EFDE for D2Q5 with constant velocities,
supplementary material for
Equivalent Finite Difference Equations and Equivalent Partial Differential Equations for the Lattice Boltzmann Method

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1 Global definitions

In $\mathbb{R}^2$, the position and velocity vectors are given by $\boldsymbol{x} = (x, y)$ and $\boldsymbol{u} = (u, v)$, respectively. Discrete velocity vectors:

$$\{\boldsymbol{c}_i\}_{i=1}^{5} = \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} -1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ -1 \end{pmatrix} \right).$$

Equilibrium DF vector $\boldsymbol{f}^{eq}$:

$$\boldsymbol{f}^{eq} = \begin{pmatrix} 1 - u^2 - 2c_s^2 - v^2 \\ \frac{1}{2}u + \frac{1}{2}u^2 + \frac{1}{2}c_s^2 \\ \frac{1}{2}v + \frac{1}{2}c_s^2 + \frac{1}{2}v^2 \\ -\frac{1}{2}u + \frac{1}{2}u^2 + \frac{1}{2}c_s^2 \\ -\frac{1}{2}v + \frac{1}{2}c_s^2 + \frac{1}{2}v^2 \end{pmatrix}.$$

Lattice speed of sound: $c_s = \frac{1}{\sqrt{3}}$.
Moments $\boldsymbol{\mu} = (\mu_1, \mu_2, \ldots, \mu_5)^T$ are given by

$$\boldsymbol{\mu} = \tilde{\mathbf{M}}\boldsymbol{f},$$

where $\boldsymbol{f} = (f_1, f_2, \ldots, f_5)^T$ and Matrix $\mathbf{M}$:

$$\tilde{\mathbf{M}} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 \end{pmatrix}.$$

2 SRT

2.1 Definitions

Matrix $\mathbf{A} = \mathbf{S}$:

$$\mathbf{A} = \begin{pmatrix} \omega & 0 & 0 & 0 & 0 \\ 0 & \omega & 0 & 0 & 0 \\ 0 & 0 & \omega & 0 & 0 \\ 0 & 0 & 0 & \omega & 0 \\ 0 & 0 & 0 & 0 & \omega \end{pmatrix}.$$

where

$$\mathbf{S} = \mathrm{diag}(\omega, \omega, \omega, \omega, \omega).$$

Matrix $\mathbf{B}$:

$$\mathbf{B} = \begin{pmatrix} 0 & -1+\omega & -1+\omega & -1+\omega & -1+\omega \\ -1+\omega & 0 & -1+\omega & -1+\omega & -1+\omega \\ -1+\omega & -1+\omega & 0 & -1+\omega & -1+\omega \\ -1+\omega & -1+\omega & -1+\omega & 0 & -1+\omega \\ -1+\omega & -1+\omega & -1+\omega & -1+\omega & 0 \end{pmatrix}.$$

2.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l, y+j\delta_l}^{[\mu_1], t-\ell\delta_t} \mu_{x+i\delta_l, y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega v^2 - \omega + \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \omega + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega + \frac{1}{2}u\omega.$

$\alpha_{x,y}^{[\mu_1],t} = 1 - \omega v^2 - 2\omega {c_s}^2 - u^2\omega.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \omega + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega - \frac{1}{2}u\omega.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega v^2 - \omega - \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}u^2\omega^2 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 - \frac{1}{2}\omega v - \omega {c_s}^2 - \frac{1}{2}u^2\omega + \omega^2 {c_s}^2 - \frac{1}{2}u\omega + \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2 + \frac{1}{2}u\omega^2,$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \tfrac{1}{2}\omega v^2 + \omega - \tfrac{1}{2}\omega v + \tfrac{3}{2}\omega {c_s}^2 + u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 + \tfrac{1}{2}\omega^2 v - \tfrac{1}{2}\omega^2 v^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}u^2\omega^2 - \tfrac{1}{2}\omega v^2 + 2\omega - \omega^2 - \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \tfrac{1}{2}\omega^2 v + \tfrac{1}{2}\omega^2 v^2 - \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}u^2\omega^2 + \omega v^2 + \omega + \tfrac{3}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \omega^2 v^2 + \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + u^2\omega^2 - \omega v^2 + 4\omega - 2\omega^2 - 2\omega {c_s}^2 - u^2\omega + 2\omega^2 {c_s}^2 + \omega^2 v^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}u^2\omega^2 + \omega v^2 + \omega + \tfrac{3}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \omega^2 v^2 - \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}u^2\omega^2 - \tfrac{1}{2}\omega v^2 + 2\omega - \omega^2 + \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \tfrac{1}{2}\omega^2 v + \tfrac{1}{2}\omega^2 v^2 + \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \tfrac{1}{2}\omega v^2 + \omega + \tfrac{1}{2}\omega v + \tfrac{3}{2}\omega {c_s}^2 + u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 - \tfrac{1}{2}\omega^2 v - \tfrac{1}{2}\omega^2 v^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}u^2\omega^2 - \tfrac{1}{2}\omega v^2 + 2\omega - \omega^2 + \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \tfrac{1}{2}\omega^2 v + \tfrac{1}{2}\omega^2 v^2 - \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 2\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \omega^2 v + \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - \omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - 2u^2\omega^2 + u^2\omega^3 + \tfrac{1}{2}\omega v^2 - 3\omega + 3\omega^2 + \tfrac{1}{2}\omega v - \omega^3 + \tfrac{3}{2}\omega {c_s}^2 + u^2\omega + \tfrac{1}{2}\omega^3 v^2 - 3\omega^2 {c_s}^2 - \omega^2 v - \omega^2 v^2 + \tfrac{3}{2}\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 2\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \omega^2 v - \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - \omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - u^2\omega^2 + \tfrac{1}{2}u^2\omega^3 + \omega v^2 - 3\omega + 3\omega^2 - \omega^3 + \tfrac{3}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega + \omega^3 v^2 - 3\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \tfrac{1}{2}u\omega^3 - 2\omega^2 v^2 + \tfrac{3}{2}\omega^3 {c_s}^2 - u\omega^2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + 2u^2\omega^2 - u^2\omega^3 - \omega v^2 - 4\omega + 2\omega^2 - 2\omega {c_s}^2 - u^2\omega - \omega^3 v^2 + 4\omega^2 {c_s}^2 + 2\omega^2 v^2 - 2\omega^3 {c_s}^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - u^2\omega^2 + \tfrac{1}{2}u^2\omega^3 + \omega v^2 - 3\omega + 3\omega^2 - \omega^3 + \tfrac{3}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega + \omega^3 v^2 - 3\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \tfrac{1}{2}u\omega^3 - 2\omega^2 v^2 + \tfrac{3}{2}\omega^3 {c_s}^2 + u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 2\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \omega^2 v + \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - \omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - 2u^2\omega^2 + u^2\omega^3 + \tfrac{1}{2}\omega v^2 - 3\omega + 3\omega^2 - \tfrac{1}{2}\omega v - \omega^3 + \tfrac{3}{2}\omega {c_s}^2 + u^2\omega + \tfrac{1}{2}\omega^3 v^2 - 3\omega^2 {c_s}^2 + \omega^2 v - \omega^2 v^2 + \tfrac{3}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - \omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 2\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \omega^2 v - \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - \omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -1 + \tfrac{1}{2}\omega^4 v + \tfrac{1}{2}\omega v^2 - \tfrac{1}{2}\omega^4 {c_s}^2 + 3\omega - 3\omega^2 - \tfrac{1}{2}\omega v + \omega^3 - \tfrac{1}{2}\omega^4 v^2 + \tfrac{1}{2}\omega {c_s}^2 + \tfrac{3}{2}\omega^3 v^2 - \tfrac{3}{2}\omega^2 {c_s}^2 + \tfrac{3}{2}\omega^2 v - \tfrac{3}{2}\omega^2 v^2 + \tfrac{3}{2}\omega^3 {c_s}^2 - \tfrac{3}{2}\omega^3 v,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - \tfrac{3}{2}u^2\omega^2 + \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega^4 {c_s}^2 + \tfrac{1}{2}u\omega^4 + 3\omega - 3\omega^2 + \omega^3 + \tfrac{1}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \tfrac{3}{2}u\omega^3 + \tfrac{3}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}u^2\omega^4 + \tfrac{3}{2}u\omega^2,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -1 + 3u^2\omega^2 - 3u^2\omega^3 - \omega v^2 + 2\omega^4 {c_s}^2 + 4\omega - 6\omega^2 + 4\omega^3 + \omega^4 v^2 - 2\omega {c_s}^2 - u^2\omega - 3\omega^3 v^2 + 6\omega^2 {c_s}^2 - \omega^4 + 3\omega^2 v^2 - 6\omega^3 {c_s}^2 + u^2\omega^4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - \tfrac{3}{2}u^2\omega^2 + \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega^4 {c_s}^2 - \tfrac{1}{2}u\omega^4 + 3\omega - 3\omega^2 + \omega^3 + \tfrac{1}{2}\omega {c_s}^2 + \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \tfrac{3}{2}u\omega^3 + \tfrac{3}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}u^2\omega^4 - \tfrac{3}{2}u\omega^2,$$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -1 - \frac{1}{2}\omega^4 v + \frac{1}{2}\omega v^2 - \frac{1}{2}\omega^4 {c_s}^2 + 3\omega - 3\omega^2 + \frac{1}{2}\omega v + \omega^3 - \frac{1}{2}\omega^4 v^2 + \frac{1}{2}\omega {c_s}^2 + \frac{3}{2}\omega^3 v^2 - \frac{3}{2}\omega^2 {c_s}^2 - \frac{3}{2}\omega^2 v - \frac{3}{2}\omega^2 v^2 + \frac{3}{2}\omega^3 {c_s}^2 + \frac{3}{2}\omega^3 v,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 1 - 4\omega + 6\omega^2 - 4\omega^3 + \omega^4,$

2.3 EFDE for μ_2

$$\mu_{2,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_2],t-\ell\delta_t} \mu_{2,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \omega + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega + \frac{1}{2}u\omega.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = -1 + \omega - \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}u^2\omega + \frac{1}{2}u\omega.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 - \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 + \frac{1}{2}\omega v^2 - 2\omega + \omega^2 + \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}\omega^2 v - \frac{1}{2}\omega^2 v^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$

$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = u\omega - u\omega^2,$

$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 - 4\omega + 2\omega^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 + u^2\omega^2 - \omega v^2 - \omega - 2\omega {c_s}^2 - u^2\omega + 2\omega^2 {c_s}^2 + \omega^2 v^2,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 + \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 + \frac{1}{2}\omega v^2 - 2\omega + \omega^2 - \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}\omega^2 v - \frac{1}{2}\omega^2 v^2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + 3u^2\omega^2 - \frac{3}{2}u^2\omega^3 - \frac{1}{2}\omega v^2 - 2\omega + \omega^2 + \frac{1}{2}\omega v - 2\omega {c_s}^2 - \frac{3}{2}u^2\omega - \frac{1}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \frac{1}{2}u\omega - \omega^2 v - \frac{1}{2}u\omega^3 + \omega^2 v^2 - 2\omega^3 {c_s}^2 + \frac{1}{2}\omega^3 v + u\omega^2,$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = -2u\omega-2u\omega^3+4u\omega^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = -1-3u^2\omega^2+\tfrac{3}{2}u^2\omega^3+\tfrac{1}{2}\omega v^2+2\omega-\omega^2-\tfrac{1}{2}\omega v+2\omega {c_s}^2+\tfrac{3}{2}u^2\omega+\tfrac{1}{2}\omega^3v^2-4\omega^2{c_s}^2-\tfrac{1}{2}u\omega+\omega^2v-\tfrac{1}{2}u\omega^3-\omega^2v^2+2\omega^3{c_s}^2-\tfrac{1}{2}\omega^3v+u\omega^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1+u^2\omega^2-\tfrac{1}{2}u^2\omega^3+\omega v^2-3\omega+3\omega^2-\omega^3+\tfrac{1}{2}\omega {c_s}^2-\tfrac{1}{2}u^2\omega+\omega^3v^2-\omega^2{c_s}^2-\tfrac{1}{2}u\omega-\tfrac{1}{2}u\omega^3-2\omega^2v^2+\tfrac{1}{2}\omega^3{c_s}^2+u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = -2u\omega-2u\omega^3+4u\omega^2,$$

$$\alpha_{x,y}^{[\mu_2],t-2\delta_t} = -4+12\omega-12\omega^2+4\omega^3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = -1-u^2\omega^2+\tfrac{1}{2}u^2\omega^3-\omega v^2+3\omega-3\omega^2+\omega^3-\tfrac{1}{2}\omega {c_s}^2+\tfrac{1}{2}u^2\omega-\omega^3v^2+\omega^2{c_s}^2-\tfrac{1}{2}u\omega-\tfrac{1}{2}u\omega^3+2\omega^2v^2-\tfrac{1}{2}\omega^3{c_s}^2+u\omega^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1+3u^2\omega^2-\tfrac{3}{2}u^2\omega^3-\tfrac{1}{2}\omega v^2-2\omega+\omega^2-\tfrac{1}{2}\omega v-2\omega {c_s}^2-\tfrac{3}{2}u^2\omega-\tfrac{1}{2}\omega^3v^2+4\omega^2{c_s}^2-\tfrac{1}{2}u\omega+\omega^2v-\tfrac{1}{2}u\omega^3+\omega^2v^2-2\omega^3{c_s}^2-\tfrac{1}{2}\omega^3v+u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = -2u\omega-2u\omega^3+4u\omega^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = -1-3u^2\omega^2+\tfrac{3}{2}u^2\omega^3+\tfrac{1}{2}\omega v^2+2\omega-\omega^2+\tfrac{1}{2}\omega v+2\omega {c_s}^2+\tfrac{3}{2}u^2\omega+\tfrac{1}{2}\omega^3v^2-4\omega^2{c_s}^2-\tfrac{1}{2}u\omega-\omega^2v-\tfrac{1}{2}u\omega^3-\omega^2v^2+2\omega^3{c_s}^2+\tfrac{1}{2}\omega^3v+u\omega^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-2\delta_t} = -2+6\omega-6\omega^2+2\omega^3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -3u\omega^4+3u\omega+9u\omega^3-9u\omega^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -1-6u^2\omega^2+6u^2\omega^3-2\omega^4{c_s}^2-u\omega^4+3\omega-3\omega^2+\omega^3+2\omega {c_s}^2+2u^2\omega-6\omega^2{c_s}^2+u\omega+3u\omega^3+6\omega^3{c_s}^2-2u^2\omega^4-3u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -3u\omega^4+3u\omega+9u\omega^3-9u\omega^2,$$

$$\alpha_{x,y}^{[\mu_2],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = 1+6u^2\omega^2-6u^2\omega^3+2\omega^4{c_s}^2-u\omega^4-3\omega+3\omega^2-\omega^3-2\omega {c_s}^2-2u^2\omega+6\omega^2{c_s}^2+u\omega+3u\omega^3-6\omega^3{c_s}^2+2u^2\omega^4-3u\omega^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -3u\omega^4 + 3u\omega + 9u\omega^3 - 9u\omega^2,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -4u\omega^5 + 16u\omega^4 - 4u\omega - 24u\omega^3 + 16u\omega^2,$

$\alpha_{x,y}^{[\mu_2],t-4\delta_t} = -4 + 20\omega - 40\omega^2 + 40\omega^3 + 4\omega^5 - 20\omega^4,$

2.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t} \mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega v^2 - \omega + \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = -1 - \frac{1}{2}\omega v^2 + \omega + \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}u^2\omega + \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}u\omega + \frac{1}{2}u\omega^2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$

$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}u^2\omega + \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}u\omega - \frac{1}{2}u\omega^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = \omega v - \omega^2 v,$

$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2 - 4\omega + 2\omega^2,$

$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{2}u^2\omega^2 - 2\omega + \omega^2 + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega - \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}u\omega - \frac{1}{2}u\omega^2,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 + u^2\omega^2 - \omega v^2 - \omega - 2\omega {c_s}^2 - u^2\omega + 2\omega^2 {c_s}^2 + \omega^2 v^2,$

$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{2}u^2\omega^2 - 2\omega + \omega^2 + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega - \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}u\omega + \frac{1}{2}u\omega^2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - 2\omega + \omega^2,$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \omega^2 v + \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1 - 2u^2\omega^2 + u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 3\omega + 3\omega^2 - \tfrac{1}{2}\omega v - \omega^3 + \tfrac{1}{2}\omega {c_s}^2 + u^2\omega - \tfrac{1}{2}\omega^3 v^2 - \omega^2 {c_s}^2 + \omega^2 v + \omega^2 v^2 + \tfrac{1}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y-\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \omega^2 v - \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = -2\omega v + 4\omega^2 v - 2\omega^3 v,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = -2\omega v + 4\omega^2 v - 2\omega^3 v,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y} = -4 + 12\omega - 12\omega^2 + 4\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = -2\omega v + 4\omega^2 v - 2\omega^3 v,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -1 - u^2\omega^2 + \tfrac{1}{2}u^2\omega^3 + \tfrac{3}{2}\omega v^2 + 2\omega - \omega^2 - \tfrac{1}{2}\omega v + 2\omega {c_s}^2 + \tfrac{1}{2}u^2\omega + \tfrac{3}{2}\omega^3 v^2 - 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \omega^2 v - \tfrac{1}{2}u\omega^3 - 3\omega^2 v^2 + 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = -1 + 2u^2\omega^2 - u^2\omega^3 + \tfrac{1}{2}\omega v^2 + 3\omega - 3\omega^2 - \tfrac{1}{2}\omega v + \omega^3 - \tfrac{1}{2}\omega {c_s}^2 - u^2\omega + \tfrac{1}{2}\omega^3 v^2 + \omega^2 {c_s}^2 + \omega^2 v - \omega^2 v^2 - \tfrac{1}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y+\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -1 - u^2\omega^2 + \tfrac{1}{2}u^2\omega^3 + \tfrac{3}{2}\omega v^2 + 2\omega - \omega^2 - \tfrac{1}{2}\omega v + 2\omega {c_s}^2 + \tfrac{1}{2}u^2\omega + \tfrac{3}{2}\omega^3 v^2 - 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \omega^2 v + \tfrac{1}{2}u\omega^3 - 3\omega^2 v^2 + 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1 - \omega^4 v + 2\omega v^2 - 2\omega^4 {c_s}^2 + 3\omega - 3\omega^2 + \omega v + \omega^3 - 2\omega^4 v^2 + 2\omega {c_s}^2 + 6\omega^3 v^2 - 6\omega^2 {c_s}^2 - 3\omega^2 v - 6\omega^2 v^2 + 6\omega^3 {c_s}^2 + 3\omega^3 v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y-\delta_l} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -3\omega^4 v + 3\omega v - 9\omega^2 v + 9\omega^3 v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x-\delta_l,y} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -3\omega^4 v + 3\omega v - 9\omega^2 v + 9\omega^3 v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -3\omega^4 v + 3\omega v - 9\omega^2 v + 9\omega^3 v,$$

$\alpha^{[\mu_3],t-3\delta_t}_{x+\delta_l,y} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} =$
$1-\omega^4 v-2\omega v^2+2\omega^4 {c_s}^2-3\omega+3\omega^2+\omega v-\omega^3+2\omega^4 v^2-2\omega {c_s}^2-6\omega^3 v^2+6\omega^2 {c_s}^2-3\omega^2 v+6\omega^2 v^2-6\omega^3 {c_s}^2+3\omega^3 v,$

$\alpha^{[\mu_3],t-3\delta_t}_{x,y+\delta_l} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 16\omega^4 v - 4\omega^5 v - 4\omega v + 16\omega^2 v - 24\omega^3 v,$

$\alpha^{[\mu_3],t-4\delta_t}_{x,y} = -4 + 20\omega - 40\omega^2 + 40\omega^3 + 4\omega^5 - 20\omega^4,$

2.5 EFDE for μ_4

$$\mu^{t+\delta_t}_{4,x,y} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_1],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} \mu^{t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_4],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} \mu^{t-\ell\delta_t}_{4,x+i\delta_l,y+j\delta_l},$$

where the non-zero coefficients are given by:

$\alpha^{[\mu_1],t}_{x-\delta_l,y} = 1 - \omega + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega + \frac{1}{2}u\omega.$

$\alpha^{[\mu_1],t}_{x+\delta_l,y} = 1 - \omega + \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}u^2\omega - \frac{1}{2}u\omega.$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = -1 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 - \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y-\delta_l} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x,y-\delta_l} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y-\delta_l} = -1 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 - \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x+\delta_l,y-\delta_l} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x,y} = -2 + u^2\omega^2 + 4\omega - 2\omega^2 - \omega {c_s}^2 - u^2\omega + \omega^2 {c_s}^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x,y} = 2 - 4\omega + 2\omega^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x+\delta_l,y} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 - \frac{1}{2}\omega v^2 + 2\omega - \omega^2 + \frac{1}{2}\omega v - \frac{1}{2}\omega {c_s}^2 + \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}\omega^2 v + \frac{1}{2}\omega^2 v^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1 - 2\omega + \omega^2,$

$\alpha^{[\mu_4],t-\delta_t}_{x,y+\delta_l} = 1 - 2\omega + \omega^2,$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}\omega v^2 + 2\omega - \omega^2 + \tfrac{1}{2}\omega v - \tfrac{1}{2}\omega {c_s}^2 + \tfrac{1}{2}\omega^2 {c_s}^2 - \tfrac{1}{2}\omega^2 v + \tfrac{1}{2}\omega^2 v^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - 2\omega + \omega^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + 3u^2\omega^2 - \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{3}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \omega^2 v - \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - 2\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 2 + \omega v^2 - 6\omega + 6\omega^2 + \omega v - 2\omega^3 + \omega {c_s}^2 + \omega^3 v^2 - 2\omega^2 {c_s}^2 - 2\omega^2 v - 2\omega^2 v^2 + \omega^3 {c_s}^2 + \omega^3 v,$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + 3u^2\omega^2 - \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{3}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \omega^2 v + \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - 2\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 + \omega v^2 - 3\omega + 3\omega^2 - \omega^3 + \tfrac{1}{2}\omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \omega^3 v^2 - \omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \tfrac{1}{2}u\omega^3 - 2\omega^2 v^2 + \tfrac{1}{2}\omega^3 {c_s}^2 + u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + 4u^2\omega^2 - 2u^2\omega^3 - 2\omega v^2 - 4\omega + 2\omega^2 - 4\omega {c_s}^2 - 2u^2\omega - 2\omega^3 v^2 + 8\omega^2 {c_s}^2 + 4\omega^2 v^2 - 4\omega^3 {c_s}^2,$$

$$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4 + 12\omega - 12\omega^2 + 4\omega^3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 + \omega v^2 - 3\omega + 3\omega^2 - \omega^3 + \tfrac{1}{2}\omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \omega^3 v^2 - \omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \tfrac{1}{2}u\omega^3 - 2\omega^2 v^2 + \tfrac{1}{2}\omega^3 {c_s}^2 - u\omega^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + 3u^2\omega^2 - \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{3}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \omega^2 v - \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 2 + \omega v^2 - 6\omega + 6\omega^2 - \omega v - 2\omega^3 + \omega {c_s}^2 + \omega^3 v^2 - 2\omega^2 {c_s}^2 + 2\omega^2 v - 2\omega^2 v^2 + \omega^3 {c_s}^2 - \omega^3 v,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + 3u^2\omega^2 - \tfrac{3}{2}u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{3}{2}u^2\omega - \tfrac{1}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \omega^2 v + \tfrac{1}{2}u\omega^3 + \omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -2 - 9u^2\omega^2 + \omega^4 v + 9u^2\omega^3 + \omega v^2 - 4\omega^4 {c_s}^2 + 6\omega - 6\omega^2 - \omega v + 2\omega^3 - \omega^4 v^2 + 4\omega {c_s}^2 + 3u^2\omega + 3\omega^3 v^2 - 12\omega^2 {c_s}^2 + 3\omega^2 v - 3\omega^2 v^2 + 12\omega^3 {c_s}^2 - 3u^2\omega^4 - 3\omega^3 v,$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - 6u^2\omega^2 + 6u^2\omega^3 - 2\omega^4 {c_s}^2 - u\omega^4 + 3\omega - 3\omega^2 + \omega^3 + 2\omega {c_s}^2 + 2u^2\omega - 6\omega^2 {c_s}^2 + u\omega + 3u\omega^3 + 6\omega^3 {c_s}^2 - 2u^2\omega^4 - 3u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2 - 3u^2\omega^2 + 3u^2\omega^3 - 2\omega v^2 + \omega^4 {c_s}^2 + 8\omega - 12\omega^2 + 8\omega^3 + 2\omega^4 v^2 - \omega {c_s}^2 + u^2\omega - 6\omega^3 v^2 + 3\omega^2 {c_s}^2 - 2\omega^4 + 6\omega^2 v^2 - 3\omega^3 {c_s}^2 - u^2\omega^4,$

$\alpha_{x,y}^{[\mu_4],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - 6u^2\omega^2 + 6u^2\omega^3 - 2\omega^4 {c_s}^2 + u\omega^4 + 3\omega - 3\omega^2 + \omega^3 + 2\omega {c_s}^2 + 2u^2\omega - 6\omega^2 {c_s}^2 - u\omega - 3u\omega^3 + 6\omega^3 {c_s}^2 - 2u^2\omega^4 + 3u\omega^2,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -2 - 9u^2\omega^2 - \omega^4 v + 9u^2\omega^3 + \omega v^2 - 4\omega^4 {c_s}^2 + 6\omega - 6\omega^2 + \omega v + 2\omega^3 - \omega^4 v^2 + 4\omega {c_s}^2 + 3u^2\omega + 3\omega^3 v^2 - 12\omega^2 {c_s}^2 - 3\omega^2 v - 3\omega^2 v^2 + 12\omega^3 {c_s}^2 - 3u^2\omega^4 + 3\omega^3 v,$

$\alpha_{x,y+\delta_l}^{[\mu_4],t-3\delta_t} = 3 - 12\omega + 18\omega^2 - 12\omega^3 + 3\omega^4,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 2 + 16u^2\omega^2 - 4\omega^5 {c_s}^2 - 24u^2\omega^3 + 16\omega^4 {c_s}^2 - 8\omega + 12\omega^2 - 8\omega^3 - 4\omega {c_s}^2 - 4u^2\omega + 16\omega^2 {c_s}^2 + 2\omega^4 - 4u^2\omega^5 - 24\omega^3 {c_s}^2 + 16u^2\omega^4,$

$\alpha_{x,y}^{[\mu_4],t-4\delta_t} = -4 + 20\omega - 40\omega^2 + 40\omega^3 + 4\omega^5 - 20\omega^4,$

2.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t} \mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega v^2 - \omega + \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega v^2 - \omega - \frac{1}{2}\omega v + \frac{1}{2}\omega {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}u^2\omega + \frac{1}{2}\omega^2 {c_s}^2 - \frac{1}{2}u\omega + \frac{1}{2}u\omega^2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \frac{1}{2}\omega {c_s}^2 - \frac{1}{2}u^2\omega + \frac{1}{2}\omega^2 {c_s}^2 + \frac{1}{2}u\omega - \frac{1}{2}u\omega^2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 - \omega v^2 + 4\omega - 2\omega^2 - \omega {c_s}^2 + \omega^2 {c_s}^2 + \omega^2 v^2,$

$\alpha_{x,y}^{[\mu_5],t-\delta_t} = 2 - 4\omega + 2\omega^2,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \tfrac{1}{2}\omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \tfrac{1}{2}\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - u^2\omega^2 + \omega v^2 + \omega + 2\omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - \omega^2 v^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}u^2\omega^2 + 2\omega - \omega^2 - \tfrac{1}{2}\omega {c_s}^2 - \tfrac{1}{2}u^2\omega + \tfrac{1}{2}\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \tfrac{1}{2}u\omega^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - 2\omega + \omega^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega + \omega^2 v + \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - 2u^2\omega^2 + u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 3\omega + 3\omega^2 - \tfrac{1}{2}\omega v - \omega^3 + \tfrac{1}{2}\omega {c_s}^2 + u^2\omega - \tfrac{1}{2}\omega^3 v^2 - \omega^2 {c_s}^2 + \omega^2 v + \omega^2 v^2 + \tfrac{1}{2}\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v,$$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 - \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega + \omega^2 v - \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 - \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 2 - 2u^2\omega^2 + u^2\omega^3 - 6\omega + 6\omega^2 - 2\omega^3 + \omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 + u\omega + u\omega^3 + \omega^3 {c_s}^2 - 2u\omega^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + 4u^2\omega^2 - 2u^2\omega^3 - 2\omega v^2 - 4\omega + 2\omega^2 - 4\omega {c_s}^2 - 2u^2\omega - 2\omega^3 v^2 + 8\omega^2 {c_s}^2 + 4\omega^2 v^2 - 4\omega^3 {c_s}^2,$$

$$\alpha_{x,y}^{[\mu_5],t-2\delta_t} = -4 + 12\omega - 12\omega^2 + 4\omega^3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 2 - 2u^2\omega^2 + u^2\omega^3 - 6\omega + 6\omega^2 - 2\omega^3 + \omega {c_s}^2 + u^2\omega - 2\omega^2 {c_s}^2 - u\omega - u\omega^3 + \omega^3 {c_s}^2 + 2u\omega^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 + \tfrac{1}{2}u\omega - \omega^2 v + \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v - u\omega^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - 2u^2\omega^2 + u^2\omega^3 - \tfrac{1}{2}\omega v^2 - 3\omega + 3\omega^2 + \tfrac{1}{2}\omega v - \omega^3 + \tfrac{1}{2}\omega {c_s}^2 + u^2\omega - \tfrac{1}{2}\omega^3 v^2 - \omega^2 {c_s}^2 - \omega^2 v + \omega^2 v^2 + \tfrac{1}{2}\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + u^2\omega^2 - \tfrac{1}{2}u^2\omega^3 - \tfrac{3}{2}\omega v^2 - 2\omega + \omega^2 + \tfrac{1}{2}\omega v - 2\omega {c_s}^2 - \tfrac{1}{2}u^2\omega - \tfrac{3}{2}\omega^3 v^2 + 4\omega^2 {c_s}^2 - \tfrac{1}{2}u\omega - \omega^2 v - \tfrac{1}{2}u\omega^3 + 3\omega^2 v^2 - 2\omega^3 {c_s}^2 + \tfrac{1}{2}\omega^3 v + u\omega^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2 + 6\omega - 6\omega^2 + 2\omega^3,$$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} =$
$-1-\omega^4 v+2\omega v^2-2\omega^4 {c_s}^2+3\omega-3\omega^2+\omega v+\omega^3-2\omega^4 v^2+2\omega {c_s}^2+6\omega^3 v^2-6\omega^2 {c_s}^2-3\omega^2 v-6\omega^2 v^2+6\omega^3 {c_s}^2+3\omega^3 v,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -2-3u^2\omega^2+3u^2\omega^3+3\omega v^2-4\omega^4 {c_s}^2+u\omega^4+6\omega-6\omega^2+2\omega^3-3\omega^4 v^2+4\omega {c_s}^2+u^2\omega+9\omega^3 v^2-12\omega^2 {c_s}^2-u\omega-3u\omega^3-9\omega^2 v^2+12\omega^3 {c_s}^2-u^2\omega^4+3u\omega^2,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2+6u^2\omega^2-6u^2\omega^3+\omega v^2+\omega^4 {c_s}^2+8\omega-12\omega^2+8\omega^3-\omega^4 v^2-\omega {c_s}^2-2u^2\omega+3\omega^3 v^2+3\omega^2 {c_s}^2-2\omega^4-3\omega^2 v^2-3\omega^3 {c_s}^2+2u^2\omega^4,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -2-3u^2\omega^2+3u^2\omega^3+3\omega v^2-4\omega^4 {c_s}^2-u\omega^4+6\omega-6\omega^2+2\omega^3-3\omega^4 v^2+4\omega {c_s}^2+u^2\omega+9\omega^3 v^2-12\omega^2 {c_s}^2+u\omega+3u\omega^3-9\omega^2 v^2+12\omega^3 {c_s}^2-u^2\omega^4-3u\omega^2,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} =$
$-1+\omega^4 v+2\omega v^2-2\omega^4 {c_s}^2+3\omega-3\omega^2-\omega v+\omega^3-2\omega^4 v^2+2\omega {c_s}^2+6\omega^3 v^2-6\omega^2 {c_s}^2+3\omega^2 v-6\omega^2 v^2+6\omega^3 {c_s}^2-3\omega^3 v,$

$\alpha_{x,y+\delta_l}^{[\mu_5],t-3\delta_t} = 3-12\omega+18\omega^2-12\omega^3+3\omega^4,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 2-4\omega^5 {c_s}^2-4\omega v^2+16\omega^4 {c_s}^2-8\omega+12\omega^2-4\omega^5 v^2-8\omega^3+16\omega^4 v^2-4\omega {c_s}^2-24\omega^3 v^2+16\omega^2 {c_s}^2+2\omega^4+16\omega^2 v^2-24\omega^3 {c_s}^2,$

$\alpha_{x,y}^{[\mu_5],t-4\delta_t} = -4+20\omega-40\omega^2+40\omega^3+4\omega^5-20\omega^4,$

3 MRT 1: relaxation of m_{00}, m_{10}, m_{01}, m_{20}, m_{02}

3.1 Definitions

Matrix $\mathbf{A} = \mathbf{M}^{-1}\mathbf{S}\mathbf{M}$:

$$\mathbf{A} = \begin{pmatrix} \omega_0 & -\omega_3+\omega_0 & \omega_0-\omega_4 & -\omega_3+\omega_0 & \omega_0-\omega_4 \\ 0 & \frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & -\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 \\ 0 & 0 & \frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & 0 & -\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 \\ 0 & -\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & \frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 \\ 0 & 0 & -\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & 0 & \frac{1}{2}\omega_2+\frac{1}{2}\omega_4 \end{pmatrix}.$$

where

$$\mathbf{S} = \mathrm{diag}(\omega_0, \omega_1, \omega_2, \omega_3, \omega_4)$$

and

$$\mathbf{M} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & -1 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 \end{pmatrix}.$$

Matrix $\mathbf{B}$:

$$\mathbf{B} = \begin{pmatrix} 0 & -1+\omega_3 & -1+\omega_4 & -1+\omega_3 & -1+\omega_4 \\ -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 \\ -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & 0 & -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & -1+\omega_2 \\ -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 \\ -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & -1+\omega_2 & -1+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4 & 0 \end{pmatrix}.$$

3.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_1 u + \frac{1}{2}u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3.$

$\alpha_{x,y}^{[\mu_1],t} = 1 - \omega_4 v^2 - u^2\omega_3 - \omega_4 {c_s}^2 - {c_s}^2\omega_3.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_1 u + \frac{1}{2}u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}\omega_4 {c_s}^2 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_2\omega_3 v,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 + \frac{1}{2}\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_2 v + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2\omega_2 + \frac{1}{2}\omega_4\omega_2 v + \frac{1}{2}\omega_4 {c_s}^2 - \frac{1}{2}\omega_4\omega_2 v^2 + {c_s}^2\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1 u - \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}\omega_4 {c_s}^2 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_2\omega_3 v,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 + \frac{1}{2}\omega_1 u\omega_3 - \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_4\omega_3 v^2 + \omega_4 v^2 + \frac{1}{2}u^2\omega_3 - \frac{1}{2}\omega_1 u^2\omega_3 + \omega_4 {c_s}^2 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 - \omega_4\omega_2 + \omega_4 + \omega_1 + \omega_2 - \omega_4 v^2 - u^2\omega_3 + \omega_4 {c_s}^2\omega_2 + \omega_1 u^2\omega_3 - \omega_4 {c_s}^2 + \omega_4\omega_2 v^2 - {c_s}^2\omega_3 + \omega_3 + \omega_1 {c_s}^2\omega_3 - \omega_1\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_1 u\omega_3 + \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_4\omega_3 v^2 + \omega_4 v^2 + \frac{1}{2}u^2\omega_3 - \frac{1}{2}\omega_1 u^2\omega_3 + \omega_4 {c_s}^2 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4\omega_1 {c_s}^2 + \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}\omega_4 {c_s}^2 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{4}\omega_2\omega_3 v,$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_4 u^2\omega_3 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 v^2 + u^2\omega_3 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_4\omega_2 v^2 + {c_s}^2\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2\omega_3 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_1 u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 u\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 u\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - \omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + \tfrac{1}{2}\omega_4\omega_1 u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 v + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4 u^2\omega_3 + \omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 v^2 + u^2\omega_3 - \omega_1 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2\omega_3 v + \tfrac{1}{2}\omega_4 {c_s}^2 + {c_s}^2\omega_3 - \omega_3 - \tfrac{1}{2}\omega_2\omega_3 v + \tfrac{1}{2}\omega_4\omega_1\omega_3 v^2 - \omega_1 {c_s}^2\omega_3 + \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1 u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1 {c_s}^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 v^2 + \omega_4\omega_2 - \omega_4 + \tfrac{1}{2}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4 u^2\omega_3 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \omega_2 + \omega_4 v^2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2 v^2 - \omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u - \tfrac{1}{2}\omega_1\omega_2 u + \omega_4 {c_s}^2 + \tfrac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \omega_4\omega_2 v^2 + \omega_4 {c_s}^2\omega_2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + 2\omega_4 {c_s}^2\omega_3 + \omega_4\omega_2 - \omega_4 - \omega_1 + \omega_4\omega_1 v^2 + {c_s}^2\omega_2\omega_3 + \omega_2 u^2\omega_3 + \omega_4 u^2\omega_3 - \omega_4\omega_1 {c_s}^2\omega_3 + \omega_4\omega_1 {c_s}^2 + \omega_4\omega_3 v^2 - \omega_2 - \omega_4 v^2 - u^2\omega_3 - \omega_4 {c_s}^2 - \omega_4 {c_s}^2\omega_2\omega_3 - {c_s}^2\omega_3 - \omega_4\omega_2 u^2\omega_3 - \omega_3 - \omega_4\omega_1\omega_3 v^2 + \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 v^2 + \omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4 u^2\omega_3 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \omega_2 + \omega_4 v^2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2 v^2 - \omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u + \tfrac{1}{2}\omega_1\omega_2 u + \omega_4 {c_s}^2 + \tfrac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \omega_4\omega_2 v^2 + \omega_4 {c_s}^2\omega_2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_1 u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 u\omega_3 + \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 u\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - \omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + \tfrac{1}{2}\omega_4\omega_1 u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 v + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4 u^2\omega_3 + \omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_2 v - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 v^2 + u^2\omega_3 - \omega_1 u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 v + \tfrac{1}{2}\omega_4 {c_s}^2 + {c_s}^2\omega_3 - \omega_3 + \tfrac{1}{2}\omega_2\omega_3 v + \tfrac{1}{2}\omega_4\omega_1\omega_3 v^2 - \omega_1 {c_s}^2\omega_3 + \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1 u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 +$$

$\frac{1}{2}\omega_4 {c_s}^2\omega_2 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{2}\omega_4\omega_2 v + \frac{1}{2}\omega_1 u^2\omega_3 + \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}\omega_4 {c_s}^2 - \frac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \frac{1}{2}\omega_4\omega_2 v^2 - \frac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{4}\omega_4\omega_1\omega_2 v - \frac{1}{2}\omega_3 - \frac{1}{4}\omega_4\omega_1 u\omega_3 + \frac{1}{4}\omega_2\omega_3 v + \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{4}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 v^2 + \frac{1}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4\omega_1\omega_3 + \omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{2}\omega_1\omega_2 v - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_2\omega_3 v - \frac{1}{2}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_4\omega_3 v^2 - \frac{1}{2}\omega_4\omega_3 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4\omega_1\omega_2 v^2 - \frac{1}{2}\omega_4 {c_s}^2\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v + \frac{1}{2}\omega_4\omega_2 v - \frac{1}{2}\omega_1\omega_2\omega_3 v + \frac{1}{2}\omega_4 {c_s}^2 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_2 v^2 + \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2 v + \omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v^2 + \frac{1}{2}\omega_2\omega_3 v + \frac{1}{2}\omega_4\omega_1\omega_3 v^2 - \omega_1\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2 u^2\omega_3 - \omega_4\omega_2 + \omega_4 - \frac{1}{2}\omega_4\omega_1\omega_2 u + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_4\omega_1 u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2 u^2\omega_3 + \frac{1}{2}\omega_1 u\omega_3 - \frac{1}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}u^2\omega_3 + \frac{1}{2}\omega_4\omega_1 u - \frac{1}{2}\omega_1 u^2\omega_3 + \frac{1}{2}\omega_1\omega_2 u + \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_4\omega_1 u\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2 u\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{2}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -1+2\omega_4 {c_s}^2\omega_3+\omega_4\omega_1\omega_2 u^2\omega_3+2\omega_4\omega_1 {c_s}^2\omega_2\omega_3-\omega_2\omega_3-\omega_1 {c_s}^2\omega_2\omega_3-\omega_1\omega_2 u^2\omega_3-\omega_4\omega_2\omega_3 v^2+\omega_1\omega_2\omega_3-\omega_4\omega_2+\omega_4+\omega_4\omega_1\omega_3+\omega_1+\omega_4\omega_1 v^2-\omega_4\omega_1 u^2\omega_3+{c_s}^2\omega_2\omega_3+\omega_2 u^2\omega_3-\omega_1\omega_2-\omega_4\omega_1+\omega_4 u^2\omega_3-2\omega_4\omega_1 {c_s}^2\omega_3+\omega_4\omega_1 {c_s}^2+\omega_4\omega_3 v^2-\omega_4\omega_3+\omega_2-\omega_4 v^2+\omega_4\omega_1\omega_2-u^2\omega_3-\omega_4\omega_1\omega_2 v^2+\omega_4 {c_s}^2\omega_2-\omega_4\omega_1\omega_2\omega_3+\omega_1 u^2\omega_3-\omega_4 {c_s}^2-\omega_4\omega_1 {c_s}^2\omega_2+\omega_4\omega_2 v^2 - 2\omega_4 {c_s}^2\omega_2\omega_3 - {c_s}^2\omega_3 - \omega_4\omega_2 u^2\omega_3 + \omega_4\omega_2\omega_3 + \omega_3 + \omega_4\omega_1\omega_2\omega_3 v^2 - \omega_4\omega_1\omega_3 v^2 + \omega_1 {c_s}^2\omega_3 - \omega_1\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2 u^2\omega_3 - \omega_4\omega_2 + \omega_4 + \frac{1}{2}\omega_4\omega_1\omega_2 u + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_4\omega_1 u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_1 u\omega_3 - \frac{1}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 u - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2 u + \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_4\omega_1 u\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2 u\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3 + \frac{1}{2}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 v^2 + \frac{1}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4\omega_1\omega_3 + \omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_1\omega_2 - \frac{1}{2}\omega_1\omega_2 v - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 v - \frac{1}{2}\omega_4\omega_1 {c_s}^2 + \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_4\omega_3 v^2 - \frac{1}{2}\omega_4\omega_3 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4\omega_1\omega_2 v^2 - \frac{1}{2}\omega_4 {c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v - \frac{1}{2}\omega_4\omega_2 v + \frac{1}{2}\omega_1\omega_2\omega_3 v + \frac{1}{2}\omega_4 {c_s}^2 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_2 v^2 + \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2 v + \omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v^2 - \frac{1}{2}\omega_2\omega_3 v + \frac{1}{2}\omega_4\omega_1\omega_3 v^2 - \omega_1\omega_3,$

$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 1 + \omega_2\omega_3 - \omega_1\omega_2\omega_3 + \omega_4\omega_2 - \omega_4 - \omega_4\omega_1\omega_3 - \omega_1 + \omega_1\omega_2 + \omega_4\omega_1 + \omega_4\omega_3 - \omega_2 - \omega_4\omega_1\omega_2 + \omega_4\omega_1\omega_2\omega_3 - \omega_4\omega_2\omega_3 - \omega_3 + \omega_1\omega_3,$

3.3 EFDE for μ_2

$$\mu^{t+\delta_t}_{2,x,y} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_1],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_2],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{2,x+i\delta_l,y+j\delta_l},$$

where the non-zero coefficients are given by:

$\alpha^{[\mu_1],t}_{x-\delta_l,y} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_1 u + \frac{1}{2}u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3.$

$\alpha^{[\mu_1],t}_{x+\delta_l,y} = -1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_1 u - \frac{1}{2}u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3.$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = -1 + \frac{1}{4}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_4 {c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_2\omega_3 v,$

$\alpha^{[\mu_2],t-\delta_t}_{x-\delta_l,y-\delta_l} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2v + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{2}\omega_2v - \tfrac{1}{4}\omega_4\omega_3v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{2}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3v,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_4\omega_1v^2 - \tfrac{1}{2}\omega_4\omega_1{c_s}^2 - \tfrac{1}{2}\omega_4\omega_3v^2 + \omega_4v^2 + u^2\omega_3 - \tfrac{1}{2}\omega_1u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3^2 + \omega_4{c_s}^2 + {c_s}^2\omega_3 + \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3^2 - \tfrac{3}{2}\omega_3 + \tfrac{1}{2}\omega_1\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = \omega_1u - \omega_1^2u,$$

$$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 - 2\omega_1 - 2\omega_2 + \omega_1^2 + \omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 + \tfrac{1}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_4\omega_1v^2 + \tfrac{1}{2}\omega_4\omega_1{c_s}^2 + \tfrac{1}{2}\omega_4\omega_3v^2 - \omega_4v^2 - u^2\omega_3 + \tfrac{1}{2}\omega_1u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3^2 - \omega_4{c_s}^2 - {c_s}^2\omega_3 - \tfrac{1}{2}\omega_3 + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3^2 - \tfrac{3}{2}\omega_3 + \tfrac{1}{2}\omega_1\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2v - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{2}\omega_2v + \tfrac{1}{4}\omega_4\omega_3v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4v^2 - \tfrac{1}{2}\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3v,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1v^2 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2v + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2 - \tfrac{1}{2}\omega_2v - \tfrac{1}{4}\omega_4\omega_3v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{2}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_2\omega_3v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{3}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}\omega_4u^2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1\omega_2u - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_2u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_3 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 + \tfrac{3}{4}\omega_2u^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{5}{4}\omega_4u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1u - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1u + \tfrac{1}{4}\omega_4\omega_2\omega_3v + \tfrac{1}{4}\omega_4\omega_1{c_s}^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 + \tfrac{1}{2}\omega_2v + \tfrac{1}{4}\omega_4\omega_3v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4v^2 - \tfrac{1}{4}\omega_4^2u^2\omega_3 - \tfrac{3}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1u - \tfrac{1}{2}\omega_4\omega_2v + \tfrac{1}{2}\omega_1u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3^2 + \tfrac{1}{4}\omega_1\omega_2u - \tfrac{1}{2}\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2v^2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2v - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3v + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{2}\omega_4\omega_1^2u + \omega_1u\omega_3 - 2\omega_1u - \tfrac{1}{2}\omega_1^2\omega_2u + \omega_1^2u + \omega_4\omega_1u + \omega_1\omega_2u - \tfrac{1}{2}\omega_4\omega_1u\omega_3 - \tfrac{1}{2}\omega_1\omega_2u\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2 + \omega_3 - \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = -1 - \tfrac{3}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2u^2\omega_3 + \tfrac{1}{4}\omega_4\omega_2\omega_3v^2 + \tfrac{1}{2}\omega_4 + \tfrac{1}{4}\omega_4u^2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1\omega_2u + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1v^2 + \tfrac{1}{4}\omega_2u^2\omega_3^2 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{4}\omega_4\omega_1u^2\omega_3 - \tfrac{3}{4}{c_s}^2\omega_2\omega_3 - \tfrac{3}{4}\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2v - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{5}{4}\omega_4u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1u + \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1u - \tfrac{1}{4}\omega_4\omega_2\omega_3v - \tfrac{1}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 - \tfrac{1}{2}\omega_2v - \tfrac{1}{4}\omega_4\omega_3v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{4}\omega_4^2u^2\omega_3 + \tfrac{3}{2}u^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2v^2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1u +$$

$$\tfrac{1}{2}\omega_4\omega_2 v - \tfrac{1}{2}\omega_1 u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3^2 + \tfrac{1}{4}\omega_1\omega_2 u + \tfrac{1}{2}\omega_4{c_s}^2 + \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 - \tfrac{1}{2}\omega_4\omega_2 v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + \tfrac{3}{2}{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v + \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_2\omega_3 v - \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 1 - \tfrac{1}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 v^2 + \omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + {c_s}^2\omega_2\omega_3 + \omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_1\omega_2^2 u - \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_4\omega_1{c_s}^2 - \tfrac{1}{2}\omega_2^2 u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \omega_2 + \omega_4 v^2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2 v^2 - \omega_4{c_s}^2\omega_2 - \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 + \omega_1\omega_2 u + \omega_4{c_s}^2 + \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2 - \omega_4\omega_2 v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \tfrac{1}{2}\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y} = -2 - \tfrac{3}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + 3\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = -\omega_1 u\omega_3^2 + 3\omega_1 u\omega_3 - 2\omega_1 u + \omega_1^2 u - \omega_1^2 u\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y} = -4 + \omega_1^2\omega_3 - 4\omega_4\omega_2 + 3\omega_4 + 3\omega_1 + \omega_4\omega_2^2 - \omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 + 3\omega_2 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 + 3\omega_3 - 4\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = -1 + \tfrac{1}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 v^2 - \omega_4\omega_2 + \omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_4\omega_1 v^2 - {c_s}^2\omega_2\omega_3 - \omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_1\omega_2^2 u - \tfrac{1}{2}\omega_1 u + \tfrac{1}{2}\omega_4\omega_1{c_s}^2 + \tfrac{1}{2}\omega_2^2 u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_3 v^2 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 - \omega_4 v^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2 v^2 + \omega_4{c_s}^2\omega_2 + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 + \omega_1\omega_2 u - \omega_4{c_s}^2 - \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2 + \omega_4\omega_2 v^2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \tfrac{1}{2}\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y} = -2 - \tfrac{3}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + 3\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1 + \tfrac{3}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}\omega_4 u^2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_2 u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 + \tfrac{3}{4}\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{5}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1 u - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1{c_s}^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_4^2 u^2\omega_3 - \tfrac{3}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3^2 + \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = -\tfrac{1}{2}\omega_4\omega_1^2 u + \omega_1 u\omega_3 - 2\omega_1 u - \tfrac{1}{2}\omega_1^2\omega_2 u + \omega_1^2 u + \omega_4\omega_1 u + \omega_1\omega_2 u - \tfrac{1}{2}\omega_4\omega_1 u\omega_3 - \tfrac{1}{2}\omega_1\omega_2 u\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y+\delta_l} = -2 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2 + \omega_3 - \omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -1 - \tfrac{3}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 + \tfrac{1}{2}\omega_4 + \tfrac{1}{4}\omega_4 u^2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 u + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1 v^2 + \tfrac{1}{4}\omega_2 u^2\omega_3^2 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 - \tfrac{3}{4}{c_s}^2\omega_2\omega_3 - \tfrac{3}{4}\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{5}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1 u + \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_2\omega_3 v - \tfrac{1}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_4\omega_3 v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 v^2 + \tfrac{1}{4}\omega_4^2 u^2\omega_3 + \tfrac{3}{2}u^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4\omega_2 v - \tfrac{1}{2}\omega_1 u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3^2 + \tfrac{1}{4}\omega_1\omega_2 u + \tfrac{1}{2}\omega_4{c_s}^2 + \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 - \tfrac{1}{2}\omega_4\omega_2 v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + \tfrac{3}{2}{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v + \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v - \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -\tfrac{1}{2}\omega_4\omega_1^2 u\omega_3 + \omega_1 u\omega_3^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_4^2\omega_1 u\omega_3 + \tfrac{1}{2}\omega_4\omega_1^2 u - 4\omega_1 u\omega_3 + \tfrac{1}{2}\omega_4^2\omega_1 u + 3\omega_1 u - \tfrac{1}{2}\omega_1^2\omega_2 u\omega_3 + \tfrac{1}{2}\omega_1^2\omega_2 u - \tfrac{1}{2}\omega_1\omega_2 u\omega_3^2 - \omega_1^2 u + \omega_1^2 u\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u\omega_3^2 - \tfrac{5}{2}\omega_4\omega_1 u - \tfrac{3}{2}\omega_1\omega_2 u + 3\omega_4\omega_1 u\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2 u\omega_3 + 2\omega_1\omega_2 u\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-3\delta_t} = 3 + 2\omega_2\omega_3 - \omega_1^2\omega_3 - \tfrac{5}{2}\omega_1\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{5}{2}\omega_4 - \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{7}{2}\omega_4\omega_1\omega_3 - 4\omega_1 + \tfrac{1}{2}\omega_4\omega_1\omega_3^2 + 2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2\omega_3^2 + 3\omega_4\omega_1 + \omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3^2 - \omega_1\omega_3^2 + \tfrac{1}{2}\omega_4^2 + 3\omega_4\omega_3 - \tfrac{3}{2}\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 + \omega_1^2 - \tfrac{1}{2}\omega_4\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_1^2\omega_3 - 4\omega_3 + \tfrac{1}{2}\omega_1^2\omega_2\omega_3 + 5\omega_1\omega_3 - \tfrac{1}{2}\omega_4\omega_3^2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - \tfrac{5}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2^2u^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2^2\omega_3 - \omega_4\omega_2 + \omega_4 + \tfrac{1}{2}\omega_4u^2\omega_3^2 + 2\omega_4\omega_1\omega_2u + \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_2u^2\omega_3^2 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{2}\omega_4\omega_1u^2\omega_3 - \tfrac{5}{2}{c_s}^2\omega_2\omega_3 - \tfrac{5}{2}\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{5}{2}\omega_4u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2u - \tfrac{1}{2}\omega_4^2{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_4^2\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4^2\omega_1u + \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3 + \omega_1u + \tfrac{1}{2}\omega_4{c_s}^2\omega_3^2 + \tfrac{1}{2}\omega_2^2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{2}\omega_4^2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + 2u^2\omega_3 - \tfrac{1}{2}\omega_4^2\omega_1\omega_2u + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 - \tfrac{3}{2}\omega_4\omega_1u - \tfrac{1}{2}\omega_4\omega_2u^2\omega_3^2 - \tfrac{1}{2}\omega_1u^2\omega_3 - \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{2}{c_s}^2\omega_3^2 - \tfrac{3}{2}\omega_1\omega_2u + 3\omega_4{c_s}^2\omega_2\omega_3 + 2{c_s}^2\omega_3 + 3\omega_4\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \tfrac{1}{2}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2^2u + \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-3\delta_t} = 3 + \tfrac{1}{2}\omega_4^2\omega_2\omega_3 + 3\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2^2 + 5\omega_4\omega_2 - 4\omega_4 + \tfrac{1}{2}\omega_4\omega_2^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - \tfrac{3}{2}\omega_1 + 2\omega_1\omega_2 - \omega_4\omega_2^2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \tfrac{5}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \tfrac{7}{2}\omega_4\omega_2\omega_3 - \tfrac{5}{2}\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2^2 - \tfrac{1}{2}\omega_2^2\omega_3 + \tfrac{1}{2}\omega_1\omega_3 - \tfrac{1}{2}\omega_4\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = 2\omega_4\omega_1\omega_2u - \omega_1\omega_2^2u\omega_3 + \omega_4\omega_1^2u - 2\omega_1u\omega_3 + \omega_1\omega_2^2u + 3\omega_1u + \omega_1^2\omega_2u - \omega_1^2u - 2\omega_4\omega_1u - 4\omega_1\omega_2u + \omega_4\omega_1u\omega_3 - \omega_4\omega_1\omega_2u\omega_3 + 3\omega_1\omega_2u\omega_3 - \omega_4\omega_1^2\omega_2u,$$

$$\alpha_{x,y}^{[\mu_2],t-3\delta_t} = 3 + 3\omega_2\omega_3 - 3\omega_1\omega_2\omega_3 - \omega_1\omega_2^2 + 2\omega_4\omega_2 - 2\omega_4 - \omega_4\omega_1^2 - \omega_4\omega_1\omega_3 - 4\omega_1 + 5\omega_1\omega_2 + 3\omega_4\omega_1 + \omega_4\omega_1^2\omega_2 + \omega_4\omega_3 - 4\omega_2 - 3\omega_4\omega_1\omega_2 + \omega_4\omega_1\omega_2\omega_3 - \omega_1^2\omega_2 + \omega_1^2 + \omega_2^2 + \omega_1\omega_2^2\omega_3 - \omega_4\omega_2\omega_3 - 2\omega_3 - \omega_2^2\omega_3 + 2\omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = 1 + \tfrac{5}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2^2u^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2^2\omega_3 + \omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_4u^2\omega_3^2 + 2\omega_4\omega_1\omega_2u - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2u^2\omega_3^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4\omega_1u^2\omega_3 + \tfrac{5}{2}{c_s}^2\omega_2\omega_3 + \tfrac{5}{2}\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{5}{2}\omega_4u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2u + \tfrac{1}{2}\omega_4^2{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_4^2\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4^2\omega_1u - \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3 + \omega_1u - \tfrac{1}{2}\omega_4{c_s}^2\omega_3^2 - \tfrac{1}{2}\omega_2^2u^2\omega_3 - \omega_2 - \tfrac{1}{2}\omega_4^2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - 2u^2\omega_3 - \tfrac{1}{2}\omega_4^2\omega_1\omega_2u - \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 - \tfrac{3}{2}\omega_4\omega_1u + \tfrac{1}{2}\omega_4\omega_2u^2\omega_3^2 + \tfrac{1}{2}\omega_1u^2\omega_3 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{2}{c_s}^2\omega_3^2 - \tfrac{3}{2}\omega_1\omega_2u - 3\omega_4{c_s}^2\omega_2\omega_3 - 2{c_s}^2\omega_3 - 3\omega_4\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \tfrac{1}{2}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2^2u - \tfrac{1}{2}\omega_3 + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-3\delta_t} = 3 + \tfrac{1}{2}\omega_4^2\omega_2\omega_3 + 3\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2^2 + 5\omega_4\omega_2 - 4\omega_4 + \tfrac{1}{2}\omega_4\omega_2^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - \tfrac{3}{2}\omega_1 + 2\omega_1\omega_2 - \omega_4\omega_2^2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \tfrac{5}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \tfrac{7}{2}\omega_4\omega_2\omega_3 - \tfrac{5}{2}\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2^2 - \tfrac{1}{2}\omega_2^2\omega_3 + \tfrac{1}{2}\omega_1\omega_3 - \tfrac{1}{2}\omega_4\omega_3^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -\tfrac{1}{2}\omega_4\omega_1^2u\omega_3 + \omega_1u\omega_3^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2u - \tfrac{1}{2}\omega_4^2\omega_1u\omega_3 + \tfrac{1}{2}\omega_4\omega_1^2u - 4\omega_1u\omega_3 + \tfrac{1}{2}\omega_4^2\omega_1u + 3\omega_1u - \tfrac{1}{2}\omega_1^2\omega_2u\omega_3 + \tfrac{1}{2}\omega_1^2\omega_2u - \tfrac{1}{2}\omega_1\omega_2u\omega_3^2 - \omega_1^2u + \omega_1^2u\omega_3 - \tfrac{1}{2}\omega_4\omega_1u\omega_3^2 - \tfrac{5}{2}\omega_4\omega_1u - \tfrac{3}{2}\omega_1\omega_2u + 3\omega_4\omega_1u\omega_3 - \tfrac{1}{2}\omega_4\omega_1\omega_2u\omega_3 + 2\omega_1\omega_2u\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t} = 3 + 2\omega_2\omega_3 - \omega_1^2\omega_3 - \tfrac{5}{2}\omega_1\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{5}{2}\omega_4 - \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{7}{2}\omega_4\omega_1\omega_3 - 4\omega_1 + \tfrac{1}{2}\omega_4\omega_1\omega_3^2 + 2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2\omega_3^2 + 3\omega_4\omega_1 + \omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3^2 - \omega_1\omega_3^2 + \tfrac{1}{2}\omega_4^2 + 3\omega_4\omega_3 - \tfrac{3}{2}\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 + \omega_1^2 - \tfrac{1}{2}\omega_4\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_1^2\omega_3 - 4\omega_3 + \tfrac{1}{2}\omega_1^2\omega_2\omega_3 + 5\omega_1\omega_3 - \tfrac{1}{2}\omega_4\omega_3^2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = \omega_4\omega_1^2u\omega_3 - \omega_1u\omega_3^2 - \omega_4\omega_1\omega_2^2u\omega_3 - 6\omega_4\omega_1\omega_2u + \omega_1\omega_2^2u\omega_3 + \omega_4^2\omega_1u\omega_3 - \omega_4\omega_1^2u + 5\omega_1u\omega_3 - \omega_1\omega_2^2u - \omega_4^2\omega_1u - 4\omega_1u + \omega_1^2\omega_2u\omega_3 - \omega_1^2\omega_2u - \omega_4\omega_1^2\omega_2u\omega_3 + \omega_1\omega_2u\omega_3^2 + \omega_1^2u - \omega_4\omega_1\omega_2u\omega_3^2 - \omega_1^2u\omega_3 + \omega_4\omega_1u\omega_3^2 + \omega_4^2\omega_1\omega_2u + 5\omega_4\omega_1u + 5\omega_1\omega_2u - \omega_4^2\omega_1\omega_2u\omega_3 + \omega_4\omega_1\omega_2^2u - 6\omega_4\omega_1u\omega_3 + 7\omega_4\omega_1\omega_2u\omega_3 - 6\omega_1\omega_2u\omega_3 + \omega_4\omega_1^2\omega_2u,$$

$$\alpha_{x,y}^{[\mu_2],t-4\delta_t} = -4 - \omega_4^2\omega_2\omega_3 - 6\omega_2\omega_3 + \omega_1^2\omega_3 + 7\omega_1\omega_2\omega_3 + \omega_1\omega_2^2 - 6\omega_4\omega_2 + 5\omega_4 + \omega_4\omega_1^2 - \omega_4\omega_2^2\omega_3 + \omega_4^2\omega_1\omega_2\omega_3 + 7\omega_4\omega_1\omega_3 + 5\omega_1 - \omega_4\omega_1\omega_3^2 + \omega_4\omega_1\omega_2^2\omega_3 - 6\omega_1\omega_2 - \omega_1\omega_2\omega_3^2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 - 6\omega_4\omega_1 - \omega_3^2 + \omega_4^2\omega_3 + \omega_4\omega_1^2\omega_2\omega_3 - \omega_4\omega_1^2\omega_2 + \omega_2\omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 - 6\omega_4\omega_3 + 5\omega_2 + 7\omega_4\omega_1\omega_2 - 8\omega_4\omega_1\omega_2\omega_3 + \omega_1^2\omega_2 - \omega_4\omega_2\omega_3^2 + \omega_4^2\omega_1 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 - \omega_1\omega_2^2\omega_3 + 7\omega_4\omega_2\omega_3 - \omega_4\omega_1^2\omega_3 + 5\omega_3 + \omega_4\omega_1\omega_2\omega_3^2 - \omega_4\omega_1\omega_2^2 + \omega_2^2\omega_3 - \omega_1^2\omega_2\omega_3 - 6\omega_1\omega_3 + \omega_4\omega_3^2 - \omega_4^2\omega_1\omega_3,$$

3.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t} \mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = -1 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1 u - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4^2 {c_s}^2 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_4^2 v^2 + \frac{1}{2}\omega_2 + \omega_4 v^2 + u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2\omega_2 + \omega_4 {c_s}^2 - \frac{1}{2}\omega_4\omega_2 v^2 + {c_s}^2\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{2}\omega_4\omega_2 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_1 u - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1 u - \frac{1}{4}\omega_1\omega_2 u - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = \omega_2 v - \omega_2^2 v,$

$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2 - 2\omega_1 - 2\omega_2 + \omega_1^2 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{4}\omega_4 {c_s}^2\omega_3 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 - \frac{1}{4}{c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_2 u^2\omega_3 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 + \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1 u - \frac{1}{4}\omega_1\omega_2 u + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 + \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4^2 {c_s}^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_4^2 v^2 - \frac{1}{2}\omega_2 - \omega_4 v^2 - u^2\omega_3 + \frac{1}{2}\omega_4 {c_s}^2\omega_2 - \omega_4 {c_s}^2 + \frac{1}{2}\omega_4\omega_2 v^2 - {c_s}^2\omega_3,$

$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{2}\omega_4\omega_2 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{4}\omega_4 {c_s}^2\omega_3 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 - \frac{1}{4}{c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_2 u^2\omega_3 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 + \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_1\omega_2 u + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \frac{3}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3^2 v + \frac{1}{4}\omega_2\omega_3 - \frac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_1\omega_2 u^2\omega_3 - \frac{1}{4}\omega_4\omega_2\omega_3 v^2 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4^2 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{3}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_4\omega_1 u^2\omega_3 - \frac{1}{4}\omega_4^2\omega_3 v^2 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_1 u\omega_3 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{4}\omega_4\omega_3^2 v^2 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \frac{1}{2}\omega_1 u + \frac{1}{2}\omega_4^2 v^2 + \frac{3}{4}\omega_4\omega_1 {c_s}^2 - \frac{1}{4}\omega_4 {c_s}^2\omega_3^2 - \frac{1}{2}\omega_2 v + \frac{5}{4}\omega_4\omega_3 v^2 +$

$\frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{3}{2}\omega_4 v^2 - \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1\omega_2 v^2 + \frac{1}{2}\omega_4 {c_s}^2\omega_2 - \frac{1}{4}\omega_4\omega_1 u + \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2\omega_3 v - \frac{1}{4}\omega_1\omega_2 u - \frac{1}{4}\omega_4^2\omega_1 {c_s}^2 - \frac{3}{2}\omega_4 {c_s}^2 - \frac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \frac{1}{2}\omega_4\omega_2 v^2 - \frac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{4}\omega_4^2 {c_s}^2\omega_3 - \frac{1}{2}\omega_3 + \frac{1}{4}\omega_4\omega_1 u\omega_3 + \frac{3}{4}\omega_2\omega_3 v - \frac{1}{4}\omega_4\omega_1\omega_3 v^2 + \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{4}\omega_4^2\omega_1 v^2 + \frac{1}{4}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 - \omega_2\omega_3 + \frac{1}{4}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_2 + 2\omega_4 + \frac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \frac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \frac{1}{2}\omega_3^2 + \frac{1}{4}\omega_4^2\omega_3 + \frac{1}{4}\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2 - \frac{3}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \frac{1}{2}\omega_1\omega_3 + \frac{1}{4}\omega_4\omega_3^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1 - \frac{1}{2}\omega_4 {c_s}^2\omega_3 + \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4\omega_1\omega_3 - \omega_1 + \omega_4\omega_1 v^2 + \frac{1}{2}\omega_4\omega_1 u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2 u^2\omega_3 + \frac{1}{2}\omega_1\omega_2 + \omega_1\omega_2 v + \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4 u^2\omega_3 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{2}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_1^2\omega_2 v - \frac{1}{2}\omega_4\omega_1^2 {c_s}^2 + u^2\omega_3 - \omega_1 u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2 + {c_s}^2\omega_3 - \omega_3 - \frac{1}{2}\omega_4\omega_1^2 v^2 - \omega_1 {c_s}^2\omega_3 + \omega_1\omega_3,$

$\alpha^{[\mu_3],t-2\delta_t}_{x,y-\delta_l} = -2 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \frac{1}{2}\omega_4\omega_1^2 + \frac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \frac{3}{2}\omega_1\omega_2 - \frac{3}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{2}\omega_1^2\omega_2 - \omega_1^2 + \omega_3 - \omega_1\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 + \frac{3}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3^2 v + \frac{1}{4}\omega_2\omega_3 - \frac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_1\omega_2 u^2\omega_3 - \frac{1}{4}\omega_4\omega_2\omega_3 v^2 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4^2 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{3}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_4\omega_1 u^2\omega_3 - \frac{1}{4}\omega_4^2\omega_3 v^2 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2 u^2\omega_3 + \frac{1}{2}\omega_1 u\omega_3 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4 u^2\omega_3 - \frac{1}{4}\omega_4\omega_3^2 v^2 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4^2 v^2 + \frac{3}{4}\omega_4\omega_1 {c_s}^2 - \frac{1}{4}\omega_4 {c_s}^2\omega_3^2 - \frac{1}{2}\omega_2 v + \frac{5}{4}\omega_4\omega_3 v^2 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{3}{2}\omega_4 v^2 - \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1\omega_2 v^2 + \frac{1}{2}\omega_4 {c_s}^2\omega_2 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2\omega_3 v + \frac{1}{4}\omega_1\omega_2 u - \frac{1}{4}\omega_4^2\omega_1 {c_s}^2 - \frac{3}{2}\omega_4 {c_s}^2 - \frac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \frac{1}{2}\omega_4\omega_2 v^2 - \frac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 - \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{4}\omega_4^2 {c_s}^2\omega_3 - \frac{1}{2}\omega_3 - \frac{1}{4}\omega_4\omega_1 u\omega_3 + \frac{3}{4}\omega_2\omega_3 v - \frac{1}{4}\omega_4\omega_1\omega_3 v^2 + \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{4}\omega_4^2\omega_1 v^2 - \frac{1}{4}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 - \omega_2\omega_3 + \frac{1}{4}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_2 + 2\omega_4 + \frac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \frac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \frac{1}{2}\omega_3^2 + \frac{1}{4}\omega_4^2\omega_3 + \frac{1}{4}\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2 - \frac{3}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \frac{1}{2}\omega_1\omega_3 + \frac{1}{4}\omega_4\omega_3^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = -\frac{1}{2}\omega_2^2\omega_3 v + \omega_1\omega_2 v - \frac{1}{2}\omega_4\omega_2\omega_3 v - 2\omega_2 v + \omega_2^2 v + \omega_4\omega_2 v - \frac{1}{2}\omega_1\omega_2^2 v - \frac{1}{2}\omega_4\omega_1\omega_2 v + \omega_2\omega_3 v,$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y} = -2 - \frac{3}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \frac{3}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_3 + 3\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \frac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \frac{1}{2}\omega_2^2\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = -\omega_4\omega_2^2 v - 2\omega_2 v - \omega_4^2\omega_2 v + \omega_2^2 v + 3\omega_4\omega_2 v,$

$\alpha^{[\mu_3],t-2\delta_t}_{x,y} = -4 + \omega_1^2\omega_3 - 4\omega_4\omega_2 + 3\omega_4 + 3\omega_1 + \omega_4\omega_2^2 - \omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 + 3\omega_2 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 + 3\omega_3 - 4\omega_1\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = -\frac{1}{2}\omega_2^2\omega_3 v + \omega_1\omega_2 v - \frac{1}{2}\omega_4\omega_2\omega_3 v - 2\omega_2 v + \omega_2^2 v + \omega_4\omega_2 v - \frac{1}{2}\omega_1\omega_2^2 v - \frac{1}{2}\omega_4\omega_1\omega_2 v + \omega_2\omega_3 v,$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y} = -2 - \frac{3}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \frac{3}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_3 + 3\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \frac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \frac{1}{2}\omega_2^2\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -1 - \frac{3}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3^2 v - \frac{1}{4}\omega_2\omega_3 + \frac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_1\omega_2 u^2\omega_3 + \frac{1}{4}\omega_4\omega_2\omega_3 v^2 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4^2 {c_s}^2 + \frac{1}{2}\omega_1 - \frac{3}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_4\omega_1 u^2\omega_3 + \frac{1}{4}\omega_4^2\omega_3 v^2 - \frac{1}{4}{c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_2 u^2\omega_3 + \frac{1}{2}\omega_1 u\omega_3 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4 u^2\omega_3 + \frac{1}{4}\omega_4\omega_3^2 v^2 + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \frac{1}{2}\omega_1 u - \frac{1}{2}\omega_4^2 v^2 - \frac{3}{4}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_4 {c_s}^2\omega_3^2 - \frac{1}{2}\omega_2 v - \frac{5}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 + \frac{3}{2}\omega_4 v^2 + \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1\omega_2 v^2 - \frac{1}{2}\omega_4 {c_s}^2\omega_2 + \frac{1}{4}\omega_4\omega_1 u - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{4}\omega_1\omega_2\omega_3 v + \frac{1}{4}\omega_1\omega_2 u + \frac{1}{4}\omega_4^2\omega_1 {c_s}^2 + \frac{3}{2}\omega_4 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_2 v^2 + \frac{1}{4}\omega_4 {c_s}^2\omega_2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{4}\omega_4^2 {c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{4}\omega_4\omega_1 u\omega_3 + \frac{3}{4}\omega_2\omega_3 v + \frac{1}{4}\omega_4\omega_1\omega_3 v^2 - \frac{1}{2}\omega_1 {c_s}^2\omega_3 + \frac{1}{4}\omega_4^2\omega_1 v^2 - \frac{1}{4}\omega_1\omega_2 u\omega_3,$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 - \omega_2\omega_3 + \frac{1}{4}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_2 + 2\omega_4 + \frac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \frac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \frac{1}{2}\omega_3^2 + \frac{1}{4}\omega_4^2\omega_3 + \frac{1}{4}\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2 - \frac{3}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \frac{1}{2}\omega_1\omega_3 + \frac{1}{4}\omega_4\omega_3^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = -1 + \frac{1}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_2\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2 u^2\omega_3 + \frac{1}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_4\omega_1\omega_3 + \omega_1 - \omega_4\omega_1 v^2 - \frac{1}{2}\omega_4\omega_1 u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2 + \omega_1\omega_2 v - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_4\omega_3 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_1^2\omega_2 v + \frac{1}{2}\omega_4\omega_1^2 {c_s}^2 - u^2\omega_3 + \omega_1 u^2\omega_3 + \frac{1}{2}\omega_4 {c_s}^2 - {c_s}^2\omega_3 + \omega_3 + \frac{1}{2}\omega_4\omega_1^2 v^2 + \omega_1 {c_s}^2\omega_3 - \omega_1\omega_3,$

$\alpha^{[\mu_3],t-2\delta_t}_{x,y+\delta_l} =$

$$-2-\tfrac{1}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_1\omega_2\omega_3+\omega_4+\tfrac{1}{2}\omega_4\omega_1^2+\tfrac{1}{2}\omega_4\omega_1\omega_3+3\omega_1-\tfrac{3}{2}\omega_1\omega_2-\tfrac{3}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_3+\omega_2+\tfrac{1}{2}\omega_1^2\omega_2-\omega_1^2+\omega_3-\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -1-\tfrac{3}{2}\omega_4{c_s}^2\omega_3-\tfrac{1}{4}\omega_2\omega_3^2v-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3+\tfrac{1}{4}\omega_1\omega_2u^2\omega_3+\tfrac{1}{4}\omega_4\omega_2\omega_3v^2+\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_1-\tfrac{3}{4}\omega_4\omega_1v^2+\tfrac{1}{4}\omega_4\omega_1u^2\omega_3+\tfrac{1}{4}\omega_4^2\omega_3v^2-\tfrac{1}{4}{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{2}\omega_1u\omega_3-\tfrac{1}{4}\omega_1\omega_2+\tfrac{1}{4}\omega_1\omega_2v-\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_4u^2\omega_3+\tfrac{1}{4}\omega_4\omega_3^2v^2+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3+\tfrac{1}{2}\omega_1u-\tfrac{1}{2}\omega_4^2v^2-\tfrac{3}{4}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_4{c_s}^2\omega_3^2-\tfrac{1}{2}\omega_2v-\tfrac{5}{4}\omega_4\omega_3v^2-\tfrac{1}{4}\omega_4\omega_3+\tfrac{1}{2}\omega_2+\tfrac{3}{2}\omega_4v^2+\tfrac{1}{2}u^2\omega_3+\tfrac{1}{4}\omega_4\omega_1\omega_2v^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_2-\tfrac{1}{4}\omega_4\omega_1u-\tfrac{1}{2}\omega_1u^2\omega_3-\tfrac{1}{4}\omega_1\omega_2\omega_3v-\tfrac{1}{4}\omega_1\omega_2u+\tfrac{1}{4}\omega_4^2\omega_1{c_s}^2+\tfrac{3}{2}\omega_4{c_s}^2+\tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_2v^2+\tfrac{1}{4}\omega_4{c_s}^2\omega_2\omega_3+\tfrac{1}{2}{c_s}^2\omega_3+\tfrac{1}{4}\omega_4^2{c_s}^2\omega_3+\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1u\omega_3+\tfrac{3}{4}\omega_2\omega_3v+\tfrac{1}{4}\omega_4\omega_1\omega_3v^2-\tfrac{1}{2}\omega_1{c_s}^2\omega_3+\tfrac{1}{4}\omega_4^2\omega_1v^2+\tfrac{1}{4}\omega_1\omega_2u\omega_3,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2-\omega_2\omega_3+\tfrac{1}{4}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_4\omega_2+2\omega_4+\tfrac{1}{4}\omega_4\omega_1\omega_3+\omega_1-\tfrac{1}{2}\omega_1\omega_2-\omega_4\omega_1-\tfrac{1}{2}\omega_3^2+\tfrac{1}{4}\omega_4^2\omega_3+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_4^2-\tfrac{3}{2}\omega_4\omega_3+\omega_2+\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_4\omega_2\omega_3+2\omega_3-\tfrac{1}{2}\omega_1\omega_3+\tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1-\tfrac{5}{2}\omega_4{c_s}^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_3^2v^2-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_2\omega_3-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_1^2\omega_2\omega_3v+\tfrac{1}{2}\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_4\omega_1^2\omega_3v^2+\tfrac{1}{2}\omega_4\omega_1\omega_3+\omega_1-\tfrac{5}{2}\omega_4\omega_1v^2+\tfrac{1}{2}\omega_4^2\omega_3v^2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{3}{2}\omega_1\omega_2v-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_1\omega_2\omega_3^2v+\tfrac{1}{2}\omega_4\omega_3^2v^2+3\omega_4\omega_1{c_s}^2\omega_3-\tfrac{1}{2}\omega_4^2v^2-\tfrac{5}{2}\omega_4\omega_1{c_s}^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_3^2+\omega_2v-\tfrac{1}{2}\omega_4^2\omega_1\omega_3v^2-\tfrac{5}{2}\omega_4\omega_3v^2-\tfrac{1}{2}\omega_4\omega_3+\tfrac{1}{2}\omega_2+2\omega_4v^2+\tfrac{1}{2}\omega_1^2\omega_2v+\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2+\tfrac{1}{2}\omega_4\omega_1\omega_2v^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_3+2\omega_1\omega_2\omega_3v+\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2+2\omega_4{c_s}^2+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_2v^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_4^2{c_s}^2\omega_3+\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2+\tfrac{1}{2}\omega_4\omega_1^2v^2-\tfrac{3}{2}\omega_2\omega_3v+3\omega_4\omega_1\omega_3v^2+\tfrac{1}{2}\omega_4^2\omega_1v^2-\omega_1\omega_3-\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_3,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y-\delta_l} = 3+2\omega_2\omega_3-\omega_1^2\omega_3-\tfrac{5}{2}\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_2-\tfrac{5}{2}\omega_4-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{7}{2}\omega_4\omega_1\omega_3-4\omega_1+\tfrac{1}{2}\omega_4\omega_1\omega_3^2+2\omega_1\omega_2+\tfrac{1}{2}\omega_1\omega_2\omega_3^2+3\omega_4\omega_1+\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2-\omega_1\omega_3^2+\tfrac{1}{2}\omega_4^2+3\omega_4\omega_3-\tfrac{3}{2}\omega_2-\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}\omega_4^2\omega_1+\omega_1^2-\tfrac{1}{2}\omega_4\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_1^2\omega_3-4\omega_3+\tfrac{1}{2}\omega_1^2\omega_2\omega_3+5\omega_1\omega_3-\tfrac{1}{2}\omega_4\omega_3^2+\tfrac{1}{2}\omega_4^2\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = \tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_2^2\omega_3v-\tfrac{1}{2}\omega_4\omega_1\omega_2^2v-\tfrac{1}{2}\omega_4^2\omega_1\omega_2v+\omega_4\omega_2^2v-\tfrac{3}{2}\omega_1\omega_2v+3\omega_4\omega_2\omega_3v+3\omega_2v+\omega_4^2\omega_2v-\tfrac{1}{2}\omega_4\omega_2\omega_3^2v-\omega_2^2v-\tfrac{1}{2}\omega_4\omega_2^2\omega_3v-\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v-4\omega_4\omega_2v+\tfrac{1}{2}\omega_1\omega_2\omega_3v+\tfrac{1}{2}\omega_1\omega_2^2v+2\omega_4\omega_1\omega_2v-\tfrac{5}{2}\omega_2\omega_3v-\tfrac{1}{2}\omega_4^2\omega_2\omega_3v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x-\delta_l,y} = 3+\tfrac{1}{2}\omega_4^2\omega_2\omega_3+3\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2^2+5\omega_4\omega_2-4\omega_4+\tfrac{1}{2}\omega_4\omega_2^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_3-\tfrac{3}{2}\omega_1+2\omega_1\omega_2-\omega_4\omega_2^2+\tfrac{1}{2}\omega_4^2\omega_1\omega_2+2\omega_4\omega_1+\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2+\omega_4^2+3\omega_4\omega_3-4\omega_2-\tfrac{5}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_2\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_1+\omega_2^2-\omega_4^2\omega_2-\tfrac{7}{2}\omega_4\omega_2\omega_3-\tfrac{5}{2}\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_2^2\omega_3+\tfrac{1}{2}\omega_1\omega_3-\tfrac{1}{2}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -\omega_4\omega_1^2\omega_2v+\omega_2^2\omega_3v-4\omega_1\omega_2v+\omega_4\omega_2\omega_3v-\omega_1\omega_2^2\omega_3v+3\omega_2v-\omega_2^2v+\omega_1^2\omega_2v-\omega_4\omega_1\omega_2\omega_3v-2\omega_4\omega_2v+2\omega_1\omega_2\omega_3v+\omega_1\omega_2^2v+3\omega_4\omega_1\omega_2v-2\omega_2\omega_3v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y} = 3+3\omega_2\omega_3-3\omega_1\omega_2\omega_3-\omega_1\omega_2^2+2\omega_4\omega_2-2\omega_4-\omega_4\omega_1^2-\omega_4\omega_1\omega_3-4\omega_1+5\omega_1\omega_2+3\omega_4\omega_1+\omega_4\omega_1^2\omega_2+\omega_4\omega_3-4\omega_2-3\omega_4\omega_1\omega_2+\omega_4\omega_1\omega_2\omega_3-\omega_1^2\omega_2+\omega_1^2+\omega_2^2+\omega_1\omega_2^2\omega_3-\omega_4\omega_2\omega_3-2\omega_3-\omega_2^2\omega_3+2\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = \tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_2^2\omega_3v-\tfrac{1}{2}\omega_4\omega_1\omega_2^2v-\tfrac{1}{2}\omega_4^2\omega_1\omega_2v+\omega_4\omega_2^2v-\tfrac{3}{2}\omega_1\omega_2v+3\omega_4\omega_2\omega_3v+3\omega_2v+\omega_4^2\omega_2v-\tfrac{1}{2}\omega_4\omega_2\omega_3^2v-\omega_2^2v-\tfrac{1}{2}\omega_4\omega_2^2\omega_3v-\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v-4\omega_4\omega_2v+\tfrac{1}{2}\omega_1\omega_2\omega_3v+\tfrac{1}{2}\omega_1\omega_2^2v+2\omega_4\omega_1\omega_2v-\tfrac{5}{2}\omega_2\omega_3v-\tfrac{1}{2}\omega_4^2\omega_2\omega_3v,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x+\delta_l,y} = 3+\tfrac{1}{2}\omega_4^2\omega_2\omega_3+3\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2^2+5\omega_4\omega_2-4\omega_4+\tfrac{1}{2}\omega_4\omega_2^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_3-\tfrac{3}{2}\omega_1+2\omega_1\omega_2-\omega_4\omega_2^2+\tfrac{1}{2}\omega_4^2\omega_1\omega_2+2\omega_4\omega_1+\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2+\omega_4^2+3\omega_4\omega_3-4\omega_2-\tfrac{5}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_2\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_1+\omega_2^2-\omega_4^2\omega_2-\tfrac{7}{2}\omega_4\omega_2\omega_3-\tfrac{5}{2}\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_2^2\omega_3+\tfrac{1}{2}\omega_1\omega_3-\tfrac{1}{2}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = 1+\tfrac{5}{2}\omega_4{c_s}^2\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_3^2v^2+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3^2-\tfrac{1}{2}\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_1^2\omega_2\omega_3v-\tfrac{1}{2}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_4+\tfrac{1}{2}\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_4\omega_1^2\omega_3v^2-\tfrac{1}{2}\omega_4\omega_1\omega_3-\omega_1+\tfrac{5}{2}\omega_4\omega_1v^2-\tfrac{1}{2}\omega_4^2\omega_3v^2+\tfrac{1}{2}\omega_1\omega_2-\tfrac{3}{2}\omega_1\omega_2v+\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_1\omega_2\omega_3^2v-\tfrac{1}{2}\omega_4\omega_3^2v^2-3\omega_4\omega_1{c_s}^2\omega_3+\tfrac{1}{2}\omega_4^2v^2+\tfrac{5}{2}\omega_4\omega_1{c_s}^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_3^2+\omega_2v+\tfrac{1}{2}\omega_4^2\omega_1\omega_3v^2+\tfrac{5}{2}\omega_4\omega_3v^2+\tfrac{1}{2}\omega_4\omega_3-\tfrac{1}{2}\omega_2-2\omega_4v^2+\tfrac{1}{2}\omega_1^2\omega_2v-\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2-\tfrac{1}{2}\omega_4\omega_1\omega_2v^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_3+2\omega_1\omega_2\omega_3v-\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2-2\omega_4{c_s}^2-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2+\tfrac{1}{2}\omega_4\omega_2v^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3-\tfrac{1}{2}\omega_4^2{c_s}^2\omega_3-\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4\omega_1^2v^2-\tfrac{3}{2}\omega_2\omega_3v-3\omega_4\omega_1\omega_3v^2-\tfrac{1}{2}\omega_4^2\omega_1v^2+\omega_1\omega_3+\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_3,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y+\delta_l} = 3+2\omega_2\omega_3-\omega_1^2\omega_3-\tfrac{5}{2}\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_2-\tfrac{5}{2}\omega_4-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{7}{2}\omega_4\omega_1\omega_3-4\omega_1+\tfrac{1}{2}\omega_4\omega_1\omega_3^2+2\omega_1\omega_2+\tfrac{1}{2}\omega_1\omega_2\omega_3^2+3\omega_4\omega_1+\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2-\omega_1\omega_3^2+\tfrac{1}{2}\omega_4^2+3\omega_4\omega_3-\tfrac{3}{2}\omega_2-\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3-$$

$\frac{1}{2}\omega_1^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_1^2 - \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_1^2\omega_3 - 4\omega_3 + \frac{1}{2}\omega_1^2\omega_2\omega_3 + 5\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2 + \frac{1}{2}\omega_4^2\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -\omega_2\omega_3^2 v + \omega_4\omega_1^2\omega_2 v + \omega_1^2\omega_2\omega_3 v - \omega_2^2\omega_3 v - \omega_4\omega_1^2\omega_2\omega_3 v + \omega_4\omega_1\omega_2^2 v + \omega_4^2\omega_1\omega_2 v - \omega_4\omega_1\omega_2\omega_3^2 v - \omega_4\omega_2^2 v + 5\omega_1\omega_2 v + \omega_1\omega_2\omega_3^2 v - \omega_4\omega_1\omega_2^2\omega_3 v - 6\omega_4\omega_2\omega_3 v + \omega_1\omega_2^2\omega_3 v - 4\omega_2 v - \omega_4^2\omega_2 v + \omega_4\omega_2\omega_3^2 v + \omega_2^2 v - \omega_1^2\omega_2 v - \omega_4^2\omega_1\omega_2\omega_3 v + \omega_4\omega_2^2\omega_3 v + 7\omega_4\omega_1\omega_2\omega_3 v + 5\omega_4\omega_2 v - 6\omega_1\omega_2\omega_3 v - \omega_1\omega_2^2 v - 6\omega_4\omega_1\omega_2 v + 5\omega_2\omega_3 v + \omega_4^2\omega_2\omega_3 v,$

$\alpha_{x,y}^{[\mu_3],t-4\delta_t} = -4 - \omega_4^2\omega_2\omega_3 - 6\omega_2\omega_3 + \omega_1^2\omega_3 + 7\omega_1\omega_2\omega_3 + \omega_1\omega_2^2 - 6\omega_4\omega_2 + 5\omega_4 + \omega_4\omega_1^2 - \omega_4\omega_2^2\omega_3 + \omega_4^2\omega_1\omega_2\omega_3 + 7\omega_4\omega_1\omega_3 + 5\omega_1 - \omega_4\omega_1\omega_3^2 + \omega_4\omega_1\omega_2^2\omega_3 - 6\omega_1\omega_2 - \omega_1\omega_2\omega_3^2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 - 6\omega_4\omega_1 - \omega_3^2 + \omega_4^2\omega_3 + \omega_4\omega_1^2\omega_2\omega_3 - \omega_4\omega_1^2\omega_2 + \omega_2\omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 - 6\omega_4\omega_3 + 5\omega_2 + 7\omega_4\omega_1\omega_2 - 8\omega_4\omega_1\omega_2\omega_3 + \omega_1^2\omega_2 - \omega_4\omega_2\omega_3^2 + \omega_4^2\omega_1 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 - \omega_1\omega_2^2\omega_3 + 7\omega_4\omega_2\omega_3 - \omega_4\omega_1^2\omega_3 + 5\omega_3 + \omega_4\omega_1\omega_2\omega_3^2 - \omega_4\omega_1\omega_2^2 + \omega_2^2\omega_3 - \omega_1^2\omega_2\omega_3 - 6\omega_1\omega_3 + \omega_4\omega_3^2 - \omega_4^2\omega_1\omega_3,$

3.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_1 u + \frac{1}{2}u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_1 u + \frac{1}{2}u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4{c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_4{c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_2\omega_3 v,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 + \frac{1}{2}\omega_4\omega_2 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4{c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 v - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_4\omega_3 v^2 - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_4{c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_2\omega_3 v,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4{c_s}^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_4\omega_3 v^2 + \omega_4 v^2 + u^2\omega_3 - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_3^2 + \omega_4{c_s}^2 + {c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1{c_s}^2\omega_3 - \frac{1}{2}u^2\omega_3^2,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + 3\omega_1 - u^2\omega_3 + \omega_1 u^2\omega_3 - \omega_1^2 - {c_s}^2\omega_3 + \omega_3 + \omega_1{c_s}^2\omega_3 - \omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_4],t-\delta_t} = 2 - 2\omega_1 - 2\omega_2 + \omega_1^2 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4{c_s}^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_4\omega_3 v^2 + \omega_4 v^2 + u^2\omega_3 - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{2}{c_s}^2\omega_3^2 + \omega_4{c_s}^2 + {c_s}^2\omega_3 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1{c_s}^2\omega_3 - \frac{1}{2}u^2\omega_3^2,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}\omega_4 {c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}\omega_4 {c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{3}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}\omega_4 u^2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_2 u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 + \tfrac{3}{4}\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{5}{4}\omega_4 u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1 u - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_3^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_4^2 u^2\omega_3 - \tfrac{3}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3^2 + \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4^2 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1 {c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 2 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \omega_4 - \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - 3\omega_1 - \tfrac{3}{2}\omega_4\omega_1 v^2 + \tfrac{3}{2}\omega_1\omega_2 - \tfrac{3}{2}\omega_1\omega_2 v + \tfrac{3}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \tfrac{3}{2}\omega_4\omega_1 {c_s}^2 + \omega_2 v - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \omega_2 + \omega_4 v^2 + \tfrac{1}{2}\omega_1^2\omega_2 v + \tfrac{1}{2}\omega_4\omega_1^2 {c_s}^2 - \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{2}\omega_1\omega_2\omega_3 v + \omega_1^2 + \omega_4 {c_s}^2 - \omega_3 + \tfrac{1}{2}\omega_4\omega_1^2 v^2 - \tfrac{1}{2}\omega_2\omega_3 v + \tfrac{1}{2}\omega_4\omega_1\omega_3 v^2 + \omega_1\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2 + \omega_3 - \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{3}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1 {c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}\omega_4 u^2\omega_3^2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 u - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_2 u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_3 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 + \tfrac{3}{4}\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{5}{4}\omega_4 u^2\omega_3 + \tfrac{1}{4}\omega_4^2\omega_1 u - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4\omega_2\omega_3 v + \tfrac{1}{4}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_3^2 + \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_4\omega_3 v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_4^2 u^2\omega_3 - \tfrac{3}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2 - \tfrac{3}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4\omega_2 v + \tfrac{1}{2}\omega_1 u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_3^2 - \tfrac{1}{4}\omega_1\omega_2 u - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2 v^2 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4^2 {c_s}^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1\omega_2 v - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}\omega_1 {c_s}^2\omega_3 + \tfrac{1}{2}u^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_4 {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_4\omega_2\omega_3 v^2 + \omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + {c_s}^2\omega_2\omega_3 + \omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_1\omega_2^2 u - \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_2^2 u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_3 v^2 + \tfrac{1}{2}\omega_4\omega_3 - \omega_2 + \omega_4 v^2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1\omega_2 v^2 - \omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 + \omega_1\omega_2 u + \omega_4 {c_s}^2 + \tfrac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \omega_4\omega_2 v^2 + \tfrac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_4],t-2\delta_t} = -2 - \tfrac{3}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + 3\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + \omega_4 {c_s}^2\omega_3 - \omega_1^2 {c_s}^2\omega_3 - 3\omega_1 + 3\omega_4\omega_1 v^2 - \omega_4\omega_1 {c_s}^2\omega_3 + 3\omega_4\omega_1 {c_s}^2 - \omega_1^2 u^2\omega_3 + \omega_4\omega_3 v^2 - 2\omega_4 v^2 - \omega_4\omega_1^2 {c_s}^2 - 2u^2\omega_3 - \omega_1 {c_s}^2\omega_3^2 + 3\omega_1 u^2\omega_3 + {c_s}^2\omega_3^2 + \omega_1^2 - 2\omega_4 {c_s}^2 - 2{c_s}^2\omega_3 - \omega_1 u^2\omega_3^2 - \omega_3 - \omega_4\omega_1^2 v^2 - \omega_4\omega_1\omega_3 v^2 + 3\omega_1 {c_s}^2\omega_3 + u^2\omega_3^2 + \omega_1\omega_3,$$

$$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4 + \omega_1^2\omega_3 - 4\omega_4\omega_2 + 3\omega_4 + 3\omega_1 + \omega_4\omega_2^2 - \omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 + 3\omega_2 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 + 3\omega_3 - 4\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 1-\frac{1}{2}\omega_4{c_s}^2\omega_3+\frac{1}{2}\omega_2\omega_3+\frac{1}{2}\omega_4\omega_2\omega_3v^2+\omega_4\omega_2-\omega_4-\frac{1}{2}\omega_1-\frac{1}{2}\omega_4\omega_1v^2+{c_s}^2\omega_2\omega_3+\omega_2u^2\omega_3+\frac{1}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_1+\frac{1}{2}\omega_1\omega_2^2u+\frac{1}{2}\omega_1u-\frac{1}{2}\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_2^2u^2\omega_3-\frac{1}{2}\omega_4\omega_3v^2+\frac{1}{2}\omega_4\omega_3-\omega_2+\omega_4v^2-\frac{1}{2}\omega_4\omega_1\omega_2-\frac{1}{2}u^2\omega_3+\frac{1}{2}\omega_4\omega_1\omega_2v^2-\omega_4{c_s}^2\omega_2-\frac{1}{2}{c_s}^2\omega_2^2\omega_3-\omega_1\omega_2u+\omega_4{c_s}^2+\frac{1}{2}\omega_4\omega_1{c_s}^2\omega_2-\omega_4\omega_2v^2+\frac{1}{2}\omega_4{c_s}^2\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_3-\frac{1}{2}\omega_4\omega_2\omega_3-\frac{1}{2}\omega_3,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y} = -2-\frac{3}{2}\omega_2\omega_3+\frac{1}{2}\omega_1\omega_2^2-\omega_4\omega_2+\omega_4+\omega_1-\frac{3}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4\omega_3+3\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2-\omega_2^2+\frac{1}{2}\omega_4\omega_2\omega_3+\omega_3+\frac{1}{2}\omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1+\frac{3}{2}\omega_4{c_s}^2\omega_3+\frac{1}{4}\omega_2\omega_3-\frac{1}{4}\omega_1{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_1\omega_2u^2\omega_3-\frac{1}{4}\omega_4\omega_2\omega_3v^2-\frac{1}{2}\omega_4-\frac{1}{4}\omega_4u^2\omega_3^2-\frac{1}{4}\omega_4\omega_1\omega_2u-\frac{1}{2}\omega_1+\frac{1}{4}\omega_4\omega_1v^2-\frac{1}{4}\omega_2u^2\omega_3^2-\frac{1}{4}{c_s}^2\omega_2\omega_3^2-\frac{1}{4}\omega_4\omega_1u^2\omega_3+\frac{3}{4}{c_s}^2\omega_2\omega_3+\frac{3}{4}\omega_2u^2\omega_3+\frac{1}{4}\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2v+\frac{1}{4}\omega_4\omega_1+\frac{5}{4}\omega_4u^2\omega_3+\frac{1}{4}\omega_4^2\omega_1u-\frac{1}{4}\omega_4\omega_1{c_s}^2\omega_3-\frac{1}{2}\omega_1u-\frac{1}{4}\omega_4\omega_2\omega_3v+\frac{1}{4}\omega_4\omega_1{c_s}^2-\frac{1}{4}\omega_4{c_s}^2\omega_3^2-\frac{1}{2}\omega_2v+\frac{1}{4}\omega_4\omega_3v^2+\frac{1}{4}\omega_4\omega_3-\frac{1}{2}\omega_2-\frac{1}{2}\omega_4v^2-\frac{1}{4}\omega_4^2u^2\omega_3-\frac{3}{2}u^2\omega_3-\frac{1}{4}\omega_4\omega_1\omega_2v^2+\frac{1}{2}\omega_4{c_s}^2\omega_2+\frac{3}{4}\omega_4\omega_1u+\frac{1}{2}\omega_4\omega_2v+\frac{1}{2}\omega_1u^2\omega_3+\frac{1}{2}{c_s}^2\omega_3^2+\frac{1}{4}\omega_1\omega_2u-\frac{1}{2}\omega_4{c_s}^2-\frac{1}{4}\omega_4\omega_1{c_s}^2\omega_2+\frac{1}{2}\omega_4\omega_2v^2-\frac{1}{2}\omega_4{c_s}^2\omega_2\omega_3-\frac{3}{2}{c_s}^2\omega_3-\frac{1}{4}\omega_4\omega_2u^2\omega_3-\frac{1}{4}\omega_4^2{c_s}^2\omega_3-\frac{1}{4}\omega_4\omega_1\omega_2v-\frac{1}{2}\omega_3+\frac{1}{4}\omega_2\omega_3v+\frac{1}{2}\omega_1{c_s}^2\omega_3+\frac{1}{2}u^2\omega_3^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2-\omega_2\omega_3+\frac{1}{4}\omega_1\omega_2\omega_3-\frac{1}{2}\omega_4\omega_2+2\omega_4+\frac{1}{4}\omega_4\omega_1\omega_3+\omega_1-\frac{1}{2}\omega_1\omega_2-\omega_4\omega_1-\frac{1}{2}\omega_3^2+\frac{1}{4}\omega_4^2\omega_3+\frac{1}{4}\omega_2\omega_3^2-\frac{1}{2}\omega_4^2-\frac{3}{2}\omega_4\omega_3+\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_4\omega_2\omega_3+2\omega_3-\frac{1}{2}\omega_1\omega_3+\frac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 2-\frac{1}{2}\omega_4{c_s}^2\omega_3+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}\omega_1\omega_2\omega_3-\omega_4-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_4\omega_1\omega_3-3\omega_1-\frac{3}{2}\omega_4\omega_1v^2+\frac{3}{2}\omega_1\omega_2+\frac{3}{2}\omega_1\omega_2v+\frac{3}{2}\omega_4\omega_1+\frac{1}{2}\omega_4\omega_1{c_s}^2\omega_3-\frac{3}{2}\omega_4\omega_1{c_s}^2-\omega_2v-\frac{1}{2}\omega_4\omega_3v^2+\frac{1}{2}\omega_4\omega_3-\omega_2+\omega_4v^2-\frac{1}{2}\omega_1^2\omega_2v+\frac{1}{2}\omega_4\omega_1^2{c_s}^2-\frac{1}{2}\omega_1^2\omega_2-\frac{1}{2}\omega_1\omega_2\omega_3v+\omega_1^2+\omega_4{c_s}^2-\omega_3+\frac{1}{2}\omega_4\omega_1^2v^2+\frac{1}{2}\omega_2\omega_3v+\frac{1}{2}\omega_4\omega_1\omega_3v^2+\omega_1\omega_3,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x,y+\delta_l} = -2-\frac{1}{2}\omega_2\omega_3+\frac{1}{2}\omega_1\omega_2\omega_3+\omega_4+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_4\omega_1\omega_3+3\omega_1-\frac{3}{2}\omega_1\omega_2-\frac{3}{2}\omega_4\omega_1-\frac{1}{2}\omega_4\omega_3+\omega_2+\frac{1}{2}\omega_1^2\omega_2-\omega_1^2+\omega_3-\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1+\frac{3}{2}\omega_4{c_s}^2\omega_3+\frac{1}{4}\omega_2\omega_3-\frac{1}{4}\omega_1{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_1\omega_2u^2\omega_3-\frac{1}{4}\omega_4\omega_2\omega_3v^2-\frac{1}{2}\omega_4-\frac{1}{4}\omega_4u^2\omega_3^2+\frac{1}{4}\omega_4\omega_1\omega_2u-\frac{1}{2}\omega_1+\frac{1}{4}\omega_4\omega_1v^2-\frac{1}{4}\omega_2u^2\omega_3^2-\frac{1}{4}{c_s}^2\omega_2\omega_3^2-\frac{1}{4}\omega_4\omega_1u^2\omega_3+\frac{3}{4}{c_s}^2\omega_2\omega_3+\frac{3}{4}\omega_2u^2\omega_3+\frac{1}{4}\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2v+\frac{1}{4}\omega_4\omega_1+\frac{5}{4}\omega_4u^2\omega_3+\frac{1}{4}\omega_4^2\omega_1u-\frac{1}{4}\omega_4\omega_1{c_s}^2\omega_3+\frac{1}{2}\omega_1u-\frac{1}{4}\omega_4\omega_2\omega_3v+\frac{1}{4}\omega_4\omega_1{c_s}^2-\frac{1}{4}\omega_4{c_s}^2\omega_3^2-\frac{1}{2}\omega_2v+\frac{1}{4}\omega_4\omega_3v^2+\frac{1}{4}\omega_4\omega_3-\frac{1}{2}\omega_2-\frac{1}{2}\omega_4v^2-\frac{1}{4}\omega_4^2u^2\omega_3-\frac{3}{2}u^2\omega_3-\frac{1}{4}\omega_4\omega_1\omega_2v^2+\frac{1}{2}\omega_4{c_s}^2\omega_2-\frac{3}{4}\omega_4\omega_1u+\frac{1}{2}\omega_4\omega_2v+\frac{1}{2}\omega_1u^2\omega_3+\frac{1}{2}{c_s}^2\omega_3^2-\frac{1}{4}\omega_1\omega_2u-\frac{1}{2}\omega_4{c_s}^2-\frac{1}{4}\omega_4\omega_1{c_s}^2\omega_2+\frac{1}{2}\omega_4\omega_2v^2-\frac{1}{2}\omega_4{c_s}^2\omega_2\omega_3-\frac{3}{2}{c_s}^2\omega_3-\frac{1}{4}\omega_4\omega_2u^2\omega_3-\frac{1}{4}\omega_4^2{c_s}^2\omega_3-\frac{1}{4}\omega_4\omega_1\omega_2v-\frac{1}{2}\omega_3+\frac{1}{4}\omega_2\omega_3v+\frac{1}{2}\omega_1{c_s}^2\omega_3+\frac{1}{2}u^2\omega_3^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2-\omega_2\omega_3+\frac{1}{4}\omega_1\omega_2\omega_3-\frac{1}{2}\omega_4\omega_2+2\omega_4+\frac{1}{4}\omega_4\omega_1\omega_3+\omega_1-\frac{1}{2}\omega_1\omega_2-\omega_4\omega_1-\frac{1}{2}\omega_3^2+\frac{1}{4}\omega_4^2\omega_3+\frac{1}{4}\omega_2\omega_3^2-\frac{1}{2}\omega_4^2-\frac{3}{2}\omega_4\omega_3+\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_4\omega_2\omega_3+2\omega_3-\frac{1}{2}\omega_1\omega_3+\frac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -2-3\omega_4{c_s}^2\omega_3-\frac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3-\omega_4\omega_1{c_s}^2\omega_2\omega_3-\frac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_2-\frac{1}{2}\omega_2\omega_3-\frac{1}{2}\omega_4\omega_1{c_s}^2\omega_3^2+2\omega_1{c_s}^2\omega_2\omega_3+2\omega_1\omega_2u^2\omega_3+\frac{1}{2}\omega_4\omega_1^2\omega_2v+\frac{1}{2}\omega_4\omega_2\omega_3v^2+\frac{1}{2}\omega_1\omega_2\omega_3+\omega_4+\omega_1^2{c_s}^2\omega_3+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_4u^2\omega_3^2+\frac{1}{2}\omega_4\omega_1\omega_3+3\omega_1-\frac{3}{2}\omega_4\omega_1v^2+\frac{1}{2}\omega_2u^2\omega_3^2+\frac{1}{2}{c_s}^2\omega_2\omega_3^2+3\omega_4\omega_1u^2\omega_3-\frac{1}{2}\omega_4\omega_1u^2\omega_3^2-\frac{3}{2}{c_s}^2\omega_2\omega_3-\frac{3}{2}\omega_2u^2\omega_3-\frac{3}{2}\omega_1\omega_2+\frac{3}{2}\omega_1\omega_2v-\frac{3}{2}\omega_4\omega_1-\frac{5}{2}\omega_4u^2\omega_3-\frac{1}{2}\omega_1\omega_2u^2\omega_3^2-\frac{1}{2}\omega_1{c_s}^2\omega_2\omega_3^2+\frac{7}{2}\omega_4\omega_1{c_s}^2\omega_3-\frac{1}{2}\omega_4\omega_2\omega_3v-\frac{1}{2}\omega_4\omega_1^2\omega_2v^2-\frac{3}{2}\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_4{c_s}^2\omega_3^2-\omega_2v+\omega_1^2u^2\omega_3-\frac{1}{2}\omega_4\omega_3v^2-\frac{1}{2}\omega_4\omega_3+\omega_2-\frac{1}{2}\omega_1^2{c_s}^2\omega_2\omega_3-\frac{1}{2}\omega_1^2\omega_2u^2\omega_3+\omega_4v^2+\frac{1}{2}\omega_4^2u^2\omega_3-\frac{1}{2}\omega_1^2\omega_2v+\frac{1}{2}\omega_4\omega_1^2{c_s}^2+3u^2\omega_3+\omega_1{c_s}^2\omega_3^2+\frac{3}{2}\omega_4\omega_1\omega_2v^2-\omega_4{c_s}^2\omega_2-\frac{1}{2}\omega_4^2\omega_1u^2\omega_3+\frac{1}{2}\omega_4\omega_1\omega_2\omega_3v-\frac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_3+\omega_4\omega_2v-4\omega_1u^2\omega_3+\frac{1}{2}\omega_1^2\omega_2-{c_s}^2\omega_3^2-\frac{1}{2}\omega_1\omega_2\omega_3v-\omega_1^2+\omega_4{c_s}^2+\frac{3}{2}\omega_4\omega_1{c_s}^2\omega_2-\omega_4\omega_2v^2+\omega_4{c_s}^2\omega_2\omega_3+3{c_s}^2\omega_3+\omega_1u^2\omega_3^2+\frac{1}{2}\omega_4\omega_2u^2\omega_3+\frac{1}{2}\omega_4^2{c_s}^2\omega_3-\frac{3}{2}\omega_4\omega_1\omega_2v+\omega_3-\frac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2+\frac{1}{2}\omega_4\omega_1^2v^2+\frac{1}{2}\omega_2\omega_3v+\frac{1}{2}\omega_4\omega_1\omega_3v^2-4\omega_1{c_s}^2\omega_3-u^2\omega_3^2-\omega_1\omega_3-\frac{1}{2}\omega_4\omega_1^2u^2\omega_3-\frac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_3,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x,y-\delta_l} = 3+2\omega_2\omega_3-\omega_1^2\omega_3-\frac{5}{2}\omega_1\omega_2\omega_3+\frac{1}{2}\omega_4\omega_2-\frac{5}{2}\omega_4-\frac{1}{2}\omega_4\omega_1^2-\frac{7}{2}\omega_4\omega_1\omega_3-4\omega_1+\frac{1}{2}\omega_4\omega_1\omega_3^2+2\omega_1\omega_2+\frac{1}{2}\omega_1\omega_2\omega_3^2+3\omega_4\omega_1+\omega_3^2-\frac{1}{2}\omega_4^2\omega_3-\frac{1}{2}\omega_2\omega_3^2-\omega_1\omega_3^2+\frac{1}{2}\omega_4^2+3\omega_4\omega_3-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2\omega_3-\frac{1}{2}\omega_1^2\omega_2-\frac{1}{2}\omega_4^2\omega_1+\omega_1^2-\frac{1}{2}\omega_4\omega_2\omega_3+\frac{1}{2}\omega_4\omega_1^2\omega_3-4\omega_3+\frac{1}{2}\omega_1^2\omega_2\omega_3+5\omega_1\omega_3-\frac{1}{2}\omega_4\omega_3^2+\frac{1}{2}\omega_4^2\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1-\frac{5}{2}\omega_4{c_s}^2\omega_3-\frac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3-\frac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3-\frac{1}{2}\omega_4\omega_2^2u^2\omega_3-\frac{1}{2}\omega_2\omega_3+\frac{1}{2}\omega_1{c_s}^2\omega_2\omega_3+\frac{1}{2}\omega_1\omega_2u^2\omega_3-\frac{1}{2}\omega_4{c_s}^2\omega_2^2\omega_3-\omega_4\omega_2+\omega_4+\frac{1}{2}\omega_4u^2\omega_3^2+2\omega_4\omega_1\omega_2u+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2u^2\omega_3^2+\frac{1}{2}{c_s}^2\omega_2\omega_3^2+\frac{1}{2}\omega_4\omega_1u^2\omega_3-\frac{5}{2}{c_s}^2\omega_2\omega_3-\frac{5}{2}\omega_2u^2\omega_3-\frac{1}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{5}{2}\omega_4u^2\omega_3+\frac{1}{2}\omega_1\omega_2^2u-\frac{1}{2}\omega_4^2{c_s}^2\omega_2\omega_3-\frac{1}{2}\omega_4^2\omega_2u^2\omega_3+$$

$\frac{1}{2}\omega_4^2\omega_1 u + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \omega_1 u + \frac{1}{2}\omega_4 {c_s}^2\omega_3^2 + \frac{1}{2}\omega_2^2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{2}\omega_4^2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2 + 2u^2\omega_3 - \frac{1}{2}\omega_4^2\omega_1\omega_2 u + \frac{1}{2}{c_s}^2\omega_2^2\omega_3 - \frac{3}{2}\omega_4\omega_1 u - \frac{1}{2}\omega_4\omega_2 u^2\omega_3^2 - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3^2 - \frac{1}{2}{c_s}^2\omega_3^2 - \frac{3}{2}\omega_1\omega_2 u + 3\omega_4 {c_s}^2\omega_2\omega_3 + 2{c_s}^2\omega_3 + 3\omega_4\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4^2 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2^2 u + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{2}u^2\omega_3^2,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 + \frac{1}{2}\omega_4^2\omega_2\omega_3 + 3\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2^2 + 5\omega_4\omega_2 - 4\omega_4 + \frac{1}{2}\omega_4\omega_2^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_3 - \frac{3}{2}\omega_1 + 2\omega_1\omega_2 - \omega_4\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \frac{1}{2}\omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \frac{7}{2}\omega_4\omega_2\omega_3 - \frac{5}{2}\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_2^2\omega_3 + \frac{1}{2}\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} =$
$-2 + \omega_4 {c_s}^2\omega_3 + \omega_4\omega_1 {c_s}^2\omega_2\omega_3 + \omega_4\omega_1^2 {c_s}^2\omega_2 - \omega_2\omega_3 + 2\omega_1 {c_s}^2\omega_2\omega_3 + 2\omega_1\omega_2 u^2\omega_3 - \omega_4\omega_2\omega_3 v^2 + \omega_1\omega_2\omega_3 - 2\omega_4\omega_2 + 2\omega_4 + \omega_4\omega_1^2 + \omega_4\omega_1\omega_3 + 3\omega_1 + 3\omega_4\omega_1 v^2 - 2{c_s}^2\omega_2\omega_3 - 2\omega_2 u^2\omega_3 - 3\omega_1\omega_2 - 3\omega_4\omega_1 - \omega_4\omega_1 {c_s}^2\omega_3 + \omega_4\omega_1^2\omega_2 v^2 + 3\omega_4\omega_1 {c_s}^2 - \omega_4\omega_1^2\omega_2 + \omega_2^2 u^2\omega_3 + \omega_4\omega_3 v^2 - \omega_4\omega_3 + 2\omega_2 - 2\omega_4 v^2 + 3\omega_4\omega_1\omega_2 - \omega_4\omega_1^2 {c_s}^2 + u^2\omega_3 - 3\omega_4\omega_1\omega_2 v^2 + 2\omega_4 {c_s}^2\omega_2 - \omega_4\omega_1\omega_2\omega_3 + {c_s}^2\omega_2^2\omega_3 - \omega_1 u^2\omega_3 + \omega_1^2\omega_2 - \omega_1^2 - 2\omega_4 {c_s}^2 - 3\omega_4\omega_1 {c_s}^2\omega_2 + 2\omega_4\omega_2 v^2 - \omega_4 {c_s}^2\omega_2\omega_3 + {c_s}^2\omega_3 + \omega_4\omega_2\omega_3 + \omega_3 + \omega_4\omega_1\omega_2\omega_3 v^2 - \omega_4\omega_1^2 v^2 - \omega_1\omega_2^2 u^2\omega_3 - \omega_4\omega_1\omega_3 v^2 - \omega_1 {c_s}^2\omega_3 - \omega_1\omega_3 - \omega_1 {c_s}^2\omega_2^2\omega_3,$

$\alpha_{x,y}^{[\mu_4],t-3\delta_t} = 3 + 3\omega_2\omega_3 - 3\omega_1\omega_2\omega_3 - \omega_1\omega_2^2 + 2\omega_4\omega_2 - 2\omega_4 - \omega_4\omega_1^2 - \omega_4\omega_1\omega_3 - 4\omega_1 + 5\omega_1\omega_2 + 3\omega_4\omega_1 + \omega_4\omega_1^2\omega_2 + \omega_4\omega_3 - 4\omega_2 - 3\omega_4\omega_1\omega_2 + \omega_4\omega_1\omega_2\omega_3 - \omega_1^2\omega_2 + \omega_1^2 + \omega_2^2 + \omega_1\omega_2^2\omega_3 - \omega_4\omega_2\omega_3 - 2\omega_3 - \omega_2^2\omega_3 + 2\omega_1\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - \frac{5}{2}\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_2^2 u^2\omega_3 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2\omega_2^2\omega_3 - \omega_4\omega_2 + \omega_4 + \frac{1}{2}\omega_4 u^2\omega_3^2 - 2\omega_4\omega_1\omega_2 u + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_2 u^2\omega_3^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3^2 + \frac{1}{2}\omega_4\omega_1 u^2\omega_3 - \frac{5}{2}{c_s}^2\omega_2\omega_3 - \frac{5}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{5}{2}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2^2 u - \frac{1}{2}\omega_4^2 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_4^2\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4^2\omega_1 u + \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3 - \omega_1 u + \frac{1}{2}\omega_4 {c_s}^2\omega_3^2 + \frac{1}{2}\omega_2^2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_3 + \omega_2 + \frac{1}{2}\omega_4^2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2 + 2u^2\omega_3 + \frac{1}{2}\omega_4^2\omega_1\omega_2 u + \frac{1}{2}{c_s}^2\omega_2^2\omega_3 + \frac{3}{2}\omega_4\omega_1 u - \frac{1}{2}\omega_4\omega_2 u^2\omega_3^2 - \frac{1}{2}\omega_1 u^2\omega_3 - \frac{1}{2}\omega_4 {c_s}^2\omega_2\omega_3^2 - \frac{1}{2}{c_s}^2\omega_3^2 + \frac{3}{2}\omega_1\omega_2 u + 3\omega_4 {c_s}^2\omega_2\omega_3 + 2{c_s}^2\omega_3 + 3\omega_4\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4^2 {c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2^2 u + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_1 {c_s}^2\omega_3 - \frac{1}{2}u^2\omega_3^2,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 + \frac{1}{2}\omega_4^2\omega_2\omega_3 + 3\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2^2 + 5\omega_4\omega_2 - 4\omega_4 + \frac{1}{2}\omega_4\omega_2^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_3 - \frac{3}{2}\omega_1 + 2\omega_1\omega_2 - \omega_4\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \frac{1}{2}\omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \frac{7}{2}\omega_4\omega_2\omega_3 - \frac{5}{2}\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_2^2\omega_3 + \frac{1}{2}\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -2 - 3\omega_4 {c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2 u^2\omega_3 - \omega_4\omega_1 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_1^2 {c_s}^2\omega_2 - \frac{1}{2}\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_1 {c_s}^2\omega_3^2 + 2\omega_1 {c_s}^2\omega_2\omega_3 + 2\omega_1\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1^2\omega_2 v + \frac{1}{2}\omega_4\omega_2\omega_3 v^2 + \frac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \omega_1^2 {c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_1^2 + \frac{1}{2}\omega_4 u^2\omega_3^2 + \frac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \frac{3}{2}\omega_4\omega_1 v^2 + \frac{1}{2}\omega_2 u^2\omega_3^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3^2 + 3\omega_4\omega_1 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 u^2\omega_3^2 - \frac{3}{2}{c_s}^2\omega_2\omega_3 - \frac{3}{2}\omega_2 u^2\omega_3 - \frac{3}{2}\omega_1\omega_2 - \frac{3}{2}\omega_1\omega_2 v - \frac{3}{2}\omega_4\omega_1 - \frac{5}{2}\omega_4 u^2\omega_3 - \frac{1}{2}\omega_1\omega_2 u^2\omega_3^2 - \frac{1}{2}\omega_1 {c_s}^2\omega_2\omega_3^2 + \frac{7}{2}\omega_4\omega_1 {c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 v - \frac{1}{2}\omega_4\omega_1^2\omega_2 v^2 - \frac{3}{2}\omega_4\omega_1 {c_s}^2 + \frac{1}{2}\omega_4 {c_s}^2\omega_3^2 + \omega_2 v + \omega_1^2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_3 v^2 - \frac{1}{2}\omega_4\omega_3 + \omega_2 - \frac{1}{2}\omega_1^2 {c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_1^2\omega_2 u^2\omega_3 + \omega_4 v^2 + \frac{1}{2}\omega_4^2 u^2\omega_3 + \frac{1}{2}\omega_1^2\omega_2 v + \frac{1}{2}\omega_4\omega_1^2 {c_s}^2 + 3u^2\omega_3 + \omega_1 {c_s}^2\omega_3^2 + \frac{3}{2}\omega_4\omega_1\omega_2 v^2 - \omega_4 {c_s}^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v - \frac{1}{2}\omega_4\omega_1^2 {c_s}^2\omega_3 - \omega_4\omega_2 v - 4\omega_1 u^2\omega_3 + \frac{1}{2}\omega_1^2\omega_2 - {c_s}^2\omega_3^2 + \frac{1}{2}\omega_1\omega_2\omega_3 v - \omega_1^2 + \omega_4 {c_s}^2 + \frac{3}{2}\omega_4\omega_1 {c_s}^2\omega_2 - \omega_4\omega_2 v^2 + \omega_4 {c_s}^2\omega_2\omega_3 + 3{c_s}^2\omega_3 + \omega_1 u^2\omega_3^2 + \frac{1}{2}\omega_4\omega_2 u^2\omega_3 + \frac{1}{2}\omega_4^2 {c_s}^2\omega_3 + \frac{3}{2}\omega_4\omega_1\omega_2 v + \omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 v^2 + \frac{1}{2}\omega_4\omega_1^2 v^2 - \frac{1}{2}\omega_2\omega_3 v + \frac{1}{2}\omega_4\omega_1\omega_3 v^2 - 4\omega_1 {c_s}^2\omega_3 - u^2\omega_3^2 - \omega_1\omega_3 - \frac{1}{2}\omega_4\omega_1^2 u^2\omega_3 - \frac{1}{2}\omega_4^2\omega_1 {c_s}^2\omega_3,$

$\alpha_{x,y+\delta_l}^{[\mu_4],t-3\delta_t} = 3 + 2\omega_2\omega_3 - \omega_1^2\omega_3 - \frac{5}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2 - \frac{5}{2}\omega_4 - \frac{1}{2}\omega_4\omega_1^2 - \frac{7}{2}\omega_4\omega_1\omega_3 - 4\omega_1 + \frac{1}{2}\omega_4\omega_1\omega_3^2 + 2\omega_1\omega_2 + \frac{1}{2}\omega_1\omega_2\omega_3^2 + 3\omega_4\omega_1 + \omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 - \omega_1\omega_3^2 + \frac{1}{2}\omega_4^2 + 3\omega_4\omega_3 - \frac{3}{2}\omega_2 - \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_1^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_1^2 - \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_1^2\omega_3 - 4\omega_3 + \frac{1}{2}\omega_1^2\omega_2\omega_3 + 5\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2 + \frac{1}{2}\omega_4^2\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} =$
$2 + 5\omega_4 {c_s}^2\omega_3 + 7\omega_4\omega_1\omega_2 u^2\omega_3 + 7\omega_4\omega_1 {c_s}^2\omega_2\omega_3 + \omega_4\omega_2^2 u^2\omega_3 + \omega_2\omega_3 + \omega_4\omega_1 {c_s}^2\omega_3^2 - 6\omega_1 {c_s}^2\omega_2\omega_3 - 6\omega_1\omega_2 u^2\omega_3 - \omega_1\omega_2\omega_3 + \omega_4 {c_s}^2\omega_2^2\omega_3 + 2\omega_4\omega_2 - 2\omega_4 - \omega_1^2 {c_s}^2\omega_3 - \omega_4\omega_1^2 - \omega_4 u^2\omega_3^2 - \omega_4^2\omega_1 {c_s}^2\omega_2\omega_3 - \omega_4^2\omega_1\omega_2 u^2\omega_3 - \omega_4\omega_1\omega_3 - 3\omega_1 - \omega_2 u^2\omega_3^2 - {c_s}^2\omega_2\omega_3^2 - 6\omega_4\omega_1 u^2\omega_3 + \omega_4\omega_1 u^2\omega_3^2 + 5{c_s}^2\omega_2\omega_3 + 5\omega_2 u^2\omega_3 + 3\omega_1\omega_2 + 3\omega_4\omega_1 + 5\omega_4 u^2\omega_3 + \omega_4^2 {c_s}^2\omega_2\omega_3 + \omega_4^2\omega_2 u^2\omega_3 + \omega_1\omega_2 u^2\omega_3^2 + \omega_1 {c_s}^2\omega_2\omega_3^2 - 6\omega_4\omega_1 {c_s}^2\omega_3 - \omega_4\omega_1 {c_s}^2\omega_2\omega_3^2 + \omega_4\omega_1^2\omega_2 - \omega_4 {c_s}^2\omega_3^2 - \omega_4\omega_1\omega_2 u^2\omega_3^2 - \omega_1^2 u^2\omega_3 - \omega_2^2 u^2\omega_3 + \omega_4\omega_3 - 2\omega_2 + \omega_1^2 {c_s}^2\omega_2\omega_3 + \omega_1^2\omega_2 u^2\omega_3 - \omega_4^2 u^2\omega_3 - 3\omega_4\omega_1\omega_2 - 4u^2\omega_3 - \omega_1 {c_s}^2\omega_3^2 - \omega_4\omega_1^2\omega_2 u^2\omega_3 - \omega_4\omega_1^2 {c_s}^2\omega_2\omega_3 + \omega_4^2\omega_1 u^2\omega_3 + \omega_4\omega_1\omega_2\omega_3 - {c_s}^2\omega_2^2\omega_3 + \omega_4\omega_1^2 {c_s}^2\omega_3 + \omega_4\omega_2 u^2\omega_3^2 + 5\omega_1 u^2\omega_3 - \omega_1^2\omega_2 + \omega_4 {c_s}^2\omega_2\omega_3^2 + {c_s}^2\omega_3^2 + \omega_1^2 - 6\omega_4 {c_s}^2\omega_2\omega_3 - 4{c_s}^2\omega_3 - \omega_1 u^2\omega_3^2 - 6\omega_4\omega_2 u^2\omega_3 - \omega_4\omega_2\omega_3 - \omega_4\omega_1\omega_2^2 u^2\omega_3 -$

$\omega_4^2 {c_s}^2\omega_3 - \omega_3 + \omega_1\omega_2^2u^2\omega_3 - \omega_4\omega_1{c_s}^2\omega_2^2\omega_3 + 5\omega_1{c_s}^2\omega_3 + u^2\omega_3^2 + \omega_1\omega_3 + \omega_4\omega_1^2u^2\omega_3 + \omega_1{c_s}^2\omega_2^2\omega_3 + \omega_4^2\omega_1{c_s}^2\omega_3,$

$\alpha_{x,y}^{[\mu_4],t-4\delta_t} = -4 - \omega_4^2\omega_2\omega_3 - 6\omega_2\omega_3 + \omega_1^2\omega_3 + 7\omega_1\omega_2\omega_3 + \omega_1\omega_2^2 - 6\omega_4\omega_2 + 5\omega_4 + \omega_4\omega_1^2 - \omega_4\omega_2^2\omega_3 + \omega_4^2\omega_1\omega_2\omega_3 + 7\omega_4\omega_1\omega_3 + 5\omega_1 - \omega_4\omega_1\omega_3^2 + \omega_4\omega_1\omega_2^2\omega_3 - 6\omega_1\omega_2 - \omega_1\omega_2\omega_3^2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 - 6\omega_4\omega_1 - \omega_3^2 + \omega_4^2\omega_3 + \omega_4\omega_1^2\omega_2\omega_3 - \omega_4\omega_1^2\omega_2 + \omega_2\omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 - 6\omega_4\omega_3 + 5\omega_2 + 7\omega_4\omega_1\omega_2 - 8\omega_4\omega_1\omega_2\omega_3 + \omega_1^2\omega_2 - \omega_4\omega_2\omega_3^2 + \omega_4^2\omega_1 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 - \omega_1\omega_2^2\omega_3 + 7\omega_4\omega_2\omega_3 - \omega_4\omega_1^2\omega_3 + 5\omega_3 + \omega_4\omega_1\omega_2\omega_3^2 - \omega_4\omega_1\omega_2^2 + \omega_2^2\omega_3 - \omega_1^2\omega_2\omega_3 - 6\omega_1\omega_3 + \omega_4\omega_3^2 - \omega_4^2\omega_1\omega_3,$

3.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t}\mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_4 {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4{c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4u^2\omega_3 - \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1u + \frac{1}{4}\omega_1\omega_2u - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4{c_s}^2\omega_3 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4^2{c_s}^2 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2u^2\omega_3 - \frac{1}{2}\omega_4u^2\omega_3 - \frac{1}{2}\omega_4^2v^2 + \frac{1}{2}\omega_2 + \omega_4v^2 + u^2\omega_3 - \frac{1}{2}\omega_4{c_s}^2\omega_2 + \omega_4{c_s}^2 - \frac{1}{2}\omega_4\omega_2v^2 + {c_s}^2\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 + \frac{1}{2}\omega_4\omega_2 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4{c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4u^2\omega_3 + \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}u^2\omega_3 - \frac{1}{4}\omega_4\omega_1u - \frac{1}{4}\omega_1\omega_2u - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 - \omega_4\omega_2 + \omega_4 + 3\omega_2 - \omega_4v^2 + \omega_4{c_s}^2\omega_2 - \omega_4{c_s}^2 + \omega_4\omega_2v^2 - \omega_2^2,$

$\alpha_{x,y}^{[\mu_5],t-\delta_t} = 2 - 2\omega_1 - 2\omega_2 + \omega_1^2 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3^2 - \frac{3}{2}\omega_3 + \frac{1}{2}\omega_1\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4{c_s}^2\omega_3 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 + \frac{1}{4}\omega_2u^2\omega_3 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4u^2\omega_3 - \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}u^2\omega_3 + \frac{1}{4}\omega_4\omega_1u + \frac{1}{4}\omega_1\omega_2u - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 + \frac{1}{4}\omega_2\omega_3 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_4{c_s}^2\omega_3 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4^2{c_s}^2 - \frac{1}{2}{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2u^2\omega_3 - \frac{1}{2}\omega_4u^2\omega_3 - \frac{1}{2}\omega_4^2v^2 + \frac{1}{2}\omega_2 + \omega_4v^2 + u^2\omega_3 - \frac{1}{2}\omega_4{c_s}^2\omega_2 + \omega_4{c_s}^2 - \frac{1}{2}\omega_4\omega_2v^2 + {c_s}^2\omega_3,$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4u^2\omega_3 + \tfrac{1}{2}\omega_1u - \tfrac{1}{4}\omega_4\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1u - \tfrac{1}{4}\omega_1\omega_2u - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{3}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3^2v + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3v^2 - \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_4^2{c_s}^2 - \tfrac{1}{2}\omega_1 + \tfrac{3}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_3v^2 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_1u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_3^2v^2 - \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3 + \tfrac{1}{2}\omega_1u + \tfrac{1}{2}\omega_4^2v^2 + \tfrac{3}{4}\omega_4\omega_1{c_s}^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 - \tfrac{1}{2}\omega_2v + \tfrac{5}{4}\omega_4\omega_3v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{3}{2}\omega_4v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{2}\omega_1u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2\omega_3v - \tfrac{1}{4}\omega_1\omega_2u - \tfrac{1}{4}\omega_4^2\omega_1{c_s}^2 - \tfrac{3}{2}\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2v^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_4\omega_1u\omega_3 + \tfrac{3}{4}\omega_2\omega_3v - \tfrac{1}{4}\omega_4\omega_1\omega_3v^2 + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1v^2 + \tfrac{1}{4}\omega_1\omega_2u\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_4{c_s}^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_4\omega_1\omega_3 - \omega_1 + \omega_4\omega_1v^2 + \tfrac{1}{2}\omega_4\omega_1u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2 + \omega_1\omega_2v + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3 + \omega_4\omega_1{c_s}^2 - \tfrac{1}{2}\omega_2v + \tfrac{1}{2}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4v^2 - \tfrac{1}{2}\omega_1^2\omega_2v - \tfrac{1}{2}\omega_4\omega_1^2{c_s}^2 + u^2\omega_3 - \omega_1u^2\omega_3 - \tfrac{1}{2}\omega_4{c_s}^2 + {c_s}^2\omega_3 - \omega_3 - \tfrac{1}{2}\omega_4\omega_1^2v^2 - \omega_1{c_s}^2\omega_3 + \omega_1\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2\omega_3 + \omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4\omega_1\omega_3 + 3\omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2 + \omega_3 - \omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{3}{2}\omega_4{c_s}^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3^2v + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_1\omega_2u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_2\omega_3v^2 - \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_4^2{c_s}^2 - \tfrac{1}{2}\omega_1 + \tfrac{3}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_3v^2 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 + \tfrac{1}{4}\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_1u\omega_3 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2v + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_3^2v^2 - \tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3 - \tfrac{1}{2}\omega_1u + \tfrac{1}{2}\omega_4^2v^2 + \tfrac{3}{4}\omega_4\omega_1{c_s}^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_3^2 - \tfrac{1}{2}\omega_2v + \tfrac{5}{4}\omega_4\omega_3v^2 + \tfrac{1}{4}\omega_4\omega_3 - \tfrac{1}{2}\omega_2 - \tfrac{3}{2}\omega_4v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1\omega_2v^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{2}\omega_1u^2\omega_3 - \tfrac{1}{4}\omega_1\omega_2\omega_3v + \tfrac{1}{4}\omega_1\omega_2u - \tfrac{1}{4}\omega_4^2\omega_1{c_s}^2 - \tfrac{3}{2}\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_2v^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4^2{c_s}^2\omega_3 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_4\omega_1u\omega_3 + \tfrac{3}{4}\omega_2\omega_3v - \tfrac{1}{4}\omega_4\omega_1\omega_3v^2 + \tfrac{1}{2}\omega_1{c_s}^2\omega_3 - \tfrac{1}{4}\omega_4^2\omega_1v^2 - \tfrac{1}{4}\omega_1\omega_2u\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 - \omega_2\omega_3 + \tfrac{1}{4}\omega_1\omega_2\omega_3 - \tfrac{1}{2}\omega_4\omega_2 + 2\omega_4 + \tfrac{1}{4}\omega_4\omega_1\omega_3 + \omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{4}\omega_4^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_4^2 - \tfrac{3}{2}\omega_4\omega_3 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_2\omega_3 + 2\omega_3 - \tfrac{1}{2}\omega_1\omega_3 + \tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_3 + \tfrac{3}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2^2 + \omega_4\omega_2 - \omega_4 + \tfrac{1}{2}\omega_4\omega_1\omega_2u - \omega_1 - \tfrac{3}{2}{c_s}^2\omega_2\omega_3 - \tfrac{3}{2}\omega_2u^2\omega_3 + \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4u^2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2u + \omega_1u + \tfrac{1}{2}\omega_2^2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_3 - 3\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 - \tfrac{1}{2}\omega_4\omega_1u - \tfrac{3}{2}\omega_1\omega_2u + \omega_2^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + {c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \omega_3 - \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_5],t-2\delta_t} = -2 - \tfrac{3}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_1 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_3 + 3\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \omega_2^2 + \tfrac{1}{2}\omega_4\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + \omega_4{c_s}^2\omega_3 - \omega_4^2\omega_2v^2 + \omega_4\omega_2 - \omega_4 + \omega_4^2{c_s}^2 - \omega_4\omega_2^2v^2 + 3{c_s}^2\omega_2\omega_3 + 3\omega_2u^2\omega_3 + \omega_4u^2\omega_3 + \omega_4^2v^2 - \omega_4^2{c_s}^2\omega_2 - \omega_2^2u^2\omega_3 - 3\omega_2 - 2\omega_4v^2 - 2u^2\omega_3 + 3\omega_4{c_s}^2\omega_2 - {c_s}^2\omega_2^2\omega_3 - 2\omega_4{c_s}^2 + 3\omega_4\omega_2v^2 + \omega_2^2 - \omega_4{c_s}^2\omega_2\omega_3 - 2{c_s}^2\omega_3 - \omega_4\omega_2u^2\omega_3 - \omega_4{c_s}^2\omega_2^2,$$

$$\alpha_{x,y}^{[\mu_5],t-2\delta_t} = -4 + \omega_1^2\omega_3 - 4\omega_4\omega_2 + 3\omega_4 + 3\omega_1 + \omega_4\omega_2^2 - \omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 + 3\omega_2 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 + 3\omega_3 - 4\omega_1\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 2 - \tfrac{1}{2}\omega_4{c_s}^2\omega_3 + \tfrac{3}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_1\omega_2^2 + \omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_4\omega_1\omega_2u - \omega_1 - \tfrac{3}{2}{c_s}^2\omega_2\omega_3 - \tfrac{3}{2}\omega_2u^2\omega_3 + \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4u^2\omega_3 - \tfrac{1}{2}\omega_1\omega_2^2u - \omega_1u + \tfrac{1}{2}\omega_2^2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_3 - 3\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + u^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1u + \tfrac{3}{2}\omega_1\omega_2u + \omega_2^2 + \tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + {c_s}^2\omega_3 + \tfrac{1}{2}\omega_4\omega_2u^2\omega_3 - \tfrac{1}{2}\omega_4\omega_2\omega_3 - \omega_3 - \tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-2\delta_t} =$$

$$-2-\tfrac{3}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_1\omega_2^2-\omega_4\omega_2+\omega_4+\omega_1-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_3+3\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2-\omega_2^2+\tfrac{1}{2}\omega_4\omega_2\omega_3+\omega_3+\tfrac{1}{2}\omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1+\tfrac{3}{2}\omega_4{c_s}^2\omega_3+\tfrac{1}{4}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_1\omega_2u^2\omega_3-\tfrac{1}{4}\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4+\tfrac{1}{2}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1+\tfrac{3}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_4\omega_1u^2\omega_3-\tfrac{1}{4}\omega_4^2\omega_3v^2+\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{2}\omega_1u\omega_3+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_1\omega_2v+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_4u^2\omega_3-\tfrac{1}{4}\omega_4\omega_3^2v^2-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3+\tfrac{1}{2}\omega_1u+\tfrac{1}{2}\omega_4^2v^2+\tfrac{3}{4}\omega_4\omega_1{c_s}^2-\tfrac{1}{4}\omega_4{c_s}^2\omega_3^2+\tfrac{1}{2}\omega_2v+\tfrac{5}{4}\omega_4\omega_3v^2+\tfrac{1}{4}\omega_4\omega_3-\tfrac{1}{2}\omega_2-\tfrac{3}{2}\omega_4v^2-\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_4\omega_1\omega_2v^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_2-\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{2}\omega_1u^2\omega_3+\tfrac{1}{4}\omega_1\omega_2\omega_3v-\tfrac{1}{4}\omega_1\omega_2u-\tfrac{1}{4}\omega_4^2\omega_1{c_s}^2-\tfrac{3}{2}\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2+\tfrac{1}{2}\omega_4\omega_2v^2-\tfrac{1}{4}\omega_4{c_s}^2\omega_2\omega_3-\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{4}\omega_4^2{c_s}^2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1u\omega_3-\tfrac{3}{4}\omega_2\omega_3v-\tfrac{1}{4}\omega_4\omega_1\omega_3v^2+\tfrac{1}{2}\omega_1{c_s}^2\omega_3-\tfrac{1}{4}\omega_4^2\omega_1v^2+\tfrac{1}{4}\omega_1\omega_2u\omega_3,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2-\omega_2\omega_3+\tfrac{1}{4}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_4\omega_2+2\omega_4+\tfrac{1}{4}\omega_4\omega_1\omega_3+\omega_1-\tfrac{1}{2}\omega_1\omega_2-\omega_4\omega_1-\tfrac{1}{2}\omega_3^2+\tfrac{1}{4}\omega_4^2\omega_3+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_4^2-\tfrac{3}{2}\omega_4\omega_3+\omega_2+\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_4\omega_2\omega_3+2\omega_3-\tfrac{1}{2}\omega_1\omega_3+\tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1-\tfrac{1}{2}\omega_4{c_s}^2\omega_3+\tfrac{1}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_1{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_1\omega_2u^2\omega_3-\tfrac{1}{2}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_4\omega_1\omega_3-\omega_1+\omega_4\omega_1v^2+\tfrac{1}{2}\omega_4\omega_1u^2\omega_3-\tfrac{1}{2}{c_s}^2\omega_2\omega_3-\tfrac{1}{2}\omega_2u^2\omega_3+\tfrac{1}{2}\omega_1\omega_2-\omega_1\omega_2v+\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4u^2\omega_3+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3+\omega_4\omega_1{c_s}^2+\tfrac{1}{2}\omega_2v+\tfrac{1}{2}\omega_4\omega_3-\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_4v^2+\tfrac{1}{2}\omega_1^2\omega_2v-\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2+u^2\omega_3-\omega_1u^2\omega_3-\tfrac{1}{2}\omega_4{c_s}^2+{c_s}^2\omega_3-\omega_3-\tfrac{1}{2}\omega_4\omega_1^2v^2-\omega_1{c_s}^2\omega_3+\omega_1\omega_3,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x,y+\delta_l} = -2-\tfrac{1}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_1\omega_2\omega_3+\omega_4+\tfrac{1}{2}\omega_4\omega_1^2+\tfrac{1}{2}\omega_4\omega_1\omega_3+3\omega_1-\tfrac{3}{2}\omega_1\omega_2-\tfrac{3}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_3+\omega_2+\tfrac{1}{2}\omega_1^2\omega_2-\omega_1^2+\omega_3-\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1+\tfrac{3}{2}\omega_4{c_s}^2\omega_3+\tfrac{1}{4}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{4}\omega_1{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_1\omega_2u^2\omega_3-\tfrac{1}{4}\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4+\tfrac{1}{2}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1+\tfrac{3}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_4\omega_1u^2\omega_3-\tfrac{1}{4}\omega_4^2\omega_3v^2+\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\tfrac{1}{4}\omega_2u^2\omega_3+\tfrac{1}{2}\omega_1u\omega_3+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_1\omega_2v+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_4u^2\omega_3-\tfrac{1}{4}\omega_4\omega_3^2v^2-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3-\tfrac{1}{2}\omega_1u+\tfrac{1}{2}\omega_4^2v^2+\tfrac{3}{4}\omega_4\omega_1{c_s}^2-\tfrac{1}{4}\omega_4{c_s}^2\omega_3^2+\tfrac{1}{2}\omega_2v+\tfrac{5}{4}\omega_4\omega_3v^2+\tfrac{1}{4}\omega_4\omega_3-\tfrac{1}{2}\omega_2-\tfrac{3}{2}\omega_4v^2-\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_4\omega_1\omega_2v^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_2+\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{2}\omega_1u^2\omega_3+\tfrac{1}{4}\omega_1\omega_2\omega_3v+\tfrac{1}{4}\omega_1\omega_2u-\tfrac{1}{4}\omega_4^2\omega_1{c_s}^2-\tfrac{3}{2}\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1{c_s}^2\omega_2+\tfrac{1}{2}\omega_4\omega_2v^2-\tfrac{1}{4}\omega_4{c_s}^2\omega_2\omega_3-\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{4}\omega_4^2{c_s}^2\omega_3-\tfrac{1}{2}\omega_3-\tfrac{1}{4}\omega_4\omega_1u\omega_3-\tfrac{3}{4}\omega_2\omega_3v-\tfrac{1}{4}\omega_4\omega_1\omega_3v^2+\tfrac{1}{2}\omega_1{c_s}^2\omega_3-\tfrac{1}{4}\omega_4^2\omega_1v^2-\tfrac{1}{4}\omega_1\omega_2u\omega_3,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2-\omega_2\omega_3+\tfrac{1}{4}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_4\omega_2+2\omega_4+\tfrac{1}{4}\omega_4\omega_1\omega_3+\omega_1-\tfrac{1}{2}\omega_1\omega_2-\omega_4\omega_1-\tfrac{1}{2}\omega_3^2+\tfrac{1}{4}\omega_4^2\omega_3+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_4^2-\tfrac{3}{2}\omega_4\omega_3+\omega_2+\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_4\omega_2\omega_3+2\omega_3-\tfrac{1}{2}\omega_1\omega_3+\tfrac{1}{4}\omega_4\omega_3^2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1-\tfrac{5}{2}\omega_4{c_s}^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_3^2v^2-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_2\omega_3-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_1^2\omega_2\omega_3v+\tfrac{1}{2}\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_4\omega_1^2\omega_3v^2+\tfrac{1}{2}\omega_4\omega_1\omega_3+\omega_1-\tfrac{5}{2}\omega_4\omega_1v^2+\tfrac{1}{2}\omega_4^2\omega_3v^2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{3}{2}\omega_1\omega_2v-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_1\omega_2\omega_3^2v+\tfrac{1}{2}\omega_4\omega_3^2v^2+3\omega_4\omega_1{c_s}^2\omega_3-\tfrac{1}{2}\omega_4^2v^2-\tfrac{5}{2}\omega_4\omega_1{c_s}^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_3^2+\omega_2v-\tfrac{1}{2}\omega_4^2\omega_1\omega_3v^2-\tfrac{5}{2}\omega_4\omega_3v^2-\tfrac{1}{2}\omega_4\omega_3+\tfrac{1}{2}\omega_2+2\omega_4v^2+\tfrac{1}{2}\omega_1^2\omega_2v+\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2+\tfrac{1}{2}\omega_4\omega_1\omega_2v^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_3+2\omega_1\omega_2\omega_3v+\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2+2\omega_4{c_s}^2+\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_2v^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_4^2{c_s}^2\omega_3+\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2+\tfrac{1}{2}\omega_4\omega_1^2v^2-\tfrac{3}{2}\omega_2\omega_3v+3\omega_4\omega_1\omega_3v^2+\tfrac{1}{2}\omega_4^2\omega_1v^2-\omega_1\omega_3-\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_3,$$

$$\alpha^{[\mu_5],t-3\delta_t}_{x,y-\delta_l} = 3+2\omega_2\omega_3-\omega_1^2\omega_3-\tfrac{5}{2}\omega_1\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_2-\tfrac{5}{2}\omega_4-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{7}{2}\omega_4\omega_1\omega_3-4\omega_1+\tfrac{1}{2}\omega_4\omega_1\omega_3^2+2\omega_1\omega_2+\tfrac{1}{2}\omega_1\omega_2\omega_3^2+3\omega_4\omega_1+\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2-\omega_1\omega_3^2+\tfrac{1}{2}\omega_4^2+3\omega_4\omega_3-\tfrac{3}{2}\omega_2-\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}\omega_4^2\omega_1+\omega_1^2-\tfrac{1}{2}\omega_4\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_1^2\omega_3-4\omega_3+\tfrac{1}{2}\omega_1^2\omega_2\omega_3+5\omega_1\omega_3-\tfrac{1}{2}\omega_4\omega_3^2+\tfrac{1}{2}\omega_4^2\omega_1\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -2-3\omega_4{c_s}^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3-\omega_4\omega_1{c_s}^2\omega_2\omega_3+\omega_4^2\omega_2v^2-\tfrac{3}{2}\omega_2\omega_3+\tfrac{3}{2}\omega_1{c_s}^2\omega_2\omega_3+\tfrac{3}{2}\omega_1\omega_2u^2\omega_3+3\omega_4\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_2^2\omega_3+\tfrac{1}{2}\omega_1\omega_2^2-\omega_4\omega_2+\omega_4-\omega_4^2{c_s}^2+\omega_4\omega_2^2v^2-\tfrac{1}{2}\omega_4\omega_1\omega_2u+\tfrac{1}{2}\omega_1\omega_2^2u\omega_3+\omega_1-\tfrac{1}{2}\omega_4^2\omega_1\omega_2v^2-\tfrac{3}{2}\omega_4\omega_1v^2+\tfrac{1}{2}\omega_4\omega_1u^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_2^2v^2+\tfrac{1}{2}\omega_4^2\omega_3v^2-\tfrac{3}{2}{c_s}^2\omega_2\omega_3-\tfrac{3}{2}\omega_2u^2\omega_3+\omega_1u\omega_3-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4u^2\omega_3-\tfrac{1}{2}\omega_1\omega_2^2u-\tfrac{1}{2}\omega_4^2{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_4\omega_3^2v^2+\omega_4\omega_1{c_s}^2\omega_3-\omega_1u-\omega_4^2v^2+\omega_4^2{c_s}^2\omega_2-\tfrac{3}{2}\omega_4\omega_1{c_s}^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_3^2+\tfrac{1}{2}\omega_2^2u^2\omega_3-\tfrac{5}{2}\omega_4\omega_3v^2-\tfrac{1}{2}\omega_4^2\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4\omega_3+3\omega_2+3\omega_4v^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+u^2\omega_3+2\omega_4\omega_1\omega_2v^2-4\omega_4{c_s}^2\omega_2+\tfrac{1}{2}{c_s}^2\omega_2^2\omega_3+\tfrac{1}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4\omega_1{c_s}^2\omega_2^2-\omega_1u^2\omega_3-\tfrac{1}{2}\omega_4{c_s}^2\omega_2\omega_3^2+\tfrac{3}{2}\omega_1\omega_2u+\tfrac{1}{2}\omega_4^2\omega_1{c_s}^2+3\omega_4{c_s}^2+2\omega_4\omega_1{c_s}^2\omega_2-4\omega_4\omega_2v^2-\omega_2^2+\tfrac{7}{2}\omega_4{c_s}^2\omega_2\omega_3+{c_s}^2\omega_3+\tfrac{1}{2}\omega_4\omega_2u^2\omega_3+\tfrac{1}{2}\omega_4\omega_2\omega_3+\tfrac{1}{2}\omega_4^2{c_s}^2\omega_3+\omega_4{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_4\omega_2^2\omega_3v^2+\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2-\tfrac{1}{2}\omega_4\omega_1u\omega_3-\tfrac{1}{2}\omega_1\omega_2^2u^2\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_2u\omega_3+\tfrac{1}{2}\omega_4\omega_1\omega_3v^2+\tfrac{1}{2}\omega_2^2\omega_3-\omega_1{c_s}^2\omega_3+\tfrac{1}{2}\omega_4^2\omega_1v^2-\tfrac{3}{2}\omega_1\omega_2u\omega_3-\tfrac{1}{2}\omega_1{c_s}^2\omega_2^2\omega_3-\tfrac{1}{2}\omega_4\omega_2\omega_3^2v^2,$$

$$\alpha^{[\mu_5],t-3\delta_t}_{x-\delta_l,y} = 3+\tfrac{1}{2}\omega_4^2\omega_2\omega_3+3\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2\omega_3-\tfrac{1}{2}\omega_1\omega_2^2+5\omega_4\omega_2-4\omega_4+\tfrac{1}{2}\omega_4\omega_2^2\omega_3-\tfrac{1}{2}\omega_4\omega_1\omega_3-\tfrac{3}{2}\omega_1+2\omega_1\omega_2-$$

$\omega_4\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \frac{1}{2}\omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \frac{7}{2}\omega_4\omega_2\omega_3 - \frac{5}{2}\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_2^2\omega_3 + \frac{1}{2}\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2 + \omega_4 {c_s}^2\omega_3 + \omega_4\omega_1\omega_2u^2\omega_3 + \omega_4\omega_1{c_s}^2\omega_2\omega_3 - \omega_4\omega_1^2{c_s}^2\omega_2 - 3\omega_2\omega_3 - 3\omega_1{c_s}^2\omega_2\omega_3 - 3\omega_1\omega_2u^2\omega_3 + 3\omega_1\omega_2\omega_3 + \omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 + \omega_4\omega_1\omega_3 + 2\omega_1 - 2\omega_4\omega_1v^2 - \omega_4\omega_1u^2\omega_3 + 3{c_s}^2\omega_2\omega_3 + 3\omega_2u^2\omega_3 - 3\omega_1\omega_2 - \omega_4\omega_1 + \omega_4u^2\omega_3 - \omega_4\omega_1{c_s}^2\omega_3 - \omega_4\omega_1^2\omega_2v^2 - 2\omega_4\omega_1{c_s}^2 - \omega_2^2u^2\omega_3 - \omega_4\omega_3 + 3\omega_2 + \omega_4v^2 + \omega_4\omega_1\omega_2 + \omega_4\omega_1^2{c_s}^2 - 2u^2\omega_3 + 2\omega_4\omega_1\omega_2v^2 - \omega_4{c_s}^2\omega_2 - \omega_4\omega_1\omega_2\omega_3 - {c_s}^2\omega_2^2\omega_3 + 2\omega_1u^2\omega_3 + \omega_4{c_s}^2 + 2\omega_4\omega_1{c_s}^2\omega_2 - \omega_4\omega_2v^2 - \omega_2^2 - \omega_4{c_s}^2\omega_2\omega_3 - 2{c_s}^2\omega_3 - \omega_1\omega_2^2\omega_3 - \omega_4\omega_2u^2\omega_3 + \omega_4\omega_2\omega_3 + 2\omega_3 + \omega_4\omega_1^2v^2 + \omega_1\omega_2^2u^2\omega_3 + \omega_2^2\omega_3 + 2\omega_1{c_s}^2\omega_3 - 2\omega_1\omega_3 + \omega_1{c_s}^2\omega_2^2\omega_3,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t} = 3 + 3\omega_2\omega_3 - 3\omega_1\omega_2\omega_3 - \omega_1\omega_2^2 + 2\omega_4\omega_2 - 2\omega_4 - \omega_4\omega_1^2 - \omega_4\omega_1\omega_3 - 4\omega_1 + 5\omega_1\omega_2 + 3\omega_4\omega_1 + \omega_4\omega_1^2\omega_2 + \omega_4\omega_3 - 4\omega_2 - 3\omega_4\omega_1\omega_2 + \omega_4\omega_1\omega_2\omega_3 - \omega_1^2\omega_2 + \omega_1^2 + \omega_2^2 + \omega_1\omega_2^2\omega_3 - \omega_4\omega_2\omega_3 - 2\omega_3 - \omega_2^2\omega_3 + 2\omega_1\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -2 - 3\omega_4{c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2u^2\omega_3 - \omega_4\omega_1{c_s}^2\omega_2\omega_3 + \omega_4^2\omega_2v^2 - \frac{3}{2}\omega_2\omega_3 + \frac{3}{2}\omega_1{c_s}^2\omega_2\omega_3 + \frac{3}{2}\omega_1\omega_2u^2\omega_3 + 3\omega_4\omega_2\omega_3v^2 - \frac{1}{2}\omega_4{c_s}^2\omega_2^2\omega_3 + \frac{1}{2}\omega_1\omega_2^2 - \omega_4\omega_2 + \omega_4 - \omega_4^2{c_s}^2 + \omega_4\omega_2^2v^2 + \frac{1}{2}\omega_4\omega_1\omega_2u - \frac{1}{2}\omega_1\omega_2^2u\omega_3 + \omega_1 - \frac{1}{2}\omega_4^2\omega_1\omega_2v^2 - \frac{3}{2}\omega_4\omega_1v^2 + \frac{1}{2}\omega_4\omega_1u^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2^2v^2 + \frac{1}{2}\omega_4^2\omega_3v^2 - \frac{3}{2}{c_s}^2\omega_2\omega_3 - \frac{3}{2}\omega_2u^2\omega_3 - \omega_1u\omega_3 - \frac{3}{2}\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_4u^2\omega_3 + \frac{1}{2}\omega_1\omega_2^2u - \frac{1}{2}\omega_4^2{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_3^2v^2 + \omega_4\omega_1{c_s}^2\omega_3 + \omega_1u - \omega_4^2v^2 + \omega_4^2{c_s}^2\omega_2 - \frac{3}{2}\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_4{c_s}^2\omega_3^2 + \frac{1}{2}\omega_2^2u^2\omega_3 - \frac{5}{2}\omega_4\omega_3v^2 - \frac{1}{2}\omega_4^2\omega_2\omega_3v^2 - \frac{1}{2}\omega_4\omega_3 + 3\omega_2 + 3\omega_4v^2 + \frac{1}{2}\omega_4\omega_1\omega_2 + u^2\omega_3 + 2\omega_4\omega_1\omega_2v^2 - 4\omega_4{c_s}^2\omega_2 + \frac{1}{2}{c_s}^2\omega_2^2\omega_3 - \frac{1}{2}\omega_4\omega_1u - \frac{1}{2}\omega_4\omega_1{c_s}^2\omega_2^2 - \omega_1u^2\omega_3 - \frac{1}{2}\omega_4{c_s}^2\omega_2\omega_3^2 - \frac{3}{2}\omega_1\omega_2u + \frac{1}{2}\omega_4^2\omega_1{c_s}^2 + 3\omega_4{c_s}^2 + 2\omega_4\omega_1{c_s}^2\omega_2 - 4\omega_4\omega_2v^2 - \omega_2^2 + \frac{7}{2}\omega_4{c_s}^2\omega_2\omega_3 + {c_s}^2\omega_3 + \frac{1}{2}\omega_4\omega_2u^2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4^2{c_s}^2\omega_3 + \omega_4{c_s}^2\omega_2^2 - \frac{1}{2}\omega_4\omega_2^2\omega_3v^2 + \omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2 + \frac{1}{2}\omega_4\omega_1u\omega_3 - \frac{1}{2}\omega_1\omega_2^2u^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2u\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_3v^2 + \frac{1}{2}\omega_2^2\omega_3 - \omega_1{c_s}^2\omega_3 + \frac{1}{2}\omega_4^2\omega_1v^2 + \frac{3}{2}\omega_1\omega_2u\omega_3 - \frac{1}{2}\omega_1{c_s}^2\omega_2^2\omega_3 - \frac{1}{2}\omega_4\omega_2\omega_3^2v^2,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-3\delta_t} = 3 + \frac{1}{2}\omega_4^2\omega_2\omega_3 + 3\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_1\omega_2^2 + 5\omega_4\omega_2 - 4\omega_4 + \frac{1}{2}\omega_4\omega_2^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_3 - \frac{3}{2}\omega_1 + 2\omega_1\omega_2 - \omega_4\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1\omega_2 + 2\omega_4\omega_1 + \frac{1}{2}\omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 + \omega_4^2 + 3\omega_4\omega_3 - 4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2\omega_3^2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_2^2 - \omega_4^2\omega_2 - \frac{7}{2}\omega_4\omega_2\omega_3 - \frac{5}{2}\omega_3 + \frac{1}{2}\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_2^2\omega_3 + \frac{1}{2}\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -1 - \frac{5}{2}\omega_4{c_s}^2\omega_3 - \frac{1}{2}\omega_4\omega_1\omega_3^2v^2 - \frac{1}{2}\omega_4\omega_1{c_s}^2\omega_2\omega_3 - \frac{1}{2}\omega_2\omega_3^2v - \frac{1}{2}\omega_2\omega_3 - \frac{1}{2}\omega_4\omega_1{c_s}^2\omega_3^2 + \frac{1}{2}\omega_4\omega_2\omega_3v^2 + \frac{1}{2}\omega_1^2\omega_2\omega_3v + \frac{1}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_4^2{c_s}^2 - \frac{1}{2}\omega_4\omega_1^2\omega_3v^2 + \frac{1}{2}\omega_4\omega_1\omega_3 + \omega_1 - \frac{5}{2}\omega_4\omega_1v^2 + \frac{1}{2}\omega_4^2\omega_3v^2 - \frac{1}{2}\omega_1\omega_2 + \frac{3}{2}\omega_1\omega_2v - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_1\omega_2\omega_3^2v + \frac{1}{2}\omega_4\omega_3^2v^2 + 3\omega_4\omega_1{c_s}^2\omega_3 - \frac{1}{2}\omega_4^2v^2 - \frac{5}{2}\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_4{c_s}^2\omega_3^2 - \omega_2v - \frac{1}{2}\omega_4^2\omega_1\omega_3v^2 - \frac{5}{2}\omega_4\omega_3v^2 - \frac{1}{2}\omega_4\omega_3 + \frac{1}{2}\omega_2 + 2\omega_4v^2 - \frac{1}{2}\omega_1^2\omega_2v + \frac{1}{2}\omega_4\omega_1^2{c_s}^2 + \frac{1}{2}\omega_4\omega_1\omega_2v^2 - \frac{1}{2}\omega_4{c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_1^2{c_s}^2\omega_3 - 2\omega_1\omega_2\omega_3v + \frac{1}{2}\omega_4^2\omega_1{c_s}^2 + 2\omega_4{c_s}^2 + \frac{1}{2}\omega_4\omega_1{c_s}^2\omega_2 - \frac{1}{2}\omega_4\omega_2v^2 + \frac{1}{2}\omega_4{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_4^2{c_s}^2\omega_3 + \omega_3 - \frac{1}{2}\omega_4\omega_1\omega_2\omega_3v^2 + \frac{1}{2}\omega_4\omega_1^2v^2 + \frac{3}{2}\omega_2\omega_3v + 3\omega_4\omega_1\omega_3v^2 + \frac{1}{2}\omega_4^2\omega_1v^2 - \omega_1\omega_3 - \frac{1}{2}\omega_4^2\omega_1{c_s}^2\omega_3,$

$\alpha_{x,y+\delta_l}^{[\mu_5],t-3\delta_t} = 3 + 2\omega_2\omega_3 - \omega_1^2\omega_3 - \frac{5}{2}\omega_1\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_2 - \frac{5}{2}\omega_4 - \frac{1}{2}\omega_4\omega_1^2 - \frac{7}{2}\omega_4\omega_1\omega_3 - 4\omega_1 + \frac{1}{2}\omega_4\omega_1\omega_3^2 + 2\omega_1\omega_2 + \frac{1}{2}\omega_1\omega_2\omega_3^2 + 3\omega_4\omega_1 + \omega_3^2 - \frac{1}{2}\omega_4^2\omega_3 - \frac{1}{2}\omega_2\omega_3^2 - \omega_1\omega_3^2 + \frac{1}{2}\omega_4^2 + 3\omega_4\omega_3 - \frac{3}{2}\omega_2 - \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2\omega_3 - \frac{1}{2}\omega_1^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \omega_1^2 - \frac{1}{2}\omega_4\omega_2\omega_3 + \frac{1}{2}\omega_4\omega_1^2\omega_3 - 4\omega_3 + \frac{1}{2}\omega_1^2\omega_2\omega_3 + 5\omega_1\omega_3 - \frac{1}{2}\omega_4\omega_3^2 + \frac{1}{2}\omega_4^2\omega_1\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 2 + 5\omega_4{c_s}^2\omega_3 + \omega_4\omega_1\omega_3^2v^2 + 7\omega_4\omega_1{c_s}^2\omega_2\omega_3 - \omega_4^2\omega_2v^2 + \omega_4\omega_1^2{c_s}^2\omega_2 + 3\omega_2\omega_3 + \omega_4\omega_1{c_s}^2\omega_3^2 - \omega_4\omega_1\omega_2^2\omega_3v^2 - 6\omega_4\omega_2\omega_3v^2 - 3\omega_1\omega_2\omega_3 + \omega_4{c_s}^2\omega_2^2\omega_3 - \omega_1\omega_2^2 + \omega_4\omega_2 - \omega_4 + \omega_4^2{c_s}^2 - \omega_4\omega_2^2v^2 + \omega_4\omega_1^2\omega_3v^2 - \omega_4^2\omega_1{c_s}^2\omega_2\omega_3 - \omega_4\omega_1\omega_3 - 2\omega_1 + \omega_4^2\omega_1\omega_2v^2 + 5\omega_4\omega_1v^2 - \omega_4\omega_1\omega_2\omega_3^2v^2 - \omega_4\omega_1^2\omega_2\omega_3v^2 + \omega_4\omega_1\omega_2^2v^2 - \omega_4^2\omega_3v^2 + 3\omega_1\omega_2 + \omega_4^2\omega_1{c_s}^2\omega_2 + \omega_4\omega_1 + \omega_4^2{c_s}^2\omega_2\omega_3 - \omega_4\omega_3^2v^2 - 6\omega_4\omega_1{c_s}^2\omega_3 + \omega_4^2v^2 - \omega_4^2{c_s}^2\omega_2 + \omega_4\omega_1^2\omega_2v^2 - \omega_4\omega_1{c_s}^2\omega_2\omega_3^2 + 5\omega_4\omega_1{c_s}^2 - \omega_4{c_s}^2\omega_3^2 + \omega_4^2\omega_1\omega_3v^2 + 5\omega_4\omega_3v^2 + \omega_4^2\omega_2\omega_3v^2 + \omega_4\omega_3 - 3\omega_2 - 4\omega_4v^2 - \omega_4\omega_1\omega_2 - \omega_4\omega_1^2{c_s}^2 - \omega_4\omega_1^2{c_s}^2\omega_2\omega_3 - 6\omega_4\omega_1\omega_2v^2 + 5\omega_4{c_s}^2\omega_2 + \omega_4\omega_1\omega_2\omega_3 + \omega_4\omega_1^2{c_s}^2\omega_3 + \omega_4\omega_1{c_s}^2\omega_2^2 + \omega_4{c_s}^2\omega_2\omega_3^2 - \omega_4^2\omega_1{c_s}^2 - 4\omega_4{c_s}^2 - 6\omega_4\omega_1{c_s}^2\omega_2 + 5\omega_4\omega_2v^2 + \omega_2^2 - 6\omega_4{c_s}^2\omega_2\omega_3 + \omega_1\omega_2^2\omega_3 - \omega_4\omega_2\omega_3 - \omega_4^2{c_s}^2\omega_3 - \omega_4{c_s}^2\omega_2^2 + \omega_4\omega_2^2\omega_3v^2 - 2\omega_3 + 7\omega_4\omega_1\omega_2\omega_3v^2 - \omega_4\omega_1^2v^2 - \omega_4\omega_1{c_s}^2\omega_2^2\omega_3 - 6\omega_4\omega_1\omega_3v^2 - \omega_2^2\omega_3 - \omega_4^2\omega_1\omega_2\omega_3v^2 - \omega_4^2\omega_1v^2 + 2\omega_1\omega_3 + \omega_4\omega_2\omega_3^2v^2 + \omega_4^2\omega_1{c_s}^2\omega_3,$

$\alpha_{x,y}^{[\mu_5],t-4\delta_t} = -4 - \omega_4^2\omega_2\omega_3 - 6\omega_2\omega_3 + \omega_1^2\omega_3 + 7\omega_1\omega_2\omega_3 + \omega_1\omega_2^2 - 6\omega_4\omega_2 + 5\omega_4 + \omega_4\omega_1^2 - \omega_4\omega_2^2\omega_3 + \omega_4^2\omega_1\omega_2\omega_3 + 7\omega_4\omega_1\omega_3 + 5\omega_1 - \omega_4\omega_1\omega_3^2 + \omega_4\omega_1\omega_2^2\omega_3 - 6\omega_1\omega_2 - \omega_1\omega_2\omega_3^2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 - 6\omega_4\omega_1 - \omega_3^2 + \omega_4^2\omega_3 + \omega_4\omega_1^2\omega_2\omega_3 - \omega_4\omega_1^2\omega_2 + \omega_2\omega_3^2 + \omega_1\omega_3^2 - \omega_4^2 - 6\omega_4\omega_3 + 5\omega_2 + 7\omega_4\omega_1\omega_2 - 8\omega_4\omega_1\omega_2\omega_3 + \omega_1^2\omega_2 - \omega_4\omega_2\omega_3^2 + \omega_4^2\omega_1 - \omega_1^2 - \omega_2^2 + \omega_4^2\omega_2 - \omega_1\omega_2^2\omega_3 + 7\omega_4\omega_2\omega_3 - \omega_4\omega_1^2\omega_3 + 5\omega_3 + \omega_4\omega_1\omega_2\omega_3^2 - \omega_4\omega_1\omega_2^2 + \omega_2^2\omega_3 - \omega_1^2\omega_2\omega_3 - 6\omega_1\omega_3 + \omega_4\omega_3^2 - \omega_4^2\omega_1\omega_3,$

4 MRT 2: relaxation of m_{00}, m_{10}, m_{01}, $m_{20}+m_{02}$, $m_{20}-m_{02}$

4.1 Definitions

Matrix $\mathbf{A}=\mathbf{M}^{-1}\mathbf{S}\mathbf{M}$:

$$\mathbf{A}=\begin{pmatrix}\omega_0 & -\omega_3+\omega_0 & -\omega_3+\omega_0 & -\omega_3+\omega_0 & -\omega_3+\omega_0\\ 0 & \frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3\\ 0 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4+\frac{1}{4}\omega_3-\frac{1}{2}\omega_2\\ 0 & \frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3\\ 0 & -\frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4+\frac{1}{4}\omega_3-\frac{1}{2}\omega_2 & \frac{1}{4}\omega_4+\frac{1}{4}\omega_3 & \frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2\end{pmatrix}.$$

where

$$\mathbf{S}=\mathrm{diag}(\omega_0,\omega_1,\omega_2,\omega_3,\omega_4)$$

and

$$\mathbf{M}=\begin{pmatrix}1 & 1 & 1 & 1 & 1\\ 0 & 1 & 0 & -1 & 0\\ 0 & 0 & 1 & 0 & -1\\ 0 & 1 & 1 & 1 & 1\\ 0 & 1 & -1 & 1 & -1\end{pmatrix}$$

Matrix $\mathbf{B}$:

$$\mathbf{B}=\begin{pmatrix}0 & -1+\omega_3 & -1+\omega_3 & -1+\omega_3 & -1+\omega_3\\ -1+\frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 & -1+\omega_1 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1\\ -1+\frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\omega_2\\ -1+\frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1\\ -1+\frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\omega_2 & -1+\frac{1}{2}\omega_2 & 0\end{pmatrix}.$$

4.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1-\frac{1}{2}\omega_2+\frac{1}{2}\omega_2 v+\frac{1}{4}v^2\omega_4-\frac{1}{4}\omega_3+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_4-\frac{1}{4}\omega_4u^2+\frac{1}{4}v^2\omega_3+\frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t}=1-\frac{1}{4}v^2\omega_4-\frac{1}{4}\omega_3+\frac{1}{4}\omega_3u^2+\frac{1}{2}\omega_1u-\frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{4}\omega_4u^2+\frac{1}{4}v^2\omega_3+\frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x,y}^{[\mu_1],t}=1-\omega_3u^2-v^2\omega_3-2\omega_3{c_s}^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t}=1-\frac{1}{4}v^2\omega_4-\frac{1}{4}\omega_3+\frac{1}{4}\omega_3u^2-\frac{1}{2}\omega_1u-\frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{4}\omega_4u^2+\frac{1}{4}v^2\omega_3+\frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t}=1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_4{c_s}^2-\frac{1}{2}\omega_2v+\frac{1}{4}v^2\omega_4-\frac{1}{4}\omega_3+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_4-\frac{1}{4}\omega_4u+\frac{1}{4}v^2\omega_3+\frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{1}{2}\omega_2+\frac{1}{4}\omega_2v\omega_1-\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{8}\omega_2\omega_3-\frac{1}{2}\omega_2v+\frac{1}{4}\omega_2v\omega_4+\frac{1}{8}\omega_2v^2\omega_3+\frac{1}{4}\omega_2\omega_3{c_s}^2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{8}\omega_2\omega_4u^2+\frac{1}{2}\omega_3-\frac{1}{8}\omega_4\omega_1+\frac{1}{4}\omega_2\omega_1u+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3u^2+\frac{1}{4}\omega_4\omega_1u+\frac{1}{8}\omega_2\omega_3u^2+\frac{1}{8}\omega_3\omega_1u^2-\frac{1}{2}\omega_1u-\frac{1}{8}\omega_3\omega_1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{8}\omega_2v^2\omega_4+\frac{1}{4}\omega_3\omega_4u^2+\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{2}v^2\omega_3-\frac{1}{4}\omega_2\omega_1-\omega_3{c_s}^2+\frac{1}{8}v^2\omega_3\omega_1-\frac{1}{8}\omega_2\omega_4+\frac{1}{4}\omega_3{c_s}^2\omega_1,$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_2 v - \tfrac{1}{2}\omega_2 v^2\omega_3 - \omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_2 v\omega_3 - \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{2}\omega_3 {c_s}^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{8}\omega_2 v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_2\omega_4 u^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{8}\omega_2\omega_3 u^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{8}\omega_2\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3\omega_1 u - \omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 v^2\omega_3 + \omega_2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{4}\omega_2\omega_4 u^2 + \omega_3 - \tfrac{1}{2}\omega_4\omega_1 - \omega_3 u^2 + \tfrac{1}{2}\omega_2\omega_3 u^2 + \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_1 + \omega_4 + \omega_1 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_4 u - v^2\omega_3 - 2\omega_3 {c_s}^2 + \tfrac{1}{2}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_4 + \omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_1 u - \omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{8}\omega_2 v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_2\omega_4 u^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{8}\omega_2\omega_3 u^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u - \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{8}\omega_2\omega_4 + \tfrac{1}{8}\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{2}\omega_2 v^2\omega_3 - \omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_4 - \tfrac{1}{4}\omega_3\omega_4 u - \tfrac{1}{2}\omega_2 v\omega_3 - \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_4 u + \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{2}\omega_3 {c_s}^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{8}\omega_2 v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 + \tfrac{1}{2}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{8}\omega_2\omega_3 u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u - \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{8}\omega_2\omega_4 + \tfrac{1}{8}\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{3}{8}\omega_2\omega_3 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - \omega_3 {c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_2 v\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2 v\omega_4\omega_1 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{2}\omega_2 v\omega_4 - \tfrac{1}{4}\omega_2 v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{3}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 - \omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3 u^2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 - \tfrac{3}{4}\omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{3}{4}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{3}{8}\omega_2\omega_3 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - \omega_3 {c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_2 v\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2 - \omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 v^2\omega_3\omega_4 - \tfrac{3}{4}\omega_2 v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3\omega_4 u^2 - \tfrac{3}{2}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{8}\omega_4^2 u - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{2}\omega_2\omega_3\omega_4 - \tfrac{3}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2\omega_1 u - \omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{3}{8}\omega_4\omega_1 u + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_2\omega_3 u^2 +$$

$$\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_3\omega_1u^2+\tfrac{3}{8}\omega_2\omega_4\omega_1u+\tfrac{1}{2}\omega_1u+\tfrac{1}{4}\omega_3\omega_1-\tfrac{3}{4}\omega_4-\tfrac{1}{4}\omega_2\omega_4\omega_1+\tfrac{1}{8}\omega_2\omega_4^2u^2-\tfrac{1}{2}\omega_1+\tfrac{1}{2}\omega_3\omega_4-\tfrac{1}{4}\omega_2v^2\omega_4-\tfrac{1}{2}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{1}{2}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u+\tfrac{3}{4}v^2\omega_3+\tfrac{1}{2}\omega_2\omega_1+\tfrac{3}{2}\omega_3{c_s}^2-\tfrac{1}{8}\omega_2\omega_4^2u-\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_4{c_s}^2-\tfrac{1}{8}\omega_2\omega_4\omega_1u^2+\tfrac{3}{4}\omega_2\omega_4-\tfrac{1}{8}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t}=2-\omega_2-\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3+\tfrac{1}{2}\omega_2v^2\omega_3-\tfrac{3}{4}\omega_2\omega_3\omega_4u^2+\omega_2\omega_3{c_s}^2+\tfrac{1}{2}v^2\omega_4\omega_1+\tfrac{1}{4}\omega_2\omega_4u+\tfrac{1}{4}\omega_2\omega_4u^2-\omega_3+\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_4u+\tfrac{7}{4}\omega_3\omega_4{c_s}^2-\omega_3u^2+\tfrac{1}{2}\omega_2\omega_3u^2-\tfrac{3}{4}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_1u^2-\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}\omega_3\omega_1-\omega_4+\tfrac{1}{4}\omega_3\omega_4u-\omega_1+\tfrac{1}{4}\omega_4u^2-\tfrac{1}{2}\omega_2v^2\omega_4+\tfrac{3}{4}\omega_3\omega_4u^2+v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u-v^2\omega_3\omega_4\omega_1-v^2\omega_3-2\omega_3{c_s}^2+\tfrac{1}{2}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_4+\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t}=1+\tfrac{1}{8}\omega_2\omega_4^2{c_s}^2-\omega_2+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{8}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{3}{4}\omega_2\omega_3+\tfrac{3}{8}\omega_2v^2\omega_3\omega_4-\tfrac{3}{4}\omega_2v^2\omega_3+\tfrac{3}{8}\omega_2\omega_3\omega_4u^2-\tfrac{3}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{8}\omega_4^2u-\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{4}v^2\omega_4+\tfrac{1}{4}\omega_2\omega_4u-\tfrac{3}{8}\omega_2\omega_3\omega_4-\tfrac{1}{8}v^2\omega_4^2-\tfrac{3}{4}\omega_3+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{8}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_1+\tfrac{1}{2}\omega_2\omega_1u-\tfrac{3}{4}\omega_3\omega_4{c_s}^2+\tfrac{3}{4}\omega_3u^2+\tfrac{3}{8}\omega_4\omega_1u+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{1}{8}\omega_2\omega_4^2-\tfrac{3}{4}\omega_2\omega_3u^2+\tfrac{3}{4}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1+\tfrac{1}{8}\omega_4^2-\tfrac{1}{4}\omega_3\omega_1u^2-\tfrac{3}{8}\omega_2\omega_4\omega_1u-\tfrac{1}{2}\omega_1u+\tfrac{1}{4}\omega_3\omega_1-\tfrac{3}{4}\omega_4-\tfrac{1}{4}\omega_2\omega_4\omega_1+\tfrac{1}{8}\omega_2v^2\omega_4^2-\tfrac{1}{2}\omega_1+\tfrac{3}{8}\omega_3\omega_4-\tfrac{1}{4}\omega_2v^2\omega_4-\tfrac{3}{8}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{3}{8}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u+\tfrac{3}{4}v^2\omega_3+\tfrac{1}{2}\omega_2\omega_1+\tfrac{3}{2}\omega_3{c_s}^2-\tfrac{1}{8}\omega_2\omega_4^2u-\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_4{c_s}^2-\tfrac{1}{8}\omega_2\omega_4\omega_1u^2+\tfrac{3}{4}\omega_2\omega_4-\tfrac{1}{8}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2v\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_1u+\tfrac{1}{4}\omega_4{c_s}^2-\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{8}\omega_2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3\omega_4-\tfrac{1}{2}\omega_2v+\tfrac{1}{8}\omega_3\omega_4^2u^2+\tfrac{1}{4}\omega_2v\omega_4+\tfrac{3}{8}\omega_2v^2\omega_3+\tfrac{3}{4}\omega_2\omega_3{c_s}^2+\tfrac{1}{8}\omega_4^2u-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{8}\omega_2\omega_4u^2-\tfrac{1}{2}\omega_3+\tfrac{1}{8}\omega_4\omega_1-\tfrac{1}{8}\omega_3\omega_4^2u-\tfrac{1}{8}\omega_4^2u^2-\tfrac{1}{8}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_1u+\tfrac{1}{4}\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_3u^2-\tfrac{1}{8}\omega_4\omega_1u-\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{3}{8}\omega_2\omega_3u^2-\tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{8}\omega_3\omega_4^2{c_s}^2+\tfrac{3}{8}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_1u-\tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{8}\omega_3\omega_1-\tfrac{1}{2}\omega_4+\tfrac{1}{4}\omega_3\omega_4u-\tfrac{1}{2}\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_4u^2+\tfrac{1}{2}\omega_2v\omega_3+\tfrac{1}{8}\omega_2v^2\omega_4-\tfrac{1}{4}\omega_2v\omega_3\omega_1+\tfrac{1}{4}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u-\tfrac{1}{2}v^2\omega_3+\tfrac{1}{4}\omega_2\omega_1-\omega_3{c_s}^2+\tfrac{3}{8}v^2\omega_3\omega_1-\tfrac{1}{2}\omega_3\omega_1u-\tfrac{1}{4}\omega_2v\omega_3\omega_4+\tfrac{1}{8}\omega_2\omega_4-\tfrac{1}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{8}\omega_4^2{c_s}^2+\tfrac{3}{4}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_2v\omega_4\omega_1+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_2v+\tfrac{1}{2}\omega_2v\omega_4-\tfrac{1}{4}\omega_2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{4}\omega_4^2u+\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{1}{4}v^2\omega_4-\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{4}\omega_2\omega_4u^2-\tfrac{3}{4}\omega_3+\tfrac{3}{4}\omega_4\omega_1-\tfrac{1}{8}\omega_4^2u^2-\tfrac{1}{4}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{3}{4}\omega_3\omega_4{c_s}^2+\tfrac{3}{4}\omega_3u^2+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{1}{4}\omega_2\omega_3u^2+\tfrac{1}{8}\omega_4^2-\tfrac{3}{4}\omega_3\omega_1u^2+\tfrac{3}{4}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{3}{4}\omega_3\omega_1-\tfrac{3}{4}\omega_4-\tfrac{1}{4}\omega_2\omega_4\omega_1+\tfrac{1}{4}\omega_4^2{c_s}^2\omega_1-\omega_1+\tfrac{3}{8}\omega_3\omega_4-\tfrac{1}{8}\omega_4^2\omega_1+\tfrac{1}{2}\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4+\tfrac{1}{8}\omega_4^2\omega_1u^2-\tfrac{3}{8}\omega_3\omega_4u^2-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{8}v^2\omega_4^2\omega_1-\tfrac{3}{8}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u+\tfrac{3}{8}v^2\omega_3\omega_4\omega_1+\tfrac{3}{4}v^2\omega_3+\tfrac{1}{2}\omega_2\omega_1+\tfrac{3}{2}\omega_3{c_s}^2-\tfrac{3}{4}v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_4\omega_1u^2+\tfrac{1}{4}\omega_2\omega_4+\tfrac{3}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_4^2{c_s}^2-\tfrac{3}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2v\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_1u+\tfrac{1}{4}\omega_4{c_s}^2-\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{8}\omega_2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3\omega_4-\tfrac{1}{2}\omega_2v-\tfrac{1}{8}\omega_3\omega_4^2u^2+\tfrac{1}{4}\omega_2v\omega_4+\tfrac{3}{8}\omega_2v^2\omega_3+\tfrac{3}{4}\omega_2\omega_3{c_s}^2+\tfrac{1}{8}\omega_4^2u-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{8}\omega_2\omega_4u^2-\tfrac{1}{2}\omega_3+\tfrac{1}{8}\omega_4\omega_1-\tfrac{1}{8}\omega_3\omega_4^2u-\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_1u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_3u^2+\tfrac{1}{8}\omega_4\omega_1u-\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{3}{8}\omega_2\omega_3u^2-\tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{8}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_4^2+\tfrac{3}{8}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_1u-\tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{8}\omega_3\omega_1-\tfrac{1}{2}\omega_4+\tfrac{1}{4}\omega_3\omega_4u-\tfrac{1}{2}\omega_1+\tfrac{1}{8}\omega_3\omega_4+\tfrac{1}{4}\omega_4u^2+\tfrac{1}{2}\omega_2v\omega_3+\tfrac{1}{8}\omega_2v^2\omega_4+\tfrac{1}{8}\omega_3\omega_4u^2-\tfrac{1}{4}\omega_2v\omega_3\omega_1+\tfrac{3}{8}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_4u-\tfrac{1}{2}v^2\omega_3+\tfrac{1}{4}\omega_2\omega_1-\omega_3{c_s}^2+\tfrac{3}{8}v^2\omega_3\omega_1+\tfrac{1}{2}\omega_3\omega_1u-\tfrac{1}{4}\omega_2v\omega_3\omega_4+\tfrac{1}{8}\omega_2\omega_4-\tfrac{1}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{8}\omega_4^2{c_s}^2+\tfrac{3}{4}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t}=-1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_2v\omega_4\omega_1+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{2}\omega_2v\omega_1+\tfrac{1}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_2v^2\omega_3\omega_4-\tfrac{1}{2}\omega_2v+\tfrac{1}{2}\omega_2v\omega_4-\tfrac{1}{4}\omega_2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3{c_s}^2-\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_4u^2+\tfrac{3}{4}\omega_3-\tfrac{3}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3u^2+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{1}{4}\omega_2\omega_3u^2+\tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_2v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{3}{4}\omega_3\omega_1+\tfrac{3}{4}\omega_4+\tfrac{1}{4}\omega_2\omega_4\omega_1+\omega_1-\tfrac{1}{2}\omega_3\omega_4-\tfrac{1}{4}\omega_4u^2+\tfrac{1}{2}\omega_2v\omega_3-\tfrac{1}{4}\omega_2v^2\omega_4-\tfrac{1}{2}\omega_2v\omega_3\omega_1+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{1}{2}v^2\omega_3\omega_4+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3-\tfrac{1}{2}\omega_2\omega_1+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_4\omega_1u^2-\tfrac{1}{2}\omega_2v\omega_3\omega_4-\tfrac{1}{4}\omega_2\omega_4-\tfrac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t}=-1-\tfrac{1}{8}\omega_2\omega_4^2{c_s}^2+\omega_2+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{1}{8}\omega_4\omega_1u^2-\tfrac{1}{2}\omega_2\omega_3\omega_1u-\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{3}{4}\omega_2\omega_3-\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_2v^2\omega_3+\tfrac{1}{4}\omega_2\omega_3\omega_4u^2-\tfrac{1}{2}\omega_2\omega_3{c_s}^2-\tfrac{1}{8}\omega_4^2u+\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{1}{4}v^2\omega_4-\tfrac{1}{4}\omega_2\omega_4u+\tfrac{1}{2}\omega_2\omega_3\omega_4-\tfrac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\tfrac{3}{4}\omega_3+\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{8}\omega_3\omega_4^2u+\tfrac{1}{8}\omega_4^2u^2+\tfrac{1}{4}\omega_2\omega_3\omega_4u+\tfrac{1}{8}\omega_2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_1+\tfrac{1}{2}\omega_2\omega_1u-\tfrac{1}{4}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3u^2+\tfrac{3}{8}\omega_4\omega_1u+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{3}{8}\omega_3\omega_4\omega_1u-\tfrac{1}{4}\omega_2\omega_3u^2+\tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{8}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_3\omega_1u^2-\tfrac{3}{8}\omega_2\omega_4\omega_1u-\tfrac{1}{2}\omega_1u+\tfrac{3}{8}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_3\omega_1+\tfrac{3}{4}\omega_4+\tfrac{1}{4}\omega_2\omega_4\omega_1-\tfrac{1}{8}\omega_2\omega_4^2u^2-\tfrac{1}{4}\omega_3\omega_4u+\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_3\omega_4-\tfrac{1}{8}\omega_2\omega_3\omega_4^2u+\tfrac{1}{4}\omega_2v^2\omega_4-$$

$\frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{4}\omega_2v^2\omega_4\omega_1 + \frac{1}{4}\omega_4u + \frac{1}{8}\omega_2\omega_3\omega_4^2u^2 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_2\omega_1 + \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{8}\omega_2\omega_4^2u - \frac{1}{4}v^2\omega_3\omega_1 + \frac{1}{4}\omega_2\omega_4{c_s}^2 + \frac{1}{2}\omega_3\omega_1u + \frac{1}{8}\omega_2\omega_4\omega_1u^2 - \frac{3}{4}\omega_2\omega_4 + \frac{3}{8}\omega_3\omega_4\omega_1u^2 + \frac{1}{8}\omega_4^2{c_s}^2 - \frac{1}{2}\omega_3{c_s}^2\omega_1,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -1 - \frac{1}{4}\omega_2\omega_4^2{c_s}^2 + \omega_2 + \frac{7}{8}\omega_2v^2\omega_3\omega_4\omega_1 - \omega_2v^2\omega_3\omega_1 + \frac{1}{4}\omega_4\omega_1u^2 - \frac{1}{4}\omega_4{c_s}^2 - 2\omega_2\omega_3{c_s}^2\omega_1 - \omega_2\omega_3 - \frac{7}{8}\omega_2v^2\omega_3\omega_4 + \frac{7}{8}\omega_2\omega_3\omega_4\omega_1u^2 + \frac{1}{8}\omega_2v^2\omega_4^2\omega_1 + \omega_2v^2\omega_3 + \frac{1}{8}\omega_2\omega_4^2\omega_1u^2 - \frac{7}{8}\omega_2\omega_3\omega_4u^2 + 2\omega_2\omega_3{c_s}^2 - \frac{1}{4}\omega_4^2u + \frac{7}{8}\omega_3\omega_4\omega_1 - \frac{1}{4}\omega_2\omega_4u + \frac{7}{8}\omega_2\omega_3\omega_4 - \frac{1}{8}\omega_2\omega_4^2\omega_1 + \frac{1}{4}\omega_2\omega_4^2{c_s}^2\omega_1 + \frac{1}{8}v^2\omega_4^2 + \frac{7}{4}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_4u^2 + \omega_3 - \omega_4\omega_1 + \frac{1}{8}\omega_4^2u^2 + \frac{1}{4}\omega_4{c_s}^2\omega_1 + \omega_2\omega_3\omega_1 + \frac{7}{4}\omega_3\omega_4{c_s}^2 - \omega_3u^2 - \omega_2\omega_3\omega_1u^2 + \frac{1}{8}\omega_2\omega_4^2 + \omega_2\omega_3u^2 - \frac{7}{4}\omega_2\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_2\omega_4{c_s}^2\omega_1 - \frac{1}{8}\omega_4^2 + \omega_3\omega_1u^2 - \frac{7}{4}\omega_3\omega_4{c_s}^2\omega_1 - \omega_3\omega_1 + \omega_4 + \omega_2\omega_4\omega_1 - \frac{1}{4}\omega_4^2{c_s}^2\omega_1 - \frac{1}{8}\omega_2\omega_4^2u^2 - \frac{1}{8}\omega_2v^2\omega_4^2 + \omega_1 - \frac{7}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2\omega_1 - \frac{1}{4}\omega_4u^2 - \frac{1}{8}\omega_4^2\omega_1u^2 + \frac{7}{8}\omega_3\omega_4u^2 - \frac{7}{8}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{8}v^2\omega_4^2\omega_1 + \frac{7}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_4u - \frac{7}{8}v^2\omega_3\omega_4\omega_1 - v^2\omega_3 - \omega_2\omega_1 - 2\omega_3{c_s}^2 + \frac{1}{4}\omega_2\omega_4^2u + v^2\omega_3\omega_1 + \frac{1}{4}\omega_2\omega_4{c_s}^2 - \frac{1}{4}\omega_2\omega_4\omega_1u^2 - \omega_2\omega_4 - \frac{7}{8}\omega_3\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2{c_s}^2 + 2\omega_3{c_s}^2\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 - \frac{1}{8}\omega_2\omega_4^2{c_s}^2 + \omega_2 + \frac{1}{4}\omega_2v^2\omega_3\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}\omega_2\omega_3\omega_1u - \frac{1}{4}\omega_4{c_s}^2 + \frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \frac{3}{4}\omega_2\omega_3 + \frac{1}{8}\omega_2v^2\omega_3\omega_4 - \frac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2 + \frac{1}{8}\omega_3\omega_4^2u^2 - \frac{1}{4}\omega_2v^2\omega_3 + \frac{3}{8}\omega_2\omega_3\omega_4u^2 - \frac{1}{2}\omega_2\omega_3{c_s}^2 - \frac{1}{8}\omega_4^2u + \frac{1}{4}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_2\omega_4u + \frac{3}{8}\omega_2\omega_3\omega_4 + \frac{1}{8}v^2\omega_4^2 - \frac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \frac{3}{4}\omega_3 - \frac{3}{8}\omega_2\omega_3\omega_4\omega_1u - \frac{1}{4}\omega_4\omega_1 + \frac{1}{8}\omega_3\omega_4^2u + \frac{1}{4}\omega_2\omega_3\omega_4u - \frac{1}{8}\omega_2\omega_3\omega_4^2{c_s}^2 + \frac{1}{8}\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_1u - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \frac{1}{4}\omega_3u^2 - \frac{3}{8}\omega_4\omega_1u + \frac{1}{4}\omega_2\omega_3\omega_1u^2 + \frac{1}{8}\omega_2\omega_4^2 + \frac{3}{8}\omega_3\omega_4\omega_1u - \frac{1}{4}\omega_2\omega_3u^2 + \frac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 + \frac{1}{8}\omega_3\omega_4^2{c_s}^2 - \frac{1}{8}\omega_2\omega_4{c_s}^2\omega_1 - \frac{1}{8}\omega_4^2 - \frac{1}{4}\omega_3\omega_1u^2 + \frac{3}{8}\omega_2\omega_4\omega_1u + \frac{1}{2}\omega_1u + \frac{3}{8}\omega_3\omega_4{c_s}^2\omega_1 - \frac{1}{4}\omega_3\omega_1 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_2\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4u - \frac{1}{8}\omega_2v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{3}{8}\omega_3\omega_4 - \frac{1}{8}\omega_2\omega_3\omega_4^2u + \frac{1}{4}\omega_2v^2\omega_4 - \frac{3}{8}\omega_3\omega_4u^2 - \frac{1}{4}\omega_2v^2\omega_4\omega_1 - \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_4u - \frac{1}{8}\omega_2\omega_3\omega_4^2u^2 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_2\omega_1 + \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{8}\omega_2\omega_4^2u - \frac{1}{4}v^2\omega_3\omega_1 + \frac{1}{4}\omega_2\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_1u + \frac{1}{8}\omega_2\omega_4\omega_1u^2 - \frac{3}{4}\omega_2\omega_4 + \frac{3}{8}\omega_3\omega_4\omega_1u^2 + \frac{1}{8}\omega_4^2{c_s}^2 - \frac{1}{2}\omega_3{c_s}^2\omega_1,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_2v\omega_4\omega_1 + \frac{1}{4}\omega_2v^2\omega_3\omega_1 - \frac{1}{2}\omega_2v\omega_1 + \frac{1}{2}\omega_4\omega_1u^2 - \frac{1}{4}\omega_4{c_s}^2 + \frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{2}\omega_2v^2\omega_3\omega_4 + \frac{1}{2}\omega_2v - \frac{1}{2}\omega_2v\omega_4 - \frac{1}{4}\omega_2v^2\omega_3 - \frac{1}{2}\omega_2\omega_3{c_s}^2 - \frac{1}{4}\omega_4^2u - \frac{1}{4}v^2\omega_4\omega_1 + \frac{3}{8}\omega_3\omega_4\omega_1 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_4^2 - \frac{1}{2}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_4u^2 + \frac{3}{4}\omega_3 - \frac{3}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4^2u + \frac{1}{8}\omega_4^2u^2 + \frac{1}{4}\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_3\omega_1 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \frac{1}{4}\omega_3u^2 + \frac{1}{4}\omega_2\omega_3\omega_1u^2 - \frac{1}{4}\omega_2\omega_3u^2 + \frac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 - \frac{1}{8}\omega_4^2 - \frac{1}{4}\omega_3\omega_1u^2 - \frac{1}{2}\omega_2v\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{3}{4}\omega_3\omega_1 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_2\omega_4\omega_1 - \frac{1}{4}\omega_4^2{c_s}^2\omega_1 - \frac{1}{4}\omega_3\omega_4u + \omega_1 - \frac{3}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2\omega_1 - \frac{1}{2}\omega_4u^2 - \frac{1}{2}\omega_2v\omega_3 - \frac{1}{4}\omega_2v^2\omega_4 - \frac{1}{8}\omega_4^2\omega_1u^2 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{2}\omega_2v\omega_3\omega_1 + \frac{1}{4}\omega_2v^2\omega_4\omega_1 - \frac{1}{8}v^2\omega_4^2\omega_1 - \frac{5}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_4u + \frac{5}{8}v^2\omega_3\omega_4\omega_1 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_2\omega_1 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}v^2\omega_3\omega_1 - \frac{1}{4}\omega_2\omega_4\omega_1u^2 + \frac{1}{2}\omega_2v\omega_3\omega_4 - \frac{1}{4}\omega_2\omega_4 - \frac{1}{8}\omega_3\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2{c_s}^2 - \frac{1}{2}\omega_3{c_s}^2\omega_1,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 1 + \frac{1}{4}\omega_2\omega_4^2{c_s}^2 - \omega_2 + \frac{1}{8}\omega_2v^2\omega_3\omega_4\omega_1 - \frac{1}{4}\omega_4\omega_1u^2 + \frac{1}{4}\omega_4{c_s}^2 + \omega_2\omega_3 - \frac{1}{8}\omega_2v^2\omega_3\omega_4 - \frac{1}{8}\omega_2\omega_3\omega_4\omega_1u^2 - \frac{1}{8}\omega_2v^2\omega_4^2\omega_1 - \frac{1}{8}\omega_2\omega_4^2\omega_1u^2 + \frac{1}{8}\omega_2\omega_3\omega_4u^2 + \frac{1}{4}\omega_4^2u - \frac{7}{8}\omega_3\omega_4\omega_1 + \frac{1}{4}\omega_2\omega_4u - \frac{7}{8}\omega_2\omega_3\omega_4 + \frac{1}{8}\omega_2\omega_4^2\omega_1 - \frac{1}{4}\omega_2\omega_4^2{c_s}^2\omega_1 - \frac{1}{8}v^2\omega_4^2 - \frac{1}{4}\omega_2\omega_4u^2 - \omega_3 + \omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4^2u - \frac{1}{8}\omega_4^2u^2 - \frac{1}{4}\omega_2\omega_3\omega_4u - \frac{1}{4}\omega_4{c_s}^2\omega_1 - \omega_2\omega_3\omega_1 - \frac{1}{8}\omega_2\omega_4^2 + \frac{1}{4}\omega_2\omega_4{c_s}^2\omega_1 + \frac{1}{8}\omega_4^2 + \omega_3\omega_1 - \omega_4 - \omega_2\omega_4\omega_1 + \frac{1}{4}\omega_4^2{c_s}^2\omega_1 + \frac{1}{8}\omega_2\omega_4^2u^2 + \frac{1}{4}\omega_3\omega_4u + \frac{1}{8}\omega_2v^2\omega_4^2 - \omega_1 + \frac{7}{8}\omega_3\omega_4 - \frac{1}{8}\omega_4^2\omega_1 + \frac{1}{4}\omega_2\omega_3\omega_4^2u + \frac{1}{4}\omega_4u^2 + \frac{1}{8}\omega_4^2\omega_1u^2 - \frac{1}{8}\omega_3\omega_4u^2 + \frac{7}{8}\omega_2\omega_3\omega_4\omega_1 + \frac{1}{8}v^2\omega_4^2\omega_1 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}\omega_4u - \frac{1}{8}v^2\omega_3\omega_4\omega_1 + \omega_2\omega_1 - \frac{1}{4}\omega_2\omega_4^2u - \frac{1}{4}\omega_2\omega_4{c_s}^2 + \frac{1}{4}\omega_2\omega_4\omega_1u^2 + \omega_2\omega_4 + \frac{1}{8}\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_4^2{c_s}^2,$

4.3 EFDE for μ_2

$$\mu_{2,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_2],t-\ell\delta_t}\mu_{2,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4u^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = -1 + \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_1u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4u^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_3{c_s}^2.$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{8}\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{4}v^2\omega_3^2 + \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_3\omega_1 - \omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -\omega_1^2 u + \omega_1 u,$$

$$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 - 2\omega_2 + \omega_1^2 - 2\omega_1 + \omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{1}{2}\omega_3\omega_1 u^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 - v^2\omega_3 - 2\omega_3 {c_s}^2 + \tfrac{1}{2}v^2\omega_3\omega_1 + \omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{8}\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{8}\omega_4^2 u - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{8}\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{8}\omega_4^2 {c_s}^2 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 u^2 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_3\omega_4^2 u^2 - \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{2}\omega_4 u^2 - \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{11}{8}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2\omega_3^2 {c_s}^2 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u + \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = \omega_2\omega_1 u + 2\omega_4\omega_1 u + \omega_1^2 u - \tfrac{1}{2}\omega_2\omega_1^2 u - \tfrac{1}{2}\omega_2\omega_4\omega_1 u - 2\omega_1 u - \tfrac{1}{2}\omega_4\omega_1^2 u - \tfrac{1}{2}\omega_4^2\omega_1 u,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 3\omega_1 + \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & -1 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 u^2 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \\ & \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_2 v\omega_4 - \tfrac{5}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 - \tfrac{5}{4}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \\ & \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4 u^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_2 v^2\omega_3^2 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{1}{8}\omega_2\omega_3^2 u^2 + \tfrac{1}{4}\omega_2\omega_1 u - \\ & \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u - \tfrac{5}{8}\omega_2\omega_3 u^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{8}\omega_4^2 - \\ & \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{8}\omega_2 v\omega_3^2 + \tfrac{1}{2}\omega_1 - \\ & \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 - \tfrac{11}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2 {c_s}^2 + v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 + \\ & 2\omega_3 {c_s}^2 - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 - \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = {} & -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \\ & \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = {} & 1 + \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2 - \omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2^2 v^2\omega_4 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2^2\omega_4 + \\ & \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3\omega_4 u^2 + \tfrac{1}{8}\omega_4^2 u - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{4}\omega_2\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{3}{4}\omega_2\omega_4 u^2 - \\ & \tfrac{1}{4}\omega_2^2\omega_3 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 + \omega_2\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \\ & \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_2^2\omega_4 u^2 + \tfrac{1}{8}\omega_2\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u + \\ & \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_2^2\omega_1 u - \tfrac{5}{4}\omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{8}\omega_2\omega_4^2 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4 u^2 - \omega_2 v^2\omega_4 - \\ & \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2 u - \tfrac{1}{4}v^2\omega_3\omega_1 - \\ & \tfrac{1}{2}\omega_2^2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_2\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2^2 v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_4 + \tfrac{1}{4}\omega_2^2\omega_3 - \tfrac{1}{8}\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-2\delta_t} = -2 + 3\omega_2 + \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_4^2 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \omega_1 - \omega_2^2 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{5}{2}\omega_2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = -\omega_3\omega_1^2 u - \tfrac{1}{2}\omega_3^2\omega_1 u + \tfrac{1}{2}\omega_4\omega_1 u + \omega_1^2 u - \tfrac{1}{2}\omega_3\omega_4\omega_1 u - 2\omega_1 u + \tfrac{5}{2}\omega_3\omega_1 u,$$

$$\begin{aligned}\alpha_{x,y}^{[\mu_2],t-2\delta_t} = {} & -4 + 3\omega_2 - \tfrac{7}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3\omega_4 + 5\omega_3 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3^2 - \omega_3^2 + \tfrac{1}{2}\omega_3^2\omega_1 - \tfrac{7}{2}\omega_3\omega_1 + \omega_4 - \\ & \omega_1^2 + 3\omega_1 - \omega_3\omega_4 - \omega_2^2 + \omega_3\omega_1^2 - \tfrac{1}{2}\omega_2\omega_4 + \omega_2^2\omega_3,\end{aligned}$$

$$\begin{aligned}\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = {} & -1 - \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2 + \omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2^2 v^2\omega_4 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2^2\omega_4 - \\ & \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2\omega_3\omega_4 u^2 - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{3}{4}v^2\omega_4 - \tfrac{1}{4}\omega_2\omega_4 u + \tfrac{1}{4}\omega_2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{3}{4}\omega_2\omega_4 u^2 + \\ & \tfrac{1}{4}\omega_2^2\omega_3 u^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3\omega_1 + \omega_2\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u - \\ & \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_4^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_2^2\omega_4 u^2 - \tfrac{1}{8}\omega_2\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_2\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u - \\ & \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_2^2\omega_1 u + \tfrac{5}{4}\omega_4 + \tfrac{1}{4}\omega_2\omega_4\omega_1 + \tfrac{1}{8}\omega_2\omega_4^2 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u^2 + \omega_2 v^2\omega_4 + \\ & \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}\omega_2\omega_4^2 u + \tfrac{1}{4}v^2\omega_3\omega_1 + \\ & \tfrac{1}{2}\omega_2^2\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_2\omega_4 {c_s}^2 + \tfrac{1}{8}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2^2 v^2\omega_3 - \tfrac{3}{2}\omega_2\omega_4 - \tfrac{1}{4}\omega_2^2\omega_3 + \tfrac{1}{8}\omega_4^2 {c_s}^2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-2\delta_t} = -2 + 3\omega_2 + \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_4^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_2\omega_4\omega_1 + \omega_1 - \omega_2^2 - \tfrac{3}{2}\omega_2\omega_1 - 2\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u + \tfrac{1}{4}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \\ & \tfrac{1}{2}\omega_2 v - \tfrac{3}{16}\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{16}\omega_4^2 u - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \\ & \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 - \tfrac{1}{16}\omega_3\omega_4^2 u + \tfrac{1}{16}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 - \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_1 u + \\ & \tfrac{19}{16}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 - \tfrac{1}{16}\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{3}{16}\omega_3\omega_4^2 {c_s}^2 + \\ & \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{16}\omega_3\omega_4 u - \tfrac{1}{8}\omega_2 v\omega_3^2 - \\ & \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{17}{16}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}\omega_2\omega_3^2 {c_s}^2 - \\ & v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{16}\omega_4^2 {c_s}^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-2\delta_t} = {} & -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \\ & \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,\end{aligned}$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = \omega_2\omega_1 u + \tfrac{3}{2}\omega_4\omega_1 u + \omega_1^2 u - \tfrac{1}{2}\omega_2\omega_4\omega_1 u - 2\omega_1 u - \tfrac{1}{4}\omega_4\omega_1^2 u - \tfrac{1}{4}\omega_4^2\omega_1 u,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-2\delta_t} = -2+\omega_2+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{7}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_4^2+\tfrac{3}{2}\omega_4-\omega_1^2+\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_1^2+3\omega_1+\tfrac{1}{4}\omega_4^2\omega_1-\tfrac{3}{2}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = {}& -1+\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2v\omega_1+\tfrac{3}{16}\omega_3^2\omega_4u^2-\tfrac{1}{4}\omega_2\omega_3\omega_1u-\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{8}\omega_2v^2\omega_3\omega_4+\\ &\tfrac{1}{2}\omega_2v+\tfrac{3}{16}\omega_3\omega_4^2u^2-\tfrac{1}{8}\omega_2v\omega_4-\tfrac{5}{8}\omega_2v^2\omega_3-\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{3}{8}\omega_2\omega_3\omega_4u^2-\tfrac{5}{4}\omega_2\omega_3{c_s}^2-\tfrac{1}{16}\omega_4^2u+\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{2}v^2\omega_4-\\ &\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{8}\omega_2\omega_4u^2+\tfrac{1}{4}\omega_3-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{8}\omega_2v^2\omega_3^2+\tfrac{1}{16}\omega_3\omega_4^2u-\tfrac{1}{16}\omega_4^2u^2+\tfrac{1}{8}\omega_2\omega_3^2u^2+\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\\ &\tfrac{1}{4}\omega_2\omega_1u-\tfrac{19}{16}\omega_3\omega_4{c_s}^2+\omega_3u^2+\tfrac{1}{16}\omega_3^2\omega_4u+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{5}{8}\omega_2\omega_3u^2+\tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{3}{16}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{8}\omega_4^2-\\ &\tfrac{1}{4}\omega_3^2u^2-\tfrac{3}{8}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_1u+\tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{8}\omega_3\omega_1+\tfrac{3}{16}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}v^2\omega_3^2+\tfrac{3}{4}\omega_4-\tfrac{5}{16}\omega_3\omega_4u+\tfrac{1}{8}\omega_2v\omega_3^2+\\ &\tfrac{1}{2}\omega_1-\tfrac{1}{8}\omega_3\omega_4+\tfrac{1}{4}\omega_4u^2-\tfrac{5}{8}\omega_2v\omega_3+\tfrac{1}{8}\omega_2v^2\omega_4-\tfrac{17}{16}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v\omega_3\omega_1-\tfrac{1}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_4u+\tfrac{1}{4}\omega_2\omega_3^2{c_s}^2+\\ &v^2\omega_3-\tfrac{1}{4}\omega_2\omega_1+2\omega_3{c_s}^2-\tfrac{3}{8}v^2\omega_3\omega_1+\tfrac{5}{8}\omega_3\omega_1u+\tfrac{1}{8}\omega_2v\omega_3\omega_4-\tfrac{1}{4}\omega_2\omega_4+\tfrac{1}{8}\omega_3\omega_4\omega_1u^2+\tfrac{1}{16}\omega_4^2{c_s}^2-\tfrac{3}{4}\omega_3{c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-2\delta_t} = {}& -2+\omega_2-\tfrac{9}{8}\omega_2\omega_3+\tfrac{1}{8}\omega_3\omega_4\omega_1+\tfrac{3}{8}\omega_2\omega_3\omega_4+\tfrac{5}{2}\omega_3-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{8}\omega_3^2\omega_4+\tfrac{1}{8}\omega_2\omega_3^2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}\omega_2\omega_3\omega_1+\\ &\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{1}{8}\omega_4^2-\tfrac{9}{8}\omega_3\omega_1+\omega_4+\omega_1-\tfrac{9}{8}\omega_3\omega_4+\tfrac{1}{8}\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_1-\tfrac{3}{8}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = {}& \\ &\omega_3\omega_1^2u+\tfrac{7}{4}\omega_2\omega_3\omega_1u-\tfrac{1}{2}\omega_3^2\omega_4\omega_1u+\tfrac{3}{4}\omega_3^2\omega_1u-\tfrac{1}{2}\omega_3\omega_4^2\omega_1u-\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3\omega_4\omega_1^2u-\tfrac{3}{2}\omega_2\omega_1u-\tfrac{11}{4}\omega_4\omega_1u-\\ &\omega_1^2u+\tfrac{13}{4}\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_2\omega_1^2u+\tfrac{3}{4}\omega_2\omega_4\omega_1u+3\omega_1u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}\omega_4^2\omega_1u-\tfrac{1}{4}\omega_2\omega_3^2\omega_1u-\tfrac{15}{4}\omega_3\omega_1u-\tfrac{1}{2}\omega_2\omega_3\omega_1^2u,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_2],t-3\delta_t} = {}& 3-\tfrac{3}{2}\omega_2+\tfrac{7}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_2\omega_3\omega_1^2-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{15}{4}\omega_3\omega_4\omega_1-\tfrac{3}{4}\omega_2\omega_3\omega_4-\tfrac{15}{4}\omega_3+\tfrac{13}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_3^2\omega_4+\\ &\tfrac{1}{2}\omega_3\omega_4\omega_1^2-\tfrac{1}{4}\omega_2\omega_3^2+\tfrac{3}{4}\omega_3^2-\tfrac{9}{4}\omega_2\omega_3\omega_1-\tfrac{3}{4}\omega_3^2\omega_1+\tfrac{1}{4}\omega_2\omega_3^2\omega_1+\tfrac{1}{2}\omega_4^2+\tfrac{19}{4}\omega_3\omega_1-\tfrac{11}{4}\omega_4+\omega_1^2-\tfrac{3}{4}\omega_2\omega_4\omega_1-\\ &\tfrac{1}{2}\omega_2\omega_1^2-4\omega_1+\tfrac{13}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+\tfrac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2\omega_1+\tfrac{1}{2}\omega_3^2\omega_4\omega_1-\omega_3\omega_1^2+\tfrac{3}{4}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = {}& -1-\tfrac{1}{16}\omega_2\omega_4^2{c_s}^2+\omega_2+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2^2v^2\omega_4+\tfrac{7}{16}\omega_3^2\omega_4u^2-\tfrac{1}{8}\omega_4\omega_1u^2+\tfrac{7}{4}\omega_2\omega_3\omega_1u-\tfrac{1}{4}\omega_4{c_s}^2+\\ &\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{4}\omega_2^2\omega_4-\tfrac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2-\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2+\tfrac{7}{16}\omega_3\omega_4^2u^2-\tfrac{5}{4}\omega_2v^2\omega_3+\tfrac{1}{4}\omega_3^2\omega_1u+\tfrac{43}{16}\omega_2\omega_3\omega_4u^2-\\ &\tfrac{5}{2}\omega_2\omega_3{c_s}^2-\tfrac{1}{16}\omega_4^2u+\tfrac{1}{4}v^2\omega_4\omega_1-v^2\omega_4-\tfrac{1}{4}\omega_2\omega_4u-\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{4}\omega_2\omega_3\omega_4+\tfrac{1}{4}v^2\omega_4^2-\tfrac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1-\omega_2\omega_4u^2+\\ &\tfrac{1}{4}\omega_2^2\omega_3u^2-\tfrac{7}{16}\omega_2\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}\omega_3-\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_2v^2\omega_3^2+\tfrac{1}{16}\omega_3\omega_4^2u-\tfrac{3}{16}\omega_4^2u^2+\tfrac{5}{16}\omega_2\omega_3\omega_4u-\\ &\tfrac{7}{16}\omega_2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}\omega_2\omega_3^2u^2+\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{3}{2}\omega_2\omega_1u-\tfrac{35}{16}\omega_3\omega_4{c_s}^2+\omega_3u^2+\tfrac{1}{16}\omega_3^2\omega_4u-\tfrac{3}{8}\omega_4\omega_1u+\\ &\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{4}\omega_2\omega_4^2+\tfrac{3}{8}\omega_3\omega_4\omega_1u-\tfrac{5}{4}\omega_2\omega_3u^2+\tfrac{43}{16}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_2^2\omega_4u^2+\tfrac{7}{16}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\\ &\tfrac{1}{4}\omega_4^2-\tfrac{1}{4}\omega_3^2u^2-\tfrac{1}{16}\omega_2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_1u+\tfrac{3}{8}\omega_2\omega_4\omega_1u+\omega_1u+\tfrac{3}{8}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_3\omega_1+\\ &\tfrac{7}{16}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}v^2\omega_3^2+\tfrac{1}{2}\omega_2^2\omega_1u+\tfrac{5}{4}\omega_4+\tfrac{1}{4}\omega_2\omega_4\omega_1+\tfrac{3}{16}\omega_2\omega_4^2u^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_4u^2-\tfrac{5}{16}\omega_3\omega_4u-\tfrac{1}{4}\omega_2v^2\omega_4^2+\\ &\tfrac{1}{2}\omega_1-\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{16}\omega_2\omega_3\omega_4^2u+\tfrac{3}{4}\omega_4u^2+\tfrac{5}{4}\omega_2v^2\omega_4-\tfrac{1}{4}\omega_2\omega_3^2\omega_1u-\tfrac{35}{16}\omega_3\omega_4u^2-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{4}\omega_4u+\\ &\tfrac{1}{2}\omega_2\omega_3^2{c_s}^2-\tfrac{7}{16}\omega_2\omega_3\omega_4^2u^2+v^2\omega_3-\tfrac{1}{2}\omega_2\omega_1+2\omega_3{c_s}^2+\tfrac{1}{16}\omega_2\omega_4^2u-\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{7}{16}\omega_2\omega_3^2\omega_4u^2+\tfrac{1}{2}\omega_2^2\omega_3{c_s}^2+\\ &\tfrac{1}{4}\omega_2\omega_4{c_s}^2-\tfrac{5}{4}\omega_3\omega_1u+\tfrac{1}{8}\omega_2\omega_4\omega_1u^2+\tfrac{1}{4}\omega_2^2v^2\omega_3-\tfrac{3}{2}\omega_2\omega_4-\tfrac{1}{4}\omega_2^2\omega_3+\tfrac{3}{8}\omega_3\omega_4\omega_1u^2+\tfrac{1}{16}\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y}^{[\mu_2],t-3\delta_t} = {}& 3-4\omega_2+\tfrac{19}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_2^2\omega_4-\tfrac{3}{4}\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_1-\tfrac{15}{4}\omega_2\omega_3\omega_4-\tfrac{15}{4}\omega_3+\tfrac{3}{4}\omega_4\omega_1-\\ &\tfrac{1}{2}\omega_3^2\omega_4-\tfrac{3}{4}\omega_2\omega_3^2+\tfrac{3}{4}\omega_3^2-\tfrac{9}{4}\omega_2\omega_3\omega_1-\tfrac{1}{4}\omega_3^2\omega_1-\tfrac{1}{2}\omega_2\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_4+\tfrac{1}{4}\omega_2\omega_3^2\omega_1+\tfrac{1}{2}\omega_4^2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{11}{4}\omega_4-\\ &\tfrac{3}{4}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2^2\omega_3\omega_1+\tfrac{1}{2}\omega_2\omega_3^2\omega_4-\tfrac{3}{2}\omega_1+\tfrac{13}{4}\omega_3\omega_4+\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+\omega_2^2+2\omega_2\omega_1+\tfrac{13}{4}\omega_2\omega_4-\omega_2^2\omega_3,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y}^{[\mu_1],t-3\delta_t} = {}& -\omega_2^2\omega_4\omega_1u-\tfrac{3}{4}\omega_2\omega_4^2\omega_1u-4\omega_2\omega_1u-\tfrac{3}{4}\omega_2\omega_4\omega_1^2u-\tfrac{7}{2}\omega_4\omega_1u-\omega_1^2u+\omega_2\omega_1^2u+\tfrac{9}{2}\omega_2\omega_4\omega_1u+3\omega_1u+\\ &\tfrac{3}{4}\omega_4\omega_1^2u+\omega_2^2\omega_1u+\tfrac{3}{4}\omega_4^2\omega_1u,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y}^{[\mu_2],t-3\delta_t} = {}& 3-4\omega_2-\omega_2^2\omega_4-\tfrac{3}{4}\omega_4\omega_1^2-\omega_2^2\omega_1+\tfrac{3}{4}\omega_2\omega_4^2\omega_1+\tfrac{17}{4}\omega_4\omega_1+\omega_2^2\omega_4\omega_1-\tfrac{3}{4}\omega_2\omega_4^2+\tfrac{3}{4}\omega_4^2-\tfrac{7}{2}\omega_4+\omega_1^2-\\ &\tfrac{21}{4}\omega_2\omega_4\omega_1-\omega_2\omega_1^2-4\omega_1-\tfrac{3}{4}\omega_4^2\omega_1+\omega_2^2+\tfrac{3}{4}\omega_2\omega_4\omega_1^2+5\omega_2\omega_1+\tfrac{9}{2}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = {}& 1+\tfrac{1}{16}\omega_2\omega_4^2{c_s}^2-\omega_2-\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2^2v^2\omega_4-\tfrac{7}{16}\omega_3^2\omega_4u^2+\tfrac{1}{8}\omega_4\omega_1u^2+\tfrac{7}{4}\omega_2\omega_3\omega_1u+\tfrac{1}{4}\omega_4{c_s}^2-\\ &\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{1}{4}\omega_2^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2+\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2-\tfrac{7}{16}\omega_3\omega_4^2u^2+\tfrac{5}{4}\omega_2v^2\omega_3+\tfrac{1}{4}\omega_3^2\omega_1u-\tfrac{43}{16}\omega_2\omega_3\omega_4u^2+\\ &\tfrac{5}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{16}\omega_4^2u-\tfrac{1}{4}v^2\omega_4\omega_1+v^2\omega_4+\tfrac{1}{4}\omega_2\omega_4u+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{4}\omega_2\omega_3\omega_4-\tfrac{1}{4}v^2\omega_4^2+\tfrac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\omega_2\omega_4u^2-\\ &\tfrac{1}{4}\omega_2^2\omega_3u^2+\tfrac{7}{16}\omega_2\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}\omega_3-\tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_2v^2\omega_3^2-\tfrac{1}{16}\omega_3\omega_4^2u+\tfrac{3}{16}\omega_4^2u^2-\tfrac{5}{16}\omega_2\omega_3\omega_4u+\\ &\tfrac{7}{16}\omega_2\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_2\omega_3^2u^2-\tfrac{1}{8}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{3}{2}\omega_2\omega_1u+\tfrac{35}{16}\omega_3\omega_4{c_s}^2-\omega_3u^2-\tfrac{1}{16}\omega_3^2\omega_4u-\tfrac{1}{8}\omega_4\omega_1u-\\ &\tfrac{1}{4}\omega_2\omega_3\omega_1u^2-\tfrac{1}{4}\omega_2\omega_4^2+\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{5}{4}\omega_2\omega_3u^2-\tfrac{43}{16}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_2^2\omega_4u^2-\tfrac{7}{16}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1+\\ &\tfrac{1}{4}\omega_4^2+\tfrac{1}{4}\omega_3^2u^2+\tfrac{1}{16}\omega_2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_1u+\tfrac{1}{8}\omega_2\omega_4\omega_1u+\omega_1u-\tfrac{3}{8}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_3\omega_1-\\ &\tfrac{7}{16}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}v^2\omega_3^2+\tfrac{1}{2}\omega_2^2\omega_1u-\tfrac{5}{4}\omega_4-\tfrac{1}{4}\omega_2\omega_4\omega_1-\tfrac{3}{16}\omega_2\omega_4^2u^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_4u^2+\tfrac{5}{16}\omega_3\omega_4u+\tfrac{1}{4}\omega_2v^2\omega_4^2-\end{aligned}$$

$\frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4 + \frac{1}{16}\omega_2\omega_3\omega_4^2 u - \frac{3}{4}\omega_4 u^2 - \frac{5}{4}\omega_2 v^2\omega_4 - \frac{1}{4}\omega_2\omega_3^2\omega_1 u + \frac{35}{16}\omega_3\omega_4 u^2 + \frac{1}{4}\omega_2 v^2\omega_4\omega_1 - \frac{1}{4}\omega_4 u - \frac{1}{2}\omega_2\omega_3^2 {c_s}^2 + \frac{7}{16}\omega_2\omega_3\omega_4^2 u^2 - v^2\omega_3 + \frac{1}{2}\omega_2\omega_1 - 2\omega_3 {c_s}^2 - \frac{1}{16}\omega_2\omega_4^2 u + \frac{1}{4}v^2\omega_3\omega_1 + \frac{7}{16}\omega_2\omega_3^2\omega_4 u^2 - \frac{1}{2}\omega_2^2\omega_3 {c_s}^2 - \frac{1}{4}\omega_2\omega_4 {c_s}^2 - \frac{5}{4}\omega_3\omega_1 u - \frac{1}{8}\omega_2\omega_4\omega_1 u^2 - \frac{1}{4}\omega_2^2 v^2\omega_3 + \frac{3}{2}\omega_2\omega_4 + \frac{1}{4}\omega_2^2\omega_3 - \frac{3}{8}\omega_3\omega_4\omega_1 u^2 - \frac{1}{16}\omega_4^2 {c_s}^2 + \frac{1}{2}\omega_3 {c_s}^2\omega_1,$

$\alpha^{[\mu_2],t-3\delta_t}_{x+\delta_l,y} = 3 - 4\omega_2 + \frac{19}{4}\omega_2\omega_3 - \frac{1}{2}\omega_2^2\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1 + \frac{3}{8}\omega_2\omega_3\omega_4^2 - \frac{1}{2}\omega_2^2\omega_1 - \frac{25}{8}\omega_2\omega_3\omega_4 - \frac{15}{4}\omega_3 + \frac{1}{2}\omega_4\omega_1 - \frac{3}{8}\omega_3^2\omega_4 - \frac{3}{4}\omega_2\omega_3^2 + \frac{3}{4}\omega_3^2 - \frac{9}{4}\omega_2\omega_3\omega_1 - \frac{1}{4}\omega_3^2\omega_1 - \frac{3}{8}\omega_2\omega_4^2 + \frac{1}{2}\omega_2^2\omega_3\omega_4 + \frac{1}{4}\omega_2\omega_3^2\omega_1 + \frac{3}{8}\omega_4^2 + \frac{7}{4}\omega_3\omega_1 - \frac{9}{4}\omega_4 - \frac{1}{2}\omega_2\omega_4\omega_1 + \frac{1}{2}\omega_2^2\omega_3\omega_1 + \frac{3}{8}\omega_2\omega_3^2\omega_4 - \frac{3}{2}\omega_1 + \frac{21}{8}\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{3}{8}\omega_3\omega_4^2 + \omega_2^2 + 2\omega_2\omega_1 + \frac{11}{4}\omega_2\omega_4 - \omega_2^2\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} =$
$\omega_3\omega_1^2 u + \frac{7}{4}\omega_2\omega_3\omega_1 u - \frac{3}{8}\omega_3^2\omega_4\omega_1 u + \frac{3}{4}\omega_3^2\omega_1 u - \frac{3}{8}\omega_3\omega_4^2\omega_1 u - \frac{3}{4}\omega_2\omega_3\omega_4\omega_1 u - \frac{1}{4}\omega_3\omega_4\omega_1^2 u - \frac{3}{2}\omega_2\omega_1 u - \frac{9}{4}\omega_4\omega_1 u - \omega_1^2 u + \frac{21}{8}\omega_3\omega_4\omega_1 u + \frac{1}{2}\omega_2\omega_1^2 u + \frac{3}{4}\omega_2\omega_4\omega_1 u + 3\omega_1 u + \frac{1}{4}\omega_4\omega_1^2 u + \frac{3}{8}\omega_4^2\omega_1 u - \frac{1}{4}\omega_2\omega_3^2\omega_1 u - \frac{15}{4}\omega_3\omega_1 u - \frac{1}{2}\omega_2\omega_3\omega_1^2 u,$

$\alpha^{[\mu_2],t-3\delta_t}_{x,y+\delta_l} = 3 - \frac{3}{2}\omega_2 + \frac{7}{4}\omega_2\omega_3 + \frac{1}{2}\omega_2\omega_3\omega_1^2 - \frac{1}{4}\omega_4\omega_1^2 - \frac{23}{8}\omega_3\omega_4\omega_1 - \frac{3}{4}\omega_2\omega_3\omega_4 - \frac{15}{4}\omega_3 + \frac{5}{2}\omega_4\omega_1 - \frac{3}{8}\omega_3^2\omega_4 + \frac{1}{4}\omega_3\omega_4\omega_1^2 - \frac{1}{4}\omega_2\omega_3^2 + \frac{3}{4}\omega_3^2 - \frac{9}{4}\omega_2\omega_3\omega_1 - \frac{3}{4}\omega_3^2\omega_1 + \frac{1}{4}\omega_2\omega_3^2\omega_1 + \frac{3}{8}\omega_4^2 + \frac{19}{4}\omega_3\omega_1 - \frac{9}{4}\omega_4 + \omega_1^2 - \frac{3}{4}\omega_2\omega_4\omega_1 - \frac{1}{2}\omega_2\omega_1^2 - 4\omega_1 + \frac{21}{8}\omega_3\omega_4 - \frac{3}{8}\omega_4^2\omega_1 + \frac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \frac{3}{8}\omega_3\omega_4^2 + \frac{3}{8}\omega_3\omega_4^2\omega_1 + 2\omega_2\omega_1 + \frac{3}{8}\omega_3^2\omega_4\omega_1 - \omega_3\omega_1^2 + \frac{3}{4}\omega_2\omega_4,$

$\alpha^{[\mu_1],t-4\delta_t}_{x,y} =$
$-\omega_3\omega_1^2 u + \omega_2^2\omega_4\omega_1 u - 6\omega_2\omega_3\omega_1 u + \frac{7}{8}\omega_3^2\omega_4\omega_1 u - \omega_3^2\omega_1 u + \frac{7}{8}\omega_3\omega_4^2\omega_1 u + \frac{51}{8}\omega_2\omega_3\omega_4\omega_1 u + \frac{7}{8}\omega_2\omega_4^2\omega_1 u + \frac{3}{4}\omega_3\omega_4\omega_1^2 u - \omega_2^2\omega_3\omega_4\omega_1 u + 5\omega_2\omega_1 u + \frac{3}{4}\omega_2\omega_4\omega_1^2 u + \frac{9}{2}\omega_4\omega_1 u + \omega_1^2 u - \frac{43}{8}\omega_3\omega_4\omega_1 u - \omega_2\omega_1^2 u + \omega_2^2\omega_3\omega_1 u - \frac{11}{2}\omega_2\omega_4\omega_1 u - 4\omega_1 u - \frac{3}{4}\omega_4\omega_1^2 u - \frac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 u - \omega_2^2\omega_1 u - \frac{7}{8}\omega_4^2\omega_1 u - \frac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 u + \omega_2\omega_3^2\omega_1 u - \frac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 u + 5\omega_3\omega_1 u + \omega_2\omega_3\omega_1^2 u,$

$\alpha^{[\mu_2],t-4\delta_t}_{x,y} = -4 + 5\omega_2 + \frac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 - 6\omega_2\omega_3 + \omega_2^2\omega_4 - \omega_2\omega_3\omega_1^2 + \frac{3}{4}\omega_4\omega_1^2 + \frac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 + \frac{49}{8}\omega_3\omega_4\omega_1 - \frac{7}{8}\omega_2\omega_3\omega_4^2 + \omega_2^2\omega_1 + \frac{51}{8}\omega_2\omega_3\omega_4 - \frac{7}{8}\omega_2\omega_4^2\omega_1 + 5\omega_3 - \frac{21}{4}\omega_4\omega_1 + \frac{7}{8}\omega_3^2\omega_4 - \frac{3}{4}\omega_3\omega_4\omega_1^2 + \omega_2^2\omega_3\omega_4\omega_1 + \omega_2\omega_3^2 - \omega_3^2 + 7\omega_2\omega_3\omega_1 - \omega_2^2\omega_4\omega_1 + \omega_3^2\omega_1 + \frac{7}{8}\omega_2\omega_4^2 - \omega_2^2\omega_3\omega_4 - \omega_2\omega_3^2\omega_1 - \frac{7}{8}\omega_4^2 - 6\omega_3\omega_1 + \frac{9}{2}\omega_4 - \omega_1^2 + \frac{25}{4}\omega_2\omega_4\omega_1 - \omega_2^2\omega_3\omega_1 - \frac{7}{8}\omega_2\omega_3^2\omega_4 + \omega_2\omega_1^2 + 5\omega_1 - \frac{43}{8}\omega_3\omega_4 + \frac{7}{8}\omega_4^2\omega_1 + \frac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 - \frac{57}{8}\omega_2\omega_3\omega_4\omega_1 + \frac{7}{8}\omega_3\omega_4^2 - \frac{7}{8}\omega_3\omega_4^2\omega_1 - \omega_2^2 - \frac{3}{4}\omega_2\omega_4\omega_1^2 - 6\omega_2\omega_1 - \frac{7}{8}\omega_3^2\omega_4\omega_1 + \omega_3\omega_1^2 - \frac{11}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$

4.4 EFDE for μ_3

$$\mu^{t+\delta_t}_{3,x,y} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_1],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_3],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{3,x+i\delta_l,y+j\delta_l},$$

where the non-zero coefficients are given by:

$\alpha^{[\mu_1],t}_{x,y-\delta_l} = 1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_2 v + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3 u^2 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_4 u^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3 {c_s}^2.$

$\alpha^{[\mu_1],t}_{x,y+\delta_l} = -1 + \frac{1}{2}\omega_2 - \frac{1}{4}\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 v - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3 u^2 + \frac{1}{4}\omega_4 + \frac{1}{4}\omega_4 u - \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_3 {c_s}^2.$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = -1 + \frac{1}{2}\omega_2 - \frac{1}{8}\omega_2\omega_3 + \frac{1}{8}\omega_2 v^2\omega_3 + \frac{1}{4}\omega_2\omega_3 {c_s}^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{8}\omega_2\omega_4 u^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{8}\omega_4^2 u^2 + \frac{1}{4}\omega_2\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{8}\omega_2\omega_3 u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}\omega_1 u + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_2 v^2\omega_4 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}\omega_2\omega_4,$

$\alpha^{[\mu_3],t-\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha^{[\mu_1],t-\delta_t}_{x,y-\delta_l} = -1 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_2 v^2\omega_3 - \omega_2\omega_3 {c_s}^2 - \frac{1}{2}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \frac{1}{2}\omega_2\omega_3 u^2 - \frac{1}{4}\omega_3^2 u^2 - \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3\omega_4 u^2 - \frac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3 {c_s}^2,$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = {} & -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{8}\omega_2\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 - \\ & \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{8}\omega_2\omega_3 u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}\omega_1 u + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 - \\ & \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4,\end{aligned}$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -\tfrac{1}{4}\omega_4 {c_s}^2 + \omega_2 v - \tfrac{1}{4}\omega_2\omega_4 u + \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_4 u^2 - \omega_2^2 v + \tfrac{1}{4}\omega_4 u + \tfrac{1}{4}\omega_2\omega_4 {c_s}^2,$$

$$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2 - 2\omega_2 + \omega_1^2 - 2\omega_1 + \omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 - \\ & \tfrac{1}{4}\omega_2\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{8}\omega_2\omega_3 u^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}\omega_1 u - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u^2 + \\ & \tfrac{1}{8}\omega_2 v^2\omega_4 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}\omega_2\omega_4,\end{aligned}$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2 v^2\omega_3 + \omega_2\omega_3 {c_s}^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 + \tfrac{1}{2}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{1}{4}v^2\omega_3^2 - \\ & \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 - v^2\omega_3 - 2\omega_3 {c_s}^2,\end{aligned}$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{1}{4}\omega_3 u^2 - \\ & \tfrac{1}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}\omega_2\omega_4,\end{aligned}$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{8}v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \\ & \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 + \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 - \\ & \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_3^2\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 - \\ & \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{3}{8}\omega_2\omega_3 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{5}{8}\omega_3\omega_1 u^2 + \\ & \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4^2 + \tfrac{1}{2}\omega_4 u^2 + \\ & \tfrac{5}{8}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \\ & \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-2\delta_t} = {} & -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \\ & \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \omega_2 v\omega_1 - \omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2 + \\ & v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 u^2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \\ & \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_2 v\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2 - \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{5}{4}\omega_4 - \\ & \tfrac{1}{4}\omega_2\omega_4\omega_1 - \omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_4^2\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4^2\omega_1 - \\ & \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1^2 u^2 + \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2,\end{aligned}$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-2\delta_t} = -2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 3\omega_1 + \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{8}v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \\ & \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 -\end{aligned}$$

$\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{8}v^2\omega_4^2-\frac{1}{8}\omega_2\omega_4u^2-\frac{1}{4}\omega_3+\frac{1}{4}\omega_4\omega_1-\frac{1}{8}\omega_4^2u^2-\frac{1}{8}\omega_3^2\omega_1u^2+\frac{1}{4}\omega_2\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\omega_3u^2+\frac{1}{8}\omega_4\omega_1u-\frac{1}{4}\omega_2\omega_3\omega_1u^2-\frac{1}{8}\omega_3\omega_4\omega_1u+\frac{3}{8}\omega_2\omega_3u^2-\frac{1}{4}\omega_2\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{8}\omega_4^2+\frac{1}{4}\omega_3^2u^2+\frac{5}{8}\omega_3\omega_1u^2-\frac{1}{2}\omega_1u-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_3^2\omega_4{c_s}^2+\frac{1}{4}v^2\omega_3^2-\frac{3}{4}\omega_4-\frac{1}{8}\omega_2v\omega_3^2-\frac{1}{2}\omega_1+\frac{1}{8}\omega_3\omega_4-\frac{1}{4}v^2\omega_3\omega_4^2+\frac{1}{2}\omega_4u^2+\frac{5}{8}\omega_2v\omega_3+\frac{1}{8}\omega_2v^2\omega_4+\frac{1}{8}\omega_3\omega_4u^2-\frac{1}{4}\omega_2v\omega_3\omega_1+\frac{11}{8}v^2\omega_3\omega_4-\frac{3}{8}v^2\omega_3\omega_4\omega_1-v^2\omega_3+\frac{1}{4}\omega_2\omega_1-2\omega_3{c_s}^2+\frac{5}{8}v^2\omega_3\omega_1+\frac{5}{8}\omega_3\omega_1u-\frac{1}{8}\omega_2v\omega_3\omega_4+\frac{1}{8}\omega_2\omega_4-\frac{1}{8}\omega_3\omega_4\omega_1u^2+\frac{5}{4}\omega_3{c_s}^2\omega_1,$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l}=-2+\omega_2-\frac{9}{8}\omega_2\omega_3+\frac{3}{8}\omega_3\omega_4\omega_1+\frac{3}{8}\omega_2\omega_3\omega_4+\frac{5}{2}\omega_3-\frac{3}{8}\omega_4\omega_1+\frac{1}{4}\omega_3^2\omega_4+\frac{1}{8}\omega_2\omega_3^2-\frac{1}{2}\omega_3^2+\frac{1}{2}\omega_2\omega_3\omega_1+\frac{1}{8}\omega_3^2\omega_1-\frac{1}{4}\omega_4^2-\frac{9}{8}\omega_3\omega_1+\frac{3}{2}\omega_4+\omega_1-\frac{7}{4}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_1-\frac{3}{8}\omega_2\omega_4,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}=$
$\frac{1}{8}\omega_4^3u^2+\frac{1}{8}\omega_2\omega_4^2{c_s}^2-\frac{1}{2}\omega_2v\omega_4\omega_1+\omega_2v\omega_1-\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{2}\omega_4{c_s}^2-2\omega_2v+2\omega_2v\omega_4+\frac{1}{2}\omega_4^2u+\frac{1}{4}\omega_2\omega_4u-\frac{1}{4}\omega_2\omega_4u^2-\frac{1}{2}\omega_2v\omega_4^2-\frac{1}{2}\omega_4^2u^2-\frac{1}{4}\omega_4{c_s}^2\omega_1-\frac{1}{8}\omega_4^3u+\frac{1}{4}\omega_4\omega_1u+\frac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\frac{1}{8}\omega_2\omega_4\omega_1u+\frac{1}{8}\omega_4^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^3{c_s}^2+\frac{1}{8}\omega_2\omega_4^2u^2-\frac{1}{8}\omega_4^2\omega_1u+\frac{1}{2}\omega_4u^2-\frac{1}{2}\omega_2^2v\omega_1+\omega_2^2v+\frac{1}{8}\omega_4^2\omega_1u^2-\frac{1}{2}\omega_4u-\frac{1}{8}\omega_2\omega_4^2u-\frac{1}{4}\omega_2\omega_4{c_s}^2+\frac{1}{8}\omega_2\omega_4\omega_1u^2-\frac{1}{2}\omega_2^2v\omega_4-\frac{1}{2}\omega_4^2{c_s}^2,$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y}=-2+3\omega_2+\frac{1}{2}\omega_2^2\omega_4+\frac{1}{2}\omega_2^2\omega_1-\frac{1}{2}\omega_4\omega_1+\frac{1}{2}\omega_2\omega_4^2-\frac{1}{2}\omega_4^2+2\omega_4+\frac{1}{2}\omega_2\omega_4\omega_1+\omega_1-\omega_2^2-\frac{3}{2}\omega_2\omega_1-\frac{5}{2}\omega_2\omega_4,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y}=-\omega_2^2v\omega_3+\frac{1}{8}\omega_3^2\omega_4u^2+\frac{1}{2}\omega_4{c_s}^2-2\omega_2v+\frac{1}{8}\omega_3\omega_4^2u^2+\frac{1}{2}\omega_2v\omega_4+\frac{1}{4}\omega_2\omega_3\omega_4u^2+\frac{1}{8}\omega_4^2u+\frac{1}{4}\omega_2\omega_4u-\frac{1}{4}\omega_2\omega_4u^2-\frac{1}{8}\omega_3\omega_4^2u-\frac{1}{8}\omega_4^2u^2-\frac{1}{4}\omega_2\omega_3\omega_4u-\frac{5}{8}\omega_3\omega_4{c_s}^2-\frac{1}{8}\omega_3^2\omega_4u+\frac{1}{4}\omega_2\omega_3\omega_4{c_s}^2+\frac{1}{8}\omega_3\omega_4^2{c_s}^2+\frac{1}{8}\omega_3^2\omega_4{c_s}^2+\frac{5}{8}\omega_3\omega_4u-\frac{1}{2}\omega_2v\omega_3^2+\frac{1}{2}\omega_4u^2+\frac{5}{2}\omega_2v\omega_3+\omega_2^2v-\frac{5}{8}\omega_3\omega_4u^2-\frac{1}{2}\omega_4u-\frac{1}{4}\omega_2\omega_4{c_s}^2-\frac{1}{2}\omega_2v\omega_3\omega_4-\frac{1}{8}\omega_4^2{c_s}^2,$

$\alpha^{[\mu_3],t-2\delta_t}_{x,y}=-4+3\omega_2-\frac{7}{2}\omega_2\omega_3+\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+5\omega_3-\frac{1}{2}\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3^2-\omega_3^2+\frac{1}{2}\omega_3^2\omega_1-\frac{7}{2}\omega_3\omega_1+\omega_4-\omega_1^2+3\omega_1-\omega_3\omega_4-\omega_2^2+\omega_3\omega_1^2-\frac{1}{2}\omega_2\omega_4+\omega_2^2\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y}=\frac{1}{8}\omega_2\omega_4^2{c_s}^2-\frac{1}{4}\omega_2v\omega_4\omega_1+\omega_2v\omega_1-\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{2}\omega_4{c_s}^2-\frac{1}{8}\omega_2v^2\omega_3\omega_4-2\omega_2v+\frac{1}{8}\omega_3\omega_4^2u^2+\frac{3}{2}\omega_2v\omega_4-\frac{1}{8}\omega_2\omega_3\omega_4u^2+\frac{1}{2}\omega_4^2u-\frac{1}{8}\omega_3\omega_4\omega_1+\frac{1}{4}\omega_2\omega_4u+\frac{1}{8}\omega_2\omega_3\omega_4-\frac{3}{8}v^2\omega_4^2-\frac{1}{4}\omega_2\omega_4u^2+\frac{1}{4}\omega_4\omega_1-\frac{1}{4}\omega_2v\omega_4^2-\frac{1}{8}\omega_4^2u^2-\frac{1}{4}\omega_4{c_s}^2\omega_1+\frac{1}{8}v^2\omega_4^3-\frac{1}{4}\omega_3\omega_4{c_s}^2-\frac{1}{8}\omega_4^3u-\frac{1}{8}\omega_2\omega_4^2-\frac{1}{4}\omega_2\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{8}\omega_2\omega_4{c_s}^2\omega_1+\frac{5}{8}\omega_4^2+\frac{1}{8}\omega_2\omega_4\omega_1u+\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_4-\frac{1}{8}\omega_4^3+\frac{1}{8}\omega_4^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^3{c_s}^2-\frac{1}{8}\omega_4^2\omega_1u+\frac{1}{8}\omega_2v^2\omega_4^2+\frac{1}{8}\omega_3\omega_4-\frac{1}{8}\omega_4^2\omega_1+\frac{1}{8}v^2\omega_3\omega_4^2+\frac{1}{2}\omega_4u^2-\frac{1}{2}\omega_2^2v\omega_1+\omega_2^2v-\frac{1}{8}\omega_3\omega_4u^2-\frac{1}{8}\omega_3\omega_4^2+\frac{1}{8}v^2\omega_4^2\omega_1-\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{2}\omega_4u+\frac{1}{8}v^2\omega_3\omega_4\omega_1-\frac{1}{8}\omega_2\omega_4^2u-\frac{1}{4}\omega_2\omega_4{c_s}^2+\frac{1}{8}\omega_2\omega_4\omega_1u^2-\frac{1}{2}\omega_2^2v\omega_4+\frac{1}{8}\omega_3\omega_4\omega_1u^2-\frac{1}{2}\omega_4^2{c_s}^2,$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y}=-2+3\omega_2+\frac{1}{2}\omega_2^2\omega_4+\frac{1}{2}\omega_2^2\omega_1-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_2\omega_4^2-\frac{1}{4}\omega_4^2+\frac{3}{2}\omega_4+\frac{1}{4}\omega_2\omega_4\omega_1+\omega_1-\omega_2^2-\frac{3}{2}\omega_2\omega_1-2\omega_2\omega_4,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l}=-1+\frac{1}{2}\omega_2+\frac{1}{8}v^2\omega_3^2\omega_1+\frac{1}{4}\omega_2v^2\omega_3\omega_1+\frac{1}{4}\omega_2v\omega_1+\frac{1}{16}\omega_3^2\omega_4u^2-\frac{1}{4}\omega_2\omega_3\omega_1u+\frac{1}{4}\omega_4{c_s}^2+\frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\frac{1}{8}\omega_2\omega_3+\frac{1}{4}\omega_2v^2\omega_3\omega_4-\frac{1}{2}\omega_2v+\frac{1}{16}\omega_3\omega_4^2u^2+\frac{1}{8}\omega_2v\omega_4-\frac{3}{8}\omega_2v^2\omega_3-\frac{1}{8}\omega_3^2\omega_1u-\frac{3}{4}\omega_2\omega_3{c_s}^2+\frac{1}{16}\omega_4^2u+\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v^2\omega_4^2+\frac{1}{8}\omega_2\omega_4u^2+\frac{1}{4}\omega_3-\frac{1}{4}\omega_4\omega_1-\frac{1}{16}\omega_3\omega_4^2u+\frac{1}{16}\omega_4^2u^2+\frac{1}{8}\omega_3^2\omega_1u^2-\frac{1}{8}\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_2\omega_1u-\frac{29}{16}\omega_3\omega_4{c_s}^2+\omega_3u^2-\frac{1}{16}\omega_3^2\omega_4u+\frac{1}{4}\omega_4\omega_1u+\frac{1}{4}\omega_2\omega_3\omega_1u^2-\frac{1}{4}\omega_3\omega_4\omega_1u-\frac{3}{8}\omega_2\omega_3u^2+\frac{1}{4}\omega_2\omega_3\omega_4{c_s}^2+\frac{5}{16}\omega_3\omega_4^2{c_s}^2-\frac{1}{8}\omega_4^2-\frac{1}{4}\omega_3^2u^2-\frac{5}{8}\omega_3\omega_1u^2-\frac{1}{2}\omega_1u+\frac{5}{8}\omega_3\omega_4{c_s}^2\omega_1+\frac{5}{16}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}v^2\omega_3^2+\frac{3}{4}\omega_4+\frac{5}{16}\omega_3\omega_4u-\frac{1}{8}\omega_2v\omega_3^2+\frac{1}{2}\omega_1-\frac{1}{8}\omega_3\omega_4+\frac{1}{4}v^2\omega_3\omega_4^2-\frac{1}{4}\omega_4u^2+\frac{5}{8}\omega_2v\omega_3-\frac{1}{8}\omega_2v^2\omega_4-\frac{7}{16}\omega_3\omega_4u^2-\frac{1}{4}\omega_2v\omega_3\omega_1-\frac{11}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_4u+\frac{3}{8}v^2\omega_3\omega_4\omega_1+v^2\omega_3-\frac{1}{4}\omega_2\omega_1+2\omega_3{c_s}^2-\frac{5}{8}v^2\omega_3\omega_1+\frac{5}{8}\omega_3\omega_1u-\frac{1}{8}\omega_2v\omega_3\omega_4-\frac{1}{8}\omega_2\omega_4+\frac{1}{4}\omega_3\omega_4\omega_1u^2-\frac{1}{16}\omega_4^2{c_s}^2-\frac{5}{4}\omega_3{c_s}^2\omega_1,$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y+\delta_l}=-2+\omega_2-\frac{9}{8}\omega_2\omega_3+\frac{3}{8}\omega_3\omega_4\omega_1+\frac{3}{8}\omega_2\omega_3\omega_4+\frac{5}{2}\omega_3-\frac{3}{8}\omega_4\omega_1+\frac{1}{4}\omega_3^2\omega_4+\frac{1}{8}\omega_2\omega_3^2-\frac{1}{2}\omega_3^2+\frac{1}{2}\omega_2\omega_3\omega_1+\frac{1}{8}\omega_3^2\omega_1-\frac{1}{4}\omega_4^2-\frac{9}{8}\omega_3\omega_1+\frac{3}{2}\omega_4+\omega_1-\frac{7}{4}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_1-\frac{3}{8}\omega_2\omega_4,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=-1+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2v^2\omega_3\omega_1+\omega_2v\omega_1+\frac{1}{2}\omega_4\omega_1u^2+\frac{1}{4}\omega_4{c_s}^2-\frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\frac{1}{4}\omega_4{c_s}^2\omega_1^2-\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_2v+\frac{1}{4}\omega_2v^2\omega_3+\frac{1}{2}\omega_2\omega_3{c_s}^2-v^2\omega_4\omega_1+\frac{1}{8}\omega_3\omega_4\omega_1+\frac{3}{4}v^2\omega_4-\frac{1}{8}v^2\omega_4^2+\frac{1}{4}\omega_2\omega_4u^2+\frac{1}{4}\omega_3-\frac{3}{4}\omega_4\omega_1+\frac{1}{8}\omega_4^2u^2+\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{2}\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_2\omega_3\omega_1+\frac{1}{4}\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_1^2u^2-\frac{1}{4}\omega_3u^2+\frac{1}{4}\omega_4\omega_1u-\frac{1}{4}\omega_2\omega_3\omega_1u^2-\frac{1}{2}\omega_2v\omega_1^2+\frac{1}{4}\omega_2\omega_3u^2-\frac{1}{8}\omega_4^2+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{4}v^2\omega_3\omega_1^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\frac{3}{4}\omega_4+\frac{1}{4}\omega_2\omega_4\omega_1+\omega_1-\frac{1}{8}\omega_3\omega_4+\frac{1}{8}\omega_4^2\omega_1-\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_2v^2\omega_4-\frac{1}{8}\omega_4^2\omega_1u^2+\frac{1}{8}\omega_3\omega_4u^2+\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{8}v^2\omega_4^2\omega_1+\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_4u-\frac{1}{8}v^2\omega_3\omega_4\omega_1-\frac{1}{4}v^2\omega_3-\frac{1}{2}\omega_2\omega_1-\frac{1}{2}\omega_3{c_s}^2-\frac{1}{4}\omega_2\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_1^2-\frac{1}{4}\omega_2\omega_4-\frac{1}{8}\omega_3\omega_4\omega_1u^2,$

$\alpha^{[\mu_3],t-2\delta_t}_{x,y+\delta_l}=-2+\omega_2+\frac{1}{4}\omega_4\omega_1^2-\frac{7}{4}\omega_4\omega_1-\frac{1}{4}\omega_4^2+\frac{3}{2}\omega_4-\omega_1^2+\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1^2+3\omega_1+\frac{1}{4}\omega_4^2\omega_1-\frac{3}{2}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_4,$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -1 + \tfrac{1}{2}\omega_2 + \tfrac{1}{8}v^2\omega_3^2\omega_1 + \tfrac{1}{4}\omega_2v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2v\omega_1 - \tfrac{1}{16}\omega_3^2\omega_4u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1u + \tfrac{1}{4}\omega_4{c_s}^2 + \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_2\omega_3 + \tfrac{1}{4}\omega_2v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2v - \tfrac{1}{16}\omega_3\omega_4^2u^2 + \tfrac{1}{8}\omega_2v\omega_4 - \tfrac{3}{8}\omega_2v^2\omega_3 + \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{3}{4}\omega_2\omega_3{c_s}^2 + \tfrac{1}{16}\omega_4^2u + \tfrac{1}{8}v^2\omega_3^2\omega_4 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2{c_s}^2\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4u^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{16}\omega_3\omega_4^2u + \tfrac{1}{16}\omega_4^2u^2 + \tfrac{1}{8}\omega_3^2\omega_1u^2 - \tfrac{1}{8}\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_1u - \tfrac{13}{16}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \tfrac{1}{16}\omega_3^2\omega_4u + \tfrac{1}{4}\omega_2\omega_3\omega_1u^2 - \tfrac{3}{8}\omega_2\omega_3u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2 + \tfrac{1}{16}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{5}{8}\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_1u + \tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{16}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 + \tfrac{1}{4}\omega_4 + \tfrac{5}{16}\omega_3\omega_4u - \tfrac{1}{8}\omega_2v\omega_3^2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4^2 - \tfrac{1}{4}\omega_4u^2 + \tfrac{5}{8}\omega_2v\omega_3 - \tfrac{1}{8}\omega_2v^2\omega_4 + \tfrac{1}{16}\omega_3\omega_4u^2 - \tfrac{1}{4}\omega_2v\omega_3\omega_1 - \tfrac{7}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4u + \tfrac{1}{8}v^2\omega_3\omega_4\omega_1 + v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 + 2\omega_3{c_s}^2 - \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{5}{8}\omega_3\omega_1u - \tfrac{1}{8}\omega_2v\omega_3\omega_4 - \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{16}\omega_4^2{c_s}^2 - \tfrac{5}{4}\omega_3{c_s}^2\omega_1,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{1}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{8}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \omega_4 + \omega_1 - \tfrac{9}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3^2\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2v\omega_4\omega_1 + \tfrac{1}{4}\omega_2v^2\omega_3\omega_1 - \tfrac{3}{2}\omega_2v\omega_1 + \tfrac{5}{4}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_2v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2v\omega_3^2\omega_1 + \omega_2v - \tfrac{1}{4}\omega_2v\omega_4 - \tfrac{1}{4}\omega_2v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3{c_s}^2 + \tfrac{1}{2}v^2\omega_3^2\omega_4 - \tfrac{5}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1 + v^2\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_4u^2 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1 + \tfrac{1}{4}\omega_3 - \tfrac{3}{2}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{4}\omega_3^2\omega_1u^2 + \tfrac{1}{4}v^2\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 - \tfrac{5}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3\omega_1^2u^2 + \omega_3u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_2v\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3u^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 + \tfrac{1}{4}v^2\omega_3\omega_1^2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{5}{4}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_2v\omega_3\omega_4\omega_1 + 3\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 + \tfrac{5}{4}\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 + \tfrac{1}{4}\omega_2v\omega_3^2 + \omega_1 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_2v\omega_3\omega_1^2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4^2 - \omega_4u^2 - \tfrac{5}{4}\omega_2v\omega_3 - \tfrac{1}{4}\omega_2v^2\omega_4 - \tfrac{1}{4}\omega_4^2\omega_1u^2 + \tfrac{7}{4}\omega_2v\omega_3\omega_1 + \tfrac{1}{4}\omega_2v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{5}{2}v^2\omega_3\omega_4 + 3v^2\omega_3\omega_4\omega_1 + v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_1 + 2\omega_3{c_s}^2 - \tfrac{5}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1^2u^2 - \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}\omega_2v\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2 - \tfrac{1}{4}\omega_2\omega_4 - \tfrac{5}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x,y-\delta_l} = 3 - \tfrac{3}{2}\omega_2 + \tfrac{7}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2\omega_3\omega_1^2 - \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{15}{4}\omega_3\omega_4\omega_1 - \tfrac{3}{4}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{13}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{1}{2}\omega_4^2 + \tfrac{19}{4}\omega_3\omega_1 - \tfrac{11}{4}\omega_4 + \omega_1^2 - \tfrac{3}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 - 4\omega_1 + \tfrac{13}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_1 + 2\omega_2\omega_1 + \tfrac{1}{2}\omega_3^2\omega_4\omega_1 - \omega_3\omega_1^2 + \tfrac{3}{4}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -\tfrac{1}{8}\omega_4^3u^2 - \tfrac{1}{8}\omega_2\omega_4^2{c_s}^2 + \tfrac{1}{16}\omega_3^2\omega_4{c_s}^2\omega_1 + \tfrac{3}{4}\omega_2v\omega_4\omega_1 - \tfrac{1}{2}\omega_2v\omega_3^2\omega_4 - \tfrac{3}{2}\omega_2v\omega_1 + \omega_2^2v\omega_3 - \tfrac{1}{8}\omega_3\omega_4^3u - \tfrac{3}{16}\omega_3^2\omega_4u^2 + \tfrac{3}{8}\omega_4\omega_1u^2 - \tfrac{3}{4}\omega_4{c_s}^2 - \tfrac{1}{16}\omega_3^2\omega_4\omega_1u + \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_2v\omega_3^2\omega_1 + 3\omega_2v - \tfrac{13}{16}\omega_3\omega_4^2u^2 - \tfrac{11}{4}\omega_2v\omega_4 - \tfrac{1}{4}\omega_2\omega_3\omega_4u^2 - \tfrac{11}{16}\omega_4^2u - \tfrac{1}{4}\omega_2\omega_4u + \tfrac{3}{16}\omega_3\omega_4^2\omega_1u^2 + \tfrac{1}{8}\omega_3^2\omega_4^2{c_s}^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_4u^2 - \tfrac{3}{16}\omega_3\omega_4^2\omega_1u + \tfrac{3}{16}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u + \tfrac{1}{2}\omega_2v\omega_4^2 + \tfrac{13}{16}\omega_3\omega_4^2u + \tfrac{11}{16}\omega_4^2u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4u - \tfrac{1}{2}\omega_2^2v\omega_3\omega_1 + \tfrac{1}{8}\omega_2\omega_3\omega_4^2{c_s}^2 + \tfrac{3}{8}\omega_4{c_s}^2\omega_1 + \tfrac{1}{16}\omega_3^2\omega_4\omega_1u^2 + \tfrac{15}{16}\omega_3\omega_4{c_s}^2 + \tfrac{1}{8}\omega_4^3u - \tfrac{1}{2}\omega_2^2v\omega_3\omega_4 + \tfrac{3}{16}\omega_3^2\omega_4u - \tfrac{3}{8}\omega_4\omega_1u + \tfrac{1}{8}\omega_3\omega_4^3u^2 + \tfrac{7}{16}\omega_3\omega_4\omega_1u - \tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{13}{16}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_4\omega_1u - \tfrac{1}{8}\omega_3^2\omega_4^2u - \tfrac{3}{4}\omega_2v\omega_3\omega_4\omega_1 - \tfrac{7}{16}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{2}\omega_2v\omega_3\omega_4^2 - \tfrac{3}{16}\omega_3^2\omega_4{c_s}^2 - \tfrac{3}{16}\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{8}\omega_4^3{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2u^2 + \tfrac{3}{16}\omega_4^2\omega_1u - \tfrac{15}{16}\omega_3\omega_4u + \tfrac{3}{4}\omega_2v\omega_3^2 - \tfrac{1}{8}\omega_2\omega_3\omega_4^2u - \tfrac{3}{4}\omega_4u^2 + \tfrac{1}{2}\omega_2^2v\omega_1 - \tfrac{15}{4}\omega_2v\omega_3 - \omega_2^2v - \tfrac{3}{16}\omega_4^2\omega_1u^2 + \tfrac{15}{16}\omega_3\omega_4u^2 + \tfrac{7}{4}\omega_2v\omega_3\omega_1 + \tfrac{3}{4}\omega_4u + \tfrac{1}{8}\omega_2\omega_3\omega_4^2u^2 + \tfrac{1}{8}\omega_3\omega_4^3{c_s}^2 + \tfrac{1}{8}\omega_2\omega_4^2u + \tfrac{1}{4}\omega_2\omega_4{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1u^2 + \tfrac{1}{8}\omega_3^2\omega_4^2u^2 + \tfrac{1}{2}\omega_2^2v\omega_4 + \tfrac{13}{4}\omega_2v\omega_3\omega_4 - \tfrac{7}{16}\omega_3\omega_4\omega_1u^2 + \tfrac{11}{16}\omega_4^2{c_s}^2,$$

$$\alpha^{[\mu_3],t-3\delta_t}_{x-\delta_l,y} = 3 - 4\omega_2 + \tfrac{19}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_2^2\omega_4 - \tfrac{3}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{15}{4}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 - \tfrac{3}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_1 - \tfrac{1}{2}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{1}{2}\omega_4^2 + \tfrac{7}{4}\omega_3\omega_1 - \tfrac{11}{4}\omega_4 - \tfrac{3}{4}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2\omega_3^2\omega_4 - \tfrac{3}{2}\omega_1 + \tfrac{13}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4^2 + \omega_2^2 + 2\omega_2\omega_1 + \tfrac{13}{4}\omega_2\omega_4 - \omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -\tfrac{1}{8}\omega_4^3u^2 - \tfrac{1}{4}\omega_2\omega_4^2{c_s}^2 - \tfrac{1}{8}\omega_2v^2\omega_3\omega_4\omega_1 + \tfrac{17}{4}\omega_2v\omega_4\omega_1 - 4\omega_2v\omega_1 + \omega_4\omega_1u^2 - \tfrac{3}{4}\omega_4{c_s}^2 + \tfrac{1}{8}\omega_3\omega_4\omega_1^2u^2 - \tfrac{1}{4}\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_4^3{c_s}^2\omega_1 + \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{8}\omega_2v^2\omega_3\omega_4 - \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u^2 + \tfrac{1}{8}\omega_2v^2\omega_4^2\omega_1 + 3\omega_2v + \tfrac{1}{8}\omega_4^2\omega_1^2u^2 - \tfrac{1}{8}\omega_3\omega_4^2u^2 - \tfrac{7}{2}\omega_2v\omega_4 + \tfrac{1}{8}\omega_2\omega_4^2\omega_1u^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4u^2 - \omega_4^2u + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4^2\omega_1 - \tfrac{1}{4}\omega_2\omega_4u + \tfrac{1}{8}\omega_3\omega_4^2\omega_1u^2 - \tfrac{1}{8}\omega_2\omega_3\omega_4 - \tfrac{1}{8}\omega_2\omega_4^2\omega_1 + \tfrac{1}{4}\omega_2\omega_4^2{c_s}^2\omega_1 + \tfrac{3}{8}v^2\omega_4^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_4u^2 + \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{3}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_2v\omega_4^2 + \tfrac{5}{8}\omega_4^2u^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1^2 + \omega_4{c_s}^2\omega_1 - \tfrac{1}{8}v^2\omega_4^3 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_4^3u + \tfrac{1}{8}\omega_4^3\omega_1u^2 - \tfrac{3}{4}\omega_2v\omega_4\omega_1^2 - \tfrac{1}{4}\omega_4\omega_1u + \omega_2v\omega_1^2 + \tfrac{1}{8}\omega_2\omega_4^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_2\omega_4{c_s}^2\omega_1 - \tfrac{5}{8}\omega_4^2 + \tfrac{1}{8}v^2\omega_4^3\omega_1 - \omega_2^2v\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{8}\omega_4^3 + \tfrac{1}{8}v^2\omega_3\omega_4\omega_1^2 - \tfrac{5}{4}\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{4}\omega_4^3{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2u^2 + \tfrac{1}{4}\omega_4^2\omega_1u - \tfrac{1}{8}\omega_2v^2\omega_4^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{4}\omega_4^2\omega_1 + \tfrac{1}{8}v^2\omega_4^2\omega_1^2 - \tfrac{1}{8}v^2\omega_3\omega_4^2 - \tfrac{3}{4}\omega_4u^2 + \omega_2^2v\omega_1 - \omega_2^2v - \tfrac{3}{4}\omega_4^2\omega_1u^2 + \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1 + \tfrac{1}{8}\omega_3\omega_4^2 - \tfrac{1}{8}\omega_4^2\omega_1^2 - \tfrac{1}{8}\omega_3\omega_4^2\omega_1 - \tfrac{1}{2}v^2\omega_4^2\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{3}{4}\omega_4u - \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2{c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_2\omega_4^2u + \tfrac{1}{4}\omega_2\omega_4{c_s}^2 - \tfrac{1}{4}\omega_2\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1^2u^2 + \omega_2^2v\omega_4 - \tfrac{3}{4}\omega_2v\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1^2 - \tfrac{1}{8}\omega_4^3\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \omega_4^2{c_s}^2,$$

$$\alpha_{x,y}^{[\mu_3],t-3\delta_t} = 3 - 4\omega_2 - \omega_2^2\omega_4 - \tfrac{3}{4}\omega_4\omega_1^2 - \omega_2^2\omega_1 + \tfrac{3}{4}\omega_2\omega_4^2\omega_1 + \tfrac{17}{4}\omega_4\omega_1 + \omega_2^2\omega_4\omega_1 - \tfrac{3}{4}\omega_2\omega_4^2 + \tfrac{3}{4}\omega_4^2 - \tfrac{7}{2}\omega_4 + \omega_1^2 - \tfrac{21}{4}\omega_2\omega_4\omega_1 - \omega_2\omega_1^2 - 4\omega_1 - \tfrac{3}{4}\omega_4^2\omega_1 + \omega_2^2 + \tfrac{3}{4}\omega_2\omega_4\omega_1^2 + 5\omega_2\omega_1 + \tfrac{9}{2}\omega_2\omega_4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -\tfrac{1}{8}\omega_2\omega_4^2{c_s}^2 + \tfrac{1}{16}\omega_3^2\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}\omega_2 v\omega_4\omega_1 - \tfrac{3}{8}\omega_2 v\omega_3^2\omega_4 - \tfrac{3}{2}\omega_2 v\omega_1 + \omega_2^2 v\omega_3 - \tfrac{1}{8}\omega_3\omega_4^3 u - \tfrac{1}{16}\omega_3^2\omega_4 u^2 + \tfrac{3}{8}\omega_4\omega_1 u^2 - \tfrac{3}{4}\omega_4{c_s}^2 + \tfrac{1}{16}\omega_3^2\omega_4\omega_1 u + \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2 v\omega_3^2\omega_1 + 3\omega_2 v + \tfrac{7}{16}\omega_3\omega_4^2 u^2 - \tfrac{9}{4}\omega_2 v\omega_4 - \tfrac{1}{8}\omega_2\omega_3\omega_4 u^2 - \tfrac{11}{16}\omega_4^2 u + \tfrac{1}{8}v^2\omega_3^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{16}\omega_3\omega_4^2\omega_1 u^2 - \tfrac{1}{8}\omega_2\omega_3\omega_4 - \tfrac{1}{8}\omega_3^2\omega_4^2{c_s}^2 + \tfrac{1}{2}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{1}{16}\omega_3\omega_4^2\omega_1 u - \tfrac{1}{16}\omega_3\omega_4^2{c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1 u - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{3}{8}\omega_2 v\omega_4^2 + \tfrac{13}{16}\omega_3\omega_4^2 u + \tfrac{3}{16}\omega_4^2 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4 u - \tfrac{1}{2}\omega_2^2 v\omega_3\omega_1 - \tfrac{1}{8}\omega_2\omega_3\omega_4^2{c_s}^2 + \tfrac{3}{8}\omega_4{c_s}^2\omega_1 - \tfrac{1}{8}v^2\omega_4^3 + \tfrac{1}{16}\omega_3^2\omega_4\omega_1 u^2 - \tfrac{1}{16}\omega_3\omega_4{c_s}^2 + \tfrac{1}{8}\omega_4^3 u - \tfrac{1}{2}\omega_2^2 v\omega_3\omega_4 + \tfrac{3}{16}\omega_3^2\omega_4 u + \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{8}\omega_3\omega_4^3 u^2 + \tfrac{1}{8}\omega_2\omega_4^2 - \tfrac{3}{16}\omega_3\omega_4\omega_1 u + \tfrac{7}{16}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1 - \tfrac{5}{8}\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u - \tfrac{1}{8}\omega_3^2\omega_4^2 u - \tfrac{1}{2}\omega_2 v\omega_3\omega_4\omega_1 - \tfrac{3}{16}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{3}{8}\omega_2 v\omega_3\omega_4^2 + \tfrac{1}{16}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{2}\omega_4 + \tfrac{1}{8}\omega_4^3 - \tfrac{3}{16}\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{8}\omega_4^3{c_s}^2 + \tfrac{1}{16}\omega_4^2\omega_1 u - \tfrac{15}{16}\omega_3\omega_4 u + \tfrac{3}{4}\omega_2 v\omega_3^2 - \tfrac{1}{8}\omega_2 v^2\omega_4^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_4^2\omega_1 - \tfrac{1}{8}\omega_2\omega_3\omega_4^2 u - \tfrac{3}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_2^2 v\omega_1 - \tfrac{15}{4}\omega_2 v\omega_3 - \omega_2^2 v - \tfrac{1}{16}\omega_4^2\omega_1 u^2 + \tfrac{7}{16}\omega_3\omega_4 u^2 + \tfrac{7}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}\omega_3\omega_4^2 - \tfrac{1}{8}v^2\omega_4^2\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}\omega_4 u - \tfrac{1}{8}\omega_2\omega_3\omega_4^2 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{8}\omega_3\omega_4^3{c_s}^2 + \tfrac{1}{8}\omega_2\omega_4^2 u + \tfrac{1}{4}\omega_2\omega_4{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u^2 - \tfrac{1}{8}\omega_3^2\omega_4^2 u^2 + \tfrac{1}{2}\omega_2^2 v\omega_4 + \tfrac{21}{8}\omega_2 v\omega_3\omega_4 - \tfrac{5}{16}\omega_3\omega_4\omega_1 u^2 + \tfrac{11}{16}\omega_4^2{c_s}^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-3\delta_t} = 3 - 4\omega_2 + \tfrac{19}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_2^2\omega_4 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{25}{8}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4 - \tfrac{3}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_1 - \tfrac{3}{8}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{3}{8}\omega_4^2 + \tfrac{7}{4}\omega_3\omega_1 - \tfrac{9}{4}\omega_4 - \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2^2\omega_3\omega_1 + \tfrac{3}{8}\omega_2\omega_3^2\omega_4 - \tfrac{3}{2}\omega_1 + \tfrac{21}{8}\omega_3\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \tfrac{3}{8}\omega_3\omega_4^2 + \omega_2^2 + 2\omega_2\omega_1 + \tfrac{11}{4}\omega_2\omega_4 - \omega_2^2\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2 v^2\omega_3\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3^2\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2 v\omega_4\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{3}{2}\omega_2 v\omega_1 - \tfrac{1}{2}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3 + \tfrac{3}{8}v^2\omega_3^2\omega_4\omega_1 - \tfrac{1}{2}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2 v\omega_3^2\omega_1 + \omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 + \tfrac{1}{4}\omega_2 v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_3{c_s}^2 - \tfrac{1}{8}\omega_4^2 u - \tfrac{3}{8}v^2\omega_3^2\omega_4 + \tfrac{5}{4}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1 - v^2\omega_4 + \tfrac{3}{8}v^2\omega_3\omega_4^2\omega_1 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{4}v^2\omega_4^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_4 u^2 + \tfrac{3}{8}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 + \tfrac{1}{8}\omega_3\omega_4^2 u - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{4}\omega_3^2\omega_1 u^2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 + \tfrac{3}{4}\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 + \tfrac{17}{8}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_1^2 u^2 - \omega_3 u^2 + \tfrac{1}{8}\omega_3^2\omega_4 u - \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_2 v\omega_1^2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{3}{8}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 - \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{5}{4}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_4\omega_1 - \tfrac{19}{8}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2{c_s}^2\omega_1 + \tfrac{5}{8}\omega_3\omega_4 u + \tfrac{1}{4}\omega_2 v\omega_3^2 - \omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v\omega_3\omega_1^2 - \tfrac{1}{8}\omega_4^2\omega_1 - \tfrac{3}{8}v^2\omega_3\omega_4^2 + \tfrac{1}{2}\omega_4 u^2 - \tfrac{5}{4}\omega_2 v\omega_3 + \tfrac{1}{4}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_4^2\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{7}{4}\omega_2 v\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4^2\omega_1 + 2v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u - \tfrac{9}{4}v^2\omega_3\omega_4\omega_1 - v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 - 2\omega_3{c_s}^2 + \tfrac{5}{4}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_4^2{c_s}^2 + \tfrac{5}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-3\delta_t} = 3 - \tfrac{3}{2}\omega_2 + \tfrac{7}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2\omega_3\omega_1^2 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{23}{8}\omega_3\omega_4\omega_1 - \tfrac{3}{4}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{5}{2}\omega_4\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{3}{8}\omega_4^2 + \tfrac{19}{4}\omega_3\omega_1 - \tfrac{9}{4}\omega_4 + \omega_1^2 - \tfrac{3}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 - 4\omega_1 + \tfrac{21}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \tfrac{3}{8}\omega_3\omega_4^2 + \tfrac{3}{8}\omega_3\omega_4^2\omega_1 + 2\omega_2\omega_1 + \tfrac{3}{8}\omega_3^2\omega_4\omega_1 - \omega_3\omega_1^2 + \tfrac{3}{4}\omega_2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = \tfrac{1}{8}\omega_4^3 u^2 + \tfrac{1}{4}\omega_2\omega_4^2{c_s}^2 + \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4\omega_1 - \tfrac{21}{4}\omega_2 v\omega_4\omega_1 + \tfrac{7}{8}\omega_2 v\omega_3^2\omega_4 + 5\omega_2 v\omega_1 - \omega_2^2 v\omega_3 + \tfrac{1}{4}\omega_3\omega_4^3 u + \tfrac{1}{8}\omega_3^2\omega_4 u^2 - \tfrac{5}{4}\omega_4\omega_1 u^2 + \omega_4{c_s}^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1^2 u^2 + \tfrac{1}{4}\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{8}v^2\omega_3^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_1 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1 u^2 + \omega_2 v\omega_3^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_4^2\omega_1 - 4\omega_2 v - \tfrac{1}{8}\omega_4^2\omega_1^2 u^2 + \tfrac{1}{4}\omega_3\omega_4^2 u^2 + \tfrac{9}{2}\omega_2 v\omega_4 - \tfrac{1}{8}\omega_2\omega_4^2\omega_1 u^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_4^2 u - \tfrac{1}{8}v^2\omega_3^2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{4}\omega_3\omega_4^2\omega_1 u^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4^2\omega_1 - \tfrac{1}{4}\omega_2\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4^2 - \tfrac{1}{4}\omega_2\omega_4 u^2 + \tfrac{1}{4}\omega_3\omega_4^2\omega_1 u - \tfrac{7}{8}\omega_2 v\omega_3^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2\omega_1 + \tfrac{3}{4}\omega_4\omega_1 - \tfrac{7}{8}\omega_2 v\omega_4^2 - \tfrac{3}{2}\omega_3\omega_4^2 u - \tfrac{3}{4}\omega_4^2 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_4\omega_1^2 + \omega_2^2 v\omega_3\omega_1 - \tfrac{5}{4}\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}v^2\omega_4^3 - \tfrac{1}{8}\omega_3^2\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4^3 u + \omega_2^2 v\omega_3\omega_4 - \tfrac{1}{8}\omega_4^3\omega_1 u^2 + \tfrac{3}{4}\omega_2 v\omega_4\omega_1^2 - \tfrac{7}{8}\omega_2 v\omega_3\omega_4^2\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1 u - \omega_2 v\omega_1^2 - \tfrac{1}{8}\omega_2\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{4}\omega_2\omega_4{c_s}^2\omega_1 + \tfrac{5}{8}\omega_4^2 - \tfrac{1}{8}v^2\omega_4^3\omega_1 + \omega_2^2 v\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4^2 u + \tfrac{49}{8}\omega_2 v\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{7}{8}\omega_2 v\omega_3\omega_4^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{8}\omega_4^3 + \tfrac{1}{8}v^2\omega_3\omega_4\omega_1^2 + \tfrac{3}{2}\omega_4^2{c_s}^2\omega_1 + \tfrac{1}{4}\omega_4^3{c_s}^2 + \tfrac{1}{8}\omega_2\omega_4^2 u^2 - \omega_2^2 v\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2\omega_1 u + \tfrac{5}{4}\omega_3\omega_4 u - \omega_2 v\omega_3^2 + \tfrac{1}{8}\omega_2 v^2\omega_4^2 + \tfrac{1}{8}\omega_3\omega_4 + \omega_2 v\omega_3\omega_1^2 - \tfrac{3}{4}\omega_4^2\omega_1 - \tfrac{1}{8}v^2\omega_4^2\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4^2 u + \omega_4 u^2 - \omega_2^2 v\omega_1 + 5\omega_2 v\omega_3 + \omega_2^2 v + \tfrac{7}{8}\omega_4^2\omega_1 u^2 - \tfrac{3}{4}\omega_3\omega_4 u^2 - \tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1 - 6\omega_2 v\omega_3\omega_1 - \tfrac{1}{8}\omega_3\omega_4^2 + \tfrac{1}{8}\omega_4^2\omega_1^2 + \tfrac{1}{8}\omega_3\omega_4^2\omega_1 + \tfrac{5}{8}v^2\omega_4^2\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4 - \omega_4 u - \tfrac{5}{8}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2{c_s}^2\omega_1^2 - \tfrac{1}{4}\omega_2\omega_4^2 u - \tfrac{1}{4}\omega_2\omega_4{c_s}^2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1^2 u^2 - \omega_2^2 v\omega_4 - \tfrac{43}{8}\omega_2 v\omega_3\omega_4 + \tfrac{7}{8}\omega_2 v\omega_4^2\omega_1 - \tfrac{3}{4}\omega_2 v\omega_3\omega_4\omega_1^2 + \tfrac{1}{8}\omega_4^3\omega_1 + \tfrac{7}{8}\omega_3\omega_4\omega_1 u^2 - \tfrac{5}{4}\omega_4^2{c_s}^2,$$

$$\alpha_{x,y}^{[\mu_3],t-4\delta_t} = -4 + 5\omega_2 + \tfrac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 - 6\omega_2\omega_3 + \omega_2^2\omega_4 - \omega_2\omega_3\omega_1^2 + \tfrac{3}{4}\omega_4\omega_1^2 + \tfrac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 + \tfrac{49}{8}\omega_3\omega_4\omega_1 - \tfrac{7}{8}\omega_2\omega_3\omega_4^2 + \omega_2^2\omega_1 + \tfrac{51}{8}\omega_2\omega_3\omega_4 - \tfrac{7}{8}\omega_2\omega_4^2\omega_1 + 5\omega_3 - \tfrac{21}{4}\omega_4\omega_1 + \tfrac{7}{8}\omega_3^2\omega_4 - \tfrac{3}{4}\omega_3\omega_4\omega_1^2 + \omega_2^2\omega_3\omega_4\omega_1 + \omega_2\omega_3^2 - \omega_3^2 + 7\omega_2\omega_3\omega_1 - \omega_2^2\omega_4\omega_1 + \omega_3^2\omega_1 + \tfrac{7}{8}\omega_2\omega_4^2 - \omega_2^2\omega_3\omega_4 - \omega_2\omega_3^2\omega_1 - \tfrac{7}{8}\omega_4^2 - 6\omega_3\omega_1 + \tfrac{9}{2}\omega_4 - \omega_1^2 + \tfrac{25}{4}\omega_2\omega_4\omega_1 -$$

$\omega_2^2\omega_3\omega_1 - \frac{7}{8}\omega_2\omega_3^2\omega_4 + \omega_2\omega_1^2 + 5\omega_1 - \frac{43}{8}\omega_3\omega_4 + \frac{7}{8}\omega_4^2\omega_1 + \frac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 - \frac{57}{8}\omega_2\omega_3\omega_4\omega_1 + \frac{7}{8}\omega_3\omega_4^2 - \frac{7}{8}\omega_3\omega_4^2\omega_1 - \omega_2^2 - \frac{3}{4}\omega_2\omega_4\omega_1^2 - 6\omega_2\omega_1 - \frac{7}{8}\omega_3^2\omega_4\omega_1 + \omega_3\omega_1^2 - \frac{11}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$

4.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4u^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4u^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3{c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 + \frac{1}{4}\omega_2v\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 - \frac{1}{2}\omega_2v + \frac{1}{4}\omega_2v\omega_4 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{4}\omega_3 - \frac{1}{8}\omega_4\omega_1 - \frac{1}{8}\omega_4^2u^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4^2 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{4}\omega_4u^2 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_2\omega_4 + \frac{1}{4}\omega_3{c_s}^2\omega_1,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_2\omega_3 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 + \frac{1}{4}\omega_2v\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 - \frac{1}{2}\omega_2v + \frac{1}{4}\omega_2v\omega_4 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{4}\omega_3 - \frac{1}{8}\omega_4\omega_1 - \frac{1}{8}\omega_4^2u^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4^2 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{4}\omega_4u^2 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_2\omega_4 + \frac{1}{4}\omega_3{c_s}^2\omega_1,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_3^2{c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_3\omega_1u^2 - \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3{c_s}^2 - \frac{1}{2}v^2\omega_3\omega_1 - \omega_3{c_s}^2\omega_1,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_1 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \frac{1}{2}\omega_4\omega_1u^2 - \frac{1}{2}v^2\omega_4\omega_1 + \frac{1}{2}v^2\omega_4 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3u^2 + \frac{1}{2}\omega_3\omega_1u^2 - \frac{1}{2}\omega_3\omega_1 + \frac{1}{2}\omega_4 - \omega_1^2 + 3\omega_1 - \frac{1}{2}\omega_4u^2 - \frac{1}{2}v^2\omega_3 - \omega_3{c_s}^2 + \frac{1}{2}v^2\omega_3\omega_1 + \omega_3{c_s}^2\omega_1,$

$\alpha_{x,y}^{[\mu_4],t-\delta_t} = 2 - 2\omega_2 + \omega_1^2 - 2\omega_1 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}\omega_3^2{c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_3\omega_1u^2 - \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3{c_s}^2 - \frac{1}{2}v^2\omega_3\omega_1 - \omega_3{c_s}^2\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_1 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{4}\omega_2v\omega_1 - \frac{1}{4}\omega_4{c_s}^2 + \frac{1}{2}\omega_2v - \frac{1}{4}\omega_2v\omega_4 - \frac{1}{8}\omega_4^2u + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{4}\omega_3 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{8}\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4\omega_1u - \frac{1}{8}\omega_4^2 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_4u - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_2\omega_4 + \frac{1}{8}\omega_4^2{c_s}^2 + \frac{1}{4}\omega_3{c_s}^2\omega_1,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3^2 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & -1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v\omega_4 - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}\omega_3 - \\ & \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 + \\ & \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{8}\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{4}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 u^2 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 + \\ & \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_3\omega_4^2 u^2 - \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \\ & \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \\ & \omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \\ & \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \\ & \tfrac{1}{2}\omega_4 u^2 - \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{11}{8}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2\omega_3^2 {c_s}^2 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \\ & \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u + \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 2 - \omega_2 + \tfrac{1}{2}\omega_2 v\omega_4\omega_1 - \tfrac{3}{2}\omega_2 v\omega_1 + \tfrac{3}{4}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1^2 + \omega_2 v - \tfrac{1}{2}\omega_2 v\omega_4 - \tfrac{3}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1 + \\ & \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}\omega_3 + \tfrac{7}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 u^2 + \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{2}\omega_2 v\omega_1^2 + \tfrac{1}{4}\omega_4^2 + \\ & \tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2 + \tfrac{1}{4}v^2\omega_3\omega_1^2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 - \tfrac{3}{2}\omega_4 + \omega_1^2 - \tfrac{1}{2}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 - 3\omega_1 + \\ & \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2\omega_1 - \tfrac{1}{2}\omega_4 u^2 - \tfrac{1}{4}\omega_4^2\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_1 + \\ & \omega_3 {c_s}^2 - \tfrac{3}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 - \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{2}\omega_2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 3\omega_1 + \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 u^2 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 + \\ & \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_3\omega_4^2 u^2 - \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 + \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \\ & \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \\ & \omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \\ & \tfrac{3}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \\ & \tfrac{1}{2}\omega_4 u^2 - \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{11}{8}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_2\omega_3^2 {c_s}^2 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \\ & \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{5}{8}\omega_3\omega_1 u + \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = {} & 1 + \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2 - \omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2^2 v^2\omega_4 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2^2\omega_4 + \\ & \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3\omega_4 u^2 + \tfrac{1}{8}\omega_4^2 u - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{4}\omega_2\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{3}{4}\omega_2\omega_4 u^2 - \\ & \tfrac{1}{4}\omega_2^2\omega_3 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 + \omega_2\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \\ & \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_2^2\omega_4 u^2 + \tfrac{1}{8}\omega_2\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u + \\ & \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_2^2\omega_1 u - \tfrac{5}{4}\omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{8}\omega_2\omega_4^2 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4 u^2 - \omega_2 v^2\omega_4 - \\ & \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2 u - \tfrac{1}{4}v^2\omega_3\omega_1 - \\ & \tfrac{1}{2}\omega_2^2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_2\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2^2 v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_4 + \tfrac{1}{4}\omega_2^2\omega_3 - \tfrac{1}{8}\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x-\delta_l,y}^{[\mu_4],t-2\delta_t} = -2 + 3\omega_2 + \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_4^2 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \omega_1 - \omega_2^2 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{5}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x,y}^{[\mu_1],t-2\delta_t} = {} & 2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - \omega_3^2 {c_s}^2\omega_1 + \omega_3^2 {c_s}^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_1 u^2 + \omega_3\omega_4 {c_s}^2 - \omega_3\omega_1^2 u^2 - 2\omega_3 u^2 - \\ & 2\omega_3 {c_s}^2\omega_1^2 - v^2\omega_3\omega_1^2 + \tfrac{1}{2}\omega_3^2 u^2 + 3\omega_3\omega_1 u^2 - \omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_3\omega_1 + \tfrac{1}{2}v^2\omega_3^2 - \tfrac{1}{2}\omega_4 + \omega_1^2 - 3\omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 + \\ & \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 - 2v^2\omega_3 - 4\omega_3 {c_s}^2 + 3v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 + 6\omega_3 {c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4 + 3\omega_2 - \tfrac{7}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3\omega_4 + 5\omega_3 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3^2 - \omega_3^2 + \tfrac{1}{2}\omega_3^2\omega_1 - \tfrac{7}{2}\omega_3\omega_1 + \omega_4 - \omega_1^2 + 3\omega_1 - \omega_3\omega_4 - \omega_2^2 + \omega_3\omega_1^2 - \tfrac{1}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{8}\omega_2\omega_4^2{c_s}^2 - \omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2^2 v^2\omega_4 + \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4{c_s}^2 + \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2^2\omega_4 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3\omega_4 u^2 + \tfrac{1}{8}\omega_4^2 u - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_4 u - \tfrac{1}{4}\omega_2\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{3}{4}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_2^2\omega_3 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_1 - \omega_2\omega_1 u - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_2^2\omega_4 u^2 + \tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}\omega_3\omega_1 + \tfrac{1}{2}\omega_2^2\omega_1 u - \tfrac{5}{4}\omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{8}\omega_2\omega_4^2 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4 u^2 - \omega_2 v^2\omega_4 - \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2 u - \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_2^2\omega_3{c_s}^2 - \tfrac{1}{4}\omega_2\omega_4{c_s}^2 - \tfrac{1}{8}\omega_2\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2^2 v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_4 + \tfrac{1}{4}\omega_2^2\omega_3 - \tfrac{1}{8}\omega_4^2{c_s}^2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t} = -2 + 3\omega_2 + \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_4^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_2\omega_4\omega_1 + \omega_1 - \omega_2^2 - \tfrac{3}{2}\omega_2\omega_1 - 2\omega_2\omega_4,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u + \tfrac{1}{4}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v - \tfrac{3}{16}\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3{c_s}^2 + \tfrac{1}{16}\omega_4^2 u - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 - \tfrac{1}{16}\omega_3\omega_4^2 u + \tfrac{1}{16}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 - \tfrac{1}{8}\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{19}{16}\omega_3\omega_4{c_s}^2 - \omega_3 u^2 - \tfrac{1}{16}\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{3}{16}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{16}\omega_3\omega_4 u - \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{17}{16}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}\omega_2\omega_3^2{c_s}^2 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3{c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{16}\omega_4^2{c_s}^2 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 2 - \omega_2 - \tfrac{1}{2}\omega_2 v\omega_4\omega_1 + \tfrac{3}{2}\omega_2 v\omega_1 + \tfrac{1}{2}\omega_4{c_s}^2 + \tfrac{1}{4}\omega_4{c_s}^2\omega_1^2 - \tfrac{1}{4}\omega_4\omega_1^2 - \omega_2 v + \tfrac{1}{2}\omega_2 v\omega_4 + \tfrac{1}{4}\omega_4^2 u - \tfrac{3}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}\omega_3 + \tfrac{7}{4}\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{3}{4}\omega_4{c_s}^2\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_2 v\omega_1^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 + \tfrac{1}{4}v^2\omega_3\omega_1^2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 - \tfrac{3}{2}\omega_4 + \omega_1^2 - \tfrac{1}{2}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 + \tfrac{1}{4}\omega_4^2{c_s}^2\omega_1 - 3\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2\omega_1 - \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_4 u + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_1 + \omega_3{c_s}^2 - \tfrac{3}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{2}\omega_2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_4^2{c_s}^2 - \tfrac{3}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{7}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \tfrac{3}{2}\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 3\omega_1 + \tfrac{1}{4}\omega_4^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_2\omega_4,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u + \tfrac{1}{4}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v - \tfrac{3}{16}\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{5}{8}\omega_2 v^2\omega_3 + \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{3}{8}\omega_2\omega_3\omega_4 u^2 + \tfrac{5}{4}\omega_2\omega_3{c_s}^2 + \tfrac{1}{16}\omega_4^2 u - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_2 v^2\omega_3^2 - \tfrac{1}{16}\omega_3\omega_4^2 u + \tfrac{1}{16}\omega_4^2 u^2 - \tfrac{1}{8}\omega_2\omega_3^2 u^2 - \tfrac{1}{8}\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{19}{16}\omega_3\omega_4{c_s}^2 - \omega_3 u^2 - \tfrac{1}{16}\omega_3^2\omega_4 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{5}{8}\omega_2\omega_3 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2 - \tfrac{3}{16}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{3}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{3}{16}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{16}\omega_3\omega_4 u - \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 - \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{17}{16}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_4 u - \tfrac{1}{4}\omega_2\omega_3^2{c_s}^2 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3{c_s}^2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{16}\omega_4^2{c_s}^2 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{1}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{8}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \omega_4 + \omega_1 - \tfrac{9}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} =$$
$$-2+\omega_2-\tfrac{1}{4}\omega_2 v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2 v\omega_4\omega_1+\tfrac{7}{4}\omega_2 v^2\omega_3\omega_1+\tfrac{3}{2}\omega_2 v\omega_1+\tfrac{1}{2}\omega_3^2\omega_4 u^2-\tfrac{5}{4}\omega_4\omega_1 u^2-\tfrac{1}{2}\omega_3\omega_4\omega_1^2 u^2+\tfrac{7}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{1}{4}\omega_2 v^2\omega_3\omega_4-\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 u^2+\tfrac{1}{4}\omega_2 v\omega_3^2\omega_1-\omega_2 v+\tfrac{1}{2}\omega_3\omega_4^2 u^2+\tfrac{1}{4}\omega_2 v\omega_4-\tfrac{5}{4}\omega_2 v^2\omega_3+\tfrac{3}{4}\omega_2\omega_3\omega_4 u^2-\tfrac{5}{2}\omega_2\omega_3{c_s}^2+\tfrac{5}{4}v^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_3^2{c_s}^2\omega_1-v^2\omega_4-\tfrac{1}{2}\omega_3\omega_4^2\omega_1 u^2-\omega_3^2{c_s}^2+\tfrac{1}{4}v^2\omega_4^2-\omega_2\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_4 u^2-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{1}{2}\omega_3-\tfrac{7}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_2 v^2\omega_3^2-\tfrac{1}{4}\omega_4^2 u^2+\tfrac{1}{2}\omega_3^2\omega_1 u^2-\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{4}\omega_2\omega_3^2 u^2-\omega_2\omega_3{c_s}^2\omega_1^2-\tfrac{1}{2}\omega_3^2\omega_4\omega_1 u^2-3\omega_3\omega_4{c_s}^2+\tfrac{3}{4}\omega_3\omega_1^2 u^2+2\omega_3 u^2-\tfrac{1}{2}\omega_2 v^2\omega_3\omega_1^2+\tfrac{7}{4}\omega_2\omega_3\omega_1 u^2-\tfrac{1}{2}\omega_2 v\omega_1^2-\tfrac{5}{4}\omega_2\omega_3 u^2+\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_4^2+\tfrac{3}{2}\omega_3{c_s}^2\omega_1^2+\tfrac{3}{4}v^2\omega_3\omega_1^2-\tfrac{1}{2}\omega_3^2 u^2-\tfrac{11}{4}\omega_3\omega_1 u^2-\tfrac{1}{2}\omega_2\omega_3\omega_1^2 u^2+\tfrac{1}{4}\omega_2 v\omega_3\omega_4\omega_1+\tfrac{7}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{3}{4}\omega_3\omega_1+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v^2\omega_3^2+\tfrac{3}{2}\omega_4-\omega_1^2+\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_1^2-\tfrac{1}{4}\omega_2\omega_3^2\omega_1 u^2-\tfrac{1}{4}\omega_2 v\omega_3^2+3\omega_1-$$

$$\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_2v\omega_3\omega_1^2+\frac{1}{4}\omega_4^2\omega_1+\omega_4u^2+\frac{5}{4}\omega_2v\omega_3+\frac{1}{4}\omega_2v^2\omega_4+\frac{1}{4}\omega_4^2\omega_1u^2-\frac{11}{4}\omega_3\omega_4u^2-\frac{7}{4}\omega_2v\omega_3\omega_1-\frac{1}{4}\omega_2v^2\omega_4\omega_1-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}v^2\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_3\omega_4\omega_1+2v^2\omega_3-\frac{1}{2}\omega_2\omega_3^2{c_s}^2\omega_1-\frac{3}{2}\omega_2\omega_1+4\omega_3{c_s}^2-\frac{11}{4}v^2\omega_3\omega_1+\frac{1}{4}\omega_2\omega_4\omega_1u^2+\frac{1}{4}\omega_4\omega_1^2u^2+\frac{1}{4}\omega_3\omega_1^2-\frac{1}{4}\omega_2v\omega_3\omega_4-\frac{1}{4}\omega_2v^2\omega_3^2\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{2}\omega_2\omega_4+\frac{13}{4}\omega_3\omega_4\omega_1u^2-\frac{11}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-3\delta_t}=3-\frac{3}{2}\omega_2+\frac{7}{4}\omega_2\omega_3+\frac{1}{2}\omega_2\omega_3\omega_1^2-\frac{1}{2}\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1-\frac{3}{4}\omega_2\omega_3\omega_4-\frac{15}{4}\omega_3+\frac{13}{4}\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{1}{4}\omega_2\omega_3^2+\frac{3}{4}\omega_3^2-\frac{9}{4}\omega_2\omega_3\omega_1-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{4}\omega_2\omega_3^2\omega_1+\frac{1}{2}\omega_4^2+\frac{19}{4}\omega_3\omega_1-\frac{11}{4}\omega_4+\omega_1^2-\frac{3}{4}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1^2-4\omega_1+\frac{13}{4}\omega_3\omega_4-\frac{1}{2}\omega_4^2\omega_1+\frac{3}{4}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2\omega_1+\frac{1}{2}\omega_3^2\omega_4\omega_1-\omega_3\omega_1^2+\frac{3}{4}\omega_2\omega_4,$$

$$\alpha_{x-\delta_t,y}^{[\mu_1],t-3\delta_t}=-1-\frac{1}{16}\omega_2\omega_4^2{c_s}^2+\omega_2+\frac{1}{4}\omega_2v^2\omega_3\omega_1-\frac{1}{4}\omega_2^2v^2\omega_4+\frac{7}{16}\omega_3^2\omega_4u^2-\frac{1}{8}\omega_4\omega_1u^2+\frac{7}{4}\omega_2\omega_3\omega_1u-\frac{1}{4}\omega_4{c_s}^2+\frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\frac{1}{4}\omega_2^2\omega_4-\frac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2-\frac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2+\frac{7}{16}\omega_3\omega_4^2u^2-\frac{5}{4}\omega_2v^2\omega_3+\frac{1}{4}\omega_3^2\omega_1u+\frac{43}{16}\omega_2\omega_3\omega_4u^2-\frac{5}{2}\omega_2\omega_3{c_s}^2-\frac{1}{16}\omega_4^2u+\frac{1}{4}v^2\omega_4\omega_1-v^2\omega_4-\frac{1}{4}\omega_2\omega_4u-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}\omega_2\omega_3\omega_4+\frac{1}{4}v^2\omega_4^2-\frac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1-\omega_2\omega_4u^2+\frac{1}{4}\omega_2^2\omega_3u^2-\frac{7}{16}\omega_2\omega_3^2\omega_4{c_s}^2+\frac{1}{4}\omega_3-\frac{3}{8}\omega_2\omega_3\omega_4\omega_1u-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_2v^2\omega_3^2+\frac{1}{16}\omega_3\omega_4^2u-\frac{3}{16}\omega_4^2u^2+\frac{5}{16}\omega_2\omega_3\omega_4u-\frac{7}{16}\omega_2\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_2\omega_3^2u^2+\frac{1}{8}\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_2\omega_3\omega_1-\frac{3}{2}\omega_2\omega_1u-\frac{35}{16}\omega_3\omega_4{c_s}^2+\omega_3u^2+\frac{1}{16}\omega_3^2\omega_4u-\frac{3}{8}\omega_4\omega_1u+\frac{1}{4}\omega_2\omega_3\omega_1u^2+\frac{1}{4}\omega_2\omega_4^2+\frac{3}{8}\omega_3\omega_4\omega_1u-\frac{5}{4}\omega_2\omega_3u^2+\frac{43}{16}\omega_2\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_2^2\omega_4u^2+\frac{7}{16}\omega_3\omega_4^2{c_s}^2-\frac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4^2-\frac{1}{4}\omega_3^2u^2-\frac{1}{16}\omega_2\omega_3^2\omega_4u-\frac{1}{4}\omega_3\omega_1u^2-\frac{1}{2}\omega_2^2\omega_3\omega_1u+\frac{3}{8}\omega_2\omega_4\omega_1u+\omega_1u+\frac{3}{8}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_3\omega_1+\frac{7}{16}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}v^2\omega_3^2+\frac{1}{2}\omega_2^2\omega_1u+\frac{5}{4}\omega_4+\frac{1}{4}\omega_2\omega_4\omega_1+\frac{3}{16}\omega_2\omega_4^2u^2-\frac{1}{2}\omega_2^2\omega_3\omega_4u^2-\frac{5}{16}\omega_3\omega_4u-\frac{1}{4}\omega_2v^2\omega_4^2+\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{16}\omega_2\omega_3\omega_4^2u+\frac{3}{4}\omega_4u^2+\frac{5}{4}\omega_2v^2\omega_4-\frac{1}{4}\omega_2\omega_3^2\omega_1u-\frac{35}{16}\omega_3\omega_4u^2-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{4}\omega_4u+\frac{1}{2}\omega_2\omega_3^2{c_s}^2-\frac{7}{16}\omega_2\omega_3\omega_4^2u^2+v^2\omega_3-\frac{1}{2}\omega_2\omega_1+2\omega_3{c_s}^2+\frac{1}{16}\omega_2\omega_4^2u-\frac{1}{4}v^2\omega_3\omega_1-\frac{7}{16}\omega_2\omega_3^2\omega_4u^2+\frac{1}{2}\omega_2^2\omega_3{c_s}^2+\frac{1}{4}\omega_2\omega_4{c_s}^2-\frac{5}{4}\omega_3\omega_1u+\frac{1}{8}\omega_2\omega_4\omega_1u^2+\frac{1}{4}\omega_2^2v^2\omega_3-\frac{3}{2}\omega_2\omega_4-\frac{1}{4}\omega_2^2\omega_3+\frac{3}{8}\omega_3\omega_4\omega_1u^2+\frac{1}{16}\omega_4^2{c_s}^2-\frac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x-\delta_t,y}^{[\mu_4],t-3\delta_t}=3-4\omega_2+\frac{19}{4}\omega_2\omega_3-\frac{1}{2}\omega_2^2\omega_4-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4^2-\frac{1}{2}\omega_2^2\omega_1-\frac{15}{4}\omega_2\omega_3\omega_4-\frac{15}{4}\omega_3+\frac{3}{4}\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{4}\omega_2\omega_3^2+\frac{3}{4}\omega_3^2-\frac{9}{4}\omega_2\omega_3\omega_1-\frac{1}{4}\omega_3^2\omega_1-\frac{1}{2}\omega_2\omega_4^2+\frac{1}{2}\omega_2^2\omega_3\omega_4+\frac{1}{4}\omega_2\omega_3^2\omega_1+\frac{1}{2}\omega_4^2+\frac{7}{4}\omega_3\omega_1-\frac{11}{4}\omega_4-\frac{3}{4}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2^2\omega_3\omega_1+\frac{1}{2}\omega_2\omega_3^2\omega_4-\frac{3}{2}\omega_1+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4^2+\omega_2^2+2\omega_2\omega_1+\frac{13}{4}\omega_2\omega_4-\omega_2^2\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-2-\frac{1}{4}\omega_2\omega_4^2{c_s}^2-\frac{1}{4}\omega_2\omega_4\omega_1^2u^2+2\omega_2+\frac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_2v^2\omega_3\omega_1-\frac{1}{2}\omega_2^2v^2\omega_4-\frac{5}{4}\omega_4\omega_1u^2-\frac{1}{2}\omega_4{c_s}^2-\omega_2\omega_3{c_s}^2\omega_1-\frac{1}{4}\omega_4{c_s}^2\omega_1^2+\frac{1}{2}\omega_2^2\omega_4-\frac{1}{2}\omega_2\omega_3\omega_1^2+\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_2v^2\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4\omega_1u^2+\frac{1}{2}\omega_2v^2\omega_4^2\omega_1-\frac{1}{4}\omega_2\omega_4^2\omega_1u^2-\frac{1}{2}\omega_2\omega_3\omega_4u^2-\frac{1}{4}\omega_4^2u+2v^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1-\frac{3}{2}v^2\omega_4-\frac{1}{2}\omega_2\omega_4u+\frac{1}{2}\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2\omega_4^2\omega_1+\frac{1}{4}\omega_2\omega_4^2{c_s}^2\omega_1+\frac{1}{2}v^2\omega_4^2+\omega_2\omega_3\omega_4{c_s}^2\omega_1-\frac{3}{2}\omega_2\omega_4u^2+\frac{1}{2}\omega_2^2\omega_3u^2+\frac{1}{2}\omega_3-3\omega_4\omega_1-\frac{1}{4}\omega_4^2u^2+\frac{1}{2}\omega_2^2v^2\omega_4\omega_1-\frac{1}{2}v^2\omega_4\omega_1^2+\omega_2\omega_3{c_s}^2\omega_1^2+\frac{3}{4}\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2^2\omega_4\omega_1+\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_1^2u^2-\frac{1}{2}\omega_3u^2+\frac{1}{2}\omega_2v^2\omega_3\omega_1^2-\frac{1}{4}\omega_4\omega_1u-\frac{1}{2}\omega_2^2\omega_4\omega_1u^2-\frac{1}{2}\omega_2\omega_3\omega_1u^2+\frac{1}{2}\omega_2\omega_4^2-\omega_2\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_2^2\omega_4u^2-\frac{3}{4}\omega_2\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_4^2-\omega_3{c_s}^2\omega_1^2-\omega_2^2\omega_3{c_s}^2\omega_1-\frac{1}{2}\omega_2^2v^2\omega_3\omega_1-\frac{1}{2}v^2\omega_3\omega_1^2+\omega_3\omega_1u^2+\frac{1}{4}\omega_2\omega_4\omega_1u+\frac{1}{2}\omega_2\omega_3\omega_1^2u^2-\omega_3\omega_4{c_s}^2\omega_1-\omega_3\omega_1+\frac{5}{2}\omega_4-\omega_1^2+\frac{7}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2^2\omega_3\omega_1+\omega_2\omega_1^2-\frac{1}{4}\omega_2^2{c_s}^2\omega_1+\frac{1}{4}\omega_2\omega_4^2u^2-\frac{1}{2}\omega_2v^2\omega_4^2+3\omega_1-\frac{1}{2}\omega_3\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1^2+\frac{1}{2}\omega_4^2\omega_1+\omega_4u^2+2\omega_2v^2\omega_4+\frac{1}{4}\omega_4^2\omega_1u^2+\frac{1}{2}\omega_3\omega_4u^2-\frac{1}{2}\omega_2\omega_3\omega_4\omega_1-\frac{5}{2}\omega_2v^2\omega_4\omega_1-\frac{1}{2}v^2\omega_4^2\omega_1+\frac{1}{2}v^2\omega_3\omega_4+\frac{1}{2}\omega_4u-\frac{1}{2}v^2\omega_3\omega_4\omega_1-\frac{1}{2}v^2\omega_3-\frac{1}{2}\omega_2\omega_4\omega_1^2-3\omega_2\omega_1-\omega_3{c_s}^2+\frac{1}{4}\omega_2\omega_4^2u+v^2\omega_3\omega_1+\omega_2^2\omega_3{c_s}^2+\frac{1}{2}\omega_2\omega_4{c_s}^2-\frac{1}{2}\omega_2^2\omega_3\omega_1u^2+\frac{7}{4}\omega_2\omega_4\omega_1u^2+\frac{1}{4}\omega_4\omega_1^2u^2+\frac{1}{2}\omega_2^2v^2\omega_3+\frac{1}{2}\omega_3\omega_1^2-3\omega_2\omega_4-\frac{1}{2}\omega_2^2\omega_3-\frac{1}{2}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_4^2{c_s}^2+\frac{1}{4}\omega_2\omega_4{c_s}^2\omega_1^2+2\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x,y}^{[\mu_4],t-3\delta_t}=3-4\omega_2-\omega_2^2\omega_4-\frac{3}{4}\omega_4\omega_1^2-\omega_2^2\omega_1+\frac{3}{4}\omega_2\omega_4^2\omega_1+\frac{17}{4}\omega_4\omega_1+\omega_2^2\omega_4\omega_1-\frac{3}{4}\omega_2\omega_4^2+\frac{3}{4}\omega_4^2-\frac{7}{2}\omega_4+\omega_1^2-\frac{21}{4}\omega_2\omega_4\omega_1-\omega_2\omega_1^2-4\omega_1-\frac{3}{4}\omega_4^2\omega_1+\omega_2^2+\frac{3}{4}\omega_2\omega_4\omega_1^2+5\omega_2\omega_1+\frac{9}{2}\omega_2\omega_4,$$

$$\alpha_{x+\delta_t,y}^{[\mu_1],t-3\delta_t}=-1-\frac{1}{16}\omega_2\omega_4^2{c_s}^2+\omega_2+\frac{1}{4}\omega_2v^2\omega_3\omega_1-\frac{1}{4}\omega_2^2v^2\omega_4+\frac{7}{16}\omega_3^2\omega_4u^2-\frac{1}{8}\omega_4\omega_1u^2-\frac{7}{4}\omega_2\omega_3\omega_1u-\frac{1}{4}\omega_4{c_s}^2+\frac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\frac{1}{4}\omega_2^2\omega_4-\frac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2-\frac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2+\frac{7}{16}\omega_3\omega_4^2u^2-\frac{5}{4}\omega_2v^2\omega_3-\frac{1}{4}\omega_3^2\omega_1u+\frac{43}{16}\omega_2\omega_3\omega_4u^2-\frac{5}{2}\omega_2\omega_3{c_s}^2-\frac{1}{16}\omega_4^2u+\frac{1}{4}v^2\omega_4\omega_1-v^2\omega_4-\frac{1}{4}\omega_2\omega_4u-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}\omega_2\omega_3\omega_4+\frac{1}{4}v^2\omega_4^2-\frac{3}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1-\omega_2\omega_4u^2+\frac{1}{4}\omega_2^2\omega_3u^2-\frac{7}{16}\omega_2\omega_3^2\omega_4{c_s}^2+\frac{1}{4}\omega_3+\frac{1}{8}\omega_2\omega_3\omega_4\omega_1u-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_2v^2\omega_3^2+\frac{1}{16}\omega_3\omega_4^2u-\frac{3}{16}\omega_4^2u^2+\frac{5}{16}\omega_2\omega_3\omega_4u-\frac{7}{16}\omega_2\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_2\omega_3^2u^2+\frac{1}{8}\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_2\omega_3\omega_1+\frac{3}{2}\omega_2\omega_1u-\frac{35}{16}\omega_3\omega_4{c_s}^2+\omega_3u^2+\frac{1}{16}\omega_3^2\omega_4u+\frac{1}{8}\omega_4\omega_1u+\frac{1}{4}\omega_2\omega_3\omega_1u^2+\frac{1}{4}\omega_2\omega_4^2-\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{5}{4}\omega_2\omega_3u^2+\frac{43}{16}\omega_2\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_2^2\omega_4u^2+\frac{7}{16}\omega_3\omega_4^2{c_s}^2-\frac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4^2-\frac{1}{4}\omega_3^2u^2-\frac{1}{16}\omega_2\omega_3^2\omega_4u-\frac{1}{4}\omega_3\omega_1u^2+\frac{1}{2}\omega_2^2\omega_3\omega_1u-\frac{1}{8}\omega_2\omega_4\omega_1u-\omega_1u+\frac{3}{8}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_3\omega_1+\frac{7}{16}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}v^2\omega_3^2-\frac{1}{2}\omega_2^2\omega_1u+\frac{5}{4}\omega_4+\frac{1}{4}\omega_2\omega_4\omega_1+\frac{3}{16}\omega_2\omega_4^2u^2-\frac{1}{2}\omega_2^2\omega_3\omega_4u^2-\frac{5}{16}\omega_3\omega_4u-\frac{1}{4}\omega_2v^2\omega_4^2+\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{16}\omega_2\omega_3\omega_4^2u+\frac{3}{4}\omega_4u^2+\frac{5}{4}\omega_2v^2\omega_4+\frac{1}{4}\omega_2\omega_3^2\omega_1u-\frac{35}{16}\omega_3\omega_4u^2-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{4}\omega_4u+\frac{1}{2}\omega_2\omega_3^2{c_s}^2-\frac{7}{16}\omega_2\omega_3\omega_4^2u^2+v^2\omega_3-\frac{1}{2}\omega_2\omega_1+2\omega_3{c_s}^2+\frac{1}{16}\omega_2\omega_4^2u-\frac{1}{4}v^2\omega_3\omega_1-\frac{7}{16}\omega_2\omega_3^2\omega_4u^2+\frac{1}{2}\omega_2^2\omega_3{c_s}^2+\frac{1}{4}\omega_2\omega_4{c_s}^2+\frac{5}{4}\omega_3\omega_1u+\frac{1}{8}\omega_2\omega_4\omega_1u^2+\frac{1}{4}\omega_2^2v^2\omega_3-\frac{3}{2}\omega_2\omega_4-\frac{1}{4}\omega_2^2\omega_3+\frac{3}{8}\omega_3\omega_4\omega_1u^2+\frac{1}{16}\omega_4^2{c_s}^2-\frac{1}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x+\delta_t,y} = 3 - 4\omega_2 + \tfrac{19}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_2^2\omega_4 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{25}{8}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4 - \tfrac{3}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{4}\omega_3^2\omega_1 - \tfrac{3}{8}\omega_2\omega_4^2 + \tfrac{1}{2}\omega_2^2\omega_3\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{3}{8}\omega_4^2 + \tfrac{7}{4}\omega_3\omega_1 - \tfrac{9}{4}\omega_4 - \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2^2\omega_3\omega_1 + \tfrac{3}{8}\omega_2\omega_3^2\omega_4 - \tfrac{3}{2}\omega_1 + \tfrac{21}{8}\omega_3\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \tfrac{3}{8}\omega_3\omega_4^2 + \omega_2^2 + 2\omega_2\omega_1 + \tfrac{11}{4}\omega_2\omega_4 - \omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_t} = -2 + \omega_2 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2 v\omega_4\omega_1 + \tfrac{7}{4}\omega_2 v^2\omega_3\omega_1 - \tfrac{3}{2}\omega_2 v\omega_1 + \tfrac{3}{8}\omega_3^2\omega_4 u^2 - \tfrac{1}{2}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1^2 u^2 + \tfrac{7}{2}\omega_2\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_4 {c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2 v\omega_3^2\omega_1 + \omega_2 v + \tfrac{3}{8}\omega_3\omega_4^2 u^2 - \tfrac{1}{4}\omega_2 v\omega_4 - \tfrac{5}{4}\omega_2 v^2\omega_3 + \tfrac{3}{4}\omega_2\omega_3\omega_4 u^2 - \tfrac{5}{2}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_4^2 u + \tfrac{5}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_3^2 {c_s}^2\omega_1 - v^2\omega_4 - \tfrac{3}{8}\omega_3\omega_4^2\omega_1 u^2 - \omega_3^2 {c_s}^2 + \tfrac{1}{4}v^2\omega_4^2 - \omega_2\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{3}{8}\omega_3\omega_4^2 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_3 - \tfrac{7}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_2 v^2\omega_3^2 + \tfrac{1}{8}\omega_3\omega_4^2 u - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{1}{2}\omega_3^2\omega_1 u^2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3^2 u^2 - \omega_2\omega_3 {c_s}^2\omega_1^2 + \tfrac{3}{4}\omega_4 {c_s}^2\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4\omega_1 u^2 - \tfrac{19}{8}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3\omega_1^2 u^2 + 2\omega_3 u^2 - \tfrac{1}{2}\omega_2 v^2\omega_3\omega_1^2 + \tfrac{1}{8}\omega_3^2\omega_4 u - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{7}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_2 v\omega_1^2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u - \tfrac{5}{4}\omega_2\omega_3 u^2 + \omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{3}{8}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{3}{2}\omega_3 {c_s}^2\omega_1^2 + \tfrac{3}{4}v^2\omega_3\omega_1^2 - \tfrac{1}{2}\omega_3^2 u^2 - \tfrac{11}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_2\omega_3\omega_1^2 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_4\omega_1 + \tfrac{21}{8}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{3}{4}\omega_3\omega_1 + \tfrac{3}{8}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{2}v^2\omega_3^2 + \tfrac{3}{2}\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 - \tfrac{1}{8}\omega_4^2 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3^2\omega_1 u^2 - \tfrac{5}{8}\omega_3\omega_4 u + \tfrac{1}{4}\omega_2 v\omega_3^2 + 3\omega_1 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v\omega_3\omega_1^2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{2}\omega_4 u^2 - \tfrac{5}{4}\omega_2 v\omega_3 + \tfrac{1}{4}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_4^2\omega_1 u^2 - \tfrac{17}{8}\omega_3\omega_4 u^2 + \tfrac{7}{4}\omega_2 v\omega_3\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u + \tfrac{1}{2}\omega_2\omega_3^2 {c_s}^2 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + 2v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3^2 {c_s}^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 + 4\omega_3 {c_s}^2 - \tfrac{11}{4}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}\omega_2 v\omega_3\omega_4 - \tfrac{1}{4}\omega_2 v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1^2 - \tfrac{1}{2}\omega_2\omega_4 + \tfrac{19}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_4^2 {c_s}^2 - \tfrac{11}{2}\omega_3 {c_s}^2\omega_1,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x,y+\delta_t} = 3 - \tfrac{3}{2}\omega_2 + \tfrac{7}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2\omega_3\omega_1^2 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{23}{8}\omega_3\omega_4\omega_1 - \tfrac{3}{4}\omega_2\omega_3\omega_4 - \tfrac{15}{4}\omega_3 + \tfrac{5}{2}\omega_4\omega_1 - \tfrac{3}{8}\omega_3^2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3^2 + \tfrac{3}{4}\omega_3^2 - \tfrac{9}{4}\omega_2\omega_3\omega_1 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3^2\omega_1 + \tfrac{3}{8}\omega_4^2 + \tfrac{19}{4}\omega_3\omega_1 - \tfrac{9}{4}\omega_4 + \omega_1^2 - \tfrac{3}{4}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 - 4\omega_1 + \tfrac{21}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \tfrac{3}{8}\omega_3\omega_4^2 + \tfrac{3}{8}\omega_3\omega_4^2\omega_1 + 2\omega_2\omega_1 + \tfrac{3}{8}\omega_3^2\omega_4\omega_1 - \omega_3\omega_1^2 + \tfrac{3}{4}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 2 + \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_2\omega_4\omega_1^2 u^2 - 2\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 + \tfrac{7}{8}\omega_3^2\omega_4 {c_s}^2\omega_1 - 3\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2^2 v^2\omega_4 - \tfrac{7}{8}\omega_3^2\omega_4 u^2 + \tfrac{7}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3\omega_4\omega_1^2 u^2 - \omega_2^2\omega_3\omega_4\omega_1 u^2 - 6\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_4 {c_s}^2\omega_1^2 - \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_1^2 + \omega_2^2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{49}{8}\omega_2\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 v^2\omega_4^2\omega_1 - \tfrac{7}{8}\omega_3\omega_4^2 u^2 + \tfrac{5}{2}\omega_2 v^2\omega_3 + \tfrac{3}{8}\omega_2\omega_4^2\omega_1 u^2 - \tfrac{43}{8}\omega_2\omega_3\omega_4 u^2 + 5\omega_2\omega_3 {c_s}^2 + \tfrac{1}{8}\omega_4^2 u - \tfrac{5}{2}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \omega_3^2 {c_s}^2\omega_1 + 2v^2\omega_4 + \tfrac{1}{2}\omega_2\omega_4 u + \tfrac{7}{8}\omega_3\omega_4^2\omega_1 u^2 - \tfrac{3}{4}\omega_2\omega_3\omega_4 {c_s}^2\omega_1^2 + \omega_3^2 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_3\omega_4 + \tfrac{1}{2}\omega_2\omega_4^2\omega_1 - \tfrac{1}{8}\omega_2\omega_4^2 {c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4^2 + \tfrac{49}{8}\omega_2\omega_3\omega_4 {c_s}^2\omega_1 + 2\omega_2\omega_4 u^2 - \tfrac{1}{2}\omega_2^2\omega_3 u^2 + \tfrac{7}{8}\omega_2\omega_3^2\omega_4 {c_s}^2 + \tfrac{7}{8}\omega_3\omega_4^2 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_2\omega_3\omega_4\omega_1 u + 3\omega_4\omega_1 - \tfrac{1}{2}\omega_2 v^2\omega_3^2 - \tfrac{1}{8}\omega_3\omega_4^2 u + \tfrac{3}{8}\omega_4^2 u^2 - \tfrac{1}{2}\omega_3^2\omega_1 u^2 - \tfrac{5}{8}\omega_2\omega_3\omega_4 u - \tfrac{1}{2}\omega_2^2 v^2\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4\omega_1^2 + \tfrac{7}{8}\omega_2\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_3^2 u^2 + \omega_2\omega_3 {c_s}^2\omega_1^2 - \tfrac{3}{4}\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{2}\omega_2^2\omega_4\omega_1 + \tfrac{7}{8}\omega_3^2\omega_4\omega_1 u^2 + \tfrac{35}{8}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_1^2 u^2 - 2\omega_3 u^2 - \omega_2^2\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_2 v^2\omega_3\omega_1^2 - \tfrac{1}{8}\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_2^2\omega_4\omega_1 u^2 - 3\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_3\omega_4^2 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{5}{2}\omega_2\omega_3 u^2 - \tfrac{43}{8}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_2^2\omega_4 u^2 - \tfrac{1}{8}\omega_3\omega_4^2 {c_s}^2 + \tfrac{3}{4}\omega_2\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4^2 - \omega_3 {c_s}^2\omega_1^2 + \omega_2^2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_2^2 v^2\omega_3\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_1^2 + \tfrac{1}{2}\omega_3^2 u^2 + \tfrac{1}{8}\omega_2\omega_3^2\omega_4 u + \tfrac{5}{2}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_4\omega_1 u + \tfrac{1}{2}\omega_2\omega_3\omega_1^2 u^2 - \tfrac{41}{8}\omega_3\omega_4 {c_s}^2\omega_1 + \omega_3\omega_1 - \tfrac{7}{8}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{2}v^2\omega_3^2 - \tfrac{5}{2}\omega_4 + \omega_1^2 - \tfrac{7}{2}\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2^2\omega_3\omega_1 - \omega_2\omega_1^2 + \tfrac{1}{8}\omega_4^2 {c_s}^2\omega_1 - \tfrac{3}{8}\omega_2\omega_4^2 u^2 + \tfrac{1}{2}\omega_2\omega_3^2\omega_1 u^2 + \omega_2^2\omega_3\omega_4 u^2 + \tfrac{5}{8}\omega_3\omega_4 u + \tfrac{1}{2}\omega_2 v^2\omega_4^2 - 3\omega_1 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v^2\omega_4\omega_1^2 - \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_2\omega_3\omega_4^2 u - \tfrac{3}{2}\omega_4 u^2 - \tfrac{5}{2}\omega_2 v^2\omega_4 - \tfrac{3}{8}\omega_4^2\omega_1 u^2 + \tfrac{35}{8}\omega_3\omega_4 u^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1 + 3\omega_2 v^2\omega_4\omega_1 - \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 u^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 - \tfrac{1}{2}\omega_4 u - \omega_2\omega_3^2 {c_s}^2 + \tfrac{7}{8}\omega_2\omega_3\omega_4^2 u^2 - 2v^2\omega_3 - \tfrac{7}{8}\omega_2\omega_3^2\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_2\omega_4\omega_1^2 + \omega_2\omega_3^2 {c_s}^2\omega_1 + 3\omega_2\omega_1 - 4\omega_3 {c_s}^2 - \tfrac{1}{8}\omega_2\omega_4^2 u + \tfrac{5}{2}v^2\omega_3\omega_1 + \tfrac{7}{8}\omega_2\omega_3^2\omega_4 u^2 - \omega_2^2\omega_3 {c_s}^2 - \tfrac{1}{2}\omega_2\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2^2\omega_3\omega_1 u^2 - \tfrac{9}{4}\omega_2\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 - \tfrac{1}{2}\omega_2^2 v^2\omega_3 - \tfrac{1}{2}\omega_3\omega_1^2 - \tfrac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 u^2 + \tfrac{1}{2}\omega_2 v^2\omega_3^2\omega_1 + \tfrac{3}{4}\omega_3\omega_4 {c_s}^2\omega_1^2 + 3\omega_2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_3 - \tfrac{41}{8}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{8}\omega_4^2 {c_s}^2 - \tfrac{1}{4}\omega_2\omega_4 {c_s}^2\omega_1^2 + 5\omega_3 {c_s}^2\omega_1,$$

$$\alpha^{[\mu_4],t-4\delta_t}_{x,y} = -4 + 5\omega_2 + \tfrac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 - 6\omega_2\omega_3 + \omega_2^2\omega_4 - \omega_2\omega_3\omega_1^2 + \tfrac{3}{4}\omega_4\omega_1^2 + \tfrac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 + \tfrac{49}{8}\omega_3\omega_4\omega_1 - \tfrac{7}{8}\omega_2\omega_3\omega_4^2 + \omega_2^2\omega_1 + \tfrac{51}{8}\omega_2\omega_3\omega_4 - \tfrac{7}{8}\omega_2\omega_4^2\omega_1 + 5\omega_3 - \tfrac{21}{4}\omega_4\omega_1 + \tfrac{7}{8}\omega_3^2\omega_4 - \tfrac{3}{4}\omega_3\omega_4\omega_1^2 + \omega_2^2\omega_3\omega_4\omega_1 + \omega_2\omega_3^2 - \omega_3^2 + 7\omega_2\omega_3\omega_1 - \omega_2^2\omega_4\omega_1 + \omega_3^2\omega_1 + \tfrac{7}{8}\omega_2\omega_4^2 - \omega_2^2\omega_3\omega_4 - \omega_2\omega_3^2\omega_1 - \tfrac{7}{8}\omega_4^2 - 6\omega_3\omega_1 + \tfrac{9}{2}\omega_4 - \omega_1^2 + \tfrac{25}{4}\omega_2\omega_4\omega_1 - \omega_2^2\omega_3\omega_1 - \tfrac{7}{8}\omega_2\omega_3^2\omega_4 + \omega_2\omega_1^2 + 5\omega_1 - \tfrac{43}{8}\omega_3\omega_4 + \tfrac{7}{8}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 - \tfrac{57}{8}\omega_2\omega_3\omega_4\omega_1 + \tfrac{7}{8}\omega_3\omega_4^2 - \tfrac{7}{8}\omega_3\omega_4^2\omega_1 - \omega_2^2 - \tfrac{3}{4}\omega_2\omega_4\omega_1^2 - 6\omega_2\omega_1 - \tfrac{7}{8}\omega_3^2\omega_4\omega_1 + \omega_3\omega_1^2 - \tfrac{11}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$$

4.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t} \mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_2 v + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3 u^2 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_4 u^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3 {c_s}^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4 {c_s}^2 - \frac{1}{2}\omega_2 v + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3 u^2 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_4 u + \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_3 {c_s}^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{8}\omega_2\omega_3 + \frac{1}{8}\omega_2 v^2\omega_3 + \frac{1}{4}\omega_2\omega_3 {c_s}^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{8}\omega_2\omega_4 u^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{8}\omega_4^2 u^2 + \frac{1}{4}\omega_2\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{8}\omega_2\omega_3 u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}\omega_1 u + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_2 v^2\omega_4 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}\omega_2\omega_4,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_2 v^2\omega_3 - \omega_2\omega_3 {c_s}^2 - \frac{1}{2}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \frac{1}{2}\omega_2\omega_3 u^2 - \frac{1}{4}\omega_3^2 u^2 - \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3\omega_4 u^2 - \frac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3 {c_s}^2,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_2\omega_3 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{8}\omega_2\omega_3 + \frac{1}{8}\omega_2 v^2\omega_3 + \frac{1}{4}\omega_2\omega_3 {c_s}^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{8}\omega_2\omega_4 u^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{8}\omega_4^2 u^2 - \frac{1}{4}\omega_2\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{4}\omega_3 u^2 - \frac{1}{4}\omega_4\omega_1 u + \frac{1}{8}\omega_2\omega_3 u^2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_1 u + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_2 v^2\omega_4 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}\omega_2\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_1 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + 3\omega_2 - \frac{1}{4}\omega_4 {c_s}^2 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_2 v^2\omega_3 + \omega_2\omega_3 {c_s}^2 - \frac{1}{2}v^2\omega_4 - \frac{1}{4}\omega_2\omega_4 u - \frac{1}{4}\omega_2\omega_4 u^2 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_3 u^2 + \frac{1}{2}\omega_2\omega_3 u^2 + \frac{1}{2}\omega_4 + \frac{1}{4}\omega_4 u^2 + \frac{1}{2}\omega_2 v^2\omega_4 - \omega_2^2 + \frac{1}{4}\omega_4 u - \frac{1}{2}v^2\omega_3 - \omega_3 {c_s}^2 + \frac{1}{4}\omega_2\omega_4 {c_s}^2 - \frac{1}{2}\omega_2\omega_4,$

$\alpha_{x,y}^{[\mu_5],t-\delta_t} = 2 - 2\omega_2 + \omega_1^2 - 2\omega_1 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_1 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{8}\omega_2\omega_3 + \frac{1}{8}\omega_2 v^2\omega_3 + \frac{1}{4}\omega_2\omega_3 {c_s}^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{8}\omega_2\omega_4 u^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{8}\omega_4^2 u^2 + \frac{1}{4}\omega_2\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{8}\omega_2\omega_3 u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}\omega_1 u + \frac{3}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_2 v^2\omega_4 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}\omega_2\omega_4,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_2 v^2\omega_3 - \omega_2\omega_3 {c_s}^2 - \frac{1}{2}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \frac{1}{2}\omega_2\omega_3 u^2 - \frac{1}{4}\omega_3^2 u^2 - \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3\omega_4 u^2 - \frac{1}{4}v^2\omega_3\omega_4 + v^2\omega_3 + 2\omega_3 {c_s}^2,$

$\alpha_{x,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_2\omega_3 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3^2 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3\omega_4,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_2 - \frac{1}{8}\omega_2\omega_3 + \frac{1}{8}\omega_2 v^2\omega_3 + \frac{1}{4}\omega_2\omega_3 {c_s}^2 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}\omega_2\omega_4 u^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_2\omega_1 u - \frac{1}{4}\omega_3 u^2 + \frac{1}{8}\omega_2\omega_3 u^2 + \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_2 v^2\omega_4 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_2\omega_1 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}\omega_2\omega_4,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_2\omega_1 + \frac{1}{4}\omega_2\omega_4,$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{8}v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 + \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_3^2\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 - \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{3}{8}\omega_2\omega_3 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{5}{8}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4^2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \omega_2 v\omega_1 - \omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2 + v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{4}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 u^2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_2 v\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2 - \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{5}{4}\omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 - \omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{3}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_2 v^2\omega_4 + \tfrac{1}{4}\omega_4^2\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1^2 u^2 + \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}\omega_2\omega_4 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x,y-\delta_l} = -2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 - \omega_1^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 3\omega_1 + \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{1}{2}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{8}v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2 v\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_1 u - \tfrac{1}{2}\omega_2\omega_3 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_2\omega_3 - \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{8}\omega_2 v\omega_4 + \tfrac{3}{8}\omega_2 v^2\omega_3 - \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{4}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{8}\omega_2\omega_4 u^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_3^2\omega_1 u^2 + \tfrac{1}{4}\omega_2\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 + \tfrac{1}{8}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{3}{8}\omega_2\omega_3 u^2 - \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{5}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{8}\omega_2 v\omega_3^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4^2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{5}{8}\omega_2 v\omega_3 + \tfrac{1}{8}\omega_2 v^2\omega_4 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}\omega_2 v\omega_3\omega_1 + \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 - v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_1 - 2\omega_3 {c_s}^2 + \tfrac{5}{8}v^2\omega_3\omega_1 + \tfrac{5}{8}\omega_3\omega_1 u - \tfrac{1}{8}\omega_2 v\omega_3\omega_4 + \tfrac{1}{8}\omega_2\omega_4 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_1,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 + \omega_2 - \tfrac{9}{8}\omega_2\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_1 + \tfrac{3}{8}\omega_2\omega_3\omega_4 + \tfrac{5}{2}\omega_3 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{8}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{1}{4}\omega_4^2 - \tfrac{9}{8}\omega_3\omega_1 + \tfrac{3}{2}\omega_4 + \omega_1 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_1 - \tfrac{3}{8}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 2 - 3\omega_2 - \tfrac{1}{4}\omega_2^2 v^2\omega_4 + \tfrac{3}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_2^2\omega_4 + \tfrac{1}{4}\omega_2 v^2\omega_3\omega_4 - \tfrac{3}{4}\omega_2 v^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3\omega_4 u^2 - \tfrac{3}{2}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{3}{4}\omega_2\omega_4 u^2 + \tfrac{1}{4}\omega_2^2\omega_3 u^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 u^2 - \tfrac{3}{2}\omega_2\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{2}\omega_4\omega_1 u - \tfrac{1}{4}\omega_2\omega_4^2 - \tfrac{3}{4}\omega_2\omega_3 u^2 + \tfrac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_2^2\omega_4 u^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}\omega_2\omega_4\omega_1 u + \omega_1 u + \tfrac{1}{2}\omega_2^2\omega_1 u - \tfrac{3}{2}\omega_4 - \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_4^2 u^2 - \tfrac{1}{4}\omega_2 v^2\omega_4^2 - \omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{3}{4}\omega_2 v^2\omega_4 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 + \omega_2^2 + \tfrac{1}{2}v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_1 + \omega_3 {c_s}^2 + \tfrac{1}{2}\omega_2^2\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_2^2 v^2\omega_3 + \tfrac{7}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_2^2\omega_3,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y} = -2 + 3\omega_2 + \tfrac{1}{2}\omega_2^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_4^2 - \tfrac{1}{2}\omega_4^2 + 2\omega_4 + \tfrac{1}{2}\omega_2\omega_4\omega_1 + \omega_1 - \omega_2^2 - \tfrac{3}{2}\omega_2\omega_1 - \tfrac{5}{2}\omega_2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = 2 - 3\omega_2 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_2 v^2\omega_3\omega_4 + 3\omega_2 v^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3\omega_4 u^2 + 6\omega_2\omega_3 {c_s}^2 + \omega_3^2 {c_s}^2 - \omega_2^2\omega_3 u^2 - \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_2 v^2\omega_3^2 - \tfrac{1}{2}\omega_2\omega_3^2 u^2 + \omega_3\omega_4 {c_s}^2 - 2\omega_3 u^2 + 3\omega_2\omega_3 u^2 - \omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3^2 u^2 + \tfrac{1}{2}v^2\omega_3^2 - \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{1}{2}v^2\omega_3\omega_4 + \omega_2^2 - \omega_2\omega_3^2 {c_s}^2 - 2v^2\omega_3 - 4\omega_3 {c_s}^2 - 2\omega_2^2\omega_3 {c_s}^2 - \omega_2^2 v^2\omega_3 + \tfrac{1}{2}\omega_2\omega_4,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x,y} = -4 + 3\omega_2 - \tfrac{7}{2}\omega_2\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3\omega_4 + 5\omega_3 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3^2 - \omega_3^2 + \tfrac{1}{2}\omega_3^2\omega_1 - \tfrac{7}{2}\omega_3\omega_1 + \omega_4 - \omega_1^2 + 3\omega_1 - \omega_3\omega_4 - \omega_2^2 + \omega_3\omega_1^2 - \tfrac{1}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 2 - 3\omega_2 - \tfrac{1}{4}\omega_2^2 v^2\omega_4 + \tfrac{3}{4}\omega_2\omega_3 - \tfrac{1}{4}\omega_2^2\omega_4 + \tfrac{1}{8}\omega_2 v^2\omega_3\omega_4 - \tfrac{3}{4}\omega_2 v^2\omega_3 + \tfrac{1}{8}\omega_2\omega_3\omega_4 u^2 - \tfrac{3}{2}\omega_2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_2^2\omega_1 - \tfrac{1}{8}\omega_2\omega_3\omega_4 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{3}{4}\omega_2\omega_4 u^2 + \tfrac{1}{4}\omega_2^2\omega_3 u^2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{3}{2}\omega_2\omega_1 u - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{8}\omega_2\omega_4^2 - \tfrac{3}{4}\omega_2\omega_3 u^2 + \tfrac{1}{4}\omega_2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_2^2\omega_4 u^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{4}\omega_2\omega_4\omega_1 u - \omega_1 u - \tfrac{1}{2}\omega_2^2\omega_1 u - \omega_4 - \tfrac{1}{4}\omega_2\omega_4\omega_1 + \tfrac{1}{8}\omega_2\omega_4^2 u^2 - \tfrac{1}{8}\omega_2 v^2\omega_4^2 - \omega_1 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{3}{4}\omega_2 v^2\omega_4 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 + \omega_2^2 + \tfrac{1}{2}v^2\omega_3 + \tfrac{3}{2}\omega_2\omega_1 + \omega_3 {c_s}^2 + \tfrac{1}{2}\omega_2^2\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_2^2 v^2\omega_3 + \tfrac{5}{4}\omega_2\omega_4 - \tfrac{1}{4}\omega_2^2\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-2\delta_t} = -2+3\omega_2+\tfrac{1}{2}\omega_2^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_1-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_2\omega_4^2-\tfrac{1}{4}\omega_4^2+\tfrac{3}{2}\omega_4+\tfrac{1}{4}\omega_2\omega_4\omega_1+\omega_1-\omega_2^2-\tfrac{3}{2}\omega_2\omega_1-2\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1-\tfrac{1}{2}\omega_2-\tfrac{1}{8}v^2\omega_3^2\omega_1-\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2v\omega_1-\tfrac{1}{16}\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_2\omega_3\omega_1u-\tfrac{1}{4}\omega_4{c_s}^2-\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\\ & \tfrac{1}{8}\omega_2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3\omega_4+\tfrac{1}{2}\omega_2v-\tfrac{1}{16}\omega_3\omega_4^2u^2-\tfrac{1}{8}\omega_2v\omega_4+\tfrac{3}{8}\omega_2v^2\omega_3+\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{3}{4}\omega_2\omega_3{c_s}^2-\tfrac{1}{16}\omega_4^2u-\\ & \tfrac{1}{4}v^2\omega_3^2\omega_4+\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1-\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{8}\omega_2\omega_4u^2-\tfrac{1}{4}\omega_3+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{16}\omega_3\omega_4^2u-\\ & \tfrac{1}{16}\omega_4^2u^2-\tfrac{1}{8}\omega_3^2\omega_1u^2+\tfrac{1}{8}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_1u+\tfrac{29}{16}\omega_3\omega_4{c_s}^2-\omega_3u^2+\tfrac{1}{16}\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1u-\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\\ & \tfrac{1}{4}\omega_3\omega_4\omega_1u+\tfrac{3}{8}\omega_2\omega_3u^2-\tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{5}{16}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_4^2+\tfrac{1}{4}\omega_3^2u^2+\tfrac{5}{8}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_1u-\tfrac{5}{8}\omega_3\omega_4{c_s}^2\omega_1-\\ & \tfrac{5}{16}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}v^2\omega_3^2-\tfrac{3}{4}\omega_4-\tfrac{5}{16}\omega_3\omega_4u+\tfrac{1}{8}\omega_2v\omega_3^2-\tfrac{1}{2}\omega_1+\tfrac{1}{8}\omega_3\omega_4-\tfrac{1}{4}v^2\omega_3\omega_4^2+\tfrac{1}{4}\omega_4u^2-\tfrac{5}{8}\omega_2v\omega_3+\\ & \tfrac{1}{8}\omega_2v^2\omega_4+\tfrac{7}{16}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v\omega_3\omega_1+\tfrac{11}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_4u-\tfrac{3}{8}v^2\omega_3\omega_4\omega_1-v^2\omega_3+\tfrac{1}{4}\omega_2\omega_1-2\omega_3{c_s}^2+\\ & \tfrac{5}{8}v^2\omega_3\omega_1-\tfrac{5}{8}\omega_3\omega_1u+\tfrac{1}{8}\omega_2v\omega_3\omega_4+\tfrac{1}{8}\omega_2\omega_4-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2+\tfrac{1}{16}\omega_4^2{c_s}^2+\tfrac{5}{4}\omega_3{c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2+\omega_2-\tfrac{9}{8}\omega_2\omega_3+\tfrac{3}{8}\omega_3\omega_4\omega_1+\tfrac{3}{8}\omega_2\omega_3\omega_4+\tfrac{5}{2}\omega_3-\tfrac{3}{8}\omega_4\omega_1+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{8}\omega_2\omega_3^2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}\omega_2\omega_3\omega_1+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{1}{4}\omega_4^2-\tfrac{9}{8}\omega_3\omega_1+\tfrac{3}{2}\omega_4+\omega_1-\tfrac{7}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_1-\tfrac{3}{8}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\omega_2v\omega_1-\tfrac{1}{2}\omega_4\omega_1u^2-\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{1}{4}\omega_4{c_s}^2\omega_1^2+\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_2v-\\ & \tfrac{1}{4}\omega_2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3{c_s}^2+v^2\omega_4\omega_1-\tfrac{1}{8}\omega_3\omega_4\omega_1-\tfrac{3}{4}v^2\omega_4+\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{4}\omega_2\omega_4u^2-\tfrac{1}{4}\omega_3+\tfrac{3}{4}\omega_4\omega_1-\tfrac{1}{8}\omega_4^2u^2-\\ & \tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{2}\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{1}{4}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_1^2u^2+\tfrac{1}{4}\omega_3u^2-\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{2}\omega_2v\omega_1^2-\\ & \tfrac{1}{4}\omega_2\omega_3u^2+\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2-\tfrac{1}{4}v^2\omega_3\omega_1^2+\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{3}{4}\omega_4-\tfrac{1}{4}\omega_2\omega_4\omega_1-\omega_1+\tfrac{1}{8}\omega_3\omega_4-\tfrac{1}{8}\omega_4^2\omega_1+\\ & \tfrac{1}{2}\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4+\tfrac{1}{8}\omega_4^2\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4u^2-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{1}{8}v^2\omega_4^2\omega_1-\tfrac{1}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_4u+\tfrac{1}{8}v^2\omega_3\omega_4\omega_1+\\ & \tfrac{1}{4}v^2\omega_3+\tfrac{1}{2}\omega_2\omega_1+\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{4}\omega_2\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{1}{4}\omega_2\omega_4+\tfrac{1}{8}\omega_3\omega_4\omega_1u^2,\end{aligned}$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2+\omega_2+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{7}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_4^2+\tfrac{3}{2}\omega_4-\omega_1^2+\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_1^2+3\omega_1+\tfrac{1}{4}\omega_4^2\omega_1-\tfrac{3}{2}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1-\tfrac{1}{2}\omega_2-\tfrac{1}{8}v^2\omega_3^2\omega_1-\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2v\omega_1+\tfrac{1}{16}\omega_3^2\omega_4u^2-\tfrac{1}{4}\omega_2\omega_3\omega_1u-\tfrac{1}{4}\omega_4{c_s}^2-\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\\ & \tfrac{1}{8}\omega_2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3\omega_4+\tfrac{1}{2}\omega_2v+\tfrac{1}{16}\omega_3\omega_4^2u^2-\tfrac{1}{8}\omega_2v\omega_4+\tfrac{3}{8}\omega_2v^2\omega_3-\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{3}{4}\omega_2\omega_3{c_s}^2-\tfrac{1}{16}\omega_4^2u-\\ & \tfrac{1}{8}v^2\omega_3^2\omega_4+\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1-\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{8}\omega_2\omega_4u^2-\tfrac{1}{4}\omega_3+\tfrac{1}{16}\omega_3\omega_4^2u-\tfrac{1}{16}\omega_4^2u^2-\\ & \tfrac{1}{8}\omega_3^2\omega_1u^2+\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_1u+\tfrac{13}{16}\omega_3\omega_4{c_s}^2-\omega_3u^2+\tfrac{1}{16}\omega_3^2\omega_4u-\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\tfrac{3}{8}\omega_2\omega_3u^2-\tfrac{1}{4}\omega_2\omega_3\omega_4{c_s}^2-\\ & \tfrac{1}{16}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}\omega_3^2u^2+\tfrac{5}{8}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_1u-\tfrac{1}{8}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{16}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}v^2\omega_3^2-\tfrac{1}{4}\omega_4-\tfrac{5}{16}\omega_3\omega_4u+\\ & \tfrac{1}{8}\omega_2v\omega_3^2-\tfrac{1}{2}\omega_1-\tfrac{1}{8}v^2\omega_3\omega_4^2+\tfrac{1}{4}\omega_4u^2-\tfrac{5}{8}\omega_2v\omega_3+\tfrac{1}{8}\omega_2v^2\omega_4-\tfrac{1}{16}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v\omega_3\omega_1+\tfrac{7}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_4u-\\ & \tfrac{1}{8}v^2\omega_3\omega_4\omega_1-v^2\omega_3+\tfrac{1}{4}\omega_2\omega_1-2\omega_3{c_s}^2+\tfrac{5}{8}v^2\omega_3\omega_1+\tfrac{5}{8}\omega_3\omega_1u+\tfrac{1}{8}\omega_2v\omega_3\omega_4+\tfrac{1}{8}\omega_2\omega_4+\tfrac{1}{16}\omega_4^2{c_s}^2+\tfrac{5}{4}\omega_3{c_s}^2\omega_1,\end{aligned}$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2+\omega_2-\tfrac{9}{8}\omega_2\omega_3+\tfrac{1}{8}\omega_3\omega_4\omega_1+\tfrac{3}{8}\omega_2\omega_3\omega_4+\tfrac{5}{2}\omega_3-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{8}\omega_3^2\omega_4+\tfrac{1}{8}\omega_2\omega_3^2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}\omega_2\omega_3\omega_1+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{1}{8}\omega_4^2-\tfrac{9}{8}\omega_3\omega_1+\omega_4+\omega_1-\tfrac{9}{8}\omega_3\omega_4+\tfrac{1}{8}\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_1-\tfrac{3}{8}\omega_2\omega_4,$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = {} & -1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3^2\omega_1-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2v\omega_4\omega_1+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1-\tfrac{3}{2}\omega_2v\omega_1+\\ & \tfrac{5}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{1}{2}\omega_2v^2\omega_3\omega_4-\tfrac{1}{4}\omega_2v\omega_3^2\omega_1+\omega_2v-\tfrac{1}{4}\omega_2v\omega_4-\\ & \tfrac{1}{4}\omega_2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{5}{4}v^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1+v^2\omega_4-\tfrac{1}{2}v^2\omega_3\omega_4^2\omega_1-\tfrac{1}{2}\omega_3^2{c_s}^2-\\ & \tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_2\omega_4u^2-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{1}{4}\omega_3-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{4}\omega_4^2u^2+\tfrac{1}{4}\omega_3^2\omega_1u^2+\tfrac{1}{4}v^2\omega_4\omega_1^2+\\ & \tfrac{1}{4}\omega_2\omega_3\omega_1-\tfrac{5}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_1^2u^2+\omega_3u^2+\tfrac{1}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{2}\omega_2v\omega_1^2-\tfrac{1}{4}\omega_2\omega_3u^2+\tfrac{1}{2}\omega_2\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\\ & \tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2+\tfrac{1}{4}v^2\omega_3\omega_1^2-\tfrac{1}{4}\omega_3^2u^2-\tfrac{5}{4}\omega_3\omega_1u^2-\tfrac{1}{4}\omega_2v\omega_3\omega_4\omega_1+3\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}v^2\omega_3^2+\\ & \tfrac{5}{4}\omega_4-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1^2+\tfrac{1}{4}\omega_2\omega_4\omega_1+\tfrac{1}{4}\omega_2v\omega_3^2+\omega_1-\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_3\omega_1^2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{2}v^2\omega_3\omega_4^2-\omega_4u^2-\tfrac{5}{4}\omega_2v\omega_3-\\ & \tfrac{1}{4}\omega_2v^2\omega_4-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{7}{4}\omega_2v\omega_3\omega_1+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{4}v^2\omega_4^2\omega_1-\tfrac{5}{2}v^2\omega_3\omega_4+3v^2\omega_3\omega_4\omega_1+v^2\omega_3-\tfrac{1}{2}\omega_2\omega_1+\\ & 2\omega_3{c_s}^2-\tfrac{5}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_4\omega_1u^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{1}{4}\omega_2v\omega_3\omega_4-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\tfrac{1}{4}\omega_2\omega_4-\tfrac{5}{2}\omega_3{c_s}^2\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_5],t-3\delta_t} = {} & 3-\tfrac{3}{2}\omega_2+\tfrac{7}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_2\omega_3\omega_1^2-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{15}{4}\omega_3\omega_4\omega_1-\tfrac{3}{4}\omega_2\omega_3\omega_4-\tfrac{15}{4}\omega_3+\tfrac{13}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_3^2\omega_4+\\ & \tfrac{1}{2}\omega_3\omega_4\omega_1^2-\tfrac{1}{4}\omega_2\omega_3^2+\tfrac{3}{4}\omega_3^2-\tfrac{9}{4}\omega_2\omega_3\omega_1-\tfrac{3}{4}\omega_3^2\omega_1+\tfrac{1}{4}\omega_2\omega_3^2\omega_1+\tfrac{1}{2}\omega_4^2+\tfrac{19}{4}\omega_3\omega_1-\tfrac{11}{4}\omega_4+\omega_1^2-\tfrac{3}{4}\omega_2\omega_4\omega_1-\\ & \tfrac{1}{2}\omega_2\omega_1^2-4\omega_1+\tfrac{13}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+\tfrac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2\omega_1+\tfrac{1}{2}\omega_3^2\omega_4\omega_1-\omega_3\omega_1^2+\tfrac{3}{4}\omega_2\omega_4,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = {} & -2+\tfrac{1}{16}\omega_2\omega_4^2{c_s}^2+3\omega_2-\tfrac{3}{4}\omega_2v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3^2\omega_1+\tfrac{7}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2^2v^2\omega_4+\tfrac{1}{16}\omega_3^2\omega_4u^2+\tfrac{1}{8}\omega_4\omega_1u^2-\\ & \tfrac{7}{4}\omega_2\omega_3\omega_1u+\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{7}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{3}{4}\omega_2\omega_3+\tfrac{1}{4}\omega_2^2\omega_4-\tfrac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2+\tfrac{13}{4}\omega_2v^2\omega_3\omega_4-\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2+\\ & \tfrac{1}{16}\omega_3\omega_4^2u^2-\tfrac{11}{4}\omega_2v^2\omega_3-\tfrac{1}{4}\omega_3^2\omega_1u+\tfrac{9}{16}\omega_2\omega_3\omega_4u^2-\tfrac{11}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{16}\omega_4^2u+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1+\end{aligned}$$

$$v^2\omega_4+\tfrac{1}{4}\omega_2\omega_4u-\omega_3^2{c_s}^2+\tfrac{1}{2}\omega_2^2\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4-\tfrac{1}{4}v^2\omega_4^2-\tfrac{9}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\omega_2\omega_4u^2+\tfrac{3}{4}\omega_2^2\omega_3u^2-\tfrac{9}{16}\omega_2\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}\omega_3+\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_2v^2\omega_3\omega_4^2-\tfrac{1}{2}\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_3^2-\tfrac{1}{16}\omega_3\omega_4^2u+\tfrac{3}{16}\omega_4^2u^2+\tfrac{1}{4}\omega_3^2\omega_1u^2-\tfrac{5}{16}\omega_2\omega_3\omega_4u-\tfrac{9}{16}\omega_2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_2\omega_3^2u^2-\tfrac{1}{8}\omega_4{c_s}^2\omega_1+\tfrac{3}{2}\omega_2\omega_1u-\tfrac{53}{16}\omega_3\omega_4{c_s}^2+2\omega_3u^2-\tfrac{1}{16}\omega_3^2\omega_4u+\tfrac{3}{8}\omega_4\omega_1u+\tfrac{7}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{4}\omega_2\omega_4^2-\tfrac{3}{8}\omega_3\omega_4\omega_1u-\tfrac{11}{4}\omega_2\omega_3u^2+\tfrac{61}{16}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_2^2\omega_4u^2+\tfrac{9}{16}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_4^2-\omega_2^2\omega_3{c_s}^2\omega_1-\tfrac{1}{2}\omega_2^2v^2\omega_3\omega_1-\tfrac{1}{2}\omega_3^2u^2+\tfrac{1}{16}\omega_2\omega_3^2\omega_4u-\tfrac{5}{4}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_1u-\tfrac{3}{8}\omega_2\omega_4\omega_1u-\omega_1u+\tfrac{9}{8}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{9}{16}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v^2\omega_3^2-\tfrac{1}{2}\omega_2^2\omega_1u+\tfrac{3}{2}\omega_4+\tfrac{1}{2}\omega_2\omega_4\omega_1-\tfrac{3}{16}\omega_2\omega_4^2u^2-\tfrac{1}{4}\omega_2\omega_3^2\omega_1u^2+\tfrac{5}{16}\omega_3\omega_4u+\tfrac{1}{4}\omega_2v^2\omega_4^2+\omega_1-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2v^2\omega_3\omega_4+\tfrac{1}{16}\omega_2\omega_3\omega_4^2u-\tfrac{3}{4}\omega_4u^2-\tfrac{5}{4}\omega_2v^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2\omega_1u-\tfrac{9}{16}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{1}{2}\omega_2v^2\omega_3^2\omega_4-\tfrac{11}{4}v^2\omega_3\omega_4-\omega_2^2-\tfrac{1}{4}\omega_4u+\omega_2\omega_3^2{c_s}^2-\tfrac{1}{16}\omega_2\omega_3\omega_4^2u^2+\tfrac{3}{4}v^2\omega_3\omega_4\omega_1+2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2{c_s}^2\omega_1-\tfrac{3}{2}\omega_2\omega_1+4\omega_3{c_s}^2-\tfrac{1}{16}\omega_2\omega_4^2u-\tfrac{5}{4}v^2\omega_3\omega_1-\tfrac{1}{16}\omega_2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_2^2\omega_3{c_s}^2-\tfrac{1}{4}\omega_2\omega_4{c_s}^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_1u^2+\tfrac{5}{4}\omega_3\omega_1u-\tfrac{1}{8}\omega_2\omega_4\omega_1u^2+\tfrac{3}{4}\omega_2^2v^2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3^2\omega_1-\tfrac{7}{4}\omega_2\omega_4+\tfrac{1}{4}\omega_2^2\omega_3+\tfrac{3}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{16}\omega_4^2{c_s}^2-\tfrac{5}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_5],t-3\delta_t}=3-4\omega_2+\tfrac{19}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_2^2\omega_4-\tfrac{3}{4}\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_1-\tfrac{15}{4}\omega_2\omega_3\omega_4-\tfrac{15}{4}\omega_3+\tfrac{3}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_3^2\omega_4-\tfrac{3}{4}\omega_2\omega_3^2+\tfrac{3}{4}\omega_3^2-\tfrac{9}{4}\omega_2\omega_3\omega_1-\tfrac{1}{4}\omega_3^2\omega_1-\tfrac{1}{2}\omega_2\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_4+\tfrac{1}{4}\omega_2\omega_3^2\omega_1+\tfrac{1}{2}\omega_4^2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{11}{4}\omega_4-\tfrac{3}{4}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2^2\omega_3\omega_1+\tfrac{1}{2}\omega_2\omega_3^2\omega_4-\tfrac{3}{2}\omega_1+\tfrac{13}{4}\omega_3\omega_4+\tfrac{3}{4}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+\omega_2^2+2\omega_2\omega_1+\tfrac{13}{4}\omega_2\omega_4-\omega_2^2\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-2+\tfrac{1}{4}\omega_2\omega_4\omega_1^2u^2+3\omega_2+\tfrac{3}{8}\omega_2v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_2v^2\omega_3\omega_1+\tfrac{1}{2}\omega_2^2v^2\omega_4+\tfrac{3}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4{c_s}^2-\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{4}\omega_4{c_s}^2\omega_1^2-\omega_2\omega_3+\tfrac{1}{2}\omega_2^2\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_1^2+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{3}{8}\omega_2v^2\omega_3\omega_4+\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1u^2-\tfrac{3}{8}\omega_2v^2\omega_4^2\omega_1+\omega_2v^2\omega_3+\tfrac{3}{8}\omega_2\omega_4^2\omega_1u^2-\tfrac{3}{8}\omega_2\omega_3\omega_4u^2+2\omega_2\omega_3{c_s}^2-2v^2\omega_4\omega_1+\tfrac{3}{8}\omega_3\omega_4\omega_1+\tfrac{3}{2}v^2\omega_4+\tfrac{1}{4}\omega_2\omega_4u+\omega_2^2\omega_1+\tfrac{3}{8}\omega_2\omega_3\omega_4-\tfrac{3}{8}\omega_2\omega_4^2\omega_1-\tfrac{3}{8}v^2\omega_4^2+\tfrac{3}{4}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\tfrac{7}{4}\omega_2\omega_4u^2-\tfrac{1}{2}\omega_2^2\omega_3u^2+\tfrac{1}{2}\omega_3-\tfrac{9}{4}\omega_4\omega_1+\tfrac{3}{8}\omega_4^2u^2-\tfrac{1}{2}\omega_2^2v^2\omega_4\omega_1+\tfrac{1}{2}v^2\omega_4\omega_1^2-\omega_2\omega_3{c_s}^2\omega_1^2-\tfrac{1}{2}\omega_4{c_s}^2\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_2^2\omega_4\omega_1+\tfrac{3}{4}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{2}\omega_3u^2-\tfrac{1}{2}\omega_2v^2\omega_3\omega_1^2+\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{2}\omega_2^2\omega_4\omega_1u^2-\tfrac{1}{2}\omega_2\omega_3\omega_1u^2+\tfrac{3}{8}\omega_2\omega_4^2+\omega_2\omega_3u^2-\tfrac{3}{4}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_2^2\omega_4u^2+\tfrac{1}{2}\omega_2\omega_4{c_s}^2\omega_1-\tfrac{3}{8}\omega_4^2+\omega_3{c_s}^2\omega_1^2+\omega_2^2\omega_3{c_s}^2\omega_1+\tfrac{1}{2}\omega_2^2v^2\omega_3\omega_1+\tfrac{1}{2}v^2\omega_3\omega_1^2-\tfrac{1}{4}\omega_2\omega_4\omega_1u-\tfrac{1}{2}\omega_2\omega_3\omega_1^2u^2-\tfrac{3}{4}\omega_3\omega_4{c_s}^2\omega_1+2\omega_4+\tfrac{11}{4}\omega_2\omega_4\omega_1-\tfrac{1}{2}\omega_2^2\omega_3\omega_1-\tfrac{3}{8}\omega_2\omega_4^2u^2+\tfrac{3}{8}\omega_2v^2\omega_4^2+2\omega_1-\tfrac{3}{8}\omega_3\omega_4-\tfrac{1}{2}\omega_2v^2\omega_4\omega_1^2+\tfrac{3}{8}\omega_4^2\omega_1-\tfrac{5}{4}\omega_4u^2-2\omega_2v^2\omega_4-\tfrac{3}{8}\omega_4^2\omega_1u^2+\tfrac{3}{8}\omega_3\omega_4u^2-\tfrac{3}{8}\omega_2\omega_3\omega_4\omega_1+\tfrac{5}{2}\omega_2v^2\omega_4\omega_1+\tfrac{3}{8}v^2\omega_4^2\omega_1+\tfrac{3}{8}v^2\omega_3\omega_4-\omega_2^2-\tfrac{1}{4}\omega_4u-\tfrac{3}{8}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v^2\omega_3-\tfrac{1}{4}\omega_2\omega_4\omega_1^2-3\omega_2\omega_1-\omega_3{c_s}^2-\omega_2^2\omega_3{c_s}^2-\tfrac{1}{4}\omega_2\omega_4{c_s}^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_1u^2-2\omega_2\omega_4\omega_1u^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}\omega_2^2v^2\omega_3-\tfrac{1}{2}\omega_3\omega_1^2-\tfrac{5}{2}\omega_2\omega_4+\tfrac{1}{2}\omega_2^2\omega_3-\tfrac{3}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_2\omega_4{c_s}^2\omega_1^2,$$

$$\alpha_{x,y}^{[\mu_5],t-3\delta_t}=3-4\omega_2-\omega_2^2\omega_4-\tfrac{3}{4}\omega_4\omega_1^2-\omega_2^2\omega_1+\tfrac{3}{4}\omega_2\omega_4^2\omega_1+\tfrac{17}{4}\omega_4\omega_1+\omega_2^2\omega_4\omega_1-\tfrac{3}{4}\omega_2\omega_4^2+\tfrac{3}{4}\omega_4^2-\tfrac{7}{2}\omega_4+\omega_1^2-\tfrac{21}{4}\omega_2\omega_4\omega_1-\omega_2\omega_1^2-4\omega_1-\tfrac{3}{4}\omega_4^2\omega_1+\omega_2^2+\tfrac{3}{4}\omega_2\omega_4\omega_1^2+5\omega_2\omega_1+\tfrac{9}{2}\omega_2\omega_4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t}=-2+\tfrac{1}{16}\omega_2\omega_4^2{c_s}^2+3\omega_2-\tfrac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3^2\omega_1+\tfrac{7}{4}\omega_2v^2\omega_3\omega_1+\tfrac{1}{4}\omega_2^2v^2\omega_4-\tfrac{1}{16}\omega_3^2\omega_4u^2+\tfrac{1}{8}\omega_4\omega_1u^2+\tfrac{7}{4}\omega_2\omega_3\omega_1u+\tfrac{1}{4}\omega_4{c_s}^2+\tfrac{7}{2}\omega_2\omega_3{c_s}^2\omega_1-\tfrac{3}{4}\omega_2\omega_3+\tfrac{1}{4}\omega_2^2\omega_4-\tfrac{1}{2}\omega_2^2\omega_3\omega_4{c_s}^2+\tfrac{11}{4}\omega_2v^2\omega_3\omega_4-\tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u^2-\tfrac{1}{16}\omega_3\omega_4^2u^2-\tfrac{11}{4}\omega_2v^2\omega_3+\tfrac{1}{4}\omega_3^2\omega_1u+\tfrac{1}{16}\omega_2\omega_3\omega_4u^2-\tfrac{11}{2}\omega_2\omega_3{c_s}^2+\tfrac{1}{16}\omega_4^2u+\tfrac{3}{8}v^2\omega_3^2\omega_4-\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1+v^2\omega_4+\tfrac{1}{4}\omega_2\omega_4u-\omega_3^2{c_s}^2+\tfrac{1}{2}\omega_2^2\omega_1+\tfrac{1}{8}\omega_2\omega_3\omega_4-\tfrac{1}{4}v^2\omega_4^2-\tfrac{5}{8}\omega_2\omega_3\omega_4{c_s}^2\omega_1+\omega_2\omega_4u^2+\tfrac{3}{4}\omega_2^2\omega_3u^2-\tfrac{5}{16}\omega_2\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}\omega_3-\tfrac{1}{8}\omega_2\omega_3\omega_4\omega_1u-\tfrac{3}{8}\omega_2v^2\omega_3\omega_4^2-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_3^2-\tfrac{1}{16}\omega_3\omega_4^2u+\tfrac{3}{16}\omega_4^2u^2+\tfrac{1}{4}\omega_3^2\omega_1u^2-\tfrac{5}{16}\omega_2\omega_3\omega_4u-\tfrac{5}{16}\omega_2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_2\omega_3^2u^2-\tfrac{1}{8}\omega_4{c_s}^2\omega_1-\tfrac{3}{2}\omega_2\omega_1u-\tfrac{37}{16}\omega_3\omega_4{c_s}^2+2\omega_3u^2-\tfrac{1}{16}\omega_3^2\omega_4u-\tfrac{1}{8}\omega_4\omega_1u+\tfrac{7}{4}\omega_2\omega_3\omega_1u^2+\tfrac{1}{8}\omega_2\omega_4^2+\tfrac{1}{8}\omega_3\omega_4\omega_1u-\tfrac{11}{4}\omega_2\omega_3u^2+\tfrac{45}{16}\omega_2\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_2^2\omega_4u^2+\tfrac{5}{16}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{8}\omega_2\omega_4{c_s}^2\omega_1-\tfrac{1}{8}\omega_4^2-\omega_2^2\omega_3{c_s}^2\omega_1-\tfrac{1}{2}\omega_2^2v^2\omega_3\omega_1-\tfrac{1}{2}\omega_3^2u^2+\tfrac{1}{16}\omega_2\omega_3^2\omega_4u-\tfrac{5}{4}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_1u+\tfrac{1}{8}\omega_2\omega_4\omega_1u+\omega_1u+\tfrac{5}{8}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{5}{16}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_2^2\omega_1u+\omega_4+\tfrac{1}{4}\omega_2\omega_4\omega_1-\tfrac{3}{16}\omega_2\omega_4^2u^2-\tfrac{1}{4}\omega_2\omega_3^2\omega_1u^2+\tfrac{5}{16}\omega_3\omega_4u+\tfrac{1}{4}\omega_2v^2\omega_4^2+\omega_1-\tfrac{1}{8}\omega_3\omega_4+\tfrac{3}{8}v^2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2v^2\omega_3\omega_4+\tfrac{1}{16}\omega_2\omega_3\omega_4^2u-\tfrac{3}{4}\omega_4u^2-\tfrac{5}{4}\omega_2v^2\omega_4-\tfrac{1}{4}\omega_2\omega_3^2\omega_1u-\tfrac{1}{16}\omega_3\omega_4u^2+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1-\tfrac{3}{8}\omega_2v^2\omega_3^2\omega_4-\tfrac{9}{4}v^2\omega_3\omega_4-\omega_2^2-\tfrac{1}{4}\omega_4u+\omega_2\omega_3^2{c_s}^2+\tfrac{1}{16}\omega_2\omega_3\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+2v^2\omega_3-\tfrac{1}{2}\omega_2\omega_3^2{c_s}^2\omega_1-\tfrac{3}{2}\omega_2\omega_1+4\omega_3{c_s}^2-\tfrac{1}{16}\omega_2\omega_4^2u-\tfrac{5}{4}v^2\omega_3\omega_1+\tfrac{1}{16}\omega_2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_2^2\omega_3{c_s}^2-\tfrac{1}{4}\omega_2\omega_4{c_s}^2-\tfrac{1}{2}\omega_2^2\omega_3\omega_1u^2-\tfrac{5}{4}\omega_3\omega_1u-\tfrac{1}{8}\omega_2\omega_4\omega_1u^2+\tfrac{3}{4}\omega_2^2v^2\omega_3-\tfrac{1}{4}\omega_2v^2\omega_3^2\omega_1-\tfrac{5}{4}\omega_2\omega_4+\tfrac{1}{4}\omega_2^2\omega_3+\tfrac{1}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{16}\omega_4^2{c_s}^2-\tfrac{5}{2}\omega_3{c_s}^2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-3\delta_t}=3-4\omega_2+\tfrac{19}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_2^2\omega_4-\tfrac{1}{2}\omega_3\omega_4\omega_1+\tfrac{3}{8}\omega_2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_1-\tfrac{25}{8}\omega_2\omega_3\omega_4-\tfrac{15}{4}\omega_3+\tfrac{1}{2}\omega_4\omega_1-\tfrac{3}{8}\omega_3^2\omega_4-\tfrac{3}{4}\omega_2\omega_3^2+\tfrac{3}{4}\omega_3^2-\tfrac{9}{4}\omega_2\omega_3\omega_1-\tfrac{1}{4}\omega_3^2\omega_1-\tfrac{3}{8}\omega_2\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3\omega_4+\tfrac{1}{4}\omega_2\omega_3^2\omega_1+\tfrac{3}{8}\omega_4^2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{9}{4}\omega_4-\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_2^2\omega_3\omega_1+\tfrac{3}{8}\omega_2\omega_3^2\omega_4-\tfrac{3}{2}\omega_1+\tfrac{21}{8}\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{3}{8}\omega_3\omega_4^2+\omega_2^2+2\omega_2\omega_1+\tfrac{11}{4}\omega_2\omega_4-\omega_2^2\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=-1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_2v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3^2\omega_1-\tfrac{3}{8}\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_2v\omega_4\omega_1+\tfrac{1}{4}\omega_2v^2\omega_3\omega_1+\tfrac{3}{2}\omega_2v\omega_1+\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_4{c_s}^2+\tfrac{1}{2}\omega_2\omega_3{c_s}^2\omega_1+\tfrac{1}{4}\omega_4{c_s}^2\omega_1^2-\tfrac{1}{4}\omega_2\omega_3-\tfrac{3}{8}v^2\omega_3^2\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_3\omega_4+\tfrac{1}{4}\omega_2v\omega_3^2\omega_1-\omega_2v+$$

$$\frac{1}{4}\omega_2 v\omega_4 - \frac{1}{4}\omega_2 v^2\omega_3 - \frac{1}{2}\omega_2\omega_3 {c_s}^2 + \frac{1}{8}\omega_4^2 u + \frac{3}{8}v^2\omega_3^2\omega_4 - \frac{5}{4}v^2\omega_4\omega_1 + \frac{1}{8}\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_3^2 {c_s}^2\omega_1 + v^2\omega_4 - \frac{3}{8}v^2\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2 {c_s}^2 - \frac{1}{4}v^2\omega_4^2 - \frac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_4 u^2 - \frac{3}{8}\omega_3\omega_4^2 {c_s}^2\omega_1 + \frac{1}{4}\omega_3 - \frac{3}{4}\omega_4\omega_1 - \frac{1}{8}\omega_3\omega_4^2 u + \frac{1}{8}\omega_4^2 u^2 + \frac{1}{4}\omega_3^2\omega_1 u^2 + \frac{1}{4}v^2\omega_4\omega_1^2 - \frac{3}{4}\omega_4 {c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_3\omega_1 - \frac{17}{8}\omega_3\omega_4 {c_s}^2 + \frac{1}{4}\omega_3\omega_1^2 u^2 + \omega_3 u^2 - \frac{1}{8}\omega_3^2\omega_4 u + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_2\omega_3\omega_1 u^2 - \frac{1}{2}\omega_2 v\omega_1^2 - \frac{1}{4}\omega_3\omega_4\omega_1 u - \frac{1}{4}\omega_2\omega_3 u^2 + \frac{1}{2}\omega_2\omega_3\omega_4 {c_s}^2 + \frac{3}{8}\omega_3\omega_4^2 {c_s}^2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_3 {c_s}^2\omega_1^2 + \frac{1}{4}v^2\omega_3\omega_1^2 - \frac{1}{4}\omega_3^2 u^2 - \frac{5}{4}\omega_3\omega_1 u^2 + \frac{1}{4}\omega_2 v\omega_3\omega_4\omega_1 + \frac{19}{8}\omega_3\omega_4 {c_s}^2\omega_1 + \frac{3}{8}\omega_3^2\omega_4 {c_s}^2 - \frac{1}{4}v^2\omega_3^2 + \frac{3}{4}\omega_4 - \frac{1}{4}v^2\omega_3\omega_4\omega_1^2 + \frac{1}{4}\omega_2\omega_4\omega_1 + \frac{1}{8}\omega_4^2 {c_s}^2\omega_1 + \frac{5}{8}\omega_3\omega_4 u - \frac{1}{4}\omega_2 v\omega_3^2 + \omega_1 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{2}\omega_2 v\omega_3\omega_1^2 + \frac{1}{8}\omega_4^2\omega_1 + \frac{3}{8}v^2\omega_3\omega_4^2 - \frac{1}{2}\omega_4 u^2 + \frac{5}{4}\omega_2 v\omega_3 - \frac{1}{4}\omega_2 v^2\omega_4 - \frac{1}{8}\omega_4^2\omega_1 u^2 - \frac{1}{8}\omega_3\omega_4 u^2 - \frac{7}{4}\omega_2 v\omega_3\omega_1 + \frac{1}{4}\omega_2 v^2\omega_4\omega_1 + \frac{1}{4}v^2\omega_4^2\omega_1 - 2v^2\omega_3\omega_4 - \frac{1}{2}\omega_4 u + \frac{9}{4}v^2\omega_3\omega_4\omega_1 + v^2\omega_3 - \frac{1}{2}\omega_2\omega_1 + 2\omega_3 {c_s}^2 - \frac{5}{4}v^2\omega_3\omega_1 - \frac{1}{4}\omega_2\omega_4\omega_1 u^2 - \frac{1}{4}\omega_3\omega_1^2 - \frac{1}{4}\omega_2 v\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1^2 - \frac{1}{4}\omega_2\omega_4 + \frac{1}{8}\omega_3\omega_4\omega_1 u^2 - \frac{1}{8}\omega_4^2 {c_s}^2 - \frac{5}{2}\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-3\delta_t} = 3 - \frac{3}{2}\omega_2 + \frac{7}{4}\omega_2\omega_3 + \frac{1}{2}\omega_2\omega_3\omega_1^2 - \frac{1}{4}\omega_4\omega_1^2 - \frac{23}{8}\omega_3\omega_4\omega_1 - \frac{3}{4}\omega_2\omega_3\omega_4 - \frac{15}{4}\omega_3 + \frac{5}{2}\omega_4\omega_1 - \frac{3}{8}\omega_3^2\omega_4 + \frac{1}{4}\omega_3\omega_4\omega_1^2 - \frac{1}{4}\omega_2\omega_3^2 + \frac{3}{4}\omega_3^2 - \frac{9}{4}\omega_2\omega_3\omega_1 - \frac{3}{4}\omega_3^2\omega_1 + \frac{1}{4}\omega_2\omega_3^2\omega_1 + \frac{3}{8}\omega_4^2 + \frac{19}{4}\omega_3\omega_1 - \frac{9}{4}\omega_4 + \omega_1^2 - \frac{3}{4}\omega_2\omega_4\omega_1 - \frac{1}{2}\omega_2\omega_1^2 - 4\omega_1 + \frac{21}{8}\omega_3\omega_4 - \frac{3}{8}\omega_4^2\omega_1 + \frac{3}{4}\omega_2\omega_3\omega_4\omega_1 - \frac{3}{8}\omega_3\omega_4^2 + \frac{3}{8}\omega_3\omega_4^2\omega_1 + 2\omega_2\omega_1 + \frac{3}{8}\omega_3^2\omega_4\omega_1 - \omega_3\omega_1^2 + \frac{3}{4}\omega_2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 2 - \frac{1}{8}\omega_2\omega_4^2 {c_s}^2 - \frac{1}{4}\omega_2\omega_4\omega_1^2 u^2 - 3\omega_2 + \frac{25}{4}\omega_2 v^2\omega_3\omega_4\omega_1 - \frac{1}{2}v^2\omega_3^2\omega_1 + \frac{7}{8}\omega_3^2\omega_4 {c_s}^2\omega_1 - 3\omega_2 v^2\omega_3\omega_1 - \frac{1}{2}\omega_2^2 v^2\omega_4 - \frac{7}{4}\omega_4\omega_1 u^2 - \frac{1}{2}\omega_4 {c_s}^2 - 6\omega_2\omega_3 {c_s}^2\omega_1 - \frac{1}{4}\omega_4 {c_s}^2\omega_1^2 + \omega_2\omega_3 - \frac{1}{2}\omega_2^2\omega_4 - \frac{1}{2}\omega_2\omega_3\omega_1^2 + \frac{7}{8}v^2\omega_3^2\omega_4\omega_1 + \omega_2^2\omega_3\omega_4 {c_s}^2 - \frac{1}{4}\omega_4\omega_1^2 - \frac{11}{2}\omega_2 v^2\omega_3\omega_4 + \frac{1}{8}\omega_2\omega_3\omega_4\omega_1 u^2 + \frac{1}{2}\omega_2 v^2\omega_4^2\omega_1 + \frac{5}{2}\omega_2 v^2\omega_3 - \frac{3}{8}\omega_2\omega_4^2\omega_1 u^2 - \frac{1}{8}\omega_2\omega_3\omega_4 u^2 + 5\omega_2\omega_3 {c_s}^2 - \frac{1}{8}\omega_4^2 u - \frac{7}{8}v^2\omega_3^2\omega_4 + \frac{5}{2}v^2\omega_4\omega_1 - \frac{3}{8}\omega_3\omega_4\omega_1 - \omega_3^2 {c_s}^2\omega_1 - 2v^2\omega_4 - \omega_2^2 v^2\omega_3\omega_4\omega_1 + \frac{7}{8}v^2\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_2\omega_4 u - \frac{3}{4}\omega_2\omega_3\omega_4 {c_s}^2\omega_1^2 + \omega_3^2 {c_s}^2 - \omega_2^2\omega_1 - \frac{3}{8}\omega_2\omega_3\omega_4 + \frac{3}{8}\omega_2\omega_4^2\omega_1 + \frac{1}{8}\omega_2\omega_4^2 {c_s}^2\omega_1 + \frac{1}{2}v^2\omega_4^2 + \frac{51}{8}\omega_2\omega_3\omega_4 {c_s}^2\omega_1 - 2\omega_2\omega_4 u^2 - \frac{1}{2}\omega_2^2\omega_3 u^2 + \frac{7}{8}\omega_2\omega_3^2\omega_4 {c_s}^2 + \frac{7}{8}\omega_3\omega_4^2 {c_s}^2\omega_1 - \frac{1}{2}\omega_3 - \frac{1}{4}\omega_2\omega_3\omega_4\omega_1 u + \frac{7}{8}\omega_2 v^2\omega_3\omega_4^2 + \frac{9}{4}\omega_4\omega_1 - \frac{1}{2}\omega_2 v^2\omega_3^2 + \frac{1}{8}\omega_3\omega_4^2 u - \frac{3}{8}\omega_4^2 u^2 - \frac{1}{2}\omega_3^2\omega_1 u^2 + \frac{5}{8}\omega_2\omega_3\omega_4 u + \frac{1}{2}\omega_2^2 v^2\omega_4\omega_1 - \frac{1}{2}v^2\omega_4\omega_1^2 + \frac{7}{8}\omega_2\omega_3\omega_4^2 {c_s}^2 - \frac{1}{2}\omega_2\omega_3^2 u^2 + \omega_2\omega_3 {c_s}^2\omega_1^2 + \frac{3}{4}\omega_4 {c_s}^2\omega_1 - \frac{1}{2}\omega_2\omega_3\omega_1 + \frac{1}{2}\omega_2^2\omega_4\omega_1 + \frac{37}{8}\omega_3\omega_4 {c_s}^2 - \frac{1}{2}\omega_3\omega_1^2 u^2 - 2\omega_3 u^2 - \frac{3}{4}\omega_2 v^2\omega_3\omega_4\omega_1^2 - \omega_2^2\omega_3\omega_4 {c_s}^2\omega_1 + \frac{1}{2}\omega_2 v^2\omega_3\omega_1^2 + \frac{1}{8}\omega_3^2\omega_4 u - \frac{1}{4}\omega_4\omega_1 u - \frac{1}{2}\omega_2^2\omega_4\omega_1 u^2 - 3\omega_2\omega_3\omega_1 u^2 - \frac{3}{8}\omega_2\omega_4^2 - \frac{7}{8}\omega_2\omega_3\omega_4^2 {c_s}^2\omega_1 + \frac{1}{4}\omega_3\omega_4\omega_1 u + \frac{5}{2}\omega_2\omega_3 u^2 - \frac{45}{8}\omega_2\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2^2\omega_4 u^2 - \frac{7}{8}\omega_3\omega_4^2 {c_s}^2 - \frac{3}{4}\omega_2\omega_4 {c_s}^2\omega_1 + \frac{3}{8}\omega_4^2 - \omega_3 {c_s}^2\omega_1^2 + \omega_2^2\omega_3 {c_s}^2\omega_1 + \frac{1}{2}\omega_2^2 v^2\omega_3\omega_1 - \frac{1}{2}v^2\omega_3\omega_1^2 + \frac{1}{2}\omega_3^2 u^2 - \frac{1}{8}\omega_2\omega_3^2\omega_4 u + \frac{5}{2}\omega_3\omega_1 u^2 + \frac{1}{4}\omega_2\omega_4\omega_1 u + \frac{1}{2}\omega_2\omega_3\omega_1^2 u^2 - \frac{43}{8}\omega_3\omega_4 {c_s}^2\omega_1 - \frac{7}{8}\omega_3^2\omega_4 {c_s}^2 + \frac{1}{2}v^2\omega_3^2 - 2\omega_4 + \frac{3}{4}v^2\omega_3\omega_4\omega_1^2 - \frac{11}{4}\omega_2\omega_4\omega_1 + \frac{1}{2}\omega_2^2\omega_3\omega_1 - \frac{1}{8}\omega_4^2 {c_s}^2\omega_1 + \frac{3}{8}\omega_2\omega_4^2 u^2 + \frac{1}{2}\omega_2\omega_3^2\omega_1 u^2 - \frac{5}{8}\omega_3\omega_4 u - \frac{1}{2}\omega_2 v^2\omega_4^2 - 2\omega_1 + \frac{3}{8}\omega_3\omega_4 + \frac{1}{2}\omega_2 v^2\omega_4\omega_1^2 - \frac{3}{8}\omega_4^2\omega_1 - \frac{7}{8}v^2\omega_3\omega_4^2 + \omega_2^2 v^2\omega_3\omega_4 - \frac{1}{8}\omega_2\omega_3\omega_4^2 u + \frac{3}{2}\omega_4 u^2 + \frac{5}{2}\omega_2 v^2\omega_4 + \frac{3}{8}\omega_4^2\omega_1 u^2 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{3}{8}\omega_2\omega_3\omega_4\omega_1 - 3\omega_2 v^2\omega_4\omega_1 + \frac{7}{8}\omega_2 v^2\omega_3^2\omega_4 - \frac{7}{8}\omega_2 v^2\omega_3^2\omega_4\omega_1 - \frac{1}{2}v^2\omega_4^2\omega_1 + \frac{9}{2}v^2\omega_3\omega_4 + \omega_2^2 + \frac{1}{2}\omega_4 u - \omega_2\omega_3^2 {c_s}^2 - \frac{21}{4}v^2\omega_3\omega_4\omega_1 - 2v^2\omega_3 - \frac{7}{8}\omega_2\omega_3^2\omega_4 {c_s}^2\omega_1 + \frac{1}{4}\omega_2\omega_4\omega_1^2 + \omega_2\omega_3^2 {c_s}^2\omega_1 + 3\omega_2\omega_1 - 4\omega_3 {c_s}^2 + \frac{1}{8}\omega_2\omega_4^2 u + \frac{5}{2}v^2\omega_3\omega_1 - \frac{7}{8}\omega_2 v^2\omega_3\omega_4^2\omega_1 - \omega_2^2\omega_3 {c_s}^2 + \frac{1}{2}\omega_2\omega_4 {c_s}^2 + \frac{1}{2}\omega_2^2\omega_3\omega_1 u^2 + \frac{9}{4}\omega_2\omega_4\omega_1 u^2 + \frac{1}{4}\omega_4\omega_1^2 u^2 - \frac{1}{2}\omega_2^2 v^2\omega_3 + \frac{1}{2}\omega_3\omega_1^2 + \frac{1}{2}\omega_2 v^2\omega_3^2\omega_1 + \frac{3}{4}\omega_3\omega_4 {c_s}^2\omega_1^2 + \frac{5}{2}\omega_2\omega_4 - \frac{1}{2}\omega_2^2\omega_3 - \frac{1}{8}\omega_3\omega_4\omega_1 u^2 + \frac{1}{8}\omega_4^2 {c_s}^2 + \frac{1}{4}\omega_2\omega_4 {c_s}^2\omega_1^2 + 5\omega_3 {c_s}^2\omega_1,$$

$$\alpha_{x,y}^{[\mu_5],t-4\delta_t} = -4 + 5\omega_2 + \frac{7}{8}\omega_2\omega_3^2\omega_4\omega_1 - 6\omega_2\omega_3 + \omega_2^2\omega_4 - \omega_2\omega_3\omega_1^2 + \frac{3}{4}\omega_4\omega_1^2 + \frac{7}{8}\omega_2\omega_3\omega_4^2\omega_1 + \frac{49}{8}\omega_3\omega_4\omega_1 - \frac{7}{8}\omega_2\omega_3\omega_4^2 + \omega_2^2\omega_1 + \frac{51}{8}\omega_2\omega_3\omega_4 - \frac{7}{8}\omega_2\omega_4^2\omega_1 + 5\omega_3 - \frac{21}{4}\omega_4\omega_1 + \frac{7}{8}\omega_3^2\omega_4 - \frac{3}{4}\omega_3\omega_4\omega_1^2 + \omega_2^2\omega_3\omega_4\omega_1 + \omega_2\omega_3^2 - \omega_3^2 + 7\omega_2\omega_3\omega_1 - \omega_2^2\omega_4\omega_1 + \omega_3^2\omega_1 + \frac{7}{8}\omega_2\omega_4^2 - \omega_2^2\omega_3\omega_4 - \omega_2\omega_3^2\omega_1 - \frac{7}{8}\omega_4^2 - 6\omega_3\omega_1 + \frac{9}{2}\omega_4 - \omega_1^2 + \frac{25}{4}\omega_2\omega_4\omega_1 - \omega_2^2\omega_3\omega_1 - \frac{7}{8}\omega_2\omega_3^2\omega_4 + \omega_2\omega_1^2 + 5\omega_1 - \frac{43}{8}\omega_3\omega_4 + \frac{7}{8}\omega_4^2\omega_1 + \frac{3}{4}\omega_2\omega_3\omega_4\omega_1^2 - \frac{57}{8}\omega_2\omega_3\omega_4\omega_1 + \frac{7}{8}\omega_3\omega_4^2 - \frac{7}{8}\omega_3\omega_4^2\omega_1 - \omega_2^2 - \frac{3}{4}\omega_2\omega_4\omega_1^2 - 6\omega_2\omega_1 - \frac{7}{8}\omega_3^2\omega_4\omega_1 + \omega_3\omega_1^2 - \frac{11}{2}\omega_2\omega_4 + \omega_2^2\omega_3,$$

5 MRT 3: with ortogonalization and relaxation of m_{00}, m_{10}, m_{01}, m_{20}, m_{02}

5.1 Definitions

Matrix $\mathbf{A} = \mathbf{M}^{-1}\mathbf{S}\mathbf{M}$:

$$\mathbf{A}_{1,1} = \frac{2}{3}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0,$$
$$\mathbf{A}_{1,2} = -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0,$$
$$\mathbf{A}_{1,3} = -\frac{1}{3}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0,$$

$$
\begin{aligned}
\mathbf{A}_{1,4} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{1,5} &= -\frac{1}{3}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{2,1} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{2,2} &= \frac{1}{2}\omega_1 + \frac{3}{10}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{2,3} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{2,4} &= -\frac{1}{2}\omega_1 + \frac{3}{10}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{2,5} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{3,1} &= -\frac{1}{3}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{3,2} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{3,3} &= \frac{1}{6}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0 + \frac{1}{2}\omega_2, \\
\mathbf{A}_{3,4} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{3,5} &= \frac{1}{6}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0 - \frac{1}{2}\omega_2, \\
\mathbf{A}_{4,1} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{4,2} &= -\frac{1}{2}\omega_1 + \frac{3}{10}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{4,3} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{4,4} &= \frac{1}{2}\omega_1 + \frac{3}{10}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{4,5} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{5,1} &= -\frac{1}{3}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{5,2} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{5,3} &= \frac{1}{6}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0 - \frac{1}{2}\omega_2, \\
\mathbf{A}_{5,4} &= -\frac{1}{5}\omega_3 + \frac{1}{5}\omega_0, \\
\mathbf{A}_{5,5} &= \frac{1}{6}\omega_4 + \frac{2}{15}\omega_3 + \frac{1}{5}\omega_0 + \frac{1}{2}\omega_2.
\end{aligned}
$$

where

$$
\mathbf{S} = \operatorname{diag}(\omega_0, \omega_1, \omega_2, \omega_3, \omega_4)
$$

and

$$\mathbf{M} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & -1 \\ -2 & 3 & -2 & 3 & -2 \\ -2 & 0 & 1 & 0 & 1 \end{pmatrix}$$

Matrix $\mathbf{B}$:

$$\mathbf{B} = \begin{pmatrix} 0 & -1+\frac{2}{3}\omega_4+\frac{1}{3}\omega_3 & -1+\omega_4 & -1+\frac{2}{3}\omega_4+\frac{1}{3}\omega_3 & -1+\omega_4 \\ -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 \\ -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\frac{1}{6}\omega_4+\frac{1}{3}\omega_3+\frac{1}{2}\omega_2 & 0 & -1+\frac{1}{6}\omega_4+\frac{1}{3}\omega_3+\frac{1}{2}\omega_2 & -1+\omega_2 \\ -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 & 0 & -1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3 \\ -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\frac{1}{6}\omega_4+\frac{1}{3}\omega_3+\frac{1}{2}\omega_2 & -1+\omega_2 & -1+\frac{1}{6}\omega_4+\frac{1}{3}\omega_3+\frac{1}{2}\omega_2 & 0 \end{pmatrix}.$$

5.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1+\frac{5}{6}\omega_4 {c_s}^2+\frac{1}{2}v\omega_2-\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1-\frac{1}{2}\omega_3+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{2}\omega_1+\frac{1}{2}\omega_3u^2+\frac{1}{2}u\omega_1.$

$\alpha_{x,y}^{[\mu_1],t} = 1-\frac{5}{3}\omega_4{c_s}^2-\frac{1}{3}\omega_3{c_s}^2-\frac{2}{3}u^2\omega_4-\omega_4v^2-\frac{1}{3}\omega_3u^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1-\frac{1}{2}\omega_3+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{2}\omega_1+\frac{1}{2}\omega_3u^2-\frac{1}{2}u\omega_1.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1+\frac{5}{6}\omega_4{c_s}^2-\frac{1}{2}v\omega_2-\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1+\frac{1}{2}\omega_3-\frac{5}{6}\omega_4{c_s}^2+\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_2{c_s}^2+\frac{1}{6}u^2\omega_4\omega_1+\frac{1}{2}\omega_4-\frac{1}{6}\omega_3{c_s}^2-\frac{1}{3}u^2\omega_4-\frac{1}{2}\omega_4v^2-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1+\frac{1}{6}\omega_3u\omega_1-\frac{1}{6}\omega_3\omega_1{c_s}^2+\frac{1}{4}\omega_3v\omega_2-\frac{1}{6}\omega_3u^2\omega_1+\frac{5}{12}\omega_4\omega_1{c_s}^2+\frac{1}{4}\omega_1v\omega_2+\frac{1}{12}u\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_2-\frac{1}{6}\omega_3u^2-\frac{1}{2}u\omega_1+\frac{1}{4}\omega_4\omega_1v^2+\frac{1}{4}\omega_3\omega_4v^2+\frac{1}{4}u\omega_1\omega_2-\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2\omega_4,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1+\frac{5}{6}\omega_4{c_s}^2-\frac{1}{6}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2-\frac{1}{6}\omega_3\omega_2{c_s}^2+\frac{1}{2}\omega_4+\frac{2}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2+\frac{1}{2}\omega_4v\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_4v^2\omega_2+\frac{1}{2}\omega_2+\frac{2}{3}\omega_3u^2-\frac{5}{6}\omega_4\omega_2{c_s}^2-\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{2}\omega_3u^2\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1+\frac{1}{2}\omega_3-\frac{5}{6}\omega_4{c_s}^2+\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_2{c_s}^2+\frac{1}{6}u^2\omega_4\omega_1+\frac{1}{2}\omega_4-\frac{1}{6}\omega_3{c_s}^2-\frac{1}{3}u^2\omega_4-\frac{1}{2}\omega_4v^2-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1-\frac{1}{6}\omega_3u\omega_1-\frac{1}{6}\omega_3\omega_1{c_s}^2+\frac{1}{4}\omega_3v\omega_2-\frac{1}{6}\omega_3u^2\omega_1+\frac{5}{12}\omega_4\omega_1{c_s}^2+\frac{1}{4}\omega_1v\omega_2-\frac{1}{12}u\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_2-\frac{1}{6}\omega_3u^2+\frac{1}{2}u\omega_1+\frac{1}{4}\omega_4\omega_1v^2+\frac{1}{4}\omega_3\omega_4v^2-\frac{1}{4}u\omega_1\omega_2-\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1+\frac{1}{2}\omega_3+\frac{5}{3}\omega_4{c_s}^2-\frac{1}{3}u^2\omega_4\omega_1-\frac{1}{6}\omega_3{c_s}^2+\frac{2}{3}u^2\omega_4+\omega_4v^2+\frac{1}{2}\omega_1+\frac{1}{6}\omega_3u\omega_1-\frac{1}{6}\omega_3\omega_1{c_s}^2-\frac{1}{6}\omega_3u^2\omega_1-\frac{5}{6}\omega_4\omega_1{c_s}^2+\frac{1}{3}u\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{6}\omega_3u^2-\frac{1}{2}u\omega_1-\frac{1}{2}\omega_4\omega_1v^2-\frac{1}{2}\omega_3\omega_4v^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2+\omega_3-\frac{5}{3}\omega_4{c_s}^2-\frac{2}{3}\omega_3u^2\omega_2-\frac{2}{3}\omega_3\omega_2{c_s}^2-\omega_3\omega_1+\omega_4-\frac{1}{3}\omega_3{c_s}^2-\frac{2}{3}u^2\omega_4-\omega_4v^2+\omega_1+\omega_3\omega_1{c_s}^2+\omega_3u^2\omega_1-\omega_4\omega_2+\omega_4v^2\omega_2+\omega_2-\frac{1}{3}\omega_3u^2+\frac{5}{3}\omega_4\omega_2{c_s}^2+\frac{2}{3}u^2\omega_4\omega_2,$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y} = -1 + \tfrac{1}{2}\omega_3 + \tfrac{5}{3}\omega_4 {c_s}^2 - \tfrac{1}{3}u^2\omega_4\omega_1 - \tfrac{1}{6}\omega_3 {c_s}^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4 v^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{6}\omega_3 u\omega_1 - \tfrac{1}{6}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{6}\omega_3 u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{3}u\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{6}\omega_3 u^2 + \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 - \tfrac{1}{2}\omega_3\omega_4 v^2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 + \tfrac{1}{2}\omega_3 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{6}\omega_3 u\omega_1 - \tfrac{1}{6}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_3 v\omega_2 - \tfrac{1}{6}\omega_3 u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1 v\omega_2 + \tfrac{1}{12}u\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{6}\omega_3 u^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 + \tfrac{1}{4}\omega_3\omega_4 v^2 + \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x,y+\delta_l} = -1 + \tfrac{5}{6}\omega_4 {c_s}^2 - \tfrac{1}{6}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{6}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4 + \tfrac{2}{3}\omega_3 {c_s}^2 + \tfrac{1}{3}u^2\omega_4 + \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{2}\omega_4 v\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_4 v^2\omega_2 + \tfrac{1}{2}\omega_2 + \tfrac{2}{3}\omega_3 u^2 - \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{3}u^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 + \tfrac{1}{2}\omega_3 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{6}\omega_3 u\omega_1 - \tfrac{1}{6}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_3 v\omega_2 - \tfrac{1}{6}\omega_3 u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1 v\omega_2 - \tfrac{1}{12}u\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{6}\omega_3 u^2 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 + \tfrac{1}{4}\omega_3\omega_4 v^2 - \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$
$$1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1 v\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{12}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{6}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4 v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 - \tfrac{1}{3}\omega_3 u\omega_1 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4 v\omega_2 + \tfrac{1}{12}\omega_3 u\omega_1\omega_2 - \tfrac{1}{4}\omega_3 v\omega_2 + \tfrac{1}{3}\omega_3 u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1 v\omega_2 - \tfrac{5}{12}u\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4 v^2\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{6}\omega_3 u^2 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_3\omega_4 v^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v^2 - \tfrac{1}{4}\omega_4\omega_1 v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 + \tfrac{1}{4}\omega_3 u\omega_4\omega_1 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1 - \omega_3 + \tfrac{1}{2}\omega_3 u^2\omega_4\omega_1 + \tfrac{5}{6}\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{3}u^2\omega_4\omega_1 + \omega_3\omega_1 + \tfrac{1}{2}\omega_3 u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 + \tfrac{2}{3}\omega_3 {c_s}^2 + \tfrac{1}{3}u^2\omega_4 + \tfrac{1}{2}\omega_4 v^2 + \tfrac{1}{2}\omega_1\omega_2 - \omega_1 + \tfrac{1}{2}\omega_3\omega_1\omega_2 {c_s}^2 - \tfrac{2}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_3 v\omega_2 - \tfrac{2}{3}\omega_3 u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_1 v\omega_2 - \omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 v^2 - \tfrac{1}{2}\omega_2 + \tfrac{2}{3}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 v^2 - \tfrac{1}{2}\omega_3\omega_4 v^2 + \omega_3\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_1 v\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} =$$
$$1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1 v\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{12}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{6}u^2\omega_4\omega_1 - \tfrac{1}{6}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4 v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3 u\omega_1 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4 v\omega_2 - \tfrac{1}{12}\omega_3 u\omega_1\omega_2 - \tfrac{1}{4}\omega_3 v\omega_2 + \tfrac{1}{3}\omega_3 u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1 v\omega_2 + \tfrac{5}{12}u\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4 v^2\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{6}\omega_3 u^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_3\omega_4 v^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v^2 - \tfrac{1}{4}\omega_4\omega_1 v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_3 u\omega_4\omega_1 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 1 - \tfrac{1}{2}\omega_3 + \tfrac{5}{3}\omega_4 {c_s}^2 + \tfrac{1}{6}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_1 + \tfrac{1}{6}u\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3 u^2\omega_1\omega_2 - \omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4 v^2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{3}\omega_3\omega_1\omega_2 {c_s}^2 - \tfrac{1}{3}\omega_3 u\omega_1 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 + \tfrac{1}{3}\omega_3 u\omega_1\omega_2 + \tfrac{1}{3}\omega_3 u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{6}u\omega_4\omega_1 - \omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 + \omega_3\omega_4\omega_2 {c_s}^2 + \tfrac{5}{6}\omega_4\omega_1\omega_2 {c_s}^2 - \omega_4 v^2\omega_2 + \tfrac{1}{2}\omega_3 u^2\omega_4\omega_2 - \omega_2 - \tfrac{1}{6}\omega_3 u^2 + \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + \tfrac{1}{2}\omega_3\omega_4 v^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 v^2 + \tfrac{1}{2}\omega_4\omega_1 v^2\omega_2 - \tfrac{5}{3}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{2}u\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{2}{3}u^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = 2 - \omega_3 - \tfrac{5}{3}\omega_4 {c_s}^2 + \omega_3 u^2\omega_2 + \omega_3\omega_2 {c_s}^2 + \tfrac{2}{3}u^2\omega_4\omega_1 + \omega_3\omega_1 - \omega_4 - \tfrac{1}{3}\omega_3 {c_s}^2 - \tfrac{2}{3}u^2\omega_4 - \omega_4 v^2 - \omega_1 - \tfrac{2}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{2}{3}\omega_3 u^2\omega_1 + \tfrac{5}{3}\omega_4\omega_1 {c_s}^2 + 2\omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 - \omega_3\omega_4\omega_2 {c_s}^2 - \omega_3\omega_4\omega_1 v^2 - \omega_3 u^2\omega_4\omega_2 - \omega_2 - \tfrac{1}{3}\omega_3 u^2 + \omega_4\omega_1 v^2 + \omega_3\omega_4 v^2 - \omega_3\omega_4\omega_1 {c_s}^2 + \omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 1 - \tfrac{1}{2}\omega_3 + \tfrac{5}{3}\omega_4 {c_s}^2 + \tfrac{1}{6}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_1 - \tfrac{1}{6}u\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3 u^2\omega_1\omega_2 - \omega_4 - \tfrac{1}{6}\omega_3 {c_s}^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4 v^2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{3}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3 u\omega_1 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{3}\omega_3 u\omega_1\omega_2 + \tfrac{1}{3}\omega_3 u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{6}u\omega_4\omega_1 - \omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 + \omega_3\omega_4\omega_2 {c_s}^2 + \tfrac{5}{6}\omega_4\omega_1\omega_2 {c_s}^2 - \omega_4 v^2\omega_2 + \tfrac{1}{2}\omega_3 u^2\omega_4\omega_2 - \omega_2 - \tfrac{1}{6}\omega_3 u^2 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + \tfrac{1}{2}\omega_3\omega_4 v^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 v^2 + \tfrac{1}{2}\omega_4\omega_1 v^2\omega_2 - \tfrac{5}{3}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{2}u\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{2}{3}u^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} =$$
$$1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 v\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{12}\omega_3\omega_2 {c_s}^2 +$$

$$\frac{1}{6}u^2\omega_4\omega_1+\frac{1}{6}u\omega_4\omega_1\omega_2-\frac{1}{12}\omega_3u^2\omega_1\omega_2-\frac{1}{2}\omega_4-\frac{1}{6}\omega_3{c_s}^2-\frac{1}{3}u^2\omega_4-\frac{1}{2}\omega_4v^2+\frac{1}{4}\omega_1\omega_2-\frac{1}{2}\omega_1-\frac{1}{12}\omega_3\omega_1\omega_2{c_s}^2-\frac{1}{3}\omega_3u\omega_1+\frac{1}{3}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_4v\omega_2+\frac{1}{12}\omega_3u\omega_1\omega_2+\frac{1}{4}\omega_3v\omega_2+\frac{1}{3}\omega_3u^2\omega_1+\frac{5}{12}\omega_4\omega_1{c_s}^2+\frac{1}{4}\omega_1v\omega_2-\frac{5}{12}u\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4\omega_2{c_s}^2-\frac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{2}\omega_4v^2\omega_2-\frac{1}{2}\omega_2-\frac{1}{6}\omega_3u^2+\frac{1}{2}u\omega_1+\frac{1}{4}\omega_4\omega_1v^2-\frac{1}{4}\omega_3\omega_4v^2\omega_2+\frac{1}{4}\omega_3\omega_4v^2-\frac{1}{4}\omega_4\omega_1v^2\omega_2+\frac{5}{6}\omega_4\omega_2{c_s}^2-\frac{1}{4}u\omega_1\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1{c_s}^2+\frac{1}{4}\omega_3u\omega_4\omega_1-\frac{1}{6}u^2\omega_4\omega_1\omega_2+\frac{1}{3}u^2\omega_4\omega_2+\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=1-\omega_3+\frac{1}{2}\omega_3u^2\omega_4\omega_1+\frac{5}{6}\omega_4{c_s}^2-\frac{1}{2}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2+\frac{1}{2}\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_2{c_s}^2-\frac{1}{3}u^2\omega_4\omega_1+\omega_3\omega_1+\frac{1}{2}\omega_3u^2\omega_1\omega_2-\frac{1}{2}\omega_4+\frac{2}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2+\frac{1}{2}\omega_1\omega_2-\omega_1+\frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2-\frac{2}{3}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_3v\omega_2-\frac{2}{3}\omega_3u^2\omega_1-\frac{5}{6}\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_1v\omega_2-\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1v^2-\frac{1}{2}\omega_2+\frac{2}{3}\omega_3u^2-\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1v^2-\frac{1}{2}\omega_3\omega_4v^2+\omega_3\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_3\omega_1v\omega_2+\frac{1}{2}\omega_3\omega_2-\frac{1}{2}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$$
$$1-\frac{1}{2}\omega_3-\frac{1}{4}\omega_3u^2\omega_4\omega_1-\frac{5}{6}\omega_4{c_s}^2-\frac{1}{4}\omega_4\omega_1v\omega_2-\frac{1}{12}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2-\frac{1}{4}\omega_3\omega_4v\omega_2+\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4-\frac{1}{12}\omega_3\omega_2{c_s}^2+\frac{1}{6}u^2\omega_4\omega_1-\frac{1}{6}u\omega_4\omega_1\omega_2-\frac{1}{12}\omega_3u^2\omega_1\omega_2-\frac{1}{2}\omega_4-\frac{1}{6}\omega_3{c_s}^2-\frac{1}{3}u^2\omega_4-\frac{1}{2}\omega_4v^2+\frac{1}{4}\omega_1\omega_2-\frac{1}{2}\omega_1-\frac{1}{12}\omega_3\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3u\omega_1+\frac{1}{3}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_4v\omega_2-\frac{1}{12}\omega_3u\omega_1\omega_2+\frac{1}{4}\omega_3v\omega_2+\frac{1}{3}\omega_3u^2\omega_1+\frac{5}{12}\omega_4\omega_1{c_s}^2+\frac{1}{4}\omega_1v\omega_2+\frac{5}{12}u\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4\omega_2{c_s}^2-\frac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{2}\omega_4v^2\omega_2-\frac{1}{2}\omega_2-\frac{1}{6}\omega_3u^2-\frac{1}{2}u\omega_1+\frac{1}{4}\omega_4\omega_1v^2-\frac{1}{4}\omega_3\omega_4v^2\omega_2+\frac{1}{4}\omega_3\omega_4v^2-\frac{1}{4}\omega_4\omega_1v^2\omega_2+\frac{5}{6}\omega_4\omega_2{c_s}^2+\frac{1}{4}u\omega_1\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1{c_s}^2-\frac{1}{4}\omega_3u\omega_4\omega_1-\frac{1}{6}u^2\omega_4\omega_1\omega_2+\frac{1}{3}u^2\omega_4\omega_2+\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-1+\omega_3+\frac{5}{6}\omega_4{c_s}^2-\frac{1}{2}\omega_4\omega_1v\omega_2+\frac{1}{3}\omega_3u^2\omega_2-\frac{1}{2}v\omega_2-\frac{1}{2}\omega_3\omega_4v\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_2{c_s}^2-\frac{1}{3}u^2\omega_4\omega_1-\omega_3\omega_1-\frac{1}{3}\omega_3u^2\omega_1\omega_2+\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2-\frac{1}{2}\omega_1\omega_2+\omega_1-\frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_4v\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1v\omega_2+\frac{1}{2}\omega_3v\omega_2+\frac{1}{3}\omega_3u^2\omega_1-\frac{5}{6}\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_1v\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1v^2+\frac{5}{6}\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_4v^2\omega_2+\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2+\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1v^2+\frac{1}{2}\omega_3\omega_4v^2\omega_2-\frac{1}{2}\omega_3\omega_4v^2+\frac{1}{2}\omega_4\omega_1v^2\omega_2-\frac{5}{6}\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_3\omega_1v\omega_2+\frac{1}{3}u^2\omega_4\omega_1\omega_2-\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y}=-1+\frac{1}{2}\omega_3+\frac{1}{2}\omega_3u^2\omega_4\omega_1-\frac{1}{2}\omega_3u^2\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_3\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2-\frac{1}{2}u\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3u^2\omega_1\omega_2+\omega_4+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{2}\omega_1\omega_2+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2+\frac{1}{2}\omega_3u\omega_1-\frac{1}{2}\omega_3u^2\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_1{c_s}^2-\frac{1}{2}\omega_3u\omega_1\omega_2-\frac{1}{2}\omega_3u^2\omega_1+\frac{1}{2}u\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2-\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3u^2\omega_4\omega_2+\omega_2+\frac{1}{2}\omega_3u^2-\frac{1}{2}u\omega_1+\frac{1}{2}u\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_3u\omega_4\omega_1+\frac{1}{2}\omega_3u\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_2-\frac{1}{2}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y}=-1+\omega_3-\omega_3u^2\omega_4\omega_1-\frac{5}{3}\omega_4{c_s}^2+\frac{1}{3}\omega_3u^2\omega_2-\omega_4\omega_1-\omega_3\omega_4+2\omega_3\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_2{c_s}^2+\omega_3\omega_4\omega_2+\omega_4\omega_1\omega_2+\frac{2}{3}u^2\omega_4\omega_1-\omega_3\omega_1-\frac{1}{3}\omega_3u^2\omega_1\omega_2+\omega_4-\frac{1}{3}\omega_3{c_s}^2-\frac{2}{3}u^2\omega_4-\omega_4v^2+\omega_3\omega_4\omega_1v^2\omega_2-\omega_1\omega_2+\omega_1-\frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2-\omega_3\omega_4\omega_1\omega_2+\omega_3u^2\omega_4\omega_1\omega_2+\frac{1}{3}\omega_3\omega_1{c_s}^2+\frac{1}{3}\omega_3u^2\omega_1+\frac{5}{3}\omega_4\omega_1{c_s}^2+2\omega_3\omega_4{c_s}^2-\omega_4\omega_2+\omega_3\omega_4\omega_1-2\omega_3\omega_4\omega_2{c_s}^2-\omega_3\omega_4\omega_1v^2-\frac{5}{3}\omega_4\omega_1\omega_2{c_s}^2+\omega_4v^2\omega_2-\omega_3u^2\omega_4\omega_2+\omega_2-\frac{1}{3}\omega_3u^2+\omega_3\omega_1\omega_2+\omega_4\omega_1v^2-\omega_3\omega_4v^2\omega_2+\omega_3\omega_4v^2-\omega_4\omega_1v^2\omega_2+\frac{5}{3}\omega_4\omega_2{c_s}^2-2\omega_3\omega_4\omega_1{c_s}^2-\frac{2}{3}u^2\omega_4\omega_1\omega_2+\frac{2}{3}u^2\omega_4\omega_2-\omega_3\omega_2+\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y}=-1+\frac{1}{2}\omega_3+\frac{1}{2}\omega_3u^2\omega_4\omega_1-\frac{1}{2}\omega_3u^2\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_3\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2+\frac{1}{2}u\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3u^2\omega_1\omega_2+\omega_4+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{2}\omega_1\omega_2+\frac{1}{2}\omega_1+\frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_3u\omega_1-\frac{1}{2}\omega_3u^2\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_3u\omega_1\omega_2-\frac{1}{2}\omega_3u^2\omega_1-\frac{1}{2}u\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2-\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3u^2\omega_4\omega_2+\omega_2+\frac{1}{2}\omega_3u^2+\frac{1}{2}u\omega_1-\frac{1}{2}u\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_3u\omega_4\omega_1-\frac{1}{2}\omega_3u\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_2-\frac{1}{2}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l}=-1+\omega_3+\frac{5}{6}\omega_4{c_s}^2+\frac{1}{2}\omega_4\omega_1v\omega_2+\frac{1}{3}\omega_3u^2\omega_2+\frac{1}{2}v\omega_2+\frac{1}{2}\omega_3\omega_4v\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_2{c_s}^2-\frac{1}{3}u^2\omega_4\omega_1-\omega_3\omega_1-\frac{1}{3}\omega_3u^2\omega_1\omega_2+\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2-\frac{1}{2}\omega_1\omega_2+\omega_1-\frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_1{c_s}^2-\frac{1}{2}\omega_4v\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1v\omega_2-\frac{1}{2}\omega_3v\omega_2+\frac{1}{3}\omega_3u^2\omega_1-\frac{5}{6}\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_1v\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1v^2+\frac{5}{6}\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_4v^2\omega_2+\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2+\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1v^2+\frac{1}{2}\omega_3\omega_4v^2\omega_2-\frac{1}{2}\omega_3\omega_4v^2+\frac{1}{2}\omega_4\omega_1v^2\omega_2-\frac{5}{6}\omega_4\omega_2{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_3\omega_1v\omega_2+\frac{1}{3}u^2\omega_4\omega_1\omega_2-\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-4\delta_t}_{x,y}=1-\omega_3+\omega_4\omega_1+\omega_3\omega_4-\omega_3\omega_4\omega_2-\omega_4\omega_1\omega_2+\omega_3\omega_1-\omega_4+\omega_1\omega_2-\omega_1+\omega_3\omega_4\omega_1\omega_2+\omega_4\omega_2-\omega_3\omega_4\omega_1-\omega_2-\omega_3\omega_1\omega_2+\omega_3\omega_2,$$

5.3 EFDE for μ_2

$$\mu_{2,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_2],t-\ell\delta_t} \mu_{2,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 u^2 + \frac{1}{2}u\omega_1.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = -1 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_3 {c_s}^2 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_3 u^2 + \frac{1}{2}u\omega_1.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 - \frac{5}{6}\omega_4 {c_s}^2 - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{6}u^2\omega_4\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 + \frac{1}{4}\omega_3 v\omega_2 - \frac{1}{6}\omega_3 u^2\omega_1 + \frac{5}{12}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_1 v\omega_2 + \frac{5}{12}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_3\omega_4 v^2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_4\omega_2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{2}\omega_3 + \frac{5}{6}\omega_4 {c_s}^2 + \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{6}u^2\omega_4\omega_1 - \frac{1}{2}\omega_4 - \frac{1}{3}\omega_3 {c_s}^2 + \frac{1}{6}\omega_3^2 u^2 + \frac{1}{3}u^2\omega_4 + \frac{1}{2}\omega_4 v^2 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3\omega_1 {c_s}^2 - \frac{1}{4}\omega_3 v\omega_2 + \frac{1}{6}\omega_3 u^2\omega_1 - \frac{5}{12}\omega_4\omega_1 {c_s}^2 - \frac{1}{4}\omega_1 v\omega_2 - \frac{5}{12}\omega_3\omega_4 {c_s}^2 - \frac{1}{2}\omega_2 - \frac{1}{3}\omega_3 u^2 + \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_3\omega_4 v^2 + \frac{1}{4}\omega_3\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 + \frac{5}{3}\omega_4 {c_s}^2 - \frac{1}{3}u^2\omega_4\omega_1 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 + \frac{2}{3}u^2\omega_4 + \omega_4 v^2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_1 - \frac{5}{6}\omega_4\omega_1 {c_s}^2 - \frac{5}{6}\omega_3\omega_4 {c_s}^2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_3\omega_4 v^2 - \frac{1}{3}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{3}\omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{2}{3}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -u\omega_1^2 + u\omega_1,$

$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 + \omega_1^2 - 2\omega_1 - 2\omega_2 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{2}\omega_3 - \frac{5}{3}\omega_4 {c_s}^2 + \frac{1}{3}u^2\omega_4\omega_1 - \frac{1}{3}\omega_3 {c_s}^2 + \frac{1}{6}\omega_3^2 u^2 - \frac{2}{3}u^2\omega_4 - \omega_4 v^2 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3\omega_1 {c_s}^2 + \frac{1}{6}\omega_3 u^2\omega_1 + \frac{5}{6}\omega_4\omega_1 {c_s}^2 + \frac{5}{6}\omega_3\omega_4 {c_s}^2 - \frac{1}{3}\omega_3 u^2 + \frac{1}{6}\omega_3^2 {c_s}^2 + \frac{1}{2}\omega_4\omega_1 v^2 + \frac{1}{2}\omega_3\omega_4 v^2 + \frac{1}{3}\omega_3 u^2\omega_4,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{3}\omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{2}{3}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3^2,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 - \frac{5}{6}\omega_4 {c_s}^2 + \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{6}u^2\omega_4\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 - \frac{1}{4}\omega_3 v\omega_2 - \frac{1}{6}\omega_3 u^2\omega_1 + \frac{5}{12}\omega_4\omega_1 {c_s}^2 - \frac{1}{4}\omega_1 v\omega_2 + \frac{5}{12}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_3\omega_4 v^2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_4\omega_2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{2}\omega_3 + \frac{5}{6}\omega_4 {c_s}^2 - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{6}u^2\omega_4\omega_1 - \frac{1}{2}\omega_4 - \frac{1}{3}\omega_3 {c_s}^2 + \frac{1}{6}\omega_3^2 u^2 + \frac{1}{3}u^2\omega_4 + \frac{1}{2}\omega_4 v^2 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3\omega_1 {c_s}^2 + \frac{1}{4}\omega_3 v\omega_2 + \frac{1}{6}\omega_3 u^2\omega_1 - \frac{5}{12}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_1 v\omega_2 - \frac{5}{12}\omega_3\omega_4 {c_s}^2 - \frac{1}{2}\omega_2 - \frac{1}{3}\omega_3 u^2 + \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_3\omega_4 v^2 + \frac{1}{4}\omega_3\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1 v\omega_2 + \tfrac{5}{12}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{4}\omega_3^2 u^2\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 + \tfrac{1}{3}\omega_3^2 u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4 v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}u\omega_4^2\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4 v\omega_2 - \tfrac{1}{4}\omega_3 v\omega_2 - \tfrac{1}{4}\omega_3 u^2\omega_4^2 + \tfrac{1}{3}\omega_3 u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1 v\omega_2 + \tfrac{3}{4}u\omega_4\omega_1 + \tfrac{5}{3}\omega_3\omega_4 {c_s}^2 - \tfrac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4 v^2\omega_2 - \tfrac{5}{12}\omega_3 u^2\omega_4\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{7}{6}\omega_3 u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1 v^2 - \tfrac{1}{4}\omega_3\omega_4 v^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4 v^2 - \tfrac{1}{4}\omega_4\omega_1 v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_2 - \tfrac{1}{12}\omega_3^2 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{17}{12}\omega_3 u^2\omega_4 - \tfrac{1}{12}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{12}\omega_3^2\omega_2 - \tfrac{7}{6}\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_4\omega_2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{7}{3}\omega_4 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 - \tfrac{5}{6}\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \tfrac{1}{12}\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 - \tfrac{1}{3}\omega_3^2 - \tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{3}\omega_3 u\omega_1^2 - \tfrac{1}{2}u\omega_1^2\omega_2 + \tfrac{5}{3}\omega_3 u\omega_1 - \tfrac{1}{2}\omega_3 u\omega_1\omega_2 + \tfrac{1}{3}u\omega_4\omega_1 - \tfrac{1}{3}\omega_3^2 u\omega_1 + u\omega_1^2 - 2u\omega_1 + u\omega_1\omega_2 - \tfrac{1}{6}\omega_3 u\omega_4\omega_1 - \tfrac{1}{6}u\omega_4\omega_1^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + \tfrac{5}{3}\omega_3 - \omega_1^2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{3}\omega_3\omega_1^2 + \tfrac{1}{6}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + 3\omega_1 + \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{6}\omega_3\omega_4\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1 + \omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = -1 + \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 + \tfrac{5}{6}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 v\omega_2 - \tfrac{5}{12}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 v\omega_2 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{5}{12}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{4}\omega_3^2 u^2\omega_4 - \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}u\omega_4\omega_1\omega_2 + \tfrac{1}{12}\omega_3 u^2\omega_1\omega_2 + \tfrac{1}{2}\omega_4 + \tfrac{7}{6}\omega_3 {c_s}^2 - \tfrac{1}{3}\omega_3^2 u^2 + \tfrac{1}{3}u^2\omega_4 + \tfrac{1}{2}\omega_4 v^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}u\omega_4^2\omega_1 + \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 - \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_4 v\omega_2 + \tfrac{1}{4}\omega_3 v\omega_2 + \tfrac{1}{4}\omega_3 u^2\omega_4^2 - \tfrac{1}{3}\omega_3 u^2\omega_1 - \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 + \tfrac{1}{4}\omega_1 v\omega_2 + \tfrac{3}{4}u\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 {c_s}^2 + \tfrac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_4 v^2\omega_2 + \tfrac{5}{12}\omega_3 u^2\omega_4\omega_2 + \tfrac{1}{2}\omega_2 + \tfrac{7}{6}\omega_3 u^2 - \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{4}\omega_4\omega_1 v^2 + \tfrac{1}{4}\omega_3\omega_4 v^2\omega_2 - \tfrac{1}{4}\omega_3\omega_4 v^2 + \tfrac{1}{4}\omega_4\omega_1 v^2\omega_2 - \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{4}u\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 + \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_2 + \tfrac{1}{12}\omega_3^2 u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_2 - \tfrac{17}{12}\omega_3 u^2\omega_4 + \tfrac{1}{12}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{12}\omega_3^2\omega_2 - \tfrac{7}{6}\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_4\omega_2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{7}{3}\omega_4 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 - \tfrac{5}{6}\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \tfrac{1}{12}\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 - \tfrac{1}{3}\omega_3^2 - \tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_3 + \tfrac{5}{3}\omega_4 {c_s}^2 + \tfrac{5}{3}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{5}{3}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_1 - \tfrac{1}{3}\omega_3 u^2\omega_1\omega_2 - \omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 - \tfrac{1}{2}\omega_3 u^2\omega_2^2 + \tfrac{1}{3}\omega_3^2 u^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4 v^2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{3}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 + \tfrac{1}{3}\omega_3 u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 - \tfrac{5}{6}\omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 + \tfrac{5}{6}\omega_3\omega_4\omega_2 {c_s}^2 + \tfrac{5}{6}\omega_4\omega_1\omega_2 {c_s}^2 - \omega_4 v^2\omega_2 - \tfrac{1}{2}u\omega_1\omega_2^2 + \tfrac{1}{3}\omega_3 u^2\omega_4\omega_2 - \omega_2 - \tfrac{7}{6}\omega_3 u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_4\omega_1 v^2 + \tfrac{1}{2}\omega_3\omega_4 v^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 v^2 + \tfrac{1}{2}\omega_4\omega_1 v^2\omega_2 - \tfrac{5}{3}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_2^2 {c_s}^2 + u\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{2}{3}u^2\omega_4\omega_2 - \tfrac{1}{3}\omega_3^2 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{3}\omega_3 u^2\omega_4 - \tfrac{1}{3}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-2\delta_t} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{3}\omega_3^2\omega_2 + \tfrac{1}{2}\omega_1\omega_2^2 - \tfrac{1}{6}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_4\omega_2 + \tfrac{1}{6}\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + \omega_1 - \tfrac{1}{3}\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_2^2 + 3\omega_2 - \omega_2^2 + \tfrac{1}{3}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{3}\omega_3 u\omega_1^2 + \tfrac{5}{3}\omega_3 u\omega_1 + \tfrac{4}{3}u\omega_4\omega_1 - \tfrac{1}{3}\omega_3^2 u\omega_1 + u\omega_1^2 - 2u\omega_1 - \tfrac{2}{3}\omega_3 u\omega_4\omega_1 - \tfrac{2}{3}u\omega_4\omega_1^2,$$

$$\alpha_{x,y}^{[\mu_2],t-2\delta_t} = -4 + \tfrac{5}{3}\omega_3 - \omega_1^2 - 2\omega_4\omega_1 - \tfrac{2}{3}\omega_3\omega_4 + \tfrac{1}{3}\omega_3\omega_1^2 + \tfrac{2}{3}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \tfrac{13}{3}\omega_4 - \omega_4^2 + 3\omega_1 + \omega_4^2\omega_2 - 4\omega_4\omega_2 + \tfrac{2}{3}\omega_3\omega_4\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1 + 3\omega_2 - \omega_2^2 - \tfrac{1}{3}\omega_3^2 + \omega_4\omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = -1 + \tfrac{1}{2}\omega_3 - \tfrac{5}{3}\omega_4 {c_s}^2 - \tfrac{5}{3}\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4 - \tfrac{5}{3}\omega_3\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1 + \tfrac{1}{3}\omega_3 u^2\omega_1\omega_2 + \omega_4 + \tfrac{7}{6}\omega_3 {c_s}^2 + \tfrac{1}{2}\omega_3 u^2\omega_2^2 - \tfrac{1}{3}\omega_3^2 u^2 - \tfrac{2}{3}u^2\omega_4 - \omega_4 v^2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{3}\omega_3\omega_1\omega_2 {c_s}^2 - \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{3}\omega_3 u^2\omega_1 + \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 + \tfrac{5}{6}\omega_3\omega_4 {c_s}^2 - \omega_4\omega_2 - \tfrac{5}{6}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{6}\omega_4\omega_1\omega_2 {c_s}^2 + \omega_4 v^2\omega_2 - \tfrac{1}{2}u\omega_1\omega_2^2 - \tfrac{1}{3}\omega_3 u^2\omega_4\omega_2 + \omega_2 + \tfrac{7}{6}\omega_3 u^2 - \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{2}\omega_4\omega_1 v^2 - \tfrac{1}{2}\omega_3\omega_4 v^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 v^2 - \tfrac{1}{2}\omega_4\omega_1 v^2\omega_2 + \tfrac{5}{3}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_2^2 {c_s}^2 + u\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 + \tfrac{2}{3}u^2\omega_4\omega_2 + \tfrac{1}{3}\omega_3^2 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_2 + \tfrac{1}{3}\omega_3 u^2\omega_4 + \tfrac{1}{3}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-2\delta_t} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{3}\omega_3^2\omega_2 + \tfrac{1}{2}\omega_1\omega_2^2 - \tfrac{1}{6}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_4\omega_2 + \tfrac{1}{6}\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + \omega_1 - \tfrac{1}{3}\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_2^2 + 3\omega_2 - \omega_2^2 + \tfrac{1}{3}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3 u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1 v\omega_2 + \tfrac{5}{12}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{4}\omega_3^2 u^2\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3 u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 + \tfrac{1}{3}\omega_3^2 u^2 -$$

$\frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \frac{1}{2}\omega_1 - \frac{1}{4}u\omega_4^2\omega_1 - \frac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 + \frac{1}{3}\omega_3\omega_1 {c_s}^2 + \frac{1}{2}\omega_4 v\omega_2 + \frac{1}{4}\omega_3 v\omega_2 - \frac{1}{4}\omega_3 u^2\omega_4^2 + \frac{1}{3}\omega_3 u^2\omega_1 + \frac{5}{12}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_1 v\omega_2 + \frac{3}{4}u\omega_4\omega_1 + \frac{5}{3}\omega_3\omega_4 {c_s}^2 - \frac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 - \frac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \frac{1}{2}\omega_4 v^2\omega_2 - \frac{5}{12}\omega_3 u^2\omega_4\omega_2 - \frac{1}{2}\omega_2 - \frac{7}{6}\omega_3 u^2 + \frac{1}{3}\omega_3^2 {c_s}^2 - \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_4\omega_1 v^2 - \frac{1}{4}\omega_3\omega_4 v^2\omega_2 + \frac{1}{4}\omega_3\omega_4 v^2 - \frac{1}{4}\omega_4\omega_1 v^2\omega_2 + \frac{5}{6}\omega_4\omega_2 {c_s}^2 + \frac{1}{4}u\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 - \frac{1}{6}u^2\omega_4\omega_1\omega_2 + \frac{1}{3}u^2\omega_4\omega_2 - \frac{1}{12}\omega_3^2 u^2\omega_2 + \frac{1}{4}\omega_3\omega_2 + \frac{17}{12}\omega_3 u^2\omega_4 - \frac{1}{12}\omega_3^2\omega_2 {c_s}^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 + \frac{5}{3}\omega_3 + \frac{1}{12}\omega_3^2\omega_2 - \frac{7}{6}\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 + \frac{5}{12}\omega_3\omega_4\omega_2 + \frac{5}{12}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 - \frac{1}{3}\omega_3\omega_1 + \frac{7}{3}\omega_4 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1\omega_2 + \omega_1 - \frac{5}{6}\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \frac{1}{12}\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_4 - \frac{1}{3}\omega_3^2 - \frac{2}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = -\frac{1}{3}\omega_3 u\omega_1^2 - \frac{1}{2}u\omega_1^2\omega_2 + \frac{5}{3}\omega_3 u\omega_1 - \frac{1}{2}\omega_3 u\omega_1\omega_2 + \frac{1}{3}u\omega_4\omega_1 - \frac{1}{3}\omega_3^2 u\omega_1 + u\omega_1^2 - 2u\omega_1 + u\omega_1\omega_2 - \frac{1}{6}\omega_3 u\omega_4\omega_1 - \frac{1}{6}u\omega_4\omega_1^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x,y+\delta_l} = -2 + \frac{5}{3}\omega_3 - \omega_1^2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4 + \frac{1}{3}\omega_3\omega_1^2 + \frac{1}{6}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \frac{1}{3}\omega_4 - \frac{3}{2}\omega_1\omega_2 + 3\omega_1 + \frac{1}{2}\omega_1^2\omega_2 + \frac{1}{6}\omega_3\omega_4\omega_1 + \frac{1}{3}\omega_3^2\omega_1 + \omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{1}{2}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -1 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_3 u^2\omega_4\omega_1 + \frac{5}{6}\omega_4 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 v\omega_2 - \frac{5}{12}\omega_3 u^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_3\omega_4 v\omega_2 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 - \frac{5}{12}\omega_3\omega_2 {c_s}^2 + \frac{1}{4}\omega_3^2 u^2\omega_4 - \frac{1}{6}u^2\omega_4\omega_1 + \frac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \frac{1}{4}u\omega_4\omega_1\omega_2 + \frac{1}{12}\omega_3 u^2\omega_1\omega_2 + \frac{1}{2}\omega_4 + \frac{7}{6}\omega_3 {c_s}^2 - \frac{1}{3}\omega_3^2 u^2 + \frac{1}{3}u^2\omega_4 + \frac{1}{2}\omega_4 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \frac{1}{2}\omega_1 - \frac{1}{4}u\omega_4^2\omega_1 + \frac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 - \frac{1}{3}\omega_3\omega_1 {c_s}^2 - \frac{1}{2}\omega_4 v\omega_2 - \frac{1}{4}\omega_3 v\omega_2 + \frac{1}{4}\omega_3 u^2\omega_4^2 - \frac{1}{3}\omega_3 u^2\omega_1 - \frac{5}{12}\omega_4\omega_1 {c_s}^2 - \frac{1}{4}\omega_1 v\omega_2 + \frac{3}{4}u\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 {c_s}^2 + \frac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 + \frac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 - \frac{1}{2}\omega_4 v^2\omega_2 + \frac{5}{12}\omega_3 u^2\omega_4\omega_2 + \frac{1}{2}\omega_2 + \frac{7}{6}\omega_3 u^2 - \frac{1}{3}\omega_3^2 {c_s}^2 - \frac{1}{2}u\omega_1 - \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_3\omega_4 v^2\omega_2 - \frac{1}{4}\omega_3\omega_4 v^2 + \frac{1}{4}\omega_4\omega_1 v^2\omega_2 - \frac{5}{6}\omega_4\omega_2 {c_s}^2 + \frac{1}{4}u\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 + \frac{1}{6}u^2\omega_4\omega_1\omega_2 - \frac{1}{3}u^2\omega_4\omega_2 + \frac{1}{12}\omega_3^2 u^2\omega_2 - \frac{1}{4}\omega_3\omega_2 - \frac{17}{12}\omega_3 u^2\omega_4 + \frac{1}{12}\omega_3^2\omega_2 {c_s}^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2 + \frac{5}{3}\omega_3 + \frac{1}{12}\omega_3^2\omega_2 - \frac{7}{6}\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 + \frac{5}{12}\omega_3\omega_4\omega_2 + \frac{5}{12}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 - \frac{1}{3}\omega_3\omega_1 + \frac{7}{3}\omega_4 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1\omega_2 + \omega_1 - \frac{5}{6}\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \frac{1}{12}\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_4 - \frac{1}{3}\omega_3^2 - \frac{2}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -\frac{1}{6}\omega_3^2 u\omega_1\omega_2 + \frac{2}{3}\omega_3 u\omega_1^2 + \frac{1}{2}u\omega_1^2\omega_2 - \frac{1}{2}\omega_3 u\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2 u\omega_4\omega_1 + \frac{7}{6}u\omega_4\omega_1\omega_2 - \frac{1}{6}\omega_3 u\omega_1^2\omega_2 + \frac{1}{2}u\omega_4^2\omega_1 - \frac{10}{3}\omega_3 u\omega_1 + \frac{4}{3}\omega_3 u\omega_1\omega_2 - \frac{19}{6}u\omega_4\omega_1 + \frac{2}{3}\omega_3^2 u\omega_1 - \frac{1}{3}u\omega_4\omega_1^2\omega_2 - \frac{1}{2}\omega_3 u\omega_4\omega_1^2 - u\omega_1^2 + 3u\omega_1 - \frac{3}{2}u\omega_1\omega_2 + \frac{10}{3}\omega_3 u\omega_4\omega_1 - \frac{5}{6}\omega_3 u\omega_4\omega_1\omega_2 + \frac{5}{6}u\omega_4\omega_1^2,$

$\alpha^{[\mu_2],t-3\delta_t}_{x,y-\delta_l} = 3 - \frac{10}{3}\omega_3 - \frac{1}{6}\omega_3^2\omega_2 + \frac{1}{6}\omega_3^2\omega_1\omega_2 + \omega_1^2 + \frac{1}{6}\omega_3\omega_1^2\omega_2 + 4\omega_4\omega_1 + \frac{10}{3}\omega_3\omega_4 - \frac{5}{6}\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{5}{6}\omega_4\omega_1^2 + 4\omega_3\omega_1 + \frac{1}{2}\omega_3^2\omega_4\omega_1 - \frac{19}{6}\omega_4 + \frac{1}{2}\omega_4^2 + 2\omega_1\omega_2 - 4\omega_1 + \frac{5}{6}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_1^2\omega_2 + \frac{7}{6}\omega_4\omega_2 - \frac{23}{6}\omega_3\omega_4\omega_1 - \frac{2}{3}\omega_3^2\omega_1 - \frac{3}{2}\omega_2 - \frac{3}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{4}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \frac{1}{2}\omega_3^2\omega_4\omega_2 {c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 u^2\omega_4\omega_1 - \frac{5}{2}\omega_3 u^2\omega_2 - \frac{1}{2}\omega_3^2 u^2\omega_4\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 {c_s}^2 - \frac{1}{2}u\omega_4\omega_1\omega_2^2 - \frac{5}{2}\omega_3\omega_2 {c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3^2\omega_4 {c_s}^2 + 2u\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3 u^2\omega_1\omega_2 - \frac{1}{2}\omega_3 u^2\omega_4^2\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_2 {c_s}^2 + \omega_4 + 2\omega_3 {c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_2^2 - \frac{1}{2}\omega_3^2 u^2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2 {c_s}^2 + \frac{1}{2}\omega_1 + \frac{1}{2}u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1\omega_2 {c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1 {c_s}^2 - \frac{1}{2}\omega_3\omega_4\omega_2^2 {c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_4^2 - \frac{1}{2}\omega_3 u^2\omega_1 - \frac{1}{2}u\omega_4^2\omega_1\omega_2 - \frac{3}{2}u\omega_4\omega_1 - \frac{5}{2}\omega_3\omega_4 {c_s}^2 - \omega_4\omega_2 + 3\omega_3\omega_4\omega_2 {c_s}^2 + \frac{1}{2}u\omega_1\omega_2^2 + 3\omega_3 u^2\omega_4\omega_2 + \omega_2 + 2\omega_3 u^2 - \frac{1}{2}\omega_3^2 {c_s}^2 + u\omega_1 - \frac{1}{2}\omega_3 u^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_2^2 {c_s}^2 - \frac{3}{2}u\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1 {c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_2 - \frac{1}{2}\omega_3\omega_2 - \frac{5}{2}\omega_3 u^2\omega_4 + \frac{1}{2}\omega_3^2\omega_2 {c_s}^2,$

$\alpha^{[\mu_2],t-3\delta_t}_{x-\delta_l,y} = 3 - \frac{5}{2}\omega_3 - \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \frac{7}{2}\omega_3\omega_4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_4\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2 + \frac{1}{2}\omega_4^2\omega_1\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -\frac{2}{3}\omega_3^2 u\omega_1\omega_2 + \frac{2}{3}\omega_3 u\omega_1^2 + u\omega_1^2\omega_2 + \frac{2}{3}u\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3 u\omega_1^2\omega_2 - \frac{10}{3}\omega_3 u\omega_1 + \frac{13}{3}\omega_3 u\omega_1\omega_2 - \frac{2}{3}u\omega_4\omega_1 + \frac{2}{3}\omega_3^2 u\omega_1 - \frac{1}{3}u\omega_4\omega_1^2\omega_2 + u\omega_1\omega_2^2 - u\omega_1^2 + 3u\omega_1 - 4u\omega_1\omega_2 + \frac{1}{3}\omega_3 u\omega_4\omega_1 - \frac{1}{3}\omega_3 u\omega_4\omega_1\omega_2 - \omega_3 u\omega_1\omega_2^2 + \frac{1}{3}u\omega_4\omega_1^2,$

$\alpha^{[\mu_2],t-3\delta_t}_{x,y} = 3 - \frac{10}{3}\omega_3 - \frac{2}{3}\omega_3^2\omega_2 + \frac{2}{3}\omega_3^2\omega_1\omega_2 - \omega_1\omega_2^2 + \omega_1^2 + \frac{2}{3}\omega_3\omega_1^2\omega_2 + \omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 - \frac{1}{3}\omega_3\omega_4\omega_2 - \omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{3}\omega_4\omega_1^2 + 4\omega_3\omega_1 - \frac{2}{3}\omega_4 + 5\omega_1\omega_2 - 4\omega_1 + \frac{1}{3}\omega_3\omega_4\omega_1\omega_2 - \omega_1^2\omega_2 + \frac{2}{3}\omega_4\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1 - \omega_3\omega_2^2 - \frac{2}{3}\omega_3^2\omega_1 + \omega_3\omega_1\omega_2^2 - 4\omega_2 + \omega_2^2 - 5\omega_3\omega_1\omega_2 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{13}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = 1 + \frac{1}{2}\omega_3^2\omega_4\omega_2 {c_s}^2 - \frac{1}{2}\omega_3 - \frac{1}{2}\omega_3 u^2\omega_4\omega_1 + \frac{5}{2}\omega_3 u^2\omega_2 + \frac{1}{2}\omega_3^2 u^2\omega_4\omega_2 + \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 {c_s}^2 - \frac{1}{2}u\omega_4\omega_1\omega_2^2 + \frac{5}{2}\omega_3\omega_2 {c_s}^2 - \frac{1}{2}\omega_3^2 u^2\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_4 {c_s}^2 + 2u\omega_4\omega_1\omega_2 -$

$\frac{1}{2}\omega_3 u^2\omega_1\omega_2 + \frac{1}{2}\omega_3 u^2\omega_4^2\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 {c_s}^2 - \omega_4 - 2\omega_3 {c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_2^2 + \frac{1}{2}\omega_3^2 u^2 + \frac{1}{2}\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{1}{2}u\omega_4^2\omega_1 - \frac{1}{2}\omega_3\omega_1\omega_2 {c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1 {c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 {c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_4^2 + \frac{1}{2}\omega_3 u^2\omega_1 - \frac{1}{2}u\omega_4^2\omega_1\omega_2 - \frac{3}{2}u\omega_4\omega_1 + \frac{5}{2}\omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 - 3\omega_3\omega_4\omega_2 {c_s}^2 + \frac{1}{2}u\omega_1\omega_2^2 - 3\omega_3 u^2\omega_4\omega_2 - \omega_2 - 2\omega_3 u^2 + \frac{1}{2}\omega_3^2 {c_s}^2 + u\omega_1 + \frac{1}{2}\omega_3 u^2\omega_4\omega_2^2 - \frac{1}{2}\omega_3\omega_2^2 {c_s}^2 - \frac{3}{2}u\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 {c_s}^2 - \frac{1}{2}\omega_3^2 u^2\omega_2 + \frac{1}{2}\omega_3\omega_2 + \frac{5}{2}\omega_3 u^2\omega_4 - \frac{1}{2}\omega_3^2\omega_2 {c_s}^2,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-3\delta_t} = 3 - \frac{5}{2}\omega_3 - \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \frac{7}{2}\omega_3\omega_4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_4\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2 + \frac{1}{2}\omega_4^2\omega_1\omega_2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -\frac{1}{6}\omega_3^2 u\omega_1\omega_2 + \frac{2}{3}\omega_3 u\omega_1^2 + \frac{1}{2}u\omega_1^2\omega_2 - \frac{1}{2}\omega_3 u\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2 u\omega_4\omega_1 + \frac{7}{6}u\omega_4\omega_1\omega_2 - \frac{1}{6}\omega_3 u\omega_1^2\omega_2 + \frac{1}{2}u\omega_4^2\omega_1 - \frac{10}{3}\omega_3 u\omega_1 + \frac{4}{3}\omega_3 u\omega_1\omega_2 - \frac{19}{6}u\omega_4\omega_1 + \frac{2}{3}\omega_3^2 u\omega_1 - \frac{1}{3}u\omega_4\omega_1^2\omega_2 - \frac{1}{2}\omega_3 u\omega_4\omega_1^2 - u\omega_1^2 + 3u\omega_1 - \frac{3}{2}u\omega_1\omega_2 + \frac{10}{3}\omega_3 u\omega_4\omega_1 - \frac{5}{6}\omega_3 u\omega_4\omega_1\omega_2 + \frac{5}{6}u\omega_4\omega_1^2,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t} = 3 - \frac{10}{3}\omega_3 - \frac{1}{6}\omega_3^2\omega_2 + \frac{1}{6}\omega_3^2\omega_1\omega_2 + \omega_1^2 + \frac{1}{6}\omega_3\omega_1^2\omega_2 + 4\omega_4\omega_1 + \frac{10}{3}\omega_3\omega_4 - \frac{5}{6}\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{5}{6}\omega_4\omega_1^2 + 4\omega_3\omega_1 + \frac{1}{2}\omega_3^2\omega_4\omega_1 - \frac{19}{6}\omega_4 + \frac{1}{2}\omega_4^2 + 2\omega_1\omega_2 - 4\omega_1 + \frac{5}{6}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_1^2\omega_2 + \frac{7}{6}\omega_4\omega_2 - \frac{23}{6}\omega_3\omega_4\omega_1 - \frac{2}{3}\omega_3^2\omega_1 - \frac{3}{2}\omega_2 - \frac{3}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{4}{3}\omega_3\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -\omega_3 u\omega_4\omega_1^2\omega_2 + \omega_3^2 u\omega_1\omega_2 - \omega_3 u\omega_1^2 - \omega_3 u\omega_4^2\omega_1\omega_2 - u\omega_1^2\omega_2 + u\omega_4\omega_1\omega_2^2 + \omega_3 u\omega_4^2\omega_1 + \omega_3^2 u\omega_4\omega_1 - 6u\omega_4\omega_1\omega_2 + \omega_3 u\omega_1^2\omega_2 - u\omega_4^2\omega_1 + 5\omega_3 u\omega_1 - 6\omega_3 u\omega_1\omega_2 + u\omega_4^2\omega_1\omega_2 + 5u\omega_4\omega_1 - \omega_3 u\omega_4\omega_1\omega_2^2 - \omega_3^2 u\omega_1 + u\omega_4\omega_1^2\omega_2 - u\omega_1\omega_2^2 + \omega_3 u\omega_4\omega_1^2 + u\omega_1^2 - 4u\omega_1 + 5u\omega_1\omega_2 - 6\omega_3 u\omega_4\omega_1 - \omega_3^2 u\omega_4\omega_1\omega_2 + 7\omega_3 u\omega_4\omega_1\omega_2 + \omega_3 u\omega_1\omega_2^2 - u\omega_4\omega_1^2,$

$\alpha_{x,y}^{[\mu_2],t-4\delta_t} = -4 + 5\omega_3 + \omega_3^2\omega_2 - \omega_3^2\omega_1\omega_2 + \omega_1\omega_2^2 + \omega_3\omega_4\omega_1\omega_2^2 - \omega_1^2 - \omega_3\omega_1^2\omega_2 - 6\omega_4\omega_1 - 6\omega_3\omega_4 + 7\omega_3\omega_4\omega_2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_1^2 + \omega_3\omega_4^2 + \omega_4\omega_1^2 - \omega_4\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 - 6\omega_3\omega_1 - \omega_3^2\omega_4\omega_1 + 5\omega_4 - \omega_4^2 - 6\omega_1\omega_2 + 5\omega_1 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_1^2\omega_2 - 6\omega_4\omega_2 + 7\omega_3\omega_4\omega_1 + \omega_3\omega_2^2 + \omega_3\omega_4^2\omega_1\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_1\omega_2^2 + 5\omega_2 - \omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_4^2\omega_1 + \omega_3^2\omega_4 - \omega_4\omega_1^2\omega_2 - \omega_3^2 - \omega_3\omega_4^2\omega_2 + \omega_4\omega_2^2 - \omega_3\omega_4\omega_1^2 - 6\omega_3\omega_2 - \omega_3^2\omega_4\omega_2 - \omega_4^2\omega_1\omega_2 + \omega_3^2\omega_4\omega_1\omega_2,$

5.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t}\mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{5}{6}\omega_4 {c_s}^2 + \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_4 - \frac{1}{3}\omega_3 {c_s}^2 + \frac{1}{3}u^2\omega_4 + \frac{1}{2}\omega_4 v^2 - \frac{1}{2}\omega_2 - \frac{1}{3}\omega_3 u^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = -1 - \frac{5}{6}\omega_4 {c_s}^2 + \frac{1}{2}v\omega_2 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{5}{6}\omega_3 + \frac{1}{4}\omega_3 u^2\omega_2 - \frac{1}{12}\omega_4\omega_1 - \frac{1}{12}\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_2 {c_s}^2 - \frac{1}{6}\omega_3\omega_1 + \frac{1}{6}\omega_4 - \frac{1}{2}\omega_3 {c_s}^2 + \frac{1}{6}\omega_3^2 u^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3 u\omega_1 + \frac{1}{12}u\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_3 u^2 + \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{2}u\omega_1 + \frac{1}{4}u\omega_1\omega_2 - \frac{1}{6}\omega_3^2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{12}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{5}{3}\omega_4 {c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_2 - \frac{1}{3}u^2\omega_4^2 - \frac{1}{6}\omega_3\omega_2 {c_s}^2 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 + \frac{2}{3}u^2\omega_4 + \omega_4 v^2 - \frac{1}{2}\omega_4^2 v^2 - \frac{1}{6}\omega_3\omega_4 {c_s}^2 - \frac{1}{2}\omega_4 v^2\omega_2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2 - \frac{5}{6}\omega_4^2 {c_s}^2 - \frac{5}{6}\omega_4\omega_2 {c_s}^2 - \frac{1}{3}u^2\omega_4\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_4\omega_2 - \frac{1}{2}\omega_2,$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1+\tfrac{5}{6}\omega_3+\tfrac{1}{4}\omega_3u^2\omega_2-\tfrac{1}{12}\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_2{c_s}^2-\tfrac{1}{6}\omega_3\omega_1+\tfrac{1}{6}\omega_4-\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{6}\omega_3^2u^2-\tfrac{1}{4}\omega_1\omega_2+\tfrac{1}{2}\omega_1-\tfrac{1}{6}\omega_3u\omega_1-\tfrac{1}{12}u\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_3u^2+\tfrac{1}{6}\omega_3^2{c_s}^2+\tfrac{1}{2}u\omega_1-\tfrac{1}{4}u\omega_1\omega_2-\tfrac{1}{6}\omega_3^2-\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1-\tfrac{5}{6}\omega_3+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{6}\omega_4+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1-\tfrac{5}{6}\omega_3+\tfrac{1}{3}\omega_4\omega_1+\tfrac{1}{3}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_1-\tfrac{2}{3}\omega_4-\tfrac{1}{2}\omega_1+\tfrac{1}{6}\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = v\omega_2-v\omega_2^2,$$

$$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2+\omega_1^2-2\omega_1-2\omega_2+\omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1-\tfrac{5}{6}\omega_3+\tfrac{1}{3}\omega_4\omega_1+\tfrac{1}{3}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_1-\tfrac{2}{3}\omega_4-\tfrac{1}{2}\omega_1+\tfrac{1}{6}\omega_3^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1-\tfrac{5}{6}\omega_3-\tfrac{1}{4}\omega_3u^2\omega_2+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_2{c_s}^2+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{6}\omega_4+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{6}\omega_3^2u^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{2}\omega_1-\tfrac{1}{6}\omega_3u\omega_1-\tfrac{1}{12}u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_3u^2-\tfrac{1}{6}\omega_3^2{c_s}^2+\tfrac{1}{2}u\omega_1-\tfrac{1}{4}u\omega_1\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{4}\omega_3\omega_2-\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1-\tfrac{5}{6}\omega_3+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{6}\omega_4+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = 1-\tfrac{5}{3}\omega_4{c_s}^2+\tfrac{1}{6}\omega_3u^2\omega_2+\tfrac{1}{3}u^2\omega_4^2+\tfrac{1}{6}\omega_3\omega_2{c_s}^2-\tfrac{1}{2}\omega_4-\tfrac{1}{3}\omega_3{c_s}^2-\tfrac{2}{3}u^2\omega_4-\omega_4v^2+\tfrac{1}{2}\omega_4^2v^2+\tfrac{1}{6}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_4v^2\omega_2-\tfrac{1}{2}\omega_2-\tfrac{1}{3}\omega_3u^2+\tfrac{5}{6}\omega_4^2{c_s}^2+\tfrac{5}{6}\omega_4\omega_2{c_s}^2+\tfrac{1}{3}u^2\omega_4\omega_2+\tfrac{1}{6}\omega_3u^2\omega_4,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1-\tfrac{3}{2}\omega_4+\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_4\omega_2-\tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1-\tfrac{5}{6}\omega_3-\tfrac{1}{4}\omega_3u^2\omega_2+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_2{c_s}^2+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{6}\omega_4+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{6}\omega_3^2u^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{2}\omega_1+\tfrac{1}{6}\omega_3u\omega_1+\tfrac{1}{12}u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_3u^2-\tfrac{1}{6}\omega_3^2{c_s}^2-\tfrac{1}{2}u\omega_1+\tfrac{1}{4}u\omega_1\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{4}\omega_3\omega_2-\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1-\tfrac{5}{6}\omega_3+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{6}\omega_4+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{4}\omega_4^2\omega_1v^2-\tfrac{1}{4}\omega_3^2\omega_4v^2-\tfrac{5}{6}\omega_3-\tfrac{1}{12}\omega_3u^2\omega_4\omega_1-\tfrac{5}{2}\omega_4{c_s}^2-\tfrac{1}{6}\omega_4\omega_1v\omega_2-\tfrac{1}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2+\tfrac{1}{3}u^2\omega_4^2-\tfrac{1}{4}\omega_3\omega_4^2v^2-\tfrac{1}{6}\omega_3\omega_4v\omega_2+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4-\tfrac{1}{12}\omega_3\omega_2{c_s}^2-\tfrac{5}{12}\omega_4^2\omega_1{c_s}^2+\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{6}u\omega_4\omega_1\omega_2+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{12}\omega_3^2v\omega_2-\tfrac{1}{12}\omega_3u^2\omega_1\omega_2-\tfrac{1}{6}\omega_4+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{6}\omega_3^2u^2-u^2\omega_4-\tfrac{3}{2}\omega_4v^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1+\tfrac{1}{6}u\omega_4^2\omega_1-\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2-\tfrac{1}{6}\omega_3u\omega_1+\tfrac{1}{3}\omega_4v\omega_2+\tfrac{1}{12}\omega_3u\omega_1\omega_2+\tfrac{5}{12}\omega_3v\omega_2+\tfrac{1}{2}\omega_4^2v^2+\tfrac{5}{4}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2-\tfrac{7}{12}u\omega_4\omega_1+\tfrac{4}{3}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2-\tfrac{1}{4}\omega_3\omega_4\omega_1v^2-\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\tfrac{1}{2}\omega_4v^2\omega_2-\tfrac{1}{6}u^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_3u^2-\tfrac{1}{6}\omega_3^2{c_s}^2+\tfrac{5}{6}\omega_4^2{c_s}^2+\tfrac{1}{2}u\omega_1+\tfrac{3}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_3\omega_4v^2\omega_2+\tfrac{5}{4}\omega_3\omega_4v^2-\tfrac{1}{4}\omega_4\omega_1v^2\omega_2+\tfrac{5}{6}\omega_4\omega_2{c_s}^2-\tfrac{1}{4}u\omega_1\omega_2-\tfrac{1}{3}\omega_3\omega_4\omega_1{c_s}^2+\tfrac{1}{12}\omega_3u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_1v\omega_2-\tfrac{1}{6}u^2\omega_4\omega_1\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{3}u^2\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1-\tfrac{5}{6}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\tfrac{1}{12}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3^2\omega_4-\tfrac{1}{3}\omega_3^2-\tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{5}{3}\omega_3+\tfrac{1}{6}\omega_3u^2\omega_4\omega_1-\tfrac{5}{6}\omega_4{c_s}^2-\tfrac{1}{2}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2-\tfrac{1}{2}\omega_4\omega_1^2v^2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{3}u^2\omega_4\omega_1^2+\tfrac{1}{6}\omega_3\omega_4-\tfrac{1}{2}\omega_3\omega_2{c_s}^2-\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{1}{3}\omega_4\omega_1^2-\tfrac{1}{2}\omega_1^2v\omega_2+\tfrac{2}{3}u^2\omega_4\omega_1+\tfrac{1}{3}\omega_3^2u^2\omega_1+2\omega_3\omega_1+\tfrac{1}{2}\omega_3u^2\omega_1\omega_2+\tfrac{1}{6}\omega_4+\tfrac{4}{3}\omega_3{c_s}^2-\tfrac{1}{3}\omega_3^2u^2-\tfrac{1}{2}u^2\omega_4-\tfrac{1}{2}\omega_4v^2+\tfrac{1}{2}\omega_1\omega_2-\omega_1-\tfrac{5}{6}\omega_4\omega_1^2{c_s}^2+\tfrac{1}{2}\omega_3\omega_1\omega_2{c_s}^2-\tfrac{5}{3}\omega_3\omega_1{c_s}^2-\tfrac{5}{3}\omega_3u^2\omega_1+\tfrac{5}{3}\omega_4\omega_1{c_s}^2+\omega_1v\omega_2-\tfrac{1}{6}\omega_3\omega_4{c_s}^2+\tfrac{1}{3}\omega_3\omega_1^2{c_s}^2-\tfrac{1}{6}\omega_3\omega_4\omega_1-\tfrac{1}{3}\omega_3^2\omega_1+\tfrac{1}{3}\omega_3^2\omega_1{c_s}^2-\tfrac{1}{2}\omega_2+\tfrac{4}{3}\omega_3u^2-\tfrac{1}{3}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_3\omega_1\omega_2+\omega_4\omega_1v^2+\tfrac{1}{6}\omega_3\omega_4\omega_1{c_s}^2+\tfrac{1}{3}\omega_3^2+\tfrac{1}{2}\omega_3\omega_2-\tfrac{1}{6}\omega_3u^2\omega_4+\tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3-\omega_1^2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{1}{6}\omega_4\omega_1^2-2\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+3\omega_1+\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{6}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1+\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{4}\omega_4^2\omega_1v^2-\tfrac{1}{4}\omega_3^2\omega_4v^2-\tfrac{5}{6}\omega_3-\tfrac{1}{12}\omega_3u^2\omega_4\omega_1-\tfrac{5}{2}\omega_4{c_s}^2-\tfrac{1}{6}\omega_4\omega_1v\omega_2-\tfrac{1}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2+\tfrac{1}{3}u^2\omega_4^2-\tfrac{1}{4}\omega_3\omega_4^2v^2-\tfrac{1}{6}\omega_3\omega_4v\omega_2+\tfrac{1}{12}\omega_4\omega_1+\tfrac{1}{12}\omega_3\omega_4-\tfrac{1}{12}\omega_3\omega_2{c_s}^2-\tfrac{5}{12}\omega_4^2\omega_1{c_s}^2+\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{6}u\omega_4\omega_1\omega_2+\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{12}\omega_3^2v\omega_2-\tfrac{1}{12}\omega_3u^2\omega_1\omega_2-\tfrac{1}{6}\omega_4+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{6}\omega_3^2u^2-u^2\omega_4-\tfrac{3}{2}\omega_4v^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1-\tfrac{1}{6}u\omega_4^2\omega_1-\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{1}{6}\omega_3u\omega_1+\tfrac{1}{3}\omega_4v\omega_2-\tfrac{1}{12}\omega_3u\omega_1\omega_2+\tfrac{5}{12}\omega_3v\omega_2+\tfrac{1}{2}\omega_4^2v^2+\tfrac{5}{4}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2+\tfrac{7}{12}u\omega_4\omega_1+\tfrac{4}{3}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2-\tfrac{1}{4}\omega_3\omega_4\omega_1v^2-\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\tfrac{1}{2}\omega_4v^2\omega_2-\tfrac{1}{6}u^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_2+$$

$$\tfrac{1}{2}\omega_3u^2-\tfrac{1}{6}\omega_3^2{c_s}^2+\tfrac{5}{6}\omega_4^2{c_s}^2-\tfrac{1}{2}u\omega_1+\tfrac{3}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_3\omega_4v^2\omega_2+\tfrac{5}{4}\omega_3\omega_4v^2-\tfrac{1}{4}\omega_4\omega_1v^2\omega_2+\tfrac{5}{6}\omega_4\omega_2{c_s}^2+\tfrac{1}{4}u\omega_1\omega_2-\tfrac{1}{3}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{12}\omega_3u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_1v\omega_2-\tfrac{1}{6}u^2\omega_4\omega_1\omega_2+\tfrac{1}{6}\omega_3^2+\tfrac{1}{3}u^2\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l}=-2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1-\tfrac{5}{6}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\tfrac{1}{12}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3^2\omega_4-\tfrac{1}{3}\omega_3^2-\tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}=$$
$$-\tfrac{1}{6}\omega_4\omega_1v\omega_2-2v\omega_2-\tfrac{1}{6}\omega_3\omega_4v\omega_2-\tfrac{1}{3}\omega_3^2v\omega_2+v\omega_2^2+\tfrac{1}{3}\omega_4v\omega_2+\tfrac{5}{3}\omega_3v\omega_2+\omega_1v\omega_2-\tfrac{1}{3}\omega_3\omega_1v\omega_2-\tfrac{1}{2}\omega_3v\omega_2^2-\tfrac{1}{2}\omega_1v\omega_2^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y}=-2+\tfrac{5}{3}\omega_3+\tfrac{1}{3}\omega_3^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{1}{6}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_4\omega_2+\tfrac{1}{6}\omega_4\omega_1\omega_2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+\omega_1-\tfrac{1}{3}\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_2^2+3\omega_2-\omega_2^2+\tfrac{1}{3}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y}=-\omega_4v\omega_2^2-2v\omega_2+v\omega_2^2+3\omega_4v\omega_2-\omega_4^2v\omega_2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y}=-4+\tfrac{5}{3}\omega_3-\omega_1^2-2\omega_4\omega_1-\tfrac{2}{3}\omega_3\omega_4+\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{2}{3}\omega_4\omega_1^2-2\omega_3\omega_1+\tfrac{13}{3}\omega_4-\omega_4^2+3\omega_1+\omega_4^2\omega_2-4\omega_4\omega_2+\tfrac{2}{3}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1+3\omega_2-\omega_2^2-\tfrac{1}{3}\omega_3^2+\omega_4\omega_2^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y}=$$
$$-\tfrac{1}{6}\omega_4\omega_1v\omega_2-2v\omega_2-\tfrac{1}{6}\omega_3\omega_4v\omega_2-\tfrac{1}{3}\omega_3^2v\omega_2+v\omega_2^2+\tfrac{1}{3}\omega_4v\omega_2+\tfrac{5}{3}\omega_3v\omega_2+\omega_1v\omega_2-\tfrac{1}{3}\omega_3\omega_1v\omega_2-\tfrac{1}{2}\omega_3v\omega_2^2-\tfrac{1}{2}\omega_1v\omega_2^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y}=-2+\tfrac{5}{3}\omega_3+\tfrac{1}{3}\omega_3^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{1}{6}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_4\omega_2+\tfrac{1}{6}\omega_4\omega_1\omega_2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+\omega_1-\tfrac{1}{3}\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_2^2+3\omega_2-\omega_2^2+\tfrac{1}{3}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l}=-1+\tfrac{1}{4}\omega_4^2\omega_1v^2+\tfrac{1}{4}\omega_3^2\omega_4v^2+\tfrac{5}{6}\omega_3+\tfrac{1}{12}\omega_3u^2\omega_4\omega_1+\tfrac{5}{2}\omega_4{c_s}^2-\tfrac{1}{6}\omega_4\omega_1v\omega_2+\tfrac{1}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2-\tfrac{1}{3}u^2\omega_4^2+\tfrac{1}{4}\omega_3\omega_4^2v^2-\tfrac{1}{6}\omega_3\omega_4v\omega_2-\tfrac{1}{12}\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{12}\omega_3\omega_2{c_s}^2+\tfrac{5}{12}\omega_4^2\omega_1{c_s}^2-\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{6}u\omega_4\omega_1\omega_2-\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{12}\omega_3^2v\omega_2+\tfrac{1}{12}\omega_3u^2\omega_1\omega_2+\tfrac{1}{6}\omega_4-\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{6}\omega_3^2u^2+u^2\omega_4+\tfrac{3}{2}\omega_4v^2-\tfrac{1}{4}\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_1-\tfrac{1}{6}u\omega_4^2\omega_1+\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{1}{6}\omega_3u\omega_1+\tfrac{1}{3}\omega_4v\omega_2-\tfrac{1}{12}\omega_3u\omega_1\omega_2+\tfrac{5}{12}\omega_3v\omega_2-\tfrac{1}{2}\omega_4^2v^2-\tfrac{5}{4}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2+\tfrac{7}{12}u\omega_4\omega_1-\tfrac{4}{3}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2+\tfrac{1}{4}\omega_3\omega_4\omega_1v^2+\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2-\tfrac{1}{2}\omega_4v^2\omega_2+\tfrac{1}{6}u^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_3u^2+\tfrac{1}{6}\omega_3^2{c_s}^2-\tfrac{5}{6}\omega_4^2{c_s}^2-\tfrac{1}{2}u\omega_1-\tfrac{3}{4}\omega_4\omega_1v^2+\tfrac{1}{4}\omega_3\omega_4v^2\omega_2-\tfrac{5}{4}\omega_3\omega_4v^2+\tfrac{1}{4}\omega_4\omega_1v^2\omega_2-\tfrac{5}{6}\omega_4\omega_2{c_s}^2+\tfrac{1}{4}u\omega_1\omega_2+\tfrac{1}{3}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{12}\omega_3u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_1v\omega_2+\tfrac{1}{6}u^2\omega_4\omega_1\omega_2-\tfrac{1}{6}\omega_3^2-\tfrac{1}{3}u^2\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_2-\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y+\delta_l}=-2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1-\tfrac{5}{6}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\tfrac{1}{12}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3^2\omega_4-\tfrac{1}{3}\omega_3^2-\tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=-1+\tfrac{5}{3}\omega_3-\tfrac{1}{6}\omega_3u^2\omega_4\omega_1+\tfrac{5}{6}\omega_4{c_s}^2+\tfrac{1}{2}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2+\tfrac{1}{2}\omega_4\omega_1^2v^2+\tfrac{1}{2}\omega_4\omega_1+\tfrac{1}{3}u^2\omega_4\omega_1^2-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{2}\omega_3\omega_2{c_s}^2+\tfrac{1}{3}\omega_3\omega_1^2-\tfrac{1}{3}\omega_4\omega_1^2-\tfrac{1}{2}\omega_1^2v\omega_2-\tfrac{2}{3}u^2\omega_4\omega_1-\tfrac{1}{3}\omega_3^2u^2\omega_1-2\omega_3\omega_1-\tfrac{1}{2}\omega_3u^2\omega_1\omega_2-\tfrac{1}{6}\omega_4-\tfrac{4}{3}\omega_3{c_s}^2+\tfrac{1}{3}\omega_3^2u^2+\tfrac{1}{3}u^2\omega_4+\tfrac{1}{2}\omega_4v^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1+\tfrac{5}{6}\omega_4\omega_1^2{c_s}^2-\tfrac{1}{2}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{5}{3}\omega_3\omega_1{c_s}^2+\tfrac{5}{3}\omega_3u^2\omega_1-\tfrac{5}{3}\omega_4\omega_1{c_s}^2+\omega_1v\omega_2+\tfrac{1}{6}\omega_3\omega_4{c_s}^2-\tfrac{1}{3}\omega_3\omega_1^2{c_s}^2+\tfrac{1}{6}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1-\tfrac{1}{3}\omega_3^2\omega_1{c_s}^2+\tfrac{1}{2}\omega_2-\tfrac{4}{3}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2+\tfrac{1}{2}\omega_3\omega_1\omega_2-\omega_4\omega_1v^2-\tfrac{1}{6}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{3}\omega_3^2-\tfrac{1}{2}\omega_3\omega_2+\tfrac{1}{6}\omega_3u^2\omega_4-\tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y+\delta_l}=-2+\tfrac{5}{3}\omega_3-\omega_1^2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{1}{6}\omega_4\omega_1^2-2\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+3\omega_1+\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{6}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1+\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-1+\tfrac{1}{4}\omega_4^2\omega_1v^2+\tfrac{1}{4}\omega_3^2\omega_4v^2+\tfrac{5}{6}\omega_3+\tfrac{1}{12}\omega_3u^2\omega_4\omega_1+\tfrac{5}{2}\omega_4{c_s}^2-\tfrac{1}{6}\omega_4\omega_1v\omega_2+\tfrac{1}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2-\tfrac{1}{3}u^2\omega_4^2+\tfrac{1}{4}\omega_3\omega_4^2v^2-\tfrac{1}{6}\omega_3\omega_4v\omega_2-\tfrac{1}{12}\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_4+\tfrac{1}{12}\omega_3\omega_2{c_s}^2+\tfrac{5}{12}\omega_4^2\omega_1{c_s}^2-\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{6}u\omega_4\omega_1\omega_2-\tfrac{1}{6}\omega_3\omega_1-\tfrac{1}{12}\omega_3^2v\omega_2+\tfrac{1}{12}\omega_3u^2\omega_1\omega_2+\tfrac{1}{6}\omega_4-\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{6}\omega_3^2u^2+u^2\omega_4+\tfrac{3}{2}\omega_4v^2-\tfrac{1}{4}\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_1+\tfrac{1}{6}u\omega_4^2\omega_1+\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2-\tfrac{1}{6}\omega_3u\omega_1+\tfrac{1}{3}\omega_4v\omega_2+\tfrac{1}{12}\omega_3u\omega_1\omega_2+\tfrac{5}{12}\omega_3v\omega_2-\tfrac{1}{2}\omega_4^2v^2-\tfrac{5}{4}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2-\tfrac{7}{12}u\omega_4\omega_1-\tfrac{4}{3}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2+\tfrac{1}{4}\omega_3\omega_4\omega_1v^2+\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2-\tfrac{1}{2}\omega_4v^2\omega_2+\tfrac{1}{6}u^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_3u^2+\tfrac{1}{6}\omega_3^2{c_s}^2-\tfrac{5}{6}\omega_4^2{c_s}^2+\tfrac{1}{2}u\omega_1-\tfrac{3}{4}\omega_4\omega_1v^2+\tfrac{1}{4}\omega_3\omega_4v^2\omega_2-\tfrac{5}{4}\omega_3\omega_4v^2+\tfrac{1}{4}\omega_4\omega_1v^2\omega_2-\tfrac{5}{6}\omega_4\omega_2{c_s}^2-\tfrac{1}{4}u\omega_1\omega_2+\tfrac{1}{3}\omega_3\omega_4\omega_1{c_s}^2+\tfrac{1}{12}\omega_3u\omega_4\omega_1-\tfrac{1}{12}\omega_3\omega_1v\omega_2+\tfrac{1}{6}u^2\omega_4\omega_1\omega_2-\tfrac{1}{6}\omega_3^2-\tfrac{1}{3}u^2\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_2-\tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-$$

$\frac{1}{2}\omega_1\omega_2+\omega_1-\frac{5}{6}\omega_4\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\frac{1}{12}\omega_3\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_4-\frac{1}{3}\omega_3^2-\frac{2}{3}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -1+\frac{1}{2}\omega_4^2\omega_1v^2-\frac{1}{2}\omega_3^2\omega_4\omega_1v^2+\frac{1}{2}\omega_3^2\omega_4v^2+\frac{5}{3}\omega_3-\frac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2-\frac{1}{6}\omega_3\omega_1^2v\omega_2+\frac{10}{3}\omega_4{c_s}^2+\omega_4\omega_1v\omega_2+\frac{1}{3}\omega_3u^2\omega_2+v\omega_2-\frac{1}{3}u^2\omega_4^2+\frac{1}{2}\omega_3\omega_4^2v^2+\frac{1}{2}\omega_4\omega_1^2v^2+\frac{1}{3}\omega_3\omega_4v\omega_2+\frac{1}{2}\omega_4\omega_1+\frac{1}{3}u^2\omega_4\omega_1^2-\frac{1}{6}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_2{c_s}^2+\frac{1}{3}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2-\frac{1}{6}\omega_3^2\omega_1v\omega_2+\frac{5}{6}\omega_4^2\omega_1{c_s}^2-\frac{1}{3}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2v\omega_2-\frac{5}{3}u^2\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2-\frac{1}{3}\omega_3^2u^2\omega_1-2\omega_3\omega_1+\frac{1}{6}\omega_3^2v\omega_2-\frac{1}{3}\omega_3u^2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2\omega_1v^2-\frac{1}{6}\omega_4-\frac{4}{3}\omega_3{c_s}^2+\frac{1}{3}\omega_3^2u^2+\frac{4}{3}u^2\omega_4+2\omega_4v^2-\frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2-\frac{1}{2}\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\omega_1+\frac{5}{6}\omega_4\omega_1^2{c_s}^2-\frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2+\frac{5}{3}\omega_3\omega_1{c_s}^2-\frac{1}{2}\omega_3\omega_4\omega_1^2v^2-\frac{2}{3}\omega_4v\omega_2-\frac{1}{3}\omega_3\omega_4\omega_1v\omega_2-\frac{5}{6}\omega_3v\omega_2-\frac{1}{2}\omega_4^2v^2+\frac{5}{3}\omega_3u^2\omega_1-\frac{25}{6}\omega_4\omega_1{c_s}^2-\frac{3}{2}\omega_1v\omega_2-\frac{5}{2}\omega_3\omega_4{c_s}^2-\frac{1}{3}\omega_3\omega_1^2{c_s}^2+\frac{1}{6}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2+3\omega_3\omega_4\omega_1v^2+\frac{5}{6}\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{2}\omega_4v^2\omega_2+\frac{1}{3}u^2\omega_4^2\omega_1+\frac{1}{3}\omega_3^2\omega_1-\frac{1}{3}\omega_3^2\omega_1{c_s}^2+\frac{1}{2}\omega_2-\frac{4}{3}\omega_3u^2+\frac{1}{3}\omega_3^2{c_s}^2+\frac{1}{2}\omega_3\omega_1\omega_2-\frac{5}{6}\omega_4^2{c_s}^2-\frac{5}{2}\omega_4\omega_1v^2+\frac{1}{2}\omega_3\omega_4v^2\omega_2-\frac{5}{2}\omega_3\omega_4v^2+\frac{1}{2}\omega_4\omega_1v^2\omega_2-\frac{5}{6}\omega_4\omega_2{c_s}^2+3\omega_3\omega_4\omega_1{c_s}^2+\omega_3\omega_1v\omega_2+\frac{1}{3}u^2\omega_4\omega_1\omega_2-\frac{1}{3}\omega_3^2-\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{3}\omega_4\omega_1^2v\omega_2-\frac{1}{2}\omega_3\omega_2-\frac{1}{3}\omega_3u^2\omega_1^2,$

$\alpha_{x,y-\delta_l}^{[\mu_3],t-3\delta_t} = 3-\frac{10}{3}\omega_3-\frac{1}{6}\omega_3^2\omega_2+\frac{1}{6}\omega_3^2\omega_1\omega_2+\omega_1^2+\frac{1}{6}\omega_3\omega_1^2\omega_2+4\omega_4\omega_1+\frac{10}{3}\omega_3\omega_4-\frac{5}{6}\omega_3\omega_4\omega_2-\frac{3}{2}\omega_4\omega_1\omega_2-\frac{2}{3}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4^2-\frac{5}{6}\omega_4\omega_1^2+4\omega_3\omega_1+\frac{1}{2}\omega_3^2\omega_4\omega_1-\frac{19}{6}\omega_4+\frac{1}{2}\omega_4^2+2\omega_1\omega_2-4\omega_1+\frac{5}{6}\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\frac{1}{2}\omega_1^2\omega_2+\frac{7}{6}\omega_4\omega_2-\frac{23}{6}\omega_3\omega_4\omega_1-\frac{2}{3}\omega_3^2\omega_1-\frac{3}{2}\omega_2-\frac{3}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{3}\omega_4\omega_1^2\omega_2+\frac{2}{3}\omega_3^2+\frac{1}{2}\omega_3\omega_4\omega_1^2+\frac{4}{3}\omega_3\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} =$
$\omega_4v\omega_2^2+2\omega_4\omega_1v\omega_2+3v\omega_2+3\omega_3\omega_4v\omega_2+\frac{1}{2}\omega_3^2v\omega_2-v\omega_2^2-\frac{1}{2}\omega_4\omega_1v\omega_2^2-\frac{1}{2}\omega_3\omega_4v\omega_2^2-4\omega_4v\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1v\omega_2-\frac{5}{2}\omega_3v\omega_2-\frac{3}{2}\omega_1v\omega_2-\frac{1}{2}\omega_4^2\omega_1v\omega_2-\frac{1}{2}\omega_3^2\omega_4v\omega_2+\omega_4^2v\omega_2+\frac{1}{2}\omega_3\omega_1v\omega_2-\frac{1}{2}\omega_3\omega_4^2v\omega_2+\frac{1}{2}\omega_3v\omega_2^2+\frac{1}{2}\omega_1v\omega_2^2,$

$\alpha_{x-\delta_l,y}^{[\mu_3],t-3\delta_t} = 3-\frac{5}{2}\omega_3-\frac{1}{2}\omega_3^2\omega_2-\frac{1}{2}\omega_1\omega_2^2+2\omega_4\omega_1+3\omega_3\omega_4-\frac{7}{2}\omega_3\omega_4\omega_2-\frac{5}{2}\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2+\frac{1}{2}\omega_3\omega_1-4\omega_4+\omega_4^2+2\omega_1\omega_2-\frac{3}{2}\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1\omega_2-\omega_4^2\omega_2+5\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_2^2-4\omega_2+\omega_2^2-\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}\omega_3^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-\omega_4\omega_2^2+3\omega_3\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -\frac{2}{3}\omega_3\omega_1^2v\omega_2+\omega_4\omega_1v\omega_2+3v\omega_2+\frac{1}{3}\omega_3\omega_4v\omega_2-\frac{2}{3}\omega_3^2\omega_1v\omega_2+\omega_1^2v\omega_2+\frac{2}{3}\omega_3^2v\omega_2-v\omega_2^2-\frac{2}{3}\omega_4v\omega_2-\frac{1}{3}\omega_3\omega_4\omega_1v\omega_2-\frac{10}{3}\omega_3v\omega_2-4\omega_1v\omega_2-\omega_3\omega_1v\omega_2^2+4\omega_3\omega_1v\omega_2-\frac{1}{3}\omega_4\omega_1^2v\omega_2+\omega_3v\omega_2^2+\omega_1v\omega_2^2,$

$\alpha_{x,y}^{[\mu_3],t-3\delta_t} = 3-\frac{10}{3}\omega_3-\frac{2}{3}\omega_3^2\omega_2+\frac{2}{3}\omega_3^2\omega_1\omega_2-\omega_1\omega_2^2+\omega_1^2+\frac{2}{3}\omega_3\omega_1^2\omega_2+\omega_4\omega_1+\frac{1}{3}\omega_3\omega_4-\frac{1}{3}\omega_3\omega_4\omega_2-\omega_4\omega_1\omega_2-\frac{2}{3}\omega_3\omega_1^2-\frac{1}{3}\omega_4\omega_1^2+4\omega_3\omega_1-\frac{2}{3}\omega_4+5\omega_1\omega_2-4\omega_1+\frac{1}{3}\omega_3\omega_4\omega_1\omega_2-\omega_1^2\omega_2+\frac{2}{3}\omega_4\omega_2-\frac{1}{3}\omega_3\omega_4\omega_1-\omega_3\omega_2^2-\frac{2}{3}\omega_3^2\omega_1+\omega_3\omega_1\omega_2^2-4\omega_2+\omega_2^2-5\omega_3\omega_1\omega_2+\frac{1}{3}\omega_4\omega_1^2\omega_2+\frac{2}{3}\omega_3^2+\frac{13}{3}\omega_3\omega_2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} =$
$\omega_4v\omega_2^2+2\omega_4\omega_1v\omega_2+3v\omega_2+3\omega_3\omega_4v\omega_2+\frac{1}{2}\omega_3^2v\omega_2-v\omega_2^2-\frac{1}{2}\omega_4\omega_1v\omega_2^2-\frac{1}{2}\omega_3\omega_4v\omega_2^2-4\omega_4v\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1v\omega_2-\frac{5}{2}\omega_3v\omega_2-\frac{3}{2}\omega_1v\omega_2-\frac{1}{2}\omega_4^2\omega_1v\omega_2-\frac{1}{2}\omega_3^2\omega_4v\omega_2+\omega_4^2v\omega_2+\frac{1}{2}\omega_3\omega_1v\omega_2-\frac{1}{2}\omega_3\omega_4^2v\omega_2+\frac{1}{2}\omega_3v\omega_2^2+\frac{1}{2}\omega_1v\omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_3],t-3\delta_t} = 3-\frac{5}{2}\omega_3-\frac{1}{2}\omega_3^2\omega_2-\frac{1}{2}\omega_1\omega_2^2+2\omega_4\omega_1+3\omega_3\omega_4-\frac{7}{2}\omega_3\omega_4\omega_2-\frac{5}{2}\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2+\frac{1}{2}\omega_3\omega_1-4\omega_4+\omega_4^2+2\omega_1\omega_2-\frac{3}{2}\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1\omega_2-\omega_4^2\omega_2+5\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_2^2-4\omega_2+\omega_2^2-\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}\omega_3^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-\omega_4\omega_2^2+3\omega_3\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1\omega_2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = 1-\frac{1}{2}\omega_4^2\omega_1v^2+\frac{1}{2}\omega_3^2\omega_4\omega_1v^2-\frac{1}{2}\omega_3^2\omega_4v^2-\frac{5}{3}\omega_3+\frac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2-\frac{1}{6}\omega_3\omega_1^2v\omega_2-\frac{10}{3}\omega_4{c_s}^2+\omega_4\omega_1v\omega_2-\frac{1}{3}\omega_3u^2\omega_2+v\omega_2+\frac{1}{3}u^2\omega_4^2-\frac{1}{2}\omega_3\omega_4^2v^2-\frac{1}{2}\omega_4\omega_1^2v^2+\frac{1}{3}\omega_3\omega_4v\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{3}u^2\omega_4\omega_1^2+\frac{1}{6}\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2-\frac{1}{3}\omega_3\omega_2{c_s}^2-\frac{1}{3}\omega_3\omega_1^2+\frac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2-\frac{1}{6}\omega_3^2\omega_1v\omega_2-\frac{5}{6}\omega_4^2\omega_1{c_s}^2+\frac{1}{3}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2v\omega_2+\frac{5}{3}u^2\omega_4\omega_1+\frac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{3}\omega_3^2u^2\omega_1+2\omega_3\omega_1+\frac{1}{6}\omega_3^2v\omega_2+\frac{1}{3}\omega_3u^2\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2\omega_1v^2+\frac{1}{6}\omega_4+\frac{4}{3}\omega_3{c_s}^2-\frac{1}{3}\omega_3^2u^2-\frac{4}{3}u^2\omega_4-2\omega_4v^2+\frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2+\frac{1}{2}\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\omega_1-\frac{5}{6}\omega_4\omega_1^2{c_s}^2+\frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2-\frac{5}{3}\omega_3\omega_1{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1^2v^2-\frac{2}{3}\omega_4v\omega_2-\frac{1}{3}\omega_3\omega_4\omega_1v\omega_2-\frac{5}{6}\omega_3v\omega_2+\frac{1}{2}\omega_4^2v^2-\frac{5}{3}\omega_3u^2\omega_1+\frac{25}{6}\omega_4\omega_1{c_s}^2-\frac{3}{2}\omega_1v\omega_2+\frac{5}{2}\omega_3\omega_4{c_s}^2+\frac{1}{3}\omega_3\omega_1^2{c_s}^2-\frac{1}{6}\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2-3\omega_3\omega_4\omega_1v^2-\frac{5}{6}\omega_4\omega_1\omega_2{c_s}^2+\frac{1}{2}\omega_4v^2\omega_2-\frac{1}{3}u^2\omega_4^2\omega_1-\frac{1}{3}\omega_3^2\omega_1+\frac{1}{3}\omega_3^2\omega_1{c_s}^2-\frac{1}{2}\omega_2+\frac{4}{3}\omega_3u^2-\frac{1}{3}\omega_3^2{c_s}^2-\frac{1}{2}\omega_3\omega_1\omega_2+\frac{5}{6}\omega_4^2{c_s}^2+\frac{5}{2}\omega_4\omega_1v^2-\frac{1}{2}\omega_3\omega_4v^2\omega_2+\frac{5}{2}\omega_3\omega_4v^2-\frac{1}{2}\omega_4\omega_1v^2\omega_2+\frac{5}{6}\omega_4\omega_2{c_s}^2-3\omega_3\omega_4\omega_1{c_s}^2+\omega_3\omega_1v\omega_2-\frac{1}{3}u^2\omega_4\omega_1\omega_2+\frac{1}{3}\omega_3^2+\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{3}\omega_4\omega_1^2v\omega_2+\frac{1}{2}\omega_3\omega_2+\frac{1}{3}\omega_3u^2\omega_1^2,$

$\alpha_{x,y+\delta_l}^{[\mu_3],t-3\delta_t} = 3-\frac{10}{3}\omega_3-\frac{1}{6}\omega_3^2\omega_2+\frac{1}{6}\omega_3^2\omega_1\omega_2+\omega_1^2+\frac{1}{6}\omega_3\omega_1^2\omega_2+4\omega_4\omega_1+\frac{10}{3}\omega_3\omega_4-\frac{5}{6}\omega_3\omega_4\omega_2-\frac{3}{2}\omega_4\omega_1\omega_2-\frac{2}{3}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4^2-\frac{5}{6}\omega_4\omega_1^2+4\omega_3\omega_1+\frac{1}{2}\omega_3^2\omega_4\omega_1-\frac{19}{6}\omega_4+\frac{1}{2}\omega_4^2+2\omega_1\omega_2-4\omega_1+\frac{5}{6}\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\frac{1}{2}\omega_1^2\omega_2+$

$\frac{7}{6}\omega_4\omega_2 - \frac{23}{6}\omega_3\omega_4\omega_1 - \frac{2}{3}\omega_3^2\omega_1 - \frac{3}{2}\omega_2 - \frac{3}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{4}{3}\omega_3\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -\omega_4 v\omega_2^2 + \omega_3\omega_1^2 v\omega_2 - \omega_3\omega_4^2\omega_1 v\omega_2 - 6\omega_4\omega_1 v\omega_2 - 4v\omega_2 - 6\omega_3\omega_4 v\omega_2 + \omega_3^2\omega_1 v\omega_2 - \omega_1^2 v\omega_2 - \omega_3\omega_4\omega_1^2 v\omega_2 - \omega_3^2 v\omega_2 + v\omega_2^2 + \omega_4\omega_1 v\omega_2^2 + \omega_3\omega_4 v\omega_2^2 + 5\omega_4 v\omega_2 + 7\omega_3\omega_4\omega_1 v\omega_2 + 5\omega_3 v\omega_2 + 5\omega_1 v\omega_2 + \omega_3\omega_1 v\omega_2^2 + \omega_4^2\omega_1 v\omega_2 - \omega_3^2\omega_4\omega_1 v\omega_2 + \omega_3^2\omega_4 v\omega_2 - \omega_4^2 v\omega_2 - 6\omega_3\omega_1 v\omega_2 + \omega_3\omega_4^2 v\omega_2 + \omega_4\omega_1^2 v\omega_2 - \omega_3 v\omega_2^2 - \omega_3\omega_4\omega_1 v\omega_2^2 - \omega_1 v\omega_2^2,$

$\alpha_{x,y}^{[\mu_3],t-4\delta_t} = -4 + 5\omega_3 + \omega_3^2\omega_2 - \omega_3^2\omega_1\omega_2 + \omega_1\omega_2^2 + \omega_3\omega_4\omega_1\omega_2^2 - \omega_1^2 - \omega_3\omega_1^2\omega_2 - 6\omega_4\omega_1 - 6\omega_3\omega_4 + 7\omega_3\omega_4\omega_2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_1^2 + \omega_3\omega_4^2 + \omega_4\omega_1^2 - \omega_4\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 - 6\omega_3\omega_1 - \omega_3^2\omega_4\omega_1 + 5\omega_4 - \omega_4^2 - 6\omega_1\omega_2 + 5\omega_1 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_1^2\omega_2 - 6\omega_4\omega_2 + 7\omega_3\omega_4\omega_1 + \omega_3\omega_2^2 + \omega_3\omega_4^2\omega_1\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_1\omega_2^2 + 5\omega_2 - \omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_4^2\omega_1 + \omega_3^2\omega_4 - \omega_4\omega_1^2\omega_2 - \omega_3^2 - \omega_3\omega_4^2\omega_2 + \omega_4\omega_2^2 - \omega_3\omega_4\omega_1^2 - 6\omega_3\omega_2 - \omega_3^2\omega_4\omega_2 - \omega_4^2\omega_1\omega_2 + \omega_3^2\omega_4\omega_1\omega_2,$

5.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 u^2 + \frac{1}{2}u\omega_1.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 u^2 - \frac{1}{2}u\omega_1.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 - \frac{5}{6}\omega_4 {c_s}^2 - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{6}u^2\omega_4\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 + \frac{1}{4}\omega_3 v\omega_2 - \frac{1}{6}\omega_3 u^2\omega_1 + \frac{5}{12}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_1 v\omega_2 + \frac{5}{12}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_3\omega_4 v^2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{3}{2}\omega_4 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_4\omega_2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 - \frac{5}{6}\omega_4 {c_s}^2 - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{6}u^2\omega_4\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4 v^2 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 + \frac{1}{4}\omega_3 v\omega_2 - \frac{1}{6}\omega_3 u^2\omega_1 + \frac{5}{12}\omega_4\omega_1 {c_s}^2 + \frac{1}{4}\omega_1 v\omega_2 + \frac{5}{12}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 + \frac{1}{4}\omega_4\omega_1 v^2 + \frac{1}{4}\omega_3\omega_4 v^2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{6}\omega_3 u^2\omega_4,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{1}{6}\omega_4 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{4}\omega_3\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 + \frac{5}{3}\omega_4 {c_s}^2 - \frac{1}{3}u^2\omega_4\omega_1 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 + \frac{2}{3}u^2\omega_4 + \omega_4 v^2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_1 - \frac{5}{6}\omega_4\omega_1 {c_s}^2 - \frac{5}{6}\omega_3\omega_4 {c_s}^2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_3\omega_4 v^2 - \frac{1}{3}\omega_3 u^2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{3}\omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{2}{3}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \omega_3 - \omega_1^2 - \omega_3\omega_1 - \omega_3 {c_s}^2 + 3\omega_1 + \omega_3\omega_1 {c_s}^2 + \omega_3 u^2\omega_1 - \omega_3 u^2,$

$\alpha_{x,y}^{[\mu_4],t-\delta_t} = 2 + \omega_1^2 - 2\omega_1 - 2\omega_2 + \omega_2^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_3 + \frac{5}{3}\omega_4 {c_s}^2 - \frac{1}{3}u^2\omega_4\omega_1 + \frac{1}{3}\omega_3 {c_s}^2 - \frac{1}{6}\omega_3^2 u^2 + \frac{2}{3}u^2\omega_4 + \omega_4 v^2 + \frac{1}{2}\omega_1 - \frac{1}{6}\omega_3\omega_1 {c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_1 - \frac{5}{6}\omega_4\omega_1 {c_s}^2 - \frac{5}{6}\omega_3\omega_4 {c_s}^2 + \frac{1}{3}\omega_3 u^2 - \frac{1}{6}\omega_3^2 {c_s}^2 - \frac{1}{2}\omega_4\omega_1 v^2 - \frac{1}{2}\omega_3\omega_4 v^2 - \frac{1}{3}\omega_3 u^2\omega_4,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{6}\omega_3 + \frac{1}{3}\omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_1 - \frac{2}{3}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{6}\omega_3^2,$

$$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 + \tfrac{1}{2}\omega_3 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{3}\omega_3 {c_s}^2 - \tfrac{1}{6}\omega_3^2u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4v^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{6}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_3v\omega_2 - \tfrac{1}{6}\omega_3u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1v\omega_2 + \tfrac{5}{12}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{3}\omega_3u^2 - \tfrac{1}{6}\omega_3^2 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1v^2 + \tfrac{1}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{6}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{6}\omega_4 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x,y+\delta_l} = 1 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 + \tfrac{1}{2}\omega_3 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{3}\omega_3 {c_s}^2 - \tfrac{1}{6}\omega_3^2u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4v^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{6}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_3v\omega_2 - \tfrac{1}{6}\omega_3u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1v\omega_2 + \tfrac{5}{12}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{3}\omega_3u^2 - \tfrac{1}{6}\omega_3^2 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1v^2 + \tfrac{1}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{6}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{6}\omega_4 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1v\omega_2 + \tfrac{5}{12}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_3\omega_4v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{4}\omega_3^2u^2\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 + \tfrac{1}{3}\omega_3^2u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}u\omega_4^2\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4v\omega_2 - \tfrac{1}{4}\omega_3v\omega_2 - \tfrac{1}{4}\omega_3u^2\omega_4^2 + \tfrac{1}{3}\omega_3u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1v\omega_2 + \tfrac{3}{4}u\omega_4\omega_1 + \tfrac{5}{3}\omega_3\omega_4 {c_s}^2 - \tfrac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4v^2\omega_2 - \tfrac{5}{12}\omega_3u^2\omega_4\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{7}{6}\omega_3u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_3\omega_4v^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_4\omega_1v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 + \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_2 - \tfrac{1}{12}\omega_3^2u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{17}{12}\omega_3u^2\omega_4 - \tfrac{1}{12}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{12}\omega_3^2\omega_2 - \tfrac{7}{6}\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_4\omega_2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{7}{3}\omega_4 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 - \tfrac{5}{6}\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \tfrac{1}{12}\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 - \tfrac{1}{3}\omega_3^2 - \tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 2 - \omega_3 + \tfrac{1}{3}\omega_3u^2\omega_4\omega_1 + \omega_1^2 + \tfrac{5}{3}\omega_4 {c_s}^2 + v\omega_2 + \tfrac{1}{2}\omega_4\omega_1^2v^2 + \tfrac{3}{2}\omega_4\omega_1 + \tfrac{1}{3}u^2\omega_4\omega_1^2 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_1^2v\omega_2 - u^2\omega_4\omega_1 - \tfrac{1}{3}\omega_3^2u^2\omega_1 + \omega_3\omega_1 - \omega_4 - \tfrac{2}{3}\omega_3 {c_s}^2 + \tfrac{1}{3}\omega_3^2u^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4v^2 + \tfrac{3}{2}\omega_1\omega_2 - 3\omega_1 + \tfrac{5}{6}\omega_4\omega_1^2 {c_s}^2 + \omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_3v\omega_2 + \omega_3u^2\omega_1 - \tfrac{5}{2}\omega_4\omega_1 {c_s}^2 - \tfrac{3}{2}\omega_1v\omega_2 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{5}{6}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{3}\omega_3\omega_1^2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1v^2 - \tfrac{1}{3}\omega_3^2\omega_1 {c_s}^2 - \omega_2 - \tfrac{2}{3}\omega_3u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{3}{2}\omega_4\omega_1v^2 - \tfrac{1}{2}\omega_3\omega_4v^2 + \tfrac{5}{6}\omega_3\omega_4\omega_1 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_1v\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{3}\omega_3u^2\omega_4 - \tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x,y-\delta_l} = -2 + \tfrac{5}{3}\omega_3 - \omega_1^2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{3}\omega_3\omega_1^2 + \tfrac{1}{6}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + 3\omega_1 + \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{6}\omega_3\omega_4\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1 + \omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1v\omega_2 + \tfrac{5}{12}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_3\omega_4v\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{4}\omega_3^2u^2\omega_4 + \tfrac{1}{6}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{4}u\omega_4\omega_1\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 + \tfrac{1}{3}\omega_3^2u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}u\omega_4^2\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 - \tfrac{1}{2}\omega_4v\omega_2 - \tfrac{1}{4}\omega_3v\omega_2 - \tfrac{1}{4}\omega_3u^2\omega_4^2 + \tfrac{1}{3}\omega_3u^2\omega_1 + \tfrac{5}{12}\omega_4\omega_1 {c_s}^2 - \tfrac{1}{4}\omega_1v\omega_2 - \tfrac{3}{4}u\omega_4\omega_1 + \tfrac{5}{3}\omega_3\omega_4 {c_s}^2 - \tfrac{2}{3}\omega_3\omega_4\omega_2 {c_s}^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2 {c_s}^2 + \tfrac{1}{2}\omega_4v^2\omega_2 - \tfrac{5}{12}\omega_3u^2\omega_4\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{7}{6}\omega_3u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_3\omega_4v^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_4\omega_1v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 {c_s}^2 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_2 - \tfrac{1}{12}\omega_3^2u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{17}{12}\omega_3u^2\omega_4 - \tfrac{1}{12}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{12}\omega_3^2\omega_2 - \tfrac{7}{6}\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_4\omega_2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{7}{3}\omega_4 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 - \tfrac{5}{6}\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \tfrac{1}{12}\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 - \tfrac{1}{3}\omega_3^2 - \tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 1 - \tfrac{1}{2}\omega_3 + \tfrac{5}{3}\omega_4 {c_s}^2 + \tfrac{5}{3}\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{5}{3}\omega_3\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{3}u^2\omega_4\omega_1 - \tfrac{1}{3}\omega_3u^2\omega_1\omega_2 - \omega_4 - \tfrac{7}{6}\omega_3 {c_s}^2 - \tfrac{1}{2}\omega_3u^2\omega_2^2 + \tfrac{1}{3}\omega_3^2u^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4v^2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{3}\omega_3\omega_1\omega_2 {c_s}^2 + \tfrac{1}{3}\omega_3\omega_1 {c_s}^2 + \tfrac{1}{3}\omega_3u^2\omega_1 - \tfrac{5}{6}\omega_4\omega_1 {c_s}^2 - \tfrac{5}{6}\omega_3\omega_4 {c_s}^2 + \omega_4\omega_2 + \tfrac{5}{6}\omega_3\omega_4\omega_2 {c_s}^2 + \tfrac{5}{6}\omega_4\omega_1\omega_2 {c_s}^2 - \omega_4v^2\omega_2 - \tfrac{1}{2}u\omega_1\omega_2^2 + \tfrac{1}{3}\omega_3u^2\omega_4\omega_2 - \omega_2 - \tfrac{7}{6}\omega_3u^2 + \tfrac{1}{3}\omega_3^2 {c_s}^2 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_4\omega_1v^2 + \tfrac{1}{2}\omega_3\omega_4v^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4v^2 + \tfrac{1}{2}\omega_4\omega_1v^2\omega_2 - \tfrac{5}{3}\omega_4\omega_2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_2^2 {c_s}^2 + u\omega_1\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{2}{3}u^2\omega_4\omega_2 - \tfrac{1}{3}\omega_3^2u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{3}\omega_3u^2\omega_4 - \tfrac{1}{3}\omega_3^2\omega_2 {c_s}^2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{3}\omega_3^2\omega_2 + \tfrac{1}{2}\omega_1\omega_2^2 - \tfrac{1}{6}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_4\omega_2 + \tfrac{1}{6}\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + \omega_1 - \tfrac{1}{3}\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_2^2 + 3\omega_2 - \omega_2^2 + \tfrac{1}{3}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2-\omega_3-\tfrac{2}{3}\omega_3u^2\omega_4\omega_1+\omega_1^2-\tfrac{10}{3}\omega_4{c_s}^2-\omega_4\omega_1^2v^2-\tfrac{2}{3}u^2\omega_4\omega_1^2+2u^2\omega_4\omega_1-\tfrac{1}{3}\omega_3^2u^2\omega_1+\omega_3\omega_1-\tfrac{2}{3}\omega_3{c_s}^2+\tfrac{1}{3}\omega_3^2u^2-\tfrac{4}{3}u^2\omega_4-2\omega_4v^2-3\omega_1-\tfrac{5}{3}\omega_4\omega_1^2{c_s}^2+\omega_3\omega_1{c_s}^2+\omega_3u^2\omega_1+5\omega_4\omega_1{c_s}^2+\tfrac{5}{3}\omega_3\omega_4{c_s}^2-\tfrac{1}{3}\omega_3\omega_1^2{c_s}^2-\omega_3\omega_4\omega_1v^2-\tfrac{1}{3}\omega_3^2\omega_1{c_s}^2-\tfrac{2}{3}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2+3\omega_4\omega_1v^2+\omega_3\omega_4v^2-\tfrac{5}{3}\omega_3\omega_4\omega_1{c_s}^2+\tfrac{2}{3}\omega_3u^2\omega_4-\tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4+\tfrac{5}{3}\omega_3-\omega_1^2-2\omega_4\omega_1-\tfrac{2}{3}\omega_3\omega_4+\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{2}{3}\omega_4\omega_1^2-2\omega_3\omega_1+\tfrac{13}{3}\omega_4-\omega_4^2+3\omega_1+\omega_4^2\omega_2-4\omega_4\omega_2+\tfrac{2}{3}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1+3\omega_2-\omega_2^2-\tfrac{1}{3}\omega_3^2+\omega_4\omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{2}\omega_3+\tfrac{5}{3}\omega_4{c_s}^2+\tfrac{5}{3}\omega_3u^2\omega_2+\tfrac{1}{2}\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4+\tfrac{5}{3}\omega_3\omega_2{c_s}^2-\tfrac{1}{2}\omega_3\omega_4\omega_2-\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{1}{3}u^2\omega_4\omega_1-\tfrac{1}{3}\omega_3u^2\omega_1\omega_2-\omega_4-\tfrac{7}{6}\omega_3{c_s}^2-\tfrac{1}{2}\omega_3u^2\omega_2^2+\tfrac{1}{3}\omega_3^2u^2+\tfrac{2}{3}u^2\omega_4+\omega_4v^2+\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{2}\omega_1-\tfrac{1}{3}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{1}{3}\omega_3\omega_1{c_s}^2+\tfrac{1}{3}\omega_3u^2\omega_1-\tfrac{5}{6}\omega_4\omega_1{c_s}^2-\tfrac{5}{6}\omega_3\omega_4{c_s}^2+\omega_4\omega_2+\tfrac{5}{6}\omega_3\omega_4\omega_2{c_s}^2+\tfrac{5}{6}\omega_4\omega_1\omega_2{c_s}^2-\omega_4v^2\omega_2+\tfrac{1}{2}u\omega_1\omega_2^2+\tfrac{1}{3}\omega_3u^2\omega_4\omega_2-\omega_2-\tfrac{7}{6}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2+\tfrac{1}{2}u\omega_1-\tfrac{1}{2}\omega_4\omega_1v^2+\tfrac{1}{2}\omega_3\omega_4v^2\omega_2-\tfrac{1}{2}\omega_3\omega_4v^2+\tfrac{1}{2}\omega_4\omega_1v^2\omega_2-\tfrac{5}{3}\omega_4\omega_2{c_s}^2-\tfrac{1}{2}\omega_3\omega_2^2{c_s}^2-u\omega_1\omega_2+\tfrac{1}{3}u^2\omega_4\omega_1\omega_2-\tfrac{2}{3}u^2\omega_4\omega_2-\tfrac{1}{3}\omega_3^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_2-\tfrac{1}{3}\omega_3u^2\omega_4-\tfrac{1}{3}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3+\tfrac{1}{3}\omega_3^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{1}{6}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{6}\omega_3\omega_4\omega_2+\tfrac{1}{6}\omega_4\omega_1\omega_2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+\omega_1-\tfrac{1}{3}\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_2^2+3\omega_2-\omega_2^2+\tfrac{1}{3}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{13}{6}\omega_3\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{2}\omega_3-\tfrac{1}{4}\omega_3u^2\omega_4\omega_1-\tfrac{5}{6}\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1v\omega_2+\tfrac{5}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2-\tfrac{1}{4}\omega_3\omega_4v\omega_2+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_2{c_s}^2-\tfrac{1}{4}\omega_3^2u^2\omega_4+\tfrac{1}{6}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}u\omega_4\omega_1\omega_2-\tfrac{1}{12}\omega_3u^2\omega_1\omega_2-\tfrac{1}{2}\omega_4-\tfrac{7}{6}\omega_3{c_s}^2+\tfrac{1}{3}\omega_3^2u^2-\tfrac{1}{3}u^2\omega_4-\tfrac{1}{2}\omega_4v^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1-\tfrac{1}{4}u\omega_4^2\omega_1-\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{1}{3}\omega_3\omega_1{c_s}^2+\tfrac{1}{2}\omega_4v\omega_2+\tfrac{1}{4}\omega_3v\omega_2-\tfrac{1}{4}\omega_3u^2\omega_4^2+\tfrac{1}{3}\omega_3u^2\omega_1+\tfrac{5}{12}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2+\tfrac{3}{4}u\omega_4\omega_1+\tfrac{5}{3}\omega_3\omega_4{c_s}^2-\tfrac{2}{3}\omega_3\omega_4\omega_2{c_s}^2-\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\tfrac{1}{2}\omega_4v^2\omega_2-\tfrac{5}{12}\omega_3u^2\omega_4\omega_2-\tfrac{1}{2}\omega_2-\tfrac{7}{6}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2-\tfrac{1}{2}u\omega_1+\tfrac{1}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_3\omega_4v^2\omega_2+\tfrac{1}{4}\omega_3\omega_4v^2-\tfrac{1}{4}\omega_4\omega_1v^2\omega_2+\tfrac{5}{6}\omega_4\omega_2{c_s}^2+\tfrac{1}{4}u\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{6}u^2\omega_4\omega_1\omega_2+\tfrac{1}{3}u^2\omega_4\omega_2-\tfrac{1}{12}\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_3\omega_2+\tfrac{17}{12}\omega_3u^2\omega_4-\tfrac{1}{12}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1-\tfrac{5}{6}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\tfrac{1}{12}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3^2\omega_4-\tfrac{1}{3}\omega_3^2-\tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} =$$
$$2-\omega_3+\tfrac{1}{3}\omega_3u^2\omega_4\omega_1+\omega_1^2+\tfrac{5}{3}\omega_4{c_s}^2-v\omega_2+\tfrac{1}{2}\omega_4\omega_1^2v^2+\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{3}u^2\omega_4\omega_1^2+\tfrac{1}{2}\omega_3\omega_4-\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{1}{2}\omega_1^2v\omega_2-u^2\omega_4\omega_1-\tfrac{1}{3}\omega_3^2u^2\omega_1+\omega_3\omega_1-\omega_4-\tfrac{2}{3}\omega_3{c_s}^2+\tfrac{1}{3}\omega_3^2u^2+\tfrac{2}{3}u^2\omega_4+\omega_4v^2+\tfrac{3}{2}\omega_1\omega_2-3\omega_1+\tfrac{5}{6}\omega_4\omega_1^2{c_s}^2+\omega_3\omega_1{c_s}^2+\tfrac{1}{2}\omega_3v\omega_2+\omega_3u^2\omega_1-\tfrac{5}{2}\omega_4\omega_1{c_s}^2+\tfrac{3}{2}\omega_1v\omega_2-\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{5}{6}\omega_3\omega_4{c_s}^2-\tfrac{1}{3}\omega_3\omega_1^2{c_s}^2-\tfrac{1}{2}\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4\omega_1v^2-\tfrac{1}{3}\omega_3^2\omega_1{c_s}^2-\omega_2-\tfrac{2}{3}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_3\omega_1\omega_2-\tfrac{3}{2}\omega_4\omega_1v^2-\tfrac{1}{2}\omega_3\omega_4v^2+\tfrac{5}{6}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{2}\omega_3\omega_1v\omega_2+\tfrac{1}{2}\omega_3\omega_2-\tfrac{1}{3}\omega_3u^2\omega_4-\tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3-\omega_1^2-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{6}\omega_3\omega_4+\tfrac{1}{3}\omega_3\omega_1^2+\tfrac{1}{6}\omega_4\omega_1^2-2\omega_3\omega_1+\tfrac{1}{3}\omega_4-\tfrac{3}{2}\omega_1\omega_2+3\omega_1+\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{6}\omega_3\omega_4\omega_1+\tfrac{1}{3}\omega_3^2\omega_1+\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2-\tfrac{1}{3}\omega_3^2-\tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{2}\omega_3-\tfrac{1}{4}\omega_3u^2\omega_4\omega_1-\tfrac{5}{6}\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1v\omega_2+\tfrac{5}{12}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_2-\tfrac{1}{4}\omega_3\omega_4v\omega_2+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_2{c_s}^2-\tfrac{1}{4}\omega_3^2u^2\omega_4+\tfrac{1}{6}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}u\omega_4\omega_1\omega_2-\tfrac{1}{12}\omega_3u^2\omega_1\omega_2-\tfrac{1}{2}\omega_4-\tfrac{7}{6}\omega_3{c_s}^2+\tfrac{1}{3}\omega_3^2u^2-\tfrac{1}{3}u^2\omega_4-\tfrac{1}{2}\omega_4v^2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_1+\tfrac{1}{4}u\omega_4^2\omega_1-\tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2+\tfrac{1}{3}\omega_3\omega_1{c_s}^2+\tfrac{1}{2}\omega_4v\omega_2+\tfrac{1}{4}\omega_3v\omega_2-\tfrac{1}{4}\omega_3u^2\omega_4^2+\tfrac{1}{3}\omega_3u^2\omega_1+\tfrac{5}{12}\omega_4\omega_1{c_s}^2+\tfrac{1}{4}\omega_1v\omega_2-\tfrac{3}{4}u\omega_4\omega_1+\tfrac{5}{3}\omega_3\omega_4{c_s}^2-\tfrac{2}{3}\omega_3\omega_4\omega_2{c_s}^2-\tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2+\tfrac{1}{2}\omega_4v^2\omega_2-\tfrac{5}{12}\omega_3u^2\omega_4\omega_2-\tfrac{1}{2}\omega_2-\tfrac{7}{6}\omega_3u^2+\tfrac{1}{3}\omega_3^2{c_s}^2+\tfrac{1}{2}u\omega_1+\tfrac{1}{4}\omega_4\omega_1v^2-\tfrac{1}{4}\omega_3\omega_4v^2\omega_2+\tfrac{1}{4}\omega_3\omega_4v^2-\tfrac{1}{4}\omega_4\omega_1v^2\omega_2+\tfrac{5}{6}\omega_4\omega_2{c_s}^2-\tfrac{1}{4}u\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1{c_s}^2-\tfrac{1}{6}u^2\omega_4\omega_1\omega_2+\tfrac{1}{3}u^2\omega_4\omega_2-\tfrac{1}{12}\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_3\omega_2+\tfrac{17}{12}\omega_3u^2\omega_4-\tfrac{1}{12}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2+\tfrac{5}{3}\omega_3+\tfrac{1}{12}\omega_3^2\omega_2-\tfrac{7}{6}\omega_4\omega_1-\tfrac{5}{3}\omega_3\omega_4+\tfrac{5}{12}\omega_3\omega_4\omega_2+\tfrac{5}{12}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2-\tfrac{1}{3}\omega_3\omega_1+\tfrac{7}{3}\omega_4-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1\omega_2+\omega_1-\tfrac{5}{6}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\omega_2+\tfrac{1}{12}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3^2\omega_4-\tfrac{1}{3}\omega_3^2-\tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -2-\tfrac{1}{2}\omega_4\omega_1^2v^2\omega_2+\omega_3-\tfrac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2+\tfrac{10}{3}\omega_3u^2\omega_4\omega_1-\omega_1^2+\tfrac{5}{3}\omega_4{c_s}^2-\tfrac{3}{2}\omega_4\omega_1v\omega_2-\tfrac{5}{6}\omega_3u^2\omega_2-v\omega_2+\tfrac{1}{2}\omega_4\omega_1^2v^2-\tfrac{1}{2}\omega_3\omega_4v\omega_2-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{3}u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_3\omega_4-\tfrac{4}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2-\tfrac{5}{6}\omega_3\omega_2{c_s}^2+\tfrac{1}{2}\omega_3^2u^2\omega_4-\tfrac{1}{3}u^2\omega_4\omega_1^2\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2+\tfrac{1}{2}\omega_4\omega_1^2-\tfrac{1}{2}\omega_1^2v\omega_2-u^2\omega_4\omega_1-\tfrac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2+\tfrac{2}{3}\omega_3^2u^2\omega_1-\omega_3\omega_1+\omega_3u^2\omega_1\omega_2-\tfrac{5}{6}\omega_4\omega_1^2\omega_2{c_s}^2+\omega_4+\tfrac{7}{3}\omega_3{c_s}^2-\tfrac{2}{3}\omega_3^2u^2+\tfrac{2}{3}u^2\omega_4+\omega_4v^2-\tfrac{1}{2}\omega_3u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2+3\omega_1+\tfrac{5}{6}\omega_4\omega_1^2{c_s}^2+\omega_3\omega_1\omega_2{c_s}^2-\tfrac{5}{6}\omega_3u^2\omega_4\omega_1\omega_2-3\omega_3\omega_1{c_s}^2+\omega_4v\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1v\omega_2+\tfrac{1}{2}\omega_3v\omega_2+\tfrac{1}{2}\omega_3u^2\omega_4^2-3\omega_3u^2\omega_1-\tfrac{5}{2}\omega_4\omega_1{c_s}^2-\tfrac{1}{2}\omega_3^2u^2\omega_4\omega_1+\tfrac{3}{2}\omega_1v\omega_2+\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{10}{3}\omega_3\omega_4{c_s}^2+\tfrac{2}{3}\omega_3\omega_1^2{c_s}^2+$$

$$\frac{1}{2}\omega_3\omega_4\omega_1 + \frac{4}{3}\omega_3\omega_4\omega_2{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1 v^2 + \frac{5}{2}\omega_4\omega_1\omega_2{c_s}^2 - \omega_4 v^2\omega_2 - \frac{1}{6}\omega_3\omega_1^2\omega_2{c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_1^2\omega_2 + \frac{5}{6}\omega_3 u^2\omega_4\omega_2 + \frac{2}{3}\omega_3^2\omega_1{c_s}^2 + \omega_2 + \frac{7}{3}\omega_3 u^2 - \frac{2}{3}\omega_3^2{c_s}^2 + \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{3}{2}\omega_4\omega_1 v^2 + \frac{1}{2}\omega_3\omega_4 v^2\omega_2 - \frac{1}{2}\omega_3\omega_4 v^2 + \frac{3}{2}\omega_4\omega_1 v^2\omega_2 - \frac{5}{3}\omega_4\omega_2{c_s}^2 - \frac{1}{6}\omega_3^2 u^2\omega_1\omega_2 + \frac{23}{6}\omega_3\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_3\omega_1 v\omega_2 + u^2\omega_4\omega_1\omega_2 - \frac{2}{3}u^2\omega_4\omega_2 + \frac{1}{2}\omega_4\omega_1^2 v\omega_2 + \frac{1}{6}\omega_3^2 u^2\omega_2 - \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_3 u^2\omega_4^2\omega_1 - \frac{1}{6}\omega_3^2\omega_1\omega_2{c_s}^2 - \frac{17}{6}\omega_3 u^2\omega_4 + \frac{1}{6}\omega_3^2\omega_2{c_s}^2 + \frac{2}{3}\omega_3 u^2\omega_1^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x,y-\delta_l} = 3 - \frac{10}{3}\omega_3 - \frac{1}{6}\omega_3^2\omega_2 + \frac{1}{6}\omega_3^2\omega_1\omega_2 + \omega_1^2 + \frac{1}{6}\omega_3\omega_1^2\omega_2 + 4\omega_4\omega_1 + \frac{10}{3}\omega_3\omega_4 - \frac{5}{6}\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{5}{6}\omega_4\omega_1^2 + 4\omega_3\omega_1 + \frac{1}{2}\omega_3^2\omega_4\omega_1 - \frac{19}{6}\omega_4 + \frac{1}{2}\omega_4^2 + 2\omega_1\omega_2 - 4\omega_1 + \frac{5}{6}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_1^2\omega_2 + \frac{7}{6}\omega_4\omega_2 - \frac{23}{6}\omega_3\omega_4\omega_1 - \frac{2}{3}\omega_3^2\omega_1 - \frac{3}{2}\omega_2 - \frac{3}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{4}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \frac{1}{2}\omega_3^2\omega_4\omega_2{c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 u^2\omega_4\omega_1 - \frac{5}{2}\omega_3 u^2\omega_2 - \frac{1}{2}\omega_3^2 u^2\omega_4\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2 - \frac{1}{2}u\omega_4\omega_1\omega_2^2 - \frac{5}{2}\omega_3\omega_2{c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 + 2u\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3 u^2\omega_1\omega_2 - \frac{1}{2}\omega_3 u^2\omega_4^2\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_2{c_s}^2 + \omega_4 + 2\omega_3{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_2^2 - \frac{1}{2}\omega_3^2 u^2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + \frac{1}{2}\omega_1 + \frac{1}{2}u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1{c_s}^2 - \frac{1}{2}\omega_3\omega_4\omega_2^2{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_4^2 - \frac{1}{2}\omega_3 u^2\omega_1 - \frac{1}{2}u\omega_4^2\omega_1\omega_2 - \frac{5}{2}u\omega_4\omega_1 - \frac{5}{2}\omega_3\omega_4{c_s}^2 - \omega_4\omega_2 + 3\omega_3\omega_4\omega_2{c_s}^2 + \frac{1}{2}u\omega_1\omega_2^2 + 3\omega_3 u^2\omega_4\omega_2 + \omega_2 + 2\omega_3 u^2 - \frac{1}{2}\omega_3^2{c_s}^2 + u\omega_1 - \frac{1}{2}\omega_3 u^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_2^2{c_s}^2 - \frac{3}{2}u\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_2 - \frac{1}{2}\omega_3\omega_2 - \frac{5}{2}\omega_3 u^2\omega_4 + \frac{1}{2}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x-\delta_l,y} = 3 - \frac{5}{2}\omega_3 - \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \frac{7}{2}\omega_3\omega_4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_4\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2 + \frac{1}{2}\omega_4^2\omega_1\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -2 + \omega_4\omega_1^2 v^2\omega_2 + \omega_3 - \frac{2}{3}\omega_3 u^2\omega_4\omega_1 - \omega_1^2 - \frac{10}{3}\omega_4{c_s}^2 - \frac{10}{3}\omega_3 u^2\omega_2 - \omega_4\omega_1^2 v^2 - 3\omega_4\omega_1 - \frac{2}{3}u^2\omega_4\omega_1^2 - \omega_3\omega_4 + \frac{5}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2 - \frac{10}{3}\omega_3\omega_2{c_s}^2 + \omega_3\omega_4\omega_2 + 3\omega_4\omega_1\omega_2 + \frac{2}{3}u^2\omega_4\omega_1^2\omega_2 - \omega_3 u^2\omega_1\omega_2^2 + \omega_4\omega_1^2 + 2u^2\omega_4\omega_1 + \frac{2}{3}\omega_3^2 u^2\omega_1 - \omega_3\omega_1 + 4\omega_3 u^2\omega_1\omega_2 + \frac{5}{3}\omega_4\omega_1^2\omega_2{c_s}^2 + 2\omega_4 + \frac{7}{3}\omega_3{c_s}^2 + \omega_3 u^2\omega_2^2 - \frac{2}{3}\omega_3^2 u^2 - \frac{4}{3}u^2\omega_4 - 2\omega_4 v^2 + \omega_3\omega_4\omega_1 v^2\omega_2 - 3\omega_1\omega_2 + 3\omega_1 - \frac{5}{3}\omega_4\omega_1^2{c_s}^2 + 4\omega_3\omega_1\omega_2{c_s}^2 - \omega_3\omega_4\omega_1\omega_2 + \frac{2}{3}\omega_3 u^2\omega_4\omega_1\omega_2 - 3\omega_3\omega_1{c_s}^2 - 3\omega_3 u^2\omega_1 - \omega_3\omega_1\omega_2^2{c_s}^2 + 5\omega_4\omega_1{c_s}^2 + \omega_1^2\omega_2 + \frac{5}{3}\omega_3\omega_4{c_s}^2 + \frac{2}{3}\omega_3\omega_1^2{c_s}^2 - 2\omega_4\omega_2 + \omega_3\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4\omega_2{c_s}^2 - \omega_3\omega_4\omega_1 v^2 - 5\omega_4\omega_1\omega_2{c_s}^2 + 2\omega_4 v^2\omega_2 - \frac{2}{3}\omega_3\omega_1^2\omega_2{c_s}^2 - \frac{2}{3}\omega_3 u^2\omega_1^2\omega_2 - \frac{2}{3}\omega_3 u^2\omega_4\omega_2 + \frac{2}{3}\omega_3^2\omega_1{c_s}^2 + 2\omega_2 + \frac{7}{3}\omega_3 u^2 - \frac{2}{3}\omega_3^2{c_s}^2 + \omega_3\omega_1\omega_2 + 3\omega_4\omega_1 v^2 - \omega_3\omega_4 v^2\omega_2 + \omega_3\omega_4 v^2 - 3\omega_4\omega_1 v^2\omega_2 + \frac{10}{3}\omega_4\omega_2{c_s}^2 + \omega_3\omega_2^2{c_s}^2 - \frac{2}{3}\omega_3^2 u^2\omega_1\omega_2 - \frac{5}{3}\omega_3\omega_4\omega_1{c_s}^2 - \omega_4\omega_1^2\omega_2 - 2u^2\omega_4\omega_1\omega_2 + \frac{4}{3}u^2\omega_4\omega_2 + \frac{2}{3}\omega_3^2 u^2\omega_2 - \omega_3\omega_2 - \frac{2}{3}\omega_3^2\omega_1\omega_2{c_s}^2 + \frac{2}{3}\omega_3 u^2\omega_4 + \frac{2}{3}\omega_3^2\omega_2{c_s}^2 + \frac{2}{3}\omega_3 u^2\omega_1^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x,y} = 3 - \frac{10}{3}\omega_3 - \frac{2}{3}\omega_3^2\omega_2 + \frac{2}{3}\omega_3^2\omega_1\omega_2 - \omega_1\omega_2^2 + \omega_1^2 + \frac{2}{3}\omega_3\omega_1^2\omega_2 + \omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 - \frac{1}{3}\omega_3\omega_4\omega_2 - \omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{3}\omega_4\omega_1^2 + 4\omega_3\omega_1 - \frac{2}{3}\omega_4 + 5\omega_1\omega_2 - 4\omega_1 + \frac{1}{3}\omega_3\omega_4\omega_1\omega_2 - \omega_1^2\omega_2 + \frac{2}{3}\omega_4\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1 - \omega_3\omega_2^2 - \frac{2}{3}\omega_3^2\omega_1 + \omega_3\omega_1\omega_2^2 - 4\omega_2 + \omega_2^2 - 5\omega_3\omega_1\omega_2 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{13}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 - \frac{1}{2}\omega_3^2\omega_4\omega_2{c_s}^2 + \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3 u^2\omega_4\omega_1 - \frac{5}{2}\omega_3 u^2\omega_2 - \frac{1}{2}\omega_3^2 u^2\omega_4\omega_2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2 + \frac{1}{2}u\omega_4\omega_1\omega_2^2 - \frac{5}{2}\omega_3\omega_2{c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 - 2u\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3 u^2\omega_1\omega_2 - \frac{1}{2}\omega_3 u^2\omega_4^2\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_2{c_s}^2 + \omega_4 + 2\omega_3{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_2^2 - \frac{1}{2}\omega_3^2 u^2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + \frac{1}{2}\omega_1 - \frac{1}{2}u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1{c_s}^2 - \frac{1}{2}\omega_3\omega_4\omega_2^2{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_4^2 - \frac{1}{2}\omega_3 u^2\omega_1 + \frac{1}{2}u\omega_4^2\omega_1\omega_2 + \frac{3}{2}u\omega_4\omega_1 - \frac{5}{2}\omega_3\omega_4{c_s}^2 - \omega_4\omega_2 + 3\omega_3\omega_4\omega_2{c_s}^2 - \frac{1}{2}u\omega_1\omega_2^2 + 3\omega_3 u^2\omega_4\omega_2 + \omega_2 + 2\omega_3 u^2 - \frac{1}{2}\omega_3^2{c_s}^2 - u\omega_1 - \frac{1}{2}\omega_3 u^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_2^2{c_s}^2 + \frac{3}{2}u\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_2 - \frac{1}{2}\omega_3\omega_2 - \frac{5}{2}\omega_3 u^2\omega_4 + \frac{1}{2}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x+\delta_l,y} = 3 - \frac{5}{2}\omega_3 - \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \frac{7}{2}\omega_3\omega_4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_4\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2 + \frac{1}{2}\omega_4^2\omega_1\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -2 - \frac{1}{2}\omega_4\omega_1^2 v^2\omega_2 + \omega_3 - \frac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2 + \frac{10}{3}\omega_3 u^2\omega_4\omega_1 - \omega_1^2 + \frac{5}{3}\omega_4{c_s}^2 + \frac{3}{2}\omega_4\omega_1 v\omega_2 - \frac{5}{6}\omega_3 u^2\omega_2 + v\omega_2 + \frac{1}{2}\omega_4\omega_1^2 v^2 + \frac{1}{2}\omega_3\omega_4 v\omega_2 - \frac{3}{2}\omega_4\omega_1 + \frac{1}{3}u^2\omega_4\omega_1^2 - \frac{1}{2}\omega_3\omega_4 - \frac{4}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2 - \frac{5}{6}\omega_3\omega_2{c_s}^2 + \frac{1}{2}\omega_3^2 u^2\omega_4 - \frac{1}{3}u^2\omega_4\omega_1^2\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2 + \frac{1}{2}\omega_4\omega_1^2 + \frac{1}{2}\omega_1^2 v\omega_2 - u^2\omega_4\omega_1 - \frac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 + \frac{2}{3}\omega_3^2 u^2\omega_1 - \omega_3\omega_1 + \omega_3 u^2\omega_1\omega_2 - \frac{5}{6}\omega_4\omega_1^2\omega_2{c_s}^2 + \omega_4 + \frac{7}{3}\omega_3{c_s}^2 - \frac{2}{3}\omega_3^2 u^2 + \frac{2}{3}u^2\omega_4 + \omega_4 v^2 - \frac{1}{2}\omega_3 u^2\omega_4\omega_1^2 - \frac{1}{2}\omega_3\omega_4\omega_1 v^2\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + 3\omega_1 + \frac{5}{6}\omega_4\omega_1^2{c_s}^2 + \omega_3\omega_1\omega_2{c_s}^2 - \frac{5}{6}\omega_3 u^2\omega_4\omega_1\omega_2 - 3\omega_3\omega_1{c_s}^2 - \omega_4 v\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 v\omega_2 - \frac{1}{2}\omega_3 v\omega_2 + \frac{1}{2}\omega_3 u^2\omega_4^2 - 3\omega_3 u^2\omega_1 - \frac{5}{2}\omega_4\omega_1{c_s}^2 - \frac{1}{2}\omega_3^2 u^2\omega_4\omega_1 - \frac{3}{2}\omega_1 v\omega_2 + \frac{1}{2}\omega_1^2\omega_2 - \frac{10}{3}\omega_3\omega_4{c_s}^2 + \frac{2}{3}\omega_3\omega_1^2{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1 + \frac{4}{3}\omega_3\omega_4\omega_2{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1 v^2 + \frac{5}{2}\omega_4\omega_1\omega_2{c_s}^2 - \omega_4 v^2\omega_2 - \frac{1}{6}\omega_3\omega_1^2\omega_2{c_s}^2 - \frac{1}{6}\omega_3 u^2\omega_1^2\omega_2 +$$

$\frac{5}{6}\omega_3u^2\omega_4\omega_2+\frac{2}{3}\omega_3^2\omega_1{c_s}^2+\omega_2+\frac{7}{3}\omega_3u^2-\frac{2}{3}\omega_3^2{c_s}^2+\frac{1}{2}\omega_3\omega_1\omega_2-\frac{3}{2}\omega_4\omega_1v^2+\frac{1}{2}\omega_3\omega_4v^2\omega_2-\frac{1}{2}\omega_3\omega_4v^2+\frac{3}{2}\omega_4\omega_1v^2\omega_2-\frac{5}{3}\omega_4\omega_2{c_s}^2-\frac{1}{6}\omega_3^2u^2\omega_1\omega_2+\frac{23}{6}\omega_3\omega_4\omega_1{c_s}^2+\frac{1}{2}\omega_3\omega_1v\omega_2+u^2\omega_4\omega_1\omega_2-\frac{2}{3}u^2\omega_4\omega_2-\frac{1}{2}\omega_4\omega_1^2v\omega_2+\frac{1}{6}\omega_3^2u^2\omega_2-\frac{1}{2}\omega_3\omega_2-\frac{1}{2}\omega_3u^2\omega_4^2\omega_1-\frac{1}{6}\omega_3^2\omega_1\omega_2{c_s}^2-\frac{17}{6}\omega_3u^2\omega_4+\frac{1}{6}\omega_3^2\omega_2{c_s}^2+\frac{2}{3}\omega_3u^2\omega_1^2,$

$\alpha_{x,y+\delta_l}^{[\mu_4],t-3\delta_t}=3-\frac{10}{3}\omega_3-\frac{1}{6}\omega_3^2\omega_2+\frac{1}{6}\omega_3^2\omega_1\omega_2+\omega_1^2+\frac{1}{6}\omega_3\omega_1^2\omega_2+4\omega_4\omega_1+\frac{10}{3}\omega_3\omega_4-\frac{5}{6}\omega_3\omega_4\omega_2-\frac{3}{2}\omega_4\omega_1\omega_2-\frac{2}{3}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4^2-\frac{5}{6}\omega_4\omega_1^2+4\omega_3\omega_1+\frac{1}{2}\omega_3^2\omega_4\omega_1-\frac{19}{6}\omega_4+\frac{1}{2}\omega_4^2+2\omega_1\omega_2-4\omega_1+\frac{5}{6}\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\frac{1}{2}\omega_1^2\omega_2+\frac{7}{6}\omega_4\omega_2-\frac{23}{6}\omega_3\omega_4\omega_1-\frac{2}{3}\omega_3^2\omega_1-\frac{3}{2}\omega_2-\frac{3}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{3}\omega_4\omega_1^2\omega_2+\frac{2}{3}\omega_3^2+\frac{1}{2}\omega_3\omega_4\omega_1^2+\frac{4}{3}\omega_3\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=2+\omega_3^2\omega_4\omega_2{c_s}^2-\omega_3^2\omega_4\omega_1\omega_2{c_s}^2-\omega_3u^2\omega_4\omega_1\omega_2^2-\omega_3+\omega_3\omega_4^2\omega_1{c_s}^2-6\omega_3u^2\omega_4\omega_1+\omega_1^2+5\omega_3u^2\omega_2+\omega_3^2u^2\omega_4\omega_2+3\omega_4\omega_1+\omega_3\omega_4+7\omega_3\omega_4\omega_1\omega_2{c_s}^2+5\omega_3\omega_2{c_s}^2-\omega_3^2u^2\omega_4-\omega_3\omega_4\omega_2-3\omega_4\omega_1\omega_2+\omega_3u^2\omega_1\omega_2^2+\omega_3\omega_4\omega_1^2{c_s}^2-\omega_4\omega_1^2+\omega_3^2\omega_4\omega_1{c_s}^2-\omega_3^2\omega_4{c_s}^2-\omega_3^2u^2\omega_1-\omega_3^2u^2\omega_4\omega_1\omega_2+\omega_3\omega_1-6\omega_3u^2\omega_1\omega_2+\omega_3u^2\omega_4^2\omega_2+\omega_3\omega_4^2\omega_2{c_s}^2-2\omega_4-4\omega_3{c_s}^2-\omega_3u^2\omega_2^2+\omega_3^2u^2+\omega_3u^2\omega_4\omega_1^2+3\omega_1\omega_2-\omega_3\omega_4^2{c_s}^2-3\omega_1-6\omega_3\omega_1\omega_2{c_s}^2+\omega_3\omega_4\omega_1\omega_2+7\omega_3u^2\omega_4\omega_1\omega_2+5\omega_3\omega_1{c_s}^2+\omega_3\omega_4\omega_2^2{c_s}^2-\omega_3u^2\omega_4^2+5\omega_3u^2\omega_1+\omega_3\omega_1\omega_2^2{c_s}^2+\omega_3^2u^2\omega_4\omega_1-\omega_1^2\omega_2+5\omega_3\omega_4{c_s}^2-\omega_3u^2\omega_4\omega_1^2\omega_2-\omega_3\omega_1^2{c_s}^2+2\omega_4\omega_2-\omega_3\omega_4\omega_1-6\omega_3\omega_4\omega_2{c_s}^2+\omega_3\omega_1^2\omega_2{c_s}^2+\omega_3u^2\omega_1^2\omega_2-\omega_3\omega_4^2\omega_1\omega_2{c_s}^2-6\omega_3u^2\omega_4\omega_2-\omega_3^2\omega_1{c_s}^2-\omega_3u^2\omega_4^2\omega_1\omega_2-2\omega_2-4\omega_3u^2+\omega_3^2{c_s}^2-\omega_3\omega_1\omega_2+\omega_3u^2\omega_4\omega_2^2-\omega_3\omega_2^2{c_s}^2-\omega_3\omega_4\omega_1\omega_2^2{c_s}^2+\omega_3^2u^2\omega_1\omega_2-6\omega_3\omega_4\omega_1{c_s}^2+\omega_4\omega_1^2\omega_2-\omega_3^2u^2\omega_2+\omega_3\omega_2+\omega_3u^2\omega_4^2\omega_1+\omega_3^2\omega_1\omega_2{c_s}^2+5\omega_3u^2\omega_4-\omega_3\omega_4\omega_1^2\omega_2{c_s}^2-\omega_3^2\omega_2{c_s}^2-\omega_3u^2\omega_1^2,$

$\alpha_{x,y}^{[\mu_4],t-4\delta_t}=-4+5\omega_3+\omega_3^2\omega_2-\omega_3^2\omega_1\omega_2+\omega_1\omega_2^2+\omega_3\omega_4\omega_1\omega_2^2-\omega_1^2-\omega_3\omega_1^2\omega_2-6\omega_4\omega_1-6\omega_3\omega_4+7\omega_3\omega_4\omega_2+7\omega_4\omega_1\omega_2+\omega_3\omega_1^2+\omega_3\omega_4^2+\omega_4\omega_1^2-\omega_4\omega_1\omega_2^2-\omega_3\omega_4\omega_2^2-6\omega_3\omega_1-\omega_3^2\omega_4\omega_1+5\omega_4-\omega_4^2-6\omega_1\omega_2+5\omega_1-8\omega_3\omega_4\omega_1\omega_2+\omega_4^2\omega_2-\omega_3\omega_4^2\omega_1+\omega_3\omega_4\omega_1^2\omega_2+\omega_1^2\omega_2-6\omega_4\omega_2+7\omega_3\omega_4\omega_1+\omega_3\omega_2^2+\omega_3\omega_4^2\omega_1\omega_2+\omega_3^2\omega_1-\omega_3\omega_1\omega_2^2+5\omega_2-\omega_2^2+7\omega_3\omega_1\omega_2+\omega_4^2\omega_1+\omega_3^2\omega_4-\omega_4\omega_1^2\omega_2-\omega_3^2-\omega_3\omega_4^2\omega_2+\omega_4\omega_2^2-\omega_3\omega_4\omega_1^2-6\omega_3\omega_2-\omega_3^2\omega_4\omega_2-\omega_4^2\omega_1\omega_2+\omega_3^2\omega_4\omega_1\omega_2,$

5.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t}\mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1+\frac{5}{6}\omega_4{c_s}^2+\frac{1}{2}v\omega_2-\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t}=1+\frac{5}{6}\omega_4{c_s}^2-\frac{1}{2}v\omega_2-\frac{1}{2}\omega_4-\frac{1}{3}\omega_3{c_s}^2+\frac{1}{3}u^2\omega_4+\frac{1}{2}\omega_4v^2-\frac{1}{2}\omega_2-\frac{1}{3}\omega_3u^2.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{5}{6}\omega_3+\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{12}\omega_4\omega_1-\frac{1}{12}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_2{c_s}^2-\frac{1}{6}\omega_3\omega_1+\frac{1}{6}\omega_4-\frac{1}{2}\omega_3{c_s}^2+\frac{1}{6}\omega_3^2u^2-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1+\frac{1}{6}\omega_3u\omega_1+\frac{1}{12}u\omega_4\omega_1+\frac{1}{12}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_2-\frac{1}{2}\omega_3u^2+\frac{1}{6}\omega_3^2{c_s}^2-\frac{1}{2}u\omega_1+\frac{1}{4}u\omega_1\omega_2-\frac{1}{6}\omega_3^2-\frac{1}{4}\omega_3\omega_2+\frac{1}{12}\omega_3u^2\omega_4,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t}=1-\frac{5}{6}\omega_3+\frac{1}{12}\omega_4\omega_1+\frac{1}{12}\omega_3\omega_4+\frac{1}{6}\omega_3\omega_1-\frac{1}{6}\omega_4+\frac{1}{4}\omega_1\omega_2-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2+\frac{1}{6}\omega_3^2+\frac{1}{4}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{5}{3}\omega_4{c_s}^2-\frac{1}{6}\omega_3u^2\omega_2-\frac{1}{3}u^2\omega_4^2-\frac{1}{6}\omega_3\omega_2{c_s}^2+\frac{1}{2}\omega_4+\frac{1}{3}\omega_3{c_s}^2+\frac{2}{3}u^2\omega_4+\omega_4v^2-\frac{1}{2}\omega_4^2v^2-\frac{1}{6}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_4v^2\omega_2+\frac{1}{2}\omega_2+\frac{1}{3}\omega_3u^2-\frac{5}{6}\omega_4^2{c_s}^2-\frac{5}{6}\omega_4\omega_2{c_s}^2-\frac{1}{3}u^2\omega_4\omega_2-\frac{1}{6}\omega_3u^2\omega_4,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t}=1-\frac{3}{2}\omega_4+\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_2-\frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{5}{6}\omega_3+\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{12}\omega_4\omega_1-\frac{1}{12}\omega_3\omega_4+\frac{1}{4}\omega_3\omega_2{c_s}^2-\frac{1}{6}\omega_3\omega_1+\frac{1}{6}\omega_4-\frac{1}{2}\omega_3{c_s}^2+\frac{1}{6}\omega_3^2u^2-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1-\frac{1}{6}\omega_3u\omega_1-\frac{1}{12}u\omega_4\omega_1+\frac{1}{12}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_2-\frac{1}{2}\omega_3u^2+\frac{1}{6}\omega_3^2{c_s}^2+\frac{1}{2}u\omega_1-\frac{1}{4}u\omega_1\omega_2-\frac{1}{6}\omega_3^2-\frac{1}{4}\omega_3\omega_2+\frac{1}{12}\omega_3u^2\omega_4,$

$$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y-\delta_l} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{6}\omega_4 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x-\delta_l,y} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{3}\omega_4\omega_1 + \tfrac{1}{3}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{2}{3}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{6}\omega_3^2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x,y} = -2 - \tfrac{5}{3}\omega_4{c_s}^2 - \tfrac{2}{3}\omega_3u^2\omega_2 - \tfrac{2}{3}\omega_3\omega_2{c_s}^2 + \omega_4 + \tfrac{2}{3}\omega_3{c_s}^2 - \tfrac{2}{3}u^2\omega_4 - \omega_4v^2 - \omega_4\omega_2 + \omega_4v^2\omega_2 + 3\omega_2 + \tfrac{2}{3}\omega_3u^2 - \omega_2^2 + \tfrac{5}{3}\omega_4\omega_2{c_s}^2 + \tfrac{2}{3}u^2\omega_4\omega_2,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x,y} = 2 + \omega_1^2 - 2\omega_1 - 2\omega_2 + \omega_2^2,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{3}\omega_4\omega_1 + \tfrac{1}{3}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{2}{3}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{6}\omega_3^2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 + \tfrac{5}{6}\omega_3 + \tfrac{1}{4}\omega_3u^2\omega_2 - \tfrac{1}{12}\omega_4\omega_1 - \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_2{c_s}^2 - \tfrac{1}{6}\omega_3\omega_1 + \tfrac{1}{6}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{6}\omega_3^2u^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{6}\omega_3u\omega_1 + \tfrac{1}{12}u\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3u^2 + \tfrac{1}{6}\omega_3^2{c_s}^2 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{6}\omega_3^2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{6}\omega_4 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x,y+\delta_l} = -1 + \tfrac{5}{3}\omega_4{c_s}^2 - \tfrac{1}{6}\omega_3u^2\omega_2 - \tfrac{1}{3}u^2\omega_4^2 - \tfrac{1}{6}\omega_3\omega_2{c_s}^2 + \tfrac{1}{2}\omega_4 + \tfrac{1}{3}\omega_3{c_s}^2 + \tfrac{2}{3}u^2\omega_4 + \omega_4v^2 - \tfrac{1}{2}\omega_4^2v^2 - \tfrac{1}{6}\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_4v^2\omega_2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{3}\omega_3u^2 - \tfrac{5}{6}\omega_4^2{c_s}^2 - \tfrac{5}{6}\omega_4\omega_2{c_s}^2 - \tfrac{1}{3}u^2\omega_4\omega_2 - \tfrac{1}{6}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x,y+\delta_l} = 1 - \tfrac{3}{2}\omega_4 + \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 + \tfrac{5}{6}\omega_3 + \tfrac{1}{4}\omega_3u^2\omega_2 - \tfrac{1}{12}\omega_4\omega_1 - \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_2{c_s}^2 - \tfrac{1}{6}\omega_3\omega_1 + \tfrac{1}{6}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{6}\omega_3^2u^2 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{6}\omega_3u\omega_1 - \tfrac{1}{12}u\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3u^2 + \tfrac{1}{6}\omega_3^2{c_s}^2 + \tfrac{1}{2}u\omega_1 - \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{6}\omega_3^2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \tfrac{5}{6}\omega_3 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{6}\omega_4 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{4}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \tfrac{1}{4}\omega_4^2\omega_1v^2 - \tfrac{1}{4}\omega_3^2\omega_4v^2 - \tfrac{5}{6}\omega_3 - \tfrac{1}{12}\omega_3u^2\omega_4\omega_1 - \tfrac{5}{2}\omega_4{c_s}^2 - \tfrac{1}{6}\omega_4\omega_1v\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_2 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{3}u^2\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4^2v^2 - \tfrac{1}{6}\omega_3\omega_4v\omega_2 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 - \tfrac{1}{12}\omega_3\omega_2{c_s}^2 - \tfrac{5}{12}\omega_4^2\omega_1{c_s}^2 + \tfrac{1}{2}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{6}u\omega_4\omega_1\omega_2 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{12}\omega_3^2v\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{6}\omega_4 + \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{6}\omega_3^2u^2 - u^2\omega_4 - \tfrac{3}{2}\omega_4v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{6}u\omega_4^2\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2 - \tfrac{1}{6}\omega_3u\omega_1 + \tfrac{1}{3}\omega_4v\omega_2 + \tfrac{1}{12}\omega_3u\omega_1\omega_2 + \tfrac{5}{12}\omega_3v\omega_2 + \tfrac{1}{2}\omega_4^2v^2 + \tfrac{5}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{4}\omega_1v\omega_2 - \tfrac{7}{12}u\omega_4\omega_1 + \tfrac{4}{3}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1v^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2 + \tfrac{1}{2}\omega_4v^2\omega_2 - \tfrac{1}{6}u^2\omega_4^2\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_3u^2 - \tfrac{1}{6}\omega_3^2{c_s}^2 + \tfrac{5}{6}\omega_4^2{c_s}^2 + \tfrac{1}{2}u\omega_1 + \tfrac{3}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_3\omega_4v^2\omega_2 + \tfrac{5}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_4\omega_1v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2{c_s}^2 - \tfrac{1}{4}u\omega_1\omega_2 - \tfrac{1}{3}\omega_3\omega_4\omega_1{c_s}^2 + \tfrac{1}{12}\omega_3u\omega_4\omega_1 - \tfrac{1}{12}\omega_3\omega_1v\omega_2 - \tfrac{1}{6}u^2\omega_4\omega_1\omega_2 + \tfrac{1}{6}\omega_3^2 + \tfrac{1}{3}u^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{12}\omega_3u^2\omega_4,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{12}\omega_3^2\omega_2 - \tfrac{7}{6}\omega_4\omega_1 - \tfrac{5}{3}\omega_3\omega_4 + \tfrac{5}{12}\omega_3\omega_4\omega_2 + \tfrac{5}{12}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{7}{3}\omega_4 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 - \tfrac{5}{6}\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \tfrac{1}{12}\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_4 - \tfrac{1}{3}\omega_3^2 - \tfrac{2}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1 - \tfrac{5}{3}\omega_3 + \tfrac{1}{6}\omega_3u^2\omega_4\omega_1 - \tfrac{5}{6}\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2v^2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{3}u^2\omega_4\omega_1^2 + \tfrac{1}{6}\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_2{c_s}^2 - \tfrac{1}{3}\omega_3\omega_1^2 + \tfrac{1}{3}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_1^2v\omega_2 + \tfrac{2}{3}u^2\omega_4\omega_1 + \tfrac{1}{3}\omega_3^2u^2\omega_1 + 2\omega_3\omega_1 + \tfrac{1}{2}\omega_3u^2\omega_1\omega_2 + \tfrac{1}{6}\omega_4 + \tfrac{4}{3}\omega_3{c_s}^2 - \tfrac{1}{3}\omega_3^2u^2 - \tfrac{1}{3}u^2\omega_4 - \tfrac{1}{2}\omega_4v^2 + \tfrac{1}{2}\omega_1\omega_2 - \omega_1 - \tfrac{5}{6}\omega_4\omega_1^2{c_s}^2 + \tfrac{1}{2}\omega_3\omega_1\omega_2{c_s}^2 - \tfrac{5}{3}\omega_3\omega_1{c_s}^2 - \tfrac{5}{3}\omega_3u^2\omega_1 + \tfrac{5}{3}\omega_4\omega_1{c_s}^2 + \omega_1v\omega_2 - \tfrac{1}{6}\omega_3\omega_4{c_s}^2 + \tfrac{1}{3}\omega_3\omega_1^2{c_s}^2 - \tfrac{1}{6}\omega_3\omega_4\omega_1 - \tfrac{1}{3}\omega_3^2\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1{c_s}^2 - \tfrac{1}{2}\omega_2 + \tfrac{4}{3}\omega_3u^2 - \tfrac{1}{3}\omega_3^2{c_s}^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2 + \omega_4\omega_1v^2 + \tfrac{1}{6}\omega_3\omega_4\omega_1{c_s}^2 + \tfrac{1}{3}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{6}\omega_3u^2\omega_4 + \tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x,y-\delta_l} = -2 + \tfrac{5}{3}\omega_3 - \omega_1^2 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 + \tfrac{1}{3}\omega_3\omega_1^2 + \tfrac{1}{6}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \tfrac{1}{3}\omega_4 - \tfrac{3}{2}\omega_1\omega_2 + 3\omega_1 + \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{6}\omega_3\omega_4\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1 + \omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 - \tfrac{1}{4}\omega_4^2\omega_1v^2 - \tfrac{1}{4}\omega_3^2\omega_4v^2 - \tfrac{5}{6}\omega_3 - \tfrac{1}{12}\omega_3u^2\omega_4\omega_1 - \tfrac{5}{2}\omega_4{c_s}^2 - \tfrac{1}{6}\omega_4\omega_1v\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_2 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{3}u^2\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4^2v^2 - \tfrac{1}{6}\omega_3\omega_4v\omega_2 + \tfrac{1}{12}\omega_4\omega_1 + \tfrac{1}{12}\omega_3\omega_4 - \tfrac{1}{12}\omega_3\omega_2{c_s}^2 - \tfrac{5}{12}\omega_4^2\omega_1{c_s}^2 + \tfrac{1}{2}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{6}u\omega_4\omega_1\omega_2 + \tfrac{1}{6}\omega_3\omega_1 - \tfrac{1}{12}\omega_3^2v\omega_2 - \tfrac{1}{12}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{6}\omega_4 + \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{6}\omega_3^2u^2 - u^2\omega_4 - \tfrac{3}{2}\omega_4v^2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{6}u\omega_4^2\omega_1 - \tfrac{1}{12}\omega_3\omega_1\omega_2{c_s}^2 + \tfrac{1}{6}\omega_3u\omega_1 + \tfrac{1}{3}\omega_4v\omega_2 - \tfrac{1}{12}\omega_3u\omega_1\omega_2 + \tfrac{5}{12}\omega_3v\omega_2 + \tfrac{1}{2}\omega_4^2v^2 + \tfrac{5}{4}\omega_4\omega_1{c_s}^2 + \tfrac{1}{4}\omega_1v\omega_2 + \tfrac{7}{12}u\omega_4\omega_1 + \tfrac{4}{3}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_2{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1v^2 - \tfrac{5}{12}\omega_4\omega_1\omega_2{c_s}^2 + \tfrac{1}{2}\omega_4v^2\omega_2 - \tfrac{1}{6}u^2\omega_4^2\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_3u^2 - \tfrac{1}{6}\omega_3^2{c_s}^2 + \tfrac{5}{6}\omega_4^2{c_s}^2 - \tfrac{1}{2}u\omega_1 + \tfrac{3}{4}\omega_4\omega_1v^2 - \tfrac{1}{4}\omega_3\omega_4v^2\omega_2 + \tfrac{5}{4}\omega_3\omega_4v^2 - \tfrac{1}{4}\omega_4\omega_1v^2\omega_2 + \tfrac{5}{6}\omega_4\omega_2{c_s}^2 +$$

$\frac{1}{4}u\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1{c_s}^2 - \frac{1}{12}\omega_3 u\omega_4\omega_1 - \frac{1}{12}\omega_3\omega_1 v\omega_2 - \frac{1}{6}u^2\omega_4\omega_1\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{3}u^2\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_2 + \frac{1}{12}\omega_3 u^2\omega_4,$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 + \frac{5}{3}\omega_3 + \frac{1}{12}\omega_3^2\omega_2 - \frac{7}{6}\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 + \frac{5}{12}\omega_3\omega_4\omega_2 + \frac{5}{12}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 - \frac{1}{3}\omega_3\omega_1 + \frac{7}{3}\omega_4 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1\omega_2 + \omega_1 - \frac{5}{6}\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \frac{1}{12}\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_4 - \frac{1}{3}\omega_3^2 - \frac{2}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 2 - \frac{5}{3}\omega_3 - \frac{1}{3}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 - \frac{3}{2}\omega_3 u^2\omega_2 + \frac{1}{6}\omega_4\omega_1 + \frac{1}{6}\omega_3\omega_4 - \frac{3}{2}\omega_3\omega_2{c_s}^2 - \frac{1}{6}\omega_3\omega_4\omega_2 - \frac{1}{6}\omega_4\omega_1\omega_2 + \frac{1}{6}u\omega_4\omega_1\omega_2 + \frac{1}{3}\omega_3\omega_1 - \frac{1}{3}\omega_4 + \omega_3{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_2^2 - \frac{1}{3}\omega_3^2u^2 + \frac{3}{2}\omega_1\omega_2 - \omega_1 - \frac{1}{3}\omega_3 u\omega_1 + \frac{1}{3}\omega_3 u\omega_1\omega_2 - \frac{1}{6}u\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4{c_s}^2 + \frac{1}{3}\omega_4\omega_2 + \frac{1}{6}\omega_3\omega_4\omega_2{c_s}^2 - \frac{1}{2}\omega_3\omega_2^2 + \frac{1}{2}u\omega_1\omega_2^2 + \frac{1}{6}\omega_3 u^2\omega_4\omega_2 - 3\omega_2 + \omega_3 u^2 + \omega_2^2 - \frac{1}{3}\omega_3^2{c_s}^2 - \frac{1}{3}\omega_3\omega_1\omega_2 + u\omega_1 + \frac{1}{2}\omega_3\omega_2^2{c_s}^2 - \frac{3}{2}u\omega_1\omega_2 + \frac{1}{3}\omega_3^2 + \frac{1}{3}\omega_3^2u^2\omega_2 + \frac{13}{6}\omega_3\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4 + \frac{1}{3}\omega_3^2\omega_2{c_s}^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y} = -2 + \frac{5}{3}\omega_3 + \frac{1}{3}\omega_3^2\omega_2 + \frac{1}{2}\omega_1\omega_2^2 - \frac{1}{6}\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_4\omega_2 + \frac{1}{6}\omega_4\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_1 + \frac{1}{3}\omega_4 - \frac{3}{2}\omega_1\omega_2 + \omega_1 - \frac{1}{3}\omega_4\omega_2 + \frac{1}{2}\omega_3\omega_2^2 + 3\omega_2 - \omega_2^2 + \frac{1}{3}\omega_3\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{13}{6}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = 2 - \frac{5}{3}\omega_4^2\omega_2{c_s}^2 - \frac{2}{3}u^2\omega_4^2\omega_2 - \frac{10}{3}\omega_4{c_s}^2 + \omega_3 u^2\omega_2 - \frac{5}{3}\omega_4\omega_2^2{c_s}^2 + \frac{2}{3}u^2\omega_4^2 + \omega_3\omega_2{c_s}^2 - \omega_4^2v^2\omega_2 - \omega_4 - \frac{2}{3}\omega_3{c_s}^2 - \frac{1}{3}\omega_3 u^2\omega_2^2 - \frac{4}{3}u^2\omega_4 - 2\omega_4v^2 + \omega_4^2v^2 + \frac{1}{3}\omega_3\omega_4{c_s}^2 - \frac{2}{3}u^2\omega_4\omega_2^2 + \omega_4\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_2{c_s}^2 + 3\omega_4v^2\omega_2 - \frac{1}{3}\omega_3 u^2\omega_4\omega_2 - 3\omega_2 - \frac{2}{3}\omega_3 u^2 + \omega_2^2 + \frac{5}{3}\omega_4^2{c_s}^2 + 5\omega_4\omega_2{c_s}^2 - \frac{1}{3}\omega_3\omega_2^2{c_s}^2 + 2u^2\omega_4\omega_2 - \omega_4v^2\omega_2^2 + \frac{1}{3}\omega_3 u^2\omega_4,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y} = -4 + \frac{5}{3}\omega_3 - \omega_1^2 - 2\omega_4\omega_1 - \frac{2}{3}\omega_3\omega_4 + \frac{1}{3}\omega_3\omega_1^2 + \frac{2}{3}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \frac{13}{3}\omega_4 - \omega_4^2 + 3\omega_1 + \omega_4^2\omega_2 - 4\omega_4\omega_2 + \frac{2}{3}\omega_3\omega_4\omega_1 + \frac{1}{3}\omega_3^2\omega_1 + 3\omega_2 - \omega_2^2 - \frac{1}{3}\omega_3^2 + \omega_4\omega_2^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 2 - \frac{5}{3}\omega_3 - \frac{1}{3}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 - \frac{3}{2}\omega_3 u^2\omega_2 + \frac{1}{6}\omega_4\omega_1 + \frac{1}{6}\omega_3\omega_4 - \frac{3}{2}\omega_3\omega_2{c_s}^2 - \frac{1}{6}\omega_3\omega_4\omega_2 - \frac{1}{6}\omega_4\omega_1\omega_2 - \frac{1}{6}u\omega_4\omega_1\omega_2 + \frac{1}{3}\omega_3\omega_1 - \frac{1}{3}\omega_4 + \omega_3{c_s}^2 + \frac{1}{2}\omega_3 u^2\omega_2^2 - \frac{1}{3}\omega_3^2u^2 + \frac{3}{2}\omega_1\omega_2 - \omega_1 + \frac{1}{3}\omega_3 u\omega_1 - \frac{1}{3}\omega_3 u\omega_1\omega_2 + \frac{1}{6}u\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4{c_s}^2 + \frac{1}{3}\omega_4\omega_2 + \frac{1}{6}\omega_3\omega_4\omega_2{c_s}^2 - \frac{1}{2}\omega_3\omega_2^2 - \frac{1}{2}u\omega_1\omega_2^2 + \frac{1}{6}\omega_3 u^2\omega_4\omega_2 - 3\omega_2 + \omega_3 u^2 + \omega_2^2 - \frac{1}{3}\omega_3^2{c_s}^2 - \frac{1}{3}\omega_3\omega_1\omega_2 - u\omega_1 + \frac{1}{2}\omega_3\omega_2^2{c_s}^2 + \frac{3}{2}u\omega_1\omega_2 + \frac{1}{3}\omega_3^2 + \frac{1}{3}\omega_3^2u^2\omega_2 + \frac{13}{6}\omega_3\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4 + \frac{1}{3}\omega_3^2\omega_2{c_s}^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y} = -2 + \frac{5}{3}\omega_3 + \frac{1}{3}\omega_3^2\omega_2 + \frac{1}{2}\omega_1\omega_2^2 - \frac{1}{6}\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4 + \frac{1}{6}\omega_3\omega_4\omega_2 + \frac{1}{6}\omega_4\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_1 + \frac{1}{3}\omega_4 - \frac{3}{2}\omega_1\omega_2 + \omega_1 - \frac{1}{3}\omega_4\omega_2 + \frac{1}{2}\omega_3\omega_2^2 + 3\omega_2 - \omega_2^2 + \frac{1}{3}\omega_3\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{13}{6}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \frac{1}{4}\omega_4^2\omega_1v^2 - \frac{1}{4}\omega_3^2\omega_4v^2 - \frac{5}{6}\omega_3 - \frac{1}{12}\omega_3 u^2\omega_4\omega_1 - \frac{5}{2}\omega_4{c_s}^2 + \frac{1}{6}\omega_4\omega_1 v\omega_2 - \frac{1}{12}\omega_3 u^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{3}u^2\omega_4^2 - \frac{1}{4}\omega_3\omega_4^2v^2 + \frac{1}{6}\omega_3\omega_4 v\omega_2 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 - \frac{1}{12}\omega_3\omega_2{c_s}^2 - \frac{5}{12}\omega_4^2\omega_1{c_s}^2 + \frac{1}{2}u^2\omega_4\omega_1 - \frac{1}{4}\omega_3^2\omega_4{c_s}^2 + \frac{1}{6}u\omega_4\omega_1\omega_2 + \frac{1}{6}\omega_3\omega_1 + \frac{1}{12}\omega_3^2v\omega_2 - \frac{1}{12}\omega_3 u^2\omega_1\omega_2 - \frac{1}{6}\omega_4 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{6}\omega_3^2u^2 - u^2\omega_4 - \frac{3}{2}\omega_4v^2 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_4^2{c_s}^2 - \frac{1}{2}\omega_1 + \frac{1}{6}u\omega_4^2\omega_1 - \frac{1}{12}\omega_3\omega_1\omega_2{c_s}^2 - \frac{1}{6}\omega_3 u\omega_1 - \frac{1}{3}\omega_4 v\omega_2 + \frac{1}{12}\omega_3 u\omega_1\omega_2 - \frac{5}{12}\omega_3 v\omega_2 + \frac{1}{2}\omega_4^2v^2 + \frac{5}{4}\omega_4\omega_1{c_s}^2 - \frac{1}{4}\omega_1 v\omega_2 - \frac{7}{12}u\omega_4\omega_1 + \frac{5}{3}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3\omega_4\omega_2{c_s}^2 - \frac{1}{4}\omega_3\omega_4\omega_1v^2 - \frac{5}{12}\omega_4\omega_1\omega_2{c_s}^2 + \frac{1}{2}\omega_4v^2\omega_2 - \frac{1}{6}u^2\omega_4^2\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_3u^2 - \frac{1}{6}\omega_3^2{c_s}^2 + \frac{5}{6}\omega_4^2{c_s}^2 + \frac{1}{2}u\omega_1 + \frac{3}{4}\omega_4\omega_1v^2 - \frac{1}{4}\omega_3\omega_4v^2\omega_2 + \frac{5}{4}\omega_3\omega_4v^2 - \frac{1}{4}\omega_4\omega_1v^2\omega_2 + \frac{5}{6}\omega_4\omega_2{c_s}^2 - \frac{1}{4}u\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1{c_s}^2 + \frac{1}{12}\omega_3 u\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_1 v\omega_2 - \frac{1}{6}u^2\omega_4\omega_1\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{3}u^2\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_2 + \frac{1}{12}\omega_3 u^2\omega_4,$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 + \frac{5}{3}\omega_3 + \frac{1}{12}\omega_3^2\omega_2 - \frac{7}{6}\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 + \frac{5}{12}\omega_3\omega_4\omega_2 + \frac{5}{12}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 - \frac{1}{3}\omega_3\omega_1 + \frac{7}{3}\omega_4 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1\omega_2 + \omega_1 - \frac{5}{6}\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \frac{1}{12}\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_4 - \frac{1}{3}\omega_3^2 - \frac{2}{3}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1 - \frac{5}{3}\omega_3 + \frac{1}{6}\omega_3 u^2\omega_4\omega_1 - \frac{5}{6}\omega_4{c_s}^2 - \frac{1}{2}\omega_3 u^2\omega_2 + \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_4\omega_1^2v^2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{3}u^2\omega_4\omega_1^2 + \frac{1}{6}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_2{c_s}^2 - \frac{1}{3}\omega_3\omega_1^2 + \frac{1}{3}\omega_4\omega_1^2 + \frac{1}{2}\omega_1^2v\omega_2 + \frac{2}{3}u^2\omega_4\omega_1 + \frac{1}{3}\omega_3^2u^2\omega_1 + 2\omega_3\omega_1 + \frac{1}{2}\omega_3 u^2\omega_1\omega_2 + \frac{1}{6}\omega_4 + \frac{4}{3}\omega_3{c_s}^2 - \frac{1}{3}\omega_3^2u^2 - \frac{1}{3}u^2\omega_4 - \frac{1}{2}\omega_4v^2 + \frac{1}{2}\omega_1\omega_2 - \omega_1 - \frac{5}{6}\omega_4\omega_1^2{c_s}^2 + \frac{1}{2}\omega_3\omega_1\omega_2{c_s}^2 - \frac{5}{3}\omega_3\omega_1{c_s}^2 - \frac{5}{3}\omega_3 u^2\omega_1 + \frac{5}{3}\omega_4\omega_1{c_s}^2 - \omega_1 v\omega_2 - \frac{1}{6}\omega_3\omega_4{c_s}^2 + \frac{1}{3}\omega_3\omega_1^2{c_s}^2 - \frac{1}{6}\omega_3\omega_4\omega_1 - \frac{1}{3}\omega_3^2\omega_1 + \frac{1}{3}\omega_3^2\omega_1{c_s}^2 - \frac{1}{2}\omega_2 + \frac{4}{3}\omega_3 u^2 - \frac{1}{3}\omega_3^2{c_s}^2 - \frac{1}{2}\omega_3\omega_1\omega_2 + \omega_4\omega_1v^2 + \frac{1}{6}\omega_3\omega_4\omega_1{c_s}^2 + \frac{1}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_2 - \frac{1}{6}\omega_3 u^2\omega_4 + \frac{1}{3}\omega_3 u^2\omega_1^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y+\delta_l} = -2 + \frac{5}{3}\omega_3 - \omega_1^2 - \frac{1}{2}\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4 + \frac{1}{3}\omega_3\omega_1^2 + \frac{1}{6}\omega_4\omega_1^2 - 2\omega_3\omega_1 + \frac{1}{3}\omega_4 - \frac{3}{2}\omega_1\omega_2 + 3\omega_1 + \frac{1}{2}\omega_1^2\omega_2 + \frac{1}{6}\omega_3\omega_4\omega_1 + \frac{1}{3}\omega_3^2\omega_1 + \omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{1}{2}\omega_3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \frac{1}{4}\omega_4^2\omega_1v^2 - \frac{1}{4}\omega_3^2\omega_4v^2 - \frac{5}{6}\omega_3 - \frac{1}{12}\omega_3 u^2\omega_4\omega_1 - \frac{5}{2}\omega_4{c_s}^2 + \frac{1}{6}\omega_4\omega_1 v\omega_2 - \frac{1}{12}\omega_3 u^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{3}u^2\omega_4^2 - \frac{1}{4}\omega_3\omega_4^2v^2 + \frac{1}{6}\omega_3\omega_4 v\omega_2 + \frac{1}{12}\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_4 - \frac{1}{12}\omega_3\omega_2{c_s}^2 - \frac{5}{12}\omega_4^2\omega_1{c_s}^2 + \frac{1}{2}u^2\omega_4\omega_1 - \frac{1}{4}\omega_3^2\omega_4{c_s}^2 - \frac{1}{6}u\omega_4\omega_1\omega_2 + \frac{1}{6}\omega_3\omega_1 + \frac{1}{12}\omega_3^2v\omega_2 - \frac{1}{12}\omega_3 u^2\omega_1\omega_2 - \frac{1}{6}\omega_4 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{6}\omega_3^2u^2 - u^2\omega_4 - \frac{3}{2}\omega_4v^2 + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_4^2{c_s}^2 - \frac{1}{2}\omega_1 - \frac{1}{6}u\omega_4^2\omega_1 - \frac{1}{12}\omega_3\omega_1\omega_2{c_s}^2 + \frac{1}{6}\omega_3 u\omega_1 - \frac{1}{3}\omega_4 v\omega_2 - \frac{1}{12}\omega_3 u\omega_1\omega_2 - \frac{5}{12}\omega_3 v\omega_2 + \frac{1}{2}\omega_4^2v^2 + \frac{5}{4}\omega_4\omega_1{c_s}^2 - \frac{1}{4}\omega_1 v\omega_2 +$

$\frac{7}{12}u\omega_4\omega_1 + \frac{4}{3}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3\omega_4\omega_2{c_s}^2 - \frac{1}{4}\omega_3\omega_4\omega_1v^2 - \frac{5}{12}\omega_4\omega_1\omega_2{c_s}^2 + \frac{1}{2}\omega_4v^2\omega_2 - \frac{1}{6}u^2\omega_4^2\omega_1 - \frac{1}{2}\omega_2 + \frac{1}{2}\omega_3u^2 - \frac{1}{6}\omega_3^2{c_s}^2 + \frac{5}{6}\omega_4^2{c_s}^2 - \frac{1}{2}u\omega_1 + \frac{3}{4}\omega_4\omega_1v^2 - \frac{1}{4}\omega_3\omega_4v^2\omega_2 + \frac{5}{4}\omega_3\omega_4v^2 - \frac{1}{4}\omega_4\omega_1v^2\omega_2 + \frac{5}{6}\omega_4\omega_2{c_s}^2 + \frac{1}{4}u\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1{c_s}^2 - \frac{1}{12}\omega_3u\omega_4\omega_1 + \frac{1}{12}\omega_3\omega_1v\omega_2 - \frac{1}{6}u^2\omega_4\omega_1\omega_2 + \frac{1}{6}\omega_3^2 + \frac{1}{3}u^2\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_2 + \frac{1}{12}\omega_3u^2\omega_4,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-2\delta_t} = -2 + \frac{5}{3}\omega_3 + \frac{1}{12}\omega_3^2\omega_2 - \frac{7}{6}\omega_4\omega_1 - \frac{5}{3}\omega_3\omega_4 + \frac{5}{12}\omega_3\omega_4\omega_2 + \frac{5}{12}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_4^2 - \frac{1}{3}\omega_3\omega_1 + \frac{7}{3}\omega_4 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1\omega_2 + \omega_1 - \frac{5}{6}\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1 + \omega_2 + \frac{1}{12}\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_4 - \frac{1}{3}\omega_3^2 - \frac{2}{3}\omega_3\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -1 + \frac{1}{2}\omega_4^2\omega_1v^2 - \frac{1}{2}\omega_3^2\omega_4\omega_1v^2 + \frac{1}{2}\omega_3^2\omega_4v^2 + \frac{5}{3}\omega_3 - \frac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2 - \frac{1}{6}\omega_3\omega_1^2v\omega_2 + \frac{10}{3}\omega_4{c_s}^2 + \omega_4\omega_1v\omega_2 + \frac{1}{3}\omega_3u^2\omega_2 + v\omega_2 - \frac{1}{3}u^2\omega_4^2 + \frac{1}{2}\omega_3\omega_4^2v^2 + \frac{1}{2}\omega_4\omega_1^2v^2 + \frac{1}{3}\omega_3\omega_4v\omega_2 + \frac{1}{2}\omega_4\omega_1 + \frac{1}{3}u^2\omega_4\omega_1^2 - \frac{1}{6}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2 + \frac{1}{3}\omega_3\omega_2{c_s}^2 + \frac{1}{3}\omega_3\omega_1^2 - \frac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2 - \frac{1}{6}\omega_3^2\omega_1v\omega_2 + \frac{5}{6}\omega_4^2\omega_1{c_s}^2 - \frac{1}{3}\omega_4\omega_1^2 + \frac{1}{2}\omega_1^2v\omega_2 - \frac{5}{3}u^2\omega_4\omega_1 - \frac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 - \frac{1}{3}\omega_3^2u^2\omega_1 - 2\omega_3\omega_1 + \frac{1}{6}\omega_3^2v\omega_2 - \frac{1}{3}\omega_3u^2\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_1v^2 - \frac{1}{6}\omega_4 - \frac{4}{3}\omega_3{c_s}^2 + \frac{1}{3}\omega_3^2u^2 + \frac{4}{3}u^2\omega_4 + 2\omega_4v^2 - \frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + \omega_1 + \frac{5}{6}\omega_4\omega_1^2{c_s}^2 - \frac{1}{3}\omega_3\omega_1\omega_2{c_s}^2 + \frac{5}{3}\omega_3\omega_1{c_s}^2 - \frac{1}{2}\omega_3\omega_4\omega_1^2v^2 - \frac{2}{3}\omega_4v\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1v\omega_2 - \frac{5}{6}\omega_3v\omega_2 - \frac{1}{2}\omega_4^2v^2 + \frac{5}{3}\omega_3u^2\omega_1 - \frac{25}{6}\omega_4\omega_1{c_s}^2 - \frac{3}{2}\omega_1v\omega_2 - \frac{5}{2}\omega_3\omega_4{c_s}^2 - \frac{1}{3}\omega_3\omega_1^2{c_s}^2 + \frac{1}{6}\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_2{c_s}^2 + 3\omega_3\omega_4\omega_1v^2 + \frac{5}{6}\omega_4\omega_1\omega_2{c_s}^2 - \frac{1}{2}\omega_4v^2\omega_2 + \frac{1}{3}u^2\omega_4^2\omega_1 + \frac{1}{3}\omega_3^2\omega_1 - \frac{1}{3}\omega_3^2\omega_1{c_s}^2 + \frac{1}{2}\omega_2 - \frac{4}{3}\omega_3u^2 + \frac{1}{3}\omega_3^2{c_s}^2 + \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{5}{6}\omega_4^2{c_s}^2 - \frac{5}{2}\omega_4\omega_1v^2 + \frac{1}{2}\omega_3\omega_4v^2\omega_2 - \frac{5}{2}\omega_3\omega_4v^2 + \frac{1}{2}\omega_4\omega_1v^2\omega_2 - \frac{5}{6}\omega_4\omega_2{c_s}^2 + 3\omega_3\omega_4\omega_1{c_s}^2 + \omega_3\omega_1v\omega_2 + \frac{1}{3}u^2\omega_4\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{1}{3}u^2\omega_4\omega_2 - \frac{1}{3}\omega_4\omega_1^2v\omega_2 - \frac{1}{2}\omega_3\omega_2 - \frac{1}{3}\omega_3u^2\omega_1^2,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-3\delta_t} = 3 - \frac{10}{3}\omega_3 - \frac{1}{6}\omega_3^2\omega_2 + \frac{1}{6}\omega_3^2\omega_1\omega_2 + \omega_1^2 + \frac{1}{6}\omega_3\omega_1^2\omega_2 + 4\omega_4\omega_1 + \frac{10}{3}\omega_3\omega_4 - \frac{5}{6}\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{5}{6}\omega_4\omega_1^2 + 4\omega_3\omega_1 + \frac{1}{2}\omega_3^2\omega_4\omega_1 - \frac{19}{6}\omega_4 + \frac{1}{2}\omega_4^2 + 2\omega_1\omega_2 - 4\omega_1 + \frac{5}{6}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \frac{1}{2}\omega_1^2\omega_2 + \frac{7}{6}\omega_4\omega_2 - \frac{23}{6}\omega_3\omega_4\omega_1 - \frac{2}{3}\omega_3^2\omega_1 - \frac{3}{2}\omega_2 - \frac{3}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{4}{3}\omega_3\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -2 - \frac{1}{2}\omega_3^2\omega_4\omega_2{c_s}^2 + \frac{5}{3}\omega_4^2\omega_2{c_s}^2 + \frac{1}{2}\omega_4^2\omega_1v^2 - \frac{5}{6}\omega_4^2\omega_1\omega_2{c_s}^2 - \frac{1}{2}\omega_3\omega_4^2v^2\omega_2 + \frac{2}{3}u^2\omega_4^2\omega_2 + \frac{1}{2}\omega_3^2\omega_4v^2 + \frac{5}{3}\omega_3 + \frac{1}{3}\omega_3^2\omega_2 - \frac{1}{3}u^2\omega_4^2\omega_1\omega_2 + \frac{1}{6}\omega_3u^2\omega_4\omega_1 + \frac{1}{2}\omega_1\omega_2^2 + 5\omega_4{c_s}^2 + \frac{7}{6}\omega_3u^2\omega_2 + \frac{5}{3}\omega_4\omega_2^2{c_s}^2 - \frac{2}{3}u^2\omega_4^2 + \frac{1}{2}\omega_3\omega_4^2v^2 - \frac{1}{6}\omega_4\omega_1 - \frac{1}{6}\omega_3\omega_4 - \frac{2}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2 + \frac{1}{3}u\omega_4\omega_1\omega_2^2 + \frac{7}{6}\omega_3\omega_2{c_s}^2 + \frac{1}{6}\omega_3\omega_4\omega_2 + \frac{1}{6}\omega_4\omega_1\omega_2 - \frac{1}{6}\omega_3u^2\omega_1\omega_2^2 + \frac{5}{6}\omega_4^2\omega_1{c_s}^2 - u^2\omega_4\omega_1 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 - \frac{3}{2}u\omega_4\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_1 + \frac{1}{6}\omega_3u^2\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_4v^2\omega_2 + \omega_4^2v^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1v^2\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_2{c_s}^2 + \frac{1}{3}\omega_4 - \omega_3{c_s}^2 - \frac{1}{6}\omega_3u^2\omega_2^2 + \frac{1}{3}\omega_3^2u^2 + 2u^2\omega_4 + 3\omega_4v^2 - \frac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + \omega_1 - \frac{1}{3}u\omega_4^2\omega_1 + \frac{1}{6}\omega_3\omega_1\omega_2{c_s}^2 + \frac{1}{3}\omega_3u\omega_1 - \frac{1}{6}\omega_3u^2\omega_4\omega_1\omega_2 - \frac{5}{6}\omega_4\omega_1\omega_2^2{c_s}^2 - \frac{1}{2}\omega_3\omega_4\omega_2^2{c_s}^2 - \frac{1}{2}\omega_3u\omega_1\omega_2 - \omega_4^2v^2 + \frac{1}{3}u\omega_4^2\omega_1\omega_2 - \frac{1}{6}\omega_3\omega_1\omega_2^2{c_s}^2 - \frac{5}{2}\omega_4\omega_1{c_s}^2 + \frac{7}{6}u\omega_4\omega_1 - \frac{8}{3}\omega_3\omega_4{c_s}^2 + \frac{2}{3}u^2\omega_4\omega_2^2 - \frac{1}{3}\omega_4\omega_2 + \frac{19}{6}\omega_3\omega_4\omega_2{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1v^2 + \frac{1}{2}\omega_3\omega_2^2 + \frac{10}{3}\omega_4\omega_1\omega_2{c_s}^2 - 4\omega_4v^2\omega_2 - \frac{1}{2}u\omega_1\omega_2^2 + \frac{1}{3}u^2\omega_4^2\omega_1 - \frac{1}{3}u^2\omega_4\omega_1\omega_2^2 + \frac{1}{6}\omega_3u^2\omega_4\omega_2 + 3\omega_2 - \frac{1}{2}\omega_3\omega_4v^2\omega_2^2 - \omega_3u^2 - \frac{1}{2}\omega_4\omega_1v^2\omega_2^2 - \omega_2^2 + \frac{1}{3}\omega_3^2{c_s}^2 + \frac{1}{3}\omega_3\omega_1\omega_2 - \frac{5}{3}\omega_4^2{c_s}^2 - u\omega_1 - \frac{3}{2}\omega_4\omega_1v^2 + 3\omega_3\omega_4v^2\omega_2 - \frac{5}{3}\omega_3\omega_4v^2 + 2\omega_4\omega_1v^2\omega_2 - \frac{20}{3}\omega_4\omega_2{c_s}^2 - \frac{1}{6}\omega_3\omega_2^2{c_s}^2 + \frac{3}{2}u\omega_1\omega_2 + \frac{2}{3}\omega_3\omega_4\omega_1{c_s}^2 - \frac{1}{6}\omega_3u\omega_4\omega_1 + \frac{4}{3}u^2\omega_4\omega_1\omega_2 - \frac{1}{3}\omega_3^2 - \frac{8}{3}u^2\omega_4\omega_2 - \frac{1}{3}\omega_3^2u^2\omega_2 + \frac{1}{6}\omega_3u\omega_4\omega_1\omega_2 + \omega_4v^2\omega_2^2 - \frac{13}{6}\omega_3\omega_2 + \frac{1}{6}\omega_3u\omega_1\omega_2^2 - \frac{1}{6}\omega_3u^2\omega_4 - \frac{1}{3}\omega_3^2\omega_2{c_s}^2,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-3\delta_t} = 3 - \frac{5}{2}\omega_3 - \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \frac{7}{2}\omega_3\omega_4\omega_2 - \frac{5}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_4\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \frac{1}{2}\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2 + \frac{1}{2}\omega_4^2\omega_1\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2 - \omega_4\omega_1^2v^2\omega_2 + \frac{10}{3}\omega_3 + \frac{2}{3}\omega_3^2\omega_2 - \frac{2}{3}\omega_3^2\omega_1\omega_2 - \frac{1}{3}\omega_3u^2\omega_4\omega_1 + \omega_1\omega_2^2 - \frac{2}{3}\omega_3\omega_1^2\omega_2 + \frac{5}{3}\omega_4{c_s}^2 + \frac{11}{3}\omega_3u^2\omega_2 + \omega_4\omega_1^2v^2 + \omega_4\omega_1 + \frac{2}{3}u^2\omega_4\omega_1^2 - \frac{1}{3}\omega_3\omega_4 + \frac{1}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2 + \frac{11}{3}\omega_3\omega_2{c_s}^2 + \frac{1}{3}\omega_3\omega_4\omega_2 - \omega_4\omega_1\omega_2 - \frac{2}{3}u^2\omega_4\omega_1^2\omega_2 + \omega_3u^2\omega_1\omega_2^2 + \frac{2}{3}\omega_3\omega_1^2 - \frac{2}{3}\omega_4\omega_1^2 - \frac{4}{3}u^2\omega_4\omega_1 - \frac{2}{3}\omega_3^2u^2\omega_1 - 4\omega_3\omega_1 - \frac{13}{3}\omega_3u^2\omega_1\omega_2 - \frac{5}{3}\omega_4\omega_1^2\omega_2{c_s}^2 - \frac{1}{3}\omega_4 - \frac{8}{3}\omega_3{c_s}^2 - \omega_3u^2\omega_2^2 + \frac{2}{3}\omega_3^2u^2 + \frac{2}{3}u^2\omega_4 + \omega_4v^2 - 3\omega_1\omega_2 + 2\omega_1 + \frac{5}{3}\omega_4\omega_1^2{c_s}^2 - \frac{13}{3}\omega_3\omega_1\omega_2{c_s}^2 - \frac{1}{3}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{3}\omega_3u^2\omega_4\omega_1\omega_2 + \frac{10}{3}\omega_3\omega_1{c_s}^2 + \frac{10}{3}\omega_3u^2\omega_1 + \omega_3\omega_1\omega_2^2{c_s}^2 - \frac{10}{3}\omega_4\omega_1{c_s}^2 + \frac{1}{3}\omega_3\omega_4{c_s}^2 - \frac{2}{3}\omega_3\omega_1^2{c_s}^2 + \frac{1}{3}\omega_4\omega_2 + \frac{1}{3}\omega_3\omega_4\omega_1 - \frac{1}{3}\omega_3\omega_4\omega_2{c_s}^2 + \omega_3\omega_2^2 + \frac{10}{3}\omega_4\omega_1\omega_2{c_s}^2 - \omega_4v^2\omega_2 + \frac{2}{3}\omega_3\omega_1^2\omega_2{c_s}^2 + \frac{2}{3}\omega_3^2\omega_1 + \frac{2}{3}\omega_3u^2\omega_1^2\omega_2 - \omega_3\omega_1\omega_2^2 - \frac{1}{3}\omega_3u^2\omega_4\omega_2 - \frac{2}{3}\omega_3^2\omega_1{c_s}^2 + 3\omega_2 - \frac{8}{3}\omega_3u^2 - \omega_2^2 + \frac{2}{3}\omega_3^2{c_s}^2 + 5\omega_3\omega_1\omega_2 - 2\omega_4\omega_1v^2 + 2\omega_4\omega_1v^2\omega_2 - \frac{5}{3}\omega_4\omega_2{c_s}^2 - \omega_3\omega_2^2{c_s}^2 + \frac{2}{3}\omega_3^2u^2\omega_1\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1{c_s}^2 + \frac{2}{3}\omega_4\omega_1^2\omega_2 + \frac{4}{3}u^2\omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3^2 - \frac{2}{3}u^2\omega_4\omega_2 - \frac{2}{3}\omega_3^2u^2\omega_2 - \frac{13}{3}\omega_3\omega_2 + \frac{2}{3}\omega_3^2\omega_1\omega_2{c_s}^2 + \frac{1}{3}\omega_3u^2\omega_4 - \frac{2}{3}\omega_3^2\omega_2{c_s}^2 - \frac{2}{3}\omega_3u^2\omega_1^2,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t} = 3 - \frac{10}{3}\omega_3 - \frac{2}{3}\omega_3^2\omega_2 + \frac{2}{3}\omega_3^2\omega_1\omega_2 - \omega_1\omega_2^2 + \omega_1^2 + \frac{2}{3}\omega_3\omega_1^2\omega_2 + \omega_4\omega_1 + \frac{1}{3}\omega_3\omega_4 - \frac{1}{3}\omega_3\omega_4\omega_2 - \omega_4\omega_1\omega_2 - \frac{2}{3}\omega_3\omega_1^2 - \frac{1}{3}\omega_4\omega_1^2 + 4\omega_3\omega_1 - \frac{2}{3}\omega_4 + 5\omega_1\omega_2 - 4\omega_1 + \frac{1}{3}\omega_3\omega_4\omega_1\omega_2 - \omega_1^2\omega_2 + \frac{2}{3}\omega_4\omega_2 - \frac{1}{3}\omega_3\omega_4\omega_1 - \omega_3\omega_2^2 - \frac{3}{2}\omega_3^2\omega_1 + \omega_3\omega_1\omega_2^2 - 4\omega_2 + \omega_2^2 - 5\omega_3\omega_1\omega_2 + \frac{1}{3}\omega_4\omega_1^2\omega_2 + \frac{2}{3}\omega_3^2 + \frac{13}{3}\omega_3\omega_2,$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -2 - \tfrac{1}{2}\omega_3^2\omega_4\omega_2{c_s}^2 + \tfrac{5}{3}\omega_4^2\omega_2{c_s}^2 + \tfrac{1}{2}\omega_4^2\omega_1v^2 - \tfrac{5}{6}\omega_4^2\omega_1\omega_2{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4^2v^2\omega_2 + \tfrac{2}{3}u^2\omega_4^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4v^2 + \tfrac{5}{3}\omega_3 + \tfrac{1}{3}\omega_3^2\omega_2 - \tfrac{1}{3}u^2\omega_4^2\omega_1\omega_2 + \tfrac{1}{6}\omega_3u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_1\omega_2^2 + 5\omega_4{c_s}^2 + \tfrac{7}{6}\omega_3u^2\omega_2 + \tfrac{5}{3}\omega_4\omega_2^2{c_s}^2 - \tfrac{2}{3}u^2\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4^2v^2 - \tfrac{1}{6}\omega_4\omega_1 - \tfrac{1}{6}\omega_3\omega_4 - \tfrac{2}{3}\omega_3\omega_4\omega_1\omega_2{c_s}^2 - \tfrac{1}{3}u\omega_4\omega_1\omega_2^2 + \tfrac{7}{6}\omega_3\omega_2{c_s}^2 + \tfrac{1}{6}\omega_3\omega_4\omega_2 + \tfrac{1}{6}\omega_4\omega_1\omega_2 - \tfrac{1}{6}\omega_3u^2\omega_1\omega_2^2 + \tfrac{5}{6}\omega_4^2\omega_1{c_s}^2 - u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 + \tfrac{3}{2}u\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3\omega_1 + \tfrac{1}{6}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4v^2\omega_2 + \omega_4^2v^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1v^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4^2\omega_2{c_s}^2 + \tfrac{1}{3}\omega_4 - \omega_3{c_s}^2 - \tfrac{1}{6}\omega_3u^2\omega_2^2 + \tfrac{1}{3}\omega_3^2u^2 + 2u^2\omega_4 + 3\omega_4v^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2 - \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 + \omega_1 + \tfrac{1}{3}u\omega_4^2\omega_1 + \tfrac{1}{6}\omega_3\omega_1\omega_2{c_s}^2 - \tfrac{1}{3}\omega_3u\omega_1 - \tfrac{1}{6}\omega_3u^2\omega_4\omega_1\omega_2 - \tfrac{5}{6}\omega_4\omega_1\omega_2^2{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_2^2{c_s}^2 + \tfrac{1}{2}\omega_3u\omega_1\omega_2 - \omega_4^2v^2 - \tfrac{1}{3}u\omega_4^2\omega_1\omega_2 - \tfrac{1}{6}\omega_3\omega_1\omega_2^2{c_s}^2 - \tfrac{5}{2}\omega_4\omega_1{c_s}^2 - \tfrac{7}{6}u\omega_4\omega_1 - \tfrac{8}{3}\omega_3\omega_4{c_s}^2 + \tfrac{2}{3}u^2\omega_4\omega_2^2 - \tfrac{1}{3}\omega_4\omega_2 + \tfrac{19}{6}\omega_3\omega_4\omega_2{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1v^2 + \tfrac{1}{2}\omega_3\omega_2^2 + \tfrac{10}{3}\omega_4\omega_1\omega_2{c_s}^2 - 4\omega_4v^2\omega_2 + \tfrac{1}{2}u\omega_1\omega_2^2 + \tfrac{1}{3}u^2\omega_4^2\omega_1 - \tfrac{1}{3}u^2\omega_4\omega_1\omega_2^2 + \tfrac{1}{6}\omega_3u^2\omega_4\omega_2 + 3\omega_2 - \tfrac{1}{2}\omega_3\omega_4v^2\omega_2^2 - \omega_3u^2 - \tfrac{1}{2}\omega_4\omega_1v^2\omega_2^2 - \omega_2^2 + \tfrac{1}{3}\omega_3^2{c_s}^2 + \tfrac{1}{3}\omega_3\omega_1\omega_2 - \tfrac{5}{3}\omega_4^2{c_s}^2 + u\omega_1 - \tfrac{3}{2}\omega_4\omega_1v^2 + 3\omega_3\omega_4v^2\omega_2 - \tfrac{5}{2}\omega_3\omega_4v^2 + 2\omega_4\omega_1v^2\omega_2 - \tfrac{20}{3}\omega_4\omega_2{c_s}^2 - \tfrac{1}{6}\omega_3\omega_2^2{c_s}^2 - \tfrac{3}{2}u\omega_1\omega_2 + \tfrac{2}{3}\omega_3\omega_4\omega_1{c_s}^2 + \tfrac{1}{6}\omega_3u\omega_4\omega_1 + \tfrac{4}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{8}{3}u^2\omega_4\omega_2 - \tfrac{1}{3}\omega_3^2u^2\omega_2 - \tfrac{1}{6}\omega_3u\omega_4\omega_1\omega_2 + \omega_4v^2\omega_2^2 - \tfrac{13}{6}\omega_3\omega_2 - \tfrac{1}{6}\omega_3u\omega_1\omega_2^2 - \tfrac{1}{6}\omega_3u^2\omega_4 - \tfrac{1}{3}\omega_3^2\omega_2{c_s}^2,$$

$$\alpha^{[\mu_5],t-3\delta_t}_{x+\delta_l,y} = 3 - \tfrac{5}{2}\omega_3 - \tfrac{1}{2}\omega_3^2\omega_2 - \tfrac{1}{2}\omega_1\omega_2^2 + 2\omega_4\omega_1 + 3\omega_3\omega_4 - \tfrac{7}{2}\omega_3\omega_4\omega_2 - \tfrac{5}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4\omega_2^2 + \tfrac{1}{2}\omega_3\omega_1 - 4\omega_4 + \omega_4^2 + 2\omega_1\omega_2 - \tfrac{3}{2}\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 + 5\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_2^2 - 4\omega_2 + \omega_2^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_2 - \omega_4\omega_2^2 + 3\omega_3\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 + \tfrac{1}{2}\omega_4^2\omega_1v^2 - \tfrac{1}{2}\omega_3^2\omega_4\omega_1v^2 + \tfrac{1}{2}\omega_3^2\omega_4v^2 + \tfrac{5}{3}\omega_3 - \tfrac{1}{2}\omega_3\omega_4^2\omega_1{c_s}^2 + \tfrac{1}{6}\omega_3\omega_1^2v\omega_2 + \tfrac{10}{3}\omega_4{c_s}^2 - \omega_4\omega_1v\omega_2 + \tfrac{1}{3}\omega_3u^2\omega_2 - v\omega_2 - \tfrac{1}{3}u^2\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4^2v^2 + \tfrac{1}{2}\omega_4\omega_1^2v^2 - \tfrac{1}{3}\omega_3\omega_4v\omega_2 + \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{3}u^2\omega_4\omega_1^2 - \tfrac{1}{6}\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_4\omega_1\omega_2{c_s}^2 + \tfrac{1}{3}\omega_3\omega_2{c_s}^2 + \tfrac{1}{3}\omega_3\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1^2{c_s}^2 + \tfrac{1}{6}\omega_3^2\omega_1v\omega_2 + \tfrac{5}{6}\omega_4^2\omega_1{c_s}^2 - \tfrac{1}{3}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_1^2v\omega_2 - \tfrac{5}{3}u^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4\omega_1{c_s}^2 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{3}\omega_3^2u^2\omega_1 - 2\omega_3\omega_1 - \tfrac{1}{6}\omega_3^2v\omega_2 - \tfrac{1}{3}\omega_3u^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4^2\omega_1v^2 - \tfrac{1}{6}\omega_4 - \tfrac{4}{3}\omega_3{c_s}^2 + \tfrac{1}{3}\omega_3^2u^2 + \tfrac{4}{3}u^2\omega_4 + 2\omega_4v^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1v^2\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 + \omega_1 + \tfrac{5}{6}\omega_4\omega_1^2{c_s}^2 - \tfrac{1}{3}\omega_3\omega_1\omega_2{c_s}^2 + \tfrac{5}{3}\omega_3\omega_1{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1^2v^2 + \tfrac{2}{3}\omega_4v\omega_2 + \tfrac{1}{3}\omega_3\omega_4\omega_1v\omega_2 + \tfrac{5}{6}\omega_3v\omega_2 - \tfrac{1}{2}\omega_4^2v^2 + \tfrac{5}{3}\omega_3u^2\omega_1 - \tfrac{25}{6}\omega_4\omega_1{c_s}^2 + \tfrac{3}{2}\omega_1v\omega_2 - \tfrac{5}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{3}\omega_3\omega_1^2{c_s}^2 + \tfrac{1}{6}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_2{c_s}^2 + 3\omega_3\omega_4\omega_1v^2 + \tfrac{5}{6}\omega_4\omega_1\omega_2{c_s}^2 - \tfrac{1}{2}\omega_4v^2\omega_2 + \tfrac{1}{3}u^2\omega_4^2\omega_1 + \tfrac{1}{3}\omega_3^2\omega_1 - \tfrac{1}{3}\omega_3^2\omega_1{c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{4}{3}\omega_3u^2 + \tfrac{1}{3}\omega_3^2{c_s}^2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 - \tfrac{5}{6}\omega_4^2{c_s}^2 - \tfrac{5}{2}\omega_4\omega_1v^2 + \tfrac{1}{2}\omega_3\omega_4v^2\omega_2 - \tfrac{5}{2}\omega_3\omega_4v^2 + \tfrac{1}{2}\omega_4\omega_1v^2\omega_2 - \tfrac{5}{6}\omega_4\omega_2{c_s}^2 + 3\omega_3\omega_4\omega_1{c_s}^2 - \omega_3\omega_1v\omega_2 + \tfrac{1}{3}u^2\omega_4\omega_1\omega_2 - \tfrac{1}{3}\omega_3^2 - \tfrac{1}{3}u^2\omega_4\omega_2 + \tfrac{1}{3}\omega_4\omega_1^2v\omega_2 - \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{3}\omega_3u^2\omega_1^2,$$

$$\alpha^{[\mu_5],t-3\delta_t}_{x,y+\delta_l} = 3 - \tfrac{10}{3}\omega_3 - \tfrac{1}{6}\omega_3^2\omega_2 + \tfrac{1}{6}\omega_3^2\omega_1\omega_2 + \omega_1^2 + \tfrac{1}{6}\omega_3\omega_1^2\omega_2 + 4\omega_4\omega_1 + \tfrac{10}{3}\omega_3\omega_4 - \tfrac{5}{6}\omega_3\omega_4\omega_2 - \tfrac{3}{2}\omega_4\omega_1\omega_2 - \tfrac{2}{3}\omega_3\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4^2 - \tfrac{5}{6}\omega_4\omega_1^2 + 4\omega_3\omega_1 + \tfrac{1}{2}\omega_3^2\omega_4\omega_1 - \tfrac{19}{6}\omega_4 + \tfrac{1}{2}\omega_4^2 + 2\omega_1\omega_2 - 4\omega_1 + \tfrac{5}{6}\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_1 - \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{7}{6}\omega_4\omega_2 - \tfrac{23}{6}\omega_3\omega_4\omega_1 - \tfrac{2}{3}\omega_3^2\omega_1 - \tfrac{3}{2}\omega_2 - \tfrac{3}{2}\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{3}\omega_4\omega_1^2\omega_2 + \tfrac{2}{3}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1^2 + \tfrac{4}{3}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 2 + \omega_4\omega_1^2v^2\omega_2 + \omega_3^2\omega_4\omega_2{c_s}^2 - \tfrac{5}{3}\omega_4^2\omega_2{c_s}^2 - \omega_4^2\omega_1v^2 + \omega_3^2\omega_4\omega_1v^2 + \tfrac{5}{3}\omega_4^2\omega_1\omega_2{c_s}^2 + \omega_3\omega_4^2v^2\omega_2 - \tfrac{2}{3}u^2\omega_4^2\omega_2 - \omega_3^2\omega_4\omega_1\omega_2{c_s}^2 - \omega_3^2\omega_4v^2 - \tfrac{10}{3}\omega_3 - \tfrac{2}{3}\omega_3^2\omega_2 + \tfrac{2}{3}\omega_3^2\omega_1\omega_2 + \tfrac{2}{3}u^2\omega_4^2\omega_1\omega_2 + \omega_3\omega_4^2\omega_1{c_s}^2 - \omega_3\omega_4\omega_1v^2\omega_2^2 - \omega_1\omega_2^2 + \tfrac{2}{3}\omega_3\omega_1^2\omega_2 - \tfrac{20}{3}\omega_4{c_s}^2 - \tfrac{10}{3}\omega_3u^2\omega_2 - \tfrac{5}{3}\omega_4\omega_2^2{c_s}^2 + \tfrac{2}{3}u^2\omega_4^2 - \omega_3\omega_4^2v^2 - \omega_4\omega_1^2v^2 - \omega_4\omega_1 - \tfrac{2}{3}u^2\omega_4\omega_1^2 + \tfrac{1}{3}\omega_3\omega_4 + 7\omega_3\omega_4\omega_1\omega_2{c_s}^2 - \tfrac{10}{3}\omega_3\omega_2{c_s}^2 - \tfrac{1}{3}\omega_3\omega_4\omega_2 + \omega_4\omega_1\omega_2 + \tfrac{2}{3}u^2\omega_4\omega_1^2\omega_2 - \tfrac{2}{3}\omega_3u^2\omega_1\omega_2^2 - \tfrac{2}{3}\omega_3\omega_1^2 + \omega_3\omega_4\omega_1^2{c_s}^2 - \tfrac{5}{3}\omega_4^2\omega_1{c_s}^2 + \tfrac{2}{3}\omega_4\omega_1^2 + \tfrac{10}{3}u^2\omega_4\omega_1 + \omega_3^2\omega_4\omega_1{c_s}^2 - \omega_3^2\omega_4{c_s}^2 + \tfrac{2}{3}\omega_3^2u^2\omega_1 + 4\omega_3\omega_1 + 4\omega_3u^2\omega_1\omega_2 + \tfrac{5}{3}\omega_4\omega_1^2\omega_2{c_s}^2 + \omega_3^2\omega_4v^2\omega_2 + \omega_3\omega_4^2\omega_1v^2 - \omega_4^2v^2\omega_2 - \omega_3^2\omega_4\omega_1v^2\omega_2 + \omega_4^2\omega_1v^2\omega_2 + \omega_3\omega_4^2\omega_2{c_s}^2 + \tfrac{1}{3}\omega_4 + \tfrac{8}{3}\omega_3{c_s}^2 + \tfrac{2}{3}\omega_3u^2\omega_2^2 - \tfrac{2}{3}\omega_3^2u^2 - \tfrac{8}{3}u^2\omega_4 - 4\omega_4v^2 + 7\omega_3\omega_4\omega_1v^2\omega_2 + 3\omega_1\omega_2 - \omega_3\omega_4^2{c_s}^2 - 2\omega_1 - \tfrac{5}{3}\omega_4\omega_1^2{c_s}^2 + 4\omega_3\omega_1\omega_2{c_s}^2 + \tfrac{1}{3}\omega_3\omega_4\omega_1\omega_2 - \tfrac{10}{3}\omega_3\omega_1{c_s}^2 + \omega_3\omega_4\omega_1^2v^2 + \tfrac{5}{3}\omega_4\omega_1\omega_2^2{c_s}^2 + \omega_3\omega_4\omega_2^2{c_s}^2 + \omega_4^2v^2 - \tfrac{10}{3}\omega_3u^2\omega_1 - \tfrac{2}{3}\omega_3\omega_1\omega_2^2{c_s}^2 + \tfrac{25}{3}\omega_4\omega_1{c_s}^2 + 5\omega_3\omega_4{c_s}^2 + \tfrac{2}{3}\omega_3\omega_1^2{c_s}^2 - \tfrac{2}{3}u^2\omega_4\omega_2^2 - \tfrac{1}{3}\omega_4\omega_2 - \tfrac{1}{3}\omega_3\omega_4\omega_1 - 6\omega_3\omega_4\omega_2{c_s}^2 - 6\omega_3\omega_4\omega_1v^2 - \omega_3\omega_2^2 - 10\omega_4\omega_1\omega_2{c_s}^2 + 5\omega_4v^2\omega_2 - \tfrac{2}{3}\omega_3\omega_1^2\omega_2{c_s}^2 - \tfrac{2}{3}u^2\omega_4^2\omega_1 - \tfrac{2}{3}\omega_3^2\omega_1 - \tfrac{2}{3}\omega_3u^2\omega_1^2\omega_2 - \omega_3\omega_4\omega_1^2v^2\omega_2 - \omega_3\omega_4^2\omega_1\omega_2{c_s}^2 + \tfrac{2}{3}u^2\omega_4\omega_1\omega_2^2 + \omega_3\omega_1\omega_2^2 + \tfrac{2}{3}\omega_3^2\omega_1{c_s}^2 - 3\omega_2 + \omega_3\omega_4v^2\omega_2^2 + \tfrac{8}{3}\omega_3u^2 + \omega_4\omega_1v^2\omega_2^2 + \omega_2^2 - \tfrac{2}{3}\omega_3^2{c_s}^2 - 5\omega_3\omega_1\omega_2 + \tfrac{5}{3}\omega_4^2{c_s}^2 + 5\omega_4\omega_1v^2 - 6\omega_3\omega_4v^2\omega_2 + 5\omega_3\omega_4v^2 - 6\omega_4\omega_1v^2\omega_2 + \tfrac{25}{3}\omega_4\omega_2{c_s}^2 + \tfrac{2}{3}\omega_3\omega_2^2{c_s}^2 - \omega_3\omega_4\omega_1\omega_2^2{c_s}^2 - \tfrac{2}{3}\omega_3^2u^2\omega_1\omega_2 - 6\omega_3\omega_4\omega_1{c_s}^2 - \tfrac{2}{3}\omega_4\omega_1^2\omega_2 - 4u^2\omega_4\omega_1\omega_2 + \tfrac{2}{3}\omega_3^2 + \tfrac{10}{3}u^2\omega_4\omega_2 + \tfrac{2}{3}\omega_3^2u^2\omega_2 - \omega_4v^2\omega_2^2 + \tfrac{13}{3}\omega_3\omega_2 - \tfrac{2}{3}\omega_3^2\omega_1\omega_2{c_s}^2 - \omega_3\omega_4\omega_1^2\omega_2{c_s}^2 + \tfrac{2}{3}\omega_3^2\omega_2{c_s}^2 + \tfrac{2}{3}\omega_3u^2\omega_1^2 - \omega_3\omega_4^2\omega_1v^2\omega_2,$$

$$\alpha^{[\mu_5],t-4\delta_t}_{x,y} = -4 + 5\omega_3 + \omega_3^2\omega_2 - \omega_3^2\omega_1\omega_2 + \omega_1\omega_2^2 + \omega_3\omega_4\omega_1\omega_2^2 - \omega_1^2 - \omega_3\omega_1^2\omega_2 - 6\omega_4\omega_1 - 6\omega_3\omega_4 + 7\omega_3\omega_4\omega_2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_1^2 + \omega_3\omega_4^2 + \omega_4\omega_1^2 - \omega_4\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 - 6\omega_3\omega_1 - \omega_3^2\omega_4\omega_1 + 5\omega_4 - \omega_4^2 - 6\omega_1\omega_2 + 5\omega_1 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_1^2\omega_2 - 6\omega_4\omega_2 + 7\omega_3\omega_4\omega_1 + \omega_3\omega_2^2 + \omega_3\omega_4^2\omega_1\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_1\omega_2^2 + 5\omega_2 - \omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_4^2\omega_1 + \omega_3^2\omega_4 - \omega_4\omega_1^2\omega_2 - \omega_3^2 - \omega_3\omega_4^2\omega_2 + \omega_4\omega_2^2 - \omega_3\omega_4\omega_1^2 - 6\omega_3\omega_2 - \omega_3^2\omega_4\omega_2 - \omega_4^2\omega_1\omega_2 + \omega_3^2\omega_4\omega_1\omega_2,$$

6 MRT 4: with ortogonalization and relaxation of m_{00}, m_{10}, m_{01}, $m_{20}+m_{02}$, $m_{20}-m_{02}$

6.1 Definitions

Matrix $\mathbf{A}=\mathbf{M}^{-1}\mathbf{S}\mathbf{M}$:

$$
\begin{aligned}
\mathbf{A}_{1,1} &= \frac{4}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{1,2} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{1,3} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{1,4} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{1,5} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{2,1} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{2,2} &= \frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{2,3} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{2,4} &= \frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{2,5} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{3,1} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{3,2} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{3,3} &= \frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0+\frac{1}{2}\omega_2,\\
\mathbf{A}_{3,4} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{3,5} &= \frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0-\frac{1}{2}\omega_2,\\
\mathbf{A}_{4,1} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{4,2} &= \frac{1}{4}\omega_4-\frac{1}{2}\omega_1+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{4,3} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{4,4} &= \frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{4,5} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{5,1} &= -\frac{1}{5}\omega_3+\frac{1}{5}\omega_0,\\
\mathbf{A}_{5,2} &= -\frac{1}{4}\omega_4+\frac{1}{20}\omega_3+\frac{1}{5}\omega_0,
\end{aligned}
$$

$$\mathbf{A}_{5,3} = \frac{1}{4}\omega_4 + \frac{1}{20}\omega_3 + \frac{1}{5}\omega_0 - \frac{1}{2}\omega_2,$$
$$\mathbf{A}_{5,4} = -\frac{1}{4}\omega_4 + \frac{1}{20}\omega_3 + \frac{1}{5}\omega_0,$$
$$\mathbf{A}_{5,5} = \frac{1}{4}\omega_4 + \frac{1}{20}\omega_3 + \frac{1}{5}\omega_0 + \frac{1}{2}\omega_2.$$

where

$$\mathbf{S} = \mathrm{diag}(\omega_0, \omega_1, \omega_2, \omega_3, \omega_4)$$

and

$$\mathbf{M} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & -1 \\ -2^2 & 1 & 1 & 1 & 1 \\ 0 & 1 & -1 & 1 & -1 \end{pmatrix}$$

Matrix $\mathbf{B}$:

$$\mathbf{B} = \begin{pmatrix} 0 & -1+\omega_3 & -1+\omega_3 & -1+\omega_3 & -1+\omega_3 \\ -1+\frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 & -1+\omega_1 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 \\ -1+\frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\omega_2 \\ -1+\frac{1}{4}\omega_4+\frac{1}{2}\omega_1+\frac{1}{4}\omega_3 & -1+\omega_1 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 & 0 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_1 \\ -1+\frac{1}{4}\omega_4+\frac{1}{4}\omega_3+\frac{1}{2}\omega_2 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & -1+\omega_2 & -1+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2 & 0 \end{pmatrix}.$$

6.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l, y+j\delta_l}^{[\mu_1], t-\ell\delta_t} \mu_{x+i\delta_l, y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_3 u^2 + \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3 u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x,y}^{[\mu_1],t} = 1 - 2\omega_3 {c_s}^2 - v^2\omega_3 - \omega_3 u^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{2}\omega_1 u + \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3 u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_3 u^2 - \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_2 + \frac{1}{2}\omega_3 + \frac{1}{4}\omega_3\omega_4 u^2 + \frac{1}{4}v^2\omega_3\omega_4 + \frac{1}{8}\omega_3\omega_1 u^2 - \frac{1}{8}\omega_3\omega_1 - \frac{1}{2}\omega_1 u - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{2}v^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{2}\omega_3\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_2 - \frac{1}{2}\omega_3 u^2 + \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{8}\omega_4\omega_1 u^2 + \frac{1}{2}\omega_2 + \frac{1}{8}v^2\omega_3\omega_2 + \frac{1}{4}v\omega_4\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{3}{2}\omega_3 {c_s}^2 + \frac{1}{2}v\omega_3\omega_2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4 u^2 + \frac{1}{4}\omega_4 u^2 + \frac{1}{4}\omega_4 - \omega_3 {c_s}^2\omega_2 + \frac{3}{4}v^2\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \frac{3}{4}\omega_3 u^2 - \frac{1}{2}\omega_3 u^2\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{2}\omega_2 - \frac{1}{4}v^2\omega_4 - \frac{1}{2}v^2\omega_3\omega_2,$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}v^2\omega_3\omega_1 + \tfrac{3}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_1 u - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4 u^2 - \omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_4 + \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 + \tfrac{1}{4}v^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \tfrac{1}{2}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_4 u^2\omega_2 - 2\omega_3 {c_s}^2 + \tfrac{1}{2}v^2\omega_4\omega_2 + \omega_3 + \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{2}\omega_4\omega_2 + \omega_3 {c_s}^2\omega_1 + \omega_4 + \omega_3 {c_s}^2\omega_2 - v^2\omega_3 + \omega_1 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_2 - \omega_3 u^2 + \tfrac{1}{2}\omega_3 u^2\omega_2 - \tfrac{1}{2}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 u^2 + \omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}v^2\omega_3\omega_1 + \tfrac{3}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_1 u - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{4}\omega_4 u^2 - \omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_4 + \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 + \tfrac{1}{4}v^2\omega_4,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{1}{2}v\omega_3\omega_2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_4 - \omega_3 {c_s}^2\omega_2 + \tfrac{3}{4}v^2\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_4 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{3}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{3}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{3}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{3}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{3}{4}v^2\omega_3 - \omega_1 + \tfrac{3}{4}\omega_4\omega_1 - \omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_4\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_4 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{3}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 u\omega_2 + \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{3}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u + \tfrac{3}{4}\omega_4\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_2 + \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_1 u - \omega_3\omega_4 {c_s}^2 + \omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{3}{4}\omega_3\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u\omega_2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{3}{4}\omega_3 u^2\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^2 - \omega_2 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{3}{4}v^2\omega_3\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + \tfrac{1}{2}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_4 u^2\omega_2 - 2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \omega_3 + \omega_3\omega_4 u^2 + v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 u^2 - \omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_3\omega_1 + \tfrac{1}{2}\omega_4\omega_2 - v^2\omega_3\omega_4\omega_1 + \omega_3 {c_s}^2\omega_1 - \omega_4 + \omega_3 {c_s}^2\omega_2 - v^2\omega_3 - \omega_3\omega_4 u^2\omega_2 - \omega_1 + \tfrac{1}{2}\omega_4\omega_1 + 2\omega_3\omega_4 {c_s}^2 - \omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_3\omega_2 - \omega_3 u^2 + \tfrac{1}{2}\omega_3 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_1 u^2 - \omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 u\omega_2 + \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{3}{2}\omega_3{c_s}^2 - \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{3}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_1 u + \tfrac{3}{4}\omega_4\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 - \tfrac{3}{2}\omega_3{c_s}^2\omega_2 + \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 u - \omega_3\omega_4{c_s}^2 + \omega_3\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_3\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u\omega_2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{3}{4}\omega_3 u^2\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^2 - \omega_2 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{3}{4}v^2\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3{c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 + \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{3}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1 - \tfrac{3}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{3}{2}\omega_3{c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{3}{4}\omega_3 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \omega_3\omega_4{c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 - \tfrac{3}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{3}{4}v^2\omega_3 - \omega_1 + \tfrac{3}{4}\omega_4\omega_1 - \omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \omega_3{c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{3}{8}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u^2 + \tfrac{3}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1 - \tfrac{1}{2}v\omega_3\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{4}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_3\omega_2 + \tfrac{3}{4}\omega_3 - \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{3}{4}\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3 + \omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 - \tfrac{3}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_1 u\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_2 + \tfrac{3}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_1 u - \tfrac{3}{4}\omega_4\omega_2 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 u - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \tfrac{3}{4}\omega_3\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u\omega_2 + \omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -1 + v^2\omega_3\omega_1 - 2\omega_3{c_s}^2\omega_1\omega_2 - \omega_1\omega_2 + v^2\omega_3\omega_4\omega_1\omega_2 - 2\omega_3{c_s}^2 + \omega_3 + \omega_3\omega_4\omega_2 + \omega_3\omega_4\omega_1 u^2\omega_2 + \omega_3\omega_4 u^2 + v^2\omega_3\omega_4 + \omega_3\omega_1\omega_2 + \omega_3\omega_1 u^2 + 2\omega_3\omega_4{c_s}^2\omega_1\omega_2 - 2\omega_3\omega_4{c_s}^2\omega_1 - \omega_3\omega_1 - \omega_4\omega_2 - v^2\omega_3\omega_4\omega_1 - \omega_3\omega_4\omega_1 u^2 - \omega_3\omega_4 - \omega_3\omega_4\omega_1\omega_2 + 2\omega_3{c_s}^2\omega_1 - \omega_3\omega_1 u^2\omega_2 + \omega_4 + 2\omega_3{c_s}^2\omega_2 - v^2\omega_3 - \omega_3\omega_4 u^2\omega_2 + \omega_1 - v^2\omega_3\omega_4\omega_2 - \omega_4\omega_1 + 2\omega_3\omega_4{c_s}^2 - 2\omega_3\omega_4{c_s}^2\omega_2 - \omega_3\omega_2 - \omega_3 u^2 + \omega_3 u^2\omega_2 + \omega_3\omega_4\omega_1 + \omega_4\omega_1\omega_2 + \omega_2 - v^2\omega_3\omega_1\omega_2 + v^2\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_2 + \tfrac{3}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{4}\omega_3\omega_1 + \tfrac{1}{2}\omega_1 u - \tfrac{3}{4}\omega_4\omega_2 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 u - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \tfrac{3}{4}\omega_3\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u\omega_2 + \omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 + \tfrac{1}{2}v\omega_3\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 +$$

$\frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}v^2\omega_4\omega_2 - \frac{1}{2}v\omega_3\omega_2 + \frac{3}{4}\omega_3 - \frac{1}{2}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{3}{4}\omega_3\omega_1 - \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v^2\omega_3\omega_4\omega_1 - \frac{1}{4}\omega_4u^2 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}\omega_3{c_s}^2\omega_1 + \frac{1}{2}v\omega_3\omega_1\omega_2 + \frac{1}{4}v^2\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_1u^2\omega_2 + \frac{3}{4}\omega_4 - \frac{1}{2}\omega_3{c_s}^2\omega_2 - \frac{1}{2}v\omega_1\omega_2 + \frac{1}{4}v^2\omega_3 + \omega_1 + \frac{1}{2}v^2\omega_3\omega_4\omega_2 - \frac{3}{4}\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{4}\omega_3\omega_2 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}\omega_3u^2\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1 + \frac{1}{2}v\omega_2 - \frac{1}{4}v^2\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1u^2 + \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 + \frac{1}{2}v\omega_4\omega_1\omega_2 + \frac{1}{4}v^2\omega_3\omega_1\omega_2 - \frac{1}{4}v^2\omega_3\omega_2 - \frac{1}{2}v\omega_4\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 1 + \omega_1\omega_2 - \omega_3 - \omega_3\omega_4\omega_2 - \omega_3\omega_1\omega_2 + \omega_3\omega_1 + \omega_4\omega_2 + \omega_3\omega_4 + \omega_3\omega_4\omega_1\omega_2 - \omega_4 - \omega_1 + \omega_4\omega_1 + \omega_3\omega_2 - \omega_3\omega_4\omega_1 - \omega_4\omega_1\omega_2 - \omega_2,$

6.3 EFDE for μ_2

$$\mu_{2,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_2],t-\ell\delta_t}\mu_{2,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_1u + \frac{1}{4}\omega_4u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = -1 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_3 + \frac{1}{2}\omega_1u - \frac{1}{4}\omega_4u^2 + \frac{1}{4}\omega_4 - \frac{1}{4}v^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_3u^2 + \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 - \frac{1}{4}\omega_4\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{8}\omega_4^2u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{4}v^2\omega_3 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}v\omega_2 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}\omega_2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}v\omega_4\omega_2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{8}v^2\omega_3\omega_1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{8}\omega_3\omega_4u^2 - \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{8}\omega_3\omega_1u^2 + \frac{1}{8}\omega_3\omega_1 + \frac{1}{4}\omega_4\omega_2 - \frac{1}{4}\omega_4u^2 + \frac{1}{8}\omega_3\omega_4 - \frac{1}{4}\omega_3{c_s}^2\omega_1 + \frac{1}{8}\omega_4^2u^2 - \frac{3}{4}\omega_4 - \frac{1}{4}v\omega_1\omega_2 + \frac{1}{4}v^2\omega_3 - \frac{1}{8}v^2\omega_4^2 - \frac{1}{2}\omega_1 + \frac{1}{8}\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4{c_s}^2 + \frac{1}{4}\omega_3u^2 + \frac{1}{8}\omega_4^2 + \frac{1}{2}v\omega_2 - \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{8}\omega_4\omega_1u^2 - \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}v\omega_4\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}v^2\omega_3\omega_1 + 2\omega_3{c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_3\omega_1u^2 - \omega_3{c_s}^2\omega_1 + \frac{1}{4}\omega_4 + v^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \frac{1}{2}\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_3^2,$

$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{2}\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t} = \omega_1u - \omega_1^2u,$

$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 + \omega_2^2 - 2\omega_1 - 2\omega_2 + \omega_1^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 + \frac{1}{2}v^2\omega_3\omega_1 - 2\omega_3{c_s}^2 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4u^2 + \frac{1}{4}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3^2u^2 + \frac{1}{2}\omega_3\omega_1u^2 + \omega_3{c_s}^2\omega_1 - \frac{1}{4}\omega_4 - v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3\omega_4{c_s}^2 - \omega_3u^2 + \frac{1}{2}\omega_3^2{c_s}^2 + \frac{1}{4}v^2\omega_3^2,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{2}\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3^2,$

$$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_4^2u^2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha^{[\mu_2],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha^{[\mu_2],t-\delta_t}_{x,y+\delta_l} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \tfrac{1}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_3\omega_4u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{8}\omega_3\omega_1u^2 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{4}\omega_4u^2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{8}\omega_4^2u^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{4}v\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3u^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1u^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha^{[\mu_2],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 + \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u - \tfrac{1}{8}v^2\omega_3^2\omega_2 + \tfrac{1}{4}\omega_1u\omega_2 + \tfrac{1}{8}\omega_4u^2\omega_2 - 2\omega_3{c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{5}{8}v\omega_3\omega_2 - \tfrac{1}{4}\omega_3 + \tfrac{11}{8}\omega_3\omega_4u^2 + \tfrac{5}{8}\omega_3\omega_1u + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_2 + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{3}{8}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}\omega_4u^2 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 + \tfrac{1}{8}\omega_4^2u^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{4}\omega_3{c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - v^2\omega_3 - \tfrac{3}{8}\omega_3\omega_4u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u\omega_2 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1u + \tfrac{3}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \omega_3u^2 + \tfrac{5}{8}\omega_3u^2\omega_2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{8}v\omega_3^2\omega_2 + \tfrac{1}{8}\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4^2u^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{1}{4}\omega_3^2\omega_4u^2 + \tfrac{5}{8}v^2\omega_3\omega_2 - \tfrac{1}{8}v\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{5}{2}\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 + \omega_1 - \tfrac{3}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = \omega_1u\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2u - 2\omega_1u - \tfrac{1}{2}\omega_4^2\omega_1u + \omega_1^2u + 2\omega_4\omega_1u - \tfrac{1}{2}\omega_4\omega_1u\omega_2 - \tfrac{1}{2}\omega_1^2u\omega_2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y-\delta_l} = -2 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1 + 2\omega_4 + 3\omega_1 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} =$$
$$-1 - \tfrac{1}{8}v\omega_3\omega_4\omega_2 - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u + \tfrac{1}{8}v^2\omega_3^2\omega_2 + \tfrac{1}{4}\omega_1u\omega_2 - \tfrac{1}{8}\omega_4u^2\omega_2 + 2\omega_3{c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{5}{8}v\omega_3\omega_2 + \tfrac{1}{4}\omega_3 - \tfrac{11}{8}\omega_3\omega_4u^2 + \tfrac{5}{8}\omega_3\omega_1u - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{4}\omega_3^2{c_s}^2\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{3}{8}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1u - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}\omega_4u^2 + \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{3}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 - \tfrac{1}{8}\omega_4^2u^2 + \tfrac{3}{4}\omega_4 - \tfrac{5}{4}\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 + v^2\omega_3 + \tfrac{3}{8}\omega_3\omega_4u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u\omega_2 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1u - \tfrac{3}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 + \omega_3u^2 - \tfrac{5}{8}\omega_3u^2\omega_2 - \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{8}v\omega_3^2\omega_2 - \tfrac{1}{8}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4^2u^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2\omega_1u + \tfrac{1}{4}\omega_3^2\omega_4u^2 - \tfrac{5}{8}v^2\omega_3\omega_2 + \tfrac{1}{8}v\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{5}{2}\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 + \omega_1 - \tfrac{3}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_2^2 + \omega_1u\omega_2 + \omega_4u^2\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 - v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}v^2\omega_4\omega_2^2 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 - \tfrac{1}{2}\omega_1u\omega_2^2 + \tfrac{1}{4}\omega_3\omega_1 - \tfrac{1}{4}\omega_4u^2\omega_2^2 - \tfrac{1}{2}\omega_1u + \tfrac{3}{2}\omega_4\omega_2 - \tfrac{3}{4}\omega_4u^2 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 + \tfrac{1}{4}\omega_4^2u^2 - \tfrac{1}{4}\omega_4^2\omega_2 - \tfrac{5}{4}\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_2^2 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3\omega_4u^2\omega_2 - \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{4}\omega_3u^2\omega_2^2 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_2^2 - \tfrac{1}{4}\omega_4^2u^2\omega_2 - \omega_2 + \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2^2,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y} = -2 - \omega_2^2 - \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_2^2 + \tfrac{1}{2}\omega_1\omega_2^2 - \tfrac{5}{2}\omega_4\omega_2 + \tfrac{1}{2}\omega_4^2\omega_2 + 2\omega_4 + \omega_1 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + 3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = -\tfrac{1}{2}\omega_3\omega_4\omega_1u + \tfrac{5}{2}\omega_3\omega_1u - 2\omega_1u + \omega_1^2u + \tfrac{1}{2}\omega_4\omega_1u - \omega_3\omega_1^2u - \tfrac{1}{2}\omega_3^2\omega_1u,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y} = -4 - \omega_2^2 + \omega_3\omega_1^2 + 5\omega_3 + \tfrac{1}{2}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3^2\omega_2 - \tfrac{7}{2}\omega_3\omega_1 - \tfrac{1}{2}\omega_4\omega_2 - \omega_3\omega_4 + \omega_4 + 3\omega_1 - \tfrac{1}{2}\omega_4\omega_1 - \omega_3^2 - \tfrac{7}{2}\omega_3\omega_2 + \tfrac{1}{2}\omega_3^2\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \omega_3\omega_2^2 + 3\omega_2 - \omega_1^2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = -1 + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2^2 + \omega_1u\omega_2 - \omega_4u^2\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2 + v^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4\omega_2 +$$

$\frac{1}{4}\omega_3\omega_4u^2+\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{4}v^2\omega_4\omega_2^2+\frac{1}{4}\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2+\frac{1}{4}\omega_4\omega_1u^2\omega_2-\frac{1}{2}\omega_1u\omega_2^2-\frac{1}{4}\omega_3\omega_1+\frac{1}{4}\omega_4u^2\omega_2^2-\frac{1}{2}\omega_1u-\frac{3}{2}\omega_4\omega_2+\frac{3}{4}\omega_4u^2-\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_3{c_s}^2\omega_1-\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2u^2+\frac{1}{4}\omega_4^2\omega_2+\frac{5}{4}\omega_4+\frac{1}{4}v^2\omega_3\omega_2^2-\frac{1}{4}v^2\omega_3-\frac{1}{4}\omega_3\omega_4u^2\omega_2+\frac{1}{4}v^2\omega_4^2+\frac{1}{2}\omega_1-\frac{1}{4}v^2\omega_3\omega_4\omega_2-\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\frac{1}{4}\omega_3u^2+\frac{1}{4}\omega_3u^2\omega_2^2-\frac{1}{4}\omega_4^2+\frac{1}{4}v^2\omega_4\omega_1-\frac{1}{4}v^2\omega_4^2\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_2^2+\frac{1}{4}\omega_4^2u^2\omega_2+\omega_2-\frac{3}{4}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_2^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y}=-2-\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_1\omega_2^2-\frac{5}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l}=1-\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{3}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{1}{8}v^2\omega_3^2\omega_2+\frac{1}{4}\omega_1u\omega_2+\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2-\frac{1}{8}v^2\omega_4\omega_2+\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{11}{8}\omega_3\omega_4u^2+\frac{5}{8}\omega_3\omega_1u+\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2{c_s}^2\omega_2+\frac{1}{4}\omega_3^2u^2+\frac{3}{8}\omega_3\omega_1u^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{8}\omega_3\omega_1-\frac{1}{2}\omega_1u+\frac{1}{4}\omega_4\omega_2-\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2u^2\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{8}\omega_4^2u^2-\frac{3}{4}\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_1\omega_2-v^2\omega_3-\frac{3}{8}\omega_3\omega_4u^2\omega_2-\frac{1}{4}\omega_3\omega_1u\omega_2-\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{8}v^2\omega_3\omega_4\omega_2+\frac{1}{8}\omega_4\omega_1+\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\omega_3u^2+\frac{5}{8}\omega_3u^2\omega_2+\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4^2u^2-\frac{1}{2}\omega_2+\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2\omega_1u-\frac{1}{4}\omega_3^2\omega_4u^2+\frac{5}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y+\delta_l}=-2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=\omega_1u\omega_2-\frac{1}{2}\omega_4\omega_1^2u-2\omega_1u-\frac{1}{2}\omega_4^2\omega_1u+\omega_1^2u+2\omega_4\omega_1u-\frac{1}{2}\omega_4\omega_1u\omega_2-\frac{1}{2}\omega_1^2u\omega_2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x,y+\delta_l}=-2-\frac{3}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\frac{5}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2\omega_2-\omega_1^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$
$-1+\frac{1}{8}v\omega_3\omega_4\omega_2-\frac{3}{8}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_1\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u+\frac{1}{8}v^2\omega_3^2\omega_2+\frac{1}{4}\omega_1u\omega_2-\frac{1}{8}\omega_4u^2\omega_2+2\omega_3{c_s}^2+\frac{1}{8}v^2\omega_4\omega_2-\frac{5}{8}v\omega_3\omega_2+\frac{1}{4}\omega_3-\frac{11}{8}\omega_3\omega_4u^2+\frac{5}{8}\omega_3\omega_1u-\frac{1}{8}v^2\omega_3\omega_4+\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_3^2{c_s}^2\omega_2-\frac{1}{4}\omega_3^2u^2-\frac{3}{8}\omega_3\omega_1u^2+\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{8}\omega_3\omega_1-\frac{1}{2}\omega_1u-\frac{1}{4}\omega_4\omega_2+\frac{1}{2}\omega_4u^2+\frac{1}{4}\omega_3^2\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_4\omega_1u^2-\frac{1}{8}\omega_3\omega_4-\frac{3}{4}\omega_3{c_s}^2\omega_1+\frac{1}{4}v\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2u^2\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{8}\omega_4^2u^2+\frac{3}{4}\omega_4-\frac{5}{4}\omega_3{c_s}^2\omega_2-\frac{1}{4}v\omega_1\omega_2+v^2\omega_3+\frac{3}{8}\omega_3\omega_4u^2\omega_2-\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{8}v^2\omega_4^2+\frac{1}{2}\omega_1+\frac{1}{8}v^2\omega_3\omega_4\omega_2-\frac{1}{8}\omega_4\omega_1+\frac{1}{8}\omega_4\omega_1u-\frac{3}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\omega_3u^2-\frac{5}{8}\omega_3u^2\omega_2-\frac{1}{8}\omega_4^2+\frac{1}{2}v\omega_2+\frac{1}{8}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{8}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4^2u^2+\frac{1}{2}\omega_2-\frac{1}{2}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2\omega_1u+\frac{1}{4}\omega_3^2\omega_4u^2-\frac{5}{8}v^2\omega_3\omega_2-\frac{1}{8}v\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-\frac{1}{4}\omega_3^2\omega_1u\omega_2+\frac{13}{4}\omega_3\omega_4\omega_1u-\frac{3}{2}\omega_1u\omega_2-\frac{15}{4}\omega_3\omega_1u+\frac{1}{2}\omega_4\omega_1^2u-\frac{1}{2}\omega_3\omega_1^2u\omega_2+3\omega_1u+\frac{1}{2}\omega_4^2\omega_1u-\frac{1}{2}\omega_3^2\omega_4\omega_1u-\omega_1^2u+\frac{7}{4}\omega_3\omega_1u\omega_2-\frac{11}{4}\omega_4\omega_1u+\frac{3}{4}\omega_4\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4^2\omega_1u+\omega_3\omega_1^2u-\frac{3}{4}\omega_3\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_1^2u\omega_2+\frac{3}{4}\omega_3^2\omega_1u-\frac{1}{2}\omega_3\omega_4\omega_1^2u,$

$\alpha^{[\mu_2],t-3\delta_t}_{x,y-\delta_l}=3+\frac{1}{2}\omega_3^2\omega_4\omega_1+2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\omega_3\omega_1^2-\frac{15}{4}\omega_3-\frac{3}{4}\omega_3\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{19}{4}\omega_3\omega_1+\frac{3}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-4\omega_1+\frac{13}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{7}{4}\omega_3\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_1^2\omega_2+\omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y}=-1-\frac{1}{4}\omega_3^2\omega_1u\omega_2-\frac{1}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3^2\omega_4u^2\omega_2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_4\omega_2^2+\frac{1}{4}\omega_3\omega_4\omega_1u+\frac{1}{4}v^2\omega_3^2\omega_2-\frac{3}{2}\omega_1u\omega_2-\frac{5}{4}\omega_4u^2\omega_2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+2\omega_3{c_s}^2+\frac{5}{4}v^2\omega_4\omega_2+\frac{1}{4}\omega_3+\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2-\frac{5}{2}\omega_3\omega_4u^2-\frac{5}{4}\omega_3\omega_1u+\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}v^2\omega_4\omega_2^2+\frac{1}{2}\omega_3^2{c_s}^2\omega_2-\frac{1}{4}\omega_3^2u^2+\frac{1}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_3\omega_1-\frac{1}{2}\omega_3\omega_4^2u^2\omega_2+\frac{1}{4}\omega_4u^2\omega_2^2+\omega_1u-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2-\frac{3}{2}\omega_4\omega_2+\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_1-\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2u^2\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2u^2+\frac{1}{4}\omega_4^2\omega_2+\frac{5}{4}\omega_4+\frac{1}{4}v^2\omega_3\omega_2^2-\frac{5}{2}\omega_3{c_s}^2\omega_2+v^2\omega_3+3\omega_3\omega_4u^2\omega_2+\frac{7}{4}\omega_3\omega_1u\omega_2+\frac{1}{4}v^2\omega_4^2+\frac{1}{2}\omega_1-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1u-\frac{5}{2}\omega_3\omega_4{c_s}^2+3\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_4\omega_1u\omega_2+\omega_3u^2-\frac{5}{4}\omega_3u^2\omega_2+\frac{1}{4}\omega_3u^2\omega_2^2-\frac{1}{4}\omega_4^2+\frac{1}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{4}v^2\omega_4^2\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_2^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2-\frac{1}{4}\omega_3\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_3\omega_4^2u^2+\frac{1}{4}\omega_4^2u^2\omega_2+\omega_2-\frac{1}{2}\omega_3\omega_4u^2\omega_2^2-v^2\omega_4-\frac{1}{2}\omega_3\omega_1u\omega_2^2+\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1u+\frac{1}{2}\omega_3^2\omega_4u^2+\frac{1}{2}\omega_3{c_s}^2\omega_2^2-\frac{5}{4}v^2\omega_3\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_2],t-3\delta_t}_{x-\delta_l,y}=3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+$

$\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-4\omega_1u\omega_2-\omega_4^2\omega_1u\omega_2+\omega_4\omega_1^2u+\omega_1u\omega_2^2+3\omega_1u-\omega_4\omega_1^2u\omega_2+\omega_4^2\omega_1u-\omega_1^2u-4\omega_4\omega_1u+5\omega_4\omega_1u\omega_2-\omega_4\omega_1u\omega_2^2+\omega_1^2u\omega_2,$

$\alpha_{x,y}^{[\mu_2],t-3\delta_t}=3+\omega_2^2+5\omega_1\omega_2-\omega_4\omega_2^2+\omega_4^2\omega_1\omega_2+\omega_4\omega_1^2\omega_2-\omega_1\omega_2^2+5\omega_4\omega_2-\omega_4^2\omega_1-\omega_4^2\omega_2-4\omega_4-4\omega_1+5\omega_4\omega_1+\omega_4\omega_1\omega_2^2+\omega_4^2-6\omega_4\omega_1\omega_2-4\omega_2-\omega_4\omega_1^2-\omega_1^2\omega_2+\omega_1^2,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t}=1-\frac{1}{4}\omega_3^2\omega_1u\omega_2+\frac{1}{4}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_3^2\omega_4u^2\omega_2+\frac{1}{2}\omega_1\omega_2-\frac{1}{4}\omega_4\omega_2^2+\frac{1}{4}\omega_3\omega_4\omega_1u-\frac{1}{4}v^2\omega_3^2\omega_2-\frac{3}{2}\omega_1u\omega_2+\frac{5}{4}\omega_4u^2\omega_2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2-2\omega_3{c_s}^2-\frac{5}{4}v^2\omega_4\omega_2-\frac{1}{4}\omega_3-\frac{1}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2+\frac{5}{2}\omega_3\omega_4u^2-\frac{5}{4}\omega_3\omega_1u-\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{2}\omega_3^2{c_s}^2\omega_2+\frac{1}{4}\omega_3^2u^2-\frac{1}{4}\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_1u\omega_2^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_3\omega_1+\frac{1}{2}\omega_3\omega_4^2u^2\omega_2-\frac{1}{4}\omega_4u^2\omega_2^2+\omega_1u+\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2+\frac{3}{2}\omega_4\omega_2-\omega_4u^2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3^2u^2\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4^2\omega_2-\frac{5}{4}\omega_4-\frac{1}{4}v^2\omega_3\omega_2^2+\frac{5}{2}\omega_3{c_s}^2\omega_2-v^2\omega_3-3\omega_3\omega_4u^2\omega_2+\frac{7}{4}\omega_3\omega_1u\omega_2-\frac{1}{4}v^2\omega_4^2-\frac{1}{2}\omega_1+\frac{1}{4}\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1u+\frac{5}{2}\omega_3\omega_4{c_s}^2-3\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_4\omega_1u\omega_2-\omega_3u^2+\frac{5}{4}\omega_3u^2\omega_2-\frac{1}{4}\omega_3u^2\omega_2^2+\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2-\frac{1}{4}\omega_3\omega_4\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4^2u^2-\frac{1}{4}\omega_4^2u^2\omega_2-\omega_2+\frac{1}{2}\omega_3\omega_4u^2\omega_2^2+v^2\omega_4-\frac{1}{2}\omega_3\omega_1u\omega_2^2-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1u-\frac{1}{2}\omega_3^2\omega_4u^2-\frac{1}{2}\omega_3{c_s}^2\omega_2^2+\frac{5}{4}v^2\omega_3\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-3\delta_t}=3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=-\frac{1}{4}\omega_3^2\omega_1u\omega_2+\frac{13}{4}\omega_3\omega_4\omega_1u-\frac{3}{2}\omega_1u\omega_2-\frac{15}{4}\omega_3\omega_1u+\frac{1}{2}\omega_4\omega_1^2u-\frac{1}{2}\omega_3\omega_1^2u\omega_2+3\omega_1u+\frac{1}{2}\omega_4^2\omega_1u-\frac{1}{2}\omega_3^2\omega_4\omega_1u-\omega_1^2u+\frac{7}{4}\omega_3\omega_1u\omega_2-\frac{11}{4}\omega_4\omega_1u+\frac{3}{4}\omega_4\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4^2\omega_1u+\omega_3\omega_1^2u-\frac{3}{4}\omega_3\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_1^2u\omega_2+\frac{3}{4}\omega_3^2\omega_1u-\frac{1}{2}\omega_3\omega_4\omega_1^2u,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t}=3+\frac{1}{2}\omega_3^2\omega_4\omega_1+2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\omega_3\omega_1^2-\frac{15}{4}\omega_3-\frac{3}{4}\omega_3\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{19}{4}\omega_3\omega_1+\frac{3}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-4\omega_1+\frac{13}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{7}{4}\omega_3\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_1^2\omega_2+\omega_1^2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=\omega_3^2\omega_1u\omega_2-\omega_3\omega_4\omega_1^2u\omega_2-6\omega_3\omega_4\omega_1u+5\omega_1u\omega_2+\omega_4^2\omega_1u\omega_2+5\omega_3\omega_1u-\omega_4\omega_1^2u-\omega_3\omega_4^2\omega_1u\omega_2-\omega_1u\omega_2^2+\omega_3\omega_1^2u\omega_2-4\omega_1u+\omega_4\omega_1^2u\omega_2-\omega_4^2\omega_1u+\omega_3^2\omega_4\omega_1u+\omega_1^2u-6\omega_3\omega_1u\omega_2+5\omega_4\omega_1u-6\omega_4\omega_1u\omega_2-\omega_3\omega_4\omega_1u\omega_2^2+\omega_3\omega_4^2\omega_1u+\omega_4\omega_1u\omega_2^2-\omega_3\omega_1^2u+7\omega_3\omega_4\omega_1u\omega_2+\omega_3\omega_1u\omega_2^2-\omega_1^2u\omega_2-\omega_3^2\omega_4\omega_1u\omega_2-\omega_3^2\omega_1u+\omega_3\omega_4\omega_1^2u,$

$\alpha_{x,y}^{[\mu_2],t-4\delta_t}=-4-\omega_2^2-\omega_3^2\omega_4\omega_1-6\omega_1\omega_2+\omega_4\omega_2^2-\omega_4^2\omega_1\omega_2+\omega_3\omega_4\omega_1\omega_2^2+\omega_3\omega_4^2-\omega_3\omega_4^2\omega_1+\omega_3\omega_1^2-\omega_4\omega_1^2\omega_2+5\omega_3+7\omega_3\omega_4\omega_2-\omega_3\omega_1\omega_2^2-\omega_3\omega_4\omega_2^2+7\omega_3\omega_1\omega_2+\omega_3^2\omega_2-6\omega_3\omega_1+\omega_1\omega_2^2-6\omega_4\omega_2-6\omega_3\omega_4-8\omega_3\omega_4\omega_1\omega_2+\omega_4^2\omega_1-\omega_3^2\omega_1\omega_2+\omega_4^2\omega_2+5\omega_4+\omega_3\omega_4\omega_1^2\omega_2+\omega_3^2\omega_4+5\omega_1-6\omega_4\omega_1-\omega_3^2+\omega_3\omega_4^2\omega_1\omega_2-\omega_4\omega_1\omega_2^2-6\omega_3\omega_2-\omega_3\omega_1^2\omega_2+\omega_3^2\omega_1-\omega_3\omega_4\omega_1^2+7\omega_3\omega_4\omega_1-\omega_4^2+7\omega_4\omega_1\omega_2+\omega_3\omega_2^2-\omega_3\omega_4^2\omega_2+5\omega_2+\omega_4\omega_1^2-\omega_3^2\omega_4\omega_2+\omega_1^2\omega_2+\omega_3^2\omega_4\omega_1\omega_2-\omega_1^2,$

6.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t}\mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:
$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{4}\omega_3-\frac{1}{4}\omega_4u^2-\frac{1}{4}\omega_4+\frac{1}{4}v^2\omega_3+\frac{1}{4}\omega_3u^2+\frac{1}{2}v\omega_2-\frac{1}{2}\omega_2+\frac{1}{4}v^2\omega_4.$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t} = -1 - \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_4 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4.$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = {} & -1 - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_1 u - \\ & \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{3}{4}\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 u + \\ & \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_3 u^2\omega_2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_3\omega_2,\end{aligned}$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\begin{aligned}\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = {} & -1 + 2\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{1}{4}\omega_4 - \omega_3 {c_s}^2\omega_2 + v^2\omega_3 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \\ & \tfrac{1}{2}\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3^2,\end{aligned}$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\begin{aligned}\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = {} & -1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_1 u - \\ & \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{3}{4}\omega_4 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u + \\ & \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{8}\omega_3 u^2\omega_2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}\omega_2 + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{8}v^2\omega_3\omega_2,\end{aligned}$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -v\omega_2^2 + v\omega_2,$$

$$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2 + \omega_2^2 - 2\omega_1 - 2\omega_2 + \omega_1^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3^2,$$

$$\begin{aligned}\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_1 u + \\ & \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 u - \\ & \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}v^2\omega_3\omega_2,\end{aligned}$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\begin{aligned}\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 - 2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{4}\omega_4 + \omega_3 {c_s}^2\omega_2 - v^2\omega_3 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \omega_3 u^2 + \\ & \tfrac{1}{2}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3^2,\end{aligned}$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\begin{aligned}\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = {} & 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_1 u + \\ & \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 u - \\ & \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{8}v^2\omega_3\omega_2,\end{aligned}$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = {} & 1 - \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - 2\omega_3 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \\ & \tfrac{5}{8}v\omega_3\omega_2 - \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{5}{8}\omega_3\omega_1 u + \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{5}{8}\omega_3\omega_1 u^2 - \tfrac{1}{4}v^2\omega_3\omega_4^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 + \\ & \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4 u^2 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - \\ & \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{1}{8}\omega_3^2\omega_1 u^2 - \tfrac{3}{4}\omega_4 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - v^2\omega_3 + \tfrac{1}{4}\omega_3\omega_1 u\omega_2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_4\omega_1 - \\ & \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{8}\omega_3\omega_2 - \omega_3 u^2 + \tfrac{3}{8}\omega_3 u^2\omega_2 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \\ & \tfrac{1}{8}v\omega_3^2\omega_2 - \tfrac{1}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}v^2\omega_3^2\omega_4 - \tfrac{1}{8}v^2\omega_3^2\omega_1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{3}{8}v^2\omega_3\omega_2 + \tfrac{1}{8}v\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3^2,\end{aligned}$$

$$\begin{aligned}\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-2\delta_t} = {} & -2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{5}{2}\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{3}{2}\omega_4 + \\ & \tfrac{1}{4}\omega_3^2\omega_4 + \omega_1 - \tfrac{3}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \omega_2,\end{aligned}$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{4}\omega_3\omega_1^2-\tfrac{1}{4}v^2\omega_4^2\omega_1-\tfrac{1}{4}\omega_4u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2u^2+\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{4}v^2\omega_4\omega_2-\tfrac{1}{4}\omega_3-\tfrac{1}{4}\omega_3\omega_4u^2-\tfrac{1}{4}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4\omega_1+\tfrac{3}{4}\omega_4u^2-\tfrac{1}{2}v\omega_1^2\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{4}v^2\omega_3\omega_1^2-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-\tfrac{1}{4}\omega_4^2\omega_1+\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2u^2-\tfrac{5}{4}\omega_4-\tfrac{1}{2}\omega_3{c_s}^2\omega_2+v\omega_1\omega_2+\tfrac{1}{4}v^2\omega_3+\tfrac{1}{4}v^2\omega_4^2-\omega_1+\tfrac{3}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_1^2u^2+\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{4}\omega_3u^2-\tfrac{1}{4}\omega_3u^2\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1^2-\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}v\omega_2+v^2\omega_4\omega_1-\tfrac{1}{4}\omega_4\omega_1\omega_2-\omega_4\omega_1u^2-\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{3}{4}v^2\omega_4+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-2\delta_t} = -2-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{2}\omega_4\omega_2+\tfrac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\tfrac{5}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\tfrac{1}{2}\omega_4\omega_1^2+\tfrac{1}{2}\omega_1^2\omega_2-\omega_1^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{5}{8}v^2\omega_3\omega_1-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_1u\omega_2-\tfrac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2+\tfrac{1}{8}v^2\omega_4\omega_2+\tfrac{5}{8}v\omega_3\omega_2-\tfrac{1}{4}\omega_3+\tfrac{1}{8}\omega_3\omega_4u^2+\tfrac{5}{8}\omega_3\omega_1u+\tfrac{11}{8}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}\omega_3^2u^2+\tfrac{5}{8}\omega_3\omega_1u^2-\tfrac{1}{4}v^2\omega_3\omega_4^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_1u+\tfrac{1}{8}\omega_4\omega_2-\tfrac{3}{8}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4u^2-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{8}\omega_3\omega_4\omega_1u^2+\tfrac{1}{8}\omega_3\omega_4+\tfrac{5}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-\tfrac{1}{8}\omega_4^2u^2-\tfrac{1}{8}\omega_3^2\omega_1u^2-\tfrac{3}{4}\omega_4+\tfrac{3}{4}\omega_3{c_s}^2\omega_2+\tfrac{1}{4}v\omega_1\omega_2-v^2\omega_3-\tfrac{1}{4}\omega_3\omega_1u\omega_2+\tfrac{1}{8}v^2\omega_4^2-\tfrac{1}{2}\omega_1-\tfrac{1}{4}v^2\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{8}\omega_4\omega_1u+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{8}\omega_3\omega_2-\omega_3u^2+\tfrac{3}{8}\omega_3u^2\omega_2-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1+\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}v\omega_2+\tfrac{1}{8}v^2\omega_4\omega_1+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{8}\omega_4\omega_1u^2-\tfrac{1}{4}v^2\omega_3^2\omega_4-\tfrac{1}{8}v^2\omega_3^2\omega_1-\tfrac{1}{2}\omega_2-\tfrac{1}{2}v^2\omega_4-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{3}{8}v^2\omega_3\omega_2+\tfrac{1}{8}v\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-2\delta_t} = -2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{5}{2}\omega_3+\tfrac{3}{8}\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{9}{8}\omega_3\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{7}{4}\omega_3\omega_4+\tfrac{3}{2}\omega_4+\tfrac{1}{4}\omega_3^2\omega_4+\omega_1-\tfrac{3}{8}\omega_4\omega_1-\tfrac{1}{2}\omega_3^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{8}\omega_3^2\omega_1+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_4^2+\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{2}v\omega_4^2\omega_2-\tfrac{1}{2}v\omega_4\omega_2^2+v\omega_1\omega_2+v\omega_2^2-2v\omega_2-\tfrac{1}{2}v\omega_4\omega_1\omega_2+2v\omega_4\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-2\delta_t} = -2-\omega_2^2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{5}{2}\omega_4\omega_2+\tfrac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{5}{2}v\omega_3\omega_2-v\omega_3\omega_2^2+v\omega_2^2-2v\omega_2-\tfrac{1}{2}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_2,$$

$$\alpha_{x,y}^{[\mu_3],t-2\delta_t} = -4-\omega_2^2+\omega_3\omega_1^2+5\omega_3+\tfrac{1}{2}\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3^2\omega_2-\tfrac{7}{2}\omega_3\omega_1-\tfrac{1}{2}\omega_4\omega_2-\omega_3\omega_4+\omega_4+3\omega_1-\tfrac{1}{2}\omega_4\omega_1-\omega_3^2-\tfrac{7}{2}\omega_3\omega_2+\tfrac{1}{2}\omega_3^2\omega_1+\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3\omega_2^2+3\omega_2-\omega_1^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{2}v\omega_4^2\omega_2-\tfrac{1}{2}v\omega_4\omega_2^2+v\omega_1\omega_2+v\omega_2^2-2v\omega_2-\tfrac{1}{2}v\omega_4\omega_1\omega_2+2v\omega_4\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-2\delta_t} = -2-\omega_2^2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{5}{2}\omega_4\omega_2+\tfrac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} =$$
$$-1-\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{5}{8}v^2\omega_3\omega_1+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_1u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2+2\omega_3{c_s}^2-\tfrac{1}{8}v^2\omega_4\omega_2+\tfrac{5}{8}v\omega_3\omega_2+\tfrac{1}{4}\omega_3-\tfrac{1}{8}\omega_3\omega_4u^2+\tfrac{5}{8}\omega_3\omega_1u-\tfrac{11}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_3^2u^2-\tfrac{5}{8}\omega_3\omega_1u^2+\tfrac{1}{4}v^2\omega_3\omega_4^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_1u-\tfrac{1}{8}\omega_4\omega_2+\tfrac{3}{8}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4u^2+\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{8}\omega_3\omega_4\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4-\tfrac{5}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1u^2\omega_2+\tfrac{1}{8}\omega_4^2u^2+\tfrac{1}{8}\omega_3^2\omega_1u^2+\tfrac{3}{4}\omega_4-\tfrac{3}{4}\omega_3{c_s}^2\omega_2+\tfrac{1}{4}v\omega_1\omega_2+v^2\omega_3-\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{8}v^2\omega_4^2+\tfrac{1}{2}\omega_1+\tfrac{1}{4}v^2\omega_3\omega_4\omega_2-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{8}\omega_4\omega_1u-\tfrac{3}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{8}\omega_3\omega_2+\omega_3u^2-\tfrac{3}{8}\omega_3u^2\omega_2+\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1-\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}v\omega_2-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{8}v\omega_3^2\omega_2+\tfrac{1}{8}\omega_4\omega_1u^2+\tfrac{1}{4}v^2\omega_3^2\omega_4+\tfrac{1}{8}v^2\omega_3^2\omega_1+\tfrac{1}{2}\omega_2+\tfrac{1}{2}v^2\omega_4+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{8}\omega_3^2\omega_1u-\tfrac{3}{8}v^2\omega_3\omega_2+\tfrac{1}{8}v\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-2\delta_t} = -2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{5}{2}\omega_3+\tfrac{3}{8}\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{9}{8}\omega_3\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{7}{4}\omega_3\omega_4+\tfrac{3}{2}\omega_4+\tfrac{1}{4}\omega_3^2\omega_4+\omega_1-\tfrac{3}{8}\omega_4\omega_1-\tfrac{1}{2}\omega_3^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{8}\omega_3^2\omega_1+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_4^2+\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = -1+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{1}{4}v^2\omega_4^2\omega_1+\tfrac{1}{4}\omega_4u^2\omega_2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{4}v^2\omega_4\omega_2+\tfrac{1}{4}\omega_3+\tfrac{1}{4}\omega_3\omega_4u^2+\tfrac{1}{4}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_4\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{4}\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1-\tfrac{3}{4}\omega_4u^2-\tfrac{1}{2}v\omega_1^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}v^2\omega_3\omega_1^2+\tfrac{1}{4}v^2\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_1-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2+\tfrac{1}{4}\omega_4^2u^2+\tfrac{5}{4}\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_2+v\omega_1\omega_2-\tfrac{1}{4}v^2\omega_3-\tfrac{1}{4}v^2\omega_4^2+\omega_1-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_1^2u^2-\tfrac{1}{4}\omega_3\omega_2-\tfrac{1}{4}\omega_3u^2+\tfrac{1}{4}\omega_3u^2\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{4}\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}v\omega_2-v^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1\omega_2+\omega_4\omega_1u^2+\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{3}{4}v^2\omega_4-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-2\delta_t} = -2-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{2}\omega_4\omega_2+\tfrac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\tfrac{5}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\tfrac{1}{2}\omega_4\omega_1^2+\tfrac{1}{2}\omega_1^2\omega_2-\omega_1^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} =$$
$$-1-\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{5}{8}v^2\omega_3\omega_1+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_1\omega_2+\tfrac{1}{8}\omega_3\omega_4\omega_1u-\tfrac{1}{4}\omega_1u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2+2\omega_3{c_s}^2-\tfrac{1}{8}v^2\omega_4\omega_2+$$

$\frac{5}{8}v\omega_3\omega_2+\frac{1}{4}\omega_3-\frac{1}{8}\omega_3\omega_4u^2-\frac{5}{8}\omega_3\omega_1u-\frac{11}{8}v^2\omega_3\omega_4+\frac{1}{4}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2u^2-\frac{5}{8}\omega_3\omega_1u^2+\frac{1}{4}v^2\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_1u-\frac{1}{8}\omega_4\omega_2+\frac{3}{8}v^2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4u^2+\frac{1}{4}\omega_3^2\omega_4{c_s}^2+\frac{1}{8}\omega_3\omega_4\omega_1u^2-\frac{1}{8}\omega_3\omega_4-\frac{5}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{8}\omega_4^2u^2+\frac{1}{8}\omega_3^2\omega_1u^2+\frac{3}{4}\omega_4-\frac{3}{4}\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_1\omega_2+v^2\omega_3+\frac{1}{4}\omega_3\omega_1u\omega_2-\frac{1}{8}v^2\omega_4^2+\frac{1}{2}\omega_1+\frac{1}{4}v^2\omega_3\omega_4\omega_2-\frac{1}{4}\omega_4\omega_1-\frac{1}{8}\omega_4\omega_1u-\frac{3}{2}\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\frac{1}{8}\omega_3\omega_2+\omega_3u^2-\frac{3}{8}\omega_3u^2\omega_2+\frac{1}{4}\omega_3^2{c_s}^2\omega_1-\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2-\frac{1}{8}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{8}\omega_4\omega_1u^2+\frac{1}{4}v^2\omega_3^2\omega_4+\frac{1}{8}v^2\omega_3^2\omega_1+\frac{1}{2}\omega_2+\frac{1}{2}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_1u-\frac{3}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-1+\frac{1}{4}v\omega_3\omega_4\omega_2-\frac{5}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1^2-\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2+\frac{1}{4}v^2\omega_4^2\omega_1+\frac{1}{4}\omega_4u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1^2u^2+2\omega_3{c_s}^2-\frac{1}{4}v^2\omega_4\omega_2-\frac{5}{4}v\omega_3\omega_2+\frac{1}{4}\omega_3-\frac{5}{2}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2u^2+\frac{1}{4}\omega_3\omega_1\omega_2-\frac{5}{4}\omega_3\omega_1u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4\omega_2+3v^2\omega_3\omega_4\omega_1-\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{2}v\omega_1^2\omega_2-\frac{1}{4}\omega_3\omega_4-\frac{5}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_3\omega_1^2+\frac{7}{4}v\omega_3\omega_1\omega_2+\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{2}v^2\omega_3\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{5}{4}\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_2-\frac{3}{2}v\omega_1\omega_2+v^2\omega_3-\frac{1}{2}v\omega_3\omega_1^2\omega_2-\frac{1}{4}v^2\omega_4^2+\omega_1+\frac{1}{2}v^2\omega_3\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-\frac{3}{2}\omega_4\omega_1-\frac{5}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_3\omega_1^2u^2-\frac{1}{4}\omega_3\omega_2-\frac{1}{2}v^2\omega_3^2\omega_4\omega_1+\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2+\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}v\omega_3^2\omega_1\omega_2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{1}{4}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+v\omega_2-\frac{5}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}v\omega_3^2\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2+\frac{5}{4}\omega_4\omega_1u^2+\frac{1}{2}v^2\omega_3^2\omega_4+\frac{1}{4}v^2\omega_3^2\omega_1+\frac{1}{2}\omega_2+\frac{1}{4}\omega_4\omega_1^2+v^2\omega_4+\frac{1}{4}v\omega_4\omega_1\omega_2+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_2-\frac{1}{4}v\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_3],t-3\delta_t}_{x,y-\delta_l}=3+\frac{1}{2}\omega_3^2\omega_4\omega_1+2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\omega_3\omega_1^2-\frac{15}{4}\omega_3-\frac{3}{4}\omega_3\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{19}{4}\omega_3\omega_1+\frac{3}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-4\omega_1+\frac{13}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{7}{4}\omega_3\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_1^2\omega_2+\omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y}=$
$\frac{13}{4}v\omega_3\omega_4\omega_2-\frac{1}{2}v\omega_3\omega_1\omega_2^2-\frac{3}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}v\omega_4^2\omega_2-\frac{15}{4}v\omega_3\omega_2+v\omega_3\omega_2^2-\frac{1}{2}v\omega_3\omega_4\omega_2^2+\frac{7}{4}v\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_4\omega_2^2-\frac{3}{2}v\omega_1\omega_2-\frac{1}{4}v\omega_3^2\omega_1\omega_2-v\omega_2^2+3v\omega_2-\frac{1}{2}v\omega_3^2\omega_4\omega_2+\frac{3}{4}v\omega_3^2\omega_2-\frac{1}{2}v\omega_3\omega_4^2\omega_2+\frac{3}{4}v\omega_4\omega_1\omega_2-\frac{11}{4}v\omega_4\omega_2+\frac{1}{2}v\omega_1\omega_2^2,$

$\alpha^{[\mu_3],t-3\delta_t}_{x-\delta_l,y}=3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y}=-v\omega_4\omega_1^2\omega_2+v\omega_4^2\omega_2-v\omega_4^2\omega_1\omega_2+v\omega_1^2\omega_2+v\omega_4\omega_2^2-4v\omega_1\omega_2-v\omega_4\omega_1\omega_2^2-v\omega_2^2+3v\omega_2+5v\omega_4\omega_1\omega_2-4v\omega_4\omega_2+v\omega_1\omega_2^2,$

$\alpha^{[\mu_3],t-3\delta_t}_{x,y}=3+\omega_2^2+5\omega_1\omega_2-\omega_4\omega_2^2+\omega_4^2\omega_1\omega_2+\omega_4\omega_1^2\omega_2-\omega_1\omega_2^2+5\omega_4\omega_2-\omega_4^2\omega_1-\omega_4^2\omega_2-4\omega_4-4\omega_1+5\omega_4\omega_1+\omega_4\omega_1\omega_2^2+\omega_4^2-6\omega_4\omega_1\omega_2-4\omega_2-\omega_4\omega_1^2-\omega_1^2\omega_2+\omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y}=$
$\frac{13}{4}v\omega_3\omega_4\omega_2-\frac{1}{2}v\omega_3\omega_1\omega_2^2-\frac{3}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}v\omega_4^2\omega_2-\frac{15}{4}v\omega_3\omega_2+v\omega_3\omega_2^2-\frac{1}{2}v\omega_3\omega_4\omega_2^2+\frac{7}{4}v\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_4\omega_2^2-\frac{3}{2}v\omega_1\omega_2-\frac{1}{4}v\omega_3^2\omega_1\omega_2-v\omega_2^2+3v\omega_2-\frac{1}{2}v\omega_3^2\omega_4\omega_2+\frac{3}{4}v\omega_3^2\omega_2-\frac{1}{2}v\omega_3\omega_4^2\omega_2+\frac{3}{4}v\omega_4\omega_1\omega_2-\frac{11}{4}v\omega_4\omega_2+\frac{1}{2}v\omega_1\omega_2^2,$

$\alpha^{[\mu_3],t-3\delta_t}_{x+\delta_l,y}=3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l}=1+\frac{1}{4}v\omega_3\omega_4\omega_2+\frac{5}{4}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1^2-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_1\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1^2+\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1^2u^2-2\omega_3{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2-\frac{5}{4}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{5}{2}v^2\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_3^2u^2-\frac{1}{4}\omega_3\omega_1\omega_2+\frac{5}{4}\omega_3\omega_1u^2-\frac{1}{2}v^2\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2\omega_2-3\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_4\omega_2-3v^2\omega_3\omega_4\omega_1+\omega_4u^2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{2}v\omega_1^2\omega_2+\frac{1}{4}\omega_3\omega_4+\frac{5}{2}\omega_3{c_s}^2\omega_1-\frac{1}{4}v^2\omega_3\omega_1^2+\frac{7}{4}v\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4^2\omega_1-\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2u^2+\frac{1}{2}v^2\omega_3\omega_4^2\omega_1-\frac{1}{4}\omega_3^2\omega_1u^2-\frac{5}{4}\omega_4+\frac{1}{2}\omega_3{c_s}^2\omega_2-\frac{3}{2}v\omega_1\omega_2-v^2\omega_3-\frac{1}{2}v\omega_3\omega_1^2\omega_2+\frac{1}{4}v^2\omega_4^2-\omega_1-\frac{1}{2}v^2\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1+\frac{3}{2}\omega_4\omega_1+$

$\frac{5}{2}\omega_3\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{4}\omega_3\omega_1^2u^2 + \frac{1}{4}\omega_3\omega_2 + \frac{1}{2}v^2\omega_3^2\omega_4\omega_1 - \omega_3u^2 + \frac{1}{4}\omega_3u^2\omega_2 - \frac{1}{4}v^2\omega_4\omega_1^2 - \frac{1}{4}v\omega_3^2\omega_1\omega_2 - \frac{1}{2}\omega_3^2{c_s}^2\omega_1 - \frac{1}{4}\omega_3\omega_4\omega_1 + \frac{1}{4}\omega_4^2 + v\omega_2 + \frac{5}{4}v^2\omega_4\omega_1 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1 + \frac{1}{2}\omega_3^2{c_s}^2 + \frac{1}{4}v\omega_3^2\omega_2 - \frac{1}{4}\omega_4\omega_1\omega_2 - \frac{5}{4}\omega_4\omega_1u^2 - \frac{1}{2}v^2\omega_3^2\omega_4 - \frac{1}{4}v^2\omega_3^2\omega_1 - \frac{1}{2}\omega_2 - \frac{1}{4}\omega_4\omega_1^2 - v^2\omega_4 + \frac{1}{4}v\omega_4\omega_1\omega_2 - \frac{1}{4}v^2\omega_3\omega_1\omega_2 + \frac{1}{4}v^2\omega_3\omega_2 - \frac{1}{4}v\omega_4\omega_2 + \frac{1}{4}v^2\omega_3^2,$

$\alpha_{x,y+\delta_l}^{[\mu_3],t-3\delta_t} = 3 + \frac{1}{2}\omega_3^2\omega_4\omega_1 + 2\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \omega_3\omega_1^2 - \frac{15}{4}\omega_3 - \frac{3}{4}\omega_3\omega_4\omega_2 - \frac{9}{4}\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3^2\omega_2 + \frac{19}{4}\omega_3\omega_1 + \frac{3}{4}\omega_4\omega_2 + \frac{13}{4}\omega_3\omega_4 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_1\omega_2 - \frac{11}{4}\omega_4 - \frac{1}{2}\omega_3^2\omega_4 - 4\omega_1 + \frac{13}{4}\omega_4\omega_1 + \frac{3}{4}\omega_3^2 + \frac{7}{4}\omega_3\omega_2 + \frac{1}{2}\omega_3\omega_1^2\omega_2 - \frac{3}{4}\omega_3^2\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1^2 - \frac{15}{4}\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_4^2 - \frac{3}{4}\omega_4\omega_1\omega_2 - \frac{3}{2}\omega_2 - \frac{1}{2}\omega_4\omega_1^2 - \frac{1}{2}\omega_1^2\omega_2 + \omega_1^2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -6v\omega_3\omega_4\omega_2 + v\omega_3\omega_1\omega_2^2 + v\omega_4\omega_1^2\omega_2 + 7v\omega_3\omega_4\omega_1\omega_2 - v\omega_4^2\omega_2 + v\omega_4^2\omega_1\omega_2 + 5v\omega_3\omega_2 - v\omega_3\omega_2^2 - v\omega_1^2\omega_2 - v\omega_3\omega_4\omega_1\omega_2^2 + v\omega_3\omega_4\omega_2^2 - 6v\omega_3\omega_1\omega_2 - v\omega_3^2\omega_4\omega_1\omega_2 - v\omega_4\omega_2^2 + 5v\omega_1\omega_2 + v\omega_3\omega_1^2\omega_2 + v\omega_4\omega_1\omega_2^2 + v\omega_3^2\omega_1\omega_2 + v\omega_2^2 - 4v\omega_2 + v\omega_3^2\omega_4\omega_2 - v\omega_3\omega_4^2\omega_1\omega_2 - v\omega_3^2\omega_2 + v\omega_3\omega_4^2\omega_2 - 6v\omega_4\omega_1\omega_2 + 5v\omega_4\omega_2 - v\omega_3\omega_4\omega_1^2\omega_2 - v\omega_1\omega_2^2,$

$\alpha_{x,y}^{[\mu_3],t-4\delta_t} = -4 - \omega_2^2 - \omega_3^2\omega_4\omega_1 - 6\omega_1\omega_2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 + \omega_3\omega_4\omega_1\omega_2^2 + \omega_3\omega_4^2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_1^2 - \omega_4\omega_1^2\omega_2 + 5\omega_3 + 7\omega_3\omega_4\omega_2 - \omega_3\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_3^2\omega_2 - 6\omega_3\omega_1 + \omega_1\omega_2^2 - 6\omega_4\omega_2 - 6\omega_3\omega_4 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_1 - \omega_3^2\omega_1\omega_2 + \omega_4^2\omega_2 + 5\omega_4 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_3^2\omega_4 + 5\omega_1 - 6\omega_4\omega_1 - \omega_3^2 + \omega_3\omega_4^2\omega_1\omega_2 - \omega_4\omega_1\omega_2^2 - 6\omega_3\omega_2 - \omega_3\omega_1^2\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_4\omega_1^2 + 7\omega_3\omega_4\omega_1 - \omega_4^2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_2^2 - \omega_3\omega_4^2\omega_2 + 5\omega_2 + \omega_4\omega_1^2 - \omega_3^2\omega_4\omega_2 + \omega_1^2\omega_2 + \omega_3^2\omega_4\omega_1\omega_2 - \omega_1^2,$

6.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_1u + \frac{1}{4}\omega_4u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{2}\omega_1u + \frac{1}{4}\omega_4u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 - \frac{1}{4}\omega_4\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{8}\omega_4^2u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{4}v^2\omega_3 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}v\omega_2 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}\omega_2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}v\omega_4\omega_2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{8}\omega_3\omega_1 - \frac{1}{4}\omega_4\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{8}\omega_4^2u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{4}v^2\omega_3 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{8}\omega_4^2 - \frac{1}{2}v\omega_2 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}\omega_2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}v\omega_4\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}v^2\omega_3\omega_1 + 2\omega_3{c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_3\omega_1u^2 - \omega_3{c_s}^2\omega_1 + \frac{1}{4}\omega_4 + v^2\omega_3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \frac{1}{2}\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_3^2,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \frac{1}{2}\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3^2,$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \tfrac{1}{2}v^2\omega_3\omega_1 - \omega_3{c_s}^2 + \tfrac{1}{2}\omega_3 + \tfrac{1}{2}\omega_3\omega_1u^2 - \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{2}\omega_4u^2 + \omega_3{c_s}^2\omega_1 + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}v^2\omega_3 + 3\omega_1 - \tfrac{1}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_3u^2 - \tfrac{1}{2}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{2}v^2\omega_4 - \omega_1^2,$$

$$\alpha_{x,y}^{[\mu_4],t-\delta_t} = 2 + \omega_2^2 - 2\omega_1 - 2\omega_2 + \omega_1^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}v^2\omega_3\omega_1 + 2\omega_3{c_s}^2 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_3\omega_1u^2 - \omega_3{c_s}^2\omega_1 + \tfrac{1}{4}\omega_4 + v^2\omega_3 + \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3u^2 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{2}\omega_3\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_4^2u^2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{8}\omega_3\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{8}\omega_4^2u^2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{4}v\omega_4\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_2 - \omega_4 - \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u - \tfrac{1}{8}v^2\omega_3^2\omega_2 + \tfrac{1}{4}\omega_1u\omega_2 + \tfrac{1}{8}\omega_4u^2\omega_2 - 2\omega_3{c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{5}{8}v\omega_3\omega_2 - \tfrac{1}{4}\omega_3 + \tfrac{11}{8}\omega_3\omega_4u^2 + \tfrac{5}{8}\omega_3\omega_1u + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_2 + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{3}{8}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_1u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}\omega_4u^2 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 + \tfrac{1}{8}\omega_4^2u^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{4}\omega_3{c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - v^2\omega_3 - \tfrac{3}{8}\omega_3\omega_4u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u\omega_2 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{8}\omega_4\omega_1u + \tfrac{3}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \omega_3u^2 + \tfrac{5}{8}\omega_3u^2\omega_2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{8}v\omega_3^2\omega_2 + \tfrac{1}{8}\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4^2u^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{1}{4}\omega_3^2\omega_4u^2 + \tfrac{5}{8}v^2\omega_3\omega_2 - \tfrac{1}{8}v\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{5}{2}\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 + \omega_1 - \tfrac{3}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 2 - \tfrac{3}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 + \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}\omega_4\omega_1^2u^2 + \omega_3{c_s}^2 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{3}{4}\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1 + \tfrac{1}{2}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_4u^2 + \tfrac{1}{2}v\omega_1^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{3}{2}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_1^2 - \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4^2u^2 - \tfrac{3}{2}\omega_4 - \tfrac{3}{2}v\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{4}v^2\omega_4^2 - 3\omega_1 + \tfrac{7}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}\omega_3\omega_1^2u^2 + \tfrac{1}{2}\omega_3u^2 + \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_4^2 + v\omega_2 - \tfrac{3}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{3}{4}\omega_4\omega_1u^2 - \omega_2 - \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}v\omega_4\omega_1\omega_2 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_2 + \omega_1^2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \tfrac{3}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1 + 2\omega_4 + 3\omega_1 - \tfrac{5}{2}\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \omega_2 + \tfrac{1}{2}\omega_4\omega_1^2 + \tfrac{1}{2}\omega_1^2\omega_2 - \omega_1^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_4\omega_1u - \tfrac{1}{8}v^2\omega_3^2\omega_2 - \tfrac{1}{4}\omega_1u\omega_2 + \tfrac{1}{8}\omega_4u^2\omega_2 - 2\omega_3{c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{5}{8}v\omega_3\omega_2 - \tfrac{1}{4}\omega_3 + \tfrac{11}{8}\omega_3\omega_4u^2 - \tfrac{5}{8}\omega_3\omega_1u + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_2 + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{3}{8}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_1u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}\omega_4u^2 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{8}\omega_3^2u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 + \tfrac{1}{8}\omega_4^2u^2 - \tfrac{3}{4}\omega_4 + \tfrac{5}{4}\omega_3{c_s}^2\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - v^2\omega_3 - \tfrac{3}{8}\omega_3\omega_4u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1u\omega_2 - \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{8}\omega_4\omega_1u + \tfrac{3}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \omega_3u^2 + \tfrac{5}{8}\omega_3u^2\omega_2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{8}v\omega_3^2\omega_2 + \tfrac{1}{8}\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4^2u^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{1}{4}\omega_3^2\omega_4u^2 + \tfrac{5}{8}v^2\omega_3\omega_2 - \tfrac{1}{8}v\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-2\delta_t} = -2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{5}{2}\omega_3 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{7}{4}\omega_3\omega_4 + \tfrac{3}{2}\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 + \omega_1 - \tfrac{3}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + \omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_2^2 + \omega_1u\omega_2 + \omega_4u^2\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2 - v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_3\omega_4\omega_2 -$$

$$\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4+\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2-\frac{1}{4}\omega_4\omega_1u^2\omega_2-\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{4}\omega_3\omega_1-\frac{1}{4}\omega_4u^2\omega_2^2-\frac{1}{2}\omega_1u+\frac{3}{2}\omega_4\omega_2-\frac{3}{4}\omega_4u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4^2\omega_2-\frac{5}{4}\omega_4-\frac{1}{4}v^2\omega_3\omega_2^2+\frac{1}{4}v^2\omega_3+\frac{1}{4}\omega_3\omega_4u^2\omega_2-\frac{1}{4}v^2\omega_4^2-\frac{1}{2}\omega_1+\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2^2+\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_2^2-\frac{1}{4}\omega_4^2u^2\omega_2-\omega_2+\frac{3}{4}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_2^2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_4],t-2\delta_t}=-2-\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_1\omega_2^2-\frac{5}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t}=2+3v^2\omega_3\omega_1-2\omega_3{c_s}^2\omega_1^2-4\omega_3{c_s}^2-\frac{1}{2}\omega_3+\frac{1}{2}\omega_3\omega_4u^2+\frac{1}{2}v^2\omega_3\omega_4+\frac{1}{2}\omega_3^2u^2+3\omega_3\omega_1u^2-\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_3\omega_1-\frac{1}{2}v^2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4\omega_1u^2+6\omega_3{c_s}^2\omega_1-v^2\omega_3\omega_1^2-\frac{1}{2}\omega_3^2\omega_1u^2-\frac{1}{2}\omega_4-2v^2\omega_3-3\omega_1+\frac{1}{2}\omega_4\omega_1+\omega_3\omega_4{c_s}^2-\omega_3\omega_1^2u^2-2\omega_3u^2-\omega_3^2{c_s}^2\omega_1+\omega_3^2{c_s}^2-\frac{1}{2}v^2\omega_3^2\omega_1+\omega_1^2+\frac{1}{2}v^2\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_4],t-2\delta_t}=-4-\omega_2^2+\omega_3\omega_1^2+5\omega_3+\frac{1}{2}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3^2\omega_2-\frac{7}{2}\omega_3\omega_1-\frac{1}{2}\omega_4\omega_2-\omega_3\omega_4+\omega_4+3\omega_1-\frac{1}{2}\omega_4\omega_1-\omega_3^2-\frac{7}{2}\omega_3\omega_2+\frac{1}{2}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3\omega_2^2+3\omega_2-\omega_1^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t}=1-\frac{1}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_1\omega_2-\frac{1}{4}\omega_4\omega_2^2-\omega_1u\omega_2+\omega_4u^2\omega_2+\frac{1}{2}\omega_3{c_s}^2-v^2\omega_4\omega_2-\frac{1}{4}\omega_3-\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4+\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{4}\omega_3\omega_1-\frac{1}{4}\omega_4u^2\omega_2^2+\frac{1}{2}\omega_1u+\frac{3}{2}\omega_4\omega_2-\frac{3}{4}\omega_4u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4^2\omega_2-\frac{5}{4}\omega_4-\frac{1}{4}v^2\omega_3\omega_2^2+\frac{1}{4}v^2\omega_3+\frac{1}{4}\omega_3\omega_4u^2\omega_2-\frac{1}{4}v^2\omega_4^2-\frac{1}{2}\omega_1+\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2^2+\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_2^2-\frac{1}{4}\omega_4^2u^2\omega_2-\omega_2+\frac{3}{4}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_2^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t}=-2-\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_1\omega_2^2-\frac{5}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{3}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{1}{8}v^2\omega_3^2\omega_2+\frac{1}{4}\omega_1u\omega_2+\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2-\frac{1}{8}v^2\omega_4\omega_2+\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{11}{8}\omega_3\omega_4u^2+\frac{5}{8}\omega_3\omega_1u+\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2{c_s}^2\omega_2+\frac{1}{4}\omega_3^2u^2+\frac{3}{8}\omega_3\omega_1u^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{8}\omega_3\omega_1-\frac{1}{2}\omega_1u+\frac{1}{4}\omega_4\omega_2-\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2u^2\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{8}\omega_4^2u^2-\frac{3}{4}\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_1\omega_2-v^2\omega_3-\frac{3}{8}\omega_3\omega_4u^2\omega_2-\frac{1}{4}\omega_3\omega_1u\omega_2-\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{8}v^2\omega_3\omega_4\omega_2+\frac{1}{8}\omega_4\omega_1+\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\omega_3u^2+\frac{5}{8}\omega_3u^2\omega_2+\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4^2u^2-\frac{1}{2}\omega_2+\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2\omega_1u-\frac{1}{4}\omega_3^2\omega_4u^2+\frac{5}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t}=-2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t}=2-\frac{3}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{3}{2}\omega_1\omega_2-\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{4}\omega_3\omega_1^2+\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}\omega_4\omega_1^2u^2+\omega_3{c_s}^2-\frac{1}{2}\omega_3-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4-\frac{3}{4}\omega_3\omega_1u^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{3}{4}\omega_3\omega_1+\frac{1}{2}\omega_4\omega_2+\frac{1}{4}v^2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4u^2-\frac{1}{2}v\omega_1^2\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4-\frac{3}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_3\omega_1^2-\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_4^2u^2-\frac{3}{2}\omega_4+\frac{3}{2}v\omega_1\omega_2+\frac{1}{2}v^2\omega_3-\frac{1}{4}v^2\omega_4^2-3\omega_1+\frac{7}{4}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_1^2u^2+\frac{1}{2}\omega_3u^2+\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}\omega_3\omega_4\omega_1+\frac{1}{4}\omega_4^2-v\omega_2-\frac{3}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1\omega_2+\frac{3}{4}\omega_4\omega_1u^2-\omega_2-\frac{1}{4}\omega_4\omega_1^2+\frac{1}{2}v^2\omega_4-\frac{1}{2}v\omega_4\omega_1\omega_2-\frac{1}{2}\omega_1^2\omega_2+\frac{1}{2}v\omega_4\omega_2+\omega_1^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t}=-2-\frac{3}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\frac{5}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2\omega_2-\omega_1^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{3}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2+\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{1}{8}v^2\omega_3^2\omega_2-\frac{1}{4}\omega_1u\omega_2+\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2-\frac{1}{8}v^2\omega_4\omega_2+\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{11}{8}\omega_3\omega_4u^2-\frac{5}{8}\omega_3\omega_1u+\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2{c_s}^2\omega_2+\frac{1}{4}\omega_3^2u^2+\frac{3}{8}\omega_3\omega_1u^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{8}\omega_3\omega_1+\frac{1}{2}\omega_1u+\frac{1}{4}\omega_4\omega_2-\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2u^2\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{8}\omega_4^2u^2-\frac{3}{4}\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_1\omega_2-v^2\omega_3-\frac{3}{8}\omega_3\omega_4u^2\omega_2+\frac{1}{4}\omega_3\omega_1u\omega_2-\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{8}v^2\omega_3\omega_4\omega_2+\frac{1}{8}\omega_4\omega_1-\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\omega_3u^2+\frac{5}{8}\omega_3u^2\omega_2+\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4^2u^2-\frac{1}{2}\omega_2+\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_1u-\frac{1}{4}\omega_3^2\omega_4u^2+\frac{5}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t}=-2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t}=-2-\frac{1}{4}v\omega_3\omega_4\omega_2-\frac{11}{4}v^2\omega_3\omega_1+\frac{3}{2}\omega_3{c_s}^2\omega_1^2-\frac{1}{2}v^2\omega_3\omega_1^2\omega_2+\frac{7}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{3}{2}\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1u^2+\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}v^2\omega_3^2\omega_2-\frac{1}{4}v^2\omega_3^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2-\frac{1}{4}v^2\omega_3\omega_4\omega_1\omega_2+$$

$\frac{1}{4}\omega_4\omega_1^2u^2 + 4\omega_3{c_s}^2 + \frac{1}{4}v^2\omega_4\omega_2 + \frac{5}{4}v\omega_3\omega_2 + \frac{1}{2}\omega_3 - \frac{3}{4}\omega_3\omega_4\omega_1u^2\omega_2 - \frac{11}{4}\omega_3\omega_4u^2 - \frac{1}{4}v^2\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 + \frac{1}{2}\omega_3^2{c_s}^2\omega_2 - \frac{1}{2}\omega_3^2u^2 - \frac{11}{4}\omega_3\omega_1u^2 - \omega_3\omega_4{c_s}^2\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1u^2\omega_2 + \frac{7}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{3}{4}\omega_3\omega_1 - \frac{1}{2}\omega_4\omega_2 + \frac{1}{4}v^2\omega_3\omega_4\omega_1 + \omega_4u^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 - \frac{1}{2}v\omega_1^2\omega_2 + \frac{13}{4}\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4 - \frac{11}{2}\omega_3{c_s}^2\omega_1 + \frac{3}{4}v^2\omega_3\omega_1^2 - \frac{7}{4}v\omega_3\omega_1\omega_2 - \frac{1}{4}v^2\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3^2u^2\omega_2 + \frac{1}{4}\omega_4^2\omega_1 + \frac{7}{4}\omega_3\omega_1u^2\omega_2 - \frac{1}{4}\omega_4^2u^2 + \frac{1}{2}\omega_3^2\omega_1u^2 + \frac{3}{2}\omega_4 - \frac{5}{2}\omega_3{c_s}^2\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1^2u^2 + \frac{3}{2}v\omega_1\omega_2 + 2v^2\omega_3 + \frac{1}{2}v\omega_3\omega_1^2\omega_2 - \frac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2 + \frac{3}{4}\omega_3\omega_4u^2\omega_2 + \frac{1}{4}v^2\omega_4^2 + 3\omega_1 + \frac{1}{4}v^2\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1 - \frac{7}{4}\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4^2\omega_1u^2 - 3\omega_3\omega_4{c_s}^2 + \omega_3\omega_4{c_s}^2\omega_2 + \frac{3}{4}\omega_3\omega_1^2u^2 + 2\omega_3u^2 - \frac{1}{2}\omega_3\omega_1^2u^2\omega_2 - \frac{5}{4}\omega_3u^2\omega_2 - \frac{1}{4}v^2\omega_4\omega_1^2 + \frac{1}{4}v\omega_3^2\omega_1\omega_2 + \omega_3^2{c_s}^2\omega_1 + \frac{1}{4}\omega_3\omega_4\omega_1 - \frac{1}{4}\omega_4^2 - v\omega_2 + \frac{5}{4}v^2\omega_4\omega_1 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1 - \omega_3^2{c_s}^2 - \frac{1}{4}v\omega_3^2\omega_2 + \frac{1}{2}\omega_4\omega_1\omega_2 - \frac{5}{4}\omega_4\omega_1u^2 + \frac{1}{2}\omega_3\omega_4^2u^2 + \frac{1}{2}v^2\omega_3^2\omega_1 - \frac{1}{4}\omega_3^2\omega_1u^2\omega_2 + \omega_2 + \frac{1}{4}\omega_4\omega_1^2 - v^2\omega_4 - \frac{1}{4}v\omega_4\omega_1\omega_2 - \omega_3{c_s}^2\omega_1^2\omega_2 + \frac{7}{4}v^2\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_4\omega_1u^2 + \frac{1}{2}\omega_1^2\omega_2 + \frac{1}{2}\omega_3^2\omega_4u^2 - \frac{5}{4}v^2\omega_3\omega_2 + \frac{1}{4}v\omega_4\omega_2 - \omega_1^2 - \frac{1}{2}v^2\omega_3^2,$

$\alpha^{[\mu_4],t-3\delta_t}_{x,y-\delta_l} = 3 + \frac{1}{2}\omega_3^2\omega_4\omega_1 + 2\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4^2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \omega_3\omega_1^2 - \frac{15}{4}\omega_3 - \frac{3}{4}\omega_3\omega_4\omega_2 - \frac{9}{4}\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3^2\omega_2 + \frac{19}{4}\omega_3\omega_1 + \frac{3}{4}\omega_4\omega_2 + \frac{13}{4}\omega_3\omega_4 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \frac{1}{4}\omega_3^2\omega_1\omega_2 - \frac{11}{4}\omega_4 - \frac{1}{2}\omega_3^2\omega_4 - 4\omega_1 + \frac{13}{4}\omega_4\omega_1 + \frac{3}{4}\omega_3^2 + \frac{7}{4}\omega_3\omega_2 + \frac{1}{2}\omega_3\omega_1^2\omega_2 - \frac{3}{4}\omega_3^2\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_1^2 - \frac{15}{4}\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_4^2 - \frac{3}{4}\omega_4\omega_1\omega_2 - \frac{3}{2}\omega_2 - \frac{1}{2}\omega_4\omega_1^2 - \frac{1}{2}\omega_1^2\omega_2 + \omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \frac{1}{4}\omega_3^2\omega_1u\omega_2 - \frac{1}{4}v^2\omega_3\omega_1 + \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_4u^2\omega_2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2^2 + \frac{1}{4}\omega_3\omega_4\omega_1u + \frac{1}{4}v^2\omega_3^2\omega_2 - \frac{3}{2}\omega_1u\omega_2 - \frac{5}{4}\omega_4u^2\omega_2 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2 + 2\omega_3{c_s}^2 + \frac{5}{4}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2 - \frac{5}{2}\omega_3\omega_4u^2 - \frac{5}{4}\omega_3\omega_1u + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 - \frac{1}{4}v^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3^2{c_s}^2\omega_2 - \frac{1}{4}\omega_3^2u^2 + \frac{1}{4}\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_1u\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{1}{4}\omega_3\omega_1 - \frac{1}{2}\omega_3\omega_4^2u^2\omega_2 + \frac{1}{4}\omega_4u^2\omega_2^2 + \omega_1u - \frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2 - \frac{3}{2}\omega_4\omega_2 + \omega_4u^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4 - \frac{1}{2}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v^2\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3^2u^2\omega_2 + \frac{1}{4}\omega_3\omega_1u^2\omega_2 - \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}\omega_4^2\omega_2 + \frac{5}{4}\omega_4 + \frac{1}{4}v^2\omega_3\omega_2^2 - \frac{5}{2}\omega_3{c_s}^2\omega_2 + v^2\omega_3 + 3\omega_3\omega_4u^2\omega_2 + \frac{7}{4}\omega_3\omega_1u\omega_2 + \frac{1}{4}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4\omega_1u - \frac{5}{2}\omega_3\omega_4{c_s}^2 + 3\omega_3\omega_4{c_s}^2\omega_2 + \frac{1}{4}\omega_4\omega_1u\omega_2 + \omega_3u^2 - \frac{5}{4}\omega_3u^2\omega_2 + \frac{1}{4}\omega_3u^2\omega_2^2 - \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4\omega_1 - \frac{1}{2}\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_4^2\omega_2 + \frac{1}{4}\omega_4\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_2^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2 - \frac{1}{4}\omega_3\omega_4\omega_1u\omega_2 + \frac{1}{2}\omega_3\omega_4^2u^2 + \frac{1}{4}\omega_4^2u^2\omega_2 + \omega_2 - \frac{1}{2}\omega_3\omega_4u^2\omega_2^2 - v^2\omega_4 - \frac{1}{2}\omega_3\omega_1u\omega_2^2 + \frac{1}{4}v^2\omega_3\omega_1\omega_2 + \frac{1}{4}\omega_3^2\omega_1u + \frac{1}{2}\omega_3^2\omega_4u^2 + \frac{1}{2}\omega_3{c_s}^2\omega_2^2 - \frac{5}{4}v^2\omega_3\omega_2 - \frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_4],t-3\delta_t}_{x-\delta_l,y} = 3 + \omega_2^2 + 2\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{15}{4}\omega_3 - \frac{15}{4}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 - \frac{9}{4}\omega_3\omega_1\omega_2 - \frac{3}{4}\omega_3^2\omega_2 + \frac{7}{4}\omega_3\omega_1 - \frac{1}{2}\omega_1\omega_2^2 + \frac{13}{4}\omega_4\omega_2 + \frac{13}{4}\omega_3\omega_4 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3^2\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_2 - \frac{11}{4}\omega_4 - \frac{1}{2}\omega_3^2\omega_4 - \frac{3}{2}\omega_1 + \frac{3}{4}\omega_4\omega_1 + \frac{3}{4}\omega_3^2 + \frac{19}{4}\omega_3\omega_2 - \frac{1}{4}\omega_3^2\omega_1 - \frac{3}{4}\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_4^2 - \frac{3}{4}\omega_4\omega_1\omega_2 - \omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - 4\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y} =$
$-2 + \frac{1}{2}v^2\omega_4\omega_1\omega_2^2 + v^2\omega_3\omega_1 - \omega_3{c_s}^2\omega_1^2 + \frac{1}{2}v^2\omega_3\omega_1^2\omega_2 - \omega_3{c_s}^2\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1u^2\omega_2^2 - 3\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}\omega_4^2\omega_1\omega_2 + \frac{1}{2}\omega_4^2\omega_1u^2 + \frac{1}{2}\omega_3\omega_1^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 2\omega_4u^2\omega_2 + \frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1^2u^2 - \frac{1}{2}\omega_4\omega_1^2\omega_2 - \omega_3{c_s}^2 + 2v^2\omega_4\omega_2 + \frac{1}{2}\omega_3 + \frac{1}{2}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_3\omega_4u^2 - \frac{1}{2}\omega_4\omega_1u^2\omega_2^2 + \frac{1}{2}v^2\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_1\omega_2^2 - \frac{1}{2}v^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_1\omega_2 + \omega_3\omega_1u^2 + \omega_3\omega_4{c_s}^2\omega_1\omega_2 + \frac{5}{2}\omega_4\omega_1u^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_1 - \omega_3\omega_1 + \frac{1}{2}\omega_4u^2\omega_2^2 - 3\omega_4\omega_2 - \frac{1}{2}v^2\omega_3\omega_4\omega_1 + \frac{3}{2}\omega_4u^2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 + 2\omega_3{c_s}^2\omega_1 - \frac{1}{2}v^2\omega_3\omega_1^2 - \frac{5}{2}v^2\omega_4\omega_1\omega_2 - \omega_3{c_s}^2\omega_1\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1 - \frac{1}{2}\omega_3\omega_1u^2\omega_2 - \frac{1}{2}\omega_4^2u^2 - \frac{1}{2}\omega_4\omega_1^2u^2\omega_2 + \frac{1}{2}\omega_4^2\omega_2 + \frac{5}{2}\omega_4 + \frac{1}{2}v^2\omega_3\omega_2^2 - \frac{1}{2}v^2\omega_3 + \frac{1}{2}v^2\omega_4\omega_1^2\omega_2 - \frac{1}{2}\omega_3\omega_4u^2\omega_2 + \frac{1}{2}v^2\omega_4^2 + 3\omega_1 - \frac{1}{2}v^2\omega_3\omega_4\omega_2 - 3\omega_4\omega_1 - \frac{1}{2}v^2\omega_3\omega_1\omega_2^2 + \omega_3\omega_4{c_s}^2 - \frac{1}{2}\omega_4\omega_1\omega_2^2 - \omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{2}\omega_3\omega_1^2u^2 - \frac{1}{2}\omega_3u^2 - \frac{1}{2}\omega_3\omega_1^2\omega_2 + \frac{1}{2}\omega_3\omega_1^2u^2\omega_2 - \frac{1}{2}v^2\omega_4\omega_1^2 + \frac{1}{2}v^2\omega_4^2\omega_1\omega_2 + \frac{1}{2}\omega_3u^2\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2 + 2v^2\omega_4\omega_1 - \frac{1}{2}v^2\omega_4^2\omega_2 + \frac{7}{2}\omega_4\omega_1\omega_2 - 2\omega_4\omega_1u^2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \frac{1}{2}\omega_3\omega_2^2 + \frac{1}{2}\omega_4^2u^2\omega_2 + 2\omega_2 + \frac{1}{2}\omega_4\omega_1^2 - \frac{3}{2}v^2\omega_4 + \omega_3{c_s}^2\omega_1^2\omega_2 - \frac{1}{2}v^2\omega_3\omega_1\omega_2 + \omega_1^2\omega_2 + \omega_3{c_s}^2\omega_2^2 - \omega_1^2,$

$\alpha^{[\mu_4],t-3\delta_t}_{x,y} = 3 + \omega_2^2 + 5\omega_1\omega_2 - \omega_4\omega_2^2 + \omega_4^2\omega_1\omega_2 + \omega_4\omega_1^2\omega_2 - \omega_1\omega_2^2 + 5\omega_4\omega_2 - \omega_4^2\omega_1 - \omega_4^2\omega_2 - 4\omega_4 - 4\omega_1 + 5\omega_4\omega_1 + \omega_4\omega_1\omega_2^2 + \omega_4^2 - 6\omega_4\omega_1\omega_2 - 4\omega_2 - \omega_4\omega_1^2 - \omega_1^2\omega_2 + \omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 + \frac{1}{4}\omega_3^2\omega_1u\omega_2 - \frac{1}{4}v^2\omega_3\omega_1 + \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_4u^2\omega_2 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2^2 - \frac{1}{4}\omega_3\omega_4\omega_1u + \frac{1}{4}v^2\omega_3^2\omega_2 + \frac{3}{2}\omega_1u\omega_2 - \frac{5}{4}\omega_4u^2\omega_2 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2 + 2\omega_3{c_s}^2 + \frac{5}{4}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2 - \frac{5}{2}\omega_3\omega_4u^2 + \frac{5}{4}\omega_3\omega_1u + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 - \frac{1}{4}v^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3^2{c_s}^2\omega_2 - \frac{1}{4}\omega_3^2u^2 + \frac{1}{4}\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1u^2\omega_2 - \frac{1}{2}\omega_1u\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{1}{4}\omega_3\omega_1 - \frac{1}{2}\omega_3\omega_4^2u^2\omega_2 + \frac{1}{4}\omega_4u^2\omega_2^2 - \omega_1u - \frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2 - \frac{3}{2}\omega_4\omega_2 + \omega_4u^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 + \frac{1}{2}\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4 - \frac{1}{2}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v^2\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3^2u^2\omega_2 + \frac{1}{4}\omega_3\omega_1u^2\omega_2 - \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}\omega_4^2\omega_2 + \frac{5}{4}\omega_4 + \frac{1}{4}v^2\omega_3\omega_2^2 - \frac{5}{2}\omega_3{c_s}^2\omega_2 + v^2\omega_3 + 3\omega_3\omega_4u^2\omega_2 - \frac{7}{4}\omega_3\omega_1u\omega_2 + \frac{1}{4}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1u - \frac{5}{2}\omega_3\omega_4{c_s}^2 + 3\omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{4}\omega_4\omega_1u\omega_2 + \omega_3u^2 - \frac{5}{4}\omega_3u^2\omega_2 + \frac{1}{4}\omega_3u^2\omega_2^2 - \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4\omega_1 - \frac{1}{2}\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_4^2\omega_2 + \frac{1}{4}\omega_4\omega_1\omega_2 - \frac{1}{4}\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_2^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2 + \frac{1}{4}\omega_3\omega_4\omega_1u\omega_2 + \frac{1}{2}\omega_3\omega_4^2u^2 + \frac{1}{4}\omega_4^2u^2\omega_2 +$

$$\omega_2 - \tfrac{1}{2}\omega_3\omega_4u^2\omega_2^2 - v^2\omega_4 + \tfrac{1}{2}\omega_3\omega_1u\omega_2^2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1u + \tfrac{1}{2}\omega_3^2\omega_4u^2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_2^2 - \tfrac{5}{4}v^2\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x+\delta_l,y} = 3 + \omega_2^2 + 2\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4^2 - \tfrac{15}{4}\omega_3 - \tfrac{15}{4}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4\omega_2^2 - \tfrac{9}{4}\omega_3\omega_1\omega_2 - \tfrac{3}{4}\omega_3^2\omega_2 + \tfrac{7}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_1\omega_2^2 + \tfrac{13}{4}\omega_4\omega_2 + \tfrac{13}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_2 - \tfrac{11}{4}\omega_4 - \tfrac{1}{2}\omega_3^2\omega_4 - \tfrac{3}{2}\omega_1 + \tfrac{3}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3^2 + \tfrac{19}{4}\omega_3\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 - \tfrac{3}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 - \tfrac{3}{4}\omega_4\omega_1\omega_2 - \omega_3\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_2 - 4\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -2 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 - \tfrac{11}{4}v^2\omega_3\omega_1 + \tfrac{3}{2}\omega_3{c_s}^2\omega_1^2 - \tfrac{1}{2}v^2\omega_3\omega_1^2\omega_2 + \tfrac{7}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1u^2 - \tfrac{1}{4}v\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3^2\omega_2 - \tfrac{1}{4}v^2\omega_3^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2 - \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{1}{4}\omega_4u^2\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1^2u^2 + 4\omega_3{c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{5}{4}v\omega_3\omega_2 + \tfrac{1}{2}\omega_3 - \tfrac{3}{4}\omega_3\omega_4\omega_1u^2\omega_2 - \tfrac{11}{4}\omega_3\omega_4u^2 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_2 - \tfrac{1}{2}\omega_3^2u^2 - \tfrac{11}{4}\omega_3\omega_1u^2 - \omega_3\omega_4{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 + \tfrac{7}{2}\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{3}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + \omega_4u^2 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{2}v\omega_1^2\omega_2 + \tfrac{13}{4}\omega_3\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{11}{2}\omega_3{c_s}^2\omega_1 + \tfrac{3}{4}v^2\omega_3\omega_1^2 + \tfrac{7}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3^2u^2\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{7}{4}\omega_3\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{2}\omega_3^2\omega_1u^2 + \tfrac{3}{2}\omega_4 - \tfrac{5}{2}\omega_3{c_s}^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1^2u^2 - \tfrac{3}{2}v\omega_1\omega_2 + 2v^2\omega_3 - \tfrac{1}{2}v\omega_3\omega_1^2\omega_2 - \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2 + \tfrac{3}{4}\omega_3\omega_4u^2\omega_2 + \tfrac{1}{4}v^2\omega_4^2 + 3\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{7}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4^2\omega_1u^2 - 3\omega_3\omega_4{c_s}^2 + \omega_3\omega_4{c_s}^2\omega_2 + \tfrac{3}{4}\omega_3\omega_1^2u^2 + 2\omega_3u^2 - \tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2 - \tfrac{5}{4}\omega_3u^2\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}v\omega_3^2\omega_1\omega_2 + \omega_3^2{c_s}^2\omega_1 + \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_4^2 + v\omega_2 + \tfrac{5}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1 - \omega_3^2{c_s}^2 + \tfrac{1}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{5}{4}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_3\omega_4^2u^2 + \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{1}{4}\omega_3^2\omega_1u^2\omega_2 + \omega_2 + \tfrac{1}{4}\omega_4\omega_1^2 - v^2\omega_4 + \tfrac{1}{4}v\omega_4\omega_1\omega_2 - \omega_3{c_s}^2\omega_1^2\omega_2 + \tfrac{7}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4u^2 - \tfrac{5}{4}v^2\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 - \omega_1^2 - \tfrac{1}{2}v^2\omega_3^2,$$

$$\alpha^{[\mu_4],t-3\delta_t}_{x,y+\delta_l} = 3 + \tfrac{1}{2}\omega_3^2\omega_4\omega_1 + 2\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_1 - \omega_3\omega_1^2 - \tfrac{15}{4}\omega_3 - \tfrac{3}{4}\omega_3\omega_4\omega_2 - \tfrac{9}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2\omega_2 + \tfrac{19}{4}\omega_3\omega_1 + \tfrac{3}{4}\omega_4\omega_2 + \tfrac{13}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 + \tfrac{1}{4}\omega_3^2\omega_1\omega_2 - \tfrac{11}{4}\omega_4 - \tfrac{1}{2}\omega_3^2\omega_4 - 4\omega_1 + \tfrac{13}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3^2 + \tfrac{7}{4}\omega_3\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2\omega_2 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1^2 - \tfrac{15}{4}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 - \tfrac{3}{4}\omega_4\omega_1\omega_2 - \tfrac{3}{2}\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 - \tfrac{1}{2}\omega_1^2\omega_2 + \omega_1^2,$$

$$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 2 - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2 + \tfrac{5}{2}v^2\omega_3\omega_1 - \omega_3{c_s}^2\omega_1^2 - \omega_3^2\omega_4\omega_1u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1^2\omega_2 - 6\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2\omega_2^2 + \omega_3^2\omega_4u^2\omega_2 + 3\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_2^2 + \tfrac{1}{2}\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1u^2 - \tfrac{1}{2}v^2\omega_3^2\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2 + \omega_3\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 + \tfrac{5}{2}\omega_4u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2u^2 + \omega_3^2\omega_4{c_s}^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1^2\omega_2 - 4\omega_3{c_s}^2 - \tfrac{5}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_3\omega_4\omega_2 + 7\omega_3\omega_4\omega_1u^2\omega_2 + 5\omega_3\omega_4u^2 + \tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2 - \omega_3\omega_4{c_s}^2\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2^2 - \omega_3\omega_4^2{c_s}^2 + \tfrac{1}{2}v^2\omega_4\omega_2^2 - \omega_3^2{c_s}^2\omega_2 - \omega_3\omega_4\omega_1u^2\omega_2^2 + \tfrac{1}{2}\omega_3^2u^2 - \tfrac{1}{2}\omega_3\omega_1\omega_2 + \tfrac{5}{2}\omega_3\omega_1u^2 + 7\omega_3\omega_4{c_s}^2\omega_1\omega_2 - 3\omega_4\omega_1u^2\omega_2 - 6\omega_3\omega_4{c_s}^2\omega_1 + \omega_3\omega_1 + \omega_3\omega_4^2u^2\omega_2 - \tfrac{1}{2}\omega_4u^2\omega_2^2 + \omega_3\omega_4^2{c_s}^2\omega_2 + 3\omega_4\omega_2 - 2\omega_4u^2 - \omega_3^2\omega_4{c_s}^2 - 6\omega_3\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_4\omega_1\omega_2 + 5\omega_3{c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_1^2 + 3v^2\omega_4\omega_1\omega_2 + \omega_3{c_s}^2\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3^2u^2\omega_2 - \omega_3^2\omega_4{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 - 3\omega_3\omega_1u^2\omega_2 + \tfrac{1}{2}\omega_4^2u^2 - \tfrac{1}{2}\omega_3^2\omega_1u^2 + \tfrac{1}{2}\omega_4\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_2 - \tfrac{5}{2}\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_2^2 + 5\omega_3{c_s}^2\omega_2 + \omega_3\omega_4\omega_1^2u^2 - 2v^2\omega_3 + \omega_3^2{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2 - 6\omega_3\omega_4u^2\omega_2 - \tfrac{1}{2}v^2\omega_4^2 - 3\omega_1 + \omega_3\omega_4^2{c_s}^2\omega_1 + 3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2 + \omega_3\omega_4^2\omega_1u^2 - \omega_3\omega_4^2\omega_1u^2\omega_2 + 5\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2^2 - 6\omega_3\omega_4{c_s}^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_1^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2u^2 - 2\omega_3u^2 + \tfrac{1}{2}\omega_3\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2 + \tfrac{5}{2}\omega_3u^2\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1^2 - \omega_3^2{c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3u^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 - \tfrac{5}{2}v^2\omega_4\omega_1 + \omega_3^2\omega_4{c_s}^2\omega_1 + \omega_3^2{c_s}^2 + \tfrac{1}{2}v^2\omega_4^2\omega_2 - \tfrac{7}{2}\omega_4\omega_1\omega_2 + \tfrac{5}{2}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \omega_3\omega_4^2{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_2^2 + \omega_3\omega_4{c_s}^2\omega_2^2 - \omega_3\omega_4^2u^2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{1}{2}\omega_4^2u^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2 - 2\omega_2 + \omega_3\omega_4u^2\omega_2^2 - \tfrac{1}{2}\omega_4\omega_1^2 + 2v^2\omega_4 + \omega_3{c_s}^2\omega_1^2\omega_2 - 3v^2\omega_3\omega_1\omega_2 + \omega_3^2\omega_4\omega_1u^2 - \omega_1^2\omega_2 - \omega_3^2\omega_4u^2 - \omega_3\omega_4\omega_1^2u^2\omega_2 - \omega_3{c_s}^2\omega_2^2 + \tfrac{5}{2}v^2\omega_3\omega_2 + \omega_1^2 + \tfrac{1}{2}v^2\omega_3^2,$$

$$\alpha^{[\mu_4],t-4\delta_t}_{x,y} = -4 - \omega_2^2 - \omega_3^2\omega_4\omega_1 - 6\omega_1\omega_2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 + \omega_3\omega_4\omega_1\omega_2^2 + \omega_3\omega_4^2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_1^2 - \omega_4\omega_1^2\omega_2 + 5\omega_3 + 7\omega_3\omega_4\omega_2 - \omega_3\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_3^2\omega_2 - 6\omega_3\omega_1 + \omega_1\omega_2^2 - 6\omega_4\omega_2 - 6\omega_3\omega_4 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_1 - \omega_3^2\omega_1\omega_2 + \omega_4^2\omega_2 + 5\omega_4 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_3^2\omega_4 + 5\omega_1 - 6\omega_4\omega_1 - \omega_3^2 + \omega_3\omega_4^2\omega_1\omega_2 - \omega_4\omega_1\omega_2^2 - 6\omega_3\omega_2 - \omega_3\omega_1^2\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_4\omega_1^2 + 7\omega_3\omega_4\omega_1 - \omega_4^2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_2^2 - \omega_3\omega_4^2\omega_2 + 5\omega_2 + \omega_4\omega_1^2 - \omega_3^2\omega_4\omega_2 + \omega_1^2\omega_2 + \omega_3^2\omega_4\omega_1\omega_2 - \omega_1^2,$$

6.6 EFDE for μ_5

$$\mu^{t+\delta_t}_{5,x,y} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha^{[\mu_1],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha^{[\mu_5],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{5,x+i\delta_l,y+j\delta_l},$$

where the non-zero coefficients are given by:

$\alpha^{[\mu_1],t}_{x,y-\delta_l} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_3 u^2 + \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4.$

$\alpha^{[\mu_1],t}_{x,y+\delta_l} = 1 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4 u^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_3 u^2 - \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4.$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = -1 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{8}\omega_4 u^2\omega_2 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{2}\omega_1 u - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2 u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 - \frac{1}{4}v^2\omega_3 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x-\delta_l,y-\delta_l} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_1],t-\delta_t}_{x,y-\delta_l} = -1 + 2\omega_3 {c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3\omega_4 u^2 - \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3^2 u^2 + \frac{1}{4}\omega_4 - \omega_3 {c_s}^2\omega_2 + v^2\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \frac{1}{2}\omega_3 u^2\omega_2 - \frac{1}{2}\omega_3^2 {c_s}^2 + \frac{1}{2}\omega_2 - \frac{1}{2}v^2\omega_3\omega_2 - \frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-\delta_t}_{x,y-\delta_l} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y-\delta_l} = -1 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{8}\omega_4 u^2\omega_2 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{2}\omega_1 u - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2 u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 - \frac{1}{4}v^2\omega_3 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y-\delta_l} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x-\delta_l,y} = 1 - \frac{5}{4}\omega_3 + \frac{1}{2}\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x,y} = -2 - \omega_2^2 - \frac{1}{2}\omega_4 u^2\omega_2 - \omega_3 {c_s}^2 + \frac{1}{2}v^2\omega_4\omega_2 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_4\omega_2 + \frac{1}{2}\omega_4 u^2 + \frac{1}{2}\omega_4 + \omega_3 {c_s}^2\omega_2 - \frac{1}{2}v^2\omega_3 - \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_3 u^2 + \frac{1}{2}\omega_3 u^2\omega_2 + 3\omega_2 - \frac{1}{2}v^2\omega_4 + \frac{1}{2}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x,y} = 2 + \omega_2^2 - 2\omega_1 - 2\omega_2 + \omega_1^2,$

$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y} = 1 - \frac{5}{4}\omega_3 + \frac{1}{2}\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3^2,$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{8}\omega_4 u^2\omega_2 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{2}\omega_1 u - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2 u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 - \frac{1}{4}v^2\omega_3 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_1],t-\delta_t}_{x,y+\delta_l} = -1 + 2\omega_3 {c_s}^2 + \frac{1}{4}\omega_3 - \frac{1}{4}\omega_3\omega_4 u^2 - \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3^2 u^2 + \frac{1}{4}\omega_4 - \omega_3 {c_s}^2\omega_2 + v^2\omega_3 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \omega_3 u^2 - \frac{1}{2}\omega_3 u^2\omega_2 - \frac{1}{2}\omega_3^2 {c_s}^2 + \frac{1}{2}\omega_2 - \frac{1}{2}v^2\omega_3\omega_2 - \frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-\delta_t}_{x,y+\delta_l} = 1 - \frac{5}{4}\omega_3 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 - \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{8}\omega_4 u^2\omega_2 - \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4 u^2 + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{2}\omega_1 u - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}\omega_4 u^2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2 u^2 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 - \frac{1}{4}v^2\omega_3 - \frac{1}{8}v^2\omega_4^2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_4\omega_1 u + \frac{1}{4}\omega_3\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_2 - \frac{1}{4}\omega_3 u^2 + \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_2 + \frac{1}{4}v^2\omega_4 + \frac{1}{8}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_2 - \omega_4 - \frac{1}{2}\omega_1 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_4^2 - \frac{1}{2}\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \frac{1}{8}v\omega_3\omega_4\omega_2 + \frac{5}{8}v^2\omega_3\omega_1 - \frac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \frac{1}{4}\omega_1\omega_2 + \frac{1}{8}\omega_3\omega_4\omega_1 u - \frac{1}{4}\omega_1 u\omega_2 - \frac{1}{8}\omega_4 u^2\omega_2 - 2\omega_3 {c_s}^2 + \frac{1}{8}v^2\omega_4\omega_2 + \frac{5}{8}v\omega_3\omega_2 - \frac{1}{4}\omega_3 + \frac{1}{8}\omega_3\omega_4 u^2 - \frac{5}{8}\omega_3\omega_1 u + \frac{11}{8}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \frac{1}{4}\omega_3^2 u^2 + \frac{5}{8}\omega_3\omega_1 u^2 - \frac{1}{4}v^2\omega_3\omega_4^2 - \frac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 + \frac{1}{2}\omega_1 u + \frac{1}{8}\omega_4\omega_2 - \frac{3}{8}v^2\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_4 u^2 - \frac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \frac{1}{8}\omega_3\omega_4\omega_1 u^2 + \frac{1}{8}\omega_3\omega_4 + \frac{5}{4}\omega_3 {c_s}^2\omega_1 - \frac{1}{4}v\omega_3\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1 u^2\omega_2 - \frac{1}{8}\omega_4^2 u^2 - \frac{1}{8}\omega_3^2\omega_1 u^2 - \frac{3}{4}\omega_4 + \frac{3}{4}\omega_3 {c_s}^2\omega_2 + \frac{1}{4}v\omega_1\omega_2 - v^2\omega_3 + \frac{1}{4}\omega_3\omega_1 u\omega_2 + \frac{1}{8}v^2\omega_4^2 - \frac{1}{2}\omega_1 - \frac{1}{4}v^2\omega_3\omega_4\omega_2 + \frac{1}{4}\omega_4\omega_1 -$

$\frac{1}{8}\omega_4\omega_1 u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{8}\omega_3\omega_2-\omega_3u^2+\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{8}v^2\omega_3^2\omega_1-\frac{1}{2}\omega_2-\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_1u+\frac{3}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y-\delta_l} = -2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1-\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1u^2+\frac{1}{4}\omega_3\omega_1^2-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2+\frac{1}{4}\omega_4\omega_1^2u^2+\frac{1}{2}\omega_3{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2-\frac{1}{4}\omega_3-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_4\omega_2+\frac{1}{4}v^2\omega_3\omega_4\omega_1+\frac{3}{4}\omega_4u^2-\frac{1}{2}v\omega_1^2\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{4}v^2\omega_3\omega_1^2-\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2u^2-\frac{5}{4}\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_2+v\omega_1\omega_2+\frac{1}{4}v^2\omega_3+\frac{1}{4}v^2\omega_4^2-\omega_1+\frac{3}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_1^2u^2+\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}\omega_3\omega_4\omega_1+\frac{1}{4}\omega_4^2-\frac{1}{2}v\omega_2+v^2\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1\omega_2-\omega_4\omega_1u^2-\frac{1}{2}\omega_2-\frac{1}{4}\omega_4\omega_1^2-\frac{3}{4}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y-\delta_l} = -2-\frac{3}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\frac{5}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2\omega_2-\omega_1^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1-\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{5}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u+\frac{1}{4}\omega_1u\omega_2-\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2+\frac{1}{8}v^2\omega_4\omega_2+\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{1}{8}\omega_3\omega_4u^2+\frac{5}{8}\omega_3\omega_1u+\frac{11}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_3^2u^2+\frac{5}{8}\omega_3\omega_1u^2-\frac{1}{4}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_1u+\frac{1}{8}\omega_4\omega_2-\frac{3}{8}v^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{8}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{8}\omega_4^2u^2-\frac{1}{8}\omega_3^2\omega_1u^2-\frac{3}{4}\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_1\omega_2-v^2\omega_3-\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_4\omega_1+\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{8}\omega_3\omega_2-\omega_3u^2+\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^2-\frac{1}{2}v\omega_2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{8}v^2\omega_3^2\omega_1-\frac{1}{2}\omega_2-\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2\omega_1u+\frac{3}{8}v^2\omega_3\omega_2+\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 2+\omega_2^2+\frac{3}{2}\omega_1\omega_2-\frac{1}{4}\omega_4\omega_2^2-\frac{3}{2}\omega_1u\omega_2-\frac{3}{4}\omega_4u^2\omega_2+\omega_3{c_s}^2+\frac{3}{4}v^2\omega_4\omega_2-\frac{1}{2}\omega_3-\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{4}v^2\omega_4\omega_2^2+\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{4}\omega_4u^2\omega_2^2+\omega_1u-\frac{1}{2}\omega_1\omega_2^2+\frac{7}{4}\omega_4\omega_2+\frac{1}{2}\omega_4u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4^2\omega_2-\frac{3}{2}\omega_4+\frac{1}{4}v^2\omega_3\omega_2^2-\frac{3}{2}\omega_3{c_s}^2\omega_2+\frac{1}{2}v^2\omega_3+\frac{1}{4}\omega_3\omega_4u^2\omega_2+\frac{1}{4}v^2\omega_4^2-\omega_1+\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1u-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{3}{4}\omega_3\omega_2+\frac{1}{2}\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_3u^2-\frac{3}{4}\omega_3u^2\omega_2+\frac{1}{4}\omega_3u^2\omega_2^2+\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{2}\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_2^2+\frac{1}{4}\omega_4^2u^2\omega_2-3\omega_2-\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_3{c_s}^2\omega_2^2-\frac{3}{4}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y} = -2-\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_1\omega_2^2-\frac{5}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = 2+\omega_2^2-\frac{1}{2}v^2\omega_3^2\omega_2-4\omega_3{c_s}^2-\frac{1}{2}\omega_3+\frac{1}{2}\omega_3\omega_4u^2+\frac{1}{2}v^2\omega_3\omega_4-\omega_3^2{c_s}^2\omega_2+\frac{1}{2}\omega_3^2u^2+\frac{1}{2}\omega_4\omega_2-\frac{1}{2}\omega_3^2u^2\omega_2-\frac{1}{2}\omega_4-v^2\omega_3\omega_2^2+6\omega_3{c_s}^2\omega_2-2v^2\omega_3-\frac{1}{2}\omega_3\omega_4u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_2+\omega_3\omega_4{c_s}^2-\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{2}\omega_3\omega_2-2\omega_3u^2+3\omega_3u^2\omega_2-\omega_3u^2\omega_2^2+\omega_3^2{c_s}^2-3\omega_2-2\omega_3{c_s}^2\omega_2^2+3v^2\omega_3\omega_2+\frac{1}{2}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y} = -4-\omega_2^2+\omega_3\omega_1^2+5\omega_3+\frac{1}{2}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3^2\omega_2-\frac{7}{2}\omega_3\omega_1-\frac{1}{2}\omega_4\omega_2-\omega_3\omega_4+\omega_4+3\omega_1-\frac{1}{2}\omega_4\omega_1-\omega_3^2-\frac{7}{2}\omega_3\omega_2+\frac{1}{2}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3\omega_2^2+3\omega_2-\omega_1^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 2+\omega_2^2+\frac{3}{2}\omega_1\omega_2-\frac{1}{4}\omega_4\omega_2^2+\frac{3}{2}\omega_1u\omega_2-\frac{3}{4}\omega_4u^2\omega_2+\omega_3{c_s}^2+\frac{3}{4}v^2\omega_4\omega_2-\frac{1}{2}\omega_3-\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{4}\omega_4u^2\omega_2^2-\omega_1u-\frac{1}{2}\omega_1\omega_2^2+\frac{7}{4}\omega_4\omega_2+\frac{1}{2}\omega_4u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4^2\omega_2-\frac{3}{2}\omega_4+\frac{1}{4}v^2\omega_3\omega_2^2-\frac{3}{2}\omega_3{c_s}^2\omega_2+\frac{1}{2}v^2\omega_3+\frac{1}{4}\omega_3\omega_4u^2\omega_2+\frac{1}{4}v^2\omega_4^2-\omega_1+\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{2}\omega_4\omega_1+\frac{1}{2}\omega_4\omega_1u-\frac{1}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{3}{4}\omega_3\omega_2-\frac{1}{2}\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_3u^2-\frac{3}{4}\omega_3u^2\omega_2+\frac{1}{4}\omega_3u^2\omega_2^2+\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{2}\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_2^2+\frac{1}{4}\omega_4^2u^2\omega_2-3\omega_2-\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_3{c_s}^2\omega_2^2-\frac{3}{4}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y} = -2-\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_1\omega_2^2-\frac{5}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_2+2\omega_4+\omega_1-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+3\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1+\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{5}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2+\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{1}{4}\omega_1u\omega_2-\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2+\frac{1}{8}v^2\omega_4\omega_2+\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{1}{8}\omega_3\omega_4u^2-\frac{5}{8}\omega_3\omega_1u+\frac{11}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_3^2u^2+\frac{5}{8}\omega_3\omega_1u^2-\frac{1}{4}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_1u+\frac{1}{8}\omega_4\omega_2-\frac{3}{8}v^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{8}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_1+\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{8}\omega_4^2u^2-\frac{1}{8}\omega_3^2\omega_1u^2-\frac{3}{4}\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_2-\frac{1}{4}v\omega_1\omega_2-v^2\omega_3+\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_4\omega_1-\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{8}\omega_3\omega_2-\omega_3u^2+\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^2+\frac{1}{2}v\omega_2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2+$

$\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{8}v^2\omega_3^2\omega_1-\frac{1}{2}\omega_2-\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_1u+\frac{3}{8}v^2\omega_3\omega_2-\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1-\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1u^2+\frac{1}{4}\omega_3\omega_1^2-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2+\frac{1}{4}\omega_4\omega_1^2u^2+\frac{1}{2}\omega_3{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2-\frac{1}{4}\omega_3-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_4\omega_2+\frac{1}{4}v^2\omega_3\omega_4\omega_1+\frac{3}{4}\omega_4u^2+\frac{1}{2}v\omega_1^2\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4-\frac{1}{4}v^2\omega_3\omega_1^2-\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2u^2-\frac{5}{4}\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_2-v\omega_1\omega_2+\frac{1}{4}v^2\omega_3+\frac{1}{4}v^2\omega_4^2-\omega_1+\frac{3}{2}\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_1^2u^2+\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}\omega_3\omega_4\omega_1+\frac{1}{4}\omega_4^2+\frac{1}{2}v\omega_2+v^2\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1\omega_2-\omega_4\omega_1u^2-\frac{1}{2}\omega_2-\frac{1}{4}\omega_4\omega_1^2-\frac{3}{4}v^2\omega_4+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y+\delta_l} = -2-\frac{3}{2}\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2+\frac{1}{2}\omega_4^2\omega_1+2\omega_4+3\omega_1-\frac{5}{2}\omega_4\omega_1-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_4\omega_1\omega_2+\omega_2+\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_1^2\omega_2-\omega_1^2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1+\frac{1}{8}v\omega_3\omega_4\omega_2+\frac{5}{8}v^2\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_1\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u+\frac{1}{4}\omega_1u\omega_2-\frac{1}{8}\omega_4u^2\omega_2-2\omega_3{c_s}^2+\frac{1}{8}v^2\omega_4\omega_2-\frac{5}{8}v\omega_3\omega_2-\frac{1}{4}\omega_3+\frac{1}{8}\omega_3\omega_4u^2+\frac{5}{8}\omega_3\omega_1u+\frac{11}{8}v^2\omega_3\omega_4-\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}\omega_3^2u^2+\frac{5}{8}\omega_3\omega_1u^2-\frac{1}{4}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_1u+\frac{1}{8}\omega_4\omega_2-\frac{3}{8}v^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4u^2-\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{8}\omega_3\omega_4\omega_1u^2+\frac{1}{8}\omega_3\omega_4+\frac{5}{4}\omega_3{c_s}^2\omega_1+\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{8}\omega_4^2u^2-\frac{1}{8}\omega_3^2\omega_1u^2-\frac{3}{4}\omega_4+\frac{3}{4}\omega_3{c_s}^2\omega_2-\frac{1}{4}v\omega_1\omega_2-v^2\omega_3-\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{8}v^2\omega_4^2-\frac{1}{2}\omega_1-\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_4\omega_1+\frac{1}{8}\omega_4\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{8}\omega_3\omega_2-\omega_3u^2+\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{8}\omega_4^2+\frac{1}{2}v\omega_2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{8}\omega_4\omega_1u^2-\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{8}v^2\omega_3^2\omega_1-\frac{1}{2}\omega_2-\frac{1}{2}v^2\omega_4-\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{8}\omega_3^2\omega_1u+\frac{3}{8}v^2\omega_3\omega_2-\frac{1}{8}v\omega_4\omega_2+\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y+\delta_l} = -2-\frac{1}{2}\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4^2+\frac{5}{2}\omega_3+\frac{3}{8}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2+\frac{1}{8}\omega_3^2\omega_2-\frac{9}{8}\omega_3\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{7}{4}\omega_3\omega_4+\frac{3}{2}\omega_4+\frac{1}{4}\omega_3^2\omega_4+\omega_1-\frac{3}{8}\omega_4\omega_1-\frac{1}{2}\omega_3^2-\frac{9}{8}\omega_3\omega_2+\frac{1}{8}\omega_3^2\omega_1+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+\omega_2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1+\frac{1}{4}v\omega_3\omega_4\omega_2-\frac{5}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1^2-\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2+\frac{1}{4}v^2\omega_4^2\omega_1+\frac{1}{4}\omega_4u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1^2u^2+2\omega_3{c_s}^2-\frac{1}{4}v^2\omega_4\omega_2-\frac{5}{4}v\omega_3\omega_2+\frac{1}{4}\omega_3-\frac{5}{2}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2u^2+\frac{1}{4}\omega_3\omega_1\omega_2-\frac{5}{4}\omega_3\omega_1u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4\omega_2+3v^2\omega_3\omega_4\omega_1-\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{2}v\omega_1^2\omega_2-\frac{1}{4}\omega_3\omega_4-\frac{5}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_3\omega_1^2+\frac{7}{4}v\omega_3\omega_1\omega_2+\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{2}v^2\omega_3\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{5}{4}\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_2-\frac{3}{2}v\omega_1\omega_2+v^2\omega_3-\frac{1}{2}v\omega_3\omega_1^2\omega_2-\frac{1}{4}v^2\omega_4^2+\omega_1+\frac{1}{2}v^2\omega_3\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-\frac{3}{2}\omega_4\omega_1-\frac{5}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_3\omega_1^2u^2-\frac{1}{4}\omega_3\omega_2-\frac{1}{2}v^2\omega_3^2\omega_4\omega_1+\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2+\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}v\omega_3^2\omega_1\omega_2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{1}{4}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2+v\omega_2-\frac{5}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}v\omega_3^2\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2+\frac{5}{4}\omega_4\omega_1u^2+\frac{1}{2}v^2\omega_3^2\omega_4+\frac{1}{4}v^2\omega_3^2\omega_1+\frac{1}{2}\omega_2+\frac{1}{4}\omega_4\omega_1^2+v^2\omega_4+\frac{1}{4}v\omega_4\omega_1\omega_2+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_2-\frac{1}{4}v\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-3\delta_t}_{x,y-\delta_l} = 3+\frac{1}{2}\omega_3^2\omega_4\omega_1+2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\omega_3\omega_1^2-\frac{15}{4}\omega_3-\frac{3}{4}\omega_3\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{19}{4}\omega_3\omega_1+\frac{3}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-4\omega_1+\frac{13}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{7}{4}\omega_3\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_1^2\omega_2+\omega_1^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -2+\frac{1}{4}\omega_3^2\omega_1u\omega_2-\omega_2^2-\frac{5}{4}v^2\omega_3\omega_1+\frac{7}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_1u^2\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{4}\omega_4\omega_2^2-\frac{1}{4}\omega_3\omega_4\omega_1u+\frac{1}{2}v^2\omega_3^2\omega_2-\frac{1}{4}v^2\omega_3^2\omega_1\omega_2+\frac{3}{2}\omega_1u\omega_2+\frac{5}{4}\omega_4u^2\omega_2-\frac{3}{4}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+4\omega_3{c_s}^2-\frac{5}{4}v^2\omega_4\omega_2+\frac{1}{2}\omega_3+\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1u^2\omega_2-\frac{1}{4}\omega_3\omega_4u^2+\frac{5}{4}\omega_3\omega_1u-\frac{11}{4}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2^2+\omega_3^2{c_s}^2\omega_2-\frac{1}{2}\omega_3^2u^2-\frac{5}{4}\omega_3\omega_1u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2-\frac{1}{2}\omega_1u\omega_2^2-\frac{1}{2}v^2\omega_3^2\omega_4\omega_2+\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2^2-\omega_1u+\frac{1}{2}\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2-\frac{7}{4}\omega_4\omega_2+\frac{3}{4}v^2\omega_3\omega_4\omega_1-\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4-\frac{5}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_4\omega_1\omega_2-\omega_3{c_s}^2\omega_1\omega_2^2+\frac{1}{2}\omega_3^2u^2\omega_2+\frac{7}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4^2\omega_2+\frac{1}{4}\omega_4^2u^2+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{1}{4}\omega_4^2\omega_2+\frac{3}{2}\omega_4+\frac{3}{4}v^2\omega_3\omega_2^2-\frac{11}{2}\omega_3{c_s}^2\omega_2+2v^2\omega_3-\frac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4u^2\omega_2-\frac{7}{4}\omega_3\omega_1u\omega_2-\frac{1}{4}v^2\omega_4^2+\omega_1+\frac{13}{4}v^2\omega_3\omega_4\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}v^2\omega_3\omega_1\omega_2^2+\frac{1}{4}\omega_4\omega_1u-3\omega_3\omega_4{c_s}^2+\frac{7}{2}\omega_3\omega_4{c_s}^2\omega_2-\frac{3}{4}\omega_3\omega_2-\frac{1}{4}\omega_4\omega_1u\omega_2+2\omega_3u^2-\frac{11}{4}\omega_3u^2\omega_2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{3}{4}\omega_3u^2\omega_2^2-\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4\omega_1-\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_4^2\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_2^2+\frac{1}{2}v^2\omega_3^2\omega_4-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2+\frac{1}{4}\omega_3\omega_4\omega_1u\omega_2+\frac{1}{4}v^2\omega_3^2\omega_1-\frac{1}{4}\omega_4^2u^2\omega_2-\frac{1}{4}\omega_3^2\omega_1u^2\omega_2+3\omega_2+v^2\omega_4+\frac{1}{2}\omega_3\omega_1u\omega_2^2-\frac{1}{2}v^2\omega_3\omega_4\omega_2^2+\frac{7}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_1u+\frac{3}{2}\omega_3{c_s}^2\omega_2^2-\frac{11}{4}v^2\omega_3\omega_2-\frac{1}{2}v^2\omega_3^2,$

$\alpha^{[\mu_5],t-3\delta_t}_{x-\delta_l,y} = 3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3+\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+$

$\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-2-\omega_2^2-\frac{1}{2}v^2\omega_4\omega_1\omega_2^2+\omega_3{c_s}^2\omega_1^2-\frac{1}{2}v^2\omega_3\omega_1^2\omega_2-\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1u^2\omega_2^2-3\omega_1\omega_2+\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_4^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}\omega_3\omega_1^2+\frac{1}{2}v^2\omega_4^2\omega_1+2\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1^2u^2-\frac{1}{2}\omega_4\omega_1^2\omega_2-\omega_3{c_s}^2-2v^2\omega_4\omega_2+\frac{1}{2}\omega_3+\frac{1}{2}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_3\omega_4u^2+\frac{1}{2}\omega_4\omega_1u^2\omega_2^2+\frac{1}{2}v^2\omega_3\omega_4-\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}v^2\omega_4\omega_2^2+\frac{1}{2}\omega_3\omega_1\omega_2+\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{5}{2}\omega_4\omega_1u^2\omega_2-\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_4u^2\omega_2^2+\omega_1\omega_2^2-3\omega_4\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1-\frac{3}{2}\omega_4u^2-\frac{1}{2}\omega_3\omega_4\omega_1u^2-\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}v^2\omega_3\omega_1^2+\frac{5}{2}v^2\omega_4\omega_1\omega_2+\omega_3{c_s}^2\omega_1\omega_2^2+\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_1u^2\omega_2+\frac{1}{2}\omega_4^2u^2+\frac{1}{2}\omega_4\omega_1^2u^2\omega_2+\frac{1}{2}\omega_4^2\omega_2+\frac{5}{2}\omega_4-\frac{1}{2}v^2\omega_3\omega_2^2+2\omega_3{c_s}^2\omega_2-\frac{1}{2}v^2\omega_3-\frac{1}{2}v^2\omega_4\omega_1^2\omega_2-\frac{1}{2}\omega_3\omega_4u^2\omega_2-\frac{1}{2}v^2\omega_4^2+2\omega_1-\frac{1}{2}v^2\omega_3\omega_4\omega_2-3\omega_4\omega_1+\frac{1}{2}v^2\omega_3\omega_1\omega_2^2+\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_4\omega_1\omega_2^2-\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{2}\omega_3\omega_1^2u^2-\omega_3\omega_2-\frac{1}{2}\omega_3u^2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{1}{2}\omega_3\omega_1^2u^2\omega_2+\omega_3u^2\omega_2+\frac{1}{2}v^2\omega_4\omega_1^2-\frac{1}{2}v^2\omega_4^2\omega_1\omega_2-\frac{1}{2}\omega_3u^2\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2-2v^2\omega_4\omega_1+\frac{1}{2}v^2\omega_4^2\omega_2+\frac{7}{2}\omega_4\omega_1\omega_2+2\omega_4\omega_1u^2+\frac{1}{2}\omega_4^2\omega_1u^2\omega_2+\frac{1}{2}\omega_3\omega_2^2-\frac{1}{2}\omega_4^2u^2\omega_2+3\omega_2+\frac{1}{2}\omega_4\omega_1^2+\frac{3}{2}v^2\omega_4-\omega_3{c_s}^2\omega_1^2\omega_2-\frac{1}{2}v^2\omega_3\omega_1\omega_2-\omega_3{c_s}^2\omega_2^2+v^2\omega_3\omega_2,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t}=3+\omega_2^2+5\omega_1\omega_2-\omega_4\omega_2^2+\omega_4^2\omega_1\omega_2+\omega_4\omega_1^2\omega_2-\omega_1\omega_2^2+5\omega_4\omega_2-\omega_4^2\omega_1-\omega_4^2\omega_2-4\omega_4-4\omega_1+5\omega_4\omega_1+\omega_4\omega_1\omega_2^2+\omega_4^2-6\omega_4\omega_1\omega_2-4\omega_2-\omega_4\omega_1^2-\omega_1^2\omega_2+\omega_1^2,$

$\alpha_{x+\delta_t,y}^{[\mu_1],t-3\delta_t}=-2-\frac{1}{4}\omega_3^2\omega_1u\omega_2-\omega_2^2-\frac{5}{4}v^2\omega_3\omega_1+\frac{7}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_1u^2\omega_2^2-\frac{3}{2}\omega_1\omega_2+\frac{1}{4}\omega_4\omega_2^2+\frac{1}{4}\omega_3\omega_4\omega_1u+\frac{1}{2}v^2\omega_3^2\omega_2-\frac{1}{4}v^2\omega_3^2\omega_1\omega_2-\frac{3}{2}\omega_1u\omega_2+\frac{5}{4}\omega_4u^2\omega_2-\frac{3}{4}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+4\omega_3{c_s}^2-\frac{5}{4}v^2\omega_4\omega_2+\frac{1}{2}\omega_3+\frac{1}{4}\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1u^2\omega_2-\frac{1}{4}\omega_3\omega_4u^2-\frac{5}{4}\omega_3\omega_1u-\frac{11}{4}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}v^2\omega_4\omega_2^2+\omega_3^2{c_s}^2\omega_2-\frac{1}{2}\omega_3^2u^2-\frac{5}{4}\omega_3\omega_1u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_1u\omega_2^2-\frac{1}{2}v^2\omega_3^2\omega_4\omega_2+\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4u^2\omega_2^2+\omega_1u+\frac{1}{2}\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2-\frac{7}{4}\omega_4\omega_2+\frac{3}{4}v^2\omega_3\omega_4\omega_1-\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2+\frac{1}{4}\omega_3\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4-\frac{5}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_4\omega_1\omega_2-\omega_3{c_s}^2\omega_1\omega_2^2+\frac{1}{2}\omega_3^2u^2\omega_2+\frac{7}{4}\omega_3\omega_1u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4^2\omega_2+\frac{1}{4}\omega_4^2u^2+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{1}{4}\omega_4^2\omega_2+\frac{3}{2}\omega_4+\frac{3}{4}v^2\omega_3\omega_2^2-\frac{11}{2}\omega_3{c_s}^2\omega_2+2v^2\omega_3-\frac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_4u^2\omega_2+\frac{7}{4}\omega_3\omega_1u\omega_2-\frac{1}{4}v^2\omega_4^2+\omega_1+\frac{13}{4}v^2\omega_3\omega_4\omega_2-\frac{1}{2}\omega_4\omega_1-\frac{1}{2}v^2\omega_3\omega_1\omega_2^2-\frac{1}{4}\omega_4\omega_1u-3\omega_3\omega_4{c_s}^2+\frac{7}{2}\omega_3\omega_4{c_s}^2\omega_2-\frac{3}{4}\omega_3\omega_2+\frac{1}{4}\omega_4\omega_1u\omega_2+2\omega_3u^2-\frac{11}{4}\omega_3u^2\omega_2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{3}{4}\omega_3u^2\omega_2^2-\frac{1}{4}\omega_4^2-\frac{1}{4}v^2\omega_4\omega_1-\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_4^2\omega_2+\frac{1}{2}\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_2^2+\frac{1}{2}v^2\omega_3^2\omega_4-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2-\frac{1}{4}\omega_3\omega_4\omega_1u\omega_2+\frac{1}{4}v^2\omega_3^2\omega_1-\frac{1}{4}\omega_4^2u^2\omega_2-\frac{1}{4}\omega_3^2\omega_1u^2\omega_2+3\omega_2+v^2\omega_4-\frac{1}{2}\omega_3\omega_1u\omega_2^2-\frac{1}{2}v^2\omega_3\omega_4\omega_2^2+\frac{7}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1u+\frac{3}{2}\omega_3{c_s}^2\omega_2^2-\frac{11}{4}v^2\omega_3\omega_2-\frac{1}{2}v^2\omega_3^2,$

$\alpha_{x+\delta_t,y}^{[\mu_5],t-3\delta_t}=3+\omega_2^2+2\omega_1\omega_2-\frac{1}{2}\omega_4\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{15}{4}\omega_3-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_1\omega_2^2+\frac{13}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-\frac{3}{2}\omega_1+\frac{3}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{19}{4}\omega_3\omega_2-\frac{1}{4}\omega_3^2\omega_1-\frac{3}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\omega_3\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=-1-\frac{1}{4}v\omega_3\omega_4\omega_2-\frac{5}{4}v^2\omega_3\omega_1+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1^2-\frac{1}{4}\omega_4^2\omega_1u^2+\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2+\frac{1}{4}v^2\omega_4^2\omega_1+\frac{1}{4}\omega_4u^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1^2u^2+2\omega_3{c_s}^2-\frac{1}{4}v^2\omega_4\omega_2+\frac{5}{4}v\omega_3\omega_2+\frac{1}{4}\omega_3-\frac{5}{2}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3^2u^2+\frac{1}{4}\omega_3\omega_1\omega_2-\frac{5}{4}\omega_3\omega_1u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1u^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_4\omega_2+3v^2\omega_3\omega_4\omega_1-\omega_4u^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2-\frac{1}{2}v\omega_1^2\omega_2-\frac{1}{4}\omega_3\omega_4-\frac{5}{2}\omega_3{c_s}^2\omega_1+\frac{1}{4}v^2\omega_3\omega_1^2-\frac{7}{4}v\omega_3\omega_1\omega_2+\frac{1}{4}v^2\omega_4\omega_1\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2u^2-\frac{1}{2}v^2\omega_3\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{5}{4}\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_2+\frac{3}{2}v\omega_1\omega_2+v^2\omega_3+\frac{1}{2}v\omega_3\omega_1^2\omega_2-\frac{1}{4}v^2\omega_4^2+\omega_1+\frac{1}{2}v^2\omega_3\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-\frac{3}{2}\omega_4\omega_1-\frac{5}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}\omega_3\omega_1^2u^2-\frac{1}{4}\omega_3\omega_2-\frac{1}{2}v^2\omega_3^2\omega_4\omega_1+\omega_3u^2-\frac{1}{4}\omega_3u^2\omega_2+\frac{1}{4}v^2\omega_4\omega_1^2+\frac{1}{4}v\omega_3^2\omega_1\omega_2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{1}{4}\omega_3\omega_4\omega_1-\frac{1}{4}\omega_4^2-v\omega_2-\frac{5}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{4}v\omega_3^2\omega_2+\frac{1}{4}\omega_4\omega_1\omega_2+\frac{5}{4}\omega_4\omega_1u^2+\frac{1}{2}v^2\omega_3^2\omega_4+\frac{1}{4}v^2\omega_3^2\omega_1+\frac{1}{2}\omega_2+\frac{1}{4}\omega_4\omega_1^2+v^2\omega_4-\frac{1}{4}v\omega_4\omega_1\omega_2+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_2+\frac{1}{4}v\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2,$

$\alpha_{x,y+\delta_l}^{[\mu_5],t-3\delta_t}=3+\frac{1}{2}\omega_3^2\omega_4\omega_1+2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\omega_3\omega_1^2-\frac{15}{4}\omega_3-\frac{3}{4}\omega_3\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{19}{4}\omega_3\omega_1+\frac{3}{4}\omega_4\omega_2+\frac{13}{4}\omega_3\omega_4+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1+\frac{1}{4}\omega_3^2\omega_1\omega_2-\frac{11}{4}\omega_4-\frac{1}{2}\omega_3^2\omega_4-4\omega_1+\frac{13}{4}\omega_4\omega_1+\frac{3}{4}\omega_3^2+\frac{7}{4}\omega_3\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-\frac{3}{4}\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1^2-\frac{15}{4}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2-\frac{3}{4}\omega_4\omega_1\omega_2-\frac{3}{2}\omega_2-\frac{1}{2}\omega_4\omega_1^2-\frac{1}{2}\omega_1^2\omega_2+\omega_1^2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=2+\omega_2^2+\frac{1}{2}v^2\omega_4\omega_1\omega_2^2+\frac{5}{2}v^2\omega_3\omega_1-\omega_3{c_s}^2\omega_1^2+\frac{1}{2}v^2\omega_3\omega_1^2\omega_2-6\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1u^2\omega_2^2+3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1^2-\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}\omega_4^2\omega_1\omega_2+\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_3^2\omega_2+\frac{1}{2}v^2\omega_3^2\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1^2+\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{2}v^2\omega_4^2\omega_1-\frac{5}{2}\omega_4u^2\omega_2+7v^2\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}\omega_4\omega_1^2u^2+\omega_3^2\omega_4{c_s}^2\omega_2+\frac{1}{2}\omega_4\omega_1^2\omega_2-4\omega_3{c_s}^2+\frac{5}{2}v^2\omega_4\omega_2-\frac{1}{2}\omega_3-\frac{1}{2}\omega_3\omega_4\omega_2-\frac{1}{2}\omega_4\omega_1u^2\omega_2^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2^2+5v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_1\omega_2^2-\omega_3\omega_4^2{c_s}^2-\frac{1}{2}v^2\omega_4\omega_2^2-\omega_3^2{c_s}^2\omega_2+\frac{1}{2}\omega_3^2u^2-\frac{1}{2}\omega_3\omega_1\omega_2+\frac{5}{2}\omega_3\omega_1u^2-v^2\omega_3\omega_4^2+7\omega_3\omega_4{c_s}^2\omega_1\omega_2+3\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_2-6\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_4u^2\omega_2^2-v^2\omega_3\omega_4\omega_1\omega_2^2-\omega_1\omega_2^2+\omega_3\omega_4^2{c_s}^2\omega_2+3\omega_4\omega_2-6v^2\omega_3\omega_4\omega_1+2\omega_4u^2-\omega_3^2\omega_4{c_s}^2+\frac{1}{2}\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1\omega_2+$

$$5\omega_3{c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_1^2 - 3v^2\omega_4\omega_1\omega_2 + \omega_3{c_s}^2\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3^2u^2\omega_2 - \omega_3^2\omega_4{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 - 3\omega_3\omega_1u^2\omega_2 + v^2\omega_3\omega_4^2\omega_2 - \tfrac{1}{2}\omega_4^2u^2 + v^2\omega_3\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3^2\omega_1u^2 - \tfrac{1}{2}\omega_4\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_2 - \tfrac{5}{2}\omega_4 - \tfrac{1}{2}v^2\omega_3\omega_2^2 + 5\omega_3{c_s}^2\omega_2 - 2v^2\omega_3 + \omega_3^2{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2 - 2\omega_1 - 6v^2\omega_3\omega_4\omega_2 + \omega_3\omega_4^2{c_s}^2\omega_1 + 3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2 + 5\omega_3\omega_4{c_s}^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2^2 - 6\omega_3\omega_4{c_s}^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_1^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2u^2 + \omega_3\omega_2 + v^2\omega_3^2\omega_4\omega_1 - 2\omega_3u^2 - \tfrac{1}{2}\omega_3\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2 + \tfrac{5}{2}\omega_3u^2\omega_2 - v^2\omega_3^2\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_4\omega_1^2 - \omega_3^2{c_s}^2\omega_1 + \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3u^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 - v^2\omega_3\omega_4\omega_1^2\omega_2 + \tfrac{5}{2}v^2\omega_4\omega_1 + \omega_3^2\omega_4{c_s}^2\omega_1 + \omega_3^2{c_s}^2 - \tfrac{1}{2}v^2\omega_4^2\omega_2 - \tfrac{7}{2}\omega_4\omega_1\omega_2 - \tfrac{5}{2}\omega_4\omega_1u^2 - \tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \omega_3\omega_4^2{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_2^2 - v^2\omega_3^2\omega_4 + \omega_3\omega_4{c_s}^2\omega_2^2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - v^2\omega_3\omega_4^2\omega_1\omega_2 + \tfrac{1}{2}\omega_4^2u^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2 - 3\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 - 2v^2\omega_4 + v^2\omega_3\omega_4\omega_2^2 + \omega_3{c_s}^2\omega_1^2\omega_2 - 3v^2\omega_3\omega_1\omega_2 - \omega_3{c_s}^2\omega_2^2 + \tfrac{5}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v^2\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_5],t-4\delta_t} = -4 - \omega_2^2 - \omega_3^2\omega_4\omega_1 - 6\omega_1\omega_2 + \omega_4\omega_2^2 - \omega_4^2\omega_1\omega_2 + \omega_3\omega_4\omega_1\omega_2^2 + \omega_3\omega_4^2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_1^2 - \omega_4\omega_1^2\omega_2 + 5\omega_3 + 7\omega_3\omega_4\omega_2 - \omega_3\omega_1\omega_2^2 - \omega_3\omega_4\omega_2^2 + 7\omega_3\omega_1\omega_2 + \omega_3^2\omega_2 - 6\omega_3\omega_1 + \omega_1\omega_2^2 - 6\omega_4\omega_2 - 6\omega_3\omega_4 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_4^2\omega_1 - \omega_3^2\omega_1\omega_2 + \omega_4^2\omega_2 + 5\omega_4 + \omega_3\omega_4\omega_1^2\omega_2 + \omega_3^2\omega_4 + 5\omega_1 - 6\omega_4\omega_1 - \omega_3^2 + \omega_3\omega_4^2\omega_1\omega_2 - \omega_4\omega_1\omega_2^2 - 6\omega_3\omega_2 - \omega_3\omega_1^2\omega_2 + \omega_3^2\omega_1 - \omega_3\omega_4\omega_1^2 + 7\omega_3\omega_4\omega_1 - \omega_4^2 + 7\omega_4\omega_1\omega_2 + \omega_3\omega_2^2 - \omega_3\omega_4^2\omega_2 + 5\omega_2 + \omega_4\omega_1^2 - \omega_3^2\omega_4\omega_2 + \omega_1^2\omega_2 + \omega_3^2\omega_4\omega_1\omega_2 - \omega_1^2,$$

7 CLBM 1: relaxation of k_{00}, k_{10}, k_{01}, k_{20}, k_{02}

7.1 Definitions

Matrix $\mathbf{A} = \mathbf{K}^{-1}\mathbf{S}\mathbf{K}$:

$$\begin{aligned}
\mathbf{A}_{1,1} &= -\omega_4v^2 + 2v^2\omega_2 - u^2\omega_3 - u^2\omega_0 + \omega_0 - v^2\omega_0 + 2u^2\omega_1,\\
\mathbf{A}_{1,2} &= -2u\omega_1 - \omega_3 - \omega_4v^2 + 2v^2\omega_2 - u^2\omega_3 - u^2\omega_0 + \omega_0 + 2u\omega_3 - v^2\omega_0 + 2u^2\omega_1,\\
\mathbf{A}_{1,3} &= 2\omega_4v - \omega_4 - \omega_4v^2 + 2v^2\omega_2 - u^2\omega_3 - u^2\omega_0 + \omega_0 - 2v\omega_2 - v^2\omega_0 + 2u^2\omega_1,\\
\mathbf{A}_{1,4} &= 2u\omega_1 - \omega_3 - \omega_4v^2 + 2v^2\omega_2 - u^2\omega_3 - u^2\omega_0 + \omega_0 - 2u\omega_3 - v^2\omega_0 + 2u^2\omega_1,\\
\mathbf{A}_{1,5} &= -2\omega_4v - \omega_4 - \omega_4v^2 + 2v^2\omega_2 - u^2\omega_3 - u^2\omega_0 + \omega_0 + 2v\omega_2 - v^2\omega_0 + 2u^2\omega_1,\\
\mathbf{A}_{2,1} &= \frac{1}{2}u(\omega_0 - \omega_1(1+2u) + u(\omega_3+\omega_0)),\\
\mathbf{A}_{2,2} &= \frac{1}{2}u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}u\omega_0 + \frac{1}{2}\omega_3 + \frac{1}{2}u^2\omega_3 + \frac{1}{2}u^2\omega_0 - u\omega_3 - u^2\omega_1,\\
\mathbf{A}_{2,3} &= \frac{1}{2}u(\omega_0 - \omega_1(1+2u) + u(\omega_3+\omega_0)),\\
\mathbf{A}_{2,4} &= \frac{1}{2}(\omega_3 - \omega_1(1+2u) + u(\omega_3+\omega_0))(1+u),\\
\mathbf{A}_{2,5} &= \frac{1}{2}u(\omega_0 - \omega_1(1+2u) + u(\omega_3+\omega_0)),\\
\mathbf{A}_{3,1} &= \frac{1}{2}v(\omega_4v + (\omega_0 - 2\omega_2)v + \omega_0 - \omega_2),\\
\mathbf{A}_{3,2} &= \frac{1}{2}v(\omega_4v + (\omega_0 - 2\omega_2)v + \omega_0 - \omega_2),\\
\mathbf{A}_{3,3} &= -\omega_4v + \frac{1}{2}\omega_4 + \frac{1}{2}v\omega_0 + \frac{1}{2}\omega_4v^2 - v^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{2}v^2\omega_0 + \frac{1}{2}\omega_2,\\
\mathbf{A}_{3,4} &= \frac{1}{2}v(\omega_4v + (\omega_0 - 2\omega_2)v + \omega_0 - \omega_2),\\
\mathbf{A}_{3,5} &= \frac{1}{2}(1+v)((\omega_0 - 2\omega_2)v - \omega_2 + (1+v)\omega_4),\\
\mathbf{A}_{4,1} &= -\frac{1}{2}u(\omega_0 - u(\omega_3+\omega_0) + (-1+2u)\omega_1),\\
\mathbf{A}_{4,2} &= -\frac{1}{2}(\omega_3 - u(\omega_3+\omega_0) + (-1+2u)\omega_1)(-1+u),
\end{aligned}$$

$$
\begin{aligned}
\mathbf{A}_{4,3} &= -\frac{1}{2}u(\omega_0 - u(\omega_3 + \omega_0) + (-1 + 2u)\omega_1),\\
\mathbf{A}_{4,4} &= -\frac{1}{2}u\omega_1 + \frac{1}{2}\omega_1 - \frac{1}{2}u\omega_0 + \frac{1}{2}\omega_3 + \frac{1}{2}u^2\omega_3 + \frac{1}{2}u^2\omega_0 + u\omega_3 - u^2\omega_1,\\
\mathbf{A}_{4,5} &= -\frac{1}{2}u(\omega_0 - u(\omega_3 + \omega_0) + (-1 + 2u)\omega_1),\\
\mathbf{A}_{5,1} &= \frac{1}{2}v(\omega_4 v + (\omega_0 - 2\omega_2)v - \omega_0 + \omega_2),\\
\mathbf{A}_{5,2} &= \frac{1}{2}v(\omega_4 v + (\omega_0 - 2\omega_2)v - \omega_0 + \omega_2),\\
\mathbf{A}_{5,3} &= \frac{1}{2}((\omega_0 - 2\omega_2)v + \omega_4(-1 + v) + \omega_2)(-1 + v),\\
\mathbf{A}_{5,4} &= \frac{1}{2}v(\omega_4 v + (\omega_0 - 2\omega_2)v - \omega_0 + \omega_2),\\
\mathbf{A}_{5,5} &= \omega_4 v + \frac{1}{2}\omega_4 - \frac{1}{2}v\omega_0 + \frac{1}{2}\omega_4 v^2 - v^2\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{2}v^2\omega_0 + \frac{1}{2}\omega_2.
\end{aligned}
$$

where

$$\mathbf{S} = \operatorname{diag}(\omega_0, \omega_1, \omega_2, \omega_3, \omega_4)$$

and

$$\mathbf{K} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ -u & 1-u & -u & -u-1 & -u \\ -v & -v & 1-v & -v & -v-1 \\ u^2 & (1-u)^2 & u^2 & (u+1)^2 & u^2 \\ v^2 & v^2 & (1-v)^2 & v^2 & (v+1)^2 \end{pmatrix}$$

Matrix $\mathbf{B}$:

$$
\begin{aligned}
\mathbf{B}_{1,1} &= 0,\\
\mathbf{B}_{1,2} &= -1 + 2u\omega_1 + \omega_3 - 2u\omega_3,\\
\mathbf{B}_{1,3} &= -1 - 2\omega_4 v + \omega_4 + 2v\omega_2,\\
\mathbf{B}_{1,4} &= -1 - 2u\omega_1 + \omega_3 + 2u\omega_3,\\
\mathbf{B}_{1,5} &= -1 + 2\omega_4 v + \omega_4 - 2v\omega_2,\\
\mathbf{B}_{2,1} &= -1 + u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 - u\omega_3,\\
\mathbf{B}_{2,2} &= 0,\\
\mathbf{B}_{2,3} &= -1 + u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 - u\omega_3,\\
\mathbf{B}_{2,4} &= -1 + 2u\omega_1 + \omega_1 - 2u\omega_3,\\
\mathbf{B}_{2,5} &= -1 + u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 - u\omega_3,\\
\mathbf{B}_{3,1} &= -1 - \omega_4 v + \frac{1}{2}\omega_4 + v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{3,2} &= -1 - \omega_4 v + \frac{1}{2}\omega_4 + v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{3,3} &= 0,\\
\mathbf{B}_{3,4} &= -1 - \omega_4 v + \frac{1}{2}\omega_4 + v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{3,5} &= -1 - 2\omega_4 v + 2v\omega_2 + \omega_2,\\
\mathbf{B}_{4,1} &= -1 - u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 + u\omega_3,\\
\mathbf{B}_{4,2} &= -1 - 2u\omega_1 + \omega_1 + 2u\omega_3,
\end{aligned}
$$

$$
\begin{aligned}
\mathbf{B}_{4,3} &= -1 - u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 + u\omega_3,\\
\mathbf{B}_{4,4} &= 0,\\
\mathbf{B}_{4,5} &= -1 - u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_3 + u\omega_3,\\
\mathbf{B}_{5,1} &= -1 + \omega_4 v + \frac{1}{2}\omega_4 - v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{5,2} &= -1 + \omega_4 v + \frac{1}{2}\omega_4 - v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{5,3} &= -1 + 2\omega_4 v - 2v\omega_2 + \omega_2,\\
\mathbf{B}_{5,4} &= -1 + \omega_4 v + \frac{1}{2}\omega_4 - v\omega_2 + \frac{1}{2}\omega_2,\\
\mathbf{B}_{5,5} &= 0.
\end{aligned}
$$

7.2 EFDE for μ_1

$$
\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},
$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}v^2\omega_4 - \frac{1}{2}\omega_2 + \omega_2 v^2 + \frac{1}{2}{c_s}^2\omega_4 + v\omega_4 - \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}u^2\omega_3 - \frac{1}{2}u\omega_1 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3 + u^2\omega_1 - \frac{1}{2}\omega_1 + u\omega_3.$

$\alpha_{x,y}^{[\mu_1],t} = 1 + u^2\omega_3 + v^2\omega_4 - {c_s}^2\omega_3 - 2\omega_2 v^2 - {c_s}^2\omega_4 - 2u^2\omega_1.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 - \frac{1}{2}u^2\omega_3 + \frac{1}{2}u\omega_1 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3 + u^2\omega_1 - \frac{1}{2}\omega_1 - u\omega_3.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}v^2\omega_4 - \frac{1}{2}\omega_2 + \omega_2 v^2 + \frac{1}{2}{c_s}^2\omega_4 - v\omega_4 - \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}uv\omega_4\omega_1 + \frac{1}{2}u\omega_3 v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3 v\omega_4 + \frac{1}{2}\omega_2 u^2\omega_1 + \frac{1}{2}\omega_2\omega_3 v^2 + \frac{1}{2}u\omega_3\omega_4 + \frac{1}{2}u^2\omega_3 + \frac{1}{2}u\omega_1 + \frac{1}{2}\omega_2 u\omega_3 v + \frac{1}{2}\omega_2 u\omega_3 + \frac{1}{2}u^2\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_2 v\omega_1 + \frac{1}{2}v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{4}\omega_2\omega_1 - \omega_2 u\omega_3 v^2 - \frac{1}{4}\omega_2\omega_3 v + \frac{1}{2}{c_s}^2 u\omega_4\omega_1 + \frac{1}{2}v\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4 - \frac{1}{4}\omega_3 v^2\omega_4 + \frac{1}{2}u^2\omega_3 v\omega_4 - \omega_2 v^2 + \frac{1}{2}\omega_3 v\omega_4 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{4}{c_s}^2\omega_4\omega_1 + \frac{1}{2}\omega_3 - u^2 v\omega_4\omega_1 - \frac{1}{2}{c_s}^2 u\omega_3\omega_4 + \omega_2 uv^2\omega_1 - \frac{1}{2}{c_s}^2\omega_4 - \frac{1}{4}v^2\omega_4\omega_1 + \omega_2 u^2 v\omega_1 - u^2\omega_1 - \frac{1}{2}uv^2\omega_4\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{2}\omega_2 v^2\omega_1 - \frac{1}{4}u^2\omega_3\omega_4 - v\omega_4 - \frac{1}{4}u\omega_4\omega_1 - u\omega_3 v\omega_4 + \frac{1}{2}{c_s}^2\omega_2\omega_3 v - \frac{1}{2}\omega_2 u^2\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v - \frac{1}{4}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 - u\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + {c_s}^2\omega_3 v\omega_4 + \frac{1}{2}\omega_2 v\omega_4 - \omega_2 u^2\omega_1 - u^2\omega_3 - u^2\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_4 - \frac{1}{2}v^2\omega_4 + {c_s}^2\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}{c_s}^2\omega_3\omega_4 - u^2\omega_3 v\omega_4 + \omega_2 v^2 + 2u^2 v\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_4 - 2\omega_2 u^2 v\omega_1 + 2u^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3 + \frac{1}{2}u^2\omega_3\omega_4 - v\omega_4 - {c_s}^2\omega_2\omega_3 v + \omega_2 u^2\omega_3 v + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v^2\omega_4 + \frac{1}{2}\omega_2 v,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{2}uv\omega_4\omega_1 - \frac{1}{2}u\omega_3 v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3 v\omega_4 + \frac{1}{2}\omega_2 u^2\omega_1 + \frac{1}{2}\omega_2\omega_3 v^2 - \frac{1}{2}u\omega_3\omega_4 + \frac{1}{2}u^2\omega_3 - \frac{1}{2}u\omega_1 - \frac{1}{2}\omega_2 u\omega_3 v - \frac{1}{2}\omega_2 u\omega_3 + \frac{1}{2}u^2\omega_4\omega_1 - \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_2 v\omega_1 + \frac{1}{2}v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{4}\omega_2\omega_1 + \omega_2 u\omega_3 v^2 - \frac{1}{4}\omega_2\omega_3 v - \frac{1}{2}{c_s}^2 u\omega_4\omega_1 + \frac{1}{2}v\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4 - \frac{1}{4}\omega_3 v^2\omega_4 + \frac{1}{2}u^2\omega_3 v\omega_4 - \omega_2 v^2 + \frac{1}{2}\omega_3 v\omega_4 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{4}{c_s}^2\omega_4\omega_1 + \frac{1}{2}\omega_3 - u^2 v\omega_4\omega_1 + \frac{1}{2}{c_s}^2 u\omega_3\omega_4 - \omega_2 uv^2\omega_1 - \frac{1}{2}{c_s}^2\omega_4 - \frac{1}{4}v^2\omega_4\omega_1 + \omega_2 u^2 v\omega_1 - u^2\omega_1 + \frac{1}{2}uv^2\omega_4\omega_1 + \frac{1}{4}{c_s}^2\omega_2\omega_3 - \frac{1}{4}\omega_2 u^2\omega_3 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{2}\omega_2 v^2\omega_1 - \frac{1}{4}u^2\omega_3\omega_4 - v\omega_4 + \frac{1}{4}u\omega_4\omega_1 + u\omega_3 v\omega_4 + \frac{1}{2}{c_s}^2\omega_2\omega_3 v - \frac{1}{2}\omega_2 u^2\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v + \frac{1}{4}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 + u\omega_3,$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 - u\omega_3 v^2\omega_4 - \omega_2\omega_3 v^2 - \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{2}u\omega_3\omega_1 - v^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + 2\omega_2 u\omega_3 v^2 - {c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3 v^2\omega_4 + 2\omega_2 v^2 - \tfrac{1}{2}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 + {c_s}^2 u\omega_3\omega_4 - 2\omega_2 uv^2\omega_1 + {c_s}^2\omega_4 + \tfrac{1}{2}v^2\omega_4\omega_1 + u^2\omega_1 + uv^2\omega_4\omega_1 - \omega_2 v^2\omega_1 - \tfrac{1}{2}u^2\omega_3\omega_1 + \tfrac{1}{2}\omega_1 - u\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 - \omega_3\omega_1 + u^2\omega_3 + {c_s}^2\omega_2\omega_4 + v^2\omega_4 - {c_s}^2\omega_3 + \omega_2 + {c_s}^2\omega_3\omega_1 - \omega_2\omega_4 - 2\omega_2 v^2 + \omega_3 - {c_s}^2\omega_4 - 2u^2\omega_1 + \omega_4 + u^2\omega_3\omega_1 + \omega_2 v^2\omega_4 + \omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + u\omega_3 v^2\omega_4 - \omega_2\omega_3 v^2 - \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}u\omega_3\omega_1 - v^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3\omega_1 - 2\omega_2 u\omega_3 v^2 + {c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3 v^2\omega_4 + 2\omega_2 v^2 - \tfrac{1}{2}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 - {c_s}^2 u\omega_3\omega_4 + 2\omega_2 uv^2\omega_1 + {c_s}^2\omega_4 + \tfrac{1}{2}v^2\omega_4\omega_1 + u^2\omega_1 - uv^2\omega_4\omega_1 - \omega_2 v^2\omega_1 - \tfrac{1}{2}u^2\omega_3\omega_1 + \tfrac{1}{2}\omega_1 + u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{2}uv\omega_4\omega_1 + \tfrac{1}{2}u\omega_3 v^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3 v\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_1 + \tfrac{1}{2}\omega_2\omega_3 v^2 + \tfrac{1}{2}u\omega_3\omega_4 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}\omega_2 u\omega_3 v + \tfrac{1}{2}\omega_2 u\omega_3 + \tfrac{1}{2}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2\omega_1 - \omega_2 u\omega_3 v^2 + \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}{c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3 v^2\omega_4 - \tfrac{1}{2}u^2\omega_3 v\omega_4 - \omega_2 v^2 - \tfrac{1}{2}\omega_3 v\omega_4 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 + u^2 v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2 u\omega_3\omega_4 + \omega_2 uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 - \omega_2 u^2 v\omega_1 - u^2\omega_1 - \tfrac{1}{2}uv^2\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2 v^2\omega_1 - \tfrac{1}{4}u^2\omega_3\omega_4 + v\omega_4 - \tfrac{1}{4}u\omega_4\omega_1 + u\omega_3 v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 v + \tfrac{1}{2}\omega_2 u^2\omega_3 v + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2 v - \tfrac{1}{4}\omega_2 u\omega_1 + \tfrac{1}{2}\omega_1 - u\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - {c_s}^2\omega_3 v\omega_4 - \tfrac{1}{2}\omega_2 v\omega_4 - \omega_2 u^2\omega_1 - u^2\omega_3 - u^2\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_4 - \tfrac{1}{2}v^2\omega_4 + {c_s}^2\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4 + u^2\omega_3 v\omega_4 + \omega_2 v^2 - 2u^2 v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_4 + 2\omega_2 u^2 v\omega_1 + 2u^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 + \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}u^2\omega_3\omega_4 + v\omega_4 + {c_s}^2\omega_2\omega_3 v - \omega_2 u^2\omega_3 v + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2 v^2\omega_4 - \tfrac{1}{2}\omega_2 v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{2}uv\omega_4\omega_1 - \tfrac{1}{2}u\omega_3 v^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3 v\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_1 + \tfrac{1}{2}\omega_2\omega_3 v^2 - \tfrac{1}{2}u\omega_3\omega_4 + \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{2}u\omega_1 + \tfrac{1}{2}\omega_2 u\omega_3 v - \tfrac{1}{2}\omega_2 u\omega_3 + \tfrac{1}{2}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2\omega_1 + \omega_2 u\omega_3 v^2 + \tfrac{1}{4}\omega_2\omega_3 v - \tfrac{1}{2}{c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3 v^2\omega_4 - \tfrac{1}{2}u^2\omega_3 v\omega_4 - \omega_2 v^2 - \tfrac{1}{2}\omega_3 v\omega_4 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 + u^2 v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2 u\omega_3\omega_4 - \omega_2 uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 - \omega_2 u^2 v\omega_1 - u^2\omega_1 + \tfrac{1}{2}uv^2\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_2 u^2\omega_3 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2 v^2\omega_1 - \tfrac{1}{4}u^2\omega_3\omega_4 + v\omega_4 + \tfrac{1}{4}u\omega_4\omega_1 - u\omega_3 v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 v + \tfrac{1}{2}\omega_2 u^2\omega_3 v + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_2 u\omega_1 + \tfrac{1}{2}\omega_1 + u\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}uv\omega_4\omega_1 - \tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}u\omega_3 v^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3 v\omega_4 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_2 v\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_1 + \tfrac{1}{2}\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_2 u^2\omega_3 v\omega_1 - \tfrac{1}{2}u\omega_3\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 v\omega_1 + \tfrac{1}{2}u^2\omega_3 - \tfrac{1}{2}u\omega_3 v\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_3 v\omega_4 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}u\omega_3\omega_1 - \tfrac{1}{2}\omega_2 u\omega_3 v - \tfrac{1}{2}\omega_2 u\omega_3 + \tfrac{1}{2}u^2\omega_3 v\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_4 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2 u^2\omega_3\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}{c_s}^2\omega_2 u\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2 uv\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_2 u\omega_3 v^2\omega_4 - \omega_2 u\omega_3 v^2 + \tfrac{1}{4}\omega_2\omega_3 v + \tfrac{1}{2}{c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3 v^2\omega_4 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_3 v\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 - \omega_2 v^2 - \tfrac{1}{2}\omega_3 v\omega_4 + \tfrac{1}{4}\omega_2 u\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{2}\omega_2 u\omega_3 v\omega_1 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - u^2 v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2 u\omega_3\omega_4 - \tfrac{1}{2}\omega_2 uv^2\omega_4\omega_1 + \omega_2 uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_2 u\omega_3 v\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2 u\omega_3\omega_4 + \omega_2 u^2 v\omega_1 + \tfrac{1}{4}\omega_2 v\omega_4\omega_1 - u^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3 v^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3 v\omega_4\omega_1 - \tfrac{1}{2}uv^2\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 - \tfrac{1}{4}\omega_2 u^2\omega_3 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2 v^2\omega_1 - \tfrac{1}{4}u^2\omega_3\omega_4 + v\omega_4 + \tfrac{1}{4}u\omega_4\omega_1 + u\omega_3 v\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3 v - \tfrac{1}{2}\omega_2 u^2\omega_3 v - \tfrac{1}{2}\omega_4 + \tfrac{1}{2}u^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2 v^2\omega_4 + \tfrac{1}{4}u\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_2 v + \tfrac{1}{4}\omega_2 u\omega_1 - \tfrac{1}{2}\omega_1 + u\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}\omega_3 v^2\omega_4\omega_1 + {c_s}^2\omega_3\omega_4\omega_1 + {c_s}^2\omega_3 v\omega_4 + \omega_3\omega_1 - \omega_2 u^2\omega_1 - \omega_2\omega_3 v^2 + \omega_2 u^2\omega_3 v\omega_1 + {c_s}^2\omega_2\omega_3 v\omega_1 - u^2\omega_3 - \tfrac{1}{2}\omega_2\omega_3 v\omega_1 - u^2\omega_3 v\omega_4\omega_1 - u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_2 v\omega_1 - \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_3\omega_1 + {c_s}^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - {c_s}^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2\omega_1 + \tfrac{1}{2}\omega_2\omega_3 v - v\omega_4\omega_1 - {c_s}^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3 v^2\omega_4 + \tfrac{1}{2}u^2\omega_3\omega_4\omega_1 - u^2\omega_3 v\omega_4 + \omega_2 v^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \omega_3 v\omega_4 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_4\omega_1 - \omega_3 + 2u^2 v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_4 + \tfrac{1}{2}v^2\omega_4\omega_1 - 2\omega_2 u^2 v\omega_1 - \tfrac{1}{2}\omega_2\omega_3\omega_1 + 2u^2\omega_1 - {c_s}^2\omega_3 v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 + \omega_3 v\omega_4\omega_1 + \tfrac{1}{2}\omega_2 u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1 - \omega_2 v^2\omega_1 + \tfrac{1}{2}u^2\omega_3\omega_4 + v\omega_4 - {c_s}^2\omega_2\omega_3 v + \omega_2 u^2\omega_3 v - \tfrac{1}{2}\omega_4 - u^2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 v - \omega_1 + \omega_2\omega_3 v^2\omega_1,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}uv\omega_4\omega_1 - \tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}u\omega_3 v^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3 v\omega_4 - \tfrac{1}{4}\omega_2 v^2\omega_4\omega_1 - \tfrac{1}{2}\omega_2 v\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_1 + \tfrac{1}{2}\omega_2\omega_3 v^2 - \tfrac{1}{2}\omega_2 u^2\omega_3 v\omega_1 + \tfrac{1}{2}u\omega_3\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 v\omega_1 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{2}u\omega_3 v\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_3 v\omega_4 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{2}u\omega_3\omega_1 + \tfrac{1}{2}\omega_2 u\omega_3 v + \tfrac{1}{2}\omega_2 u\omega_3 + \tfrac{1}{2}u^2\omega_3 v\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_4 + \tfrac{1}{4}\omega_2 v\omega_1 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2 u^2\omega_3\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}{c_s}^2\omega_2 u\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 uv\omega_4\omega_1 + \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_2 u\omega_3 v^2\omega_4 + \omega_2 u\omega_3 v^2 + \tfrac{1}{4}\omega_2\omega_3 v - \tfrac{1}{2}{c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3 v^2\omega_4 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_3 v\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 - \omega_2 v^2 - \tfrac{1}{2}\omega_3 v\omega_4 - \tfrac{1}{4}\omega_2 u\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{2}\omega_2 u\omega_3 v\omega_1 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - u^2 v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2 u\omega_3\omega_4 + \tfrac{1}{2}\omega_2 uv^2\omega_4\omega_1 - \omega_2 uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{2}\omega_2 u\omega_3 v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2 u\omega_3\omega_4 + \omega_2 u^2 v\omega_1 + \tfrac{1}{4}\omega_2 v\omega_4\omega_1 - u^2\omega_1 - \tfrac{1}{4}\omega_2\omega_3 v^2\omega_4 +$$

$\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+\frac{1}{2}uv^2\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{1}{4}u^2\omega_3\omega_4+v\omega_4-\frac{1}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4-\frac{1}{4}u\omega_3\omega_4\omega_1-\frac{1}{2}\omega_2v-\frac{1}{4}\omega_2u\omega_1-\frac{1}{2}\omega_1-u\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}=1-\frac{1}{2}\omega_2\omega_4\omega_1-u\omega_3v^2\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1-\omega_2u^2\omega_1-\omega_2\omega_3v^2-u\omega_3\omega_4-\frac{1}{2}u^2\omega_3-\frac{1}{2}u\omega_1-\omega_2u\omega_3-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4-{c_s}^2\omega_2\omega_4-v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3-\omega_2-\frac{1}{2}\omega_2u\omega_4\omega_1+{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1-\omega_2u\omega_3v^2\omega_4+2\omega_2u\omega_3v^2-{c_s}^2u\omega_4\omega_1-{c_s}^2\omega_3\omega_4+\omega_2\omega_4+\frac{1}{2}\omega_3v^2\omega_4+{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+\omega_2u^2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4+\omega_2uv^2\omega_4\omega_1-2\omega_2uv^2\omega_1+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1+\omega_2u\omega_3\omega_4-{c_s}^2\omega_2u\omega_3\omega_4+u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_4+uv^2\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3+\frac{1}{2}\omega_2u^2\omega_3+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1+\frac{1}{2}u^2\omega_3\omega_4+\frac{1}{2}u\omega_4\omega_1-\omega_4-\omega_2v^2\omega_4+\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4+u\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y}=2+\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_3\omega_4\omega_1+\omega_3\omega_1+2\omega_2u^2\omega_1+2\omega_2\omega_3v^2+u^2\omega_3+2u^2\omega_4\omega_1+v^2\omega_4-{c_s}^2\omega_3-\omega_2+2{c_s}^2\omega_3\omega_4+\omega_2\omega_4-\omega_3v^2\omega_4-{c_s}^2\omega_2\omega_3\omega_4+\omega_2u^2\omega_3\omega_4-2\omega_2u^2\omega_4\omega_1-2\omega_2v^2+{c_s}^2\omega_4\omega_1-\omega_3-{c_s}^2\omega_4-v^2\omega_4\omega_1-2u^2\omega_1+{c_s}^2\omega_2\omega_3-\omega_2u^2\omega_3+2\omega_2v^2\omega_1-u^2\omega_3\omega_4-\omega_4-\omega_1-2\omega_2\omega_3v^2\omega_1,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y}=1-\frac{1}{2}\omega_2\omega_4\omega_1+u\omega_3v^2\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1-\omega_2u^2\omega_1-\omega_2\omega_3v^2+u\omega_3\omega_4-\frac{1}{2}u^2\omega_3+\frac{1}{2}u\omega_1+\omega_2u\omega_3-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4-{c_s}^2\omega_2\omega_4-v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3-\omega_2+\frac{1}{2}\omega_2u\omega_4\omega_1-{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1+\omega_2u\omega_3v^2\omega_4-2\omega_2u\omega_3v^2+{c_s}^2u\omega_4\omega_1-{c_s}^2\omega_3\omega_4+\omega_2\omega_4+\frac{1}{2}\omega_3v^2\omega_4+{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+\omega_2u^2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3-{c_s}^2u\omega_3\omega_4-\omega_2uv^2\omega_4\omega_1+2\omega_2uv^2\omega_1+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1-\omega_2u\omega_3\omega_4+{c_s}^2\omega_2u\omega_3\omega_4+u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_4-uv^2\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3+\frac{1}{2}\omega_2u^2\omega_3+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1+\frac{1}{2}u^2\omega_3\omega_4-\frac{1}{2}u\omega_4\omega_1-\omega_4-\omega_2v^2\omega_4-\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4-u\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l}=1+\frac{1}{2}uv\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+\frac{1}{2}u\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{2}\omega_2v\omega_4+\frac{1}{2}\omega_2u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2+\frac{1}{2}\omega_2u^2\omega_3v\omega_1-\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{1}{2}u^2\omega_3+\frac{1}{2}u\omega_3v\omega_4\omega_1-\frac{1}{4}\omega_2\omega_3v\omega_4-\frac{1}{2}u\omega_1-\frac{1}{2}u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3-\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{1}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4-\frac{1}{4}\omega_2v\omega_1+\frac{1}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{1}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2-\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_1-\frac{1}{2}\omega_2uv\omega_4\omega_1+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3v^2-\frac{1}{4}\omega_2\omega_3v+\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4-\frac{1}{4}u^2\omega_3\omega_4\omega_1-\frac{1}{2}u^2\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\omega_2v^2+\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_2u\omega_3v\omega_1+\frac{1}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2u\omega_3\omega_4-\frac{1}{2}\omega_2uv^2\omega_4\omega_1+\omega_2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{2}\omega_2u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-\omega_2u^2v\omega_1-\frac{1}{4}\omega_2v\omega_4\omega_1-u^2\omega_1-\frac{1}{4}\omega_2\omega_3v^2\omega_4-\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-\frac{1}{2}uv^2\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{1}{4}u^2\omega_3\omega_4-v\omega_4+\frac{1}{4}u\omega_4\omega_1-u\omega_3v\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3v+\frac{1}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4+\frac{1}{4}u\omega_3\omega_4\omega_1+\frac{1}{2}\omega_2v+\frac{1}{4}\omega_2u\omega_1-\frac{1}{2}\omega_1+u\omega_3,$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=1-\frac{1}{2}\omega_3v^2\omega_4\omega_1+{c_s}^2\omega_3\omega_4\omega_1-{c_s}^2\omega_3v\omega_4+\omega_3\omega_1-\omega_2u^2\omega_1-\omega_2\omega_3v^2-\omega_2u^2\omega_3v\omega_1-{c_s}^2\omega_2\omega_3v\omega_1-u^2\omega_3+\frac{1}{2}\omega_2\omega_3v\omega_1+u^2\omega_3v\omega_4\omega_1-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_2u^2\omega_3\omega_1+{c_s}^2\omega_3+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2-{c_s}^2\omega_3\omega_1+\frac{1}{2}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v+v\omega_4\omega_1-{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+\frac{1}{2}u^2\omega_3\omega_4\omega_1+u^2\omega_3v\omega_4+\omega_2v^2-\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\omega_3-2u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1+2\omega_2u^2v\omega_1-\frac{1}{2}\omega_2\omega_3\omega_1+2u^2\omega_1+{c_s}^2\omega_3v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3-\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2u^2\omega_3+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1+\frac{1}{2}u^2\omega_3\omega_4-v\omega_4+{c_s}^2\omega_2\omega_3v-\omega_2u^2\omega_3v-\frac{1}{2}\omega_4-u^2\omega_3\omega_1+\frac{1}{2}\omega_2v-\omega_1+\omega_2\omega_3v^2\omega_1,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=1-\frac{1}{2}uv\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1-\frac{1}{2}u\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{2}\omega_2v\omega_4+\frac{1}{2}\omega_2u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2+\frac{1}{2}\omega_2u^2\omega_3v\omega_1+\frac{1}{2}u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{1}{2}u^2\omega_3-\frac{1}{2}u\omega_3v\omega_4\omega_1-\frac{1}{4}\omega_2\omega_3v\omega_4+\frac{1}{2}u\omega_1+\frac{1}{2}u\omega_3\omega_1-\frac{1}{2}\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3-\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{1}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4-\frac{1}{4}\omega_2v\omega_1+\frac{1}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{1}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2+\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_1+\frac{1}{2}\omega_2uv\omega_4\omega_1+\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3v^2-\frac{1}{4}\omega_2\omega_3v-\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4-\frac{1}{4}u^2\omega_3\omega_4\omega_1-\frac{1}{2}u^2\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\omega_2v^2+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+\frac{1}{2}\omega_2u\omega_3v\omega_1+\frac{1}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2u\omega_3\omega_4+\frac{1}{2}\omega_2uv^2\omega_4\omega_1-\omega_2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1-\frac{1}{2}\omega_2u\omega_3v\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-\omega_2u^2v\omega_1-\frac{1}{4}\omega_2v\omega_4\omega_1-u^2\omega_1-\frac{1}{4}\omega_2\omega_3v^2\omega_4-\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+\frac{1}{2}uv^2\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{1}{4}u^2\omega_3\omega_4-v\omega_4+\frac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3v+\frac{1}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4-\frac{1}{4}u\omega_3\omega_4\omega_1+\frac{1}{2}\omega_2v-\frac{1}{4}\omega_2u\omega_1-\frac{1}{2}\omega_1-u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-1-\frac{1}{2}\omega_3v^2\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_4\omega_1+\frac{1}{2}\omega_2v\omega_4-\omega_3\omega_1-\omega_2\omega_3v^2+\frac{1}{2}\omega_2\omega_3v\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_4-\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_2-\frac{1}{2}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v+v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+\omega_2v^2+\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-$

$\frac{1}{2}\omega_2\omega_3 - \frac{1}{2}{c_s}^2\omega_4\omega_1 + \omega_3 + \frac{1}{2}\omega_2\omega_3 v\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_4 + \frac{1}{2}v^2\omega_4\omega_1 - \frac{1}{2}\omega_2 v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_1 + \frac{1}{2}\omega_2\omega_3 v^2\omega_4 - \omega_3 v\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1 - \omega_2 v^2\omega_1 - v\omega_4 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v^2\omega_4 + \frac{1}{2}\omega_2 v + \omega_1 + \omega_2\omega_3 v^2\omega_1,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 + \frac{1}{2}\omega_2\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 - \omega_2 u^2\omega_1 + u\omega_3\omega_4 - \frac{1}{2}u^2\omega_3 + \frac{1}{2}u\omega_1 + \frac{1}{2}u\omega_3\omega_1 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_2 u\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 - u^2\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 + \frac{1}{2}\omega_2 u^2\omega_3\omega_1 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 + \omega_2 + \frac{1}{2}\omega_2 u\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_4 - \omega_2\omega_4 + \frac{1}{2}u^2\omega_3\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4 + \omega_2 u^2\omega_4\omega_1 - \frac{1}{2}\omega_2 u\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_3 - \omega_2 u\omega_3\omega_4 + \frac{1}{2}\omega_2 u\omega_3\omega_4\omega_1 + u^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}u^2\omega_3\omega_4 - \frac{1}{2}u\omega_4\omega_1 + \omega_4 - \frac{1}{2}u^2\omega_3\omega_1 - \frac{1}{2}u\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 - u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -1+\omega_2\omega_4\omega_1+\omega_3 v^2\omega_4\omega_1-2{c_s}^2\omega_3\omega_4\omega_1-\omega_2 v^2\omega_4\omega_1-\omega_3\omega_1+2\omega_2 u^2\omega_1+2\omega_2\omega_3 v^2+u^2\omega_3+\omega_2 u^2\omega_3\omega_4\omega_1+2{c_s}^2\omega_2\omega_3\omega_4\omega_1 + 2u^2\omega_4\omega_1 - \omega_3\omega_4 + {c_s}^2\omega_2\omega_4 - \omega_2\omega_3\omega_4\omega_1 + v^2\omega_4 - \omega_2 u^2\omega_3\omega_1 - {c_s}^2\omega_3 - {c_s}^2\omega_2\omega_3\omega_1 + \omega_2 + {c_s}^2\omega_3\omega_1 - \omega_2\omega_1 + \omega_2\omega_3 v^2\omega_4\omega_1 + 2{c_s}^2\omega_3\omega_4 - \omega_2\omega_4 - \omega_3 v^2\omega_4 - u^2\omega_3\omega_4\omega_1 - 2{c_s}^2\omega_2\omega_3\omega_4 + \omega_2 u^2\omega_3\omega_4 - {c_s}^2\omega_2\omega_4\omega_1 - 2\omega_2 u^2\omega_4\omega_1 - 2\omega_2 v^2 + \omega_3\omega_4\omega_1 - \omega_2\omega_3 + {c_s}^2\omega_4\omega_1 + \omega_3 - {c_s}^2\omega_4 - v^2\omega_4\omega_1 + \omega_2\omega_3\omega_1 - 2u^2\omega_1 - \omega_2\omega_3 v^2\omega_4+{c_s}^2\omega_2\omega_3-\omega_2 u^2\omega_3-\omega_4\omega_1+2\omega_2 v^2\omega_1-u^2\omega_3\omega_4+\omega_4+u^2\omega_3\omega_1+\omega_2 v^2\omega_4+\omega_1+\omega_2\omega_3\omega_4-2\omega_2\omega_3 v^2\omega_1,$

$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 + \frac{1}{2}\omega_2\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 - \omega_2 u^2\omega_1 - u\omega_3\omega_4 - \frac{1}{2}u^2\omega_3 - \frac{1}{2}u\omega_1 - \frac{1}{2}u\omega_3\omega_1 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 - \omega_2 u\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 - u^2\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 + \frac{1}{2}\omega_2 u^2\omega_3\omega_1 + \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 + \omega_2 - \frac{1}{2}\omega_2 u\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_4 - \omega_2\omega_4 + \frac{1}{2}u^2\omega_3\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4 + \omega_2 u^2\omega_4\omega_1 + \frac{1}{2}\omega_2 u\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_3 + \omega_2 u\omega_3\omega_4 - \frac{1}{2}\omega_2 u\omega_3\omega_4\omega_1 + u^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}u^2\omega_3\omega_4 + \frac{1}{2}u\omega_4\omega_1 + \omega_4 - \frac{1}{2}u^2\omega_3\omega_1 + \frac{1}{2}u\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 + u\omega_3,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 - \frac{1}{2}\omega_3 v^2\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_2 v^2\omega_4\omega_1 - \frac{1}{2}\omega_2 v\omega_4 - \omega_3\omega_1 - \omega_2\omega_3 v^2 - \frac{1}{2}\omega_2\omega_3 v\omega_1 + \frac{1}{2}\omega_2\omega_3 v\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_4 + \frac{1}{2}\omega_2 v\omega_1 - \frac{1}{2}v^2\omega_4 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_2\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3 v - v\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_4 + \frac{1}{2}\omega_3 v^2\omega_4 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 + \frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1 + \omega_2 v^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_3 v\omega_4 - \frac{1}{2}\omega_2\omega_3 - \frac{1}{2}{c_s}^2\omega_4\omega_1 + \omega_3 - \frac{1}{2}\omega_2\omega_3 v\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_4 + \frac{1}{2}v^2\omega_4\omega_1 + \frac{1}{2}\omega_2 v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_1 + \frac{1}{2}\omega_2\omega_3 v^2\omega_4 + \omega_3 v\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1 - \omega_2 v^2\omega_1 + v\omega_4 + \frac{1}{2}\omega_4 - \frac{1}{2}\omega_2 v^2\omega_4 - \frac{1}{2}\omega_2 v + \omega_1 + \omega_2\omega_3 v^2\omega_1,$

$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 1 - \omega_2\omega_4\omega_1 + \omega_3\omega_1 + \omega_3\omega_4 + \omega_2\omega_3\omega_4\omega_1 - \omega_2 + \omega_2\omega_1 + \omega_2\omega_4 - \omega_3\omega_4\omega_1 + \omega_2\omega_3 - \omega_3 - \omega_2\omega_3\omega_1 + \omega_4\omega_1 - \omega_4 - \omega_1 - \omega_2\omega_3\omega_4,$

7.3 EFDE for μ_2

$$\mu^{t+\delta_t}_{2,x,y} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_1],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha^{[\mu_2],t-\ell\delta_t}_{x+i\delta_l,y+j\delta_l}\mu^{t-\ell\delta_t}_{2,x+i\delta_l,y+j\delta_l},$$

where the non-zero coefficients are given by:

$\alpha^{[\mu_1],t}_{x-\delta_l,y} = 1 - \frac{1}{2}u^2\omega_3 - \frac{1}{2}u\omega_1 + \frac{1}{2}{c_s}^2\omega_3 - \frac{1}{2}\omega_3 + u^2\omega_1 - \frac{1}{2}\omega_1 + u\omega_3.$

$\alpha^{[\mu_1],t}_{x+\delta_l,y} = -1 + \frac{1}{2}u^2\omega_3 - \frac{1}{2}u\omega_1 - \frac{1}{2}{c_s}^2\omega_3 + \frac{1}{2}\omega_3 - u^2\omega_1 + \frac{1}{2}\omega_1 + u\omega_3.$

$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = -1 + uv\omega_4\omega_1 + \frac{1}{2}u\omega_3 v^2\omega_4 + \frac{1}{2}\omega_2\omega_3 v^2 + \frac{1}{2}u\omega_3\omega_4 + u\omega_1 + \frac{1}{2}\omega_2 u\omega_3 v + \frac{1}{2}\omega_2 u\omega_3 - \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_2 v\omega_1 + \frac{1}{2}v^2\omega_4 + \frac{1}{2}\omega_2 - \frac{1}{4}\omega_2\omega_1 - \omega_2 u\omega_3 v^2 - \frac{1}{4}\omega_2\omega_3 v + \frac{1}{2}{c_s}^2 u\omega_4\omega_1 + \frac{1}{2}v\omega_4\omega_1 + \frac{1}{4}{c_s}^2\omega_3\omega_4 - \frac{1}{4}\omega_3 v^2\omega_4 - \frac{1}{2}\omega_2 uv\omega_1 - \omega_2 v^2 + \frac{1}{2}\omega_3 v\omega_4 - \frac{1}{4}\omega_2\omega_3 + \frac{1}{4}{c_s}^2\omega_4\omega_1 + \frac{1}{2}\omega_3 - \frac{1}{2}{c_s}^2 u\omega_3\omega_4 + \omega_2 uv^2\omega_1 - \frac{1}{2}{c_s}^2\omega_4 - \frac{1}{4}v^2\omega_4\omega_1 - \frac{1}{2}uv^2\omega_4\omega_1 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{2}\omega_2 v^2\omega_1 - v\omega_4 - \frac{1}{2}u\omega_4\omega_1 - u\omega_3 v\omega_4 + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_2 v - \frac{1}{2}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 - u\omega_3,$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1-uv\omega_4\omega_1-\tfrac{1}{2}u\omega_3\omega_4-u\omega_1-\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1+v\omega_4+\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}\omega_4-\omega_2v+\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1+\tfrac{1}{2}\omega_4^2+\omega_2v\omega_4+\omega_2^2v-\tfrac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\tfrac{1}{2}\omega_2\omega_4-2v\omega_4^2+3v\omega_4-\tfrac{3}{2}\omega_4-4\omega_2v^2\omega_4-3\omega_2v,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1+uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3v^2+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1+\tfrac{1}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_2v\omega_1-\tfrac{1}{2}v^2\omega_4-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\omega_2u\omega_3v^2+\tfrac{1}{4}\omega_2\omega_3v+\tfrac{1}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4+\tfrac{1}{4}\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2uv\omega_1+\omega_2v^2-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4+\omega_2uv^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_4+\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{1}{2}uv^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_2v^2\omega_1+v\omega_4-\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1+uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1+\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1+v\omega_4-\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4-\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1-u\omega_3v^2\omega_4-\omega_2\omega_3v^2-u^2\omega_3+u\omega_1-u^3\omega_3^2-\tfrac{1}{2}{c_s}^2\omega_3^2-v^2\omega_4+{c_s}^2\omega_3-\tfrac{1}{2}{c_s}^2\omega_3\omega_1+2\omega_2u\omega_3v^2+3u^3\omega_3\omega_1-{c_s}^2u\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4+\tfrac{1}{2}\omega_3v^2\omega_4+2\omega_2v^2-\tfrac{1}{2}{c_s}^2\omega_4\omega_1+\tfrac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-2\omega_2uv^2\omega_1+{c_s}^2\omega_4+\tfrac{1}{2}v^2\omega_4\omega_1-{c_s}^2u\omega_3\omega_1-u^2\omega_1^2+2u^2\omega_1+uv^2\omega_4\omega_1+{c_s}^2u\omega_3^2-\omega_2v^2\omega_1-\tfrac{1}{2}u^2\omega_3\omega_1-2u^3\omega_1^2+\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1+\tfrac{1}{2}\omega_3\omega_1-3u\omega_1+u\omega_3\omega_1+u\omega_1^2+2u^2\omega_3^2-2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1+3u\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = 3u\omega_1-2u\omega_3\omega_1+2u^3\omega_3^2-u\omega_1^2-6u^3\omega_3\omega_1+2u\omega_3^2+2{c_s}^2u\omega_3\omega_1-2{c_s}^2u\omega_3^2+4u^3\omega_1^2-2u\omega_3,$$

$$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2+\omega_1^2+\omega_2^2-2\omega_2-4v^2\omega_4^2-4\omega_2^2v^2-4u^2\omega_3^2-4u^2\omega_1^2+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1-u\omega_3v^2\omega_4+\omega_2\omega_3v^2+u^2\omega_3+u\omega_1-u^3\omega_3^2+\tfrac{1}{2}{c_s}^2\omega_3^2+v^2\omega_4-{c_s}^2\omega_3+\tfrac{1}{2}{c_s}^2\omega_3\omega_1+2\omega_2u\omega_3v^2+3u^3\omega_3\omega_1-{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}u^2\omega_3^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4-\tfrac{1}{2}\omega_3v^2\omega_4-2\omega_2v^2+\tfrac{1}{2}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-2\omega_2uv^2\omega_1-{c_s}^2\omega_4-\tfrac{1}{2}v^2\omega_4\omega_1-{c_s}^2u\omega_3\omega_1+u^2\omega_1^2-2u^2\omega_1+uv^2\omega_4\omega_1+{c_s}^2u\omega_3^2+\omega_2v^2\omega_1+\tfrac{1}{2}u^2\omega_3\omega_1-2u^3\omega_1^2-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1+\tfrac{1}{2}\omega_3\omega_1+3u\omega_1-u\omega_3\omega_1-u\omega_1^2+2u^2\omega_3^2+2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1-3u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1-uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4+\tfrac{1}{2}\omega_2\omega_3v^2+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1-\tfrac{1}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_2v\omega_1+\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2\omega_1-\omega_2u\omega_3v^2+\tfrac{1}{4}\omega_2\omega_3v+\tfrac{1}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_3\omega_4-\tfrac{1}{4}\omega_3v^2\omega_4+\tfrac{1}{2}\omega_2uv\omega_1-\omega_2v^2-\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{4}{c_s}^2\omega_4\omega_1+\tfrac{1}{2}\omega_3-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4+\omega_2uv^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_4-\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{1}{2}uv^2\omega_4\omega_1-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_1+v\omega_4-\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}\omega_4-\tfrac{1}{2}\omega_2v-\tfrac{1}{2}\omega_2u\omega_1+\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1+uv\omega_4\omega_1-\tfrac{1}{2}u\omega_3\omega_4-u\omega_1+\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4+\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1+\tfrac{1}{2}\omega_4^2-\omega_2v\omega_4-\omega_2^2v-\tfrac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\tfrac{1}{2}\omega_2\omega_4+2v\omega_4^2-3v\omega_4-\tfrac{3}{2}\omega_4-4\omega_2v^2\omega_4+3\omega_2v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1-uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3v^2+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1-\tfrac{1}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_2v\omega_1-\tfrac{1}{2}v^2\omega_4-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\omega_2u\omega_3v^2-\tfrac{1}{4}\omega_2\omega_3v+\tfrac{1}{2}{c_s}^2u\omega_4\omega_1+\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4+\tfrac{1}{4}\omega_3v^2\omega_4+\tfrac{1}{2}\omega_2uv\omega_1+\omega_2v^2+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4+\omega_2uv^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_4+\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{1}{2}uv^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_2v^2\omega_1-v\omega_4-\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}\omega_4+\tfrac{1}{2}\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1-uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1-\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4-\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{5}{2}uv\omega_4\omega_1+\tfrac{1}{2}\omega_2u^2\omega_3^2v-\tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+4\omega_2u^2v^2\omega_4\omega_1-\omega_2^2uv^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3^2v-\tfrac{1}{4}u\omega_4^2\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4-\tfrac{5}{2}{c_s}^2\omega_3v\omega_4-u^2\omega_3v\omega_4^2-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\omega_2^2u^2\omega_3v^2-\tfrac{1}{2}\omega_2v\omega_4+\tfrac{3}{2}\omega_2u^2\omega_1+{c_s}^2u\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v^2-\tfrac{1}{2}\omega_2u^2\omega_3v\omega_1-\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{3}{2}u^2\omega_3+\tfrac{3}{2}u^3\omega_3\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2+\tfrac{1}{4}\omega_2\omega_3v\omega_4-\tfrac{3}{2}u\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}\omega_2u^2\omega_3v\omega_4-uv^2\omega_4^2\omega_1-{c_s}^2u\omega_3^2v\omega_4+\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1+\tfrac{5}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4-\omega_2^2u^2v\omega_1-\tfrac{1}{2}{c_s}^2\omega_2^2\omega_3v+\tfrac{1}{2}{c_s}^2\omega_2\omega_4+u^3\omega_3^2+\tfrac{1}{4}\omega_2v\omega_1+\tfrac{1}{4}u^2\omega_3^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3^2-\omega_2u^3\omega_1^2+$$

$$\tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2u^2\omega_3\omega_1 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2u\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_2u\omega_3v^2\omega_4 - \omega_2u\omega_3v^2 - {c_s}^2\omega_2^2\omega_3v^2 - 3u^3\omega_3\omega_1 - \tfrac{1}{2}u^2\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3v - \tfrac{1}{2}\omega_2u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2u\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3^2 + \tfrac{3}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3v^2\omega_4 - 2\omega_2u^3v\omega_1^2 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 + \tfrac{5}{2}u^2\omega_3v\omega_4 + 3\omega_2u^3\omega_3v\omega_1 + {c_s}^2\omega_3v\omega_4^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 + 2\omega_2uv\omega_1 + \tfrac{1}{2}{c_s}^2u\omega_3^2\omega_4 + \tfrac{1}{4}\omega_2u^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2^2u^2\omega_3v + 2u^2v\omega_4^2\omega_1 - {c_s}^2\omega_2u\omega_3v\omega_1 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2u^2\omega_4\omega_1 - \omega_2v^2 - \tfrac{1}{2}u^3\omega_3^2\omega_4 + 2u^3v\omega_4\omega_1^2 - \tfrac{1}{2}\omega_3v\omega_4 - \tfrac{1}{4}{c_s}^2\omega_3^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - 5u^2v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2u\omega_3\omega_4 + \tfrac{3}{2}\omega_2uv^2\omega_4\omega_1 + \omega_2uv^2\omega_1 - {c_s}^2\omega_3v^2\omega_4^2 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}u^2\omega_3\omega_4^2 + {c_s}^2u\omega_3\omega_1 - \tfrac{1}{2}\omega_2u\omega_3v\omega_4 - 2u^2v^2\omega_4^2\omega_1 - \tfrac{1}{2}u^2\omega_3^2v\omega_4 - \omega_2u^3\omega_3^2v + u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4 + 5\omega_2u^2v\omega_1 + \tfrac{1}{4}\omega_2u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{4}\omega_2v\omega_4\omega_1 + 2{c_s}^2\omega_2\omega_3v^2\omega_4 - \omega_2u^2v\omega_1^2 - 3u^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3^2v\omega_4 - \tfrac{1}{4}\omega_2\omega_3v^2\omega_4 - 2\omega_2^2u^2v^2\omega_1 - \omega_2u^2v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1 + {c_s}^2\omega_2u\omega_3^2v - \tfrac{1}{2}u^2\omega_4^2\omega_1 - \tfrac{1}{2}uv^2\omega_4\omega_1 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 - {c_s}^2u\omega_3^2 - \tfrac{3}{4}\omega_2u^2\omega_3 - 2\omega_2u^2\omega_3v^2\omega_4 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_1 - \tfrac{5}{4}u^2\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2u\omega_3^2 + u^3\omega_3^2v\omega_4 + v\omega_4 + \tfrac{5}{4}u\omega_4\omega_1 + u\omega_3v\omega_4 - \tfrac{1}{2}\omega_2^2uv\omega_1 + \tfrac{5}{2}{c_s}^2\omega_2\omega_3v - \tfrac{5}{2}\omega_2u^2\omega_3v - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2u^3\omega_3^2 + uv\omega_4^2\omega_1 + \tfrac{1}{2}u^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_4 - u^3\omega_4\omega_1^2 - \tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1 + u^2v\omega_4\omega_1^2 + 2u^3\omega_1^2 + u^2\omega_3v^2\omega_4^2 + \tfrac{3}{2}\omega_2u^3\omega_3\omega_1 - \tfrac{1}{2}\omega_2v + \tfrac{3}{4}\omega_2u\omega_1 - 3u^3\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_1 + u\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$
$$-2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 + 6uv\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 + 2\omega_2u^2\omega_3^2v + 2\omega_2^2uv^2\omega_1 + \tfrac{1}{2}u\omega_4^2\omega_1 + \omega_2uv\omega_1^2 - 2\omega_2v^2\omega_4\omega_1 - \omega_2v\omega_4 - \tfrac{1}{2}\omega_3\omega_1 - \omega_2^2v - 4\omega_2u^2\omega_3v\omega_1 + 3u\omega_3\omega_4 + \omega_2^2v^2\omega_1 + \tfrac{1}{2}\omega_2\omega_3v\omega_1 + \omega_3v^2\omega_4^2 - u\omega_3v\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3v\omega_4 + 4u\omega_1 - u\omega_3\omega_1 + 6\omega_2u\omega_3v + 2\omega_2u\omega_3 + 2uv^2\omega_4^2\omega_1 + 4u^2\omega_3v\omega_4\omega_1 + 2u\omega_3^2v\omega_4 - \tfrac{3}{2}\omega_3\omega_4 + \tfrac{1}{4}\omega_4^2\omega_1 - 2\omega_2v\omega_1 + u^2\omega_3^2\omega_4 - 2\omega_2u^2\omega_3\omega_1 + v^2\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3^2v\omega_4 + \omega_2 + \tfrac{1}{2}\omega_2u\omega_4\omega_1 - 2v^2\omega_4^2 - u\omega_1^2 + \omega_2uv\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1 + 4\omega_2u\omega_3v^2\omega_4 - \omega_2u\omega_3^2 + \tfrac{1}{4}\omega_3\omega_4^2 + u^2\omega_4\omega_1^2 - 3\omega_2\omega_3v + \omega_2u^2\omega_1^2 - 2\omega_2^2v^2 + 2v\omega_4\omega_1 - 2u^2\omega_3^2 - \tfrac{1}{2}u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_4 - uv\omega_4\omega_1^2 - 2u\omega_3v^2\omega_4^2 - 2u^2\omega_3\omega_4\omega_1 - 6\omega_2uv\omega_1 + \tfrac{1}{2}\omega_2u\omega_1^2 + \tfrac{1}{2}\omega_2\omega_3^2v + \tfrac{1}{4}\omega_3\omega_4\omega_1 + 3\omega_3v\omega_4 + \tfrac{1}{2}\omega_2u\omega_3\omega_1 - \omega_2\omega_3 + \omega_2u\omega_3v\omega_1 - v\omega_4^2\omega_1 + 2u\omega_3^2 + 2u\omega_3v\omega_4^2 + \tfrac{1}{2}u\omega_4\omega_1^2 + 2\omega_3 - 4\omega_2uv^2\omega_4\omega_1 + 2v\omega_4^2 + \tfrac{1}{2}\omega_2^2\omega_3v - \omega_2u\omega_3v\omega_4 - \omega_2^2u\omega_3v - \tfrac{1}{2}\omega_2u\omega_3\omega_4 - 2u^2\omega_3^2v\omega_4 - 2u^2\omega_1^2 + \omega_2u^2\omega_3^2 + \tfrac{1}{2}\omega_2v\omega_4\omega_1 - 2\omega_2^2u\omega_3v^2 + 2\omega_2u^2v\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 - 2\omega_2\omega_3v^2\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 - 2\omega_2u\omega_3^2v - \tfrac{1}{2}\omega_3v\omega_4\omega_1 - \omega_4\omega_1 - 4v\omega_4 + \omega_2^2\omega_3v^2 - 3u\omega_4\omega_1 - 6u\omega_3v\omega_4 + \omega_2^2uv\omega_1 - \tfrac{1}{2}\omega_3^2 + 2\omega_4 - 2uv\omega_4^2\omega_1 + 4u^2\omega_3\omega_1 + 4\omega_2v^2\omega_4 - 2u^2v\omega_4\omega_1^2 + \tfrac{1}{2}u\omega_3\omega_4\omega_1 + 4\omega_2v - 2\omega_2u\omega_1 + \omega_1 + \tfrac{1}{4}\omega_2\omega_3\omega_4 - \omega_3v\omega_4^2 - 4u\omega_3 - u\omega_3^2\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2 + \tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = -4uv\omega_4\omega_1 - u\omega_3v^2\omega_4 - \omega_2uv\omega_1^2 - 2{c_s}^2u\omega_3v\omega_4\omega_1 - u\omega_3\omega_4 - 3u^3\omega_3\omega_4\omega_1 + 3u\omega_3v\omega_4\omega_1 - 4u\omega_1 + 3u\omega_3\omega_1 - \omega_2u\omega_3v - \omega_2u\omega_3 + 2{c_s}^2u\omega_3^2v\omega_4 - 2u\omega_3^2v\omega_4 - 2u^3\omega_3^2 + 2\omega_2u^3\omega_1^2 + u\omega_1^2 + 2\omega_2u\omega_3v^2 + \omega_2u\omega_3^2 + 6u^3\omega_3\omega_1 - {c_s}^2u\omega_4\omega_1 + 2\omega_2u\omega_3v^2\omega_1 + 4\omega_2u^3v\omega_1^2 + uv\omega_4\omega_1^2 - 6\omega_2u^3\omega_3v\omega_1 + 3\omega_2uv\omega_1 - 2{c_s}^2u\omega_3^2\omega_4 + 2{c_s}^2\omega_2u\omega_3v\omega_1 - \tfrac{1}{2}\omega_2u\omega_1^2 + u^3\omega_3^2\omega_4 - 4u^3v\omega_4\omega_1^2 + {c_s}^2\omega_2u\omega_3\omega_1 - \tfrac{3}{2}\omega_2u\omega_3\omega_1 - 2\omega_2u\omega_3v\omega_1 - 2u\omega_3^2 - \tfrac{1}{2}u\omega_4\omega_1^2 + {c_s}^2u\omega_3\omega_4 - 2\omega_2uv^2\omega_1 - 2{c_s}^2u\omega_3\omega_1 + 2\omega_2u^3\omega_3^2v - 2\omega_2u\omega_3^2v^2 - 2{c_s}^2\omega_2u\omega_3^2v + u\omega_3^2v^2\omega_4 + uv^2\omega_4\omega_1 + \omega_2u\omega_3^2v + 2{c_s}^2u\omega_3^2 - u\omega_3v^2\omega_4\omega_1 - {c_s}^2\omega_2u\omega_3^2 - 2u^3\omega_3^2v\omega_4 + 2u\omega_4\omega_1 + 2u\omega_3v\omega_4 + \omega_2u^3\omega_3^2 + 2u^3\omega_4\omega_1^2 + 2{c_s}^2u\omega_3\omega_4\omega_1 - 4u^3\omega_1^2 - \tfrac{3}{2}u\omega_3\omega_4\omega_1 - 3\omega_2u^3\omega_3\omega_1 + 2\omega_2u\omega_1 + 6u^3\omega_3v\omega_4\omega_1 + 2u\omega_3 + u\omega_3^2\omega_4,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y-\delta_l} = -2 - 4\omega_2u^2\omega_3^2v - \omega_3\omega_1 + 8\omega_2u^2\omega_3v\omega_1 - v\omega_4\omega_1^2 + \omega_2\omega_3v\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 - 8u^2\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4 - 3\omega_2v\omega_1 - 2u^2\omega_3^2\omega_4 - \omega_1^2 + \omega_2v\omega_1^2 + 4\omega_2u^2\omega_3\omega_1 + \omega_2 - \tfrac{3}{2}\omega_2\omega_1 - 2u^2\omega_4\omega_1^2 - \omega_2\omega_3v - 2\omega_2u^2\omega_1^2 + 3v\omega_4\omega_1 + 4u^2\omega_3^2 + 4u^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \omega_3v\omega_4 - \tfrac{1}{2}\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_4\omega_1^2 + 4u^2\omega_3^2v\omega_4 + 4u^2\omega_1^2 - 2\omega_2u^2\omega_3^2 - 4\omega_2u^2v\omega_1^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 - \omega_3v\omega_4\omega_1 - \tfrac{3}{2}\omega_4\omega_1 - 2v\omega_4 + \omega_4 - 8u^2\omega_3\omega_1 + 4u^2v\omega_4\omega_1^2 + 2\omega_2v + 3\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = -1 - \tfrac{5}{2}uv\omega_4\omega_1 - \tfrac{1}{2}\omega_2u^2\omega_3^2v + \tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1 - 4\omega_2u^2v^2\omega_4\omega_1 - \omega_2^2uv^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2v - \tfrac{1}{4}u\omega_4^2\omega_1 + \tfrac{1}{2}u\omega_3v^2\omega_4 + \tfrac{5}{2}{c_s}^2\omega_3v\omega_4 + u^2\omega_3v\omega_4^2 + \tfrac{1}{4}\omega_2v^2\omega_4\omega_1 - \omega_2^2u^2\omega_3v^2 + \tfrac{1}{2}\omega_2v\omega_4 - \tfrac{3}{2}\omega_2u^2\omega_1 + {c_s}^2u\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_3v^2 + \tfrac{1}{2}\omega_2u^2\omega_3v\omega_1 - \tfrac{1}{2}u\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1 - \tfrac{3}{2}u^2\omega_3 + \tfrac{3}{2}u^3\omega_3\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_3\omega_4^2 - \tfrac{1}{4}\omega_2\omega_3v\omega_4 - \tfrac{3}{2}u\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4 - \tfrac{1}{2}\omega_2u\omega_3v - \tfrac{1}{2}\omega_2u\omega_3 - \tfrac{1}{2}\omega_2u^2\omega_3v\omega_4 - uv^2\omega_4^2\omega_1 - {c_s}^2u\omega_3^2v\omega_4 - \tfrac{1}{2}u^2\omega_3v\omega_4\omega_1 - \tfrac{5}{2}u^2\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_4 + \omega_2^2u^2v\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3v - \tfrac{1}{2}{c_s}^2\omega_2\omega_4 + u^3\omega_3^2 - \tfrac{1}{4}\omega_2v\omega_1 - \tfrac{1}{4}u^2\omega_3^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3^2 - \omega_2u^3\omega_1^2 - \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{4}\omega_2u^2\omega_3\omega_1 + \tfrac{3}{2}{c_s}^2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2u\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_2u\omega_3v^2\omega_4 - \omega_2u\omega_3v^2 + {c_s}^2\omega_2^2\omega_3v^2 - 3u^3\omega_3\omega_1 + \tfrac{1}{2}u^2\omega_4\omega_1^2 - \tfrac{1}{4}\omega_2\omega_3v + \tfrac{1}{2}\omega_2u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2u\omega_4\omega_1 + \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_3^2 - \tfrac{3}{2}{c_s}^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3v^2\omega_4 - 2\omega_2u^3v\omega_1^2 + \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 - \tfrac{5}{2}u^2\omega_3v\omega_4 + 3\omega_2u^3\omega_3v\omega_1 - {c_s}^2\omega_3v\omega_4^2 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 + 2\omega_2uv\omega_1 + \tfrac{1}{2}{c_s}^2u\omega_3^2\omega_4 - \tfrac{1}{4}\omega_2u^2\omega_3\omega_4 - \tfrac{1}{2}\omega_2^2u^2\omega_3v - 2u^2v\omega_4^2\omega_1 - {c_s}^2\omega_2u\omega_3v\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2u^2\omega_4\omega_1 + \omega_2v^2 - \tfrac{1}{2}u^3\omega_3^2\omega_4 + 2u^3v\omega_4\omega_1^2 + \tfrac{1}{2}\omega_3v\omega_4 + \tfrac{1}{4}{c_s}^2\omega_3^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1 - \tfrac{1}{4}\omega_2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 + 5u^2v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2u\omega_3\omega_4 + \tfrac{3}{2}\omega_2uv^2\omega_4\omega_1 + \omega_2uv^2\omega_1 + {c_s}^2\omega_3v^2\omega_4^2 + \tfrac{1}{2}{c_s}^2\omega_4 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}u^2\omega_3\omega_4^2 + {c_s}^2u\omega_3\omega_1 - \tfrac{1}{2}\omega_2u\omega_3v\omega_4 + 2u^2v^2\omega_4^2\omega_1 + \tfrac{1}{2}u^2\omega_3^2v\omega_4 - \omega_2u^3\omega_3^2v - u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4 - 5\omega_2u^2v\omega_1 -$$

$\frac{1}{4}\omega_2u^2\omega_3^2+\frac{1}{4}{c_s}^2\omega_2\omega_3^2-\frac{1}{4}\omega_2v\omega_4\omega_1-2{c_s}^2\omega_2\omega_3v^2\omega_4+\omega_2u^2v\omega_1^2+3u^2\omega_1-\frac{1}{2}{c_s}^2\omega_3^2v\omega_4+\frac{1}{4}\omega_2\omega_3v^2\omega_4+2\omega_2^2u^2v^2\omega_1+\omega_2u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+{c_s}^2\omega_2u\omega_3^2v+\frac{1}{2}u^2\omega_4^2\omega_1-\frac{1}{2}uv^2\omega_4\omega_1-\frac{3}{4}{c_s}^2\omega_2\omega_3-{c_s}^2u\omega_3^2+\frac{3}{4}\omega_2u^2\omega_3+2\omega_2u^2\omega_3v^2\omega_4-\frac{1}{4}\omega_4\omega_1-\frac{1}{2}\omega_2v^2\omega_1+\frac{5}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3^2+u^3\omega_3^2v\omega_4-v\omega_4+\frac{5}{4}u\omega_4\omega_1+u\omega_3v\omega_4-\frac{1}{2}\omega_2^2uv\omega_1-\frac{5}{2}{c_s}^2\omega_2\omega_3v+\frac{5}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4-\frac{1}{2}\omega_2u^3\omega_3^2+uv\omega_4^2\omega_1-\frac{1}{2}u^2\omega_3\omega_1-\frac{1}{2}\omega_2v^2\omega_4-u^3\omega_4\omega_1^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-u^2v\omega_4\omega_1^2+2u^3\omega_1^2-u^2\omega_3v^2\omega_4^2+\frac{3}{2}\omega_2u^3\omega_3\omega_1+\frac{1}{2}\omega_2v+\frac{3}{4}\omega_2u\omega_1-3u^3\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t}=$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\frac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1-6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\frac{1}{2}\omega_3^2v\omega_4+\omega_2-\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2-\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2+\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1-\frac{1}{2}\omega_2u\omega_1^2+\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4-\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1-v\omega_4^2\omega_1-2u\omega_3^2-2u\omega_3v\omega_4^2-\frac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\frac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v+\frac{1}{2}\omega_2u\omega_3\omega_4-2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2+\frac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2+2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v-\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2-\frac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2v+2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2+\frac{1}{2}\omega_2^2v\omega_1,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t}=1-\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2^2u^2\omega_3-8\omega_2u^2v^2\omega_4\omega_1+2\omega_2^2uv^2\omega_1-u\omega_3v^2\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1-2\omega_2^2u^2\omega_3v^2+2\omega_2u^2\omega_1-\omega_2\omega_3v^2-u\omega_3\omega_4+\frac{1}{2}u^2\omega_3-\frac{3}{2}u\omega_1-\omega_2u\omega_3+2uv^2\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_2^2\omega_3+\frac{1}{2}\omega_3\omega_4-{c_s}^2\omega_2\omega_4-\frac{1}{2}\omega_2^2u\omega_1-v^2\omega_4-\frac{1}{2}{c_s}^2\omega_3-\omega_2-\omega_2u\omega_4\omega_1+{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1-\omega_2u\omega_3v^2\omega_4+2\omega_2u\omega_3v^2+2{c_s}^2\omega_2^2\omega_3v^2-{c_s}^2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4+\omega_2\omega_4+\frac{1}{2}\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-3\omega_2uv^2\omega_4\omega_1-2\omega_2uv^2\omega_1+2{c_s}^2\omega_3v^2\omega_4^2+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1+\omega_2u\omega_3\omega_4+4u^2v^2\omega_4^2\omega_1-{c_s}^2\omega_2u\omega_3\omega_4-4{c_s}^2\omega_2\omega_3v^2\omega_4-u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_4+4\omega_2^2u^2v^2\omega_1+uv^2\omega_4\omega_1+{c_s}^2\omega_2\omega_3-\omega_2u^2\omega_3+4\omega_2u^2\omega_3v^2\omega_4+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1-\omega_2^2u^2\omega_1+u\omega_4\omega_1-\omega_4-\omega_2v^2\omega_4-2u^2\omega_3v^2\omega_4^2+2\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4+u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_2],t-2\delta_t}=-2+\frac{1}{2}\omega_2\omega_4\omega_1-4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1+u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2+2u\omega_1+3\omega_2u\omega_3-4uv^2\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_4+\omega_2^2u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2+\omega_2u\omega_4\omega_1+4v^2\omega_4^2-\frac{3}{2}\omega_2\omega_1-8\omega_2u\omega_3v^2\omega_4+4\omega_2^2v^2+\frac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4+4u\omega_3v^2\omega_4^2-\frac{3}{2}\omega_2\omega_3+\omega_3+8\omega_2uv^2\omega_4\omega_1-\omega_2u\omega_3\omega_4+\frac{1}{2}\omega_2^2\omega_1+4\omega_2^2u\omega_3v^2+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3v^2-u\omega_4\omega_1-\omega_2^2u\omega_3+\omega_4-8\omega_2v^2\omega_4-3\omega_2u\omega_1+\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4-2u\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-2\delta_t}=2u\omega_3v^2\omega_4-4u\omega_1+5u\omega_3\omega_1+u\omega_1^2-u\omega_3\omega_1^2-4\omega_2u\omega_3v^2+2{c_s}^2u\omega_4\omega_1-4\omega_2u\omega_3v^2\omega_1+2{c_s}^2u\omega_3^2\omega_4-2u\omega_3^2-2{c_s}^2u\omega_3\omega_4+4\omega_2uv^2\omega_1+4\omega_2u\omega_3^2v^2-u\omega_3^2\omega_1-2u\omega_3^2v^2\omega_4-2uv^2\omega_4\omega_1+2u\omega_3v^2\omega_4\omega_1-2{c_s}^2u\omega_3\omega_4\omega_1+2u\omega_3,$

$\alpha_{x,y}^{[\mu_2],t-2\delta_t}=-4-\omega_4^2-4\omega_3\omega_1+\omega_2\omega_4^2-\omega_1^2-\omega_2^2+3\omega_2+\omega_3\omega_1^2-4\omega_2\omega_4+\omega_2^2\omega_4+3\omega_3-\omega_3^2+3\omega_4+\omega_3^2\omega_1+3\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t}=-1+\frac{1}{2}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2^2u^2\omega_3+8\omega_2u^2v^2\omega_4\omega_1+2\omega_2^2uv^2\omega_1-u\omega_3v^2\omega_4-\frac{1}{2}\omega_2v^2\omega_4\omega_1+2\omega_2^2u^2\omega_3v^2-2\omega_2u^2\omega_1+\omega_2\omega_3v^2-u\omega_3\omega_4-\frac{1}{2}u^2\omega_3-\frac{3}{2}u\omega_1-\omega_2u\omega_3+2uv^2\omega_4^2\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3-\frac{1}{2}\omega_3\omega_4+{c_s}^2\omega_2\omega_4-\frac{1}{2}\omega_2^2u\omega_1+v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3+\omega_2-\omega_2u\omega_4\omega_1+{c_s}^2\omega_2u\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1-\omega_2u\omega_3v^2\omega_4+2\omega_2u\omega_3v^2-2{c_s}^2\omega_2^2\omega_3v^2-{c_s}^2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4-\omega_2\omega_4-\frac{1}{2}\omega_3v^2\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1-2\omega_2v^2-\frac{1}{2}\omega_2\omega_3+\frac{1}{2}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-3\omega_2uv^2\omega_4\omega_1-2\omega_2uv^2\omega_1-2{c_s}^2\omega_3v^2\omega_4^2-{c_s}^2\omega_4-\frac{1}{2}v^2\omega_4\omega_1+\omega_2u\omega_3\omega_4-4u^2v^2\omega_4^2\omega_1-{c_s}^2\omega_2u\omega_3\omega_4+4{c_s}^2\omega_2\omega_3v^2\omega_4+u^2\omega_1-\frac{1}{2}\omega_2\omega_3v^2\omega_4-4\omega_2^2u^2v^2\omega_1+uv^2\omega_4\omega_1-{c_s}^2\omega_2\omega_3+\omega_2u^2\omega_3-4\omega_2u^2\omega_3v^2\omega_4-\frac{1}{2}\omega_4\omega_1+\omega_2v^2\omega_1+\omega_2^2u^2\omega_1+u\omega_4\omega_1+\omega_4+\omega_2v^2\omega_4+2u^2\omega_3v^2\omega_4^2+2\omega_2u\omega_1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+u\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_2],t-2\delta_t}=-2+\frac{1}{2}\omega_2\omega_4\omega_1+4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1-u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2-2u\omega_1-3\omega_2u\omega_3+4uv^2\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_4-\omega_2^2u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2-\omega_2u\omega_4\omega_1+4v^2\omega_4^2-\frac{3}{2}\omega_2\omega_1+8\omega_2u\omega_3v^2\omega_4+4\omega_2^2v^2+\frac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4-4u\omega_3v^2\omega_4^2-\frac{3}{2}\omega_2\omega_3+\omega_3-8\omega_2uv^2\omega_4\omega_1+\omega_2u\omega_3\omega_4+\frac{1}{2}\omega_2^2\omega_1-4\omega_2^2u\omega_3v^2+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3v^2+u\omega_4\omega_1+\omega_2^2u\omega_3+\omega_4-8\omega_2v^2\omega_4+3\omega_2u\omega_1+\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+2u\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1+\frac{5}{2}uv\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_3^2v-\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+4\omega_2u^2v^2\omega_4\omega_1-\omega_2^2uv^2\omega_1+\frac{1}{2}{c_s}^2\omega_2\omega_3^2v-\frac{1}{4}u\omega_4^2\omega_1+\frac{1}{2}u\omega_3v^2\omega_4+\frac{5}{2}{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\omega_2^2u^2\omega_3v^2+\frac{1}{2}\omega_2v\omega_4+\frac{3}{2}\omega_2u^2\omega_1-{c_s}^2u\omega_3v\omega_4\omega_1+$

$$\frac{1}{2}\omega_2\omega_3v^2+\frac{1}{2}\omega_2u^2\omega_3v\omega_1-\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{3}{2}u^2\omega_3+\frac{3}{2}u^3\omega_3\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4^2-\frac{1}{4}\omega_2\omega_3v\omega_4-\frac{3}{2}u\omega_1+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3-\frac{1}{2}\omega_2u^2\omega_3v\omega_4-uv^2\omega_4^2\omega_1+{c_s}^2u\omega_3^2v\omega_4-\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{5}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4+\omega_2^2u^2v\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3v+\frac{1}{2}{c_s}^2\omega_2\omega_4+u^3\omega_3^2-\frac{1}{4}\omega_2v\omega_1+\frac{1}{4}u^2\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_3^2-\omega_2u^3\omega_1^2+\frac{1}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{3}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2-\frac{1}{4}\omega_2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_1+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3v^2-{c_s}^2\omega_2^2\omega_3v^2-3u^3\omega_3\omega_1-\frac{1}{2}u^2\omega_4\omega_1^2-\frac{1}{4}\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_1^2+\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}u^2\omega_3^2+\frac{3}{2}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4+2\omega_2u^3v\omega_1^2-\frac{1}{4}u^2\omega_3\omega_4\omega_1-\frac{5}{2}u^2\omega_3v\omega_4-3\omega_2u^3\omega_3v\omega_1-{c_s}^2\omega_3v\omega_4^2-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1+\frac{1}{2}{c_s}^2u\omega_3^2\omega_4+\frac{1}{4}\omega_2u^2\omega_3\omega_4-\frac{1}{2}\omega_2^2u^2\omega_3v-2u^2v\omega_4^2\omega_1+{c_s}^2\omega_2u\omega_3v\omega_1-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_4\omega_1-\omega_2v^2-\frac{1}{2}u^3\omega_3^2\omega_4-2u^3v\omega_4\omega_1^2+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+\frac{1}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+5u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2uv^2\omega_4\omega_1+\omega_2uv^2\omega_1-{c_s}^2\omega_3v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{4}u^2\omega_3\omega_4^2+{c_s}^2u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_3v\omega_4-2u^2v^2\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3^2v\omega_4+\omega_2u^3\omega_3^2v+u^2\omega_1^2+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-5\omega_2u^2v\omega_1+\frac{1}{4}\omega_2u^2\omega_3^2-\frac{1}{4}{c_s}^2\omega_2\omega_3^2-\frac{1}{4}\omega_2v\omega_4\omega_1+2{c_s}^2\omega_2\omega_3v^2\omega_4+\omega_2u^2v\omega_1^2-3u^2\omega_1-\frac{1}{2}{c_s}^2\omega_3^2v\omega_4-\frac{1}{4}\omega_2\omega_3v^2\omega_4-2\omega_2^2u^2v^2\omega_1+\omega_2u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-{c_s}^2\omega_2u\omega_3^2v-\frac{1}{2}u^2\omega_4^2\omega_1-\frac{1}{2}uv^2\omega_4\omega_1+\frac{3}{4}{c_s}^2\omega_2\omega_3-{c_s}^2u\omega_3^2-\frac{3}{4}\omega_2u^2\omega_3-2\omega_2u^2\omega_3v^2\omega_4+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{5}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3^2-u^3\omega_3^2v\omega_4-v\omega_4+\frac{5}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}\omega_2^2uv\omega_1-\frac{5}{2}{c_s}^2\omega_2\omega_3v+\frac{5}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4-\frac{1}{2}\omega_2u^3\omega_3^2-uv\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4-u^3\omega_4\omega_1^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-u^2v\omega_4\omega_1^2+2u^3\omega_1^2+u^2\omega_3v^2\omega_4^2+\frac{3}{2}\omega_2u^3\omega_3\omega_1+\frac{1}{2}\omega_2v+\frac{3}{4}\omega_2u\omega_1+3u^3\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_1+u\omega_3,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y+\delta_l}=$$
$$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\frac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1+3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4+4u\omega_1-u\omega_3\omega_1-6\omega_2u\omega_3v+2\omega_2u\omega_3+2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\frac{1}{2}\omega_3^2v\omega_4+\omega_2+\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2-u\omega_1^2-\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1+4\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2-\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2-2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1+\frac{1}{2}\omega_2u\omega_1^2-\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1+2u\omega_3^2-2u\omega_3v\omega_4^2+\frac{1}{2}u\omega_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\frac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v-\frac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\frac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v+\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2-3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2+\frac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v-2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2-4u\omega_3-u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2-\frac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=4uv\omega_4\omega_1-u\omega_3v^2\omega_4+\omega_2uv\omega_1^2+2{c_s}^2u\omega_3v\omega_4\omega_1-u\omega_3\omega_4-3u^3\omega_3\omega_4\omega_1-3u\omega_3v\omega_4\omega_1-4u\omega_1+3u\omega_3\omega_1+\omega_2u\omega_3v-\omega_2u\omega_3-2{c_s}^2u\omega_3^2v\omega_4+2u\omega_3^2v\omega_4-2u^3\omega_3^2+2\omega_2u^3\omega_1^2+u\omega_1^2+2\omega_2u\omega_3v^2+\omega_2u\omega_3^2+6u^3\omega_3\omega_1-{c_s}^2u\omega_4\omega_1+2\omega_2u\omega_3v^2\omega_1-4\omega_2u^3v\omega_1^2-uv\omega_4\omega_1^2+6\omega_2u^3\omega_3v\omega_1-3\omega_2uv\omega_1-2{c_s}^2u\omega_3^2\omega_4-2{c_s}^2\omega_2u\omega_3v\omega_1-\frac{1}{2}\omega_2u\omega_1^2+u^3\omega_3^2\omega_4+4u^3v\omega_4\omega_1^2+{c_s}^2\omega_2u\omega_3\omega_1-\frac{3}{2}\omega_2u\omega_3\omega_1+2\omega_2u\omega_3v\omega_1-2u\omega_3^2-\frac{1}{2}u\omega_4\omega_1^2+{c_s}^2u\omega_3\omega_4-2\omega_2uv^2\omega_1-2{c_s}^2u\omega_3\omega_1-2\omega_2u^3\omega_3^2v-2\omega_2u\omega_3^2v^2+2{c_s}^2\omega_2u\omega_3^2v+u\omega_3^2v^2\omega_4+uv^2\omega_4\omega_1-\omega_2u\omega_3^2v+2{c_s}^2u\omega_3^2-u\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_2u\omega_3^2+2u^3\omega_3^2v\omega_4+2u\omega_4\omega_1-2u\omega_3v\omega_4+\omega_2u^3\omega_3^2+2u^3\omega_4\omega_1^2+2{c_s}^2u\omega_3\omega_4\omega_1-4u^3\omega_1^2-\frac{3}{2}u\omega_3\omega_4\omega_1-3\omega_2u^3\omega_3\omega_1+2\omega_2u\omega_1-6u^3\omega_3v\omega_4\omega_1+2u\omega_3+u\omega_3^2\omega_4,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x,y+\delta_l}=-2+4\omega_2u^2\omega_3^2v-\omega_3\omega_1-8\omega_2u^2\omega_3v\omega_1+v\omega_4\omega_1^2-\omega_2\omega_3v\omega_1+\frac{1}{2}\omega_2\omega_1^2+8u^2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4+3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2-\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\frac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2+\omega_2\omega_3v-2\omega_2u^2\omega_1^2-3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4-\frac{1}{2}\omega_2\omega_3+\omega_3+\frac{1}{2}\omega_4\omega_1^2-4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2+4\omega_2u^2v\omega_1^2+\frac{1}{2}\omega_2\omega_3\omega_1+\omega_3v\omega_4\omega_1-\frac{3}{2}\omega_4\omega_1+2v\omega_4+\omega_4-8u^2\omega_3\omega_1-4u^2v\omega_4\omega_1^2-2\omega_2v+3\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-1+\frac{5}{2}uv\omega_4\omega_1+\frac{1}{2}\omega_2u^2\omega_3^2v+\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1-4\omega_2u^2v^2\omega_4\omega_1-\omega_2^2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3^2v-\frac{1}{4}u\omega_4^2\omega_1+\frac{1}{2}u\omega_3v^2\omega_4-\frac{5}{2}{c_s}^2\omega_3v\omega_4-u^2\omega_3v\omega_4^2+\frac{1}{4}\omega_2v^2\omega_4\omega_1-\omega_2^2u^2\omega_3v^2-\frac{1}{2}\omega_2v\omega_4-\frac{3}{2}\omega_2u^2\omega_1-{c_s}^2u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v^2-\frac{1}{2}\omega_2u^2\omega_3v\omega_1-\frac{1}{2}u\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1-\frac{3}{2}u^2\omega_3+\frac{3}{2}u^3\omega_3\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4^2+\frac{1}{4}\omega_2\omega_3v\omega_4-\frac{3}{2}u\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}\omega_2u^2\omega_3v\omega_4-uv^2\omega_4^2\omega_1+{c_s}^2u\omega_3^2v\omega_4+\frac{1}{2}u^2\omega_3v\omega_4\omega_1-\frac{5}{2}u^2\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4-\omega_2^2u^2v\omega_1-\frac{1}{2}{c_s}^2\omega_2^2\omega_3v-\frac{1}{2}{c_s}^2\omega_2\omega_4+u^3\omega_3^2+\frac{1}{4}\omega_2v\omega_1-\frac{1}{4}u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_3^2-\omega_2u^3\omega_1^2-\frac{1}{2}v^2\omega_4+\frac{1}{4}\omega_2u^2\omega_3\omega_1+\frac{3}{2}{c_s}^2\omega_3+\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_1-\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3v^2+{c_s}^2\omega_2^2\omega_3v^2-3u^3\omega_3\omega_1+\frac{1}{2}u^2\omega_4\omega_1^2+\frac{1}{4}\omega_2\omega_3v+\frac{1}{2}\omega_2u^2\omega_1^2+\frac{1}{2}{c_s}^2u\omega_4\omega_1-\frac{1}{2}v\omega_4\omega_1+\frac{1}{2}u^2\omega_3^2-\frac{3}{2}{c_s}^2\omega_3\omega_4+\frac{1}{4}\omega_3v^2\omega_4+2\omega_2u^3v\omega_1^2+\frac{1}{4}u^2\omega_3\omega_4\omega_1+\frac{5}{2}u^2\omega_3v\omega_4-3\omega_2u^3\omega_3v\omega_1+{c_s}^2\omega_3v\omega_4^2+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1+\frac{1}{2}{c_s}^2u\omega_3^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_4+\frac{1}{2}\omega_2^2u^2\omega_3v+2u^2v\omega_4^2\omega_1+{c_s}^2\omega_2u\omega_3v\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1+$$

$\frac{1}{2}\omega_2u^2\omega_4\omega_1+\omega_2v^2-\frac{1}{2}u^3\omega_3^2\omega_4-2u^3v\omega_4\omega_1^2-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}{c_s}^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1-\frac{1}{4}\omega_2\omega_3-\frac{1}{4}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3-5u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2uv^2\omega_4\omega_1+\omega_2uv^2\omega_1+{c_s}^2\omega_3v^2\omega_4^2+\frac{1}{2}{c_s}^2\omega_4+\frac{1}{4}v^2\omega_4\omega_1-\frac{1}{4}u^2\omega_3\omega_4^2+{c_s}^2u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_3v\omega_4+2u^2v^2\omega_4^2\omega_1-\frac{1}{2}u^2\omega_3^2v\omega_4+\omega_2u^3\omega_3^2v-u^2\omega_1^2+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+5\omega_2u^2v\omega_1-\frac{1}{4}\omega_2u^2\omega_3^2+\frac{1}{4}{c_s}^2\omega_2\omega_3^2+\frac{1}{4}\omega_2v\omega_4\omega_1-2{c_s}^2\omega_2\omega_3v^2\omega_4-\omega_2u^2v\omega_1^2+3u^2\omega_1+\frac{1}{2}{c_s}^2\omega_3^2v\omega_4+\frac{1}{4}\omega_2\omega_3v^2\omega_4+2\omega_2^2u^2v^2\omega_1-\omega_2u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-{c_s}^2\omega_2u\omega_3^2v+\frac{1}{2}u^2\omega_4^2\omega_1-\frac{1}{2}uv^2\omega_4\omega_1-\frac{3}{4}{c_s}^2\omega_2\omega_3-{c_s}^2u\omega_3^2+\frac{3}{4}\omega_2u^2\omega_3+2\omega_2u^2\omega_3v^2\omega_4-\frac{1}{4}\omega_4\omega_1-\frac{1}{2}\omega_2v^2\omega_1+\frac{5}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3^2-u^3\omega_3^2v\omega_4+v\omega_4+\frac{5}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}\omega_2^2uv\omega_1+\frac{5}{2}{c_s}^2\omega_2\omega_3v-\frac{5}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4-\frac{1}{2}\omega_2u^3\omega_3^2-uv\omega_4^2\omega_1-\frac{1}{2}u^2\omega_3\omega_1-\frac{1}{2}\omega_2v^2\omega_4-u^3\omega_4\omega_1^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1+u^2v\omega_4\omega_1^2+2u^3\omega_1^2-u^2\omega_3v^2\omega_4^2+\frac{3}{2}\omega_2u^3\omega_3\omega_1-\frac{1}{2}\omega_2v+\frac{3}{4}\omega_2u\omega_1+3u^3\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_1+u\omega_3,$

$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\frac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1+6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\frac{1}{2}\omega_3^2v\omega_4+\omega_2-\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2+\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2+\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1-\frac{1}{2}\omega_2u\omega_1^2-\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4-\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1-2u\omega_3^2+2u\omega_3v\omega_4^2-\frac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\frac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v+\frac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\frac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v+\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2-\frac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v+2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2-\frac{1}{2}\omega_2^2v\omega_1,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=7uv\omega_4\omega_1+2\omega_2^2uv^2\omega_1+\frac{1}{2}u\omega_4^2\omega_1-u\omega_3v^2\omega_4+\omega_2uv\omega_1^2-\frac{1}{2}u\omega_3\omega_4^2\omega_1+u\omega_3\omega_4-8u\omega_3v\omega_4\omega_1+5u\omega_1-\frac{1}{2}u\omega_3^2\omega_4\omega_1-6u\omega_3\omega_1+\omega_2u\omega_3v+\omega_2u\omega_3+2uv^2\omega_4^2\omega_1+2u\omega_3^2v\omega_4-2u\omega_3v^2\omega_4^2\omega_1-\omega_2u\omega_3^2v\omega_1+\frac{1}{2}\omega_2u\omega_4\omega_1+{c_s}^2\omega_2u\omega_4\omega_1-u\omega_1^2+{c_s}^2\omega_2u\omega_3^2\omega_4-\omega_2u\omega_3v^2\omega_4+u\omega_3\omega_1^2-2\omega_2^2u\omega_3v^2\omega_1+2\omega_2u\omega_3v^2-\omega_2u\omega_3^2-{c_s}^2u\omega_4\omega_1-\frac{1}{2}\omega_2u\omega_3^2\omega_1+2\omega_2u\omega_3v^2\omega_1+u\omega_3v\omega_4\omega_1^2+3\omega_2u\omega_3v^2\omega_4\omega_1-uv\omega_4\omega_1^2-6\omega_2uv\omega_1-{c_s}^2u\omega_3^2\omega_4-\omega_2u\omega_3^2v\omega_4+\frac{1}{2}\omega_2u\omega_1^2+u\omega_3^2v\omega_4\omega_1+3\omega_2u\omega_3\omega_1+7\omega_2u\omega_3v\omega_1+2u\omega_3^2+\frac{1}{2}u\omega_4\omega_1^2+{c_s}^2u\omega_3\omega_4+\omega_2u\omega_3^2v^2\omega_4-\frac{1}{2}u\omega_3\omega_4\omega_1^2-3\omega_2uv^2\omega_4\omega_1-2\omega_2uv^2\omega_1+\omega_2u\omega_3v\omega_4-{c_s}^2\omega_2u\omega_3\omega_4\omega_1-{c_s}^2\omega_2u\omega_3\omega_4-2\omega_2u\omega_3^2v^2-\frac{1}{2}\omega_2u\omega_3\omega_4\omega_1-\omega_2^2u\omega_3v\omega_1+u\omega_3^2\omega_1+u\omega_3^2v^2\omega_4+uv^2\omega_4\omega_1-\omega_2u\omega_3^2v-u\omega_3v^2\omega_4\omega_1-\frac{7}{2}u\omega_4\omega_1-2u\omega_3v\omega_4+\omega_2^2uv\omega_1-2uv\omega_4^2\omega_1+{c_s}^2u\omega_3\omega_4\omega_1+4u\omega_3\omega_4\omega_1-\frac{5}{2}\omega_2u\omega_1+2u\omega_3v\omega_4^2\omega_1-2u\omega_3-\omega_2u\omega_3v\omega_1^2-u\omega_3^2\omega_4-\frac{1}{2}\omega_2u\omega_3\omega_1^2,$

$\alpha^{[\mu_2],t-3\delta_t}_{x,y-\delta_l}=3-\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_4^2+4\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4+5\omega_3\omega_1+\omega_2^2v-2\omega_2^2v^2\omega_1+v\omega_4\omega_1^2-7\omega_2\omega_3v\omega_1-2\omega_3v^2\omega_4^2-\frac{1}{2}\omega_2\omega_1^2-\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3^2\omega_1-2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2\omega_1+6\omega_2v\omega_1+\omega_1^2-\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1+\omega_3^2v\omega_4-\frac{3}{2}\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1-\omega_3^2v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4^2+6\omega_2\omega_3v+\frac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2-6v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_4+\omega_2\omega_3v\omega_1^2+\omega_2^2\omega_3v\omega_1-\omega_2\omega_3^2v-\frac{7}{2}\omega_3\omega_4\omega_1-6\omega_3v\omega_4+2\omega_2\omega_3+2v\omega_4^2\omega_1-4\omega_3+\omega_2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1^2-2v\omega_4^2-\omega_2^2\omega_3v+\frac{1}{2}\omega_2\omega_3\omega_1^2-\omega_3v\omega_4\omega_1^2-\omega_2v\omega_4\omega_1-\frac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_3^2\omega_4+7\omega_3v\omega_4\omega_1+\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1+5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\frac{5}{2}\omega_4-4\omega_2v^2\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1-5\omega_2v-4\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4+2\omega_3v\omega_4^2-\frac{1}{2}\omega_2\omega_3^2-\omega_2^2v\omega_1,$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y}=-1+\frac{1}{2}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2^2u^2\omega_3+\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\frac{1}{2}u\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2+\frac{1}{2}\omega_2u^2\omega_3\omega_4^2-5\omega_2u^2\omega_1+u\omega_3\omega_4-2u^2\omega_3-3u^3\omega_3\omega_4\omega_1-\omega_2^2u^2\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4^2+2u\omega_1-\frac{1}{2}\omega_2u^2\omega_3\omega_4\omega_1+\omega_2u\omega_3-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3-5u^2\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-\omega_2u^3\omega_3^2\omega_4-u^3\omega_3^2-\frac{1}{2}u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_3^2+2\omega_2u^3\omega_1^2+\frac{1}{2}\omega_2^2u\omega_1+\frac{1}{2}\omega_2u^2\omega_3\omega_1-2\omega_2u^3\omega_4\omega_1^2+2{c_s}^2\omega_3+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1+\omega_2+3\omega_2u\omega_4\omega_1+3\omega_2u^3\omega_3\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_1+{c_s}^2\omega_2u\omega_3^2\omega_4-\frac{1}{2}\omega_2\omega_1+3u^3\omega_3\omega_1+u^2\omega_4\omega_1^2+\omega_2u^2\omega_1^2-\omega_2u^2\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3^2-\frac{5}{2}{c_s}^2\omega_3\omega_4-\omega_2\omega_4+\frac{1}{2}u^2\omega_3\omega_4\omega_1+3{c_s}^2\omega_2\omega_3\omega_4-{c_s}^2u\omega_3^2\omega_4-3\omega_2u^2\omega_3\omega_4+6\omega_2u^2\omega_4\omega_1+u^3\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_3^2\omega_4+{c_s}^2\omega_2u\omega_3\omega_1-\frac{1}{2}\omega_2\omega_3+\frac{1}{2}\omega_3+\frac{1}{2}\omega_2u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4-\frac{1}{2}u^2\omega_3\omega_4^2-{c_s}^2u\omega_3\omega_1-\frac{1}{2}\omega_2u\omega_4^2\omega_1-\omega_2u\omega_3\omega_4-{c_s}^2\omega_2u\omega_3\omega_4\omega_4\omega_1-u^2\omega_1^2-\frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4-\frac{1}{2}\omega_2u^2\omega_3^2+\frac{1}{2}{c_s}^2\omega_2\omega_3^2+4u^2\omega_1+u^2\omega_4^2\omega_1-\frac{5}{2}{c_s}^2\omega_2\omega_3+{c_s}^2u\omega_3^2+\frac{5}{2}\omega_2u^2\omega_3-\frac{1}{2}\omega_2^2u\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1+\frac{5}{2}u^2\omega_3\omega_4-{c_s}^2\omega_2u\omega_3^2+\omega_2^2u^2\omega_1-\frac{5}{2}u\omega_4\omega_1+\frac{1}{2}\omega_2^2u^2\omega_3\omega_4+\omega_4+\omega_2u^3\omega_3^2-\frac{1}{2}u^2\omega_3\omega_1+2u^3\omega_4\omega_1^2+{c_s}^2u\omega_3\omega_4\omega_1-2u^3\omega_1^2-3\omega_2u^3\omega_3\omega_1-\omega_2u^2\omega_4\omega_1^2-\frac{5}{2}\omega_2u\omega_1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4-u\omega_3,$

$\alpha^{[\mu_2],t-3\delta_t}_{x-\delta_l,y}=3-\frac{5}{2}\omega_2\omega_4\omega_1+\omega_4^2-u\omega_4^2\omega_1+\frac{1}{2}\omega_3\omega_1-6u\omega_3\omega_4-\omega_2\omega_4^2+\frac{1}{2}\omega_2\omega_3^2\omega_4-5u\omega_1+u\omega_3\omega_1-4\omega_2u^2\omega_3\omega_4\omega_1-$

$$\omega_2^2 u\omega_3\omega_4 - 6\omega_2 u\omega_3 + 3\omega_3\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2\omega_1 - 2u^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_3\omega_4 + \omega_2 u\omega_4\omega_1^2 - \omega_2^2 u\omega_1 + 4\omega_2 u^2\omega_3\omega_1 + \omega_2^2 - 4\omega_2 - 7\omega_2 u\omega_4\omega_1 + u\omega_1^2 + 2\omega_2\omega_1 - 2\omega_2 u\omega_3^2\omega_4 + 2\omega_2 u\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4^2 - 2u^2\omega_4\omega_1^2 - 2\omega_2 u^2\omega_1^2 + 2u^2\omega_3^2 + u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_3 + 5\omega_2\omega_4 + 4u^2\omega_3\omega_4\omega_1 - \omega_2 u\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4^2 - \omega_2 u\omega_3\omega_1 + 3\omega_2\omega_3 - 2u\omega_3^2 - u\omega_4\omega_1^2 - \tfrac{5}{2}\omega_3 + 2\omega_2 u^2\omega_3^2\omega_4 + \omega_2 u\omega_4^2\omega_1 + 7\omega_2 u\omega_3\omega_4 - \tfrac{1}{2}\omega_2^2\omega_1 + 2u^2\omega_1^2 - 2\omega_2 u^2\omega_3^2 + \omega_2 u\omega_3\omega_4\omega_1 - \omega_2 u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_4\omega_1 + \omega_2^2 u\omega_4\omega_1 + 2\omega_4\omega_1 + 6u\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2 + \omega_2^2 u\omega_3 + \tfrac{1}{2}\omega_2\omega_4^2\omega_1 - 4\omega_4 - 4u^2\omega_3\omega_1 - u\omega_3\omega_4\omega_1 + 2\omega_2 u^2\omega_4\omega_1^2 + 6\omega_2 u\omega_1 - \tfrac{3}{2}\omega_1 - \tfrac{7}{2}\omega_2\omega_3\omega_4 + 5u\omega_3 + 2u\omega_3^2\omega_4 - \tfrac{1}{2}\omega_2\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -4\omega_2^2 uv^2\omega_1 + 2u\omega_3 v^2\omega_4 - \omega_2^2 u\omega_3\omega_1 + 2u\omega_3\omega_4 + 6u^3\omega_3\omega_4\omega_1 + 5u\omega_1 - 4u\omega_3\omega_1 + 2\omega_2 u\omega_3 - 4uv^2\omega_4^2\omega_1 + 2\omega_2 u^3\omega_3^2\omega_4 + 2u^3\omega_3^2 + 4u\omega_3 v^2\omega_4^2\omega_1 - 4\omega_2 u^3\omega_1^2 - \omega_2 u\omega_4\omega_1^2 + \omega_2^2 u\omega_1 + 4\omega_2 u^3\omega_4\omega_1^2 + 4\omega_2 u\omega_4\omega_1 - 6\omega_2 u^3\omega_3\omega_4\omega_1 - 2{c_s}^2\omega_2 u\omega_4\omega_1 - u\omega_1^2 - 4{c_s}^2\omega_2 u\omega_3^2\omega_4 + 2\omega_2 u\omega_3 v^2\omega_4 + 2\omega_2 u\omega_3^2\omega_4 + 4\omega_2^2 u\omega_3 v^2\omega_1 - 4\omega_2 u\omega_3 v^2 - 2\omega_2 u\omega_3^2 - 6u^3\omega_3\omega_1 + 2{c_s}^2 u\omega_4\omega_1 - 4\omega_2 u\omega_3 v^2\omega_1 - 6\omega_2 u\omega_3 v^2\omega_4\omega_1 + 4{c_s}^2 u\omega_3^2\omega_4 + \omega_2 u\omega_1^2 - 2u^3\omega_3^2\omega_4 - 2{c_s}^2\omega_2 u\omega_3\omega_1 + 5\omega_2 u\omega_3\omega_1 + 2u\omega_3^2 + u\omega_4\omega_1^2 - 2{c_s}^2 u\omega_3\omega_4 - 2\omega_2 u\omega_3^2 v^2\omega_4 + 6\omega_2 uv^2\omega_4\omega_1 + 4\omega_2 uv^2\omega_1 + 2{c_s}^2 u\omega_3\omega_1 - 2\omega_2 u\omega_3\omega_4 + 4{c_s}^2\omega_2 u\omega_3\omega_4\omega_1 + 2{c_s}^2\omega_2 u\omega_3\omega_4 + 4\omega_2 u\omega_3^2 v^2 - 3\omega_2 u\omega_3\omega_4\omega_1 - 2u\omega_3^2 v^2\omega_4 - 2uv^2\omega_4\omega_1 - 2{c_s}^2 u\omega_3^2 + 2u\omega_3 v^2\omega_4\omega_1 + 2{c_s}^2\omega_2 u\omega_3^2 - 4u\omega_4\omega_1 - 2\omega_2 u^3\omega_3^2 - 4u^3\omega_4\omega_1^2 - 4{c_s}^2 u\omega_3\omega_4\omega_1 + 4u^3\omega_1^2 + 3u\omega_3\omega_4\omega_1 + 6\omega_2 u^3\omega_3\omega_1 - 6\omega_2 u\omega_1 - 2u\omega_3 - 2u\omega_3^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_2],t-3\delta_t} = 3 - 3\omega_2\omega_4\omega_1 + \omega_2^2\omega_3\omega_1 - 8\omega_2 v^2\omega_4\omega_1 + 2\omega_3\omega_1 + 4\omega_2^2 v^2\omega_1 + 4\omega_3 v^2\omega_4^2 - \omega_2\omega_1^2 + 8\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_3\omega_4 + \omega_2\omega_3\omega_4\omega_1 + 4u^2\omega_3^2\omega_4 + \omega_1^2 - 8\omega_2 u^2\omega_3\omega_1 + 4v^2\omega_4^2\omega_1 + \omega_2^2 - 4\omega_2 - 4v^2\omega_4^2 + 5\omega_2\omega_1 + 8\omega_2\omega_3 v^2\omega_4\omega_1 + 4u^2\omega_4\omega_1^2 + 4\omega_2 u^2\omega_1^2 - 4\omega_2^2 v^2 - 4\omega_2^2\omega_3 v^2\omega_1 - 4u^2\omega_3^2 - \omega_2^2\omega_3 + 2\omega_2\omega_4 + \omega_2\omega_4\omega_1^2 - 8u^2\omega_3\omega_4\omega_1 - \omega_3\omega_4\omega_1 + 3\omega_2\omega_3 - 2\omega_3 - 4\omega_2 u^2\omega_3^2\omega_4 - \omega_4\omega_1^2 - \omega_2^2\omega_1 - 4u^2\omega_1^2 + 4\omega_2 u^2\omega_3^2 - 3\omega_2\omega_3\omega_1 - 8\omega_2\omega_3 v^2\omega_4 + 3\omega_4\omega_1 + 4\omega_2^2\omega_3 v^2 - 4\omega_3 v^2\omega_4^2\omega_1 - 2\omega_4 + 8u^2\omega_3\omega_1 + 8\omega_2 v^2\omega_4 - 4\omega_2 u^2\omega_4\omega_1^2 - 4\omega_1 - \omega_2\omega_3\omega_4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = 1 - \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_2^2 u^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}u\omega_4^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2 u^2\omega_3\omega_4^2 + 5\omega_2 u^2\omega_1 + u\omega_3\omega_4 + 2u^2\omega_3 - 3u^3\omega_3\omega_4\omega_1 + \omega_2^2 u^2\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4^2 + 2u\omega_1 + \tfrac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_2 u\omega_3 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3 + 5u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 - \omega_2 u^3\omega_3^2\omega_4 - u^3\omega_3^2 + \tfrac{1}{2}u^2\omega_3^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3^2 + 2\omega_2 u^3\omega_1^2 + \tfrac{1}{2}\omega_2^2 u\omega_1 - \tfrac{1}{2}\omega_2 u^2\omega_3\omega_1 - 2\omega_2 u^3\omega_4\omega_1^2 - 2{c_s}^2\omega_3 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 - \omega_2 + 3\omega_2 u\omega_4\omega_1 + 3\omega_2 u^3\omega_3\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + {c_s}^2\omega_2 u\omega_3^2\omega_4 + \tfrac{1}{2}\omega_2\omega_1 + 3u^3\omega_3\omega_1 - u^2\omega_4\omega_1^2 - \omega_2 u^2\omega_1^2 + \omega_2 u^2\omega_4^2\omega_1 - \tfrac{1}{2}u^2\omega_3^2 + \tfrac{5}{2}{c_s}^2\omega_3\omega_4 + \omega_2\omega_4 - \tfrac{1}{2}u^2\omega_3\omega_4\omega_1 - 3{c_s}^2\omega_2\omega_3\omega_4 - {c_s}^2 u\omega_3^2\omega_4 + 3\omega_2 u^2\omega_3\omega_4 - 6\omega_2 u^2\omega_4\omega_1 + u^3\omega_3^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3^2\omega_4 + {c_s}^2\omega_2 u\omega_3\omega_1 + \tfrac{1}{2}\omega_2\omega_3 - \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_2 u^2\omega_3^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4 + \tfrac{1}{2}u^2\omega_3\omega_4^2 - {c_s}^2 u\omega_3\omega_1 - \tfrac{1}{2}\omega_2 u\omega_4^2\omega_1 - \omega_2 u\omega_3\omega_4 - {c_s}^2\omega_2 u\omega_3\omega_4\omega_1 + u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2 u^2\omega_3^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2 - 4u^2\omega_1 - u^2\omega_4^2\omega_1 + \tfrac{5}{2}{c_s}^2\omega_2\omega_3 + {c_s}^2 u\omega_3^2 - \tfrac{5}{2}\omega_2 u^2\omega_3 - \tfrac{1}{2}\omega_2^2 u\omega_4\omega_1 + \tfrac{1}{2}\omega_4\omega_1 - \tfrac{5}{2}u^2\omega_3\omega_4 - {c_s}^2\omega_2 u\omega_3^2 - \omega_2^2 u^2\omega_1 - \tfrac{5}{2}u\omega_4\omega_1 - \tfrac{1}{2}\omega_2^2 u^2\omega_3\omega_4 - \omega_4 + \omega_2 u^3\omega_3^2 + \tfrac{1}{2}u^2\omega_3\omega_1 + 2u^3\omega_4\omega_1^2 + {c_s}^2 u\omega_3\omega_4\omega_1 - 2u^3\omega_1^2 - 3\omega_2 u^3\omega_3\omega_1 + \omega_2 u^2\omega_4\omega_1^2 - \tfrac{5}{2}\omega_2 u\omega_1 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2\omega_3\omega_4 - u\omega_3,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-3\delta_t} = 3 - \tfrac{5}{2}\omega_2\omega_4\omega_1 + \omega_4^2 + u\omega_4^2\omega_1 + \tfrac{1}{2}\omega_3\omega_1 + 6u\omega_3\omega_4 - \omega_2\omega_4^2 + \tfrac{1}{2}\omega_2\omega_3^2\omega_4 + 5u\omega_1 - u\omega_3\omega_1 - 4\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_2^2 u\omega_3\omega_4 + 6\omega_2 u\omega_3 + 3\omega_3\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2\omega_1 - 2u^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_3\omega_4 - \omega_2 u\omega_4\omega_1^2 + \omega_2^2 u\omega_1 + 4\omega_2 u^2\omega_3\omega_1 + \omega_2^2 - 4\omega_2 + 7\omega_2 u\omega_4\omega_1 - u\omega_1^2 + 2\omega_2\omega_1 + 2\omega_2 u\omega_3^2\omega_4 - 2\omega_2 u\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4^2 - 2u^2\omega_4\omega_1^2 - 2\omega_2 u^2\omega_1^2 + 2u^2\omega_3^2 - u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_3 + 5\omega_2\omega_4 + 4u^2\omega_3\omega_4\omega_1 + \omega_2 u\omega_1^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2\omega_4 + \tfrac{1}{2}\omega_2\omega_3\omega_4^2 + \omega_2 u\omega_3\omega_1 + 3\omega_2\omega_3 + 2u\omega_3^2 + u\omega_4\omega_1^2 - \tfrac{5}{2}\omega_3 + 2\omega_2 u^2\omega_3^2\omega_4 - \omega_2 u\omega_4^2\omega_1 - 7\omega_2 u\omega_3\omega_4 - \tfrac{1}{2}\omega_2^2\omega_1 + 2u^2\omega_1^2 - 2\omega_2 u^2\omega_3^2 - \omega_2 u\omega_3\omega_4\omega_1 + \omega_2 u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_2^2\omega_4\omega_1 - \omega_2^2 u\omega_4\omega_1 + 2\omega_4\omega_1 - 6u\omega_4\omega_1 + \tfrac{1}{2}\omega_3^2 - \omega_2^2 u\omega_3 + \tfrac{1}{2}\omega_2\omega_4^2\omega_1 - 4\omega_4 - 4u^2\omega_3\omega_1 + u\omega_3\omega_4\omega_1 + 2\omega_2 u^2\omega_4\omega_1^2 - 6\omega_2 u\omega_1 - \tfrac{3}{2}\omega_1 - \tfrac{7}{2}\omega_2\omega_3\omega_4 - 5u\omega_3 - 2u\omega_3^2\omega_4 - \tfrac{1}{2}\omega_2\omega_3^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = -7uv\omega_4\omega_1 + 2\omega_2^2 uv^2\omega_1 + \tfrac{1}{2}u\omega_4^2\omega_1 - u\omega_3 v^2\omega_4 - \omega_2 uv\omega_1^2 - \tfrac{1}{2}u\omega_3\omega_4^2\omega_1 + u\omega_3\omega_4 + 8u\omega_3 v\omega_4\omega_1 + 5u\omega_1 - \tfrac{1}{2}u\omega_3^2\omega_4\omega_1 - 6u\omega_3\omega_1 - \omega_2 u\omega_3 v + \omega_2 u\omega_3 + 2uv^2\omega_4^2\omega_1 - 2u\omega_3^2 v\omega_4 - 2u\omega_3 v^2\omega_4^2\omega_1 + \omega_2 u\omega_3^2 v\omega_1 + \tfrac{1}{2}\omega_2 u\omega_4\omega_1 + {c_s}^2\omega_2 u\omega_4\omega_1 - u\omega_1^2 + {c_s}^2\omega_2 u\omega_3^2\omega_4 - \omega_2 u\omega_3 v^2\omega_4 + u\omega_3\omega_1^2 - 2\omega_2^2 u\omega_3 v^2\omega_1 + 2\omega_2 u\omega_3 v^2 - \omega_2 u\omega_3^2 - {c_s}^2 u\omega_4\omega_1 - \tfrac{1}{2}\omega_2 u\omega_3^2\omega_1 + 2\omega_2 u\omega_3 v^2\omega_1 - u\omega_3 v\omega_4\omega_1^2 + 3\omega_2 u\omega_3 v^2\omega_4\omega_1 + uv\omega_4\omega_1^2 + 6\omega_2 uv\omega_1 - {c_s}^2 u\omega_3^2\omega_4 + \omega_2 u\omega_3^2 v\omega_4 + \tfrac{1}{2}\omega_2 u\omega_1^2 - u\omega_3^2 v\omega_4\omega_1 + 3\omega_2 u\omega_3\omega_1 - 7\omega_2 u\omega_3 v\omega_1 + 2u\omega_3^2 + \tfrac{1}{2}u\omega_4\omega_1^2 + {c_s}^2 u\omega_3\omega_4 + \omega_2 u\omega_3^2 v^2\omega_4 - \tfrac{1}{2}u\omega_3\omega_4\omega_1^2 - 3\omega_2 uv^2\omega_4\omega_1 - 2\omega_2 uv^2\omega_1 - \omega_2 u\omega_3 v\omega_4 - {c_s}^2\omega_2 u\omega_3\omega_4\omega_1 - {c_s}^2\omega_2 u\omega_3\omega_4 - 2\omega_2 u\omega_3^2 v^2 - \tfrac{1}{2}\omega_2 u\omega_3\omega_4\omega_1 + \omega_2^2 u\omega_3 v\omega_1 + u\omega_3^2\omega_1 + u\omega_3^2 v^2\omega_4 + uv^2\omega_4\omega_1 + \omega_2 u\omega_3^2 v - u\omega_3 v^2\omega_4\omega_1 - \tfrac{7}{2}u\omega_4\omega_1 + 2u\omega_3 v\omega_4 - \omega_2^2 uv\omega_1 + 2uv\omega_4^2\omega_1 + {c_s}^2 u\omega_3\omega_4\omega_1 + 4u\omega_3\omega_4\omega_1 - \tfrac{5}{2}\omega_2 u\omega_1 - 2u\omega_3 v\omega_4^2\omega_1 - 2u\omega_3 + \omega_2 u\omega_3 v\omega_1^2 - u\omega_3^2\omega_4 - \tfrac{1}{2}\omega_2 u\omega_3\omega_1^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t} = 3 - \tfrac{1}{2}\omega_2\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 + 4\omega_2 v^2\omega_4\omega_1 - \omega_2 v\omega_4 + 5\omega_3\omega_1 - \omega_2^2 v - 2\omega_2^2 v^2\omega_1 - v\omega_4\omega_1^2 + 7\omega_2\omega_3 v\omega_1 -$$

$2\omega_3v^2\omega_4^2-\frac{1}{2}\omega_2\omega_1^2+\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3^2\omega_1+2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2\omega_1-6\omega_2v\omega_1+\omega_1^2+\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1-\omega_3^2v\omega_4-\frac{3}{2}\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1+\omega_3^2v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4^2-6\omega_2\omega_3v+\frac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2+6v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_4-\omega_2\omega_3v\omega_1^2-\omega_2^2\omega_3v\omega_1+\omega_2\omega_3^2v-\frac{7}{2}\omega_3\omega_4\omega_1+6\omega_3v\omega_4+2\omega_2\omega_3-2v\omega_4^2\omega_1-4\omega_3-\omega_2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1^2+2v\omega_4^2+\omega_2^2\omega_3v+\frac{1}{2}\omega_2\omega_3\omega_1^2+\omega_3v\omega_4\omega_1^2+\omega_2v\omega_4\omega_1-\frac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_3^2\omega_4-7\omega_3v\omega_4\omega_1-\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1-5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\frac{5}{2}\omega_4-4\omega_2v^2\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1+5\omega_2v-4\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4-2\omega_3v\omega_4^2-\frac{1}{2}\omega_2\omega_3^2+\omega_2^2v\omega_1,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=-u\omega_4^2\omega_1+u\omega_3\omega_4^2\omega_1+\omega_2^2u\omega_3\omega_1-2u\omega_3\omega_4-6u\omega_1+u\omega_3^2\omega_4\omega_1+7u\omega_3\omega_1-2\omega_2u\omega_3+\omega_2u\omega_4\omega_1^2-\omega_2^2u\omega_1-8\omega_2u\omega_4\omega_1+u\omega_1^2-u\omega_3\omega_1^2-2\omega_2u\omega_3^2\omega_4-\omega_2u\omega_3\omega_4^2\omega_1+2\omega_2u\omega_3^2+\omega_2u\omega_3^2\omega_1-\omega_2u\omega_3^2\omega_4\omega_1-\omega_2u\omega_1^2-8\omega_2u\omega_3\omega_1-\omega_2^2u\omega_3\omega_4\omega_1-2u\omega_3^2-u\omega_4\omega_1^2+u\omega_3\omega_4\omega_1^2+\omega_2u\omega_4^2\omega_1+2\omega_2u\omega_3\omega_4+9\omega_2u\omega_3\omega_4\omega_1-u\omega_3^2\omega_1-\omega_2u\omega_3\omega_4\omega_1^2+\omega_2^2u\omega_4\omega_1+7u\omega_4\omega_1-8u\omega_3\omega_4\omega_1+7\omega_2u\omega_1+2u\omega_3+2u\omega_3^2\omega_4+\omega_2u\omega_3\omega_1^2,$

$\alpha_{x,y}^{[\mu_2],t-4\delta_t}=-4+7\omega_2\omega_4\omega_1-\omega_4^2-\omega_2^2\omega_3\omega_1-6\omega_3\omega_1+\omega_2\omega_4^2-\omega_2\omega_3^2\omega_4+\omega_2\omega_1^2-\omega_2\omega_3^2\omega_1-6\omega_3\omega_4-8\omega_2\omega_3\omega_4\omega_1+\omega_4^2\omega_1-\omega_2^2\omega_3\omega_4-\omega_1^2-\omega_2^2+5\omega_2-\omega_3^2\omega_4\omega_1-6\omega_2\omega_1+\omega_2\omega_3\omega_4\omega_1^2+\omega_3\omega_4^2-\omega_3\omega_4^2\omega_1+\omega_3\omega_1^2+\omega_2^2\omega_3-6\omega_2\omega_4-\omega_2\omega_4\omega_1^2+7\omega_3\omega_4\omega_1+\omega_2^2\omega_4-\omega_2\omega_3\omega_4^2-6\omega_2\omega_3+5\omega_3+\omega_4\omega_1^2+\omega_2^2\omega_1+\omega_2^2\omega_3\omega_4\omega_1-\omega_2\omega_3\omega_1^2+7\omega_2\omega_3\omega_1+\omega_2\omega_3\omega_4^2\omega_1+\omega_3^2\omega_4-\omega_2^2\omega_4\omega_1-6\omega_4\omega_1-\omega_3^2+\omega_2\omega_3^2\omega_4\omega_1-\omega_2\omega_4^2\omega_1+5\omega_4-\omega_3\omega_4\omega_1^2+\omega_3^2\omega_1+5\omega_1+7\omega_2\omega_3\omega_4+\omega_2\omega_3^2,$

7.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t}\mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1-\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_2+\omega_2v^2+\frac{1}{2}{c_s}^2\omega_4+v\omega_4-\frac{1}{2}\omega_4-\frac{1}{2}\omega_2v.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t}=-1+\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_2-\omega_2v^2-\frac{1}{2}{c_s}^2\omega_4+v\omega_4+\frac{1}{2}\omega_4-\frac{1}{2}\omega_2v.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{1}{2}uv\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4+\frac{1}{2}\omega_2u^2\omega_1+\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}u^2\omega_3+\frac{1}{2}u\omega_1+\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}u^2\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}{c_s}^2\omega_3+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v+\frac{1}{2}v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4+\frac{1}{2}u^2\omega_3v\omega_4-\frac{1}{2}\omega_2uv\omega_1+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2\omega_3+\frac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1-u^2\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}u^2\omega_3\omega_4-v\omega_4-\frac{1}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4+\omega_2v-\frac{1}{4}\omega_2u\omega_1+\frac{1}{2}\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t}=1-uv\omega_4\omega_1-\frac{1}{2}u\omega_3\omega_4-u\omega_1-\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2\omega_3v-\frac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_3+\frac{1}{4}\omega_4\omega_1+v\omega_4+\frac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\frac{1}{2}\omega_4-\omega_2v+\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+{c_s}^2\omega_3v\omega_4-\omega_2u^2\omega_1-v^3\omega_4^2-u^2\omega_3-u^2\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_4-v^2\omega_4+{c_s}^2\omega_3+\frac{1}{2}\omega_2-2\omega_2^2v^3+\frac{1}{2}v^2\omega_4^2-\omega_2^2v^2-\frac{1}{2}{c_s}^2\omega_3\omega_4-u^2\omega_3v\omega_4+2\omega_2v^2-{c_s}^2\omega_2v\omega_4+2u^2v\omega_4\omega_1+{c_s}^2\omega_4+3\omega_2v^3\omega_4-2\omega_2u^2v\omega_1+2u^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3+\frac{1}{2}\omega_2u^2\omega_3+\frac{1}{2}u^2\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_4^2-v\omega_4-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v+\frac{1}{2}\omega_4+{c_s}^2v\omega_4^2-\frac{1}{2}\omega_2v^2\omega_4+\omega_2v,$

$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t}=1+\frac{1}{2}\omega_4^2+\omega_2v\omega_4+\omega_2^2v-\frac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\frac{1}{2}\omega_2\omega_4-2v\omega_4^2+3v\omega_4-\frac{3}{2}\omega_4-4\omega_2v^2\omega_4-3\omega_2v,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1-\frac{1}{2}uv\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4+\frac{1}{2}\omega_2u^2\omega_1-\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}u^2\omega_3-\frac{1}{2}u\omega_1-\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}u^2\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}{c_s}^2\omega_3+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v+\frac{1}{2}v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4+\frac{1}{2}u^2\omega_3v\omega_4+\frac{1}{2}\omega_2uv\omega_1+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2\omega_3+\frac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1-u^2\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}u^2\omega_3\omega_4-v\omega_4+\frac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4+\omega_2v+\frac{1}{4}\omega_2u\omega_1+\frac{1}{2}\omega_1+u\omega_3,$

$$\alpha^{[\mu_3],t-\delta_t}_{x+\delta_l,y-\delta_l} = 1+uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1+\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1+v\omega_4-\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4-\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha^{[\mu_3],t-\delta_t}_{x-\delta_l,y} = 1+\tfrac{1}{2}\omega_3\omega_1-3u\omega_1+u\omega_3\omega_1+u\omega_1^2+2u^2\omega_3^2-2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1+3u\omega_3,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x,y} = -2\omega_2v\omega_4-\omega_2^2v+2v^3\omega_4^2+4\omega_2^2v^3+2{c_s}^2\omega_2v\omega_4+2v\omega_4^2-6\omega_2v^3\omega_4-2v\omega_4-2{c_s}^2v\omega_4^2+3\omega_2v,$$

$$\alpha^{[\mu_3],t-\delta_t}_{x,y} = 2+\omega_1^2+\omega_2^2-2\omega_2-4v^2\omega_4^2-4\omega_2^2v^2-4u^2\omega_3^2-4u^2\omega_1^2+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-2\omega_1,$$

$$\alpha^{[\mu_3],t-\delta_t}_{x+\delta_l,y} = 1+\tfrac{1}{2}\omega_3\omega_1+3u\omega_1-u\omega_3\omega_1-u\omega_1^2+2u^2\omega_3^2+2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1-3u\omega_3,$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = {}& 1+\tfrac{1}{2}uv\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4-\tfrac{1}{2}\omega_2u^2\omega_1-\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}u^2\omega_3-\tfrac{1}{2}u\omega_1+\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3-\\ &\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1+\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3v\omega_4-\\ &\tfrac{1}{2}\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1+u^2\omega_1-\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\tfrac{1}{4}\omega_2u^2\omega_3+\tfrac{1}{4}\omega_4\omega_1+\\ &\tfrac{1}{4}u^2\omega_3\omega_4-v\omega_4+\tfrac{1}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-\tfrac{1}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{4}\omega_2u\omega_1-\tfrac{1}{2}\omega_1+u\omega_3,\end{aligned}$$

$$\alpha^{[\mu_3],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1+uv\omega_4\omega_1-\tfrac{1}{2}u\omega_3\omega_4-u\omega_1+\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4+\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x,y+\delta_l} = 1+{c_s}^2\omega_3v\omega_4+\omega_2u^2\omega_1-v^3\omega_4^2+u^2\omega_3+u^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_2\omega_4+v^2\omega_4-{c_s}^2\omega_3-\tfrac{1}{2}\omega_2-2\omega_2^2v^3-\tfrac{1}{2}v^2\omega_4^2+\omega_2^2v^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4-u^2\omega_3v\omega_4-2\omega_2v^2-{c_s}^2\omega_2v\omega_4+2u^2v\omega_4\omega_1-{c_s}^2\omega_4+3\omega_2v^3\omega_4-2\omega_2u^2v\omega_1-2u^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_2\omega_3-\tfrac{1}{2}\omega_2u^2\omega_3-\tfrac{1}{2}u^2\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_4^2-v\omega_4-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+{c_s}^2v\omega_4^2+\tfrac{1}{2}\omega_2v^2\omega_4+\omega_2v,$$

$$\alpha^{[\mu_3],t-\delta_t}_{x,y+\delta_l} = 1+\tfrac{1}{2}\omega_4^2-\omega_2v\omega_4-\omega_2^2v-\tfrac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\tfrac{1}{2}\omega_2\omega_4+2v\omega_4^2-3v\omega_4-\tfrac{3}{2}\omega_4-4\omega_2v^2\omega_4+3\omega_2v,$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = {}& 1-\tfrac{1}{2}uv\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4-\tfrac{1}{2}\omega_2u^2\omega_1+\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}u^2\omega_3+\tfrac{1}{2}u\omega_1-\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3-\\ &\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1+\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3v\omega_4+\\ &\tfrac{1}{2}\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1+u^2\omega_1-\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\tfrac{1}{4}\omega_2u^2\omega_3+\tfrac{1}{4}\omega_4\omega_1+\\ &\tfrac{1}{4}u^2\omega_3\omega_4-v\omega_4-\tfrac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-\tfrac{1}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\omega_2v-\tfrac{1}{4}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,\end{aligned}$$

$$\alpha^{[\mu_3],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1-uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1-\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4-\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\begin{aligned}\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = {}& 1-\tfrac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v+\tfrac{1}{4}\omega_3v^2\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1-\omega_2^2uv^2\omega_1+\tfrac{5}{2}u\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2uv\omega_1^2-\\ &\tfrac{1}{2}{c_s}^2\omega_3v\omega_4-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2v\omega_4^2\omega_1-3\omega_2u\omega_3v^3\omega_4-\tfrac{1}{2}{c_s}^2u\omega_4\omega_1^2+\tfrac{1}{2}\omega_2u^2\omega_1+\tfrac{5}{2}\omega_2\omega_3v^2+\tfrac{3}{2}\omega_2u^2\omega_3v\omega_1+\\ &v^3\omega_4^2-\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}\omega_2^2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_2\omega_3v\omega_1+\tfrac{1}{4}\omega_3v^2\omega_4^2-\tfrac{1}{2}u\omega_3v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2-\\ &2\omega_2u^2v^2\omega_1^2-\tfrac{1}{2}u\omega_1-\tfrac{1}{2}u\omega_3\omega_1+u^2v^2\omega_4\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{5}{2}\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}uv^2\omega_4^2\omega_1+\\ &3\omega_2uv^3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1+\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_4+u\omega_3v^3\omega_4^2+\tfrac{3}{4}\omega_2v\omega_1+\tfrac{3}{2}v^2\omega_4-\tfrac{1}{4}\omega_2u^2\omega_3\omega_1+\\ &\tfrac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1-\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3v^3\omega_4^2-\tfrac{1}{2}\omega_2-\tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3-\tfrac{1}{2}v^2\omega_4^2+\\ &\tfrac{1}{2}{c_s}^2\omega_3\omega_1+u^2\omega_3^2v^2\omega_4+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2u\omega_3v^2\omega_4-5\omega_2u\omega_3v^2-{c_s}^2\omega_2uv\omega_4\omega_1-2\omega_2^2uv^3\omega_1+\tfrac{5}{4}\omega_2\omega_3v+\omega_2^2v^2+\\ &\tfrac{5}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1-\omega_2u\omega_3v^2\omega_1+\tfrac{3}{2}{c_s}^2\omega_3\omega_4-\tfrac{5}{4}\omega_3v^2\omega_4+2{c_s}^2u^2\omega_3\omega_4\omega_1-2\omega_2u^2\omega_3^2v^2-\tfrac{1}{4}{c_s}^2\omega_4^2\omega_1-\\ &\tfrac{1}{2}u\omega_3v^2\omega_4^2-\tfrac{1}{4}u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4+2\omega_2uv\omega_1+{c_s}^2u\omega_3^2\omega_4-\tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\\ &3\omega_2v^2-\tfrac{1}{2}{c_s}^2u\omega_4^2\omega_1-\tfrac{1}{4}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}{c_s}^2\omega_3^2\omega_4+\tfrac{1}{4}\omega_2u\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4-{c_s}^2u\omega_3v\omega_4^2+\\ &\tfrac{3}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1-\tfrac{5}{2}{c_s}^2u\omega_3\omega_4+\tfrac{3}{2}\omega_2\omega_3v^3\omega_4-uv^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2uv^2\omega_4\omega_1+5\omega_2uv^2\omega_1+\tfrac{1}{4}\omega_3^2v^2\omega_4-\\ &\tfrac{3}{2}{c_s}^2\omega_4-\tfrac{3}{4}v^2\omega_4\omega_1-{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\tfrac{3}{2}\omega_2v^3\omega_4\omega_1+2\omega_2u\omega_3^2v^2+\\ &{c_s}^2\omega_2u\omega_3v\omega_4+\tfrac{1}{2}uv^2\omega_4\omega_1^2+\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2-u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1-\tfrac{1}{4}\omega_2\omega_3v^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-\\ &u\omega_3^2v^2\omega_4-\tfrac{5}{2}uv^2\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\omega_2u\omega_3^2v-\tfrac{1}{4}\omega_2u^2\omega_3+\tfrac{1}{2}u\omega_3v^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1+\tfrac{3}{2}\omega_2v^2\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4+\\ &\tfrac{1}{2}{c_s}^2\omega_4^2+v\omega_4-{c_s}^2u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_2^2\omega_3v^2+\tfrac{1}{4}u\omega_4\omega_1+{c_s}^2uv\omega_4^2\omega_1-2u^2\omega_3v^2\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-\\ &\tfrac{1}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\tfrac{1}{2}u^2\omega_3\omega_1-{c_s}^2v\omega_4^2+\tfrac{1}{2}\omega_2v^2\omega_4+\tfrac{1}{2}{c_s}^2u\omega_3\omega_4^2-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-\omega_2uv^2\omega_1^2+\tfrac{1}{4}u\omega_3\omega_4\omega_1+\\ &2\omega_2^2u\omega_3v^3+4\omega_2u^2\omega_3v^2\omega_1-\omega_2^2\omega_3v^3-\tfrac{1}{2}v^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v^2-\tfrac{3}{2}\omega_2v+\tfrac{1}{4}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_1+u\omega_3,\end{aligned}$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$

$$-2+\tfrac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\tfrac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\tfrac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1+3u\omega_3\omega_4+\omega_2^2v^2\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_4+4u\omega_1-u\omega_3\omega_1+6\omega_2u\omega_3v+2\omega_2u\omega_3+2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\tfrac{3}{2}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2+\tfrac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2-u\omega_1^2+\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1+4\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2-\tfrac{1}{2}u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2-2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1+\tfrac{1}{2}\omega_2u\omega_1^2+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4+\tfrac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1-v\omega_4^2\omega_1+2u\omega_3^2+2u\omega_3v\omega_4^2+\tfrac{1}{2}u\omega_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3\omega_4-2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2+\tfrac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u\omega_3v^2+2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v-\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2-3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2+\tfrac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2v-2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2-4u\omega_3-u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2+\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l}=1+2\omega_2u^2\omega_3^2v+\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+{c_s}^2\omega_3v\omega_4+\omega_3\omega_1-\omega_2u^2\omega_1-3\omega_2u^2\omega_3v\omega_1+{c_s}^2\omega_2\omega_3v\omega_1-u^2\omega_3-\omega_2\omega_3v\omega_1+4\omega_2u^2v^2\omega_1^2-2u^2v^2\omega_4\omega_1^2-u^2\omega_3v\omega_4\omega_1-u^2\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4+2\omega_2v\omega_1+\tfrac{1}{2}v^2\omega_4-\tfrac{1}{2}\omega_2v\omega_1^2+\tfrac{1}{2}\omega_2u^2\omega_3\omega_1+{c_s}^2\omega_3+\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_2-{c_s}^2\omega_3\omega_1-2u^2\omega_3^2v^2\omega_4+\tfrac{1}{2}\omega_2\omega_1+\omega_2\omega_3v-v\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4-4{c_s}^2u^2\omega_3\omega_4\omega_1+4\omega_2u^2\omega_3^2v^2+\tfrac{1}{2}u^2\omega_3\omega_4\omega_1-u^2\omega_3v\omega_4-\omega_2v^2-\tfrac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3+{c_s}^2\omega_4\omega_1-\omega_3+2u^2v\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_4-v^2\omega_4\omega_1-\omega_2v^2\omega_1^2+2{c_s}^2u^2\omega_3^2\omega_4-2\omega_2u^2v\omega_1+2\omega_2u^2v\omega_1^2-\tfrac{1}{2}\omega_2\omega_3\omega_1+2u^2\omega_1-{c_s}^2\omega_3v\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3+\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2u^2\omega_3+\tfrac{1}{2}\omega_4\omega_1+2\omega_2v^2\omega_1+\tfrac{1}{2}u^2\omega_3\omega_4+\tfrac{1}{2}v^2\omega_4\omega_1^2+v\omega_4+2{c_s}^2u^2\omega_4\omega_1^2+4u^2\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4-\tfrac{1}{2}{c_s}^2\omega_4\omega_1^2-u^2\omega_3\omega_1-8\omega_2u^2\omega_3v^2\omega_1-\tfrac{3}{2}\omega_2v-\omega_1,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y-\delta_l}=-2-4\omega_2u^2\omega_3^2v-\omega_3\omega_1+8\omega_2u^2\omega_3v\omega_1-v\omega_4\omega_1^2+\omega_2\omega_3v\omega_1+\tfrac{1}{2}\omega_2\omega_1^2-8u^2\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4-3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2+\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\tfrac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2-\omega_2\omega_3v-2\omega_2u^2\omega_1^2+3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-\tfrac{1}{2}\omega_2\omega_3+\omega_3+\tfrac{1}{2}\omega_4\omega_1^2+4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2-4\omega_2u^2v\omega_1^2+\tfrac{1}{2}\omega_2\omega_3\omega_1-\omega_3v\omega_4\omega_1-\tfrac{3}{2}\omega_4\omega_1-2v\omega_4+\omega_4-8u^2\omega_3\omega_1+4u^2v\omega_4\omega_1^2+2\omega_2v+3\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l}=1+\tfrac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v+\tfrac{1}{4}\omega_3v^2\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\omega_2^2uv^2\omega_1-\tfrac{5}{2}u\omega_3v^2\omega_4+\tfrac{1}{2}\omega_2uv\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2v\omega_4^2\omega_1+3\omega_2u\omega_3v^3\omega_4+\tfrac{1}{2}{c_s}^2u\omega_4\omega_1^2+\tfrac{1}{2}\omega_2u^2\omega_1+\tfrac{5}{2}\omega_2\omega_3v^2+\tfrac{3}{2}\omega_2u^2\omega_3v\omega_1+v^3\omega_4^2+\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}\omega_2^2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_2\omega_3v\omega_1+\tfrac{1}{4}\omega_3v^2\omega_4^2+\tfrac{1}{2}u\omega_3v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2-2\omega_2u^2v^2\omega_1^2+\tfrac{1}{2}u\omega_1+\tfrac{1}{2}u\omega_3\omega_1+u^2v^2\omega_4\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\tfrac{5}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3-\tfrac{1}{2}uv^2\omega_4^2\omega_1-3\omega_2uv^3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1+\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_4-u\omega_3v^3\omega_4^2+\tfrac{3}{4}\omega_2v\omega_1+\tfrac{3}{2}v^2\omega_4-\tfrac{1}{4}\omega_2u^2\omega_3\omega_1+\tfrac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1-\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3v^3\omega_4^2-\tfrac{1}{2}\omega_2+\tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3-\tfrac{1}{2}v^2\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_1+u^2\omega_3^2v^2\omega_4+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2u\omega_3v^2\omega_4+5\omega_2u\omega_3v^2+{c_s}^2\omega_2uv\omega_4\omega_1+2\omega_2^2uv^3\omega_1+\tfrac{5}{4}\omega_2\omega_3v+\omega_2^2v^2-\tfrac{5}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1+\omega_2u\omega_3v^2\omega_1+\tfrac{3}{2}{c_s}^2\omega_3\omega_4-\tfrac{5}{4}\omega_3v^2\omega_4+2{c_s}^2u^2\omega_3\omega_4\omega_1-2\omega_2u^2\omega_3^2v^2-\tfrac{1}{4}{c_s}^2\omega_4^2\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4^2-\tfrac{1}{4}u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1-{c_s}^2u\omega_3^2\omega_4-\tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-3\omega_2v^2+\tfrac{1}{2}{c_s}^2u\omega_4^2\omega_1-\tfrac{1}{4}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}{c_s}^2\omega_3^2\omega_4-\tfrac{1}{4}\omega_2u\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4+{c_s}^2u\omega_3v\omega_4^2+\tfrac{3}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1+\tfrac{5}{2}{c_s}^2u\omega_3\omega_4+\tfrac{3}{2}\omega_2\omega_3v^3\omega_4+uv^3\omega_4^2\omega_1+\tfrac{1}{2}\omega_2uv^2\omega_4\omega_1-5\omega_2uv^2\omega_1+\tfrac{1}{4}\omega_3^2v^2\omega_4-\tfrac{3}{2}{c_s}^2\omega_4-\tfrac{3}{4}v^2\omega_4\omega_1-{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\tfrac{3}{2}\omega_2v^3\omega_4\omega_1-2\omega_2u\omega_3^2v^2-{c_s}^2\omega_2u\omega_3v\omega_4-\tfrac{1}{2}uv^2\omega_4\omega_1^2-\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2-u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1-\tfrac{1}{4}\omega_2\omega_3v^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+u\omega_3^2v^2\omega_4+\tfrac{5}{2}uv^2\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3-\omega_2u\omega_3^2v-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{2}u\omega_3v^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1+\tfrac{3}{2}\omega_2v^2\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_4^2+v\omega_4-{c_s}^2u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_2^2\omega_3v^2-\tfrac{1}{4}u\omega_4\omega_1-{c_s}^2uv\omega_4^2\omega_1-2u^2\omega_3v^2\omega_4\omega_1-u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-\tfrac{1}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\tfrac{1}{2}u^2\omega_3\omega_1-{c_s}^2v\omega_4^2+\tfrac{1}{2}\omega_2v^2\omega_4-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4^2+\tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1+\omega_2uv^2\omega_1^2-\tfrac{1}{4}u\omega_3\omega_4\omega_1-2\omega_2^2u\omega_3v^3+4\omega_2u^2\omega_3v^2\omega_1-\omega_2^2\omega_3v^3-\tfrac{1}{2}v^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v^2-\tfrac{3}{2}\omega_2v-\tfrac{1}{4}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_1-u\omega_3,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l}=$$
$$-2+\tfrac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\tfrac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\tfrac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1-6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\tfrac{3}{2}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2-\tfrac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2-\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2+\tfrac{1}{2}u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1-\tfrac{1}{2}\omega_2u\omega_1^2+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1-v\omega_4^2\omega_1-2u\omega_3^2-2u\omega_3v\omega_4^2-\tfrac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3\omega_4-2u^2\omega_3^2v\omega_4-$$

$$2u^2\omega_1^2+\omega_2u^2\omega_3^2+\tfrac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2+2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v-\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2-\tfrac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2v+2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2+\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t}=-uv\omega_4\omega_1+{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-{c_s}^2v\omega_4^2\omega_1+6\omega_2u\omega_3v^3\omega_4+3\omega_2v\omega_4+\omega_2^2v-2v^3\omega_4^2-\tfrac{3}{2}\omega_2\omega_3v\omega_4+2{c_s}^2\omega_2\omega_3v\omega_4-4\omega_2u\omega_3v-\omega_2u^2\omega_3v\omega_4-6\omega_2uv^3\omega_4\omega_1-2u\omega_3v^3\omega_4^2+2\omega_2v\omega_1+2\omega_2^2v^3\omega_1+\omega_3v^3\omega_4^2-4\omega_2^2v^3-2\omega_2uv\omega_4\omega_1+2{c_s}^2\omega_2uv\omega_4\omega_1+4\omega_2^2uv^3\omega_1+2\omega_2\omega_3v-v\omega_4\omega_1-u^2\omega_3v\omega_4-2{c_s}^2\omega_3v\omega_4^2+3\omega_2uv\omega_1-2u^2v\omega_4^2\omega_1-\omega_3v\omega_4-2{c_s}^2\omega_2v\omega_4+v\omega_4^2\omega_1-2u\omega_3v\omega_4^2+2{c_s}^2u\omega_3v\omega_4^2+2u^2v\omega_4\omega_1-3\omega_2\omega_3v^3\omega_4+2uv^3\omega_4^2\omega_1-2v\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v+3\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v+6\omega_2v^3\omega_4-2\omega_2u^2v\omega_1-3\omega_2v^3\omega_4\omega_1-2{c_s}^2\omega_2u\omega_3v\omega_4-\tfrac{3}{2}\omega_2v\omega_4\omega_1+{c_s}^2\omega_2v\omega_4\omega_1+2\omega_2u^2v\omega_4\omega_1+2v\omega_4-2{c_s}^2uv\omega_4^2\omega_1+2u\omega_3v\omega_4-\omega_2^2uv\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v+uv\omega_4^2\omega_1+2{c_s}^2v\omega_4^2-4\omega_2^2u\omega_3v^3+2\omega_2^2\omega_3v^3+v^3\omega_4^2\omega_1-4\omega_2v+\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-2\delta_t}=-2+\tfrac{1}{2}\omega_2\omega_4\omega_1-4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1+u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2+2u\omega_1+3\omega_2u\omega_3-4uv^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_3\omega_4+\omega_2^2u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2+\omega_2u\omega_4\omega_1+4v^2\omega_4^2-\tfrac{3}{2}\omega_2\omega_1-8\omega_2u\omega_3v^2\omega_4+4\omega_2^2v^2+\tfrac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4+4u\omega_3v^2\omega_4^2-\tfrac{3}{2}\omega_2\omega_3+\omega_3+8\omega_2uv^2\omega_4\omega_1-\omega_2u\omega_3\omega_4+\tfrac{1}{2}\omega_2^2\omega_1+4\omega_2^2u\omega_3v^2+4\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3v^2-u\omega_4\omega_1-\omega_2^2u\omega_3+\omega_4-8\omega_2v^2\omega_4-3\omega_2u\omega_1+\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_4-2u\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t}=-2{c_s}^2\omega_3v\omega_4-2u^2\omega_3v\omega_4^2+5\omega_2v\omega_4+\omega_2^2v-2{c_s}^2\omega_2\omega_3v\omega_4+2\omega_2u^2\omega_3v\omega_4+2u^2\omega_3v\omega_4+2{c_s}^2\omega_3v\omega_4^2-\omega_2v\omega_4^2+4u^2v\omega_4^2\omega_1-4u^2v\omega_4\omega_1-2v\omega_4^2+4\omega_2u^2v\omega_1-\omega_2^2v\omega_4-4\omega_2u^2v\omega_4\omega_1+2v\omega_4+2{c_s}^2\omega_2\omega_3v-2\omega_2u^2\omega_3v-4\omega_2v,$$

$$\alpha_{x,y}^{[\mu_3],t-2\delta_t}=-4-\omega_4^2-4\omega_3\omega_1+\omega_2\omega_4^2-\omega_1^2-\omega_2^2+3\omega_2+\omega_3\omega_1^2-4\omega_2\omega_4+\omega_2^2\omega_4+3\omega_3-\omega_3^2+3\omega_4+\omega_3^2\omega_1+3\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t}=uv\omega_4\omega_1+{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-{c_s}^2v\omega_4^2\omega_1-6\omega_2u\omega_3v^3\omega_4+3\omega_2v\omega_4+\omega_2^2v-2v^3\omega_4^2-\tfrac{3}{2}\omega_2\omega_3v\omega_4+2{c_s}^2\omega_2\omega_3v\omega_4+4\omega_2u\omega_3v-\omega_2u^2\omega_3v\omega_4+6\omega_2uv^3\omega_4\omega_1+2u\omega_3v^3\omega_4^2+2\omega_2v\omega_1+2\omega_2^2v^3\omega_1+\omega_3v^3\omega_4^2-4\omega_2^2v^3+2\omega_2uv\omega_4\omega_1-2{c_s}^2\omega_2uv\omega_4\omega_1-4\omega_2^2uv^3\omega_1+2\omega_2\omega_3v-v\omega_4\omega_1-u^2\omega_3v\omega_4-2{c_s}^2\omega_3v\omega_4^2-3\omega_2uv\omega_1-2u^2v\omega_4^2\omega_1-\omega_3v\omega_4-2{c_s}^2\omega_2v\omega_4+v\omega_4^2\omega_1+2u\omega_3v\omega_4^2-2{c_s}^2u\omega_3v\omega_4^2+2u^2v\omega_4\omega_1-3\omega_2\omega_3v^3\omega_4-2uv^3\omega_4^2\omega_1-2v\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v-3\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v+6\omega_2v^3\omega_4-2\omega_2u^2v\omega_1-3\omega_2v^3\omega_4\omega_1+2{c_s}^2\omega_2u\omega_3v\omega_4-\tfrac{3}{2}\omega_2v\omega_4\omega_1+{c_s}^2\omega_2v\omega_4\omega_1+2\omega_2u^2v\omega_4\omega_1+2v\omega_4+2{c_s}^2uv\omega_4^2\omega_1-2u\omega_3v\omega_4+\omega_2^2uv\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-uv\omega_4^2\omega_1+2{c_s}^2v\omega_4^2+4\omega_2^2u\omega_3v^3+2\omega_2^2\omega_3v^3+v^3\omega_4^2\omega_1-4\omega_2v+\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-2\delta_t}=-2+\tfrac{1}{2}\omega_2\omega_4\omega_1+4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1-u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2-2u\omega_1-3\omega_2u\omega_3+4uv^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_3\omega_4-\omega_2^2u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2-\omega_2u\omega_4\omega_1+4v^2\omega_4^2-\tfrac{3}{2}\omega_2\omega_1+8\omega_2u\omega_3v^2\omega_4+4\omega_2^2v^2+\tfrac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4-4u\omega_3v^2\omega_4^2-\tfrac{3}{2}\omega_2\omega_3+\omega_3-8\omega_2uv^2\omega_4\omega_1+\omega_2u\omega_3\omega_4+\tfrac{1}{2}\omega_2^2\omega_1-4\omega_2^2u\omega_3v^2+4\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3v^2+u\omega_4\omega_1+\omega_2^2u\omega_3+\omega_4-8\omega_2v^2\omega_4+3\omega_2u\omega_1+\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_4+2u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=-1-\tfrac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v-\tfrac{1}{4}\omega_3v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\omega_2^2uv^2\omega_1-\tfrac{5}{2}u\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2uv\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4+\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2v\omega_4^2\omega_1-3\omega_2u\omega_3v^3\omega_4+\tfrac{1}{2}{c_s}^2u\omega_4\omega_1^2-\tfrac{1}{2}\omega_2u^2\omega_1-\tfrac{5}{2}\omega_2\omega_3v^2+\tfrac{3}{2}\omega_2u^2\omega_3v\omega_1+v^3\omega_4^2+\tfrac{1}{2}u\omega_3\omega_4+\tfrac{1}{2}\omega_2^2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1-\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_2\omega_3v\omega_1-\tfrac{1}{4}\omega_3v^2\omega_4^2-\tfrac{1}{2}u\omega_3v\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2+2\omega_2u^2v^2\omega_1^2+\tfrac{1}{2}u\omega_1+\tfrac{1}{2}u\omega_3\omega_1-u^2v^2\omega_4\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{5}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3-\tfrac{1}{2}uv^2\omega_4^2\omega_1+3\omega_2uv^3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1-\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_4+u\omega_3v^3\omega_4^2+\tfrac{3}{4}\omega_2v\omega_1-\tfrac{3}{2}v^2\omega_4+\tfrac{1}{4}\omega_2u^2\omega_3\omega_1-\tfrac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1+\tfrac{1}{2}{c_s}^2\omega_3+\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3v^3\omega_4^2+\tfrac{1}{2}\omega_2+\tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3+\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_1-u^2\omega_3^2v^2\omega_4-\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2u\omega_3v^2\omega_4+5\omega_2u\omega_3v^2-{c_s}^2\omega_2uv\omega_4\omega_1-2\omega_2^2uv^3\omega_1+\tfrac{5}{4}\omega_2\omega_3v-\omega_2^2v^2-\tfrac{5}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1+\omega_2u\omega_3v^2\omega_1-\tfrac{3}{2}{c_s}^2\omega_3\omega_4+\tfrac{5}{4}\omega_3v^2\omega_4-2{c_s}^2u^2\omega_3\omega_4\omega_1+2\omega_2u^2\omega_3^2v^2+\tfrac{1}{4}{c_s}^2\omega_4^2\omega_1+\tfrac{1}{2}u\omega_3v^2\omega_4^2+\tfrac{1}{4}u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2+\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4+2\omega_2uv\omega_1-{c_s}^2u\omega_3^2\omega_4+\tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1+3\omega_2v^2+\tfrac{1}{2}{c_s}^2u\omega_4^2\omega_1-\tfrac{1}{4}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}{c_s}^2\omega_3^2\omega_4-\tfrac{1}{4}\omega_2u\omega_3\omega_1-\tfrac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4-{c_s}^2u\omega_3v\omega_4^2-\tfrac{3}{4}{c_s}^2\omega_4\omega_1+\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1+\tfrac{5}{2}{c_s}^2u\omega_3\omega_4+\tfrac{3}{2}\omega_2\omega_3v^3\omega_4-uv^3\omega_4^2\omega_1+\tfrac{1}{2}\omega_2uv^2\omega_4\omega_1-5\omega_2uv^2\omega_1-\tfrac{1}{4}\omega_3^2v^2\omega_4+\tfrac{3}{2}{c_s}^2\omega_4+\tfrac{3}{4}v^2\omega_4\omega_1+{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\tfrac{3}{2}\omega_2v^3\omega_4\omega_1-2\omega_2u\omega_3^2v^2+{c_s}^2\omega_2u\omega_3v\omega_4-\tfrac{1}{2}uv^2\omega_4\omega_1^2-\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2+u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1+\tfrac{1}{4}\omega_2\omega_3v^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2\omega_1+u\omega_3^2v^2\omega_4+\tfrac{5}{2}uv^2\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\omega_2u\omega_3^2v+\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{2}u\omega_3v^2\omega_4\omega_1-\tfrac{1}{4}\omega_4\omega_1-\tfrac{3}{2}\omega_2v^2\omega_1+\tfrac{1}{4}u^2\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_4^2+v\omega_4+{c_s}^2u^2\omega_4\omega_1^2+\tfrac{1}{2}\omega_2^2\omega_3v^2-\tfrac{1}{4}u\omega_4\omega_1+{c_s}^2uv\omega_4^2\omega_1+2u^2\omega_3v^2\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-$$

$\frac{1}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4-\frac{1}{2}u^2\omega_3\omega_1-{c_s}^2v\omega_4^2-\frac{1}{2}\omega_2v^2\omega_4-\frac{1}{2}{c_s}^2u\omega_3\omega_4^2+\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1+\omega_2uv^2\omega_1^2-\frac{1}{4}u\omega_3\omega_4\omega_1+2\omega_2^2u\omega_3v^3-4\omega_2u^2\omega_3v^2\omega_1-\omega_2^2\omega_3v^3-\frac{1}{2}v^3\omega_4^2\omega_1+\frac{1}{2}\omega_2\omega_3^2v^2-\frac{3}{2}\omega_2v-\frac{1}{4}\omega_2u\omega_1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-2\delta_t}=$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\frac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1+3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4+4u\omega_1-u\omega_3\omega_1-6\omega_2u\omega_3v+2\omega_2u\omega_3+2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\frac{1}{2}\omega_3^2v\omega_4+\omega_2+\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2-u\omega_1^2-\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1+4\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2-\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2-2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1+\frac{1}{2}\omega_2u\omega_1^2-\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1+2u\omega_3^2-2u\omega_3v\omega_4^2+\frac{1}{2}u\omega_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\frac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v-\frac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\frac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v+\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2-3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2+\frac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v-2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2-4u\omega_3-u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2-\frac{1}{2}\omega_2^2v\omega_1,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t}=-1+2\omega_2u^2\omega_3^2v-\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+{c_s}^2\omega_3v\omega_4-\omega_3\omega_1+\omega_2u^2\omega_1-3\omega_2u^2\omega_3v\omega_1+{c_s}^2\omega_2\omega_3v\omega_1+u^2\omega_3-\omega_2\omega_3v\omega_1-4\omega_2u^2v^2\omega_1^2+2u^2v^2\omega_4\omega_1^2-u^2\omega_3v\omega_4\omega_1+u^2\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4+2\omega_2v\omega_1-\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_2v\omega_1^2-\frac{1}{2}\omega_2u^2\omega_3\omega_1-{c_s}^2\omega_3-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1+\frac{1}{2}\omega_2+{c_s}^2\omega_3\omega_1+2u^2\omega_3^2v^2\omega_4-\frac{1}{2}\omega_2\omega_1+\omega_2\omega_3v-v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4+4{c_s}^2u^2\omega_3\omega_4\omega_1-4\omega_2u^2\omega_3^2v^2-\frac{1}{2}u^2\omega_3\omega_4\omega_1-u^2\omega_3v\omega_4+\omega_2v^2+\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4-\frac{1}{2}\omega_2\omega_3-{c_s}^2\omega_4\omega_1+\omega_3+2u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_4+v^2\omega_4\omega_1+\omega_2v^2\omega_1^2-2{c_s}^2u^2\omega_3^2\omega_4-2\omega_2u^2v\omega_1+2\omega_2u^2v\omega_1^2+\frac{1}{2}\omega_2\omega_3\omega_1-2u^2\omega_1-{c_s}^2\omega_3v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_2\omega_3+\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_3-\frac{1}{2}\omega_4\omega_1-2\omega_2v^2\omega_1-\frac{1}{2}u^2\omega_3\omega_4-\frac{1}{2}v^2\omega_4\omega_1^2+v\omega_4-2{c_s}^2u^2\omega_4\omega_1^2-4u^2\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v+\frac{1}{2}\omega_4+\frac{1}{2}{c_s}^2\omega_4\omega_1^2+u^2\omega_3\omega_1+8\omega_2u^2\omega_3v^2\omega_1-\frac{3}{2}\omega_2v+\omega_1,$

$\alpha_{x,y+\delta_l}^{[\mu_3],t-2\delta_t}=-2+4\omega_2u^2\omega_3^2v-\omega_3\omega_1-8\omega_2u^2\omega_3v\omega_1+v\omega_4\omega_1^2-\omega_2\omega_3v\omega_1+\frac{1}{2}\omega_2\omega_1^2+8u^2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4+3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2-\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\frac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2+\omega_2\omega_3v-2\omega_2u^2\omega_1^2-3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4-\frac{1}{2}\omega_2\omega_3+\omega_3+\frac{1}{2}\omega_4\omega_1^2-4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2+4\omega_2u^2v\omega_1^2+\frac{1}{2}\omega_2\omega_3\omega_1+\omega_3v\omega_4\omega_1-\frac{3}{2}\omega_4\omega_1+2v\omega_4+\omega_4-8u^2\omega_3\omega_1-4u^2v\omega_4\omega_1^2-2\omega_2v+3\omega_1,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=-1+\frac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v-\frac{1}{4}\omega_3v^2\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1-\omega_2^2uv^2\omega_1+\frac{5}{2}u\omega_3v^2\omega_4+\frac{1}{2}\omega_2uv\omega_1^2-\frac{1}{2}{c_s}^2\omega_3v\omega_4+\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{2}{c_s}^2v\omega_4^2\omega_1+3\omega_2u\omega_3v^3\omega_4-\frac{1}{2}{c_s}^2u\omega_4\omega_1^2-\frac{1}{2}\omega_2u^2\omega_1-\frac{5}{2}\omega_2\omega_3v^2+\frac{3}{2}\omega_2u^2\omega_3v\omega_1+v^3\omega_4^2-\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}\omega_2^2v^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1-\frac{1}{2}u^2\omega_3-\frac{1}{4}\omega_2\omega_3v\omega_1-\frac{1}{4}\omega_3v^2\omega_4^2+\frac{1}{2}u\omega_3v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4^2+2\omega_2u^2v^2\omega_1^2-\frac{1}{2}u\omega_1-\frac{1}{2}u\omega_3\omega_1-u^2v^2\omega_4\omega_1^2-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{5}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}uv^2\omega_4^2\omega_1-3\omega_2uv^3\omega_4\omega_1+\frac{1}{2}u^2\omega_3v\omega_4\omega_1-\frac{1}{2}u^2\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_4-u\omega_3v^3\omega_4^2+\frac{3}{4}\omega_2v\omega_1-\frac{3}{2}v^2\omega_4+\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1+\frac{1}{2}{c_s}^2\omega_3+\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_3v^3\omega_4^2+\frac{1}{2}\omega_2-\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3+\frac{1}{2}v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_3\omega_1-u^2\omega_3^2v^2\omega_4-\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2u\omega_3v^2\omega_4-5\omega_2u\omega_3v^2+{c_s}^2\omega_2uv\omega_4\omega_1+2\omega_2^2uv^3\omega_1+\frac{5}{4}\omega_2\omega_3v-\omega_2^2v^2+\frac{5}{2}{c_s}^2u\omega_4\omega_1-\frac{1}{2}v\omega_4\omega_1-\omega_2u\omega_3v^2\omega_1-\frac{3}{2}{c_s}^2\omega_3\omega_4+\frac{5}{4}\omega_3v^2\omega_4-2{c_s}^2u^2\omega_3\omega_4\omega_1+2\omega_2u^2\omega_3^2v^2+\frac{1}{4}{c_s}^2\omega_4^2\omega_1-\frac{1}{2}u\omega_3v^2\omega_4^2+\frac{1}{4}u^2\omega_3\omega_4\omega_1+\frac{1}{2}u^2\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4^2+\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1+{c_s}^2u\omega_3^2\omega_4+\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1+3\omega_2v^2-\frac{1}{2}{c_s}^2u\omega_4^2\omega_1-\frac{1}{4}\omega_2\omega_3^2v-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}{c_s}^2\omega_3^2\omega_4+\frac{1}{4}\omega_2u\omega_3\omega_1-\frac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4+{c_s}^2u\omega_3v\omega_4^2-\frac{3}{4}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3-u^2v\omega_4\omega_1-\frac{5}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2\omega_3v^3\omega_4+uv^3\omega_4^2\omega_1-\frac{1}{2}\omega_2uv^2\omega_4\omega_1+5\omega_2uv^2\omega_1-\frac{1}{4}\omega_3^2v^2\omega_4+\frac{3}{2}{c_s}^2\omega_4+\frac{3}{4}v^2\omega_4\omega_1+{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\frac{3}{2}\omega_2v^3\omega_4\omega_1+2\omega_2u\omega_3^2v^2-{c_s}^2\omega_2u\omega_3v\omega_4+\frac{1}{2}uv^2\omega_4\omega_1^2+\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2+u^2\omega_1-\frac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1+\frac{1}{4}\omega_2\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-u\omega_3^2v^2\omega_4-\frac{5}{2}uv^2\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_2\omega_3-\omega_2u\omega_3^2v+\frac{1}{4}\omega_2u^2\omega_3+\frac{1}{2}u\omega_3v^2\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1-\frac{3}{2}\omega_2v^2\omega_1+\frac{1}{4}u^2\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_4^2+v\omega_4+{c_s}^2u^2\omega_4\omega_1^2+\frac{1}{2}\omega_2^2\omega_3v^2+\frac{1}{4}u\omega_4\omega_1-{c_s}^2uv\omega_4^2\omega_1+2u^2\omega_3v^2\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4-\frac{1}{2}u^2\omega_3\omega_1-{c_s}^2v\omega_4^2-\frac{1}{2}\omega_2v^2\omega_4+\frac{1}{2}{c_s}^2u\omega_3\omega_4^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-\omega_2uv^2\omega_1^2+\frac{1}{4}u\omega_3\omega_4\omega_1-2\omega_2^2u\omega_3v^3-4\omega_2u^2\omega_3v^2\omega_1-\omega_2^2\omega_3v^3-\frac{1}{2}v^3\omega_4^2\omega_1+\frac{1}{2}\omega_2\omega_3^2v^2-\frac{3}{2}\omega_2v+\frac{1}{4}\omega_2u\omega_1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_1+u\omega_3,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-2\delta_t}=$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\frac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1+6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+$

$$v^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2-\tfrac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2+\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2+\tfrac{1}{2}u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1-\tfrac{1}{2}\omega_2u\omega_1^2-\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1-2u\omega_3^2+2u\omega_3v\omega_4^2-\tfrac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\tfrac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v+\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2-\tfrac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v+2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t}=-1-3\omega_3v^2\omega_4\omega_1+3{c_s}^2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_4\omega_1-{c_s}^2v\omega_4^2\omega_1-\omega_3\omega_1-5\omega_2\omega_3v^2-v^3\omega_4^2+\omega_2^2v^2\omega_1+3\omega_2\omega_3v\omega_1-\tfrac{1}{2}\omega_3v^2\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2+{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4+{c_s}^2\omega_3v\omega_4^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_4-\tfrac{5}{2}\omega_2v\omega_1-\omega_2\omega_3^2v^2\omega_1-2\omega_2^2\omega_3v^3\omega_1-2v^2\omega_4+\tfrac{1}{2}\omega_2v\omega_1^2-\tfrac{1}{2}v^2\omega_4^2\omega_1+2\omega_2^2v^3\omega_1+\omega_3v^3\omega_4^2+\tfrac{1}{2}\omega_2-2\omega_2^2v^3+\tfrac{1}{2}v^2\omega_4^2-\omega_3v^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3v-\omega_2^2v^2-\omega_2^2\omega_3v^2\omega_1+v\omega_4\omega_1-\tfrac{5}{2}{c_s}^2\omega_3\omega_4+\tfrac{5}{2}\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3v\omega_1^2+\tfrac{1}{2}\omega_3v^2\omega_4\omega_1^2+\tfrac{1}{2}{c_s}^2\omega_4^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2-{c_s}^2\omega_3v\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+4\omega_2v^2+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-\omega_2\omega_3v^2\omega_1^2+\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_2\omega_3-{c_s}^2\omega_2v\omega_4-{c_s}^2\omega_2\omega_3v\omega_4\omega_1-\tfrac{5}{2}{c_s}^2\omega_4\omega_1+\omega_3+\tfrac{1}{2}\omega_3^2v^2\omega_4\omega_1-3\omega_2\omega_3v^3\omega_4-\tfrac{1}{2}\omega_3^2v^2\omega_4+2{c_s}^2\omega_4+\tfrac{5}{2}v^2\omega_4\omega_1+\omega_2v^2\omega_1^2+3\omega_2v^3\omega_4-3\omega_2v^3\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_1+{c_s}^2\omega_2v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1-\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v\omega_1-\tfrac{1}{2}\omega_4\omega_1-5\omega_2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_4^2-\tfrac{1}{2}v^2\omega_4\omega_1^2-v\omega_4+\omega_2^2\omega_3v^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1+\tfrac{1}{2}\omega_3v^2\omega_4^2\omega_1+3\omega_2\omega_3v^3\omega_4\omega_1+\tfrac{1}{2}\omega_4+\tfrac{1}{2}{c_s}^2\omega_4\omega_1^2+{c_s}^2v\omega_4^2-\tfrac{1}{2}\omega_2v^2\omega_4+2\omega_2^2\omega_3v^3+v^3\omega_4^2\omega_1+\omega_2\omega_3^2v^2+2\omega_2v+\omega_1+6\omega_2\omega_3v^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-3\delta_t}=3-\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_4^2+4\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4+5\omega_3\omega_1+\omega_2^2v-2\omega_2^2v^2\omega_1+v\omega_4\omega_1^2-7\omega_2\omega_3v\omega_1-2\omega_3v^2\omega_4^2-\tfrac{1}{2}\omega_2\omega_1^2-\omega_2\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3^2\omega_1-2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2\omega_1+6\omega_2v\omega_1+\omega_1^2-\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1+\omega_3^2v\omega_4-\tfrac{3}{2}\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1-\omega_3^2v\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+6\omega_2\omega_3v+\tfrac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2-6v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_4+\omega_2\omega_3v\omega_1^2+\omega_2^2\omega_3v\omega_1-\omega_2\omega_3^2v-\tfrac{7}{2}\omega_3\omega_4\omega_1-6\omega_3v\omega_4+2\omega_2\omega_3+2v\omega_4^2\omega_1-4\omega_3+\omega_2\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_1^2-2v\omega_4^2-\omega_2^2\omega_3v+\tfrac{1}{2}\omega_2\omega_3\omega_1^2-\omega_3v\omega_4\omega_1^2-\omega_2v\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}\omega_3^2\omega_4+7\omega_3v\omega_4\omega_1+\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1+5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\tfrac{5}{2}\omega_4-4\omega_2v^2\omega_4+\tfrac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1-5\omega_2v-4\omega_1-\tfrac{1}{2}\omega_2\omega_3\omega_4+2\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2\omega_3^2-\omega_2^2v\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t}=uv\omega_4\omega_1+2\omega_2u^2\omega_3^2v+\omega_2uv\omega_1^2+{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-6\omega_2v\omega_4-\omega_2^2v-3\omega_2u^2\omega_3v\omega_1+{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_1+u\omega_3v\omega_4\omega_1+4\omega_2\omega_3v\omega_4-\omega_2uv\omega_4\omega_1^2-\tfrac{1}{2}\omega_2v\omega_4^2\omega_1+{c_s}^2\omega_2\omega_3v\omega_4+7\omega_2u\omega_3v-\omega_2u^2\omega_3v\omega_4-u^2\omega_3v\omega_4\omega_1+{c_s}^2\omega_3v\omega_4^2\omega_1-\tfrac{5}{2}\omega_2v\omega_1+7\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2^2v\omega_4\omega_1-\tfrac{7}{2}\omega_2\omega_3v-\omega_2^2uv\omega_4\omega_1+v\omega_4\omega_1-u^2\omega_3v\omega_4-{c_s}^2\omega_3v\omega_4^2-6\omega_2uv\omega_1+2\omega_2u\omega_3^2v\omega_4+\omega_2v\omega_4^2-2u^2v\omega_4^2\omega_1+\omega_2^2u\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3^2v+\omega_3v\omega_4-v\omega_4^2\omega_1+3\omega_2u^2\omega_3v\omega_4\omega_1+2u\omega_3v\omega_4^2-{c_s}^2\omega_2\omega_3v\omega_4\omega_1+2u^2v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4\omega_1+2v\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3v-8\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v-2\omega_2u^2v\omega_1-\omega_2uv\omega_4^2\omega_1-\tfrac{1}{2}\omega_2^2\omega_3v\omega_4-2\omega_2u^2v\omega_4\omega_1^2+3\omega_2v\omega_4\omega_1+\omega_2^2v\omega_4+\omega_2u\omega_3v\omega_4^2+2\omega_2u^2v\omega_1^2+2\omega_2u^2v\omega_4\omega_1-{c_s}^2\omega_3v\omega_4\omega_1+u^2\omega_3v\omega_4^2\omega_1-2\omega_2u\omega_3^2v-2v\omega_4-2u\omega_3v\omega_4+\omega_2^2uv\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-2\omega_2u^2\omega_3^2v\omega_4-uv\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v\omega_4+5\omega_2v-u\omega_3v\omega_4^2\omega_1-\omega_3v\omega_4^2+\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-3\delta_t}=3-\tfrac{5}{2}\omega_2\omega_4\omega_1+\omega_4^2-u\omega_4^2\omega_1+\tfrac{1}{2}\omega_3\omega_1-6u\omega_3\omega_4-\omega_2\omega_4^2+\tfrac{1}{2}\omega_2\omega_3^2\omega_4-5u\omega_1+u\omega_3\omega_1-4\omega_2u^2\omega_3\omega_4\omega_1-\omega_2^2u\omega_3\omega_4-6\omega_2u\omega_3+3\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2\omega_1-2u^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_3\omega_4+\omega_2u\omega_4\omega_1^2-\omega_2^2u\omega_1+4\omega_2u^2\omega_3\omega_1+\omega_2^2-4\omega_2-7\omega_2u\omega_4\omega_1+u\omega_1^2+2\omega_2\omega_1-2\omega_2u\omega_3^2\omega_4+2\omega_2u\omega_3^2-\tfrac{1}{2}\omega_3\omega_4^2-2u^2\omega_4\omega_1^2-2\omega_2u^2\omega_1^2+2u^2\omega_3^2+u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3+5\omega_2\omega_4+4u^2\omega_3\omega_4\omega_1-\omega_2u\omega_1^2-\tfrac{1}{2}\omega_3\omega_4\omega_1-\omega_2^2\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4^2-\omega_2u\omega_3\omega_1+3\omega_2\omega_3-2u\omega_3^2-u\omega_4\omega_1^2-\tfrac{5}{2}\omega_3+2\omega_2u^2\omega_3^2\omega_4+\omega_2u\omega_4^2\omega_1+7\omega_2u\omega_3\omega_4-\tfrac{1}{2}\omega_2^2\omega_1+2u^2\omega_1^2-2\omega_2u^2\omega_3^2+\omega_2u\omega_3\omega_4\omega_1-\omega_2u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_4\omega_1+\omega_2^2u\omega_4\omega_1+2\omega_4\omega_1+6u\omega_4\omega_1+\tfrac{1}{2}\omega_3^2+\omega_2^2u\omega_3+\tfrac{1}{2}\omega_2\omega_4^2\omega_1-4\omega_4-4u^2\omega_3\omega_1-u\omega_3\omega_4\omega_1+2\omega_2u^2\omega_4\omega_1^2+6\omega_2u\omega_1-\tfrac{3}{2}\omega_1-\tfrac{7}{2}\omega_2\omega_3\omega_4+5u\omega_3+2u\omega_3^2\omega_4-\tfrac{1}{2}\omega_2\omega_3^2,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-4\omega_2u^2\omega_3^2v-2{c_s}^2\omega_3v\omega_4-2u^2\omega_3v\omega_4^2+2{c_s}^2v\omega_4^2\omega_1-4\omega_2v\omega_4-\omega_2^2v+6\omega_2u^2\omega_3v\omega_1+2v^3\omega_4^2-2{c_s}^2\omega_2\omega_3v\omega_1+4\omega_2\omega_3v\omega_1+3\omega_2\omega_3v\omega_4-4{c_s}^2\omega_2\omega_3v\omega_4+2\omega_3v\omega_4^2\omega_1+2\omega_2u^2\omega_3v\omega_4+2u^2\omega_3v\omega_4\omega_1-4{c_s}^2\omega_3v\omega_4^2\omega_1-6\omega_2v\omega_1+4\omega_2^2\omega_3v^3\omega_1+\omega_2v\omega_1^2-4\omega_2^2v^3\omega_1-2\omega_3v^3\omega_4^2+4\omega_2^2v^3+2\omega_3v^3\omega_4^2\omega_1-4\omega_2\omega_3v+2v\omega_4\omega_1+2u^2\omega_3v\omega_4+4{c_s}^2\omega_3v\omega_4^2+4u^2v\omega_4^2\omega_1-\omega_2^2\omega_3v\omega_1+2\omega_3v\omega_4+2{c_s}^2\omega_2v\omega_4-2v\omega_4^2\omega_1-6\omega_2u^2\omega_3v\omega_4\omega_1+4{c_s}^2\omega_2\omega_3v\omega_4\omega_1-4u^2v\omega_4\omega_1+6\omega_2\omega_3v^3\omega_4-3\omega_2\omega_3v\omega_4\omega_1+2v\omega_4^2+\omega_2^2\omega_3v-\omega_2v\omega_4\omega_1^2-6\omega_2v^3\omega_4+4\omega_2u^2v\omega_1+6\omega_2v^3\omega_4\omega_1+4\omega_2u^2v\omega_4\omega_1^2+5\omega_2v\omega_4\omega_1-4\omega_2u^2v\omega_1^2-2{c_s}^2\omega_2v\omega_4\omega_1-$$

$$4\omega_2u^2v\omega_4\omega_1+2{c_s}^2\omega_3v\omega_4\omega_1-2u^2\omega_3v\omega_4^2\omega_1-2\omega_3v\omega_4\omega_1-2v\omega_4+2{c_s}^2\omega_2\omega_3v-2\omega_2u^2\omega_3v-6\omega_2\omega_3v^3\omega_4\omega_1+4\omega_2u^2\omega_3^2v\omega_4-2{c_s}^2v\omega_4^2-4\omega_2^2\omega_3v^3-2v^3\omega_4^2\omega_1+5\omega_2v-2\omega_3v\omega_4^2+\omega_2^2v\omega_1,$$

$$\alpha_{x,y}^{[\mu_3],t-3\delta_t}=3-3\omega_2\omega_4\omega_1+\omega_2^2\omega_3\omega_1-8\omega_2v^2\omega_4\omega_1+2\omega_3\omega_1+4\omega_2^2v^2\omega_1+4\omega_3v^2\omega_4^2-\omega_2\omega_1^2+8\omega_2u^2\omega_3\omega_4\omega_1+\omega_3\omega_4+\omega_2\omega_3\omega_4\omega_1+4u^2\omega_3^2\omega_4+\omega_1^2-8\omega_2u^2\omega_3\omega_1+4v^2\omega_4^2\omega_1+\omega_2^2-4\omega_2-4v^2\omega_4^2+5\omega_2\omega_1+8\omega_2\omega_3v^2\omega_4\omega_1+4u^2\omega_4\omega_1^2+4\omega_2u^2\omega_1^2-4\omega_2^2v^2-4\omega_2^2\omega_3v^2\omega_1-4u^2\omega_3^2-\omega_2^2\omega_3+2\omega_2\omega_4+\omega_2\omega_4\omega_1^2-8u^2\omega_3\omega_4\omega_1-\omega_3\omega_4\omega_1+3\omega_2\omega_3-2\omega_3-4\omega_2u^2\omega_3^2\omega_4-\omega_4\omega_1^2-\omega_2^2\omega_1-4u^2\omega_1^2+4\omega_2u^2\omega_3^2-3\omega_2\omega_3\omega_1-8\omega_2\omega_3v^2\omega_4+3\omega_4\omega_1+4\omega_2^2\omega_3v^2-4\omega_3v^2\omega_4^2\omega_1-2\omega_4+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-4\omega_2u^2\omega_4\omega_1^2-4\omega_1-\omega_2\omega_3\omega_4,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t}=-uv\omega_4\omega_1+2\omega_2u^2\omega_3^2v-\omega_2uv\omega_1^2+{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-6\omega_2v\omega_4-\omega_2^2v-3\omega_2u^2\omega_3v\omega_1+{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_1-u\omega_3v\omega_4\omega_1+4\omega_2\omega_3v\omega_4+\omega_2uv\omega_4\omega_1^2-\tfrac{1}{2}\omega_2v\omega_4^2\omega_1+{c_s}^2\omega_2\omega_3v\omega_4-7\omega_2u\omega_3v-\omega_2u^2\omega_3v\omega_4-u^2\omega_3v\omega_4\omega_1+{c_s}^2\omega_3v\omega_4^2\omega_1-\tfrac{5}{2}\omega_2v\omega_1-7\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2^2v\omega_4\omega_1-\tfrac{7}{2}\omega_2\omega_3v+\omega_2^2uv\omega_4\omega_1+v\omega_4\omega_1-u^2\omega_3v\omega_4-{c_s}^2\omega_3v\omega_4^2+6\omega_2uv\omega_1-2\omega_2u\omega_3^2v\omega_4+\omega_2v\omega_4^2-2u^2v\omega_4^2\omega_1-\omega_2^2u\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3^2v+\omega_3v\omega_4-v\omega_4^2\omega_1+3\omega_2u^2\omega_3v\omega_4\omega_1-2u\omega_3v\omega_4^2-{c_s}^2\omega_2\omega_3v\omega_4\omega_1+2u^2v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4\omega_1+2v\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3v+8\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v-2\omega_2u^2v\omega_1+\omega_2uv\omega_4^2\omega_1-\tfrac{1}{2}\omega_2^2\omega_3v\omega_4-2\omega_2u^2v\omega_4\omega_1^2+3\omega_2v\omega_4\omega_1+\omega_2^2v\omega_4-\omega_2u\omega_3v\omega_4^2+2\omega_2u^2v\omega_1^2+2\omega_2u^2v\omega_4\omega_1-{c_s}^2\omega_3v\omega_4\omega_1+u^2\omega_3v\omega_4^2\omega_1+2\omega_2u\omega_3^2v-2v\omega_4+2u\omega_3v\omega_4-\omega_2^2uv\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-2\omega_2u^2\omega_3^2v\omega_4+uv\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v\omega_4+5\omega_2v+u\omega_3v\omega_4^2\omega_1-\omega_3v\omega_4^2+\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-3\delta_t}=3-\tfrac{5}{2}\omega_2\omega_4\omega_1+\omega_4^2+u\omega_4^2\omega_1+\tfrac{1}{2}\omega_3\omega_1+6u\omega_3\omega_4-\omega_2\omega_4^2+\tfrac{1}{2}\omega_2\omega_3^2\omega_4+5u\omega_1-u\omega_3\omega_1-4\omega_2u^2\omega_3\omega_4\omega_1+\omega_2^2u\omega_3\omega_4+6\omega_2u\omega_3+3\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2\omega_1-2u^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_3\omega_4-\omega_2u\omega_4\omega_1^2+\omega_2^2u\omega_1+4\omega_2u^2\omega_3\omega_1+\omega_2^2-4\omega_2+7\omega_2u\omega_4\omega_1-u\omega_1^2+2\omega_2\omega_1+2\omega_2u\omega_3^2\omega_4-2\omega_2u\omega_3^2-\tfrac{1}{2}\omega_3\omega_4^2-2u^2\omega_4\omega_1^2-2\omega_2u^2\omega_1^2+2u^2\omega_3^2-u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3+5\omega_2\omega_4+4u^2\omega_3\omega_4\omega_1+\omega_2u\omega_1^2-\tfrac{1}{2}\omega_3\omega_4\omega_1-\omega_2^2\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4^2+\omega_2u\omega_3\omega_1+3\omega_2\omega_3+2u\omega_3^2+u\omega_4\omega_1^2-\tfrac{5}{2}\omega_3+2\omega_2u^2\omega_3^2\omega_4-\omega_2u\omega_4^2\omega_1-7\omega_2u\omega_3\omega_4-\tfrac{1}{2}\omega_2^2\omega_1+2u^2\omega_1^2-2\omega_2u^2\omega_3^2-\omega_2u\omega_3\omega_4\omega_1+\omega_2u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3^2\omega_4+\tfrac{1}{2}\omega_2^2\omega_4\omega_1-\omega_2^2u\omega_4\omega_1+2\omega_4\omega_1-6u\omega_4\omega_1+\tfrac{1}{2}\omega_3^2-\omega_2^2u\omega_3+\tfrac{1}{2}\omega_2\omega_4^2\omega_1-4\omega_4-4u^2\omega_3\omega_1+u\omega_3\omega_4\omega_1+2\omega_2u^2\omega_4\omega_1^2-6\omega_2u\omega_1-\tfrac{3}{2}\omega_1-\tfrac{7}{2}\omega_2\omega_3\omega_4-5u\omega_3-2u\omega_3^2\omega_4-\tfrac{1}{2}\omega_2\omega_3^2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=1+3\omega_3v^2\omega_4\omega_1-3{c_s}^2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_2v^2\omega_4\omega_1-{c_s}^2v\omega_4^2\omega_1+\omega_3\omega_1+5\omega_2\omega_3v^2-v^3\omega_4^2-\omega_2^2v^2\omega_1+3\omega_2\omega_3v\omega_1+\tfrac{1}{2}\omega_3v^2\omega_4^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2+{c_s}^2\omega_2\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4+{c_s}^2\omega_3v\omega_4^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_2\omega_4-\tfrac{5}{2}\omega_2v\omega_1+\omega_2\omega_3^2v^2\omega_1-2\omega_2^2\omega_3v^3\omega_1+2v^2\omega_4+\tfrac{1}{2}\omega_2v\omega_1^2+\tfrac{1}{2}v^2\omega_4^2\omega_1+2\omega_2^2v^3\omega_1+\omega_3v^3\omega_4^2-\tfrac{1}{2}\omega_2-2\omega_2^2v^3-\tfrac{1}{2}v^2\omega_4^2-\omega_3v^3\omega_4^2\omega_1+\tfrac{1}{2}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3v+\omega_2^2v^2+\omega_2^2\omega_3v^2\omega_1+v\omega_4\omega_1+\tfrac{5}{2}{c_s}^2\omega_3\omega_4-\tfrac{5}{2}\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3v\omega_1^2-\tfrac{1}{2}\omega_3v^2\omega_4\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_4^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2-{c_s}^2\omega_3v\omega_4^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_4\omega_1-4\omega_2v^2+\tfrac{1}{2}\omega_2\omega_3^2v-\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4+\omega_2\omega_3v^2\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_2\omega_3-{c_s}^2\omega_2v\omega_4-{c_s}^2\omega_2\omega_3v\omega_4\omega_1+\tfrac{5}{2}{c_s}^2\omega_4\omega_1-\omega_3-\tfrac{1}{2}\omega_3^2v^2\omega_4\omega_1-3\omega_2\omega_3v^3\omega_4+\tfrac{1}{2}\omega_3^2v^2\omega_4-2{c_s}^2\omega_4-\tfrac{5}{2}v^2\omega_4\omega_1-\omega_2v^2\omega_1^2+3\omega_2v^3\omega_4-3\omega_2v^3\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3\omega_1+{c_s}^2\omega_2v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1-\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v\omega_1+\tfrac{1}{2}\omega_4\omega_1+5\omega_2v^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_4^2+\tfrac{1}{2}v^2\omega_4\omega_1^2-v\omega_4-\omega_2^2\omega_3v^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1-\tfrac{1}{2}\omega_3v^2\omega_4^2\omega_1+3\omega_2\omega_3v^3\omega_4\omega_1-\tfrac{1}{2}\omega_4-\tfrac{1}{2}{c_s}^2\omega_4\omega_1^2+{c_s}^2v\omega_4^2+\tfrac{1}{2}\omega_2v^2\omega_4+2\omega_2^2\omega_3v^3+v^3\omega_4^2\omega_1-\omega_2\omega_3^2v^2+2\omega_2v-\omega_1-6\omega_2\omega_3v^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-3\delta_t}=3-\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_4^2+4\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4+5\omega_3\omega_1-\omega_2^2v-2\omega_2^2v^2\omega_1-v\omega_4\omega_1^2+7\omega_2\omega_3v\omega_1-2\omega_3v^2\omega_4^2-\tfrac{1}{2}\omega_2\omega_1^2+\omega_2\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3^2\omega_1+2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2\omega_1-6\omega_2v\omega_1+\omega_1^2+\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1-\omega_3^2v\omega_4-\tfrac{3}{2}\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1+\omega_3^2v\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2-6\omega_2\omega_3v+\tfrac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2+6v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_4-\omega_2\omega_3v\omega_1^2-\omega_2^2\omega_3v\omega_1+\omega_2\omega_3^2v-\tfrac{7}{2}\omega_3\omega_4\omega_1+6\omega_3v\omega_4+2\omega_2\omega_3-2v\omega_4^2\omega_1-4\omega_3-\omega_2\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_1^2+2v\omega_4^2+\omega_2^2\omega_3v+\tfrac{1}{2}\omega_2\omega_3\omega_1^2+\omega_3v\omega_4\omega_1^2+\omega_2v\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}\omega_3^2\omega_4-7\omega_3v\omega_4\omega_1-\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1-5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\tfrac{5}{2}\omega_4-4\omega_2v^2\omega_4+\tfrac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1+5\omega_2v-4\omega_1-\tfrac{1}{2}\omega_2\omega_3\omega_4-2\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2\omega_3^2+\omega_2^2v\omega_1,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=-\omega_2\omega_3^2v\omega_4\omega_1+7\omega_2v\omega_4+\omega_2^2v-8\omega_2\omega_3v\omega_1-8\omega_2\omega_3v\omega_4+\omega_2v\omega_4^2\omega_1-2\omega_3v\omega_4^2\omega_1+7\omega_2v\omega_1-\omega_2v\omega_1^2+\omega_2\omega_3v\omega_4^2+\omega_2^2v\omega_4\omega_1+7\omega_2\omega_3v-2v\omega_4\omega_1+\omega_2\omega_3v\omega_1^2-\omega_2\omega_3v\omega_4^2\omega_1-\omega_2v\omega_4^2+\omega_2^2\omega_3v\omega_1-\omega_2\omega_3^2v-2\omega_3v\omega_4+2v\omega_4^2\omega_1+9\omega_2\omega_3v\omega_4\omega_1-2v\omega_4^2-\omega_2^2\omega_3v-\omega_2^2\omega_3v\omega_4\omega_1+\omega_2v\omega_4\omega_1^2+\omega_2^2\omega_3v\omega_4-8\omega_2v\omega_4\omega_1-\omega_2^2v\omega_4+2\omega_3v\omega_4\omega_1+\omega_2\omega_3^2v\omega_1+2v\omega_4-\omega_2\omega_3v\omega_4\omega_1^2+\omega_2\omega_3^2v\omega_4-6\omega_2v+2\omega_3v\omega_4^2-\omega_2^2v\omega_1,$$

$$\alpha_{x,y}^{[\mu_3],t-4\delta_t}=-4+7\omega_2\omega_4\omega_1-\omega_4^2-\omega_2^2\omega_3\omega_1-6\omega_3\omega_1+\omega_2\omega_4^2-\omega_2\omega_3^2\omega_4+\omega_2\omega_1^2-\omega_2\omega_3^2\omega_1-6\omega_3\omega_4-8\omega_2\omega_3\omega_4\omega_1+\omega_4^2\omega_1-$$

$\omega_2^2\omega_3\omega_4-\omega_1^2-\omega_2^2+5\omega_2-\omega_3^2\omega_4\omega_1-6\omega_2\omega_1+\omega_2\omega_3\omega_4\omega_1^2+\omega_3\omega_4^2-\omega_3\omega_4^2\omega_1+\omega_3\omega_1^2+\omega_2^2\omega_3-6\omega_2\omega_4-\omega_2\omega_4\omega_1^2+7\omega_3\omega_4\omega_1+\omega_2^2\omega_4-\omega_2\omega_3\omega_4^2-6\omega_2\omega_3+5\omega_3+\omega_4\omega_1^2+\omega_2^2\omega_1+\omega_2^2\omega_3\omega_4\omega_1-\omega_2\omega_3\omega_1^2+7\omega_2\omega_3\omega_1+\omega_2\omega_3\omega_4^2\omega_1+\omega_3^2\omega_4-\omega_2^2\omega_4\omega_1-6\omega_4\omega_1-\omega_3^2+\omega_2\omega_3^2\omega_4\omega_1-\omega_2\omega_4^2\omega_1+5\omega_4-\omega_3\omega_4\omega_1^2+\omega_3^2\omega_1+5\omega_1+7\omega_2\omega_3\omega_4+\omega_2\omega_3^2,$

7.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t}=1-\frac{1}{2}u^2\omega_3-\frac{1}{2}u\omega_1+\frac{1}{2}{c_s}^2\omega_3-\frac{1}{2}\omega_3+u^2\omega_1-\frac{1}{2}\omega_1+u\omega_3.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t}=1-\frac{1}{2}u^2\omega_3+\frac{1}{2}u\omega_1+\frac{1}{2}{c_s}^2\omega_3-\frac{1}{2}\omega_3+u^2\omega_1-\frac{1}{2}\omega_1-u\omega_3.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+uv\omega_4\omega_1+\frac{1}{2}u\omega_3v^2\omega_4+\frac{1}{2}\omega_2\omega_3v^2+\frac{1}{2}u\omega_3\omega_4+u\omega_1+\frac{1}{2}\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3-\frac{1}{4}\omega_3\omega_4-\frac{1}{4}\omega_2v\omega_1+\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2\omega_1-\omega_2u\omega_3v^2-\frac{1}{4}\omega_2\omega_3v+\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4-\frac{1}{2}\omega_2uv\omega_1-\omega_2v^2+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2\omega_3+\frac{1}{4}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3-\frac{1}{2}{c_s}^2u\omega_3\omega_4+\omega_2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1-\frac{1}{2}uv^2\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-v\omega_4-\frac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2v-\frac{1}{2}\omega_2u\omega_1+\frac{1}{2}\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t}=1-uv\omega_4\omega_1-\frac{1}{2}u\omega_3\omega_4-u\omega_1-\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2\omega_3v-\frac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_3+\frac{1}{4}\omega_4\omega_1+v\omega_4+\frac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\frac{1}{2}\omega_4-\omega_2v+\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-\delta_t}=1+\frac{1}{2}\omega_4^2+\omega_2v\omega_4+\omega_2^2v-\frac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\frac{1}{2}\omega_2\omega_4-2v\omega_4^2+3v\omega_4-\frac{3}{2}\omega_4-4\omega_2v^2\omega_4-3\omega_2v,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1-uv\omega_4\omega_1-\frac{1}{2}u\omega_3v^2\omega_4+\frac{1}{2}\omega_2\omega_3v^2-\frac{1}{2}u\omega_3\omega_4-u\omega_1-\frac{1}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3-\frac{1}{4}\omega_3\omega_4-\frac{1}{4}\omega_2v\omega_1+\frac{1}{2}v^2\omega_4+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2\omega_1+\omega_2u\omega_3v^2-\frac{1}{4}\omega_2\omega_3v-\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4+\frac{1}{2}\omega_2uv\omega_1-\omega_2v^2+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2\omega_3+\frac{1}{4}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3+\frac{1}{2}{c_s}^2u\omega_3\omega_4-\omega_2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{2}uv^2\omega_4\omega_1-\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-v\omega_4+\frac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4+\frac{1}{2}\omega_4+\frac{1}{2}\omega_2v+\frac{1}{2}\omega_2u\omega_1+\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_4],t-\delta_t}=1+uv\omega_4\omega_1+\frac{1}{2}u\omega_3\omega_4+u\omega_1+\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2\omega_3v-\frac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_3+\frac{1}{4}\omega_4\omega_1+v\omega_4-\frac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\frac{1}{2}\omega_4-\omega_2v-\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t}=-1-u\omega_3v^2\omega_4-\omega_2\omega_3v^2-u^2\omega_3+u\omega_1-u^3\omega_3^2-\frac{1}{2}{c_s}^2\omega_3^2-v^2\omega_4+{c_s}^2\omega_3-\frac{1}{2}{c_s}^2\omega_3\omega_1+2\omega_2u\omega_3v^2+3u^3\omega_3\omega_1-{c_s}^2u\omega_4\omega_1+\frac{1}{2}u^2\omega_3^2-\frac{1}{2}{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+2\omega_2v^2-\frac{1}{2}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-2\omega_2uv^2\omega_1+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1-{c_s}^2u\omega_3\omega_1-u^2\omega_1^2+2u^2\omega_1+uv^2\omega_4\omega_1+{c_s}^2u\omega_3^2-\omega_2v^2\omega_1-\frac{1}{2}u^2\omega_3\omega_1-2u^3\omega_1^2+\frac{1}{2}\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-\delta_t}=1+\frac{1}{2}\omega_3\omega_1-3u\omega_1+u\omega_3\omega_1+u\omega_1^2+2u^2\omega_3^2-2u\omega_3^2-\frac{3}{2}\omega_3+2u^2\omega_1^2+\frac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\frac{1}{2}\omega_1+3u\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-\delta_t}=-2-\omega_3\omega_1+u^2\omega_3-\omega_1^2-{c_s}^2\omega_3+{c_s}^2\omega_3\omega_1+4u^2\omega_3^2+\omega_3+4u^2\omega_1^2-2u^2\omega_1-7u^2\omega_3\omega_1+3\omega_1,$

$\alpha_{x,y}^{[\mu_4],t-\delta_t}=2+\omega_1^2+\omega_2^2-2\omega_2-4v^2\omega_4^2-4\omega_2^2v^2-4u^2\omega_3^2-4u^2\omega_1^2+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-2\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t}=-1+u\omega_3v^2\omega_4-\omega_2\omega_3v^2-u^2\omega_3-u\omega_1+u^3\omega_3^2-\frac{1}{2}{c_s}^2\omega_3^2-v^2\omega_4+{c_s}^2\omega_3-\frac{1}{2}{c_s}^2\omega_3\omega_1-2\omega_2u\omega_3v^2-3u^3\omega_3\omega_1+{c_s}^2u\omega_4\omega_1+\frac{1}{2}u^2\omega_3^2-\frac{1}{2}{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+2\omega_2v^2-\frac{1}{2}{c_s}^2\omega_4\omega_1+\frac{1}{2}\omega_3-{c_s}^2u\omega_3\omega_4+2\omega_2uv^2\omega_1+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1+{c_s}^2u\omega_3\omega_1-u^2\omega_1^2+2u^2\omega_1-uv^2\omega_4\omega_1-{c_s}^2u\omega_3^2-\omega_2v^2\omega_1-\frac{1}{2}u^2\omega_3\omega_1+2u^3\omega_1^2+\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t}=1+\frac{1}{2}\omega_3\omega_1+3u\omega_1-u\omega_3\omega_1-u\omega_1^2+2u^2\omega_3^2+2u\omega_3^2-\frac{3}{2}\omega_3+2u^2\omega_1^2+\frac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\frac{1}{2}\omega_1-3u\omega_3,$

$$\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y+\delta_l} = -1 - uv\omega_4\omega_1 + \tfrac{1}{2}uw_3v^2\omega_4 + \tfrac{1}{2}\omega_2\omega_3v^2 + \tfrac{1}{2}uw_3\omega_4 + uw_1 - \tfrac{1}{2}\omega_2uw_3v + \tfrac{1}{2}\omega_2uw_3 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_2v\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2\omega_1 - \omega_2uw_3v^2 + \tfrac{1}{4}\omega_2\omega_3v + \tfrac{1}{2}{c_s}^2uw_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3v^2\omega_4 + \tfrac{1}{2}\omega_2uv\omega_1 - \omega_2v^2 - \tfrac{1}{2}\omega_3v\omega_4 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 - \tfrac{1}{2}{c_s}^2uw_3\omega_4 + \omega_2uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}uv^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_1 + v\omega_4 - \tfrac{1}{2}uw_4\omega_1 + uw_3v\omega_4 + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2v - \tfrac{1}{2}\omega_2uw_1 + \tfrac{1}{2}\omega_1 - uw_3,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y+\delta_l} = 1+uv\omega_4\omega_1-\tfrac{1}{2}uw_3\omega_4-uw_1+\omega_2uw_3v-\tfrac{1}{2}\omega_2uw_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4+\tfrac{1}{2}uw_4\omega_1-uw_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{2}\omega_2uw_1-\tfrac{1}{2}\omega_1+uw_3,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x,y+\delta_l} = 1 + \tfrac{1}{2}\omega_4^2 - \omega_2v\omega_4 - \omega_2^2v - \tfrac{1}{2}\omega_2 + 2v^2\omega_4^2 + 2\omega_2^2v^2 + \tfrac{1}{2}\omega_2\omega_4 + 2v\omega_4^2 - 3v\omega_4 - \tfrac{3}{2}\omega_4 - 4\omega_2v^2\omega_4 + 3\omega_2v,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 + uv\omega_4\omega_1 - \tfrac{1}{2}uw_3v^2\omega_4 + \tfrac{1}{2}\omega_2\omega_3v^2 - \tfrac{1}{2}uw_3\omega_4 - uw_1 + \tfrac{1}{2}\omega_2uw_3v - \tfrac{1}{2}\omega_2uw_3 - \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{4}\omega_2v\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2\omega_1 + \omega_2uw_3v^2 + \tfrac{1}{4}\omega_2\omega_3v - \tfrac{1}{2}{c_s}^2uw_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3v^2\omega_4 - \tfrac{1}{2}\omega_2uv\omega_1 - \omega_2v^2 - \tfrac{1}{2}\omega_3v\omega_4 - \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3 + \tfrac{1}{2}{c_s}^2uw_3\omega_4 - \omega_2uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{2}uv^2\omega_4\omega_1 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_1 + v\omega_4 + \tfrac{1}{2}uw_4\omega_1 - uw_3v\omega_4 + \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2v + \tfrac{1}{2}\omega_2uw_1 + \tfrac{1}{2}\omega_1 + uw_3,$$

$$\alpha^{[\mu_4],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1-uv\omega_4\omega_1+\tfrac{1}{2}uw_3\omega_4+uw_1-\omega_2uw_3v+\tfrac{1}{2}\omega_2uw_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4-\tfrac{1}{2}uw_4\omega_1+uw_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v-\tfrac{1}{2}\omega_2uw_1-\tfrac{1}{2}\omega_1-uw_3,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \tfrac{5}{2}uv\omega_4\omega_1 + \tfrac{1}{2}\omega_2u^2\omega_3^2v - \tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1 + 4\omega_2u^2v^2\omega_4\omega_1 - \omega_2^2uv^2\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3^2v - \tfrac{1}{4}uw_4^2\omega_1 + \tfrac{1}{2}uw_3v^2\omega_4 - \tfrac{5}{2}{c_s}^2\omega_3v\omega_4 - u^2\omega_3v\omega_4^2 - \tfrac{1}{4}\omega_2v^2\omega_4\omega_1 + \omega_2^2u^2\omega_3v^2 - \tfrac{1}{2}\omega_2v\omega_4 + \tfrac{3}{2}\omega_2u^2\omega_1 + {c_s}^2uw_3v\omega_4\omega_1 + \tfrac{1}{2}\omega_2\omega_3v^2 - \tfrac{1}{2}\omega_2u^2\omega_3v\omega_1 - \tfrac{1}{2}uw_3\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1 + \tfrac{3}{2}u^2\omega_3 + \tfrac{3}{2}u^3\omega_3\omega_4\omega_1 - \tfrac{1}{4}{c_s}^2\omega_3\omega_4^2 + \tfrac{1}{4}\omega_2\omega_3v\omega_4 - \tfrac{3}{2}uw_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4 - \tfrac{1}{2}\omega_2uw_3v - \tfrac{1}{2}\omega_2uw_3 + \tfrac{1}{2}\omega_2u^2\omega_3v\omega_4 - uv^2\omega_4^2\omega_1 - {c_s}^2uw_3^2v\omega_4 + \tfrac{1}{2}u^2\omega_3v\omega_4\omega_1 + \tfrac{5}{2}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 - \omega_2^2u^2v\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2^2\omega_3v + \tfrac{1}{2}{c_s}^2\omega_2\omega_4 + u^3\omega_3^2 + \tfrac{1}{4}\omega_2v\omega_1 + \tfrac{1}{4}u^2\omega_3^2\omega_4 + \tfrac{1}{2}{c_s}^2\omega_3^2 - \omega_2u^3\omega_1^2 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2u^2\omega_3\omega_1 - \tfrac{3}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{4}\omega_2uw_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2uw_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_2uw_3v^2\omega_4 - \omega_2uw_3v^2 - {c_s}^2\omega_2^2\omega_3v^2 - 3u^3\omega_3\omega_1 - \tfrac{1}{2}u^2\omega_4\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3v - \tfrac{1}{2}\omega_2u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2uw_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3^2 + \tfrac{3}{2}{c_s}^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3v^2\omega_4 - 2\omega_2u^3v\omega_1^2 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 + \tfrac{5}{2}u^2\omega_3v\omega_4 + 3\omega_2u^3\omega_3v\omega_1 + {c_s}^2\omega_3v\omega_4^2 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 + 2\omega_2uv\omega_1 + \tfrac{1}{2}{c_s}^2uw_3^2\omega_4 + \tfrac{1}{4}\omega_2u^2\omega_3\omega_4 + \tfrac{1}{2}\omega_2^2u^2\omega_3v + 2u^2v\omega_4^2\omega_1 - {c_s}^2\omega_2uw_3v\omega_1 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 - \tfrac{1}{2}\omega_2u^2\omega_4\omega_1 - \omega_2v^2 - \tfrac{1}{2}u^3\omega_3^2\omega_4 + 2u^3v\omega_4\omega_1^2 - \tfrac{1}{2}\omega_3v\omega_4 - \tfrac{1}{4}{c_s}^2\omega_3^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2uw_3\omega_1 + \tfrac{1}{4}\omega_2\omega_3 + \tfrac{1}{4}{c_s}^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - 5u^2v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2uw_3\omega_4 + \tfrac{3}{2}\omega_2uv^2\omega_4\omega_1 + \omega_2uv^2\omega_1 - {c_s}^2\omega_3v^2\omega_4^2 - \tfrac{1}{2}{c_s}^2\omega_4 - \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{1}{4}u^2\omega_3\omega_4^2 + {c_s}^2uw_3\omega_1 - \tfrac{1}{2}\omega_2uw_3v\omega_4 - 2u^2v^2\omega_4^2\omega_1 - \tfrac{1}{2}u^2\omega_3^2v\omega_4 - \omega_2u^3\omega_3^2v + u^2\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2uw_3\omega_4 + 5\omega_2u^2v\omega_1 + \tfrac{1}{4}\omega_2u^2\omega_3^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3^2 + \tfrac{1}{4}\omega_2v\omega_4\omega_1 + 2{c_s}^2\omega_2\omega_3v^2\omega_4 - \omega_2u^2v\omega_1^2 - 3u^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3^2v\omega_4 - \tfrac{1}{4}\omega_2\omega_3v^2\omega_4 - 2\omega_2^2u^2v^2\omega_1 - \omega_2u^2v\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1 + {c_s}^2\omega_2uw_3^2v - \tfrac{1}{2}u^2\omega_4^2\omega_1 - \tfrac{1}{2}uv^2\omega_4\omega_1 + \tfrac{3}{4}{c_s}^2\omega_2\omega_3 - {c_s}^2uw_3^2 - \tfrac{3}{4}\omega_2u^2\omega_3 - 2\omega_2u^2\omega_3v^2\omega_4 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_1 - \tfrac{5}{4}u^2\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2uw_3^2 + u^3\omega_3^2v\omega_4 + v\omega_4 + \tfrac{5}{4}uw_4\omega_1 + uw_3v\omega_4 - \tfrac{1}{2}\omega_2^2uv\omega_1 + \tfrac{5}{2}{c_s}^2\omega_2\omega_3v - \tfrac{5}{2}\omega_2u^2\omega_3v - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}\omega_2u^3\omega_3^2 + uv\omega_4^2\omega_1 + \tfrac{1}{2}u^2\omega_3\omega_1 + \tfrac{1}{2}\omega_2v^2\omega_4 - u^3\omega_4\omega_1^2 - \tfrac{1}{2}{c_s}^2uw_3\omega_4\omega_1 + u^2v\omega_4\omega_1^2 + 2u^3\omega_1^2 + u^2\omega_3v^2\omega_4^2 + \tfrac{3}{2}\omega_2u^3\omega_3\omega_1 - \tfrac{1}{2}\omega_2v + \tfrac{3}{4}\omega_2uw_1 - 3u^3\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_1 + uw_3,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$
$$-2+\tfrac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\tfrac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\tfrac{1}{2}uw_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\tfrac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1+3uw_3\omega_4+\omega_2^2v^2\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-uw_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v\omega_4+4uw_1-uw_3\omega_1+6\omega_2uw_3v+2\omega_2uw_3+2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1+2uw_3^2v\omega_4-\tfrac{3}{2}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2+\tfrac{1}{2}\omega_2uw_4\omega_1-2v^2\omega_4^2-uw_1^2+\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1+4\omega_2uw_3v^2\omega_4-\omega_2uw_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2-\tfrac{1}{2}uw_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2-2uw_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1+\tfrac{1}{2}\omega_2uw_1^2+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4+\tfrac{1}{2}\omega_2uw_3\omega_1-\omega_2\omega_3+\omega_2uw_3v\omega_1-v\omega_4^2\omega_1+2uw_3^2+2uw_3v\omega_4^2+\tfrac{1}{2}uw_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\tfrac{1}{2}\omega_2^2\omega_3v-\omega_2uw_3v\omega_4-\omega_2^2uw_3v-\tfrac{1}{2}\omega_2uw_3\omega_4-2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2+\tfrac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2uw_3v^2+2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4-2\omega_2uw_3^2v-\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2-3uw_4\omega_1-6uw_3v\omega_4+\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2+\tfrac{1}{2}uw_3\omega_4\omega_1+4\omega_2v-2\omega_2uw_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2-4uw_3-uw_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2+\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 2 + 2\omega_2u^2\omega_3^2v - \tfrac{1}{2}\omega_3v^2\omega_4\omega_1 + \tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 + \omega_3\omega_1 - \omega_2\omega_3v^2 - 4\omega_2u^2\omega_3v\omega_1 + v\omega_4\omega_1^2 - \tfrac{1}{2}\omega_2\omega_3v\omega_1 - \tfrac{1}{2}\omega_2\omega_1^2 - 4\omega_2u^2v^2\omega_1^2 + 2u^2v^2\omega_4\omega_1^2 + 8u^2\omega_3v\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{3}{2}\omega_2v\omega_1 + 2u^2\omega_3^2\omega_4 - v^2\omega_4 + \omega_1^2 - \tfrac{1}{2}\omega_2v\omega_1^2 -$$

$$4\omega_2u^2\omega_3\omega_1-\omega_2+2u^2\omega_3^2v^2\omega_4+\frac{3}{2}\omega_2\omega_1+2u^2\omega_4\omega_1^2+\frac{1}{2}\omega_2\omega_3v+2\omega_2u^2\omega_1^2-3v\omega_4\omega_1-4u^2\omega_3^2-\frac{1}{2}{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+4{c_s}^2u^2\omega_3\omega_4\omega_1-4\omega_2u^2\omega_3^2v^2-4u^2\omega_3\omega_4\omega_1+2\omega_2v^2-\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3-\frac{3}{2}{c_s}^2\omega_4\omega_1-\omega_3+{c_s}^2\omega_4+\frac{3}{2}v^2\omega_4\omega_1+\omega_2v^2\omega_1^2-\frac{1}{2}\omega_4\omega_1^2-2{c_s}^2u^2\omega_3^2\omega_4-4u^2\omega_3^2v\omega_4-4u^2\omega_1^2+2\omega_2u^2\omega_3^2+2\omega_2u^2v\omega_1^2-\frac{1}{2}\omega_2\omega_3\omega_1+\omega_3v\omega_4\omega_1+\frac{3}{2}\omega_4\omega_1-3\omega_2v^2\omega_1-\frac{1}{2}v^2\omega_4\omega_1^2+2v\omega_4-2{c_s}^2u^2\omega_4\omega_1^2-4u^2\omega_3v^2\omega_4\omega_1-\omega_4+\frac{1}{2}{c_s}^2\omega_4\omega_1^2+8u^2\omega_3\omega_1-4u^2v\omega_4\omega_1^2+8\omega_2u^2\omega_3v^2\omega_1-\omega_2v-3\omega_1+\omega_2\omega_3v^2\omega_1,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x,y-\delta_l}=-2-4\omega_2u^2\omega_3^2v-\omega_3\omega_1+8\omega_2u^2\omega_3v\omega_1-v\omega_4\omega_1^2+\omega_2\omega_3v\omega_1+\frac{1}{2}\omega_2\omega_1^2-8u^2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2+\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\frac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2-\omega_2\omega_3v-2\omega_2u^2\omega_1^2+3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-\frac{1}{2}\omega_2\omega_3+\omega_3+\frac{1}{2}\omega_4\omega_1^2+4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2-4\omega_2u^2v\omega_1^2+\frac{1}{2}\omega_2\omega_3\omega_1-\omega_3v\omega_4\omega_1-\frac{3}{2}\omega_4\omega_1-2v\omega_4+\omega_4-8u^2\omega_3\omega_1+4u^2v\omega_4\omega_1^2+2\omega_2v+3\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l}=1+\frac{5}{2}uv\omega_4\omega_1+\frac{1}{2}\omega_2u^2\omega_3^2v-\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+4\omega_2u^2v^2\omega_4\omega_1+\omega_2^2uv^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3^2v+\frac{1}{4}u\omega_4^2\omega_1-\frac{1}{2}u\omega_3v^2\omega_4-\frac{5}{2}{c_s}^2\omega_3v\omega_4-u^2\omega_3v\omega_4^2-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\omega_2^2u^2\omega_3v^2-\frac{1}{2}\omega_2v\omega_4+\frac{3}{2}\omega_2u^2\omega_1-{c_s}^2u\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3v^2-\frac{1}{2}\omega_2u^2\omega_3v\omega_1+\frac{1}{2}u\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{3}{2}u^2\omega_3-\frac{3}{2}u^3\omega_3\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4^2+\frac{1}{4}\omega_2\omega_3v\omega_4+\frac{3}{2}u\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}\omega_2u^2\omega_3v\omega_4+uv^2\omega_4^2\omega_1+{c_s}^2u\omega_3^2v\omega_4+\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{5}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4-\omega_2^2u^2v\omega_1-\frac{1}{2}{c_s}^2\omega_2^2\omega_3v+\frac{1}{2}{c_s}^2\omega_2\omega_4-u^3\omega_3^2+\frac{1}{4}\omega_2v\omega_1+\frac{1}{4}u^2\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_3^2+\omega_2u^3\omega_1^2+\frac{1}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{3}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_1+\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3v^2-{c_s}^2\omega_2^2\omega_3v^2+3u^3\omega_3\omega_1-\frac{1}{2}u^2\omega_4\omega_1^2+\frac{1}{4}\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_1^2-\frac{1}{2}{c_s}^2u\omega_4\omega_1-\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}u^2\omega_3^2+\frac{3}{2}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4+2\omega_2u^3v\omega_1^2-\frac{1}{4}u^2\omega_3\omega_4\omega_1+\frac{5}{2}u^2\omega_3v\omega_4-3\omega_2u^3\omega_3v\omega_1+{c_s}^2\omega_3v\omega_4^2-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1-\frac{1}{2}{c_s}^2u\omega_3^2\omega_4+\frac{1}{4}\omega_2u^2\omega_3\omega_4+\frac{1}{2}\omega_2^2u^2\omega_3v+2u^2v\omega_4^2\omega_1+{c_s}^2\omega_2u\omega_3v\omega_1-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_4\omega_1-\omega_2v^2+\frac{1}{2}u^3\omega_3^2\omega_4-2u^3v\omega_4\omega_1^2-\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+\frac{1}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3-5u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2u\omega_3\omega_4-\frac{3}{2}\omega_2uv^2\omega_4\omega_1-\omega_2uv^2\omega_1-{c_s}^2\omega_3v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{4}u^2\omega_3\omega_4^2-{c_s}^2u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_3v\omega_4-2u^2v^2\omega_4^2\omega_1-\frac{1}{2}u^2\omega_3^2v\omega_4+\omega_2u^3\omega_3^2v+u^2\omega_1^2-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+5\omega_2u^2v\omega_1+\frac{1}{4}\omega_2u^2\omega_3^2-\frac{1}{4}{c_s}^2\omega_2\omega_3^2+\frac{1}{4}\omega_2v\omega_4\omega_1+2{c_s}^2\omega_2\omega_3v^2\omega_4-\omega_2u^2v\omega_1^2-3u^2\omega_1+\frac{1}{2}{c_s}^2\omega_3^2v\omega_4-\frac{1}{4}\omega_2\omega_3v^2\omega_4-2\omega_2^2u^2v^2\omega_1-\omega_2u^2v\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-{c_s}^2\omega_2u\omega_3^2v-\frac{1}{2}u^2\omega_4^2\omega_1+\frac{1}{2}uv^2\omega_4\omega_1+\frac{3}{4}{c_s}^2\omega_2\omega_3+{c_s}^2u\omega_3^2-\frac{3}{4}\omega_2u^2\omega_3-2\omega_2u^2\omega_3v^2\omega_4+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{5}{4}u^2\omega_3\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3^2-u^3\omega_3^2v\omega_4+v\omega_4-\frac{5}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}\omega_2^2uv\omega_1+\frac{5}{2}{c_s}^2\omega_2\omega_3v-\frac{5}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4+\frac{1}{2}\omega_2u^3\omega_3^2-uv\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4+u^3\omega_4\omega_1^2+\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1+u^2v\omega_4\omega_1^2-2u^3\omega_1^2+u^2\omega_3v^2\omega_4^2-\frac{3}{2}\omega_2u^3\omega_3\omega_1-\frac{1}{2}\omega_2v-\frac{3}{4}\omega_2u\omega_1+3u^3\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_1-u\omega_3,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y-\delta_l}=$$
$$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\frac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1-6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\frac{1}{2}\omega_3^2v\omega_4+\omega_2-\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2-\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2+\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1-\frac{1}{2}\omega_2u\omega_1^2+\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4-\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1-v\omega_4^2\omega_1-2u\omega_3^2-2u\omega_3v\omega_4^2-\frac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\frac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v+\frac{1}{2}\omega_2u\omega_3\omega_4-2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2+\frac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2+2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v-\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2-\frac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2v+2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2+\frac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}=1-\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2^2u^2\omega_3-8\omega_2u^2v^2\omega_4\omega_1+2\omega_2^2uv^2\omega_1-u\omega_3v^2\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1-2\omega_2^2u^2\omega_3v^2+2\omega_2u^2\omega_1-\omega_2\omega_3v^2-u\omega_3\omega_4+\frac{1}{2}u^2\omega_3-\frac{3}{2}u\omega_1-\omega_2u\omega_3+2uv^2\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_2^2\omega_3+\frac{1}{2}\omega_3\omega_4-{c_s}^2\omega_2\omega_4-\frac{1}{2}\omega_2^2u\omega_1-v^2\omega_4-\frac{1}{2}{c_s}^2\omega_3-\omega_2-\omega_2u\omega_4\omega_1+{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1-\omega_2u\omega_3v^2\omega_4+2\omega_2u\omega_3v^2+2{c_s}^2\omega_2^2\omega_3v^2-{c_s}^2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4+\omega_2\omega_4+\frac{1}{2}\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+{c_s}^2u\omega_3\omega_4-3\omega_2uv^2\omega_4\omega_1-2\omega_2uv^2\omega_1+2{c_s}^2\omega_3v^2\omega_4^2+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1+\omega_2u\omega_3\omega_4+4u^2v^2\omega_4^2\omega_1-{c_s}^2\omega_2u\omega_3\omega_4-4{c_s}^2\omega_2\omega_3v^2\omega_4-u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_4+4\omega_2^2u^2v^2\omega_1+uv^2\omega_4\omega_1+{c_s}^2\omega_2\omega_3-\omega_2u^2\omega_3+4\omega_2u^2\omega_3v^2\omega_4+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1-\omega_2^2u^2\omega_1+u\omega_4\omega_1-\omega_4-\omega_2v^2\omega_4-2u^2\omega_3v^2\omega_4^2+2\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4+u\omega_3,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y}=-2+\frac{1}{2}\omega_2\omega_4\omega_1-4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1+u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2+2u\omega_1+3\omega_2u\omega_3-$$

$4uv^2\omega_4^2\omega_1 - \frac{1}{2}\omega_3\omega_4 + \omega_2^2u\omega_1 - 2v^2\omega_4^2\omega_1 - \omega_2^2 + 3\omega_2 + \omega_2u\omega_4\omega_1 + 4v^2\omega_4^2 - \frac{3}{2}\omega_2\omega_1 - 8\omega_2u\omega_3v^2\omega_4 + 4\omega_2^2v^2 + \frac{1}{2}\omega_2^2\omega_3 - \omega_2\omega_4 + 4u\omega_3v^2\omega_4^2 - \frac{3}{2}\omega_2\omega_3 + \omega_3 + 8\omega_2uv^2\omega_4\omega_1 - \omega_2u\omega_3\omega_4 + \frac{1}{2}\omega_2^2\omega_1 + 4\omega_2^2u\omega_3v^2 + 4\omega_2\omega_3v^2\omega_4 - \frac{1}{2}\omega_4\omega_1 - 2\omega_2^2\omega_3v^2 - u\omega_4\omega_1 - \omega_2^2u\omega_3 + \omega_4 - 8\omega_2v^2\omega_4 - 3\omega_2u\omega_1 + \omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 - 2u\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-2\delta_t} =$
$2+\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_3\omega_4\omega_1-u^2\omega_3^2\omega_1+\omega_3\omega_1+2\omega_2\omega_3v^2+2u^2\omega_3+8\omega_2u^2v^2\omega_1^2-{c_s}^2\omega_3\omega_1^2-4u^2v^2\omega_4\omega_1^2+{c_s}^2\omega_3^2+2v^2\omega_4+\omega_1^2-2{c_s}^2\omega_3+3{c_s}^2\omega_3\omega_1-4u^2\omega_3^2v^2\omega_4-5u^2\omega_3^2+{c_s}^2\omega_3\omega_4-\omega_3v^2\omega_4-8{c_s}^2u^2\omega_3\omega_4\omega_1+8\omega_2u^2\omega_3^2v^2-4\omega_2v^2+3{c_s}^2\omega_4\omega_1-\omega_3-u^2\omega_3\omega_1^2-2{c_s}^2\omega_4-3v^2\omega_4\omega_1-2\omega_2v^2\omega_1^2+4{c_s}^2u^2\omega_3^2\omega_4-2u^2\omega_1^2-{c_s}^2\omega_3^2\omega_1-4u^2\omega_1+6\omega_2v^2\omega_1+v^2\omega_4\omega_1^2+4{c_s}^2u^2\omega_4\omega_1^2+8u^2\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_4\omega_1^2+11u^2\omega_3\omega_1-16\omega_2u^2\omega_3v^2\omega_1-3\omega_1-2\omega_2\omega_3v^2\omega_1,$

$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4-\omega_4^2-4\omega_3\omega_1+\omega_2\omega_4^2-\omega_1^2-\omega_2^2+3\omega_2+\omega_3\omega_1^2-4\omega_2\omega_4+\omega_2^2\omega_4+3\omega_3-\omega_3^2+3\omega_4+\omega_2^2\omega_1+3\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 1-\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_2^2u^2\omega_3-8\omega_2u^2v^2\omega_4\omega_1-2\omega_2^2uv^2\omega_1+u\omega_3v^2\omega_4+\frac{1}{2}\omega_2v^2\omega_4\omega_1-2\omega_2^2u^2\omega_3v^2+2\omega_2u^2\omega_1-\omega_2\omega_3v^2+u\omega_3\omega_4+\frac{1}{2}u^2\omega_3+\frac{3}{2}u\omega_1+\omega_2u\omega_3-2uv^2\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_2^2\omega_3+\frac{1}{2}\omega_3\omega_4-{c_s}^2\omega_2\omega_4+\frac{1}{2}\omega_2^2u\omega_1-v^2\omega_4-\frac{1}{2}{c_s}^2\omega_3-\omega_2+\omega_2u\omega_4\omega_1-{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}\omega_2\omega_1+\omega_2u\omega_3v^2\omega_4-2\omega_2u\omega_3v^2+2{c_s}^2\omega_2^2\omega_3v^2+{c_s}^2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4+\omega_2\omega_4+\frac{1}{2}\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_2\omega_3-\frac{1}{2}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3-{c_s}^2u\omega_3\omega_4+3\omega_2uv^2\omega_4\omega_1+2\omega_2uv^2\omega_1+2{c_s}^2\omega_3v^2\omega_4^2+{c_s}^2\omega_4+\frac{1}{2}v^2\omega_4\omega_1-\omega_2u\omega_3\omega_4+4u^2v^2\omega_4^2\omega_1+{c_s}^2\omega_2u\omega_3\omega_4-4{c_s}^2\omega_2\omega_3v^2\omega_4-u^2\omega_1+\frac{1}{2}\omega_2\omega_3v^2\omega_4+4\omega_2^2u^2v^2\omega_1-uv^2\omega_4\omega_1+{c_s}^2\omega_2\omega_3-\omega_2u^2\omega_3+4\omega_2u^2\omega_3v^2\omega_4+\frac{1}{2}\omega_4\omega_1-\omega_2v^2\omega_1-\omega_2^2u^2\omega_1-u\omega_4\omega_1-\omega_4-\omega_2v^2\omega_4-2u^2\omega_3v^2\omega_4^2-2\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4-u\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t} = -2+\frac{1}{2}\omega_2\omega_4\omega_1+4\omega_2^2uv^2\omega_1+4\omega_2v^2\omega_4\omega_1-u\omega_3\omega_4-2\omega_2^2v^2\omega_1-2\omega_3v^2\omega_4^2-2u\omega_1-3\omega_2u\omega_3+4uv^2\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_4-\omega_2^2u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2-\omega_2u\omega_4\omega_1+4v^2\omega_4^2-\frac{3}{2}\omega_2\omega_1+8\omega_2u\omega_3v^2\omega_4+4\omega_2^2v^2+\frac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4-4u\omega_3v^2\omega_4^2-\frac{3}{2}\omega_2\omega_3+\omega_3-8\omega_2uv^2\omega_4\omega_1+\omega_2u\omega_3\omega_4+\frac{1}{2}\omega_2^2\omega_1-4\omega_2^2u\omega_3v^2+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3v^2+u\omega_4\omega_1+\omega_2^2u\omega_3+\omega_4-8\omega_2v^2\omega_4+3\omega_2u\omega_1+\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+2u\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1+\frac{5}{2}uv\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_3^2v-\frac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+4\omega_2u^2v^2\omega_4\omega_1-\omega_2^2uv^2\omega_1+\frac{1}{2}{c_s}^2\omega_2\omega_3^2v-\frac{1}{4}u\omega_4^2\omega_1+\frac{1}{2}u\omega_3v^2\omega_4+\frac{5}{2}{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\omega_2^2u^2\omega_3v^2+\frac{1}{2}\omega_2v\omega_4+\frac{3}{2}\omega_2u^2\omega_1-{c_s}^2u\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3v^2+\frac{1}{2}\omega_2u^2\omega_3v\omega_1-\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{3}{2}u^2\omega_3+\frac{3}{2}u^3\omega_3\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4^2-\frac{1}{4}\omega_2\omega_3v\omega_4-\frac{3}{2}u\omega_1+\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3-\frac{1}{2}\omega_2u^2\omega_3v\omega_4-uv^2\omega_4^2\omega_1+{c_s}^2u\omega_3^2v\omega_4-\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{5}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4+\omega_2^2u^2v\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3v+\frac{1}{2}{c_s}^2\omega_2\omega_4+u^3\omega_3^2-\frac{1}{4}\omega_2v\omega_1+\frac{1}{4}u^2\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_3^2-\omega_2u^3\omega_1^2+\frac{1}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1-\frac{3}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2-\frac{1}{4}\omega_2u\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_1+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3v^2-{c_s}^2\omega_2^2\omega_3v^2-3u^3\omega_3\omega_1-\frac{1}{2}u^2\omega_4\omega_1^2-\frac{1}{4}\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_1^2+\frac{1}{2}{c_s}^2u\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}u^2\omega_3^2+\frac{3}{2}{c_s}^2\omega_3\omega_4-\frac{1}{4}\omega_3v^2\omega_4+2\omega_2u^3v\omega_1^2-\frac{1}{4}u^2\omega_3\omega_4\omega_1-\frac{5}{2}u^2\omega_3v\omega_4-3\omega_2u^3\omega_3v\omega_1-{c_s}^2\omega_3v\omega_4^2-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1+\frac{1}{2}{c_s}^2u\omega_3^2\omega_4+\frac{1}{4}\omega_2u^2\omega_3\omega_4-\frac{1}{2}\omega_2^2u^2\omega_3v-2u^2v\omega_4^2\omega_1+{c_s}^2\omega_2u\omega_3v\omega_1-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2u^2\omega_4\omega_1-\omega_2v^2-\frac{1}{2}u^3\omega_3^2\omega_4-2u^3v\omega_4\omega_1^2+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+\frac{1}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3+5u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2uv^2\omega_4\omega_1+\omega_2uv^2\omega_1-{c_s}^2\omega_3v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_4-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{4}u^2\omega_3\omega_4^2+{c_s}^2u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_3v\omega_4-2u^2v^2\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3^2v\omega_4+\omega_2u^3\omega_3^2v+u^2\omega_1^2+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-5\omega_2u^2v\omega_1+\frac{1}{4}\omega_2u^2\omega_3^2-\frac{1}{4}{c_s}^2\omega_2\omega_3^2-\frac{1}{4}\omega_2v\omega_4\omega_1+2{c_s}^2\omega_2\omega_3v^2\omega_4+\omega_2u^2v\omega_1^2-3u^2\omega_1-\frac{1}{2}{c_s}^2\omega_3^2v\omega_4-\frac{1}{4}\omega_2\omega_3v^2\omega_4-2\omega_2^2u^2v^2\omega_1+\omega_2u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-{c_s}^2\omega_2u\omega_3^2v-\frac{1}{2}u^2\omega_4^2\omega_1-\frac{1}{2}uv^2\omega_4\omega_1+\frac{3}{4}{c_s}^2\omega_2\omega_3-{c_s}^2u\omega_3^2-\frac{3}{4}\omega_2u^2\omega_3-2\omega_2u^2\omega_3v^2\omega_4+\frac{1}{4}\omega_4\omega_1+\frac{1}{2}\omega_2v^2\omega_1-\frac{5}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3^2-u^3\omega_3^2v\omega_4-v\omega_4+\frac{5}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}\omega_2^2uv\omega_1-\frac{5}{2}{c_s}^2\omega_2\omega_3v+\frac{5}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4-\frac{1}{2}\omega_2u^3\omega_3^2-uv\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3\omega_1+\frac{1}{2}\omega_2v^2\omega_4-u^3\omega_4\omega_1^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-u^2v\omega_4\omega_1^2+2u^3\omega_1^2+u^2\omega_3v^2\omega_4^2+\frac{3}{2}\omega_2u^3\omega_3\omega_1+\frac{1}{2}\omega_2v+\frac{3}{4}\omega_2u\omega_1+3u^3\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_1+u\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t} =$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\frac{1}{2}u\omega_4^2\omega_1-\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1+3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2+u\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_2\omega_3v\omega_4+4u\omega_1-u\omega_3\omega_1-6\omega_2u\omega_3v+2\omega_2u\omega_3+2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1-2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\frac{1}{2}\omega_3^2v\omega_4+\omega_2+\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2-u\omega_1^2-\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1+4\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2-\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2-2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2uv\omega_1+\frac{1}{2}\omega_2u\omega_1^2-\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3-\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1+2u\omega_3^2-2u\omega_3v\omega_4^2+\frac{1}{2}u\omega_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\frac{1}{2}\omega_2^2\omega_3v+\omega_2u\omega_3v\omega_4+\omega_2^2u\omega_3v-\frac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-$

$$2u^2\omega_1^2+\omega_2u^2\omega_3^2-\tfrac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4+2\omega_2u\omega_3^2v+\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2-3u\omega_4\omega_1+6u\omega_3v\omega_4-\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2+\tfrac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v-2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2-4u\omega_3-u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t}=2-2\omega_2u^2\omega_3^2v-\tfrac{1}{2}\omega_3v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\omega_3\omega_1-\omega_2\omega_3v^2+4\omega_2u^2\omega_3v\omega_1-v\omega_4\omega_1^2+\tfrac{1}{2}\omega_2\omega_3v\omega_1-\tfrac{1}{2}\omega_2\omega_1^2-4\omega_2u^2v^2\omega_1^2+2u^2v^2\omega_4\omega_1^2-8u^2\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4-\tfrac{3}{2}\omega_2v\omega_1+2u^2\omega_3^2\omega_4-v^2\omega_4+\omega_1^2+\tfrac{1}{2}\omega_2v\omega_1^2-4\omega_2u^2\omega_3\omega_1-\omega_2+2u^2\omega_3^2v^2\omega_4+\tfrac{3}{2}\omega_2\omega_1+2u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_2\omega_3v+2\omega_2u^2\omega_1^2+3v\omega_4\omega_1-4u^2\omega_3^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4+\tfrac{1}{2}\omega_3v^2\omega_4+4{c_s}^2u^2\omega_3\omega_4\omega_1-4\omega_2u^2\omega_3^2v^2-4u^2\omega_3\omega_4\omega_1+2\omega_2v^2-\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3-\tfrac{3}{2}{c_s}^2\omega_4\omega_1-\omega_3+{c_s}^2\omega_4+\tfrac{3}{2}v^2\omega_4\omega_1+\omega_2v^2\omega_1^2-\tfrac{1}{2}\omega_4\omega_1^2-2{c_s}^2u^2\omega_3^2\omega_4+4u^2\omega_3^2v\omega_4-4u^2\omega_1^2+2\omega_2u^2\omega_3^2-2\omega_2u^2v\omega_1^2-\tfrac{1}{2}\omega_2\omega_3\omega_1-\omega_3v\omega_4\omega_1+\tfrac{3}{2}\omega_4\omega_1-3\omega_2v^2\omega_1-\tfrac{1}{2}v^2\omega_4\omega_1^2-2v\omega_4-2{c_s}^2u^2\omega_4\omega_1^2-4u^2\omega_3v^2\omega_4\omega_1-\omega_4+\tfrac{1}{2}{c_s}^2\omega_4\omega_1^2+8u^2\omega_3\omega_1+4u^2v\omega_4\omega_1^2+8\omega_2u^2\omega_3v^2\omega_1+\omega_2v-3\omega_1+\omega_2\omega_3v^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t}=-2+4\omega_2u^2\omega_3^2v-\omega_3\omega_1-8\omega_2u^2\omega_3v\omega_1+v\omega_4\omega_1^2-\omega_2\omega_3v\omega_1+\tfrac{1}{2}\omega_2\omega_1^2+8u^2\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4+3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2-\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\tfrac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2+\omega_2\omega_3v-2\omega_2u^2\omega_1^2-3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4-\tfrac{1}{2}\omega_2\omega_3+\omega_3+\tfrac{1}{2}\omega_4\omega_1^2-4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2+4\omega_2u^2v\omega_1^2+\tfrac{1}{2}\omega_2\omega_3\omega_1+\omega_3v\omega_4\omega_1-\tfrac{3}{2}\omega_4\omega_1+2v\omega_4+\omega_4-8u^2\omega_3\omega_1-4u^2v\omega_4\omega_1^2-2\omega_2v+3\omega_1,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\tfrac{5}{2}uv\omega_4\omega_1-\tfrac{1}{2}\omega_2u^2\omega_3^2v-\tfrac{1}{4}{c_s}^2\omega_3\omega_4\omega_1+4\omega_2u^2v^2\omega_4\omega_1+\omega_2^2uv^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_2\omega_3^2v+\tfrac{1}{4}u\omega_4^2\omega_1-\tfrac{1}{2}u\omega_3v^2\omega_4+\tfrac{5}{2}{c_s}^2\omega_3v\omega_4+u^2\omega_3v\omega_4^2-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\omega_2^2u^2\omega_3v^2+\tfrac{1}{2}\omega_2v\omega_4+\tfrac{3}{2}\omega_2u^2\omega_1+{c_s}^2u\omega_3v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v^2+\tfrac{1}{2}\omega_2u^2\omega_3v\omega_1+\tfrac{1}{2}u\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{3}{2}u^2\omega_3-\tfrac{3}{2}u^3\omega_3\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2-\tfrac{1}{4}\omega_2\omega_3v\omega_4+\tfrac{3}{2}u\omega_1+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3-\tfrac{1}{2}\omega_2u^2\omega_3v\omega_4+uv^2\omega_4^2\omega_1-{c_s}^2u\omega_3^2v\omega_4-\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1+\tfrac{5}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\omega_2^2u^2v\omega_1+\tfrac{1}{2}{c_s}^2\omega_2^2\omega_3v+\tfrac{1}{2}{c_s}^2\omega_2\omega_4-u^3\omega_3^2-\tfrac{1}{4}\omega_2v\omega_1+\tfrac{1}{4}u^2\omega_3^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_3^2+\omega_2u^3\omega_1^2+\tfrac{1}{2}v^2\omega_4-\tfrac{1}{4}\omega_2u^2\omega_3\omega_1-\tfrac{3}{2}{c_s}^2\omega_3-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2u\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3v^2-{c_s}^2\omega_2^2\omega_3v^2+3u^3\omega_3\omega_1-\tfrac{1}{2}u^2\omega_4\omega_1^2-\tfrac{1}{4}\omega_2\omega_3v-\tfrac{1}{2}\omega_2u^2\omega_1^2-\tfrac{1}{2}{c_s}^2u\omega_4\omega_1+\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}u^2\omega_3^2+\tfrac{3}{2}{c_s}^2\omega_3\omega_4-\tfrac{1}{4}\omega_3v^2\omega_4-2\omega_2u^3v\omega_1^2-\tfrac{1}{4}u^2\omega_3\omega_4\omega_1-\tfrac{5}{2}u^2\omega_3v\omega_4+3\omega_2u^3\omega_3v\omega_1-{c_s}^2\omega_3v\omega_4^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+2\omega_2uv\omega_1-\tfrac{1}{2}{c_s}^2u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2u^2\omega_3\omega_4-\tfrac{1}{2}\omega_2^2u^2\omega_3v-2u^2v\omega_4^2\omega_1-{c_s}^2\omega_2u\omega_3v\omega_1-\tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-\tfrac{1}{2}\omega_2u^2\omega_4\omega_1-\omega_2v^2+\tfrac{1}{2}u^3\omega_3^2\omega_4+2u^3v\omega_4\omega_1^2+\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}{c_s}^2\omega_3^2\omega_4+\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3+5u^2v\omega_4\omega_1+\tfrac{1}{2}{c_s}^2u\omega_3\omega_4-\tfrac{3}{2}\omega_2uv^2\omega_4\omega_1-\omega_2uv^2\omega_1-{c_s}^2\omega_3v^2\omega_4^2-\tfrac{1}{2}{c_s}^2\omega_4-\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{4}u^2\omega_3\omega_4^2-{c_s}^2u\omega_3\omega_1-\tfrac{1}{2}\omega_2u\omega_3v\omega_4-2u^2v^2\omega_4^2\omega_1+\tfrac{1}{2}u^2\omega_3^2v\omega_4-\omega_2u^3\omega_3^2v+u^2\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-5\omega_2u^2v\omega_1+\tfrac{1}{4}\omega_2u^2\omega_3^2-\tfrac{1}{4}{c_s}^2\omega_2\omega_3^2-\tfrac{1}{4}\omega_2v\omega_4\omega_1+2{c_s}^2\omega_2\omega_3v^2\omega_4+\omega_2u^2v\omega_1^2-3u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_3^2v\omega_4-\tfrac{1}{4}\omega_2\omega_3v^2\omega_4-2\omega_2^2u^2v^2\omega_1+\omega_2u^2v\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+{c_s}^2\omega_2u\omega_3^2v-\tfrac{1}{2}u^2\omega_4^2\omega_1+\tfrac{1}{2}uv^2\omega_4\omega_1+\tfrac{3}{4}{c_s}^2\omega_2\omega_3+{c_s}^2u\omega_3^2-\tfrac{3}{4}\omega_2u^2\omega_3-2\omega_2u^2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_1-\tfrac{5}{4}u^2\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2u\omega_3^2+u^3\omega_3^2v\omega_4-v\omega_4-\tfrac{5}{4}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}\omega_2^2uv\omega_1-\tfrac{5}{2}{c_s}^2\omega_2\omega_3v+\tfrac{5}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\tfrac{1}{2}\omega_2u^3\omega_3^2+uv\omega_4^2\omega_1+\tfrac{1}{2}u^2\omega_3\omega_1+\tfrac{1}{2}\omega_2v^2\omega_4+u^3\omega_4\omega_1^2+\tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-u^2v\omega_4\omega_1^2-2u^3\omega_1^2+u^2\omega_3v^2\omega_4^2-\tfrac{3}{2}\omega_2u^3\omega_3\omega_1+\tfrac{1}{2}\omega_2v-\tfrac{3}{4}\omega_2u\omega_1-3u^3\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t}=$$
$$-2+\tfrac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\tfrac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\tfrac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\tfrac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1+6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\tfrac{3}{2}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2-\tfrac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2+\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2+\tfrac{1}{2}u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1-\tfrac{1}{2}\omega_2u\omega_1^2-\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1-2u\omega_3^2+2u\omega_3v\omega_4^2-\tfrac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\tfrac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v+\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2-\tfrac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v+2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t}=-2-3\omega_2u^2\omega_3^2v-\tfrac{1}{2}\omega_3v^2\omega_4\omega_1+2\omega_2u^2\omega_3^2v^2\omega_4+\tfrac{7}{2}{c_s}^2\omega_3\omega_4\omega_1-8\omega_2u^2v^2\omega_4\omega_1-\tfrac{1}{2}u^2\omega_3\omega_4\omega_1^2+{c_s}^2\omega_2\omega_3^2v-2u^2\omega_3v^2\omega_4^2\omega_1+5{c_s}^2\omega_3v\omega_4+2u^2\omega_3v\omega_4^2+\tfrac{3}{2}\omega_2v^2\omega_4\omega_1+u^2\omega_3^2\omega_1-2\omega_2^2u^2\omega_3v^2+\omega_2v\omega_4-\omega_3\omega_1-3\omega_2u^2\omega_1-\omega_2\omega_3v^2+10\omega_2u^2\omega_3v\omega_1+6{c_s}^2\omega_2\omega_3v\omega_1-3u^2\omega_3-v\omega_4\omega_1^2+\tfrac{1}{2}\omega_2\omega_3v\omega_1+\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2+$$

$\frac{1}{2}\omega_2\omega_1^2 - \frac{1}{2}\omega_2\omega_3 v\omega_4 - 4\omega_2 u^2 v^2\omega_1^2 + {c_s}^2\omega_3\omega_1^2 + 2u^2v^2\omega_4\omega_1^2 - \omega_2^2 u^2\omega_3 v\omega_1 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 + {c_s}^2\omega_2\omega_3 v\omega_4 - {c_s}^2\omega_2\omega_3\omega_4\omega_1 - \omega_2 u^2\omega_3 v\omega_4 - 4{c_s}^2\omega_2 u^2\omega_3\omega_4\omega_1 - 14u^2\omega_3 v\omega_4\omega_1 - 5u^2\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 + 2\omega_2^2 u^2 v\omega_1 + 2{c_s}^2\omega_3 v\omega_4^2\omega_1 + {c_s}^2\omega_2^2\omega_3 v - {c_s}^2\omega_2\omega_4 - \frac{3}{2}\omega_2 v\omega_1 - \frac{1}{2}\omega_2 u^2\omega_3\omega_1^2 - \frac{5}{2}u^2\omega_3^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1^2 - {c_s}^2\omega_3^2 - v^2\omega_4 - \omega_1^2 + \frac{1}{2}\omega_2 v\omega_1^2 + 6\omega_2 u^2\omega_3\omega_1 + 3{c_s}^2\omega_3 + 2{c_s}^2\omega_2\omega_3\omega_1 + \omega_2 - 4{c_s}^2\omega_3\omega_1 + {c_s}^2\omega_3^2 v\omega_4\omega_1 + 2u^2\omega_3^2 v^2\omega_4 - \frac{3}{2}\omega_2\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4\omega_1 + 2{c_s}^2\omega_2^2\omega_3 v^2 + 4{c_s}^2\omega_2\omega_3 v^2\omega_4\omega_1 + u^2\omega_3 v\omega_4\omega_1^2 - u^2\omega_4\omega_1^2 - \frac{1}{2}\omega_2\omega_3 v - \omega_2 u^2\omega_1^2 - 2{c_s}^2\omega_2^2\omega_3 v^2\omega_1 - \omega_2 u^2\omega_3 v\omega_1^2 + 3v\omega_4\omega_1 - {c_s}^2\omega_2\omega_3 v\omega_1^2 + 5u^2\omega_3^2 - 3{c_s}^2\omega_3\omega_4 + \frac{1}{2}\omega_3 v^2\omega_4 + 4{c_s}^2 u^2\omega_3\omega_4\omega_1 - 4\omega_2 u^2\omega_3^2 v^2 + 7u^2\omega_3\omega_4\omega_1 + 2\omega_2 u^2 v^2\omega_4\omega_1^2 - \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2 - 5u^2\omega_3 v\omega_4 - 2{c_s}^2\omega_3 v\omega_4^2 + {c_s}^2\omega_2\omega_3\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4 - \omega_2^2 u^2\omega_3 v - 4u^2 v\omega_4^2\omega_1 - \frac{1}{2}\omega_2 v^2\omega_4\omega_1^2 + \frac{3}{2}{c_s}^2\omega_2\omega_4\omega_1 - {c_s}^2\omega_2^2\omega_3 v\omega_1 + \omega_2 u^2\omega_4\omega_1 + 2\omega_2 v^2 + \frac{1}{2}\omega_3\omega_4\omega_1 + \omega_3 v\omega_4 + \frac{1}{2}{c_s}^2\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_3 + 3\omega_2 u^2\omega_3 v\omega_4\omega_1 - \frac{1}{2}u^2\omega_3\omega_4^2\omega_1 - {c_s}^2\omega_2\omega_3 v\omega_4\omega_1 - \frac{3}{2}{c_s}^2\omega_4\omega_1 + \omega_3 + 10u^2 v\omega_4\omega_1 + u^2\omega_3\omega_1^2 + 2{c_s}^2\omega_2 u^2\omega_3^2\omega_4 + \frac{1}{2}\omega_2\omega_3 v\omega_4\omega_1 + 2{c_s}^2\omega_3 v^2\omega_4^2 - \frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_1 + {c_s}^2\omega_4 + \frac{3}{2}v^2\omega_4\omega_1 + \omega_2 v^2\omega_1^2 - \frac{1}{2}u^2\omega_3\omega_4^2 - \frac{1}{2}\omega_2 u^2\omega_3^2\omega_1 + \frac{1}{2}\omega_4\omega_1^2 - 2{c_s}^2 u^2\omega_3^2\omega_4 + 4u^2 v^2\omega_4^2\omega_1 + \frac{1}{2}\omega_2 v\omega_4\omega_1^2 + 5u^2\omega_3^2 v\omega_4 + u^2\omega_3^2 v\omega_4\omega_1 + 2u^2\omega_1^2 + {c_s}^2\omega_3^2\omega_1 - 10\omega_2 u^2 v\omega_1 - \frac{1}{2}u^2\omega_3^2\omega_4\omega_1 - 2\omega_2 u^2 v\omega_4\omega_1^2 + {c_s}^2\omega_3 v\omega_4\omega_1^2 - \frac{5}{2}\omega_2 u^2\omega_3^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3^2 - \frac{3}{2}\omega_2 v\omega_4\omega_1 - 2\omega_2^2 u^2\omega_3 v^2\omega_1 - 4{c_s}^2\omega_2\omega_3 v^2\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_1 + 6u^2\omega_1 - {c_s}^2\omega_3^2 v\omega_4 + \frac{1}{2}\omega_2\omega_3 v^2\omega_4 + 4\omega_2^2 u^2 v^2\omega_1 - \frac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1 + 2\omega_2 u^2 v\omega_4\omega_1 - 6{c_s}^2\omega_3 v\omega_4\omega_1 + 2u^2\omega_3 v\omega_4^2\omega_1 + u^2\omega_4^2\omega_1 - \frac{3}{2}{c_s}^2\omega_2\omega_3 - \omega_3 v\omega_4\omega_1 + \frac{3}{2}\omega_2 u^2\omega_3 + 4\omega_2 u^2\omega_3 v^2\omega_4 - \frac{3}{2}\omega_4\omega_1 - 3\omega_2 v^2\omega_1 + \frac{5}{2}u^2\omega_3\omega_4 - {c_s}^2\omega_2\omega_3^2 v\omega_1 - \frac{1}{2}v^2\omega_4\omega_1^2 - \omega_2 u^2\omega_3^2 v\omega_1 - 2v\omega_4 - 2{c_s}^2 u^2\omega_4\omega_1^2 - 4u^2\omega_3 v^2\omega_4\omega_1 - 2{c_s}^2\omega_3 v^2\omega_4^2\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1 - 5{c_s}^2\omega_2\omega_3 v + 5\omega_2 u^2\omega_3 v - 2\omega_2 u^2\omega_3^2 v\omega_4 + \omega_4 + \frac{1}{2}{c_s}^2\omega_4\omega_1^2 - 12u^2\omega_3\omega_1 - \omega_2 v^2\omega_4 + 2u^2 v\omega_4\omega_1^2 - 2u^2\omega_3 v^2\omega_4^2 - \frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1^2 + 2{c_s}^2\omega_2 u^2\omega_4\omega_1^2 + 8\omega_2 u^2\omega_3 v^2\omega_1 + \omega_2 v + 3\omega_1 + \omega_2\omega_3 v^2\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-3\delta_t} = 3 - \frac{1}{2}\omega_2\omega_4\omega_1 + \frac{1}{2}\omega_4^2 + 4\omega_2 v^2\omega_4\omega_1 + \omega_2 v\omega_4 + 5\omega_3\omega_1 + \omega_2^2 v - 2\omega_2^2 v^2\omega_1 + v\omega_4\omega_1^2 - 7\omega_2\omega_3 v\omega_1 - 2\omega_3 v^2\omega_4^2 - \frac{1}{2}\omega_2\omega_1^2 - \omega_2\omega_3 v\omega_4 + \frac{1}{2}\omega_2\omega_3^2\omega_1 - 2\omega_3 v\omega_4^2\omega_1 + 3\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2\omega_1 + 6\omega_2 v\omega_1 + \omega_1^2 - \omega_2 v\omega_1^2 - 2v^2\omega_4^2\omega_1 + \omega_3^2 v\omega_4 - \frac{3}{2}\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_1 + 2v^2\omega_4^2 + 2\omega_2\omega_1 - 4\omega_2\omega_3 v^2\omega_4\omega_1 - \omega_3^2 v\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4^2 + 6\omega_2\omega_3 v + \frac{1}{2}\omega_3\omega_4^2\omega_1 + 2\omega_2^2 v^2 + 2\omega_2^2\omega_3 v^2\omega_1 - \omega_3\omega_1^2 - 6v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_4 + \omega_2\omega_3 v\omega_1^2 + \omega_2^2\omega_3 v\omega_1 - \omega_2\omega_3^2 v - \frac{7}{2}\omega_3\omega_4\omega_1 - 6\omega_3 v\omega_4 + 2\omega_2\omega_3 + 2v\omega_4^2\omega_1 - 4\omega_3 + \omega_2\omega_3 v\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1^2 - 2v\omega_4^2 - \omega_2^2\omega_3 v + \frac{1}{2}\omega_2\omega_3\omega_1^2 - \omega_3 v\omega_4\omega_1^2 - \omega_2 v\omega_4\omega_1 - \frac{5}{2}\omega_2\omega_3\omega_1 + 4\omega_2\omega_3 v^2\omega_4 - \frac{1}{2}\omega_3^2\omega_4 + 7\omega_3 v\omega_4\omega_1 + \omega_2\omega_3^2 v\omega_1 + 3\omega_4\omega_1 + 5v\omega_4 - 2\omega_2^2\omega_3 v^2 + \omega_3^2 + 2\omega_3 v^2\omega_4^2\omega_1 - \frac{5}{2}\omega_4 - 4\omega_2 v^2\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_1^2 - \omega_3^2\omega_1 - 5\omega_2 v - 4\omega_1 - \frac{1}{2}\omega_2\omega_3\omega_4 + 2\omega_3 v\omega_4^2 - \frac{1}{2}\omega_2\omega_3^2 - \omega_2^2 v\omega_1,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 + \frac{1}{2}\omega_2\omega_4\omega_1 - \frac{1}{2}\omega_2^2 u^2\omega_3 + \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 + \frac{1}{2}u\omega_4^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2 + \frac{1}{2}\omega_2 u^2\omega_3\omega_4^2 - 5\omega_2 u^2\omega_1 + u\omega_3\omega_4 - 2u^2\omega_3 - 3u^3\omega_3\omega_4\omega_1 - \omega_2^2 u^2\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_3\omega_4^2 + 2u\omega_1 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_2 u\omega_3 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_2^2\omega_3 - 5u^2\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - \omega_2 u^3\omega_3^2\omega_4 - u^3\omega_3^2 - \frac{1}{2}u^2\omega_3^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3^2 + 2\omega_2 u^3\omega_1^2 + \frac{1}{2}\omega_2^2 u\omega_1 + \frac{1}{2}\omega_2 u^2\omega_3\omega_1 - 2\omega_2 u^3\omega_4\omega_1^2 + 2{c_s}^2\omega_3 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 + \omega_2 + 3\omega_2 u\omega_4\omega_1 + 3\omega_2 u^3\omega_3\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_1 + {c_s}^2\omega_2 u\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_1 + 3u^3\omega_3\omega_1 + u^2\omega_4\omega_1^2 + \omega_2 u^2\omega_1^2 - \omega_2 u^2\omega_4^2\omega_1 + \frac{1}{2}u^2\omega_3^2 - \frac{5}{2}{c_s}^2\omega_3\omega_4 - \omega_2\omega_4 + \frac{1}{2}u^2\omega_3\omega_4\omega_1 + 3{c_s}^2\omega_2\omega_3\omega_4 - {c_s}^2 u\omega_3^2\omega_4 - 3\omega_2 u^2\omega_3\omega_4 + 6\omega_2 u^2\omega_4\omega_1 + u^3\omega_3^2\omega_4 + \frac{1}{2}{c_s}^2\omega_3^2\omega_4 + {c_s}^2\omega_2 u\omega_3\omega_1 - \frac{1}{2}\omega_2\omega_3 + \frac{1}{2}\omega_3 + \frac{1}{2}\omega_2 u^2\omega_3^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4 - \frac{1}{2}u^2\omega_3\omega_4^2 - {c_s}^2 u\omega_3\omega_1 - \frac{1}{2}\omega_2 u\omega_4^2\omega_1 - \omega_2 u\omega_3\omega_4 - {c_s}^2\omega_2 u\omega_3\omega_4\omega_1 - u^2\omega_1^2 - \frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3^2 + 4u^2\omega_1 + u^2\omega_4^2\omega_1 - \frac{5}{2}{c_s}^2\omega_2\omega_3 + {c_s}^2 u\omega_3^2 + \frac{5}{2}\omega_2 u^2\omega_3 - \frac{1}{2}\omega_2^2 u\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1 + \frac{5}{2}u^2\omega_3\omega_4 - {c_s}^2\omega_2 u\omega_3^2 + \omega_2^2 u^2\omega_1 - \frac{5}{2}u\omega_4\omega_1 + \frac{1}{2}\omega_2^2 u^2\omega_3\omega_4 + \omega_4 + \omega_2 u^3\omega_3^2 - \frac{1}{2}u^2\omega_3\omega_1 + 2u^3\omega_4\omega_1^2 + {c_s}^2 u\omega_3\omega_4\omega_1 - 2u^3\omega_1^2 - 3\omega_2 u^3\omega_3\omega_1 - \omega_2 u^2\omega_4\omega_1^2 - \frac{5}{2}\omega_2 u\omega_1 + \frac{1}{2}\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 - u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 - \frac{5}{2}\omega_2\omega_4\omega_1 + \omega_4^2 - u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1 - 6u\omega_3\omega_4 - \omega_2\omega_4^2 + \frac{1}{2}\omega_2\omega_3^2\omega_4 - 5u\omega_1 + u\omega_3\omega_1 - 4\omega_2 u^2\omega_3\omega_4\omega_1 - \omega_2^2 u\omega_3\omega_4 - 6\omega_2 u\omega_3 + 3\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2\omega_1 - 2u^2\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_3\omega_4 + \omega_2 u\omega_4\omega_1^2 - \omega_2^2 u\omega_1 + 4\omega_2 u^2\omega_3\omega_1 + \omega_2^2 - 4\omega_2 - 7\omega_2 u\omega_4\omega_1 + u\omega_1^2 + 2\omega_2\omega_1 - 2\omega_2 u\omega_3^2\omega_4 + 2\omega_2 u\omega_3^2 - \frac{1}{2}\omega_3\omega_4^2 - 2u^2\omega_4\omega_1^2 - 2\omega_2 u^2\omega_1^2 + 2u^2\omega_3^2 + u\omega_3\omega_4^2 - \frac{1}{2}\omega_2^2\omega_3 + 5\omega_2\omega_4 + 4u^2\omega_3\omega_4\omega_1 - \omega_2 u\omega_1^2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4^2 - \omega_2 u\omega_3\omega_1 + 3\omega_2\omega_3 - 2u\omega_3^2 - u\omega_4\omega_1^2 - \frac{5}{2}\omega_3 + 2\omega_2 u^2\omega_3^2\omega_4 + \omega_2 u\omega_4^2\omega_1 + 7\omega_2 u\omega_3\omega_4 - \frac{1}{2}\omega_2^2\omega_1 + 2u^2\omega_1^2 - 2\omega_2 u^2\omega_3^2 + \omega_2 u\omega_3\omega_4\omega_1 - \omega_2 u\omega_3\omega_4^2 - \frac{1}{2}\omega_2\omega_3\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_4\omega_1 + \omega_2^2 u\omega_4\omega_1 + 2\omega_4\omega_1 + 6u\omega_4\omega_1 + \frac{1}{2}\omega_3^2 + \omega_2^2 u\omega_3 + \frac{1}{2}\omega_2\omega_4^2\omega_1 - 4\omega_4 - 4u^2\omega_3\omega_1 - u\omega_3\omega_4\omega_1 + 2\omega_2 u^2\omega_4\omega_1^2 + 6\omega_2 u\omega_1 - \frac{3}{2}\omega_1 - \frac{7}{2}\omega_2\omega_3\omega_4 + 5u\omega_3 + 2u\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2 + 3\omega_2\omega_4\omega_1 - \omega_2^2 u^2\omega_3 + \omega_3 v^2\omega_4\omega_1 - 4\omega_2 u^2\omega_3^2 v^2\omega_4 - {c_s}^2\omega_3\omega_4\omega_1 + 16\omega_2 u^2 v^2\omega_4\omega_1 + 4u^2\omega_3 v^2\omega_4^2\omega_1 - 3\omega_2 v^2\omega_4\omega_1 + 4\omega_2^2 u^2\omega_3 v^2 - \omega_3\omega_1 - 4\omega_2 u^2\omega_1 + 2\omega_2\omega_3 v^2 - u^2\omega_3 + \omega_2\omega_1^2 + 8\omega_2 u^2 v^2\omega_1^2 - 4u^2 v^2\omega_4\omega_1^2 - 8\omega_2 u^2\omega_3\omega_4\omega_1 + {c_s}^2\omega_2\omega_3\omega_4\omega_1 + 8{c_s}^2\omega_2 u^2\omega_3\omega_4\omega_1 + {c_s}^2\omega_2^2\omega_3 - \omega_3\omega_4 + 2{c_s}^2\omega_2\omega_4 - \omega_2\omega_3\omega_4\omega_1 - 4u^2\omega_3^2\omega_4 + 2v^2\omega_4 - \omega_1^2 + 10\omega_2 u^2\omega_3\omega_1 + {c_s}^2\omega_3 + 2{c_s}^2\omega_2\omega_3\omega_1 + 2\omega_2 - {c_s}^2\omega_3\omega_1 - 4u^2\omega_3^2 v^2\omega_4 - 3\omega_2\omega_1 + \omega_2\omega_3 v^2\omega_4\omega_1 - 4{c_s}^2\omega_2^2\omega_3 v^2 - 8{c_s}^2\omega_2\omega_3 v^2\omega_4\omega_1 - 4u^2\omega_4\omega_1^2 - 4\omega_2 u^2\omega_1^2 + 4{c_s}^2\omega_2^2\omega_3 v^2\omega_1 + 4u^2\omega_3^2 + {c_s}^2\omega_3\omega_4 - 2\omega_2\omega_4 - \omega_3 v^2\omega_4 -$

$8{c_s}^2u^2\omega_3\omega_4\omega_1+8\omega_2u^2\omega_3^2v^2-\omega_2\omega_4\omega_1^2+8u^2\omega_3\omega_4\omega_1-4\omega_2u^2v^2\omega_4\omega_1^2-{c_s}^2\omega_2\omega_3\omega_4+\omega_2v^2\omega_4\omega_1^2-3{c_s}^2\omega_2\omega_4\omega_1-4\omega_2v^2+\omega_3\omega_4\omega_1-{c_s}^2\omega_2^2\omega_3\omega_1-\omega_2\omega_3+3{c_s}^2\omega_4\omega_1+\omega_3+4\omega_2u^2\omega_3^2\omega_4-4{c_s}^2\omega_2u^2\omega_3^2\omega_4-4{c_s}^2\omega_3v^2\omega_4^2-2{c_s}^2\omega_4-3v^2\omega_4\omega_1-2\omega_2v^2\omega_1^2+\omega_4\omega_1^2+4{c_s}^2u^2\omega_3^2\omega_4-8u^2v^2\omega_4^2\omega_1+4u^2\omega_1^2-4\omega_2u^2\omega_3^2+4\omega_2^2u^2\omega_3v^2\omega_1+8{c_s}^2\omega_2\omega_3v^2\omega_4+\omega_2\omega_3\omega_1+2u^2\omega_1-\omega_2\omega_3v^2\omega_4-8\omega_2^2u^2v^2\omega_1-2{c_s}^2\omega_2\omega_3+2\omega_2u^2\omega_3-8\omega_2u^2\omega_3v^2\omega_4-3\omega_4\omega_1+6\omega_2v^2\omega_1+v^2\omega_4\omega_1^2-\omega_2^2u^2\omega_3\omega_1+4{c_s}^2u^2\omega_4\omega_1^2+2\omega_2^2u^2\omega_1+8u^2\omega_3v^2\omega_4\omega_1+4{c_s}^2\omega_3v^2\omega_4^2\omega_1+2\omega_4-{c_s}^2\omega_4\omega_1^2-9u^2\omega_3\omega_1+2\omega_2v^2\omega_4+4u^2\omega_3v^2\omega_4^2+{c_s}^2\omega_2\omega_4\omega_1^2-4{c_s}^2\omega_2u^2\omega_4\omega_1^2-16\omega_2u^2\omega_3v^2\omega_1+4\omega_2u^2\omega_4\omega_1^2+3\omega_1+\omega_2\omega_3\omega_4-2\omega_2\omega_3v^2\omega_1,$

$\alpha_{x,y}^{[\mu_4],t-3\delta_t}=3-3\omega_2\omega_4\omega_1+\omega_2^2\omega_3\omega_1-8\omega_2v^2\omega_4\omega_1+2\omega_3\omega_1+4\omega_2^2v^2\omega_1+4\omega_3v^2\omega_4^2-\omega_2\omega_1^2+8\omega_2u^2\omega_3\omega_4\omega_1+\omega_3\omega_4+\omega_2\omega_3\omega_4\omega_1+4u^2\omega_3^2\omega_4+\omega_1^2-8\omega_2u^2\omega_3\omega_1+4v^2\omega_4^2\omega_1+\omega_2^2-4\omega_2-4v^2\omega_4^2+5\omega_2\omega_1+8\omega_2\omega_3v^2\omega_4\omega_1+4u^2\omega_4\omega_1^2+4\omega_2u^2\omega_1^2-4\omega_2^2v^2-4\omega_2^2\omega_3v^2\omega_1-4u^2\omega_3^2-\omega_2^2\omega_3+2\omega_2\omega_4+\omega_2\omega_4\omega_1^2-8u^2\omega_3\omega_4\omega_1-\omega_3\omega_4\omega_1+3\omega_2\omega_3-2\omega_3-4\omega_2u^2\omega_3^2\omega_4-\omega_4\omega_1^2-\omega_2^2\omega_1-4u^2\omega_1^2+4\omega_2u^2\omega_3^2-3\omega_2\omega_3\omega_1-8\omega_2\omega_3v^2\omega_4+3\omega_4\omega_1+4\omega_2^2\omega_3v^2-4\omega_3v^2\omega_4^2\omega_1-2\omega_4+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-4\omega_2u^2\omega_4\omega_1^2-4\omega_1-\omega_2\omega_3\omega_4,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t}=-1+\frac{1}{2}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2^2u^2\omega_3+\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1-\frac{1}{2}u\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2+\frac{1}{2}\omega_2u^2\omega_3\omega_4^2-5\omega_2u^2\omega_1-u\omega_3\omega_4-2u^2\omega_3+3u^3\omega_3\omega_4\omega_1-\omega_2^2u^2\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4^2-2u\omega_1-\frac{1}{2}\omega_2u^2\omega_3\omega_4\omega_1-\omega_2u\omega_3-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3-5u^2\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4+\omega_2u^3\omega_3^2\omega_4+u^3\omega_3^2-\frac{1}{2}u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_3^2-2\omega_2u^3\omega_1^2-\frac{1}{2}\omega_2^2u\omega_1+\frac{1}{2}\omega_2u^2\omega_3\omega_1+2\omega_2u^3\omega_4\omega_1^2+2{c_s}^2\omega_3+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1+\omega_2-3\omega_2u\omega_4\omega_1-3\omega_2u^3\omega_3\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_1-{c_s}^2\omega_2u\omega_3^2\omega_4-\frac{1}{2}\omega_2\omega_1-3u^3\omega_3\omega_1+u^2\omega_4\omega_1^2+\omega_2u^2\omega_1^2-\omega_2u^2\omega_4^2\omega_1+\frac{1}{2}u^2\omega_3^2-\frac{5}{2}{c_s}^2\omega_3\omega_4-\omega_2\omega_4+\frac{1}{2}u^2\omega_3\omega_4\omega_1+3{c_s}^2\omega_2\omega_3\omega_4+{c_s}^2u\omega_3^2\omega_4-3\omega_2u^2\omega_3\omega_4+6\omega_2u^2\omega_4\omega_1-u^3\omega_3^2\omega_4+\frac{1}{2}{c_s}^2\omega_3^2\omega_4-{c_s}^2\omega_2u\omega_3\omega_1-\frac{1}{2}\omega_2\omega_3+\frac{1}{2}\omega_3+\frac{1}{2}\omega_2u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4-\frac{1}{2}u^2\omega_3\omega_4^2+{c_s}^2u\omega_3\omega_1+\frac{1}{2}\omega_2u\omega_4^2\omega_1+\omega_2u\omega_3\omega_4+{c_s}^2\omega_2u\omega_3\omega_4\omega_1-u^2\omega_1^2-\frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4-\frac{1}{2}\omega_2u^2\omega_3^2+\frac{1}{2}{c_s}^2\omega_2\omega_3^2+4u^2\omega_1+u^2\omega_4^2\omega_1-\frac{5}{2}{c_s}^2\omega_2\omega_3-{c_s}^2u\omega_3^2+\frac{5}{2}\omega_2u^2\omega_3+\frac{1}{2}\omega_2^2u\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1+\frac{5}{2}u^2\omega_3\omega_4+{c_s}^2\omega_2u\omega_3^2+\omega_2^2u^2\omega_1+\frac{5}{2}u\omega_4\omega_1+\frac{1}{2}\omega_2^2u^2\omega_3\omega_4+\omega_4-\omega_2u^3\omega_3^2-\frac{1}{2}u^2\omega_3\omega_1-2u^3\omega_4\omega_1^2-{c_s}^2u\omega_3\omega_4\omega_1+2u^3\omega_1^2+3\omega_2u^3\omega_3\omega_1-\omega_2u^2\omega_4\omega_1^2+\frac{5}{2}\omega_2u\omega_1+\frac{1}{2}\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+u\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-3\delta_t}=3-\frac{5}{2}\omega_2\omega_4\omega_1+\omega_4^2+u\omega_4^2\omega_1+\frac{1}{2}\omega_3\omega_1+6u\omega_3\omega_4-\omega_2\omega_4^2+\frac{1}{2}\omega_2\omega_3^2\omega_4+5u\omega_1-u\omega_3\omega_1-4\omega_2u^2\omega_3\omega_4\omega_1+\omega_2^2u\omega_3\omega_4+6\omega_2u\omega_3+3\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2\omega_1-2u^2\omega_3^2\omega_4+\frac{1}{2}\omega_2^2\omega_3\omega_4-\omega_2u\omega_4\omega_1^2+\omega_2^2u\omega_1+4\omega_2u^2\omega_3\omega_1+\omega_2^2-4\omega_2+7\omega_2u\omega_4\omega_1-u\omega_1^2+2\omega_2\omega_1+2\omega_2u\omega_3^2\omega_4-2\omega_2u\omega_3^2-\frac{1}{2}\omega_3\omega_4^2-2u^2\omega_4\omega_1^2-2\omega_2u^2\omega_1^2+2u^2\omega_3^2-u\omega_3\omega_4^2-\frac{1}{2}\omega_2^2\omega_3+5\omega_2\omega_4+4u^2\omega_3\omega_4\omega_1+\omega_2u\omega_1^2-\frac{1}{2}\omega_3\omega_4\omega_1-\omega_2^2\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4^2+\omega_2u\omega_3\omega_1+3\omega_2\omega_3+2u\omega_3^2+u\omega_4\omega_1^2-\frac{5}{2}\omega_3+2\omega_2u^2\omega_3^2\omega_4-\omega_2u\omega_4^2\omega_1-7\omega_2u\omega_3\omega_4-\frac{1}{2}\omega_2^2\omega_1+2u^2\omega_1^2-2\omega_2u^2\omega_3^2-\omega_2u\omega_3\omega_4\omega_1+\omega_2u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_3\omega_1-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}\omega_2^2\omega_4\omega_1-\omega_2^2u\omega_4\omega_1+2\omega_4\omega_1-6u\omega_4\omega_1+\frac{1}{2}\omega_3^2-\omega_2^2u\omega_3+\frac{1}{2}\omega_2\omega_4^2\omega_1-4\omega_4-4u^2\omega_3\omega_1+u\omega_3\omega_4\omega_1+2\omega_2u^2\omega_4\omega_1^2-6\omega_2u\omega_1-\frac{3}{2}\omega_1-\frac{7}{2}\omega_2\omega_3\omega_4-5u\omega_3-2u\omega_3^2\omega_4-\frac{1}{2}\omega_2\omega_3^2,$

$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=-2+3\omega_2u^2\omega_3^2v-\frac{1}{2}\omega_3v^2\omega_4\omega_1+2\omega_2u^2\omega_3^2v^2\omega_4+\frac{7}{2}{c_s}^2\omega_3\omega_4\omega_1-8\omega_2u^2v^2\omega_4\omega_1-\frac{1}{2}u^2\omega_3\omega_4\omega_1^2-{c_s}^2\omega_2\omega_3^2v-2u^2\omega_3v^2\omega_4^2\omega_1-5{c_s}^2\omega_3v\omega_4-2u^2\omega_3v\omega_4^2+\frac{3}{2}\omega_2v^2\omega_4\omega_1+u^2\omega_3^2\omega_1-2\omega_2^2u^2\omega_3v^2-\omega_2v\omega_4-\omega_3\omega_1-3\omega_2u^2\omega_1-\omega_2\omega_3v^2-10\omega_2u^2\omega_3v\omega_1-6{c_s}^2\omega_2\omega_3v\omega_1-3u^2\omega_3+v\omega_4\omega_1^2-\frac{1}{2}\omega_2\omega_3v\omega_1+\frac{1}{2}{c_s}^2\omega_3\omega_4^2+\frac{1}{2}\omega_2\omega_1^2+\frac{1}{2}\omega_2\omega_3v\omega_4-4\omega_2u^2v^2\omega_1^2+{c_s}^2\omega_3\omega_1^2+2u^2v^2\omega_4\omega_1^2+\omega_2^2u^2\omega_3v\omega_1-\frac{1}{2}\omega_2u^2\omega_3\omega_4\omega_1-{c_s}^2\omega_2\omega_3v\omega_4-{c_s}^2\omega_2\omega_3\omega_4\omega_1+\omega_2u^2\omega_3v\omega_4-4{c_s}^2\omega_2u^2\omega_3\omega_4\omega_1+14u^2\omega_3v\omega_4\omega_1-5u^2\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-2\omega_2^2u^2v\omega_1-2{c_s}^2\omega_3v\omega_4^2\omega_1-{c_s}^2\omega_2^2\omega_3v-{c_s}^2\omega_2\omega_4+\frac{3}{2}\omega_2v\omega_1-\frac{1}{2}\omega_2u^2\omega_3\omega_1^2-\frac{5}{2}u^2\omega_3^2\omega_4-\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1^2-{c_s}^2\omega_3^2-v^2\omega_4-\omega_1^2-\frac{1}{2}\omega_2v\omega_1^2+6\omega_2u^2\omega_3\omega_1+3{c_s}^2\omega_3+2{c_s}^2\omega_2\omega_3\omega_1+\omega_2-4{c_s}^2\omega_3\omega_1-{c_s}^2\omega_3^2v\omega_4\omega_1+2u^2\omega_3^2v^2\omega_4-\frac{3}{2}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1+2{c_s}^2\omega_2^2\omega_3v^2+4{c_s}^2\omega_2\omega_3v^2\omega_4\omega_1-u^2\omega_3v\omega_4\omega_1^2-u^2\omega_4\omega_1^2+\frac{1}{2}\omega_2\omega_3v-\omega_2u^2\omega_1^2-2{c_s}^2\omega_2^2\omega_3v^2\omega_1+\omega_2u^2\omega_3v\omega_1^2-3v\omega_4\omega_1+{c_s}^2\omega_2\omega_3v\omega_1^2+5u^2\omega_3^2-3{c_s}^2\omega_3\omega_4+\frac{1}{2}\omega_3v^2\omega_4+4{c_s}^2u^2\omega_3\omega_4\omega_1-4\omega_2u^2\omega_3^2v^2+7u^2\omega_3\omega_4\omega_1+2\omega_2u^2v^2\omega_4\omega_1^2-\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2+5u^2\omega_3v\omega_4+2{c_s}^2\omega_3v\omega_4^2+{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2u^2\omega_3\omega_4+\omega_2^2u^2\omega_3v+4u^2v\omega_4^2\omega_1-\frac{1}{2}\omega_2v^2\omega_4\omega_1^2+\frac{3}{2}{c_s}^2\omega_2\omega_4\omega_1+{c_s}^2\omega_2^2\omega_3v\omega_1+\omega_2u^2\omega_4\omega_1+2\omega_2v^2+\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2^2\omega_4-\frac{1}{2}\omega_2\omega_3-3\omega_2u^2\omega_3v\omega_4\omega_1-\frac{1}{2}u^2\omega_3\omega_4^2\omega_1+{c_s}^2\omega_2\omega_3v\omega_4\omega_1-\frac{3}{2}{c_s}^2\omega_4\omega_1+\omega_3-10u^2v\omega_4\omega_1+u^2\omega_3\omega_1^2+2{c_s}^2\omega_2u^2\omega_3^2\omega_4-\frac{1}{2}\omega_2\omega_3v\omega_4\omega_1+2{c_s}^2\omega_3v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_1+{c_s}^2\omega_4+\frac{3}{2}v^2\omega_4\omega_1+\omega_2v^2\omega_1^2-\frac{1}{2}u^2\omega_3\omega_4^2-\frac{1}{2}\omega_2u^2\omega_3^2\omega_1+\frac{1}{2}\omega_4\omega_1^2-2{c_s}^2u^2\omega_3^2\omega_4+4u^2v^2\omega_4^2\omega_1-\frac{1}{2}\omega_2v\omega_4\omega_1^2-5u^2\omega_3^2v\omega_4-u^2\omega_3^2v\omega_4\omega_1+2u^2\omega_1^2+{c_s}^2\omega_3^2\omega_1+10\omega_2u^2v\omega_1-\frac{1}{2}u^2\omega_3^2\omega_4\omega_1+2\omega_2u^2v\omega_4\omega_1^2-{c_s}^2\omega_3v\omega_4\omega_1^2-\frac{5}{2}\omega_2u^2\omega_3^2+\frac{1}{2}{c_s}^2\omega_2\omega_3^2+\frac{3}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u^2\omega_3v^2\omega_1-4{c_s}^2\omega_2\omega_3v^2\omega_4+\frac{1}{2}\omega_2\omega_3\omega_1+6u^2\omega_1+{c_s}^2\omega_3^2v\omega_4+\frac{1}{2}\omega_2\omega_3v^2\omega_4+4\omega_2^2u^2v^2\omega_1-\frac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1-2\omega_2u^2v\omega_4\omega_1+6{c_s}^2\omega_3v\omega_4\omega_1-2u^2\omega_3v\omega_4^2\omega_1+u^2\omega_4^2\omega_1-\frac{3}{2}{c_s}^2\omega_2\omega_3+\omega_3v\omega_4\omega_1+\frac{3}{2}\omega_2u^2\omega_3+4\omega_2u^2\omega_3v^2\omega_4-\frac{3}{2}\omega_4\omega_1-3\omega_2v^2\omega_1+\frac{5}{2}u^2\omega_3\omega_4+{c_s}^2\omega_2\omega_3^2v\omega_1-\frac{1}{2}v^2\omega_4\omega_1^2+\omega_2u^2\omega_3^2v\omega_1+2v\omega_4-2{c_s}^2u^2\omega_4\omega_1^2-4u^2\omega_3v^2\omega_4\omega_1-$

$2{c_s}^2\omega_3v^2\omega_4^2\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1+5{c_s}^2\omega_2\omega_3v-5\omega_2u^2\omega_3v+2\omega_2u^2\omega_3^2v\omega_4+\omega_4+\frac{1}{2}{c_s}^2\omega_4\omega_1^2-12u^2\omega_3\omega_1-\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2-2u^2\omega_3v^2\omega_4^2-\frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1^2+2{c_s}^2\omega_2u^2\omega_4\omega_1^2+8\omega_2u^2\omega_3v^2\omega_1-\omega_2v+3\omega_1+\omega_2\omega_3v^2\omega_1,$

$\alpha_{x,y+\delta_l}^{[\mu_4],t-3\delta_t}=3-\frac{1}{2}\omega_2\omega_4\omega_1+\frac{1}{2}\omega_4^2+4\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4+5\omega_3\omega_1-\omega_2^2v-2\omega_2^2v^2\omega_1-v\omega_4\omega_1^2+7\omega_2\omega_3v\omega_1-2\omega_3v^2\omega_4^2-\frac{1}{2}\omega_2\omega_1^2+\omega_2\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3^2\omega_1+2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\frac{1}{2}\omega_2\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2\omega_1-6\omega_2v\omega_1+\omega_1^2+\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1-\omega_3^2v\omega_4-\frac{3}{2}\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1+\omega_3^2v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4^2-6\omega_2\omega_3v+\frac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2+6v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_4-\omega_2\omega_3v\omega_1^2-\omega_2^2\omega_3v\omega_1+\omega_2\omega_3^2v-\frac{7}{2}\omega_3\omega_4\omega_1+6\omega_3v\omega_4+2\omega_2\omega_3-2v\omega_4^2\omega_1-4\omega_3-\omega_2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_4\omega_1^2+2v\omega_4^2+\omega_2^2\omega_3v+\frac{1}{2}\omega_2\omega_3\omega_1^2+\omega_3v\omega_4\omega_1^2+\omega_2v\omega_4\omega_1-\frac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\frac{1}{2}\omega_3^2\omega_4-7\omega_3v\omega_4\omega_1-\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1-5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\frac{5}{2}\omega_4-4\omega_2v^2\omega_4+\frac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1+5\omega_2v-4\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4-2\omega_3v\omega_4^2-\frac{1}{2}\omega_2\omega_3^2+\omega_2^2v\omega_1,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=2-3\omega_2\omega_4\omega_1+\omega_2^2u^2\omega_3-6{c_s}^2\omega_3\omega_4\omega_1+u^2\omega_3\omega_4\omega_1^2+{c_s}^2\omega_2\omega_3\omega_4^2-u^2\omega_3^2\omega_1-\omega_2u^2\omega_3\omega_4^2+\omega_3\omega_1+10\omega_2u^2\omega_1-\omega_2^2u^2\omega_3\omega_4\omega_1+4u^2\omega_3+2\omega_2^2u^2\omega_4\omega_1-{c_s}^2\omega_3\omega_4^2-\omega_2\omega_1^2-{c_s}^2\omega_3\omega_1^2+15\omega_2u^2\omega_3\omega_4\omega_1+7{c_s}^2\omega_2\omega_3\omega_4\omega_1-{c_s}^2\omega_2^2\omega_3+10u^2\omega_4\omega_1+\omega_3\omega_4+\omega_2\omega_3\omega_4\omega_1+\omega_2u^2\omega_3\omega_1^2+5u^2\omega_3^2\omega_4+{c_s}^2\omega_2\omega_3\omega_1^2+{c_s}^2\omega_3^2+\omega_1^2-14\omega_2u^2\omega_3\omega_1-4{c_s}^2\omega_3-6{c_s}^2\omega_2\omega_3\omega_1-2\omega_2+5{c_s}^2\omega_3\omega_1+3\omega_2\omega_1-\omega_2u^2\omega_3\omega_4\omega_1^2-{c_s}^2\omega_2\omega_3\omega_4\omega_1^2+2u^2\omega_4\omega_1^2+2\omega_2u^2\omega_1^2+2\omega_2u^2\omega_4^2\omega_1-5u^2\omega_3^2+5{c_s}^2\omega_3\omega_4+2\omega_2\omega_4+\omega_2\omega_4\omega_1^2-14u^2\omega_3\omega_4\omega_1+{c_s}^2\omega_3\omega_4\omega_1^2-6{c_s}^2\omega_2\omega_3\omega_4+6\omega_2u^2\omega_3\omega_4-12\omega_2u^2\omega_4\omega_1-\omega_3\omega_4\omega_1-{c_s}^2\omega_3^2\omega_4+{c_s}^2\omega_2^2\omega_3\omega_1+\omega_2\omega_3+u^2\omega_3\omega_4^2\omega_1-\omega_3-5\omega_2u^2\omega_3^2\omega_4-u^2\omega_3\omega_1^2+{c_s}^2\omega_2\omega_3^2\omega_4+{c_s}^2\omega_2\omega_3^2\omega_1+u^2\omega_3\omega_4^2+\omega_2u^2\omega_3^2\omega_1-\omega_4\omega_1^2-{c_s}^2\omega_2^2\omega_3\omega_4\omega_1-2u^2\omega_1^2+{c_s}^2\omega_2^2\omega_3\omega_4-{c_s}^2\omega_3^2\omega_1+u^2\omega_3^2\omega_4\omega_1+5\omega_2u^2\omega_3^2-{c_s}^2\omega_2\omega_3^2-\omega_2u^2\omega_3\omega_4^2\omega_1-\omega_2\omega_3\omega_1-8u^2\omega_1+{c_s}^2\omega_3^2\omega_4\omega_1-2u^2\omega_4^2\omega_1+5{c_s}^2\omega_2\omega_3-5\omega_2u^2\omega_3-{c_s}^2\omega_2\omega_3\omega_4^2\omega_1+3\omega_4\omega_1-5u^2\omega_3\omega_4+\omega_2^2u^2\omega_3\omega_1-2\omega_2^2u^2\omega_1+{c_s}^2\omega_3\omega_4^2\omega_1-\omega_2^2u^2\omega_3\omega_4-{c_s}^2\omega_2\omega_3^2\omega_4\omega_1-2\omega_4+13u^2\omega_3\omega_1-\omega_2u^2\omega_3^2\omega_4\omega_1-2\omega_2u^2\omega_4\omega_1^2-3\omega_1-\omega_2\omega_3\omega_4,$

$\alpha_{x,y}^{[\mu_4],t-4\delta_t}=-4+7\omega_2\omega_4\omega_1-\omega_4^2-\omega_2^2\omega_3\omega_1-6\omega_3\omega_1+\omega_2\omega_4^2-\omega_2\omega_3^2\omega_4+\omega_2\omega_1^2-\omega_2\omega_3^2\omega_1-6\omega_3\omega_4-8\omega_2\omega_3\omega_4\omega_1+\omega_4^2\omega_1-\omega_2^2\omega_3\omega_4-\omega_1^2-\omega_2^2+5\omega_2-\omega_3^2\omega_4\omega_1-6\omega_2\omega_1+\omega_2\omega_3\omega_4\omega_1^2+\omega_3\omega_4^2-\omega_3\omega_4^2\omega_1+\omega_3\omega_1^2+\omega_2^2\omega_3-6\omega_2\omega_4-\omega_2\omega_4\omega_1^2+7\omega_3\omega_4\omega_1+\omega_2^2\omega_4-\omega_2\omega_3\omega_4^2-6\omega_2\omega_3+5\omega_3+\omega_4\omega_1^2+\omega_2^2\omega_1+\omega_2^2\omega_3\omega_4\omega_1-\omega_2\omega_3\omega_1^2+7\omega_2\omega_3\omega_1+\omega_2\omega_3\omega_4^2\omega_1+\omega_3^2\omega_4-\omega_2^2\omega_4\omega_1-6\omega_4\omega_1-\omega_3^2+\omega_2\omega_3^2\omega_4\omega_1-\omega_2\omega_4^2\omega_1+5\omega_4-\omega_3\omega_4\omega_1^2+\omega_3^2\omega_1+5\omega_1+7\omega_2\omega_3\omega_4+\omega_2\omega_3^2,$

7.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t}\mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1-\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_2+\omega_2v^2+\frac{1}{2}{c_s}^2\omega_4+v\omega_4-\frac{1}{2}\omega_4-\frac{1}{2}\omega_2v.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t}=1-\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_2+\omega_2v^2+\frac{1}{2}{c_s}^2\omega_4-v\omega_4-\frac{1}{2}\omega_4+\frac{1}{2}\omega_2v.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{1}{2}uv\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3v\omega_4+\frac{1}{2}\omega_2u^2\omega_1+\frac{1}{2}u\omega_3\omega_4+\frac{1}{2}u^2\omega_3+\frac{1}{2}u\omega_1+\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3+\frac{1}{2}u^2\omega_4\omega_1-\frac{1}{4}\omega_3\omega_4-\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}{c_s}^2\omega_3+\frac{1}{2}\omega_2-\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2\omega_3v+\frac{1}{2}v\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_3\omega_4+\frac{1}{2}u^2\omega_3v\omega_4-\frac{1}{2}\omega_2uv\omega_1+\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}\omega_2\omega_3+\frac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1-u^2\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\frac{1}{4}\omega_2u^2\omega_3-\frac{1}{4}\omega_4\omega_1-\frac{1}{4}u^2\omega_3\omega_4-v\omega_4-\frac{1}{4}u\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v+\frac{1}{2}\omega_4+\omega_2v-\frac{1}{4}\omega_2u\omega_1+\frac{1}{2}\omega_1-u\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t}=1-uv\omega_4\omega_1-\frac{1}{2}u\omega_3\omega_4-u\omega_1-\omega_2u\omega_3v-\frac{1}{2}\omega_2u\omega_3+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}\omega_2v\omega_1-\frac{1}{2}\omega_2+\frac{1}{4}\omega_2\omega_1+\frac{1}{2}\omega_2\omega_3v-\frac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1-\frac{1}{2}\omega_3v\omega_4+\frac{1}{4}\omega_2\omega_3-\frac{1}{2}\omega_3+\frac{1}{4}\omega_4\omega_1+v\omega_4+\frac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\frac{1}{2}\omega_4-\omega_2v+\frac{1}{2}\omega_2u\omega_1-\frac{1}{2}\omega_1+u\omega_3,$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1+{c_s}^2\omega_3v\omega_4-\omega_2u^2\omega_1-v^3\omega_4^2-u^2\omega_3-u^2\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_4-v^2\omega_4+{c_s}^2\omega_3+\tfrac{1}{2}\omega_2-2\omega_2^2v^3+\tfrac{1}{2}v^2\omega_4^2-\omega_2^2v^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4-u^2\omega_3v\omega_4+2\omega_2v^2-{c_s}^2\omega_2v\omega_4+2u^2v\omega_4\omega_1+{c_s}^2\omega_4+3\omega_2v^3\omega_4-2\omega_2u^2v\omega_1+2u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_2u^2\omega_3+\tfrac{1}{2}u^2\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_4^2-v\omega_4-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v+\tfrac{1}{2}\omega_4+{c_s}^2v\omega_4^2-\tfrac{1}{2}\omega_2v^2\omega_4+\omega_2v,$$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t} = 1+\tfrac{1}{2}\omega_4^2+\omega_2v\omega_4+\omega_2^2v-\tfrac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\tfrac{1}{2}\omega_2\omega_4-2v\omega_4^2+3v\omega_4-\tfrac{3}{2}\omega_4-4\omega_2v^2\omega_4-3\omega_2v,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1-\tfrac{1}{2}uv\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2u^2\omega_1-\tfrac{1}{2}u\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3-\tfrac{1}{2}u\omega_1-\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}{c_s}^2\omega_3+\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_3-u^2v\omega_4\omega_1+\omega_2u^2v\omega_1-u^2\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4-v\omega_4+\tfrac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_3v-\tfrac{1}{2}\omega_2u^2\omega_3v+\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{4}\omega_2u\omega_1+\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1+uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1+\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1+v\omega_4-\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4-\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y}^{[\mu_5],t-\delta_t} = 1+\tfrac{1}{2}\omega_3\omega_1-3u\omega_1+u\omega_3\omega_1+u\omega_1^2+2u^2\omega_3^2-2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1+3u\omega_3,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2+{c_s}^2\omega_2\omega_4+v^2\omega_4-\omega_2^2+3\omega_2+4v^2\omega_4^2+4\omega_2^2v^2-\omega_2\omega_4-2\omega_2v^2-{c_s}^2\omega_4+\omega_4-7\omega_2v^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_5],t-\delta_t} = 2+\omega_1^2+\omega_2^2-2\omega_2-4v^2\omega_4^2-4\omega_2^2v^2-4u^2\omega_3^2-4u^2\omega_1^2+8u^2\omega_3\omega_1+8\omega_2v^2\omega_4-2\omega_1,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-\delta_t} = 1+\tfrac{1}{2}\omega_3\omega_1+3u\omega_1-u\omega_3\omega_1-u\omega_1^2+2u^2\omega_3^2+2u\omega_3^2-\tfrac{3}{2}\omega_3+2u^2\omega_1^2+\tfrac{1}{2}\omega_3^2-4u^2\omega_3\omega_1-\tfrac{1}{2}\omega_1-3u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1-\tfrac{1}{2}uv\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2u^2\omega_1+\tfrac{1}{2}u\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3+\tfrac{1}{2}u\omega_1-\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}{c_s}^2\omega_3+\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_3\omega_4-\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_3+u^2v\omega_4\omega_1-\omega_2u^2v\omega_1-u^2\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4+v\omega_4-\tfrac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v+\tfrac{1}{2}\omega_2u^2\omega_3v+\tfrac{1}{2}\omega_4-\omega_2v-\tfrac{1}{4}\omega_2u\omega_1+\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1+uv\omega_4\omega_1-\tfrac{1}{2}u\omega_3\omega_4-u\omega_1+\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1-\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4+\tfrac{1}{2}u\omega_4\omega_1-u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v+\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1-{c_s}^2\omega_3v\omega_4-\omega_2u^2\omega_1+v^3\omega_4^2-u^2\omega_3-u^2\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_4-v^2\omega_4+{c_s}^2\omega_3+\tfrac{1}{2}\omega_2+2\omega_2^2v^3+\tfrac{1}{2}v^2\omega_4^2-\omega_2^2v^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4+u^2\omega_3v\omega_4+2\omega_2v^2+{c_s}^2\omega_2v\omega_4-2u^2v\omega_4\omega_1+{c_s}^2\omega_4-3\omega_2v^3\omega_4+2\omega_2u^2v\omega_1+2u^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3+\tfrac{1}{2}\omega_2u^2\omega_3+\tfrac{1}{2}u^2\omega_3\omega_4-\tfrac{1}{2}{c_s}^2\omega_4^2+v\omega_4+{c_s}^2\omega_2\omega_3v-\omega_2u^2\omega_3v+\tfrac{1}{2}\omega_4-{c_s}^2v\omega_4^2-\tfrac{1}{2}\omega_2v^2\omega_4-\omega_2v,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-\delta_t} = 1+\tfrac{1}{2}\omega_4^2-\omega_2v\omega_4-\omega_2^2v-\tfrac{1}{2}\omega_2+2v^2\omega_4^2+2\omega_2^2v^2+\tfrac{1}{2}\omega_2\omega_4+2v\omega_4^2-3v\omega_4-\tfrac{3}{2}\omega_4-4\omega_2v^2\omega_4+3\omega_2v,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1+\tfrac{1}{2}uv\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2u^2\omega_1-\tfrac{1}{2}u\omega_3\omega_4+\tfrac{1}{2}u^2\omega_3-\tfrac{1}{2}u\omega_1+\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}u^2\omega_4\omega_1-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}{c_s}^2\omega_3+\tfrac{1}{2}\omega_2-\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2\omega_3v-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_3\omega_4-\tfrac{1}{2}u^2\omega_3v\omega_4+\tfrac{1}{2}\omega_2uv\omega_1-\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}\omega_2\omega_3+\tfrac{1}{2}\omega_3+u^2v\omega_4\omega_1-\omega_2u^2v\omega_1-u^2\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4+v\omega_4+\tfrac{1}{4}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v+\tfrac{1}{2}\omega_2u^2\omega_3v+\tfrac{1}{2}\omega_4-\omega_2v+\tfrac{1}{4}\omega_2u\omega_1+\tfrac{1}{2}\omega_1+u\omega_3,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1-uv\omega_4\omega_1+\tfrac{1}{2}u\omega_3\omega_4+u\omega_1-\omega_2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_2v\omega_1-\tfrac{1}{2}\omega_2+\tfrac{1}{4}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v+\tfrac{1}{2}v\omega_4\omega_1+\omega_2uv\omega_1+\tfrac{1}{2}\omega_3v\omega_4+\tfrac{1}{4}\omega_2\omega_3-\tfrac{1}{2}\omega_3+\tfrac{1}{4}\omega_4\omega_1-v\omega_4-\tfrac{1}{2}u\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}\omega_4+\omega_2v-\tfrac{1}{2}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-u\omega_3,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1-\tfrac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v+\tfrac{1}{4}\omega_3v^2\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1-\omega_2^2uv^2\omega_1+\tfrac{5}{2}u\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2uv\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4-\tfrac{1}{4}\omega_2v^2\omega_4\omega_1+\tfrac{1}{2}{c_s}^2v\omega_4^2\omega_1-3\omega_2u\omega_3v^3\omega_4-\tfrac{1}{2}{c_s}^2u\omega_4\omega_1^2+\tfrac{1}{2}\omega_2u^2\omega_1+\tfrac{5}{2}\omega_2\omega_3v^2+\tfrac{3}{2}\omega_2u^2\omega_3v\omega_1+v^3\omega_4^2-\tfrac{1}{2}u\omega_3\omega_4-\tfrac{1}{2}\omega_2^2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\tfrac{1}{2}u^2\omega_3-\tfrac{1}{4}\omega_2\omega_3v\omega_1+\tfrac{1}{4}\omega_3v^2\omega_4^2-\tfrac{1}{2}u\omega_3v\omega_4\omega_1-\tfrac{1}{4}{c_s}^2\omega_3\omega_4^2-2\omega_2u^2v^2\omega_1^2-\tfrac{1}{2}u\omega_1-\tfrac{1}{2}u\omega_3\omega_1+u^2v^2\omega_4\omega_1^2-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{5}{2}\omega_2u\omega_3v-\tfrac{1}{2}\omega_2u\omega_3+\tfrac{1}{2}uv^2\omega_4^2\omega_1+3\omega_2uv^3\omega_4\omega_1+\tfrac{1}{2}u^2\omega_3v\omega_4\omega_1+\tfrac{1}{2}u^2\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_4+u\omega_3v^3\omega_4^2+\tfrac{3}{4}\omega_2v\omega_1+\tfrac{3}{2}v^2\omega_4-\tfrac{1}{4}\omega_2u^2\omega_3\omega_1+\tfrac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1-\tfrac{1}{2}{c_s}^2\omega_3-\tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\tfrac{1}{2}\omega_3v^3\omega_4^2-\tfrac{1}{2}\omega_2-\tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3-\tfrac{1}{2}v^2\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_1+u^2\omega_3^2v^2\omega_4+\tfrac{1}{4}\omega_2\omega_1+\tfrac{1}{2}\omega_2u\omega_3v^2\omega_4-5\omega_2u\omega_3v^2-{c_s}^2\omega_2uv\omega_4\omega_1-2\omega_2^2uv^3\omega_1+\tfrac{5}{4}\omega_2\omega_3v+\omega_2^2v^2+\tfrac{5}{2}{c_s}^2u\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1-\omega_2u\omega_3v^2\omega_1+\tfrac{3}{2}{c_s}^2\omega_3\omega_4-\tfrac{5}{4}\omega_3v^2\omega_4+2{c_s}^2u^2\omega_3\omega_4\omega_1-2\omega_2u^2\omega_3^2v^2-\tfrac{1}{4}{c_s}^2\omega_4^2\omega_1-$$

$\frac{1}{2}u\omega_3v^2\omega_4^2-\frac{1}{4}u^2\omega_3\omega_4\omega_1+\frac{1}{2}u^2\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4^2-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_4+2\omega_2uv\omega_1+{c_s}^2u\omega_3^2\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-3\omega_2v^2-\frac{1}{2}{c_s}^2u\omega_4^2\omega_1-\frac{1}{4}\omega_2\omega_3^2v-\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_3^2\omega_4+\frac{1}{4}\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4-{c_s}^2u\omega_3v\omega_4^2+\frac{3}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3-u^2v\omega_4\omega_1-\frac{5}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2\omega_3v^3\omega_4-uv^3\omega_4^2\omega_1-\frac{1}{2}\omega_2uv^2\omega_4\omega_1+5\omega_2uv^2\omega_1+\frac{1}{4}\omega_3^2v^2\omega_4-\frac{3}{2}{c_s}^2\omega_4-\frac{3}{4}v^2\omega_4\omega_1-{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4+\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\frac{3}{2}\omega_2v^3\omega_4\omega_1+2\omega_2u\omega_3^2v^2+{c_s}^2\omega_2u\omega_3v\omega_4+\frac{1}{2}uv^2\omega_4\omega_1^2+\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2-u^2\omega_1-\frac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1-\frac{1}{4}\omega_2\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1-u\omega_3^2v^2\omega_4-\frac{5}{2}uv^2\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3+\omega_2u\omega_3^2v-\frac{1}{4}\omega_2u^2\omega_3+\frac{1}{2}u\omega_3v^2\omega_4\omega_1+\frac{1}{4}\omega_4\omega_1+\frac{3}{2}\omega_2v^2\omega_1-\frac{1}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_4^2+v\omega_4-{c_s}^2u^2\omega_4\omega_1^2-\frac{1}{2}\omega_2^2\omega_3v^2+\frac{1}{4}u\omega_4\omega_1+{c_s}^2uv\omega_4^2\omega_1-2u^2\omega_3v^2\omega_4\omega_1+u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-\frac{1}{2}\omega_2u^2\omega_3v-\frac{1}{2}\omega_4+\frac{1}{2}u^2\omega_3\omega_1-{c_s}^2v\omega_4^2+\frac{1}{2}\omega_2v^2\omega_4+\frac{1}{2}{c_s}^2u\omega_3\omega_4^2-\frac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1-\omega_2uv^2\omega_1^2+\frac{1}{4}u\omega_3\omega_4\omega_1+2\omega_2^2u\omega_3v^3+4\omega_2u^2\omega_3v^2\omega_1-\omega_2^2\omega_3v^3-\frac{1}{2}v^3\omega_4^2\omega_1-\frac{1}{2}\omega_2\omega_3^2v^2-\frac{3}{2}\omega_2v+\frac{1}{4}\omega_2u\omega_1-\frac{1}{2}\omega_1-\frac{1}{2}\omega_2\omega_3v^2\omega_1+u\omega_3,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t}=$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2+2\omega_2u^2\omega_3^2v+2\omega_2^2uv^2\omega_1+\frac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1-\omega_2v\omega_4-\frac{1}{2}\omega_3\omega_1-\omega_2^2v-4\omega_2u^2\omega_3v\omega_1+3u\omega_3\omega_4+\omega_2^2v^2\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3v\omega_4+4u\omega_1-u\omega_3\omega_1+6\omega_2u\omega_3v+2\omega_2u\omega_3+2uv^2\omega_4^2\omega_1+4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1-2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\frac{1}{2}\omega_3^2v\omega_4+\omega_2+\frac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2-u\omega_1^2+\omega_2uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1+4\omega_2u\omega_3v^2\omega_4-\omega_2u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2+2v\omega_4\omega_1-2u^2\omega_3^2-\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2-2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1+\frac{1}{2}\omega_2u\omega_1^2+\frac{1}{2}\omega_2\omega_3^2v+\frac{1}{4}\omega_3\omega_4\omega_1+3\omega_3v\omega_4+\frac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1-v\omega_4^2\omega_1+2u\omega_3^2+2u\omega_3v\omega_4^2+\frac{1}{2}u\omega_4\omega_1^2+2\omega_3-4\omega_2uv^2\omega_4\omega_1+2v\omega_4^2+\frac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v-\frac{1}{2}\omega_2u\omega_3\omega_4-2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2+\frac{1}{2}\omega_2v\omega_4\omega_1-2\omega_2^2u\omega_3v^2+2\omega_2u^2v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\frac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v-\frac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3v^2-3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4-2u^2v\omega_4\omega_1^2+\frac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2v-2\omega_2u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4-\omega_3v\omega_4^2-4u\omega_3-u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2+\frac{1}{2}\omega_2^2v\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t}=1+2\omega_2u^2\omega_3^2v+\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+{c_s}^2\omega_3v\omega_4+\omega_3\omega_1-\omega_2u^2\omega_1-3\omega_2u^2\omega_3v\omega_1+{c_s}^2\omega_2\omega_3v\omega_1-u^2\omega_3-\omega_2\omega_3v\omega_1+4\omega_2u^2v^2\omega_1^2-2u^2v^2\omega_4\omega_1^2-u^2\omega_3v\omega_4\omega_1-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4+2\omega_2v\omega_1+\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_2v\omega_1^2+\frac{1}{2}\omega_2u^2\omega_3\omega_1+{c_s}^2\omega_3+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_2-{c_s}^2\omega_3\omega_1-2u^2\omega_3^2v^2\omega_4+\frac{1}{2}\omega_2\omega_1+\omega_2\omega_3v-v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4-4{c_s}^2u^2\omega_3\omega_4\omega_1+4\omega_2u^2\omega_3^2v^2+\frac{1}{2}u^2\omega_3\omega_4\omega_1-u^2\omega_3v\omega_4-\omega_2v^2-\frac{1}{2}\omega_3\omega_4\omega_1-\omega_3v\omega_4+\frac{1}{2}\omega_2\omega_3+{c_s}^2\omega_4\omega_1-\omega_3+2u^2v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_4-v^2\omega_4\omega_1-\omega_2v^2\omega_1^2+2{c_s}^2u^2\omega_3^2\omega_4-2\omega_2u^2v\omega_1+2\omega_2u^2v\omega_1^2-\frac{1}{2}\omega_2\omega_3\omega_1+2u^2\omega_1-{c_s}^2\omega_3v\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3+\omega_3v\omega_4\omega_1+\frac{1}{2}\omega_2u^2\omega_3+\frac{1}{2}\omega_4\omega_1+2\omega_2v^2\omega_1+\frac{1}{2}u^2\omega_3\omega_4+\frac{1}{2}v^2\omega_4\omega_1^2+v\omega_4+2{c_s}^2u^2\omega_4\omega_1^2+4u^2\omega_3v^2\omega_4\omega_1-{c_s}^2\omega_2\omega_3v+\omega_2u^2\omega_3v-\frac{1}{2}\omega_4-\frac{1}{2}{c_s}^2\omega_4\omega_1^2-u^2\omega_3\omega_1-8\omega_2u^2\omega_3v^2\omega_1-\frac{3}{2}\omega_2v-\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_5],t-2\delta_t}=-2-4\omega_2u^2\omega_3^2v-\omega_3\omega_1+8\omega_2u^2\omega_3v\omega_1-v\omega_4\omega_1^2+\omega_2\omega_3v\omega_1+\frac{1}{2}\omega_2\omega_1^2-8u^2\omega_3v\omega_4\omega_1-\frac{1}{2}\omega_3\omega_4-3\omega_2v\omega_1-2u^2\omega_3^2\omega_4-\omega_1^2+\omega_2v\omega_1^2+4\omega_2u^2\omega_3\omega_1+\omega_2-\frac{3}{2}\omega_2\omega_1-2u^2\omega_4\omega_1^2-\omega_2\omega_3v-2\omega_2u^2\omega_1^2+3v\omega_4\omega_1+4u^2\omega_3^2+4u^2\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-\frac{1}{2}\omega_2\omega_3+\omega_3+\frac{1}{2}\omega_4\omega_1^2+4u^2\omega_3^2v\omega_4+4u^2\omega_1^2-2\omega_2u^2\omega_3^2-4\omega_2u^2v\omega_1^2+\frac{1}{2}\omega_2\omega_3\omega_1-\omega_3v\omega_4\omega_1-\frac{3}{2}\omega_4\omega_1-2v\omega_4+\omega_4-8u^2\omega_3\omega_1+4u^2v\omega_4\omega_1^2+2\omega_2v+3\omega_1,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t}=1+\frac{1}{2}uv\omega_4\omega_1-\omega_2u^2\omega_3^2v+\frac{1}{4}\omega_3v^2\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1+\omega_2^2uv^2\omega_1-\frac{5}{2}u\omega_3v^2\omega_4+\frac{1}{2}\omega_2uv\omega_1^2-\frac{1}{2}{c_s}^2\omega_3v\omega_4-\frac{1}{4}\omega_2v^2\omega_4\omega_1+\frac{1}{2}{c_s}^2v\omega_4^2\omega_1+3\omega_2u\omega_3v^3\omega_4+\frac{1}{2}{c_s}^2u\omega_4\omega_1^2+\frac{1}{2}\omega_2u^2\omega_1+\frac{5}{2}\omega_2\omega_3v^2+\frac{3}{2}\omega_2u^2\omega_3v\omega_1+v^3\omega_4^2+\frac{1}{2}u\omega_3\omega_4-\frac{1}{2}\omega_2^2v^2\omega_1-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1+\frac{1}{2}u^2\omega_3-\frac{1}{4}\omega_2\omega_3v\omega_1+\frac{1}{4}\omega_3v^2\omega_4^2+\frac{1}{2}u\omega_3v\omega_4\omega_1-\frac{1}{4}{c_s}^2\omega_3\omega_4^2-2\omega_2u^2v^2\omega_1^2+\frac{1}{2}u\omega_1+\frac{1}{2}u\omega_3\omega_1+u^2v^2\omega_4\omega_1^2-\frac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4+\frac{5}{2}\omega_2u\omega_3v+\frac{1}{2}\omega_2u\omega_3-\frac{1}{2}uv^2\omega_4^2\omega_1-3\omega_2uv^3\omega_4\omega_1+\frac{1}{2}u^2\omega_3v\omega_4\omega_1+\frac{1}{2}u^2\omega_4\omega_1+\frac{1}{4}\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_4-u\omega_3v^3\omega_4^2+\frac{3}{4}\omega_2v\omega_1+\frac{3}{2}v^2\omega_4-\frac{1}{4}\omega_2u^2\omega_3\omega_1+\frac{1}{4}v^2\omega_4^2\omega_1-\omega_2^2v^3\omega_1-\frac{1}{2}{c_s}^2\omega_3-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_1-\frac{1}{2}\omega_3v^3\omega_4^2-\frac{1}{2}\omega_2+\frac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1+2\omega_2^2v^3-\frac{1}{2}v^2\omega_4^2+\frac{1}{2}{c_s}^2\omega_3\omega_1+u^2\omega_3^2v^2\omega_4+\frac{1}{4}\omega_2\omega_1-\frac{1}{2}\omega_2u\omega_3v^2\omega_4+5\omega_2u\omega_3v^2+{c_s}^2\omega_2uv\omega_4\omega_1+2\omega_2^2uv^3\omega_1+\frac{5}{4}\omega_2\omega_3v+\omega_2^2v^2-\frac{5}{2}{c_s}^2u\omega_4\omega_1-\frac{1}{2}v\omega_4\omega_1+\omega_2u\omega_3v^2\omega_1+\frac{3}{2}{c_s}^2\omega_3\omega_4-\frac{5}{4}\omega_3v^2\omega_4+2{c_s}^2u^2\omega_3\omega_4\omega_1-2\omega_2u^2\omega_3^2v^2-\frac{1}{4}{c_s}^2\omega_4^2\omega_1+\frac{1}{2}u\omega_3v^2\omega_4^2-\frac{1}{4}u^2\omega_3\omega_4\omega_1+\frac{1}{2}u^2\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4^2-\frac{1}{4}{c_s}^2\omega_2\omega_3\omega_4-2\omega_2uv\omega_1-{c_s}^2u\omega_3^2\omega_4-\frac{1}{4}{c_s}^2\omega_2\omega_4\omega_1-3\omega_2v^2+\frac{1}{2}{c_s}^2u\omega_4^2\omega_1-\frac{1}{4}\omega_2\omega_3^2v-\frac{1}{2}\omega_3v\omega_4-\frac{1}{4}{c_s}^2\omega_3^2\omega_4-\frac{1}{4}\omega_2u\omega_3\omega_1+\frac{1}{4}\omega_2\omega_3+{c_s}^2\omega_2v\omega_4+{c_s}^2u\omega_3v\omega_4^2+\frac{3}{4}{c_s}^2\omega_4\omega_1-\frac{1}{2}\omega_3-u^2v\omega_4\omega_1+\frac{5}{2}{c_s}^2u\omega_3\omega_4+\frac{3}{2}\omega_2\omega_3v^3\omega_4+uv^3\omega_4^2\omega_1+\frac{1}{2}\omega_2uv^2\omega_4\omega_1-5\omega_2uv^2\omega_1+\frac{1}{4}\omega_3^2v^2\omega_4-\frac{3}{2}{c_s}^2\omega_4-\frac{3}{4}v^2\omega_4\omega_1-{c_s}^2u^2\omega_3^2\omega_4-3\omega_2v^3\omega_4-\frac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4+\omega_2u^2v\omega_1+\frac{3}{2}\omega_2v^3\omega_4\omega_1-2\omega_2u\omega_3^2v^2-{c_s}^2\omega_2u\omega_3v\omega_4-\frac{1}{2}uv^2\omega_4\omega_1^2-\omega_2^2u\omega_3v^2-\omega_2u^2v\omega_1^2-u^2\omega_1-\frac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1-\frac{1}{4}\omega_2\omega_3v^2\omega_4+\frac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+u\omega_3^2v^2\omega_4+\frac{5}{2}uv^2\omega_4\omega_1+\frac{1}{4}{c_s}^2\omega_2\omega_3-\omega_2u\omega_3^2v-\frac{1}{4}\omega_2u^2\omega_3-\frac{1}{2}u\omega_3v^2\omega_4\omega_1+\frac{1}{4}\omega_4\omega_1+\frac{3}{2}\omega_2v^2\omega_1-\frac{1}{4}u^2\omega_3\omega_4+\frac{1}{2}{c_s}^2\omega_4^2+v\omega_4-{c_s}^2u^2\omega_4\omega_1^2-\frac{1}{2}\omega_2^2\omega_3v^2-\frac{1}{4}u\omega_4\omega_1-{c_s}^2uv\omega_4^2\omega_1-2u^2\omega_3v^2\omega_4\omega_1-u\omega_3v\omega_4+\frac{1}{2}{c_s}^2\omega_2\omega_3v-$

$\frac{1}{2}\omega_2 u^2\omega_3 v - \frac{1}{2}\omega_4 + \frac{1}{2}u^2\omega_3\omega_1 - {c_s}^2 v\omega_4^2 + \frac{1}{2}\omega_2 v^2\omega_4 - \frac{1}{2}{c_s}^2 u\omega_3\omega_4^2 + \frac{1}{2}{c_s}^2 u\omega_3\omega_4\omega_1 + \omega_2 uv^2\omega_1^2 - \frac{1}{4}u\omega_3\omega_4\omega_1 - 2\omega_2^2 u\omega_3 v^3 + 4\omega_2 u^2\omega_3 v^2\omega_1 - \omega_2^2\omega_3 v^3 - \frac{1}{2}v^3\omega_4^2\omega_1 - \frac{1}{2}\omega_2\omega_3^2 v^2 - \frac{3}{2}\omega_2 v - \frac{1}{4}\omega_2 u\omega_1 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_1 - u\omega_3,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-2\delta_t} =$
$-2+\frac{1}{4}\omega_2\omega_4\omega_1-6uv\omega_4\omega_1-\frac{1}{2}\omega_4^2+2\omega_2 u^2\omega_3^2 v-2\omega_2^2 uv^2\omega_1-\frac{1}{2}u\omega_4^2\omega_1-\omega_2 uv\omega_1^2-2\omega_2 v^2\omega_4\omega_1-\omega_2 v\omega_4-\frac{1}{2}\omega_3\omega_1-\omega_2^2 v-4\omega_2 u^2\omega_3 v\omega_1-3u\omega_3\omega_4+\omega_2^2 v^2\omega_1+\frac{1}{2}\omega_2\omega_3 v\omega_1+\omega_3 v^2\omega_4^2+u\omega_3 v\omega_4\omega_1+\frac{1}{2}\omega_2\omega_3 v\omega_4-4u\omega_1+u\omega_3\omega_1-6\omega_2 u\omega_3 v-2\omega_2 u\omega_3-2uv^2\omega_4^2\omega_1+4u^2\omega_3 v\omega_4\omega_1-2u\omega_3^2 v\omega_4-\frac{3}{2}\omega_3\omega_4+\frac{1}{4}\omega_4^2\omega_1-2\omega_2 v\omega_1+u^2\omega_3^2\omega_4-2\omega_2 u^2\omega_3\omega_1+v^2\omega_4^2\omega_1-\frac{1}{2}\omega_3^2 v\omega_4+\omega_2-\frac{1}{2}\omega_2 u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2-\omega_2 uv\omega_4\omega_1-\frac{1}{2}\omega_2\omega_1-4\omega_2 u\omega_3 v^2\omega_4+\omega_2 u\omega_3^2+\frac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2-3\omega_2\omega_3 v+\omega_2 u^2\omega_1^2-2\omega_2^2 v^2+2v\omega_4\omega_1-2u^2\omega_3^2+\frac{1}{2}u\omega_3\omega_4^2-\frac{1}{2}\omega_2\omega_4+uv\omega_4\omega_1^2+2u\omega_3 v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1+6\omega_2 uv\omega_1-\frac{1}{2}\omega_2 u\omega_1^2+\frac{1}{2}\omega_2\omega_3^2 v+\frac{1}{4}\omega_3\omega_4\omega_1+3\omega_3 v\omega_4-\frac{1}{2}\omega_2 u\omega_3\omega_1-\omega_2\omega_3-\omega_2 u\omega_3 v\omega_1-v\omega_4^2\omega_1-2u\omega_3^2-2u\omega_3 v\omega_4^2-\frac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2 uv^2\omega_4\omega_1+2v\omega_4^2+\frac{1}{2}\omega_2^2\omega_3 v+\omega_2 u\omega_3 v\omega_4+\omega_2^2 u\omega_3 v+\frac{1}{2}\omega_2 u\omega_3\omega_4-2u^2\omega_3^2 v\omega_4-2u^2\omega_1^2+\omega_2 u^2\omega_3^2+\frac{1}{2}\omega_2 v\omega_4\omega_1+2\omega_2^2 u\omega_3 v^2+2\omega_2 u^2 v\omega_1^2+\frac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3 v^2\omega_4+\frac{1}{4}\omega_2^2\omega_4+2\omega_2 u\omega_3^2 v-\frac{1}{2}\omega_3 v\omega_4\omega_1-\omega_4\omega_1-4v\omega_4+\omega_2^2\omega_3 v^2+3u\omega_4\omega_1+6u\omega_3 v\omega_4-\omega_2^2 uv\omega_1-\frac{1}{2}\omega_3^2+2\omega_4+2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2 v^2\omega_4-2u^2 v\omega_4\omega_1^2-\frac{1}{2}u\omega_3\omega_4\omega_1+4\omega_2 v+2\omega_2 u\omega_1+\omega_1+\frac{1}{4}\omega_2\omega_3\omega_4-\omega_3 v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\frac{1}{4}\omega_2\omega_3^2+\frac{1}{2}\omega_2^2 v\omega_1,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-2\delta_t} = 2-\frac{1}{2}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2^2 u^2\omega_3+8\omega_2 u^2 v^2\omega_4\omega_1+2\omega_2^2 uv^2\omega_1-4\omega_2 v^2\omega_4\omega_1+2\omega_2^2 u^2\omega_3 v^2-3\omega_2 u^2\omega_1-u\omega_3\omega_4+2\omega_2^2 v^2\omega_1-u^2\omega_3+2\omega_3 v^2\omega_4^2-u\omega_1-3\omega_2 u\omega_3+2uv^2\omega_4^2\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4-\frac{1}{2}\omega_2^2 u\omega_1+2v^2\omega_4^2\omega_1+\omega_2^2+{c_s}^2\omega_3-3\omega_2-\frac{1}{2}\omega_2 u\omega_4\omega_1-4v^2\omega_4^2+\frac{3}{2}\omega_2\omega_1+8\omega_2 u\omega_3 v^2\omega_4-2{c_s}^2\omega_2^2\omega_3 v^2-4\omega_2^2 v^2-\frac{1}{2}\omega_2^2\omega_3-\frac{1}{2}{c_s}^2\omega_3\omega_4+\omega_2\omega_4-4u\omega_3 v^2\omega_4^2+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2 u^2\omega_3\omega_4+\omega_2 u^2\omega_4\omega_1+\frac{3}{2}\omega_2\omega_3-\omega_3-4\omega_2 uv^2\omega_4\omega_1-2{c_s}^2\omega_3 v^2\omega_4^2+\omega_2 u\omega_3\omega_4-4u^2 v^2\omega_4^2\omega_1-\frac{1}{2}\omega_2^2\omega_1+4{c_s}^2\omega_2\omega_3 v^2\omega_4-4\omega_2^2 u\omega_3 v^2+2u^2\omega_1-4\omega_2\omega_3 v^2\omega_4-4\omega_2^2 u^2 v^2\omega_1-\frac{3}{2}{c_s}^2\omega_2\omega_3+\frac{3}{2}\omega_2 u^2\omega_3-4\omega_2 u^2\omega_3 v^2\omega_4+\frac{1}{2}\omega_4\omega_1+\frac{1}{2}u^2\omega_3\omega_4+\omega_2^2 u^2\omega_1+2\omega_2^2\omega_3 v^2+\frac{1}{2}u\omega_4\omega_1+\omega_2^2 u\omega_3-\omega_4+8\omega_2 v^2\omega_4+2u^2\omega_3 v^2\omega_4^2+\frac{3}{2}\omega_2 u\omega_1-\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4+2u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-2\delta_t} = -2+\frac{1}{2}\omega_2\omega_4\omega_1-4\omega_2^2 uv^2\omega_1+4\omega_2 v^2\omega_4\omega_1+u\omega_3\omega_4-2\omega_2^2 v^2\omega_1-2\omega_3 v^2\omega_4^2+2u\omega_1+3\omega_2 u\omega_3-4uv^2\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_4+\omega_2^2 u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2+\omega_2 u\omega_4\omega_1+4v^2\omega_4^2-\frac{3}{2}\omega_2\omega_1-8\omega_2 u\omega_3 v^2\omega_4+4\omega_2^2 v^2+\frac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4+4u\omega_3 v^2\omega_4^2-\frac{3}{2}\omega_2\omega_3+\omega_3+8\omega_2 uv^2\omega_4\omega_1-\omega_2 u\omega_3\omega_4+\frac{1}{2}\omega_2^2\omega_1+4\omega_2^2 u\omega_3 v^2+4\omega_2\omega_3 v^2\omega_4-\frac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3 v^2-u\omega_4\omega_1-\omega_2^2 u\omega_3+\omega_4-8\omega_2 v^2\omega_4-3\omega_2 u\omega_1+\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4-2u\omega_3,$

$\alpha_{x,y}^{[\mu_1],t-2\delta_t} =$
$2+\omega_2^2 u^2\omega_3-16\omega_2 u^2 v^2\omega_4\omega_1-4\omega_2^2 u^2\omega_3 v^2+6\omega_2 u^2\omega_1+2u^2\omega_3-\omega_2^2 v^2\omega_4-{c_s}^2\omega_2^2\omega_3+2u^2\omega_4\omega_1+3{c_s}^2\omega_2\omega_4+2v^2\omega_4+\omega_2^2-2{c_s}^2\omega_3-3\omega_2-5v^2\omega_4^2+4{c_s}^2\omega_2^2\omega_3 v^2-{c_s}^2\omega_2\omega_4^2-2\omega_2^2 v^2+{c_s}^2\omega_3\omega_4+\omega_2\omega_4-{c_s}^2\omega_2\omega_3\omega_4+\omega_2 u^2\omega_3\omega_4-2\omega_2 u^2\omega_4\omega_1-4\omega_2 v^2-\omega_2 v^2\omega_4^2+4{c_s}^2\omega_3 v^2\omega_4^2-2{c_s}^2\omega_4+8u^2 v^2\omega_4^2\omega_1-8{c_s}^2\omega_2\omega_3 v^2\omega_4-4u^2\omega_1+8\omega_2^2 u^2 v^2\omega_1-{c_s}^2\omega_2^2\omega_4+3{c_s}^2\omega_2\omega_3-3\omega_2 u^2\omega_3+8\omega_2 u^2\omega_3 v^2\omega_4-u^2\omega_3\omega_4+{c_s}^2\omega_4^2-2\omega_2^2 u^2\omega_1-\omega_4+11\omega_2 v^2\omega_4-4u^2\omega_3 v^2\omega_4^2,$

$\alpha_{x,y}^{[\mu_5],t-2\delta_t} = -4-\omega_4^2-4\omega_3\omega_1+\omega_2\omega_4^2-\omega_1^2-\omega_2^2+3\omega_2+\omega_3\omega_1^2-4\omega_2\omega_4+\omega_2^2\omega_4+3\omega_3-\omega_3^2+3\omega_4+\omega_3^2\omega_1+3\omega_1,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-2\delta_t} = 2-\frac{1}{2}\omega_2\omega_4\omega_1-\frac{1}{2}\omega_2^2 u^2\omega_3+8\omega_2 u^2 v^2\omega_4\omega_1-2\omega_2^2 uv^2\omega_1-4\omega_2 v^2\omega_4\omega_1+2\omega_2^2 u^2\omega_3 v^2-3\omega_2 u^2\omega_1+u\omega_3\omega_4+2\omega_2^2 v^2\omega_1-u^2\omega_3+2\omega_3 v^2\omega_4^2+u\omega_1+3\omega_2 u\omega_3-2uv^2\omega_4^2\omega_1+\frac{1}{2}{c_s}^2\omega_2^2\omega_3-u^2\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4+\frac{1}{2}\omega_2^2 u\omega_1+2v^2\omega_4^2\omega_1+\omega_2^2+{c_s}^2\omega_3-3\omega_2+\frac{1}{2}\omega_2 u\omega_4\omega_1-4v^2\omega_4^2+\frac{3}{2}\omega_2\omega_1-8\omega_2 u\omega_3 v^2\omega_4-2{c_s}^2\omega_2^2\omega_3 v^2-4\omega_2^2 v^2-\frac{1}{2}\omega_2^2\omega_3-\frac{1}{2}{c_s}^2\omega_3\omega_4+\omega_2\omega_4+4u\omega_3 v^2\omega_4^2+\frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4-\frac{1}{2}\omega_2 u^2\omega_3\omega_4+\omega_2 u^2\omega_4\omega_1+\frac{3}{2}\omega_2\omega_3-\omega_3+4\omega_2 uv^2\omega_4\omega_1-2{c_s}^2\omega_3 v^2\omega_4^2-\omega_2 u\omega_3\omega_4-4u^2 v^2\omega_4^2\omega_1-\frac{1}{2}\omega_2^2\omega_1+4{c_s}^2\omega_2\omega_3 v^2\omega_4+4\omega_2^2 u\omega_3 v^2+2u^2\omega_1-4\omega_2\omega_3 v^2\omega_4-4\omega_2^2 u^2 v^2\omega_1-\frac{3}{2}{c_s}^2\omega_2\omega_3+\frac{3}{2}\omega_2 u^2\omega_3-4\omega_2 u^2\omega_3 v^2\omega_4+\frac{1}{2}\omega_4\omega_1+\frac{1}{2}u^2\omega_3\omega_4+\omega_2^2 u^2\omega_1+2\omega_2^2\omega_3 v^2-\frac{1}{2}u\omega_4\omega_1-\omega_2^2 u\omega_3-\omega_4+8\omega_2 v^2\omega_4+2u^2\omega_3 v^2\omega_4^2-\frac{3}{2}\omega_2 u\omega_1-\omega_1-\frac{1}{2}\omega_2\omega_3\omega_4-2u\omega_3,$

$\alpha_{x+\delta_l,y}^{[\mu_5],t-2\delta_t} = -2+\frac{1}{2}\omega_2\omega_4\omega_1+4\omega_2^2 uv^2\omega_1+4\omega_2 v^2\omega_4\omega_1-u\omega_3\omega_4-2\omega_2^2 v^2\omega_1-2\omega_3 v^2\omega_4^2-2u\omega_1-3\omega_2 u\omega_3+4uv^2\omega_4^2\omega_1-\frac{1}{2}\omega_3\omega_4-\omega_2^2 u\omega_1-2v^2\omega_4^2\omega_1-\omega_2^2+3\omega_2-\omega_2 u\omega_4\omega_1+4v^2\omega_4^2-\frac{3}{2}\omega_2\omega_1+8\omega_2 u\omega_3 v^2\omega_4+4\omega_2^2 v^2+\frac{1}{2}\omega_2^2\omega_3-\omega_2\omega_4-4u\omega_3 v^2\omega_4^2-\frac{3}{2}\omega_2\omega_3+\omega_3-8\omega_2 uv^2\omega_4\omega_1+\omega_2 u\omega_3\omega_4+\frac{1}{2}\omega_2^2\omega_1-4\omega_2^2 u\omega_3 v^2+4\omega_2\omega_3 v^2\omega_4-\frac{1}{2}\omega_4\omega_1-2\omega_2^2\omega_3 v^2+u\omega_4\omega_1+\omega_2^2 u\omega_3+\omega_4-8\omega_2 v^2\omega_4+3\omega_2 u\omega_1+\omega_1+\frac{1}{2}\omega_2\omega_3\omega_4+2u\omega_3,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1+\frac{1}{2}uv\omega_4\omega_1+\omega_2 u^2\omega_3^2 v+\frac{1}{4}\omega_3 v^2\omega_4\omega_1-\frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1-\omega_2^2 uv^2\omega_1+\frac{5}{2}u\omega_3 v^2\omega_4+\frac{1}{2}\omega_2 uv\omega_1^2+\frac{1}{2}{c_s}^2\omega_3 v\omega_4-\frac{1}{4}\omega_2 v^2\omega_4\omega_1-\frac{1}{2}{c_s}^2 v\omega_4^2\omega_1+3\omega_2 u\omega_3 v^3\omega_4-\frac{1}{2}{c_s}^2 u\omega_4\omega_1^2+\frac{1}{2}\omega_2 u^2\omega_1+\frac{5}{2}\omega_2\omega_3 v^2-\frac{3}{2}\omega_2 u^2\omega_3 v\omega_1-$

$$v^3\omega_4^2 - \tfrac{1}{2}u\omega_3\omega_4 - \tfrac{1}{2}\omega_2^2v^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3v\omega_1 + \tfrac{1}{4}\omega_3v^2\omega_4^2 + \tfrac{1}{2}u\omega_3v\omega_4\omega_1 - \tfrac{1}{4}{c_s}^2\omega_3\omega_4^2 - 2\omega_2u^2v^2\omega_1^2 - \tfrac{1}{2}u\omega_1 - \tfrac{1}{2}u\omega_3\omega_1 + u^2v^2\omega_4\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4 + \tfrac{5}{2}\omega_2u\omega_3v - \tfrac{1}{2}\omega_2u\omega_3 + \tfrac{1}{3}uv^2\omega_4^2\omega_1 - 3\omega_2uv^3\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3v\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_4 - u\omega_3v^3\omega_4^2 - \tfrac{3}{4}\omega_2v\omega_1 + \tfrac{3}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2u^2\omega_3\omega_1 + \tfrac{1}{4}v^2\omega_4^2\omega_1 + \omega_2^2v^3\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 + \tfrac{1}{2}\omega_3v^3\omega_4^2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1 - 2\omega_2^2v^3 - \tfrac{1}{2}v^2\omega_4^2 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + u^2\omega_3^2v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_1 + \tfrac{1}{2}\omega_2u\omega_3v^2\omega_4 - 5\omega_2u\omega_3v^2 + {c_s}^2\omega_2uv\omega_4\omega_1 + 2\omega_2^2uv^3\omega_1 - \tfrac{5}{4}\omega_2\omega_3v + \omega_2^2v^2 + \tfrac{5}{2}{c_s}^2u\omega_4\omega_1 + \tfrac{1}{2}v\omega_4\omega_1 - \omega_2u\omega_3v^2\omega_1 + \tfrac{3}{2}{c_s}^2\omega_3\omega_4 - \tfrac{5}{4}\omega_3v^2\omega_4 + 2{c_s}^2u^2\omega_3\omega_4\omega_1 - 2\omega_2u^2\omega_3^2v^2 - \tfrac{1}{4}{c_s}^2\omega_4^2\omega_1 - \tfrac{1}{2}u\omega_3v^2\omega_4^2 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4 - 2\omega_2uv\omega_1 + {c_s}^2u\omega_3^2\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 - 3\omega_2v^2 - \tfrac{1}{2}{c_s}^2u\omega_4^2\omega_1 + \tfrac{1}{4}\omega_2\omega_3^2v + \tfrac{1}{2}\omega_3v\omega_4 - \tfrac{1}{4}{c_s}^2\omega_3^2\omega_4 + \tfrac{1}{4}\omega_2u\omega_3\omega_1 + \tfrac{1}{4}\omega_2\omega_3 - {c_s}^2\omega_2v\omega_4 + {c_s}^2u\omega_3v\omega_4^2 + \tfrac{3}{4}{c_s}^2\omega_4\omega_1 - \tfrac{1}{2}\omega_3 + u^2v\omega_4\omega_1 - \tfrac{5}{2}{c_s}^2u\omega_3\omega_4 - \tfrac{3}{2}\omega_2\omega_3v^3\omega_4 + uv^3\omega_4^2\omega_1 - \tfrac{1}{2}\omega_2uv^2\omega_4\omega_1 + 5\omega_2uv^2\omega_1 + \tfrac{1}{4}\omega_3^2v^2\omega_4 - \tfrac{3}{2}{c_s}^2\omega_4 - \tfrac{3}{4}v^2\omega_4\omega_1 - {c_s}^2u^2\omega_3^2\omega_4 + 3\omega_2v^3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4 - \omega_2u^2v\omega_1 - \tfrac{3}{2}\omega_2v^3\omega_4\omega_1 + 2\omega_2u\omega_3^2v^2 - {c_s}^2\omega_2u\omega_3v\omega_4 + \tfrac{1}{2}uv^2\omega_4\omega_1^2 + \omega_2^2u\omega_3v^2 + \omega_2u^2v\omega_1^2 - u^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1 - \tfrac{1}{4}\omega_2\omega_3v^2\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1 - u\omega_3^2v^2\omega_4 - \tfrac{5}{2}uv^2\omega_4\omega_1 + \tfrac{1}{4}{c_s}^2\omega_2\omega_3 - \omega_2u\omega_3^2v - \tfrac{1}{4}\omega_2u^2\omega_3 + \tfrac{1}{2}u\omega_3v^2\omega_4\omega_1 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{3}{2}\omega_2v^2\omega_1 - \tfrac{1}{4}u^2\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_4^2 - v\omega_4 - {c_s}^2u^2\omega_4\omega_1^2 - \tfrac{1}{2}\omega_2^2\omega_3v^2 + \tfrac{1}{4}u\omega_4\omega_1 - {c_s}^2uv\omega_4^2\omega_1 - 2u^2\omega_3v^2\omega_4\omega_1 - u\omega_3v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3v + \tfrac{1}{2}\omega_2u^2\omega_3v - \tfrac{1}{2}\omega_4 + \tfrac{1}{2}u^2\omega_3\omega_1 + {c_s}^2v\omega_4^2 + \tfrac{1}{2}\omega_2v^2\omega_4 + \tfrac{1}{2}{c_s}^2u\omega_3\omega_4^2 - \tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1 - \omega_2uv^2\omega_1^2 + \tfrac{1}{4}u\omega_3\omega_4\omega_1 - 2\omega_2^2u\omega_3v^3 + 4\omega_2u^2\omega_3v^2\omega_1 + \omega_2^2\omega_3v^3 + \tfrac{1}{2}v^3\omega_4^2\omega_1 - \tfrac{1}{2}\omega_2\omega_3^2v^2 + \tfrac{3}{2}\omega_2v + \tfrac{1}{4}\omega_2u\omega_1 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}\omega_2\omega_3v^2\omega_1 + u\omega_3,$$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y+\delta_l} =$

$$-2 + \tfrac{1}{4}\omega_2\omega_4\omega_1 - 6uv\omega_4\omega_1 - \tfrac{1}{2}\omega_4^2 - 2\omega_2u^2\omega_3^2v + 2\omega_2^2uv^2\omega_1 + \tfrac{1}{2}u\omega_4^2\omega_1 - \omega_2uv\omega_1^2 - 2\omega_2v^2\omega_4\omega_1 + \omega_2v\omega_4 - \tfrac{1}{2}\omega_3\omega_1 + \omega_2^2v + 4\omega_2u^2\omega_3v\omega_1 + 3u\omega_3\omega_4 + \omega_2^2v^2\omega_1 - \tfrac{1}{2}\omega_2\omega_3v\omega_1 + \omega_3v^2\omega_4^2 + u\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_3v\omega_4 + 4u\omega_1 - u\omega_3\omega_1 - 6\omega_2u\omega_3v + 2\omega_2u\omega_3 + 2uv^2\omega_4^2\omega_1 - 4u^2\omega_3v\omega_4\omega_1 - 2u\omega_3^2v\omega_4 - \tfrac{3}{2}\omega_3\omega_4 + \tfrac{1}{4}\omega_4^2\omega_1 + 2\omega_2v\omega_1 + u^2\omega_3^2\omega_4 - 2\omega_2u^2\omega_3\omega_1 + v^2\omega_4^2\omega_1 + \tfrac{1}{2}\omega_3^2v\omega_4 + \omega_2 + \tfrac{1}{2}\omega_2u\omega_4\omega_1 - 2v^2\omega_4^2 - u\omega_1^2 - \omega_2uv\omega_4\omega_1 - \tfrac{1}{2}\omega_2\omega_1 + 4\omega_2u\omega_3v^2\omega_4 - \omega_2u\omega_3^2 + \tfrac{1}{4}\omega_3\omega_4^2 + u^2\omega_4\omega_1^2 + 3\omega_2\omega_3v + \omega_2u^2\omega_1^2 - 2\omega_2^2v^2 - 2v\omega_4\omega_1 - 2u^2\omega_3^2 - \tfrac{1}{2}u\omega_3\omega_4^2 - \tfrac{1}{2}\omega_2\omega_4 + uv\omega_4\omega_1^2 - 2u\omega_3v^2\omega_4^2 - 2u^2\omega_3\omega_4\omega_1 + 6\omega_2uv\omega_1 + \tfrac{1}{2}\omega_2u\omega_1^2 - \tfrac{1}{2}\omega_2\omega_3^2v + \tfrac{1}{4}\omega_3\omega_4\omega_1 - 3\omega_3v\omega_4 + \tfrac{1}{2}\omega_2u\omega_3\omega_1 - \omega_2\omega_3 - \omega_2u\omega_3v\omega_1 + v\omega_4^2\omega_1 + 2u\omega_3^2 - 2u\omega_3v\omega_4^2 + \tfrac{1}{2}u\omega_4\omega_1^2 + 2\omega_3 - 4\omega_2uv^2\omega_4\omega_1 - 2v\omega_4^2 - \tfrac{1}{2}\omega_2^2\omega_3v + \omega_2u\omega_3v\omega_4 + \omega_2^2u\omega_3v - \tfrac{1}{2}\omega_2u\omega_3\omega_4 + 2u^2\omega_3^2v\omega_4 - 2u^2\omega_1^2 + \omega_2u^2\omega_3^2 - \tfrac{1}{2}\omega_2v\omega_4\omega_1 - 2\omega_2^2u\omega_3v^2 - 2\omega_2u^2v\omega_1^2 + \tfrac{1}{4}\omega_2\omega_3\omega_1 - 2\omega_2\omega_3v^2\omega_4 + \tfrac{1}{4}\omega_3^2\omega_4 + 2\omega_2u\omega_3^2v + \tfrac{1}{2}\omega_3v\omega_4\omega_1 - \omega_4\omega_1 + 4v\omega_4 + \omega_2^2\omega_3v^2 - 3u\omega_4\omega_1 + 6u\omega_3v\omega_4 - \omega_2^2uv\omega_1 - \tfrac{1}{2}\omega_3^2 + 2\omega_4 + 2uv\omega_4^2\omega_1 + 4u^2\omega_3\omega_1 + 4\omega_2v^2\omega_4 + 2u^2v\omega_4\omega_1^2 + \tfrac{1}{2}u\omega_3\omega_4\omega_1 - 4\omega_2v - 2\omega_2u\omega_1 + \omega_1 + \tfrac{1}{4}\omega_2\omega_3\omega_4 + \omega_3v\omega_4^2 - 4u\omega_3 - u\omega_3^2\omega_4 + \tfrac{1}{4}\omega_2\omega_3^2 - \tfrac{1}{2}\omega_2^2v\omega_1,$$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1 - 2\omega_2u^2\omega_3^2v + \tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 - {c_s}^2\omega_3v\omega_4 + \omega_3\omega_1 - \omega_2u^2\omega_1 + 3\omega_2u^2\omega_3v\omega_1 - {c_s}^2\omega_2\omega_3v\omega_1 - u^2\omega_3 + \omega_2\omega_3v\omega_1 + 4\omega_2u^2v^2\omega_1^2 - 2u^2v^2\omega_4\omega_1^2 + u^2\omega_3v\omega_4\omega_1 - u^2\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4 - 2\omega_2v\omega_1 + \tfrac{1}{2}v^2\omega_4 + \tfrac{1}{2}\omega_2v\omega_1^2 + \tfrac{1}{2}\omega_2u^2\omega_3\omega_1 + {c_s}^2\omega_3 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - {c_s}^2\omega_3\omega_1 - 2u^2\omega_3^2v^2\omega_4 + \tfrac{1}{2}\omega_2\omega_1 - \omega_2\omega_3v + v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4 - 4{c_s}^2u^2\omega_3\omega_4\omega_1 + 4\omega_2u^2\omega_3^2v^2 + \tfrac{1}{2}u^2\omega_3\omega_4\omega_1 + u^2\omega_3v\omega_4 - \omega_2v^2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \omega_3v\omega_4 + \tfrac{1}{2}\omega_2\omega_3 + {c_s}^2\omega_4\omega_1 - \omega_3 - 2u^2v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_4 - v^2\omega_4\omega_1 - \omega_2v^2\omega_1^2 + 2{c_s}^2u^2\omega_3^2\omega_4 + 2\omega_2u^2v\omega_1 - 2\omega_2u^2v\omega_1^2 - \tfrac{1}{2}\omega_2\omega_3\omega_1 + 2u^2\omega_1 + {c_s}^2\omega_3v\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_2\omega_3 - \omega_3v\omega_4\omega_1 + \tfrac{1}{2}\omega_2u^2\omega_3 + \tfrac{1}{2}\omega_4\omega_1 + 2\omega_2v^2\omega_1 + \tfrac{1}{2}u^2\omega_3\omega_4 + \tfrac{1}{2}v^2\omega_4\omega_1^2 - v\omega_4 + 2{c_s}^2u^2\omega_4\omega_1^2 + 4u^2\omega_3v^2\omega_4\omega_1 + {c_s}^2\omega_2\omega_3v - \omega_2u^2\omega_3v - \tfrac{1}{2}\omega_4 - \tfrac{1}{2}{c_s}^2\omega_4\omega_1^2 - u^2\omega_3\omega_1 - 8\omega_2u^2\omega_3v^2\omega_1 + \tfrac{3}{2}\omega_2v - \omega_1,$

$\alpha^{[\mu_5],t-2\delta_t}_{x,y+\delta_l} = -2 + 4\omega_2u^2\omega_3^2v - \omega_3\omega_1 - 8\omega_2u^2\omega_3v\omega_1 + v\omega_4\omega_1^2 - \omega_2\omega_3v\omega_1 + \tfrac{1}{2}\omega_2\omega_1^2 + 8u^2\omega_3v\omega_4\omega_1 - \tfrac{1}{2}\omega_3\omega_4 + 3\omega_2v\omega_1 - 2u^2\omega_3^2\omega_4 - \omega_1^2 - \omega_2v\omega_1^2 + 4\omega_2u^2\omega_3\omega_1 + \omega_2 - \tfrac{3}{2}\omega_2\omega_1 - 2u^2\omega_4\omega_1^2 + \omega_2\omega_3v - 2\omega_2u^2\omega_1^2 - 3v\omega_4\omega_1 + 4u^2\omega_3^2 + 4u^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 - \omega_3v\omega_4 - \tfrac{1}{2}\omega_2\omega_3 + \omega_3 + \tfrac{1}{2}\omega_4\omega_1^2 - 4u^2\omega_3^2v\omega_4 + 4u^2\omega_1^2 - 2\omega_2u^2\omega_3^2 + 4\omega_2u^2v\omega_1^2 + \tfrac{1}{2}\omega_2\omega_3\omega_1 + \omega_3v\omega_4\omega_1 - \tfrac{3}{2}\omega_4\omega_1 + 2v\omega_4 + \omega_4 - 8u^2\omega_3\omega_1 - 4u^2v\omega_4\omega_1^2 - 2\omega_2v + 3\omega_1,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1 - \tfrac{1}{2}uv\omega_4\omega_1 + \omega_2u^2\omega_3^2v + \tfrac{1}{4}\omega_3v^2\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1 + \omega_2^2uv^2\omega_1 - \tfrac{5}{2}u\omega_3v^2\omega_4 - \tfrac{1}{2}\omega_2uv\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_3v\omega_4 - \tfrac{1}{4}\omega_2v^2\omega_4\omega_1 - \tfrac{1}{2}{c_s}^2v\omega_4^2\omega_1 - 3\omega_2u\omega_3v^3\omega_4 + \tfrac{1}{2}{c_s}^2u\omega_4\omega_1^2 + \tfrac{1}{2}\omega_2u^2\omega_1 + \tfrac{5}{2}\omega_2\omega_3v^2 - \tfrac{3}{2}\omega_2u^2\omega_3v\omega_1 - v^3\omega_4^2 + \tfrac{1}{2}u\omega_3\omega_4 - \tfrac{1}{2}\omega_2^2v^2\omega_1 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_1 + \tfrac{1}{2}u^2\omega_3 + \tfrac{1}{4}\omega_2\omega_3v\omega_1 + \tfrac{1}{4}\omega_3v^2\omega_4^2 - \tfrac{1}{2}u\omega_3v\omega_4\omega_1 - \tfrac{1}{4}{c_s}^2\omega_3\omega_4^2 - 2\omega_2u^2v^2\omega_1^2 + \tfrac{1}{2}u\omega_1 + \tfrac{1}{2}u\omega_3\omega_1 + u^2v^2\omega_4\omega_1^2 + \tfrac{1}{2}{c_s}^2\omega_2\omega_3v\omega_4 - \tfrac{5}{2}\omega_2u\omega_3v + \tfrac{1}{2}\omega_2u\omega_3 - \tfrac{1}{2}uv^2\omega_4^2\omega_1 + 3\omega_2uv^3\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3v\omega_4\omega_1 + \tfrac{1}{2}u^2\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}{c_s}^2\omega_2\omega_4 + u\omega_3v^3\omega_4^2 - \tfrac{3}{4}\omega_2v\omega_1 + \tfrac{3}{2}v^2\omega_4 - \tfrac{1}{4}\omega_2u^2\omega_3\omega_1 + \tfrac{1}{4}v^2\omega_4^2\omega_1 + \omega_2^2v^3\omega_1 - \tfrac{1}{2}{c_s}^2\omega_3 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_1 + \tfrac{1}{2}\omega_3v^3\omega_4^2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}{c_s}^2\omega_2u\omega_4\omega_1 - 2\omega_2^2v^3 - \tfrac{1}{2}v^2\omega_4^2 + \tfrac{1}{2}{c_s}^2\omega_3\omega_1 + u^2\omega_3^2v^2\omega_4 + \tfrac{1}{4}\omega_2\omega_1 - \tfrac{1}{2}\omega_2u\omega_3v^2\omega_4 + 5\omega_2u\omega_3v^2 - {c_s}^2\omega_2uv\omega_4\omega_1 - 2\omega_2^2uv^3\omega_1 - \tfrac{5}{4}\omega_2\omega_3v + \omega_2^2v^2 - \tfrac{5}{2}{c_s}^2u\omega_4\omega_1 + \tfrac{1}{2}v\omega_4\omega_1 + \omega_2u\omega_3v^2\omega_1 + \tfrac{3}{2}{c_s}^2\omega_3\omega_4 - \tfrac{5}{4}\omega_3v^2\omega_4 + 2{c_s}^2u^2\omega_3\omega_4\omega_1 - 2\omega_2u^2\omega_3^2v^2 - \tfrac{1}{4}{c_s}^2\omega_4^2\omega_1 + \tfrac{1}{2}u\omega_3v^2\omega_4^2 - \tfrac{1}{4}u^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}u^2\omega_3v\omega_4 - \tfrac{1}{2}{c_s}^2\omega_3v\omega_4^2 - \tfrac{1}{4}{c_s}^2\omega_2\omega_3\omega_4 + 2\omega_2uv\omega_1 - {c_s}^2u\omega_3^2\omega_4 - \tfrac{1}{4}{c_s}^2\omega_2\omega_4\omega_1 -$

$$3\omega_2v^2+\tfrac{1}{2}{c_s}^2u\omega_4^2\omega_1+\tfrac{1}{4}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_3v\omega_4-\tfrac{1}{4}{c_s}^2\omega_3^2\omega_4-\tfrac{1}{4}\omega_2u\omega_3\omega_1+\tfrac{1}{4}\omega_2\omega_3-{c_s}^2\omega_2v\omega_4-{c_s}^2u\omega_3v\omega_4^2+\tfrac{3}{4}{c_s}^2\omega_4\omega_1-\tfrac{1}{2}\omega_3+u^2v\omega_4\omega_1+\tfrac{5}{2}{c_s}^2u\omega_3\omega_4-\tfrac{3}{2}\omega_2\omega_3v^3\omega_4-uv^3\omega_4^2\omega_1+\tfrac{1}{2}\omega_2uv^2\omega_4\omega_1-5\omega_2uv^2\omega_1+\tfrac{1}{4}\omega_3^2v^2\omega_4-\tfrac{3}{2}{c_s}^2\omega_4-\tfrac{3}{4}v^2\omega_4\omega_1-{c_s}^2u^2\omega_3^2\omega_4+3\omega_2v^3\omega_4-\tfrac{1}{2}{c_s}^2\omega_2u\omega_3\omega_4-\omega_2u^2v\omega_1-\tfrac{3}{2}\omega_2v^3\omega_4\omega_1-2\omega_2u\omega_3^2v^2+{c_s}^2\omega_2u\omega_3v\omega_4-\tfrac{1}{2}uv^2\omega_4\omega_1^2-\omega_2^2u\omega_3v^2+\omega_2u^2v\omega_1^2-u^2\omega_1+\tfrac{1}{2}{c_s}^2\omega_2v\omega_4\omega_1-\tfrac{1}{4}\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}{c_s}^2\omega_3v\omega_4\omega_1+u\omega_3^2v^2\omega_4+\tfrac{5}{2}uv^2\omega_4\omega_1+\tfrac{1}{4}{c_s}^2\omega_2\omega_3+\omega_2u\omega_3^2v-\tfrac{1}{4}\omega_2u^2\omega_3-\tfrac{1}{2}u\omega_3v^2\omega_4\omega_1+\tfrac{1}{4}\omega_4\omega_1+\tfrac{3}{2}\omega_2v^2\omega_1-\tfrac{1}{4}u^2\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_4^2-v\omega_4-{c_s}^2u^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_2^2\omega_3v^2-\tfrac{1}{4}u\omega_4\omega_1+{c_s}^2uv\omega_4^2\omega_1-2u^2\omega_3v^2\omega_4\omega_1+u\omega_3v\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3v+\tfrac{1}{2}\omega_2u^2\omega_3v-\tfrac{1}{2}\omega_4+\tfrac{1}{2}u^2\omega_3\omega_1+{c_s}^2v\omega_4^2+\tfrac{1}{2}\omega_2v^2\omega_4-\tfrac{1}{2}{c_s}^2u\omega_3\omega_4^2+\tfrac{1}{2}{c_s}^2u\omega_3\omega_4\omega_1+\omega_2uv^2\omega_1^2-\tfrac{1}{4}u\omega_3\omega_4\omega_1+2\omega_2^2u\omega_3v^3+4\omega_2u^2\omega_3v^2\omega_1+\omega_2^2\omega_3v^3+\tfrac{1}{2}v^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v^2+\tfrac{3}{2}\omega_2v-\tfrac{1}{4}\omega_2u\omega_1-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_1-u\omega_3,$$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$

$$-2+\tfrac{1}{4}\omega_2\omega_4\omega_1+6uv\omega_4\omega_1-\tfrac{1}{2}\omega_4^2-2\omega_2u^2\omega_3^2v-2\omega_2^2uv^2\omega_1-\tfrac{1}{2}u\omega_4^2\omega_1+\omega_2uv\omega_1^2-2\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4-\tfrac{1}{2}\omega_3\omega_1+\omega_2^2v+4\omega_2u^2\omega_3v\omega_1-3u\omega_3\omega_4+\omega_2^2v^2\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_1+\omega_3v^2\omega_4^2-u\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3v\omega_4-4u\omega_1+u\omega_3\omega_1+6\omega_2u\omega_3v-2\omega_2u\omega_3-2uv^2\omega_4^2\omega_1-4u^2\omega_3v\omega_4\omega_1+2u\omega_3^2v\omega_4-\tfrac{3}{2}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2\omega_1+2\omega_2v\omega_1+u^2\omega_3^2\omega_4-2\omega_2u^2\omega_3\omega_1+v^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_3^2v\omega_4+\omega_2-\tfrac{1}{2}\omega_2u\omega_4\omega_1-2v^2\omega_4^2+u\omega_1^2+\omega_2uv\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_1-4\omega_2u\omega_3v^2\omega_4+\omega_2u\omega_3^2+\tfrac{1}{4}\omega_3\omega_4^2+u^2\omega_4\omega_1^2+3\omega_2\omega_3v+\omega_2u^2\omega_1^2-2\omega_2^2v^2-2v\omega_4\omega_1-2u^2\omega_3^2+\tfrac{1}{2}u\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_4-uv\omega_4\omega_1^2+2u\omega_3v^2\omega_4^2-2u^2\omega_3\omega_4\omega_1-6\omega_2uv\omega_1-\tfrac{1}{2}\omega_2u\omega_1^2-\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{4}\omega_3\omega_4\omega_1-3\omega_3v\omega_4-\tfrac{1}{2}\omega_2u\omega_3\omega_1-\omega_2\omega_3+\omega_2u\omega_3v\omega_1+v\omega_4^2\omega_1-2u\omega_3^2+2u\omega_3v\omega_4^2-\tfrac{1}{2}u\omega_4\omega_1^2+2\omega_3+4\omega_2uv^2\omega_4\omega_1-2v\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v-\omega_2u\omega_3v\omega_4-\omega_2^2u\omega_3v+\tfrac{1}{2}\omega_2u\omega_3\omega_4+2u^2\omega_3^2v\omega_4-2u^2\omega_1^2+\omega_2u^2\omega_3^2-\tfrac{1}{2}\omega_2v\omega_4\omega_1+2\omega_2^2u\omega_3v^2-2\omega_2u^2v\omega_1^2+\tfrac{1}{4}\omega_2\omega_3\omega_1-2\omega_2\omega_3v^2\omega_4+\tfrac{1}{4}\omega_3^2\omega_4-2\omega_2u\omega_3^2v+\tfrac{1}{2}\omega_3v\omega_4\omega_1-\omega_4\omega_1+4v\omega_4+\omega_2^2\omega_3v^2+3u\omega_4\omega_1-6u\omega_3v\omega_4+\omega_2^2uv\omega_1-\tfrac{1}{2}\omega_3^2+2\omega_4-2uv\omega_4^2\omega_1+4u^2\omega_3\omega_1+4\omega_2v^2\omega_4+2u^2v\omega_4\omega_1^2-\tfrac{1}{2}u\omega_3\omega_4\omega_1-4\omega_2v+2\omega_2u\omega_1+\omega_1+\tfrac{1}{4}\omega_2\omega_3\omega_4+\omega_3v\omega_4^2+4u\omega_3+u\omega_3^2\omega_4+\tfrac{1}{4}\omega_2\omega_3^2-\tfrac{1}{2}\omega_2^2v\omega_1,$$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=$

$$-1-3\omega_3v^2\omega_4\omega_1+3{c_s}^2\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_2v^2\omega_4\omega_1-{c_s}^2v\omega_4^2\omega_1-\omega_3\omega_1-5\omega_2\omega_3v^2-v^3\omega_4^2+\omega_2^2v^2\omega_1+3\omega_2\omega_3v\omega_1-\tfrac{1}{2}\omega_3v^2\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2+{c_s}^2\omega_2\omega_3v\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4+{c_s}^2\omega_3v\omega_4^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_2\omega_4-\tfrac{5}{2}\omega_2v\omega_1-\omega_2\omega_3^2v^2\omega_1-2\omega_2^2\omega_3v^3\omega_1-2v^2\omega_4+\tfrac{1}{2}\omega_2v\omega_1^2-\tfrac{1}{2}v^2\omega_4^2\omega_1+2\omega_2^2v^3\omega_1+\omega_3v^3\omega_4^2+\tfrac{1}{2}\omega_2-2\omega_2^2v^3+\tfrac{1}{2}v^2\omega_4^2-\omega_3v^3\omega_4^2\omega_1-\tfrac{1}{2}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3v-\omega_2^2v^2-\omega_2^2\omega_3v^2\omega_1+v\omega_4\omega_1-\tfrac{5}{2}{c_s}^2\omega_3\omega_4+\tfrac{5}{2}\omega_3v^2\omega_4-\tfrac{1}{2}\omega_2\omega_3v\omega_1^2+\tfrac{1}{2}\omega_3v^2\omega_4\omega_1^2+\tfrac{1}{2}{c_s}^2\omega_4^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2-{c_s}^2\omega_3v\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4+\tfrac{1}{2}{c_s}^2\omega_2\omega_4\omega_1+4\omega_2v^2+\tfrac{1}{2}\omega_2\omega_3^2v+\tfrac{1}{2}\omega_3\omega_4\omega_1+\omega_3v\omega_4-\omega_2\omega_3v^2\omega_1^2+\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_2\omega_3-{c_s}^2\omega_2v\omega_4-{c_s}^2\omega_2\omega_3v\omega_4\omega_1-\tfrac{5}{2}{c_s}^2\omega_4\omega_1+\omega_3+\tfrac{1}{2}\omega_3^2v^2\omega_4\omega_1-3\omega_2\omega_3v^3\omega_4-\tfrac{1}{2}\omega_3^2v^2\omega_4+2{c_s}^2\omega_4+\tfrac{5}{2}v^2\omega_4\omega_1+\omega_2v^2\omega_1^2+3\omega_2v^3\omega_4-3\omega_2v^3\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3\omega_1+{c_s}^2\omega_2v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1-\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_2\omega_3^2v\omega_1-\tfrac{1}{2}\omega_4\omega_1-5\omega_2v^2\omega_1-\tfrac{1}{2}{c_s}^2\omega_4^2-\tfrac{1}{2}v^2\omega_4\omega_1^2-v\omega_4+\omega_2^2\omega_3v^2-\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1+\tfrac{1}{2}\omega_3v^2\omega_4^2\omega_1+3\omega_2\omega_3v^3\omega_4\omega_1+\tfrac{1}{2}\omega_4+\tfrac{1}{2}{c_s}^2\omega_4\omega_1^2+{c_s}^2v\omega_4^2-\tfrac{1}{2}\omega_2v^2\omega_4+2\omega_2^2\omega_3v^3+v^3\omega_4^2\omega_1+\omega_2\omega_3^2v^2+2\omega_2v+\omega_1+6\omega_2\omega_3v^2\omega_1,$$

$\alpha^{[\mu_5],t-3\delta_t}_{x,y-\delta_l}=$

$$3-\tfrac{1}{2}\omega_2\omega_4\omega_1+\tfrac{1}{2}\omega_4^2+4\omega_2v^2\omega_4\omega_1+\omega_2v\omega_4+5\omega_3\omega_1+\omega_2^2v-2\omega_2^2v^2\omega_1+v\omega_4\omega_1^2-7\omega_2\omega_3v\omega_1-2\omega_3v^2\omega_4^2-\tfrac{1}{2}\omega_2\omega_1^2-\omega_2\omega_3v\omega_4+\tfrac{1}{2}\omega_2\omega_3^2\omega_1-2\omega_3v\omega_4^2\omega_1+3\omega_3\omega_4+\tfrac{1}{2}\omega_2\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2\omega_1+6\omega_2v\omega_1+\omega_1^2-\omega_2v\omega_1^2-2v^2\omega_4^2\omega_1+\omega_3^2v\omega_4-\tfrac{3}{2}\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+2v^2\omega_4^2+2\omega_2\omega_1-4\omega_2\omega_3v^2\omega_4\omega_1-\omega_3^2v\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4^2+6\omega_2\omega_3v+\tfrac{1}{2}\omega_3\omega_4^2\omega_1+2\omega_2^2v^2+2\omega_2^2\omega_3v^2\omega_1-\omega_3\omega_1^2-6v\omega_4\omega_1+\tfrac{1}{2}\omega_2\omega_4+\omega_2\omega_3v\omega_1^2+\omega_2^2\omega_3v\omega_1-\omega_2\omega_3^2v-\tfrac{7}{2}\omega_3\omega_4\omega_1-6\omega_3v\omega_4+2\omega_2\omega_3+2v\omega_4^2\omega_1-4\omega_3+\omega_2\omega_3v\omega_4\omega_1-\tfrac{1}{2}\omega_4\omega_1^2-2v\omega_4^2-\omega_2^2\omega_3v+\tfrac{1}{2}\omega_2\omega_3\omega_1^2-\omega_3v\omega_4\omega_1^2-\omega_2v\omega_4\omega_1-\tfrac{5}{2}\omega_2\omega_3\omega_1+4\omega_2\omega_3v^2\omega_4-\tfrac{1}{2}\omega_3^2\omega_4+7\omega_3v\omega_4\omega_1+\omega_2\omega_3^2v\omega_1+3\omega_4\omega_1+5v\omega_4-2\omega_2^2\omega_3v^2+\omega_3^2+2\omega_3v^2\omega_4^2\omega_1-\tfrac{5}{2}\omega_4-4\omega_2v^2\omega_4+\tfrac{1}{2}\omega_3\omega_4\omega_1^2-\omega_3^2\omega_1-5\omega_2v-4\omega_1-\tfrac{1}{2}\omega_2\omega_3\omega_4+2\omega_3v\omega_4^2-\tfrac{1}{2}\omega_2\omega_3^2-\omega_2^2v\omega_1,$$

$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y}=$

$$-2+\tfrac{1}{2}\omega_2\omega_4\omega_1-\tfrac{1}{2}\omega_2^2u^2\omega_3-\tfrac{1}{2}\omega_3v^2\omega_4\omega_1-2\omega_2u^2\omega_3^2v^2\omega_4+{c_s}^2\omega_3\omega_4\omega_1+8\omega_2u^2v^2\omega_4\omega_1+2u^2\omega_3v^2\omega_4^2\omega_1-5u\omega_3v^2\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2-\tfrac{1}{2}\omega_2\omega_3^2v^2\omega_4+6\omega_2v^2\omega_4\omega_1+2\omega_2^2u^2\omega_3v^2+{c_s}^2u\omega_4\omega_1^2-3\omega_2u^2\omega_1-5\omega_2\omega_3v^2+\tfrac{1}{2}\omega_2^2u\omega_3\omega_1+u\omega_3\omega_4-\omega_2^2v^2\omega_1-u^2\omega_3-\tfrac{5}{2}\omega_3v^2\omega_4^2+\tfrac{1}{2}{c_s}^2\omega_3\omega_4^2+4\omega_2u^2v^2\omega_1^2+u\omega_1+\omega_2^2v^2\omega_4+u\omega_3\omega_1+\omega_2u\omega_3v^2\omega_4^2-2u^2v^2\omega_4\omega_1^2-\tfrac{1}{2}\omega_2u^2\omega_3\omega_4\omega_1+3\omega_2u\omega_3-{c_s}^2\omega_2\omega_3\omega_4\omega_1-3uv^2\omega_4^2\omega_1+4{c_s}^2\omega_2u^2\omega_3\omega_4\omega_1+\tfrac{1}{2}{c_s}^2\omega_2^2\omega_3-u^2\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4+{c_s}^2\omega_2^2u\omega_3\omega_4-4{c_s}^2\omega_2\omega_4-2u\omega_3v^2\omega_4^2\omega_1+\tfrac{1}{2}\omega_2^2u\omega_1-3v^2\omega_4-{c_s}^2\omega_2u\omega_4\omega_1^2+\tfrac{3}{2}\omega_2u^2\omega_3\omega_1-\tfrac{5}{2}v^2\omega_4^2\omega_1-\omega_2^2+{c_s}^2\omega_3+\tfrac{3}{2}{c_s}^2\omega_2\omega_3\omega_1+3\omega_2+\tfrac{1}{2}\omega_2u\omega_4\omega_1+6{c_s}^2\omega_2u\omega_4\omega_1-\tfrac{1}{2}{c_s}^2\omega_2^2\omega_4\omega_1+5v^2\omega_4^2-{c_s}^2\omega_3\omega_1+2{c_s}^2\omega_2u\omega_3^2\omega_4-2u^2\omega_3^2v^2\omega_4-\tfrac{3}{2}\omega_2\omega_1-\tfrac{1}{2}\omega_2\omega_3v^2\omega_4\omega_1-14\omega_2u\omega_3v^2\omega_4-2\omega_2^2u\omega_3v^2\omega_1+10\omega_2u\omega_3v^2-2{c_s}^2\omega_2^2\omega_3v^2+{c_s}^2\omega_2\omega_4^2-\tfrac{1}{2}\omega_2^2\omega_3v^2\omega_4-4{c_s}^2\omega_2\omega_3v^2\omega_4\omega_1+2\omega_2^2v^2-5{c_s}^2u\omega_4\omega_1+\omega_2^2u\omega_3v^2\omega_4-\tfrac{1}{2}{c_s}^2\omega_2\omega_4^2\omega_1+2{c_s}^2\omega_2^2\omega_3v^2\omega_1+\tfrac{1}{2}\omega_2^2\omega_3+2\omega_2u\omega_3v^2\omega_1-3{c_s}^2\omega_3\omega_4-\omega_2\omega_4+\tfrac{5}{2}\omega_3v^2\omega_4-4{c_s}^2u^2\omega_3\omega_4\omega_1+3\omega_2u\omega_3v^2\omega_4\omega_1+4\omega_2u^2\omega_3^2v^2+\tfrac{1}{2}{c_s}^2\omega_4^2\omega_1+5u\omega_3v^2\omega_4^2+\tfrac{1}{2}u^2\omega_3\omega_4\omega_1-2\omega_2u^2v^2\omega_4\omega_1^2+\tfrac{7}{2}{c_s}^2\omega_2\omega_3\omega_4-$$

$\omega_2 uv^2\omega_4^2\omega_1 - 2{c_s}^2 u\omega_3^2\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4 + 2{c_s}^2\omega_2\omega_4\omega_1 + \omega_2 u^2\omega_4\omega_1 + 6\omega_2 v^2 + {c_s}^2 u\omega_4^2\omega_1 + \frac{1}{2}{c_s}^2\omega_3^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_1 - \frac{3}{2}\omega_2 u\omega_3\omega_1 - \frac{3}{2}\omega_2\omega_3 - \frac{1}{2}\omega_2^2 v^2\omega_4\omega_1 - \frac{3}{2}{c_s}^2\omega_4\omega_1 + \omega_3 + 5{c_s}^2 u\omega_3\omega_4 + 2\omega_2 u\omega_3^2 v^2\omega_4 + \omega_2 v^2\omega_4^2 - \frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4 + 10\omega_2 uv^2\omega_4\omega_1 - 10\omega_2 uv^2\omega_1 - 2{c_s}^2\omega_2 u^2\omega_3^2\omega_4 - 2{c_s}^2\omega_3 v^2\omega_4^2 - \frac{1}{2}\omega_3^2 v^2\omega_4 + 3{c_s}^2\omega_4 + \frac{3}{2}v^2\omega_4\omega_1 - {c_s}^2\omega_2 u\omega_4^2\omega_1 - \omega_2^2 uv^2\omega_4\omega_1 + 2{c_s}^2 u^2\omega_3^2\omega_4 - \omega_2 u\omega_3\omega_4 - 4u^2 v^2\omega_4^2\omega_1 - {c_s}^2\omega_2 u\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4^2 + \frac{1}{2}\omega_2^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4 - 6{c_s}^2\omega_2 u\omega_3\omega_4 - 4\omega_2 u\omega_3^2 v^2 + \frac{1}{2}\omega_2 u\omega_3\omega_4\omega_1 - uv^2\omega_4\omega_1^2 + 2\omega_2^2 u^2\omega_3 v^2\omega_1 + 4{c_s}^2\omega_2\omega_3 v^2\omega_4 + 2\omega_2^2 u\omega_3 v^2 + {c_s}^2\omega_2 u\omega_3\omega_4^2 + 2u^2\omega_1 + 7\omega_2\omega_3 v^2\omega_4 - 4\omega_2^2 u^2 v^2\omega_1 + {c_s}^2\omega_2^2\omega_4 + 2u\omega_3^2 v^2\omega_4 + 5uv^2\omega_4\omega_1 - \frac{3}{2}{c_s}^2\omega_2\omega_3 + \frac{3}{2}\omega_2 u^2\omega_3 - 4\omega_2 u^2\omega_3 v^2\omega_4 - u\omega_3 v^2\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1 - 3\omega_2 v^2\omega_1 + \frac{1}{2}u^2\omega_3\omega_4 - {c_s}^2\omega_2^2 u\omega_4\omega_1 - {c_s}^2\omega_4^2 - \frac{1}{2}\omega_2^2 u^2\omega_3\omega_1 + 2{c_s}^2 u^2\omega_4\omega_1^2 + \omega_2^2 u^2\omega_1 - \omega_2^2\omega_3 v^2 - \frac{1}{2}u\omega_4\omega_1 + 4u^2\omega_3 v^2\omega_4\omega_1 + 2{c_s}^2\omega_3 v^2\omega_4^2\omega_1 - \omega_2^2 u\omega_3 + \omega_4 - u^2\omega_3\omega_1 - 12\omega_2 v^2\omega_4 - {c_s}^2 u\omega_3\omega_4^2 + {c_s}^2 u\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_2 v^2\omega_4^2\omega_1 + 2u^2\omega_3 v^2\omega_4^2 - \omega_2 uv^2\omega_4\omega_1^2 + 2\omega_2 uv^2\omega_1^2 - \frac{1}{2}u\omega_3\omega_4\omega_1 - 2{c_s}^2\omega_2 u^2\omega_4\omega_1^2 - 8\omega_2 u^2\omega_3 v^2\omega_1 + \omega_2\omega_3^2 v^2 - \frac{3}{2}\omega_2 u\omega_1 + \omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 + \omega_2\omega_3 v^2\omega_1 - 2u\omega_3,$

$\alpha_{x-\delta_l,y}^{[\mu_5],t-3\delta_t} = 3 - \frac{5}{2}\omega_2\omega_4\omega_1 + \omega_4^2 - u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1 - 6u\omega_3\omega_4 - \omega_2\omega_4^2 + \frac{1}{2}\omega_2\omega_3^2\omega_4 - 5u\omega_1 + u\omega_3\omega_1 - 4\omega_2 u^2\omega_3\omega_4\omega_1 - \omega_2^2 u\omega_3\omega_4 - 6\omega_2 u\omega_3 + 3\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2\omega_1 - 2u^2\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_3\omega_4 + \omega_2 u\omega_4\omega_1^2 - \omega_2^2 u\omega_1 + 4\omega_2 u^2\omega_3\omega_1 + \omega_2^2 - 4\omega_2 - 7\omega_2 u\omega_4\omega_1 + u\omega_1^2 + 2\omega_2\omega_1 - 2\omega_2 u\omega_3^2\omega_4 + 2\omega_2 u\omega_3^2 - \frac{1}{2}\omega_3\omega_4^2 - 2u^2\omega_4\omega_1^2 - 2\omega_2 u^2\omega_1^2 + 2u^2\omega_3^2 + u\omega_3\omega_4^2 - \frac{1}{2}\omega_2^2\omega_3 + 5\omega_2\omega_4 + 4u^2\omega_3\omega_4\omega_1 - \omega_2 u\omega_1^2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4^2 - \omega_2 u\omega_3\omega_1 + 3\omega_2\omega_3 - 2u\omega_3^2 - u\omega_4\omega_1^2 - \frac{5}{2}\omega_3 + 2\omega_2 u^2\omega_3^2\omega_4 + \omega_2 u\omega_4^2\omega_1 + 7\omega_2 u\omega_3\omega_4 - \frac{1}{2}\omega_2^2\omega_1 + 2u^2\omega_1^2 - 2\omega_2 u^2\omega_3^2 + \omega_2 u\omega_3\omega_4\omega_1 - \omega_2 u\omega_3\omega_4^2 - \frac{1}{2}\omega_2\omega_3\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_4\omega_1 + \omega_2^2 u\omega_4\omega_1 + 2\omega_4\omega_1 + 6u\omega_4\omega_1 + \frac{1}{2}\omega_3^2 + \omega_2^2 u\omega_3 + \frac{1}{2}\omega_2\omega_4^2\omega_1 - 4\omega_4 - 4u^2\omega_3\omega_1 - u\omega_3\omega_4\omega_1 + 2\omega_2 u^2\omega_4\omega_1^2 + 6\omega_2 u\omega_1 - \frac{3}{2}\omega_1 - \frac{7}{2}\omega_2\omega_3\omega_4 + 5u\omega_3 + 2u\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_3^2,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} =$
$-2 + \omega_2\omega_4\omega_1 + \omega_2^2 u^2\omega_3 + 4\omega_2 u^2\omega_3^2 v^2\omega_4 - {c_s}^2\omega_3\omega_4\omega_1 - 16\omega_2 u^2 v^2\omega_4\omega_1 - 4u^2\omega_3 v^2\omega_4^2\omega_1 - \omega_2^2\omega_3\omega_1 + 10\omega_2 v^2\omega_4\omega_1 - 4\omega_2^2 u^2\omega_3 v^2 - 2\omega_3\omega_1 + 6\omega_2 u^2\omega_1 - 4\omega_2^2 v^2\omega_1 + 2u^2\omega_3 - 4\omega_3 v^2\omega_4^2 - 8\omega_2 u^2 v^2\omega_1^2 + 4u^2 v^2\omega_4\omega_1^2 + \omega_2 u^2\omega_3\omega_4\omega_1 + {c_s}^2\omega_2\omega_3\omega_4\omega_1 - 8{c_s}^2\omega_2 u^2\omega_3\omega_4\omega_1 - {c_s}^2\omega_2^2\omega_3 + 2u^2\omega_4\omega_1 - \omega_3\omega_4 - {c_s}^2\omega_2\omega_4 - \omega_2\omega_3\omega_4\omega_1 - v^2\omega_4 - 3\omega_2 u^2\omega_3\omega_1 - 4v^2\omega_4^2\omega_1 - \omega_2^2 - 2{c_s}^2\omega_3 - 3{c_s}^2\omega_2\omega_3\omega_1 + 3\omega_2 + 4v^2\omega_4^2 + 2{c_s}^2\omega_3\omega_1 + 4u^2\omega_3^2 v^2\omega_4 - 3\omega_2\omega_1 - 8\omega_2\omega_3 v^2\omega_4\omega_1 + 4{c_s}^2\omega_2^2\omega_3 v^2 + 8{c_s}^2\omega_2\omega_3 v^2\omega_4\omega_1 + 4\omega_2^2 v^2 + 4\omega_2^2\omega_3 v^2\omega_1 - 4{c_s}^2\omega_2^2\omega_3 v^2\omega_1 + \omega_2^2\omega_3 + {c_s}^2\omega_3\omega_4 - \omega_2\omega_4 + 8{c_s}^2 u^2\omega_3\omega_4\omega_1 - 8\omega_2 u^2\omega_3^2 v^2 - u^2\omega_3\omega_4\omega_1 + 4\omega_2 u^2 v^2\omega_4\omega_1^2 - {c_s}^2\omega_2\omega_3\omega_4 + \omega_2 u^2\omega_3\omega_4 - \omega_2 v^2\omega_4\omega_1^2 + 2{c_s}^2\omega_2\omega_4\omega_1 - 2\omega_2 u^2\omega_4\omega_1 + 2\omega_2 v^2 + \omega_3\omega_4\omega_1 + {c_s}^2\omega_2^2\omega_3\omega_1 - 3\omega_2\omega_3 - 2{c_s}^2\omega_4\omega_1 + 2\omega_3 + 4{c_s}^2\omega_2 u^2\omega_3^2\omega_4 + 4{c_s}^2\omega_3 v^2\omega_4^2 + {c_s}^2\omega_4 + 2v^2\omega_4\omega_1 + 2\omega_2 v^2\omega_1^2 - 4{c_s}^2 u^2\omega_3^2\omega_4 + 8u^2 v^2\omega_4^2\omega_1 + \omega_2^2\omega_1 - 4\omega_2^2 u^2\omega_3 v^2\omega_1 - 8{c_s}^2\omega_2\omega_3 v^2\omega_4 + 3\omega_2\omega_3\omega_1 - 4u^2\omega_1 + 8\omega_2\omega_3 v^2\omega_4 + 8\omega_2^2 u^2 v^2\omega_1 + 3{c_s}^2\omega_2\omega_3 - 3\omega_2 u^2\omega_3 + 8\omega_2 u^2\omega_3 v^2\omega_4 - \omega_4\omega_1 - 4\omega_2 v^2\omega_1 - u^2\omega_3\omega_4 - v^2\omega_4\omega_1^2 + \omega_2^2 u^2\omega_3\omega_1 - 4{c_s}^2 u^2\omega_4\omega_1^2 - 2\omega_2^2 u^2\omega_1 - 4\omega_2^2\omega_3 v^2 - 8u^2\omega_3 v^2\omega_4\omega_1 - 4{c_s}^2\omega_3 v^2\omega_4^2\omega_1 + 4\omega_3 v^2\omega_4^2\omega_1 + \omega_4 + {c_s}^2\omega_4\omega_1^2 + 2u^2\omega_3\omega_1 - 9\omega_2 v^2\omega_4 - 4u^2\omega_3 v^2\omega_4^2 - {c_s}^2\omega_2\omega_4\omega_1^2 + 4{c_s}^2\omega_2 u^2\omega_4\omega_1^2 + 16\omega_2 u^2\omega_3 v^2\omega_1 + 2\omega_1 + \omega_2\omega_3\omega_4,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t} = 3 - 3\omega_2\omega_4\omega_1 + \omega_2^2\omega_3\omega_1 - 8\omega_2 v^2\omega_4\omega_1 + 2\omega_3\omega_1 + 4\omega_2^2 v^2\omega_1 + 4\omega_3 v^2\omega_4^2 - \omega_2\omega_1^2 + 8\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_3\omega_4 + \omega_2\omega_3\omega_4\omega_1 + 4u^2\omega_3^2\omega_4 + \omega_1^2 - 8\omega_2 u^2\omega_3\omega_1 + 4v^2\omega_4^2\omega_1 + \omega_2^2 - 4\omega_2 - 4v^2\omega_4^2 + 5\omega_2\omega_1 + 8\omega_2\omega_3 v^2\omega_4\omega_1 + 4u^2\omega_4\omega_1^2 + 4\omega_2 u^2\omega_1^2 - 4\omega_2^2 v^2 - 4\omega_2^2\omega_3 v^2\omega_1 - 4u^2\omega_3^2 - \omega_2^2\omega_3 + 2\omega_2\omega_4 + \omega_2\omega_4\omega_1^2 - 8u^2\omega_3\omega_4\omega_1 - \omega_3\omega_4\omega_1 + 3\omega_2\omega_3 - 2\omega_3 - 4\omega_2 u^2\omega_3^2\omega_4 - \omega_4\omega_1^2 - \omega_2^2\omega_1 - 4u^2\omega_1^2 + 4\omega_2 u^2\omega_3^2 - 3\omega_2\omega_3\omega_1 - 8\omega_2\omega_3 v^2\omega_4 + 3\omega_4\omega_1 + 4\omega_2^2\omega_3 v^2 - 4\omega_3 v^2\omega_4^2\omega_1 - 2\omega_4 + 8u^2\omega_3\omega_1 + 8\omega_2 v^2\omega_4 - 4\omega_2 u^2\omega_4\omega_1^2 - 4\omega_1 - \omega_2\omega_3\omega_4,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -2 + \frac{1}{2}\omega_2\omega_4\omega_1 - \frac{1}{2}\omega_2^2 u^2\omega_3 - \frac{1}{2}\omega_3 v^2\omega_4\omega_1 - 2\omega_2 u^2\omega_3^2 v^2\omega_4 + {c_s}^2\omega_3\omega_4\omega_1 + 8\omega_2 u^2 v^2\omega_4\omega_1 + 2u^2\omega_3 v^2\omega_4^2\omega_1 + 5u\omega_3 v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4^2 - \frac{1}{2}\omega_2\omega_3^2 v^2\omega_4 + 6\omega_2 v^2\omega_4\omega_1 + 2\omega_2^2 u^2\omega_3 v^2 - {c_s}^2 u\omega_4\omega_1^2 - 3\omega_2 u^2\omega_1 - 5\omega_2\omega_3 v^2 - \frac{1}{2}\omega_2^2 u\omega_3\omega_1 - u\omega_3\omega_4 - \omega_2^2 v^2\omega_1 - u^2\omega_3 - \frac{5}{2}\omega_3 v^2\omega_4^2 + \frac{1}{2}{c_s}^2\omega_3\omega_4^2 + 4\omega_2 u^2 v^2\omega_1^2 - u\omega_1 + \omega_2^2 v^2\omega_4 - u\omega_3\omega_1 - \omega_2 u\omega_3 v^2\omega_4^2 - 2u^2 v^2\omega_4\omega_1^2 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4\omega_1 - 3\omega_2 u\omega_3 - {c_s}^2\omega_2\omega_3\omega_4\omega_1 + 3uv^2\omega_4^2\omega_1 + 4{c_s}^2\omega_2 u^2\omega_3\omega_4\omega_1 + \frac{1}{2}{c_s}^2\omega_2^2\omega_3 - u^2\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - {c_s}^2\omega_2^2 u\omega_3\omega_4 - 4{c_s}^2\omega_2\omega_4 + 2u\omega_3 v^2\omega_4^2\omega_1 - \frac{1}{2}\omega_2^2 u\omega_1 - 3v^2\omega_4 + {c_s}^2\omega_2 u\omega_4\omega_1^2 + \frac{3}{2}\omega_2 u^2\omega_3\omega_1 - \frac{5}{2}v^2\omega_4^2\omega_1 - \omega_2^2 + {c_s}^2\omega_3 + \frac{3}{2}{c_s}^2\omega_2\omega_3\omega_1 + 3\omega_2 - \frac{1}{2}\omega_2 u\omega_4\omega_1 - 6{c_s}^2\omega_2 u\omega_4\omega_1 - \frac{1}{2}{c_s}^2\omega_2^2\omega_4\omega_1 + 5v^2\omega_4^2 - {c_s}^2\omega_3\omega_1 - 2{c_s}^2\omega_2 u\omega_3^2\omega_4 - 2u^2\omega_3^2 v^2\omega_4 - \frac{3}{2}\omega_2\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4\omega_1 + 14\omega_2 u\omega_3 v^2\omega_4 + 2\omega_2^2 u\omega_3 v^2\omega_1 - 10\omega_2 u\omega_3 v^2 - 2{c_s}^2\omega_2^2\omega_3 v^2 + {c_s}^2\omega_2\omega_4^2 - \frac{1}{2}\omega_2^2\omega_3 v^2\omega_4 - 4{c_s}^2\omega_2\omega_3 v^2\omega_4\omega_1 + 2\omega_2^2 v^2 + 5{c_s}^2 u\omega_4\omega_1 - \omega_2^2 u\omega_3 v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_4^2\omega_1 + 2{c_s}^2\omega_2^2\omega_3 v^2\omega_1 + \frac{1}{2}\omega_2^2\omega_3 - 2\omega_2 u\omega_3 v^2\omega_1 - 3{c_s}^2\omega_3\omega_4 - \omega_2\omega_4 + \frac{5}{2}\omega_3 v^2\omega_4 - 4{c_s}^2 u^2\omega_3\omega_4\omega_1 - 3\omega_2 u\omega_3 v^2\omega_4\omega_1 + 4\omega_2 u^2\omega_3^2 v^2 + \frac{1}{2}{c_s}^2\omega_4^2\omega_1 - 5u\omega_3 v^2\omega_4^2 + \frac{1}{2}u^2\omega_3\omega_4\omega_1 - 2\omega_2 u^2 v^2\omega_4\omega_1^2 + \frac{7}{2}{c_s}^2\omega_2\omega_3\omega_4 + \omega_2 uv^2\omega_4^2\omega_1 + 2{c_s}^2 u\omega_3^2\omega_4 - \frac{1}{2}\omega_2 u^2\omega_3\omega_4 + 2{c_s}^2\omega_2\omega_4\omega_1 + \omega_2 u^2\omega_4\omega_1 + 6\omega_2 v^2 - {c_s}^2 u\omega_4^2\omega_1 + \frac{1}{2}{c_s}^2\omega_3^2\omega_4 - \frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_1 + \frac{3}{2}\omega_2 u\omega_3\omega_1 - \frac{3}{2}\omega_2\omega_3 - \frac{1}{2}\omega_2^2 v^2\omega_4\omega_1 - \frac{3}{2}{c_s}^2\omega_4\omega_1 + \omega_3 - 5{c_s}^2 u\omega_3\omega_4 - 2\omega_2 u\omega_3^2 v^2\omega_4 + \omega_2 v^2\omega_4^2 -$

$\frac{1}{2}{c_s}^2\omega_2\omega_3^2\omega_4 - 10\omega_2 u v^2\omega_4\omega_1 + 10\omega_2 u v^2\omega_1 - 2{c_s}^2\omega_2 u^2\omega_3^2\omega_4 - 2{c_s}^2\omega_3 v^2\omega_4^2 - \frac{1}{2}\omega_3^2 v^2\omega_4 + 3{c_s}^2\omega_4 + \frac{3}{2}v^2\omega_4\omega_1 + {c_s}^2\omega_2 u\omega_4^2\omega_1 + \omega_2^2 u v^2\omega_4\omega_1 + 2{c_s}^2 u^2\omega_3^2\omega_4 + \omega_2 u\omega_3\omega_4 - 4u^2 v^2\omega_4^2\omega_1 + {c_s}^2\omega_2 u\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4^2 + \frac{1}{2}\omega_2^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2^2\omega_3\omega_4 + 6{c_s}^2\omega_2 u\omega_3\omega_4 + 4\omega_2 u\omega_3^2 v^2 - \frac{1}{2}\omega_2 u\omega_3\omega_4\omega_1 + u v^2\omega_4\omega_1^2 + 2\omega_2^2 u^2\omega_3 v^2\omega_1 + 4{c_s}^2\omega_2\omega_3 v^2\omega_4 - 2\omega_2^2 u\omega_3 v^2 - {c_s}^2\omega_2 u\omega_3\omega_4^2 + 2u^2\omega_1 + 7\omega_2\omega_3 v^2\omega_4 - 4\omega_2^2 u^2 v^2\omega_1 + {c_s}^2\omega_2^2\omega_4 - 2u\omega_3^2 v^2\omega_4 - 5u v^2\omega_4\omega_1 - \frac{3}{2}{c_s}^2\omega_2\omega_3 + \frac{3}{2}\omega_2 u^2\omega_3 - 4\omega_2 u^2\omega_3 v^2\omega_4 + u\omega_3 v^2\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1 - 3\omega_2 v^2\omega_1 + \frac{1}{2}u^2\omega_3\omega_4 + {c_s}^2\omega_2^2 u\omega_4\omega_1 - {c_s}^2\omega_4^2 - \frac{1}{2}\omega_2^2 u^2\omega_3\omega_1 + 2{c_s}^2 u^2\omega_4\omega_1^2 + \omega_2^2 u^2\omega_1 - \omega_2^2\omega_3 v^2 + \frac{1}{2}u\omega_4\omega_1 + 4u^2\omega_3 v^2\omega_4\omega_1 + 2{c_s}^2\omega_3 v^2\omega_4^2\omega_1 + \omega_2^2 u\omega_3 + \omega_4 - u^2\omega_3\omega_1 - 12\omega_2 v^2\omega_4 + {c_s}^2 u\omega_3\omega_4^2 - {c_s}^2 u\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_2 v^2\omega_4^2\omega_1 + 2u^2\omega_3 v^2\omega_4^2 + \omega_2 u v^2\omega_4\omega_1^2 - 2\omega_2 u v^2\omega_1^2 + \frac{1}{2}u\omega_3\omega_4\omega_1 - 2{c_s}^2\omega_2 u^2\omega_4\omega_1^2 - 8\omega_2 u^2\omega_3 v^2\omega_1 + \omega_2\omega_3^2 v^2 + \frac{3}{2}\omega_2 u\omega_1 + \omega_1 + \frac{1}{2}\omega_2\omega_3\omega_4 + \omega_2\omega_3 v^2\omega_1 + 2u\omega_3,$

$\alpha^{[\mu_5],t-3\delta_t}_{x+\delta_l,y} = 3 - \frac{5}{2}\omega_2\omega_4\omega_1 + \omega_4^2 + u\omega_4^2\omega_1 + \frac{1}{2}\omega_3\omega_1 + 6u\omega_3\omega_4 - \omega_2\omega_4^2 + \frac{1}{2}\omega_2\omega_3^2\omega_4 + 5u\omega_1 - u\omega_3\omega_1 - 4\omega_2 u^2\omega_3\omega_4\omega_1 + \omega_2^2 u\omega_3\omega_4 + 6\omega_2 u\omega_3 + 3\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2\omega_1 - 2u^2\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_3\omega_4 - \omega_2 u\omega_4\omega_1^2 + \omega_2^2 u\omega_1 + 4\omega_2 u^2\omega_3\omega_1 + \omega_2^2 - 4\omega_2 + 7\omega_2 u\omega_4\omega_1 - u\omega_1^2 + 2\omega_2\omega_1 + 2\omega_2 u\omega_3^2\omega_4 - 2\omega_2 u\omega_3^2 - \frac{1}{2}\omega_3\omega_4^2 - 2u^2\omega_4\omega_1^2 - 2\omega_2 u^2\omega_1^2 + 2u^2\omega_3^2 - u\omega_3\omega_4^2 - \frac{1}{2}\omega_2^2\omega_3 + 5\omega_2\omega_4 + 4u^2\omega_3\omega_4\omega_1 + \omega_2 u\omega_1^2 - \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4^2 + \omega_2 u\omega_3\omega_1 + 3\omega_2\omega_3 + 2u\omega_3^2 + u\omega_4\omega_1^2 - \frac{5}{2}\omega_3 + 2\omega_2 u^2\omega_3^2\omega_4 - \omega_2 u\omega_4^2\omega_1 - 7\omega_2 u\omega_3\omega_4 - \frac{1}{2}\omega_2^2\omega_1 + 2u^2\omega_1^2 - 2\omega_2 u^2\omega_3^2 - \omega_2 u\omega_3\omega_4\omega_1 + \omega_2 u\omega_3\omega_4^2 - \frac{1}{2}\omega_2\omega_3\omega_1 - \frac{1}{2}\omega_3^2\omega_4 + \frac{1}{2}\omega_2^2\omega_4\omega_1 - \omega_2^2 u\omega_4\omega_1 + 2\omega_4\omega_1 - 6u\omega_4\omega_1 + \frac{1}{2}\omega_3^2 - \omega_2^2 u\omega_3 + \frac{1}{2}\omega_2\omega_4^2\omega_1 - 4\omega_4 - 4u^2\omega_3\omega_1 + u\omega_3\omega_4\omega_1 + 2\omega_2 u^2\omega_4\omega_1^2 - 6\omega_2 u\omega_1 - \frac{3}{2}\omega_1 - \frac{7}{2}\omega_2\omega_3\omega_4 - 5u\omega_3 - 2u\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_3^2,$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 - 3\omega_3 v^2\omega_4\omega_1 + 3{c_s}^2\omega_3\omega_4\omega_1 + \frac{1}{2}\omega_2 v^2\omega_4\omega_1 + {c_s}^2 v\omega_4^2\omega_1 - \omega_3\omega_1 - 5\omega_2\omega_3 v^2 + v^3\omega_4^2 + \omega_2^2 v^2\omega_1 - 3\omega_2\omega_3 v\omega_1 - \frac{1}{2}\omega_3 v^2\omega_4^2 + \frac{1}{2}{c_s}^2\omega_3\omega_4^2 - {c_s}^2\omega_2\omega_3 v\omega_4 - \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4 - {c_s}^2\omega_3 v\omega_4^2\omega_1 - \frac{1}{2}{c_s}^2\omega_2\omega_4 + \frac{5}{2}\omega_2 v\omega_1 - \omega_2\omega_3^2 v^2\omega_1 + 2\omega_2^2\omega_3 v^3\omega_1 - 2v^2\omega_4 - \frac{1}{2}\omega_2 v\omega_1^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 2\omega_2^2 v^3\omega_1 - \omega_3 v^3\omega_4^2 + \frac{1}{2}\omega_2 + 2\omega_2^2 v^3 + \frac{1}{2}v^2\omega_4^2 + \omega_3 v^3\omega_4^2\omega_1 - \frac{1}{2}\omega_2\omega_1 - \frac{1}{2}\omega_2\omega_3 v^2\omega_4\omega_1 + \frac{5}{2}\omega_2\omega_3 v - \omega_2^2 v^2 - \omega_2^2\omega_3 v^2\omega_1 - v\omega_4\omega_1 - \frac{5}{2}{c_s}^2\omega_3\omega_4 + \frac{5}{2}\omega_3 v^2\omega_4 + \frac{1}{2}\omega_2\omega_3 v\omega_1^2 + \frac{1}{2}\omega_3 v^2\omega_4\omega_1^2 + \frac{1}{2}{c_s}^2\omega_4^2\omega_1 - \frac{1}{2}{c_s}^2\omega_3\omega_4\omega_1^2 + {c_s}^2\omega_3 v\omega_4^2 + \frac{1}{2}{c_s}^2\omega_2\omega_3\omega_4 + \frac{1}{2}{c_s}^2\omega_2\omega_4\omega_1 + 4\omega_2 v^2 - \frac{1}{2}\omega_2\omega_3^2 v + \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_3 v\omega_4 - \omega_2\omega_3 v^2\omega_1^2 + \frac{1}{2}{c_s}^2\omega_3^2\omega_4 - \frac{1}{2}\omega_2\omega_3 + {c_s}^2\omega_2 v\omega_4 + {c_s}^2\omega_2\omega_3 v\omega_4\omega_1 - \frac{5}{2}{c_s}^2\omega_4\omega_1 + \omega_3 + \frac{1}{2}\omega_3^2 v^2\omega_4\omega_1 + 3\omega_2\omega_3 v^3\omega_4 - \frac{1}{2}\omega_3^2 v^2\omega_4 + 2{c_s}^2\omega_4 + \frac{5}{2}v^2\omega_4\omega_1 + \omega_2 v^2\omega_1^2 - 3\omega_2 v^3\omega_4 + 3\omega_2 v^3\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3\omega_1 - {c_s}^2\omega_2 v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3 v^2\omega_4 - \frac{1}{2}{c_s}^2\omega_3^2\omega_4\omega_1 + \omega_3 v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_3^2 v\omega_1 - \frac{1}{2}\omega_4\omega_1 - 5\omega_2 v^2\omega_1 - \frac{1}{2}{c_s}^2\omega_4^2 - \frac{1}{2}v^2\omega_4\omega_1^2 + v\omega_4 + \omega_2^2\omega_3 v^2 - \frac{1}{2}{c_s}^2\omega_3\omega_4^2\omega_1 + \frac{1}{2}\omega_3 v^2\omega_4^2\omega_1 - 3\omega_2\omega_3 v^3\omega_4\omega_1 + \frac{1}{2}\omega_4 + \frac{1}{2}{c_s}^2\omega_4\omega_1^2 - {c_s}^2 v\omega_4^2 - \frac{1}{2}\omega_2 v^2\omega_4 - 2\omega_2^2\omega_3 v^3 - v^3\omega_4^2\omega_1 + \omega_2\omega_3^2 v^2 - 2\omega_2 v + \omega_1 + 6\omega_2\omega_3 v^2\omega_1,$

$\alpha^{[\mu_5],t-3\delta_t}_{x,y+\delta_l} = 3 - \frac{1}{2}\omega_2\omega_4\omega_1 + \frac{1}{2}\omega_4^2 + 4\omega_2 v^2\omega_4\omega_1 - \omega_2 v\omega_4 + 5\omega_3\omega_1 - \omega_2^2 v - 2\omega_2^2 v^2\omega_1 - v\omega_4\omega_1^2 + 7\omega_2\omega_3 v\omega_1 - 2\omega_3 v^2\omega_4^2 - \frac{1}{2}\omega_2\omega_1^2 + \omega_2\omega_3 v\omega_4 + \frac{1}{2}\omega_2\omega_3^2\omega_1 + 2\omega_3 v\omega_4^2\omega_1 + 3\omega_3\omega_4 + \frac{1}{2}\omega_2\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4^2\omega_1 - 6\omega_2 v\omega_1 + \omega_1^2 + \omega_2 v\omega_1^2 - 2v^2\omega_4^2\omega_1 - \omega_3^2 v\omega_4 - \frac{3}{2}\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_1 + 2v^2\omega_4^2 + 2\omega_2\omega_1 - 4\omega_2\omega_3 v^2\omega_4\omega_1 + \omega_3^2 v\omega_4\omega_1 - \frac{1}{2}\omega_3\omega_4^2 - 6\omega_2\omega_3 v + \frac{1}{2}\omega_3\omega_4^2\omega_1 + 2\omega_2^2 v^2 + 2\omega_2^2\omega_3 v^2\omega_1 - \omega_3\omega_1^2 + 6v\omega_4\omega_1 + \frac{1}{2}\omega_2\omega_4 - \omega_2\omega_3 v\omega_1^2 - \omega_2^2\omega_3 v\omega_1 + \omega_2\omega_3^2 v - \frac{7}{2}\omega_3\omega_4\omega_1 + 6\omega_3 v\omega_4 + 2\omega_2\omega_3 - 2v\omega_4^2\omega_1 - 4\omega_3 - \omega_2\omega_3 v\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1^2 + 2v\omega_4^2 + \omega_2^2\omega_3 v + \frac{1}{2}\omega_2\omega_3\omega_1^2 + \omega_3 v\omega_4\omega_1^2 + \omega_2 v\omega_4\omega_1 - \frac{5}{2}\omega_2\omega_3\omega_1 + 4\omega_2\omega_3 v^2\omega_4 - \frac{1}{2}\omega_3^2\omega_4 - 7\omega_3 v\omega_4\omega_1 - \omega_2\omega_3^2 v\omega_1 + 3\omega_4\omega_1 - 5v\omega_4 - 2\omega_2^2\omega_3 v^2 + \omega_3^2 + 2\omega_3 v^2\omega_4^2\omega_1 - \frac{5}{2}\omega_4 - 4\omega_2 v^2\omega_4 + \frac{1}{2}\omega_3\omega_4\omega_1^2 - \omega_3^2\omega_1 + 5\omega_2 v - 4\omega_1 - \frac{1}{2}\omega_2\omega_3\omega_4 - 2\omega_3 v\omega_4^2 - \frac{1}{2}\omega_2\omega_3^2 + \omega_2^2 v\omega_1,$

$\alpha^{[\mu_1],t-4\delta_t}_{x,y} = 2 - \omega_2\omega_4\omega_1 + 6\omega_3 v^2\omega_4\omega_1 - 6{c_s}^2\omega_3\omega_4\omega_1 + \omega_2^2\omega_3\omega_1 + {c_s}^2\omega_2\omega_3\omega_4^2 + \omega_2\omega_3^2 v^2\omega_4 - 14\omega_2 v^2\omega_4\omega_1 + 2\omega_3\omega_1 + 10\omega_2\omega_3 v^2 + 2\omega_2^2 v^2\omega_1 + 5\omega_3 v^2\omega_4^2 - {c_s}^2\omega_3\omega_4^2 - \omega_2\omega_3 v^2\omega_4\omega_1^2 - \omega_2^2 v^2\omega_4 + 7{c_s}^2\omega_2\omega_3\omega_4\omega_1 + \omega_3\omega_4 + 5{c_s}^2\omega_2\omega_4 + \omega_2\omega_3\omega_4\omega_1 + 2\omega_2\omega_3^2 v^2\omega_1 + 4v^2\omega_4 + 5v^2\omega_4^2\omega_1 + \omega_2^2 - 3\omega_2 + {c_s}^2\omega_2^2\omega_4\omega_1 - 5v^2\omega_4^2 + 3\omega_2\omega_1 + 15\omega_2\omega_3 v^2\omega_4\omega_1 - {c_s}^2\omega_2\omega_3\omega_4\omega_1^2 - {c_s}^2\omega_2\omega_4^2 + \omega_2^2\omega_3 v^2\omega_4 - \omega_2^2\omega_3 v^2\omega_4\omega_1 - 2\omega_2^2 v^2 - 2\omega_2^2\omega_3 v^2\omega_1 + {c_s}^2\omega_2\omega_4^2\omega_1 - \omega_2^2\omega_3 + 5{c_s}^2\omega_3\omega_4 + \omega_2\omega_4 - 5\omega_3 v^2\omega_4 - \omega_3 v^2\omega_4\omega_1^2 - {c_s}^2\omega_4^2\omega_1 + {c_s}^2\omega_3\omega_4\omega_1^2 - 6{c_s}^2\omega_2\omega_3\omega_4 + \omega_2 v^2\omega_4\omega_1^2 - 6{c_s}^2\omega_2\omega_4\omega_1 - 8\omega_2 v^2 - \omega_3\omega_4\omega_1 + 2\omega_2\omega_3 v^2\omega_1^2 - {c_s}^2\omega_3^2\omega_4 + 3\omega_2\omega_3 + \omega_2^2 v^2\omega_4\omega_1 + 5{c_s}^2\omega_4\omega_1 - 2\omega_3 - \omega_2 v^2\omega_4^2 - \omega_3^2 v^2\omega_4\omega_1 + {c_s}^2\omega_2\omega_3^2\omega_4 + \omega_3^2 v^2\omega_4 - 4{c_s}^2\omega_4 - 5v^2\omega_4\omega_1 - 2\omega_2 v^2\omega_1^2 - {c_s}^2\omega_2^2\omega_3\omega_4\omega_1 + \omega_2\omega_3 v^2\omega_4^2 - \omega_2^2\omega_1 - \omega_2\omega_3 v^2\omega_4^2\omega_1 + {c_s}^2\omega_2^2\omega_3\omega_4 - 3\omega_2\omega_3\omega_1 - 14\omega_2\omega_3 v^2\omega_4 + {c_s}^2\omega_3^2\omega_4\omega_1 - {c_s}^2\omega_2^2\omega_4 - \omega_2\omega_3^2 v^2\omega_4\omega_1 - {c_s}^2\omega_2\omega_3\omega_4^2\omega_1 + \omega_4\omega_1 + 10\omega_2 v^2\omega_1 + {c_s}^2\omega_4^2 + v^2\omega_4\omega_1^2 + 2\omega_2^2\omega_3 v^2 + {c_s}^2\omega_3\omega_4^2\omega_1 - 5\omega_3 v^2\omega_4^2\omega_1 - {c_s}^2\omega_2\omega_3^2\omega_4\omega_1 - \omega_4 - {c_s}^2\omega_4\omega_1^2 + 13\omega_2 v^2\omega_4 + \omega_2 v^2\omega_4^2\omega_1 + {c_s}^2\omega_2\omega_4\omega_1^2 - 2\omega_2\omega_3^2 v^2 - 2\omega_1 - \omega_2\omega_3\omega_4 - 12\omega_2\omega_3 v^2\omega_1,$

$\alpha^{[\mu_5],t-4\delta_t}_{x,y} = -4 + 7\omega_2\omega_4\omega_1 - \omega_4^2 - \omega_2^2\omega_3\omega_1 - 6\omega_3\omega_1 + \omega_2\omega_4^2 - \omega_2\omega_3^2\omega_4 + \omega_2\omega_1^2 - \omega_2\omega_3^2\omega_1 - 6\omega_3\omega_4 - 8\omega_2\omega_3\omega_4\omega_1 + \omega_4^2\omega_1 - \omega_2^2\omega_3\omega_4 - \omega_1^2 - \omega_2^2 + 5\omega_2 - \omega_3^2\omega_4\omega_1 - 6\omega_2\omega_1 + \omega_2\omega_3\omega_4\omega_1^2 + \omega_3\omega_4^2 - \omega_3\omega_4^2\omega_1 + \omega_3\omega_1^2 + \omega_2^2\omega_3 - 6\omega_2\omega_4 - \omega_2\omega_4\omega_1^2 + 7\omega_3\omega_4\omega_1 + \omega_2^2\omega_4 - \omega_2\omega_3\omega_4^2 - 6\omega_2\omega_3 + 5\omega_3 + \omega_4\omega_1^2 + \omega_2^2\omega_1 + \omega_2^2\omega_3\omega_4\omega_1 - \omega_2\omega_3\omega_1^2 + 7\omega_2\omega_3\omega_1 + \omega_2\omega_3\omega_4^2\omega_1 +$

$$\omega_3^2\omega_4 - \omega_2^2\omega_4\omega_1 - 6\omega_4\omega_1 - \omega_3^2 + \omega_2\omega_3^2\omega_4\omega_1 - \omega_2\omega_4^2\omega_1 + 5\omega_4 - \omega_3\omega_4\omega_1^2 + \omega_3^2\omega_1 + 5\omega_1 + 7\omega_2\omega_3\omega_4 + \omega_2\omega_3^2,$$

8 CLBM 2: relaxation of k_{00}, k_{10}, k_{01}, $k_{20}+k_{02}$, $k_{20}-k_{02}$

8.1 Definitions

Matrix $\mathbf{A} = \mathbf{K}^{-1}\mathbf{S}\mathbf{K}$:

$$\mathbf{A}_{1,1} = \omega_0 - \omega_3u^2 + 2u^2\omega_1 + 2v^2\omega_2 - \omega_3v^2 - \omega_0u^2 - v^2\omega_0,$$
$$\mathbf{A}_{1,2} = 2\omega_3u - \omega_3 + \omega_0 - \omega_3u^2 + 2u^2\omega_1 + 2v^2\omega_2 - 2u\omega_1 - \omega_3v^2 - \omega_0u^2 - v^2\omega_0,$$
$$\mathbf{A}_{1,3} = -\omega_3 + \omega_0 - \omega_3u^2 + 2u^2\omega_1 + 2v^2\omega_2 - 2v\omega_2 - \omega_3v^2 + 2\omega_3v - \omega_0u^2 - v^2\omega_0,$$
$$\mathbf{A}_{1,4} = -2\omega_3u - \omega_3 + \omega_0 - \omega_3u^2 + 2u^2\omega_1 + 2v^2\omega_2 + 2u\omega_1 - \omega_3v^2 - \omega_0u^2 - v^2\omega_0,$$
$$\mathbf{A}_{1,5} = -\omega_3 + \omega_0 - \omega_3u^2 + 2u^2\omega_1 + 2v^2\omega_2 + 2v\omega_2 - \omega_3v^2 - 2\omega_3v - \omega_0u^2 - v^2\omega_0,$$
$$\mathbf{A}_{2,1} = \frac{1}{4}\omega_3u^2 - u^2\omega_1 - \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_0u + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{2,2} = -\frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 + \frac{1}{2}u\omega_1 - \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_0u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2 + \frac{1}{2}\omega_1,$$
$$\mathbf{A}_{2,3} = \frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 - \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_0u - \frac{1}{2}\omega_3v - \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{2,4} = \frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 - \frac{3}{2}u\omega_1 + \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_0u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2 - \frac{1}{2}\omega_1,$$
$$\mathbf{A}_{2,5} = -\frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 - \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_0u + \frac{1}{2}\omega_3v - \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{3,1} = \frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_3v^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{3,2} = \frac{1}{2}v\omega_0 - \frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{3,3} = -\frac{1}{2}v\omega_4 + \frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 + \frac{1}{2}\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_3v + \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{3,4} = \frac{1}{2}v\omega_0 + \frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 - \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{3,5} = \frac{1}{2}v\omega_4 + \frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 - \frac{1}{2}\omega_2 - \frac{3}{2}v\omega_2 + \frac{1}{4}\omega_3v^2 + \frac{1}{2}\omega_3v + \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{4,1} = \frac{1}{4}\omega_3u^2 - u^2\omega_1 + \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_0u + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{4,2} = -\frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 + \frac{3}{2}u\omega_1 - \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_0u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2 - \frac{1}{2}\omega_1,$$
$$\mathbf{A}_{4,3} = \frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 + \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_0u - \frac{1}{2}\omega_3v - \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{4,4} = \frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 - \frac{1}{2}u\omega_1 + \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_0u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2 + \frac{1}{2}\omega_1,$$
$$\mathbf{A}_{4,5} = -\frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - u^2\omega_1 + \frac{1}{2}u\omega_1 + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_0u + \frac{1}{2}\omega_3v - \frac{1}{4}\omega_4 + \frac{1}{2}\omega_0u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{4}\omega_4u^2,$$
$$\mathbf{A}_{5,1} = -\frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_3v^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{5,2} = -\frac{1}{2}v\omega_0 - \frac{1}{2}\omega_3u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{2}\omega_4u + \frac{1}{4}\omega_3v^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{5,3} = -\frac{1}{2}v\omega_4 - \frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3u^2 - v^2\omega_2 - \frac{1}{2}\omega_2 + \frac{3}{2}v\omega_2 + \frac{1}{4}\omega_3v^2 - \frac{1}{2}\omega_3v + \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_0,$$

$$\mathbf{A}_{5,4} = -\frac{1}{2}v\omega_0 + \frac{1}{2}\omega_3 u + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3 u^2 - v^2\omega_2 + \frac{1}{2}v\omega_2 - \frac{1}{2}\omega_4 u + \frac{1}{4}\omega_3 v^2 - \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4 u^2 + \frac{1}{2}v^2\omega_0,$$
$$\mathbf{A}_{5,5} = \frac{1}{2}v\omega_4 - \frac{1}{2}v\omega_0 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_3 u^2 - v^2\omega_2 + \frac{1}{2}\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_3 v^2 + \frac{1}{2}\omega_3 v + \frac{1}{4}\omega_4 + \frac{1}{4}v^2\omega_4 - \frac{1}{4}\omega_4 u^2 + \frac{1}{2}v^2\omega_0.$$

where

$$\mathbf{S} = \operatorname{diag}(\omega_0, \omega_1, \omega_2, \omega_3, \omega_4)$$

and

$$\mathbf{K} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \\ -u & 1-u & -u & -u-1 & -u \\ -v & -v & 1-v & -v & -v-1 \\ v^2+u^2 & v^2+u^2-2u+1 & v^2-2v+u^2+1 & v^2+u^2+2u+1 & v^2+2v+u^2+1 \\ u^2-v^2 & -v^2+u^2-2u+1 & -v^2+2v+u^2-1 & -v^2+u^2+2u+1 & -v^2-2v+u^2-1 \end{pmatrix}$$

Matrix $\mathbf{B}$:

$$\mathbf{B}_{1,1} = 0,$$
$$\mathbf{B}_{1,2} = -1 - 2\omega_3 u + \omega_3 + 2u\omega_1,$$
$$\mathbf{B}_{1,3} = -1 + \omega_3 + 2v\omega_2 - 2\omega_3 v,$$
$$\mathbf{B}_{1,4} = -1 + 2\omega_3 u + \omega_3 - 2u\omega_1,$$
$$\mathbf{B}_{1,5} = -1 + \omega_3 - 2v\omega_2 + 2\omega_3 v,$$
$$\mathbf{B}_{2,1} = -1 - \frac{1}{2}\omega_3 u + \frac{1}{4}\omega_3 + u\omega_1 - \frac{1}{2}\omega_4 u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{2,2} = 0,$$
$$\mathbf{B}_{2,3} = -1 - \frac{1}{2}v\omega_4 - \frac{1}{2}\omega_3 u + u\omega_1 - \frac{1}{2}\omega_4 u + \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{2,4} = -1 - \omega_3 u + 2u\omega_1 - \omega_4 u + \omega_1,$$
$$\mathbf{B}_{2,5} = -1 + \frac{1}{2}v\omega_4 - \frac{1}{2}\omega_3 u + u\omega_1 - \frac{1}{2}\omega_4 u - \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{3,1} = -1 - \frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{2}\omega_2 + v\omega_2 - \frac{1}{2}\omega_3 v + \frac{1}{4}\omega_4,$$
$$\mathbf{B}_{3,2} = -1 - \frac{1}{2}v\omega_4 + \frac{1}{2}\omega_3 u + \frac{1}{2}\omega_2 + v\omega_2 - \frac{1}{2}\omega_4 u - \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4,$$
$$\mathbf{B}_{3,3} = 0,$$
$$\mathbf{B}_{3,4} = -1 - \frac{1}{2}v\omega_4 - \frac{1}{2}\omega_3 u + \frac{1}{2}\omega_2 + v\omega_2 + \frac{1}{2}\omega_4 u - \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4,$$
$$\mathbf{B}_{3,5} = -1 - v\omega_4 + \omega_2 + 2v\omega_2 - \omega_3 v,$$
$$\mathbf{B}_{4,1} = -1 + \frac{1}{2}\omega_3 u + \frac{1}{4}\omega_3 - u\omega_1 + \frac{1}{2}\omega_4 u + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{4,2} = -1 + \omega_3 u - 2u\omega_1 + \omega_4 u + \omega_1,$$
$$\mathbf{B}_{4,3} = -1 - \frac{1}{2}v\omega_4 + \frac{1}{2}\omega_3 u - u\omega_1 + \frac{1}{2}\omega_4 u + \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{4,4} = 0,$$
$$\mathbf{B}_{4,5} = -1 + \frac{1}{2}v\omega_4 + \frac{1}{2}\omega_3 u - u\omega_1 + \frac{1}{2}\omega_4 u - \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4 + \frac{1}{2}\omega_1,$$
$$\mathbf{B}_{5,1} = -1 + \frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 + \frac{1}{2}\omega_2 - v\omega_2 + \frac{1}{2}\omega_3 v + \frac{1}{4}\omega_4,$$
$$\mathbf{B}_{5,2} = -1 + \frac{1}{2}v\omega_4 + \frac{1}{2}\omega_3 u + \frac{1}{2}\omega_2 - v\omega_2 - \frac{1}{2}\omega_4 u + \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4,$$
$$\mathbf{B}_{5,3} = -1 + v\omega_4 + \omega_2 - 2v\omega_2 + \omega_3 v,$$

$$\mathbf{B}_{5,4} = -1 + \frac{1}{2}v\omega_4 - \frac{1}{2}\omega_3 u + \frac{1}{2}\omega_2 - v\omega_2 + \frac{1}{2}\omega_4 u + \frac{1}{2}\omega_3 v + \frac{1}{2}\omega_4,$$
$$\mathbf{B}_{5,5} = 0.$$

8.2 EFDE for μ_1

$$\mu_{1,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4} \sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t} \mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}v\omega_4 - \frac{1}{4}\omega_3 + v^2\omega_2 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3 u^2 + \frac{1}{2}v\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4 u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 + \omega_1 u^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_1 u - \frac{1}{4}\omega_3 u^2 + \frac{1}{2}\omega_4 u - \frac{1}{4}\omega_4 u^2 + \frac{1}{4}v^2\omega_4 + \frac{1}{2}\omega_3 u.$

$\alpha_{x,y}^{[\mu_1],t} = 1 - 2\omega_1 u^2 - 2v^2\omega_2 - 2\omega_3 {c_s}^2 + v^2\omega_3 + \omega_3 u^2.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = 1 + \omega_1 u^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 + \frac{1}{2}\omega_1 u - \frac{1}{4}\omega_3 u^2 - \frac{1}{2}\omega_4 u - \frac{1}{4}\omega_4 u^2 + \frac{1}{4}v^2\omega_4 - \frac{1}{2}\omega_3 u.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = 1 - \frac{1}{2}v\omega_4 - \frac{1}{4}\omega_3 + v^2\omega_2 + \frac{1}{2}\omega_3 {c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3 u^2 - \frac{1}{2}v\omega_3 - \frac{1}{2}\omega_2 + \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4 u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{4}\omega_4\omega_1 u^3 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 + \frac{1}{2}\omega_3 {c_s}^2\omega_1 u - \frac{1}{2}v\omega_4 - \omega_1 u^2 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{2}\omega_3 - \frac{1}{4}v\omega_3\omega_2 - \frac{1}{4}v^2\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_4 u + \frac{1}{4}v\omega_3\omega_1 u - v^2\omega_2 + \frac{3}{8}\omega_4\omega_1 u^2 - \frac{1}{4}v^3\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_4 - \omega_3 {c_s}^2 + \frac{1}{4}\omega_4 u\omega_2 - \frac{1}{4}v^2\omega_4\omega_1 u - \frac{1}{2}v\omega_3\omega_4 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v\omega_4 u^2\omega_2 + \frac{1}{2}v^2\omega_3 - \frac{1}{8}\omega_3 u^2\omega_2 - \frac{1}{2}v^2\omega_4 u\omega_2 - \frac{1}{8}\omega_3\omega_1 + \frac{1}{2}v^2\omega_1\omega_2 + \frac{1}{4}v\omega_3 u\omega_2 + \frac{1}{2}\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3\omega_1 u^2 + \frac{1}{2}\omega_4 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_3\omega_4 u^2 + \frac{1}{4}v^3\omega_3\omega_2 + \frac{1}{2}v^2\omega_3\omega_4 u + \frac{1}{2}\omega_1 u - \frac{1}{8}v^2\omega_3\omega_1 + \frac{1}{2}\omega_3 u^2 + \frac{1}{4}\omega_3\omega_1 u^3 + \frac{1}{2}v\omega_3\omega_4 u^2 + \frac{3}{8}v^2\omega_4\omega_2 - \frac{1}{4}v\omega_1\omega_2 + \frac{1}{8}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 + \frac{1}{4}\omega_3 u\omega_2 + \frac{1}{4}\omega_3 {c_s}^2\omega_1 - \frac{1}{2}v\omega_3 - \frac{1}{8}\omega_4\omega_2 + \frac{1}{4}v\omega_4\omega_1 u - \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{4}v\omega_3\omega_1 - \frac{1}{4}v\omega_3 u^2\omega_2 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4 u - \frac{1}{4}v^2\omega_3\omega_1 u + \frac{1}{2}v\omega_2 - \frac{1}{2}v^2\omega_3 u\omega_2 - \frac{1}{8}\omega_4 u^2\omega_2 + \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}v\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_1 u - \frac{1}{2}\omega_3\omega_4 {c_s}^2 u + \frac{1}{4}v\omega_4 u\omega_2 + \frac{1}{8}v^2\omega_3\omega_2 + v^2\omega_1 u\omega_2 - \frac{1}{2}v\omega_4\omega_1 u^2 - v\omega_3\omega_4 u - \frac{1}{8}\omega_3\omega_2 + \frac{1}{4}v\omega_4\omega_1 + \frac{1}{2}v\omega_3 {c_s}^2\omega_2 - \frac{1}{2}\omega_3 u,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} =$
$-1 - \omega_3 {c_s}^2\omega_2 - \frac{1}{2}v\omega_4 + 2\omega_1 u^2 + \frac{1}{4}\omega_3 + \frac{1}{2}v\omega_3\omega_2 + v^2\omega_2 - \frac{1}{2}\omega_4\omega_1 u^2 + \frac{1}{2}v^3\omega_4\omega_2 + \frac{3}{2}\omega_3 {c_s}^2 + v\omega_3\omega_4 {c_s}^2 + \frac{1}{2}v\omega_4 u^2\omega_2 - \frac{3}{4}v^2\omega_3 + \frac{1}{2}\omega_3 u^2\omega_2 - \omega_1 u^2\omega_2 + v\omega_3\omega_1 u^2 + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_3\omega_4 u^2 - \frac{1}{2}v^3\omega_3\omega_2 - \frac{3}{4}\omega_3 u^2 - v\omega_3\omega_4 u^2 - \frac{1}{2}v^2\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_1 u^2 - 2v\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3 + \frac{1}{2}v\omega_3 u^2\omega_2 + \frac{1}{2}\omega_2 + \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4 u^2 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + v\omega_4\omega_1 u^2 + \frac{1}{4}v^2\omega_4 - v\omega_3 {c_s}^2\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{4}\omega_4\omega_1 u^3 + \frac{1}{4}\omega_3 {c_s}^2\omega_2 - \frac{1}{2}\omega_3 {c_s}^2\omega_1 u - \frac{1}{2}v\omega_4 - \omega_1 u^2 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{2}\omega_3 - \frac{1}{4}v\omega_3\omega_2 - \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4 u - \frac{1}{4}v\omega_3\omega_1 u - v^2\omega_2 + \frac{3}{8}\omega_4\omega_1 u^2 - \frac{1}{4}v^3\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_4 - \omega_3 {c_s}^2 - \frac{1}{4}\omega_4 u\omega_2 + \frac{1}{4}v^2\omega_4\omega_1 u - \frac{1}{2}v\omega_3\omega_4 {c_s}^2 - \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v\omega_4 u^2\omega_2 + \frac{1}{2}v^2\omega_3 - \frac{1}{8}\omega_3 u^2\omega_2 + \frac{1}{2}v^2\omega_4 u\omega_2 - \frac{1}{8}\omega_3\omega_1 + \frac{1}{2}v^2\omega_1\omega_2 - \frac{1}{4}v\omega_3 u\omega_2 + \frac{1}{2}\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3\omega_1 u^2 + \frac{1}{2}\omega_4 - \frac{1}{4}\omega_1\omega_2 + \frac{1}{2}\omega_1 - \frac{1}{4}\omega_3\omega_4 u^2 + \frac{1}{4}v^3\omega_3\omega_2 - \frac{1}{2}v^2\omega_3\omega_4 u - \frac{1}{2}\omega_1 u - \frac{1}{8}v^2\omega_3\omega_1 + \frac{1}{2}\omega_3 u^2 - \frac{1}{4}\omega_3\omega_1 u^3 + \frac{1}{2}v\omega_3\omega_4 u^2 + \frac{3}{8}v^2\omega_4\omega_2 - \frac{1}{4}v\omega_1\omega_2 + \frac{1}{8}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 - \frac{1}{4}\omega_3 u\omega_2 + \frac{1}{4}\omega_3 {c_s}^2\omega_1 - \frac{1}{2}v\omega_3 - \frac{1}{8}\omega_4\omega_2 - \frac{1}{4}v\omega_4\omega_1 u + \frac{1}{4}\omega_1 u\omega_2 + \frac{1}{4}v\omega_3\omega_1 - \frac{1}{4}v\omega_3 u^2\omega_2 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4 u + \frac{1}{4}v^2\omega_3\omega_1 u + \frac{1}{2}v\omega_2 + \frac{1}{2}v^2\omega_3 u\omega_2 - \frac{1}{8}\omega_4 u^2\omega_2 + \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}v\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_1 u + \frac{1}{2}\omega_3\omega_4 {c_s}^2 u - \frac{1}{4}v\omega_4 u\omega_2 + \frac{1}{8}v^2\omega_3\omega_2 - v^2\omega_1 u\omega_2 - \frac{1}{2}v\omega_4\omega_1 u^2 + v\omega_3\omega_4 u - \frac{1}{8}\omega_3\omega_2 + \frac{1}{4}v\omega_4\omega_1 + \frac{1}{2}v\omega_3 {c_s}^2\omega_2 + \frac{1}{2}\omega_3 u,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{2}\omega_4\omega_1 u^3 - \omega_3 {c_s}^2\omega_1 u + \omega_1 u^2 + \frac{1}{4}\omega_3 + \frac{1}{2}v^2\omega_3\omega_4 + 2v^2\omega_2 - \frac{1}{2}\omega_4\omega_1 u^2 + \frac{3}{2}\omega_3 {c_s}^2 + \frac{1}{2}v^2\omega_4\omega_1 u - \frac{3}{4}v^2\omega_3 + v^2\omega_4 u\omega_2 - v^2\omega_1\omega_2 + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - v^2\omega_3\omega_4 u + \frac{1}{2}\omega_1 u + \frac{1}{2}v^2\omega_3\omega_1 - \frac{3}{4}\omega_3 u^2 - \frac{1}{2}\omega_3\omega_1 u^3 - \frac{1}{2}v^2\omega_4\omega_2 - \omega_3 {c_s}^2\omega_1 - \frac{1}{2}\omega_4 u + \frac{1}{2}v^2\omega_3\omega_1 u + \frac{1}{4}\omega_4 u^2 + v^2\omega_3 u\omega_2 - \frac{1}{2}\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_3\omega_1 u + \omega_3\omega_4 {c_s}^2 u - \frac{1}{2}v^2\omega_3\omega_2 - 2v^2\omega_1 u\omega_2 - \frac{1}{4}v^2\omega_4 - \frac{1}{2}\omega_3 u,$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2+\omega_3{c_s}^2\omega_2-2\omega_1u^2-\frac{1}{2}\omega_4\omega_1+\omega_3-2v^2\omega_2+\frac{1}{2}\omega_4\omega_1u^2-2\omega_3{c_s}^2+\frac{1}{2}v^2\omega_4\omega_1+v^2\omega_3-\frac{1}{2}\omega_3u^2\omega_2-\frac{1}{2}\omega_3\omega_1+\omega_4+\omega_1-\frac{1}{2}v^2\omega_3\omega_1+\omega_3u^2+\frac{1}{2}v^2\omega_4\omega_2+\frac{1}{2}\omega_3\omega_1u^2+\omega_3{c_s}^2\omega_1-\frac{1}{2}\omega_4\omega_2+\omega_2+\frac{1}{2}\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_2-\frac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_t,y}^{[\mu_1],t-\delta_t} = -1-\frac{1}{2}\omega_4\omega_1u^3+\omega_3{c_s}^2\omega_1u+\omega_1u^2+\frac{1}{4}\omega_3+\frac{1}{2}v^2\omega_3\omega_4+2v^2\omega_2-\frac{1}{2}\omega_4\omega_1u^2+\frac{3}{2}\omega_3{c_s}^2-\frac{1}{2}v^2\omega_4\omega_1u-\frac{3}{4}v^2\omega_3-v^2\omega_4u\omega_2-v^2\omega_1\omega_2+\frac{1}{4}\omega_4+\frac{1}{2}\omega_1+v^2\omega_3\omega_4u-\frac{1}{2}\omega_1u+\frac{1}{2}v^2\omega_3\omega_1-\frac{3}{4}\omega_3u^2+\frac{1}{2}\omega_3\omega_1u^3-\frac{1}{2}v^2\omega_4\omega_2-\omega_3{c_s}^2\omega_1+\frac{1}{2}\omega_4u-\frac{1}{2}v^2\omega_3\omega_1u+\frac{1}{4}\omega_4u^2-v^2\omega_3u\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}\omega_3\omega_1u-\omega_3\omega_4{c_s}^2u-\frac{1}{2}v^2\omega_3\omega_2+2v^2\omega_1u\omega_2-\frac{1}{4}v^2\omega_4+\frac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_t,y+\delta_t}^{[\mu_1],t-\delta_t} = -1-\frac{1}{4}\omega_4\omega_1u^3+\frac{1}{4}\omega_3{c_s}^2\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1u+\frac{1}{2}v\omega_4-\omega_1u^2-\frac{1}{8}\omega_4\omega_1+\frac{1}{2}\omega_3+\frac{1}{4}v\omega_3\omega_2-\frac{1}{4}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4u-\frac{1}{4}v\omega_3\omega_1u-v^2\omega_2+\frac{3}{8}\omega_4\omega_1u^2+\frac{1}{4}v^3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4-\omega_3{c_s}^2+\frac{1}{4}\omega_4u\omega_2-\frac{1}{4}v^2\omega_4\omega_1u+\frac{1}{2}v\omega_3\omega_4{c_s}^2-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{4}v\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3-\frac{1}{8}\omega_3u^2\omega_2-\frac{1}{2}v^2\omega_4u\omega_2-\frac{1}{8}\omega_3\omega_1+\frac{1}{2}v^2\omega_1\omega_2-\frac{1}{4}v\omega_3u\omega_2+\frac{1}{2}\omega_1u^2\omega_2+\frac{1}{2}v\omega_3\omega_1u^2+\frac{1}{2}\omega_4-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^3\omega_3\omega_2+\frac{1}{2}v^2\omega_3\omega_4u+\frac{1}{2}\omega_1u-\frac{1}{8}v^2\omega_3\omega_1+\frac{1}{2}\omega_3u^2+\frac{1}{4}\omega_3\omega_1u^3-\frac{1}{2}v\omega_3\omega_4u^2+\frac{3}{8}v^2\omega_4\omega_2+\frac{1}{4}v\omega_1\omega_2+\frac{1}{8}\omega_3\omega_1u^2-v\omega_1u^2\omega_2+\frac{1}{4}\omega_3u\omega_2+\frac{1}{4}\omega_3{c_s}^2\omega_1+\frac{1}{2}v\omega_3-\frac{1}{8}\omega_4\omega_2-\frac{1}{4}v\omega_4\omega_1u-\frac{1}{4}\omega_1u\omega_2-\frac{1}{4}v\omega_3\omega_1+\frac{1}{4}v\omega_3u^2\omega_2+\frac{1}{2}\omega_2-\frac{1}{2}\omega_4u-\frac{1}{4}v^2\omega_3\omega_1u-\frac{1}{2}v\omega_2-\frac{1}{2}v^2\omega_3u\omega_2-\frac{1}{8}\omega_4u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}v\omega_3\omega_4-\frac{1}{4}\omega_3\omega_1u-\frac{1}{2}\omega_3\omega_4{c_s}^2u-\frac{1}{4}v\omega_4u\omega_2+\frac{1}{8}v^2\omega_3\omega_2+v^2\omega_1u\omega_2+\frac{1}{2}v\omega_4\omega_1u^2+v\omega_3\omega_4u-\frac{1}{8}\omega_3\omega_2-\frac{1}{4}v\omega_4\omega_1-\frac{1}{2}v\omega_3{c_s}^2\omega_2-\frac{1}{2}\omega_3u,$$

$$\alpha_{x,y+\delta_t}^{[\mu_1],t-\delta_t} = -1-\omega_3{c_s}^2\omega_2+\frac{1}{2}v\omega_4+2\omega_1u^2+\frac{1}{4}\omega_3-\frac{1}{2}v\omega_3\omega_2+v^2\omega_2-\frac{1}{2}\omega_4\omega_1u^2-\frac{1}{2}v^3\omega_4\omega_2+\frac{3}{2}\omega_3{c_s}^2-v\omega_3\omega_4{c_s}^2-\frac{1}{2}v\omega_4u^2\omega_2-\frac{3}{4}v^2\omega_3+\frac{1}{2}\omega_3u^2\omega_2-\omega_1u^2\omega_2-v\omega_3\omega_1u^2+\frac{1}{4}\omega_4+\frac{1}{2}\omega_3\omega_4u^2+\frac{1}{2}v^3\omega_3\omega_2-\frac{3}{4}\omega_3u^2+v\omega_3\omega_4u^2-\frac{1}{2}v^2\omega_4\omega_2-\frac{1}{2}\omega_3\omega_1u^2+2v\omega_1u^2\omega_2+\frac{1}{2}v\omega_3-\frac{1}{2}v\omega_3u^2\omega_2+\frac{1}{2}\omega_2-\frac{1}{2}v\omega_2-\frac{1}{4}\omega_4u^2-\frac{1}{2}\omega_3\omega_4{c_s}^2-v\omega_4\omega_1u^2+\frac{1}{4}v^2\omega_4+v\omega_3{c_s}^2\omega_2,$$

$$\alpha_{x+\delta_t,y+\delta_t}^{[\mu_1],t-\delta_t} = -1+\frac{1}{4}\omega_4\omega_1u^3+\frac{1}{4}\omega_3{c_s}^2\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_1u+\frac{1}{2}v\omega_4-\omega_1u^2-\frac{1}{8}\omega_4\omega_1+\frac{1}{2}\omega_3+\frac{1}{4}v\omega_3\omega_2-\frac{1}{4}v^2\omega_3\omega_4+\frac{1}{2}\omega_3\omega_4u+\frac{1}{4}v\omega_3\omega_1u-v^2\omega_2+\frac{3}{8}\omega_4\omega_1u^2+\frac{1}{4}v^3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4-\omega_3{c_s}^2-\frac{1}{4}\omega_4u\omega_2+\frac{1}{4}v^2\omega_4\omega_1u+\frac{1}{2}v\omega_3\omega_4{c_s}^2-\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{4}v\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3-\frac{1}{8}\omega_3u^2\omega_2+\frac{1}{2}v^2\omega_4u\omega_2-\frac{1}{8}\omega_3\omega_1+\frac{1}{2}v^2\omega_1\omega_2+\frac{1}{4}v\omega_3u\omega_2+\frac{1}{2}\omega_1u^2\omega_2+\frac{1}{2}v\omega_3\omega_1u^2+\frac{1}{2}\omega_4-\frac{1}{4}\omega_1\omega_2+\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4u^2-\frac{1}{4}v^3\omega_3\omega_2-\frac{1}{2}v^2\omega_3\omega_4u-\frac{1}{2}\omega_1u-\frac{1}{8}v^2\omega_3\omega_1+\frac{1}{2}\omega_3u^2-\frac{1}{4}\omega_3\omega_1u^3-\frac{1}{2}v\omega_3\omega_4u^2+\frac{3}{8}v^2\omega_4\omega_2+\frac{1}{4}v\omega_1\omega_2+\frac{1}{8}\omega_3\omega_1u^2-v\omega_1u^2\omega_2-\frac{1}{4}\omega_3u\omega_2+\frac{1}{4}\omega_3{c_s}^2\omega_1+\frac{1}{2}v\omega_3-\frac{1}{8}\omega_4\omega_2+\frac{1}{4}v\omega_4\omega_1u+\frac{1}{4}\omega_1u\omega_2-\frac{1}{4}v\omega_3\omega_1+\frac{1}{4}v\omega_3u^2\omega_2+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4u+\frac{1}{4}v^2\omega_3\omega_1u-\frac{1}{2}v\omega_2+\frac{1}{2}v^2\omega_3u\omega_2-\frac{1}{8}\omega_4u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}v\omega_3\omega_4+\frac{1}{4}\omega_3\omega_1u+\frac{1}{2}\omega_3\omega_4{c_s}^2u+\frac{1}{4}v\omega_4u\omega_2+\frac{1}{8}v^2\omega_3\omega_2-v^2\omega_1u\omega_2+\frac{1}{2}v\omega_4\omega_1u^2-v\omega_3\omega_4u-\frac{1}{8}\omega_3\omega_2-\frac{1}{4}v\omega_4\omega_1-\frac{1}{2}v\omega_3{c_s}^2\omega_2-\frac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_t,y-\delta_t}^{[\mu_1],t-2\delta_t} = 1+\frac{1}{2}v\omega_4\omega_1u\omega_2-\frac{1}{4}\omega_4\omega_1u^3+\frac{3}{4}\omega_3{c_s}^2\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1u+\frac{1}{2}v\omega_4-\omega_1u^2+\frac{1}{8}\omega_4\omega_1-\frac{1}{2}\omega_3-\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}v\omega_3\omega_1u\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u-\frac{1}{4}v\omega_3\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_4-\frac{1}{2}\omega_3\omega_4u-\frac{1}{4}v^2\omega_3\omega_1u\omega_2-\frac{1}{4}v\omega_3\omega_1u-\frac{1}{4}v^2\omega_4\omega_1\omega_2-v^2\omega_2+\frac{5}{8}\omega_4\omega_1u^2-\frac{1}{4}v^3\omega_4\omega_2+\frac{1}{4}\omega_3\omega_4-\omega_3{c_s}^2-\frac{1}{4}\omega_4u\omega_2-\frac{1}{4}v^2\omega_4\omega_1u\omega_2-\frac{1}{4}v^2\omega_4\omega_1u+\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_4{c_s}^2+\frac{1}{8}v^2\omega_4\omega_1-\frac{1}{4}v\omega_4u^2\omega_2+\frac{1}{2}v^2\omega_3-\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{2}v^2\omega_4u\omega_2-\frac{1}{4}\omega_3\omega_1u^3\omega_2+\frac{1}{4}v^3\omega_4\omega_1\omega_2+\frac{1}{8}\omega_3\omega_1-\frac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2+\frac{1}{2}v^2\omega_1\omega_2-\frac{1}{4}v\omega_3u\omega_2+\frac{1}{4}\omega_4\omega_1u^3\omega_2+\frac{1}{2}\omega_1u^2\omega_2-\frac{1}{2}v\omega_3\omega_1u^2-\frac{1}{2}\omega_4-\frac{1}{4}v^2\omega_3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1u^2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{4}\omega_1\omega_2-\frac{1}{2}\omega_1-\frac{1}{4}\omega_3\omega_4u^2+\frac{1}{4}v^3\omega_3\omega_2+\frac{1}{2}v^2\omega_3\omega_4u-\frac{1}{2}\omega_1u-\frac{3}{8}v^2\omega_3\omega_1+\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}v\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_3u^2+\frac{1}{4}\omega_3\omega_1u^3+\frac{1}{2}v\omega_3\omega_4u^2+\frac{5}{8}v^2\omega_4\omega_2+\frac{1}{4}v\omega_1\omega_2+\frac{3}{8}\omega_3\omega_1u^2+v\omega_1u^2\omega_2-\frac{1}{4}\omega_3u\omega_2+\frac{3}{4}\omega_3{c_s}^2\omega_1+\frac{1}{2}v\omega_3+\frac{1}{8}\omega_4\omega_2-\frac{1}{4}v\omega_4\omega_1u+\frac{1}{4}\omega_1u\omega_2-\frac{1}{4}v\omega_3\omega_1-\frac{1}{4}v\omega_3u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4u\omega_2-\frac{1}{2}\omega_2+\frac{1}{2}\omega_4u-\frac{1}{4}v^2\omega_3\omega_1u-\frac{1}{4}v^3\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_2-\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\frac{1}{2}v^2\omega_3u\omega_2+\frac{1}{8}\omega_4u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2-\frac{1}{2}v\omega_3\omega_4-\frac{1}{4}\omega_3\omega_1u-\frac{1}{2}\omega_3\omega_4{c_s}^2u-\frac{1}{4}v\omega_4u\omega_2+\frac{3}{8}v^2\omega_3\omega_2+v^2\omega_1u\omega_2-\frac{1}{2}v\omega_4\omega_1u^2-\frac{1}{4}v\omega_4\omega_1u^2\omega_2+v\omega_3\omega_4u+\frac{1}{8}\omega_3\omega_2-\frac{1}{4}v\omega_4\omega_1+\frac{1}{2}v\omega_3{c_s}^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\frac{1}{4}v\omega_3\omega_1u^2\omega_2+\frac{1}{4}v\omega_3\omega_4\omega_2-\frac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u\omega_2-\frac{1}{2}v\omega_3\omega_4\omega_1u+\frac{1}{2}\omega_3u,$$

$$\alpha_{x,y-\delta_t}^{[\mu_1],t-2\delta_t} = 1-\frac{1}{2}\omega_3{c_s}^2\omega_2+\frac{1}{2}v\omega_4+2\omega_1u^2+\frac{3}{4}\omega_4\omega_1-\frac{3}{4}\omega_3+\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}v\omega_3\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4+\frac{3}{4}v^2\omega_4\omega_1\omega_2+v^2\omega_2-\frac{5}{4}\omega_4\omega_1u^2+\frac{1}{2}v^3\omega_4\omega_2+\frac{1}{2}\omega_3\omega_4+\frac{3}{2}\omega_3{c_s}^2-\frac{1}{2}v\omega_3\omega_1\omega_2+v\omega_3\omega_4{c_s}^2-\frac{1}{4}v^2\omega_4\omega_1+\frac{1}{2}v\omega_4u^2\omega_2-\frac{3}{4}v^2\omega_3+\frac{1}{4}\omega_3u^2\omega_2-\frac{1}{2}v^3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1\omega_2+\frac{3}{4}\omega_3\omega_1-v^2\omega_1\omega_2-\omega_1u^2\omega_2+v\omega_3\omega_1u^2-\frac{3}{4}\omega_4+v\omega_3\omega_4\omega_1+\frac{1}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4{c_s}^2\omega_1+\frac{1}{2}\omega_1\omega_2-\omega_1+\frac{1}{2}\omega_3\omega_4u^2-\frac{1}{2}v^3\omega_3\omega_2+\frac{3}{4}v^2\omega_3\omega_1-v\omega_3\omega_4{c_s}^2\omega_1-v\omega_3\omega_4\omega_1u^2-\frac{3}{4}\omega_3u^2-v\omega_3\omega_4u^2-\frac{3}{4}v^2\omega_4\omega_2+\frac{1}{2}v\omega_1\omega_2-\frac{3}{4}\omega_3\omega_1u^2-2v\omega_1u^2\omega_2-\frac{3}{2}\omega_3{c_s}^2\omega_1+\frac{1}{2}v\omega_3+\frac{1}{4}\omega_4\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_1+\frac{1}{2}v\omega_3u^2\omega_2-\frac{1}{2}\omega_2+\frac{1}{2}v^3\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1-\frac{1}{4}\omega_3\omega_1\omega_2-\frac{1}{4}\omega_4u^2+\frac{1}{4}\omega_4u^2\omega_2-\omega_3\omega_4{c_s}^2-v\omega_3\omega_4-\frac{1}{4}v^2\omega_3\omega_2+v\omega_4\omega_1u^2+\frac{1}{4}v^2\omega_4+\frac{1}{2}v\omega_4\omega_1u^2\omega_2+\frac{1}{4}\omega_3\omega_2-\frac{1}{2}v\omega_4\omega_1-v\omega_3{c_s}^2\omega_2+\frac{1}{2}v\omega_3\omega_1u^2\omega_2+v\omega_3{c_s}^2\omega_1\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1 - \tfrac{1}{2}v\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^3 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u + \tfrac{1}{2}v\omega_4 - \omega_1 u^2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_4 u + \tfrac{1}{4}v^2\omega_3\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \tfrac{5}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 - \omega_3 {c_s}^2 + \tfrac{1}{4}\omega_4 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v\omega_4 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3 - \tfrac{3}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4 u\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^3\omega_2 + \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_1\omega_2 + \tfrac{1}{4}v\omega_3 u\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{2}\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 u^2 + \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4 u + \tfrac{1}{2}\omega_1 u - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3\omega_4 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{4}\omega_3\omega_1 u^3 + \tfrac{1}{2}v\omega_3\omega_4 u^2 + \tfrac{5}{8}v^2\omega_4\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 + \tfrac{3}{8}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3 + \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{4}v\omega_3 u^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 u + \tfrac{1}{4}v^2\omega_3\omega_1 u - \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}v^2\omega_3 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u + \tfrac{1}{4}v\omega_4 u\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 - v^2\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u^2 - \tfrac{1}{4}v\omega_4\omega_1 u^2\omega_2 - v\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 - \tfrac{1}{2}v\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4\omega_1 u - \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y} = 1 + \tfrac{1}{2}\omega_4\omega_1 u^3 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_2 - \omega_3 {c_s}^2\omega_1 u + \omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{3}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 - \omega_3\omega_4 u + \tfrac{1}{2}v^2\omega_3\omega_1 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + 2v^2\omega_2 - \tfrac{3}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{3}{2}\omega_3 {c_s}^2 - \tfrac{1}{2}\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1 u + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{4}\omega_3 u^2\omega_2 + v^2\omega_4 u\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 + \omega_3 {c_s}^2\omega_1 u\omega_2 - v^2\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 - \omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \omega_3\omega_4 u\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 - v^2\omega_3\omega_4 u - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{3}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^3 - \tfrac{5}{4}v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3 u\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_1 u\omega_2 - v^2\omega_3\omega_4 u\omega_2 - \omega_2 + \tfrac{1}{2}\omega_4 u + \tfrac{1}{2}v^2\omega_3\omega_1 u - \tfrac{1}{4}\omega_3\omega_1\omega_2 + \omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_4 u^2 + v^2\omega_3 u\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 - \omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_1 u + \omega_3\omega_4 {c_s}^2 u - \tfrac{3}{4}v^2\omega_3\omega_2 - 2v^2\omega_1 u\omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{3}{4}\omega_3\omega_2 - \omega_3\omega_4 {c_s}^2 u\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y} = 2 + \omega_3 {c_s}^2\omega_2 - 2\omega_1 u^2 + \tfrac{1}{2}\omega_4\omega_1 - \omega_3 - \omega_4\omega_1 u^2\omega_2 - \omega_3\omega_1 u^2\omega_2 - v^2\omega_3\omega_4 - v^2\omega_4\omega_1\omega_2 - 2v^2\omega_2 + \tfrac{3}{2}\omega_4\omega_1 u^2 - 2\omega_3 {c_s}^2 - \tfrac{1}{2}v^2\omega_4\omega_1 + v^2\omega_3 - \tfrac{1}{2}\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_1 + 2v^2\omega_1\omega_2 + 2\omega_1 u^2\omega_2 - \omega_4 - \omega_3\omega_4 {c_s}^2\omega_1 - \omega_1 - \omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_1 + \omega_3\omega_4 u^2\omega_2 + \omega_3 u^2 + \tfrac{3}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 + \omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4\omega_2 - v^2\omega_3\omega_1\omega_2 - \omega_2 + v^2\omega_3\omega_4\omega_1 - \omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_4 u^2\omega_2 + 2\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y} = 1 - \tfrac{1}{2}\omega_4\omega_1 u^3 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_2 + \omega_3 {c_s}^2\omega_1 u + \omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{3}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 + \omega_3\omega_4 u + \tfrac{1}{2}v^2\omega_3\omega_1 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 + 2v^2\omega_2 - \tfrac{3}{4}\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{3}{2}\omega_3 {c_s}^2 + \tfrac{1}{2}\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_1 u + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{3}{4}v^2\omega_3 + \tfrac{3}{4}\omega_3 u^2\omega_2 - v^2\omega_4 u\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 - \omega_3 {c_s}^2\omega_1 u\omega_2 - v^2\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 - \omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 - \omega_3\omega_4 u\omega_2 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 + v^2\omega_3\omega_4 u + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{3}{4}\omega_3 u^2 + \tfrac{1}{2}\omega_3\omega_1 u^3 - \tfrac{5}{4}v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_3 u\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 + \tfrac{3}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_1 u\omega_2 + v^2\omega_3\omega_4 u\omega_2 - \omega_2 - \tfrac{1}{2}\omega_4 u - \tfrac{1}{2}v^2\omega_3\omega_1 u - \tfrac{1}{4}\omega_3\omega_1\omega_2 + \omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_4 u^2 - v^2\omega_3 u\omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2 - \omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_1 u - \omega_3\omega_4 {c_s}^2 u - \tfrac{3}{4}v^2\omega_3\omega_2 + 2v^2\omega_1 u\omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{3}{4}\omega_3\omega_2 + \omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \tfrac{1}{2}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^3 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u - \tfrac{1}{2}v\omega_4 - \omega_1 u^2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 - \tfrac{1}{2}\omega_3\omega_4 u - \tfrac{1}{4}v^2\omega_3\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \tfrac{5}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 - \omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}v\omega_4 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3 - \tfrac{3}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}v^2\omega_4 u\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_1\omega_2 + \tfrac{1}{4}v\omega_3 u\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{2}\omega_1 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 u - \tfrac{1}{2}\omega_1 u - \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3 u^2 + \tfrac{1}{4}\omega_3\omega_1 u^3 - \tfrac{1}{2}v\omega_3\omega_4 u^2 + \tfrac{5}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 + \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 u + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_3 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 u - \tfrac{1}{4}v^2\omega_3\omega_1 u + \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}v^2\omega_3 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1 u - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u + \tfrac{1}{4}v\omega_4 u\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 + v^2\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 u^2 + \tfrac{1}{4}v\omega_4\omega_1 u^2\omega_2 - v\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l} = 1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 + 2\omega_1 u^2 + \tfrac{3}{4}\omega_4\omega_1 - \tfrac{3}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}v^2\omega_4\omega_1\omega_2 + v^2\omega_2 - \tfrac{5}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}v^3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4 + \tfrac{3}{2}\omega_3 {c_s}^2 + \tfrac{1}{2}v\omega_3\omega_1\omega_2 - v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}v\omega_4 u^2\omega_2 - \tfrac{3}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{3}{4}\omega_3\omega_1 - v^2\omega_1\omega_2 -$$

$$\omega_1 u^2\omega_2 - v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 - v\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 + \omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_1\omega_2 - \omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{1}{2}v^3\omega_3\omega_2 + \tfrac{3}{4}v^2\omega_3\omega_1 + v\omega_3\omega_4 {c_s}^2\omega_1 + v\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{4}\omega_3 u^2 + v\omega_3\omega_4 u^2 - \tfrac{3}{4}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + 2v\omega_1 u^2\omega_2 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 - \tfrac{1}{2}v\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_4 u^2\omega_2 - \omega_3\omega_4 {c_s}^2 + v\omega_3\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_2 - v\omega_4\omega_1 u^2 + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 + v\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2\omega_2 - v\omega_3 {c_s}^2\omega_1\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1 + \tfrac{1}{2}v\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^3 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u - \tfrac{1}{2}v\omega_4 - \omega_1 u^2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_4 u + \tfrac{1}{4}v^2\omega_3\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \tfrac{5}{8}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 - \omega_3 {c_s}^2 + \tfrac{1}{4}\omega_4 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}v\omega_4 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3 - \tfrac{3}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4 u\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3 u\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{2}\omega_1 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_4 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4 u + \tfrac{1}{2}\omega_1 u - \tfrac{3}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{4}\omega_3\omega_1 u^3 - \tfrac{1}{2}v\omega_3\omega_4 u^2 + \tfrac{5}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 + \tfrac{3}{8}\omega_3\omega_1 u^2 - v\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_3 u^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 u + \tfrac{1}{4}v^2\omega_3\omega_1 u + \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}v^2\omega_3 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u - \tfrac{1}{4}v\omega_4 u\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_2 - v^2\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 u^2 + \tfrac{1}{4}v\omega_4\omega_1 u^2\omega_2 + v\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 u - \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 - \tfrac{3}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}v^2\omega_4\omega_1\omega_2 + v^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{3}{4}\omega_3\omega_1 - v^2\omega_1\omega_2 + \tfrac{3}{4}\omega_4 - v\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - \tfrac{3}{4}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 + \tfrac{1}{2}\omega_2 + \tfrac{1}{2}v\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + v\omega_3\omega_4 - \tfrac{3}{4}v^2\omega_3\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3\omega_4\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x-\delta_l,y} = -1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 + \omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{3}{4}\omega_3\omega_1 u^2\omega_2 + \omega_3\omega_4 u + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - \tfrac{3}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{2}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 - \omega_1 u^2\omega_2 + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 - \omega_3\omega_4 u\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 + \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_3 u\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 - \tfrac{3}{4}\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_1 u\omega_2 + \omega_2 - \tfrac{1}{2}\omega_4 u + \tfrac{1}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_4 - \tfrac{3}{4}\omega_3\omega_2 - \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y} = -1 - \omega_3\omega_4\omega_1\omega_2 + 2\omega_3 {c_s}^2\omega_2 - 2\omega_1 u^2 - \omega_4\omega_1 + \omega_3 - 2\omega_4\omega_1 u^2\omega_2 + \omega_3\omega_4\omega_2 - 2\omega_3 {c_s}^2\omega_1\omega_2 - \omega_3\omega_1 u^2\omega_2 - v^2\omega_3\omega_4 - 2v^2\omega_4\omega_1\omega_2 - 2v^2\omega_2 + 2\omega_4\omega_1 u^2 - \omega_3\omega_4 - 2\omega_3 {c_s}^2 + v^2\omega_3 - \omega_3 u^2\omega_2 + \omega_4\omega_1\omega_2 - \omega_3\omega_1 + 2v^2\omega_1\omega_2 + 2\omega_1 u^2\omega_2 + \omega_4 - v^2\omega_3\omega_4\omega_2 - \omega_3\omega_4\omega_1 u^2 - 2\omega_3\omega_4 {c_s}^2\omega_1 - \omega_1\omega_2 + \omega_1 - \omega_3\omega_4 u^2 - v^2\omega_3\omega_1 + \omega_3\omega_4 u^2\omega_2 + \omega_3 u^2 + 2\omega_3\omega_4 {c_s}^2\omega_1\omega_2 + 2v^2\omega_4\omega_2 + \omega_3\omega_4\omega_1 u^2\omega_2 + \omega_3\omega_1 u^2 + 2\omega_3 {c_s}^2\omega_1 - \omega_4\omega_2 + \omega_3\omega_4\omega_1 - v^2\omega_3\omega_1\omega_2 + \omega_2 + v^2\omega_3\omega_4\omega_1 + \omega_3\omega_1\omega_2 - 2\omega_3\omega_4 {c_s}^2\omega_2 + 2\omega_3\omega_4 {c_s}^2 + v^2\omega_3\omega_2 + v^2\omega_3\omega_4\omega_1\omega_2 - \omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x+\delta_l,y} = -1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 + \omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3 + \tfrac{3}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{3}{4}\omega_3\omega_1 u^2\omega_2 - \omega_3\omega_4 u + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - \tfrac{3}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{2}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 - \omega_1 u^2\omega_2 + \tfrac{3}{4}\omega_4 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2 + \omega_3\omega_4 u\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{2}\omega_3\omega_4 u^2 - \tfrac{1}{2}\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3 u\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 - \tfrac{3}{4}\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_1 u\omega_2 + \omega_2 + \tfrac{1}{2}\omega_4 u + \tfrac{1}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}v^2\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_4 - \tfrac{3}{4}\omega_3\omega_2 + \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l} = -1 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_2 + \tfrac{1}{2}v\omega_4 - \tfrac{3}{4}\omega_4\omega_1 + \tfrac{3}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4 + \tfrac{3}{4}v^2\omega_4\omega_1\omega_2 + v^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3\omega_4 + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{3}{4}\omega_3\omega_1 - v^2\omega_1\omega_2 + \tfrac{3}{4}\omega_4 + v\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}\omega_1\omega_2 + \omega_1 + \tfrac{1}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - \tfrac{3}{4}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 + \tfrac{3}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}v\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{4}\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 -$$

$v\omega_3\omega_4 - \frac{3}{4}v^2\omega_3\omega_2 - \frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 - \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_2 - \frac{1}{2}v\omega_4\omega_1 + \frac{1}{2}v\omega_3\omega_4\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = 1 + \omega_3\omega_4\omega_1\omega_2 + \omega_4\omega_1 - \omega_3 - \omega_3\omega_4\omega_2 + \omega_3\omega_4 - \omega_4\omega_1\omega_2 + \omega_3\omega_1 - \omega_4 + \omega_1\omega_2 - \omega_1 + \omega_4\omega_2 - \omega_3\omega_4\omega_1 - \omega_2 - \omega_3\omega_1\omega_2 + \omega_3\omega_2,$

8.3 EFDE for μ_2

$$\mu_{2,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_2],t-\ell\delta_t}\mu_{2,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x-\delta_l,y}^{[\mu_1],t} = 1 + \omega_1u^2 - \frac{1}{4}\omega_3 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_1 - \frac{1}{2}\omega_1u - \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_4u - \frac{1}{4}\omega_4u^2 + \frac{1}{4}v^2\omega_4 + \frac{1}{2}\omega_3u.$

$\alpha_{x+\delta_l,y}^{[\mu_1],t} = -1 - \omega_1u^2 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_4 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_1u + \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_4u + \frac{1}{4}\omega_4u^2 - \frac{1}{4}v^2\omega_4 + \frac{1}{2}\omega_3u.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{8}\omega_4^2u^3 + \frac{1}{4}\omega_4\omega_1u^3 + \frac{1}{2}\omega_3{c_s}^2\omega_1u - v\omega_4 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3 - \frac{1}{4}v\omega_3\omega_2 + \frac{1}{8}\omega_3^2u - \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4u + \frac{1}{2}v\omega_3\omega_1u - v^2\omega_2 + \frac{1}{8}\omega_4\omega_1u^2 - \frac{1}{2}v^3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2u^2 + \frac{1}{8}v^2\omega_3^2u - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_4u\omega_2 + \frac{1}{4}v\omega_3^2{c_s}^2 + \frac{1}{4}v^2\omega_3^2 - \frac{1}{4}v^2\omega_4\omega_1u - \frac{1}{4}v\omega_3\omega_4{c_s}^2 - \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}v^2\omega_4u\omega_2 - \frac{1}{2}v\omega_1u\omega_2 + \frac{1}{8}\omega_3^2u^3 - \frac{1}{8}\omega_3\omega_1 + \frac{1}{2}v^2\omega_1\omega_2 + \frac{1}{4}v\omega_3u\omega_2 + \frac{3}{4}\omega_4 - \frac{1}{4}\omega_4\omega_1u + \frac{1}{8}\omega_4^2u - \frac{1}{4}\omega_1\omega_2 - \frac{1}{8}v^3\omega_3^2 + \frac{1}{8}v^2\omega_4^2u + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4u^2 + \frac{1}{2}v^3\omega_3\omega_2 + \frac{1}{4}v^2\omega_3\omega_4u + \omega_1u + \frac{3}{8}v\omega_4^2 - \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{8}\omega_4^2 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}\omega_3\omega_1u^3 - \frac{1}{8}v\omega_3^2u^2 - \frac{3}{8}v^2\omega_4^2 + \frac{1}{4}v\omega_3\omega_4u^2 + \frac{3}{4}v^2\omega_4\omega_2 - \frac{1}{4}v\omega_1\omega_2 - \frac{1}{8}\omega_3\omega_1u^2 + \frac{1}{4}\omega_3u\omega_2 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v\omega_4^2u - \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u - \frac{1}{2}\omega_1u\omega_2 + \frac{1}{4}v\omega_3\omega_1 + \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4u - \frac{1}{4}v^2\omega_3\omega_1u + \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4u^2 - \frac{1}{2}v^2\omega_3u\omega_2 + \frac{1}{8}v^3\omega_4^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 + \frac{1}{4}v\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_1u - \frac{1}{8}v\omega_3^2 - \frac{1}{8}v\omega_4^2u^2 - \frac{1}{4}\omega_3\omega_4{c_s}^2u - \frac{1}{4}\omega_3^2{c_s}^2u + \frac{1}{4}v\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3\omega_2 + v^2\omega_1u\omega_2 - \frac{1}{4}v\omega_3^2u + \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4u + \frac{1}{4}v\omega_4\omega_1 - \frac{1}{2}\omega_3u,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + v\omega_4 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}v\omega_3\omega_2 - \frac{1}{2}v\omega_3\omega_1u - \frac{1}{2}\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2u^2 - \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3^2 + v\omega_1u\omega_2 + \frac{1}{4}v\omega_4\omega_2 - \frac{1}{2}v\omega_3u\omega_2 - \omega_4 + \frac{1}{4}\omega_4\omega_1u - \frac{1}{2}\omega_4^2u + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_1 - \omega_1u - \frac{1}{2}v\omega_4^2 + \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4^2 - \frac{1}{2}v^2\omega_4\omega_2 + \frac{1}{2}v\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1u^2 - \frac{1}{4}\omega_3u\omega_2 + \frac{1}{2}v\omega_4^2u + \frac{1}{4}\omega_4\omega_2 - \frac{1}{2}v\omega_4\omega_1u + \frac{1}{2}\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_1 - \frac{1}{2}\omega_2 + \omega_4u - v\omega_2 + \frac{1}{4}\omega_3\omega_1u - \frac{1}{2}v\omega_4u\omega_2 + \frac{1}{2}v^2\omega_3\omega_2 + \frac{1}{2}v\omega_3^2u - \frac{1}{4}v\omega_4\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + \frac{1}{2}v\omega_4 - \frac{5}{4}\omega_3 + \frac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 + \frac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \frac{1}{4}\omega_4 - v^2\omega_4\omega_2 + \frac{5}{2}v\omega_3 + v\omega_2^2 - \frac{1}{2}\omega_2 - 3v\omega_2 - v\omega_3\omega_4 - v\omega_3^2 - 3v^2\omega_3\omega_2 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = 1 - \frac{1}{8}\omega_4^2u^3 + \frac{1}{4}\omega_4\omega_1u^3 + \frac{1}{2}\omega_3{c_s}^2\omega_1u + v\omega_4 + \frac{1}{8}\omega_4\omega_1 - \frac{1}{4}\omega_3 + \frac{1}{4}v\omega_3\omega_2 + \frac{1}{8}\omega_3^2u + \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4u + \frac{1}{2}v\omega_3\omega_1u + v^2\omega_2 - \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}v^3\omega_4\omega_2 + \frac{1}{8}\omega_3\omega_4 - \frac{1}{8}\omega_4^2u^2 + \frac{1}{8}v^2\omega_3^2u + \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_3^2 - \frac{1}{4}v^2\omega_4\omega_1u + \frac{1}{4}v\omega_3\omega_4{c_s}^2 + \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_3 - \frac{1}{2}v^2\omega_4u\omega_2 - \frac{1}{2}v\omega_1u\omega_2 + \frac{1}{8}\omega_3^2u^3 + \frac{1}{8}\omega_3\omega_1 - \frac{1}{2}v^2\omega_1\omega_2 + \frac{1}{4}v\omega_3u\omega_2 - \frac{3}{4}\omega_4 - \frac{1}{4}\omega_4\omega_1u + \frac{1}{8}\omega_4^2u + \frac{1}{4}\omega_1\omega_2 + \frac{1}{8}v^3\omega_3^2 + \frac{1}{8}v^2\omega_4^2u - \frac{1}{2}\omega_1 + \frac{1}{8}\omega_3\omega_4u^2 - \frac{1}{2}v^3\omega_3\omega_2 + \frac{1}{4}v^2\omega_3\omega_4u + \omega_1u - \frac{3}{8}v\omega_4^2 + \frac{1}{8}v^2\omega_3\omega_1 + \frac{1}{8}\omega_4^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{4}\omega_3\omega_1u^3 + \frac{1}{8}v\omega_3^2u^2 + \frac{3}{8}v^2\omega_4^2 - \frac{1}{4}v\omega_3\omega_4u^2 - \frac{3}{4}v^2\omega_4\omega_2 + \frac{1}{4}v\omega_1\omega_2 + \frac{1}{8}\omega_3\omega_1u^2 + \frac{1}{4}\omega_3u\omega_2 - \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v\omega_4^2u + \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u - \frac{1}{2}\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_1 - \frac{1}{2}\omega_2 - \frac{1}{2}\omega_4u - \frac{1}{4}v^2\omega_3\omega_1u - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{2}v^2\omega_3u\omega_2 - \frac{1}{8}v^3\omega_4^2 - \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}v\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_1u + \frac{1}{8}v\omega_3^2 + \frac{1}{8}v\omega_4^2u^2 - \frac{1}{4}\omega_3\omega_4{c_s}^2u - \frac{1}{4}\omega_3^2{c_s}^2u + \frac{1}{4}v\omega_4u\omega_2 + \frac{1}{4}v^2\omega_3\omega_2 + v^2\omega_1u\omega_2 - \frac{1}{4}v\omega_3^2u - \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4u - \frac{1}{4}v\omega_4\omega_1 - \frac{1}{2}\omega_3u,$

$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_2],t-\delta_t} = 1 + v\omega_4 + \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}v\omega_3\omega_2 + \frac{1}{2}v\omega_3\omega_1u - \frac{1}{2}\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3^2 - v\omega_1u\omega_2 + \frac{1}{4}v\omega_4\omega_2 + \frac{1}{2}v\omega_3u\omega_2 - \omega_4 - \frac{1}{4}\omega_4\omega_1u + \frac{1}{2}\omega_4^2u + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_1 + \omega_1u - \frac{1}{2}v\omega_4^2 + \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4^2 - \frac{1}{2}v^2\omega_4\omega_2 + \frac{1}{2}v\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1u^2 + \frac{1}{4}\omega_3u\omega_2 - \frac{1}{2}v\omega_4^2u + \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u - \frac{1}{2}\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_1 - \frac{1}{2}\omega_2 - \omega_4u - v\omega_2 - \frac{1}{4}\omega_3\omega_1u + \frac{1}{2}v\omega_4u\omega_2 + \frac{1}{2}v^2\omega_3\omega_2 - \frac{1}{2}v\omega_3^2u - \frac{1}{4}v\omega_4\omega_1,$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-\delta_t} = -1 + \omega_4\omega_1u^3 - 2\omega_3{c_s}^2\omega_1u + 2\omega_1u^2 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}v^2\omega_3\omega_4 + 2v^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1u^2 - \tfrac{1}{2}v^2\omega_3^2u + 2\omega_3{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4u^3 - v^2\omega_3 + v^2\omega_4u\omega_2 - \tfrac{1}{2}\omega_3^2u^3 - v^2\omega_1\omega_2 + \tfrac{1}{4}\omega_4 + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{1}{2}\omega_1 + \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{1}{2}v^2\omega_3\omega_4u + \omega_1u + \tfrac{1}{2}v^2\omega_3\omega_1 - \omega_3u^2 + 2\omega_3\omega_1u^3 - \tfrac{1}{2}v^2\omega_4\omega_2 - \omega_3{c_s}^2\omega_1 - \tfrac{1}{2}\omega_4u + v^2\omega_3\omega_1u - \tfrac{1}{2}\omega_3^2{c_s}^2 + v^2\omega_3u\omega_2 - 2\omega_1^2u^3 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3\omega_4{c_s}^2u + \omega_3^2{c_s}^2u - \tfrac{1}{2}v^2\omega_3\omega_2 - 2v^2\omega_1u\omega_2 - \omega_1^2u^2 - \tfrac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 - \omega_3^2u - \omega_3\omega_4u - \omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_4\omega_1u + \omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4u^2 - 3\omega_1u + \omega_1^2u - 3\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_4u + \tfrac{1}{2}\omega_3\omega_1u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2u^2 + \tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = \tfrac{1}{2}\omega_4^2u^3 - 3\omega_4\omega_1u^3 + 2\omega_3{c_s}^2\omega_1u + \tfrac{1}{2}\omega_3^2u + \omega_3\omega_4u + \tfrac{1}{2}v^2\omega_3^2u + v^2\omega_4\omega_1u + \omega_3\omega_4u^3 + \tfrac{1}{2}\omega_3^2u^3 - \omega_4\omega_1u + \tfrac{1}{2}\omega_4^2u - \tfrac{1}{2}v^2\omega_4^2u + 3\omega_1u - 3\omega_3\omega_1u^3 - \omega_1^2u - \omega_4u - v^2\omega_3\omega_1u + 4\omega_1^2u^3 - \omega_3\omega_1u - \omega_3\omega_4{c_s}^2u - \omega_3^2{c_s}^2u - \omega_3u,$$

$$\alpha_{x,y}^{[\mu_2],t-\delta_t} = 2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4\omega_4\omega_1u^2 - \omega_4^2u^2 - v^2\omega_3^2 - 4v^2\omega_2^2 - \omega_3^2u^2 - 2\omega_1 - 2\omega_3\omega_4u^2 - v^2\omega_4^2 + 4v^2\omega_4\omega_2 + 4\omega_3\omega_1u^2 + \omega_2^2 - 2\omega_2 + 4v^2\omega_3\omega_2 - 4\omega_1^2u^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_1],t-\delta_t} = 1 + \omega_4\omega_1u^3 - 2\omega_3{c_s}^2\omega_1u - 2\omega_1u^2 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v^2\omega_3\omega_4 - 2v^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1u^2 - \tfrac{1}{2}v^2\omega_3^2u - 2\omega_3{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4u^3 + v^2\omega_3 + v^2\omega_4u\omega_2 - \tfrac{1}{2}\omega_3^2u^3 + v^2\omega_1\omega_2 - \tfrac{1}{4}\omega_4 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 - \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{1}{2}v^2\omega_3\omega_4u + \omega_1u - \tfrac{1}{2}v^2\omega_3\omega_1 + \omega_3u^2 + 2\omega_3\omega_1u^3 + \tfrac{1}{2}v^2\omega_4\omega_2 + \omega_3{c_s}^2\omega_1 - \tfrac{1}{2}\omega_4u + v^2\omega_3\omega_1u + \tfrac{1}{2}\omega_3^2{c_s}^2 + v^2\omega_3u\omega_2 - 2\omega_1^2u^3 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \omega_3\omega_4{c_s}^2u + \omega_3^2{c_s}^2u + \tfrac{1}{2}v^2\omega_3\omega_2 - 2v^2\omega_1u\omega_2 + \omega_1^2u^2 - \tfrac{1}{2}\omega_3u,$$

$$\alpha_{x+\delta_l,y}^{[\mu_2],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \omega_3^2u + \omega_3\omega_4u - \omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_4\omega_1u + \omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4u^2 + 3\omega_1u - \omega_1^2u - 3\omega_3\omega_1u^2 - \tfrac{1}{2}\omega_4u - \tfrac{1}{2}\omega_3\omega_1u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2u^2 - \tfrac{5}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{8}\omega_4^2u^3 + \tfrac{1}{4}\omega_4\omega_1u^3 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1u + v\omega_4 - \tfrac{1}{8}\omega_4\omega_1 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2u - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4u - \tfrac{1}{2}v\omega_3\omega_1u - v^2\omega_2 + \tfrac{1}{8}\omega_4\omega_1u^2 + \tfrac{1}{2}v^3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4 + \tfrac{1}{8}\omega_4^2u^2 + \tfrac{1}{8}v^2\omega_3^2u - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v\omega_3^2{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}v^2\omega_4\omega_1u + \tfrac{1}{4}v\omega_3\omega_4{c_s}^2 - \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{2}v^2\omega_4u\omega_2 + \tfrac{1}{2}v\omega_1u\omega_2 + \tfrac{1}{8}\omega_3^2u^3 - \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{2}v^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3u\omega_2 + \tfrac{3}{4}\omega_4 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{8}\omega_4^2u - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2u + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4u^2 - \tfrac{1}{2}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4u + \omega_1u - \tfrac{3}{8}v\omega_4^2 - \tfrac{1}{8}v^2\omega_3\omega_1 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{4}\omega_3\omega_1u^3 + \tfrac{1}{8}v\omega_3^2u^2 - \tfrac{3}{8}v^2\omega_4^2 - \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{3}{4}v^2\omega_4\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{8}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{1}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2u - \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u - \tfrac{1}{2}\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4u - \tfrac{1}{4}v^2\omega_3\omega_1u - \tfrac{1}{2}v\omega_2 - \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{2}v^2\omega_3u\omega_2 - \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1u + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2u - \tfrac{1}{4}\omega_3^2{c_s}^2u - \tfrac{1}{4}v\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2 + v^2\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3^2u + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4u - \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u - \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_4^2u^2 - \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 - v\omega_1u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3u\omega_2 - \omega_4 + \tfrac{1}{4}\omega_4\omega_1u - \tfrac{1}{2}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 - \omega_1u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_3u\omega_2 - \tfrac{1}{2}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v\omega_4\omega_1u + \tfrac{1}{2}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 + \omega_4u + v\omega_2 + \tfrac{1}{4}\omega_3\omega_1u + \tfrac{1}{2}v\omega_4u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_3^2u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - \tfrac{1}{2}v\omega_4 - \tfrac{5}{4}\omega_3 - \tfrac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 - \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \tfrac{1}{4}\omega_4 - v^2\omega_4\omega_2 - \tfrac{5}{2}v\omega_3 - v\omega_2^2 - \tfrac{1}{2}\omega_2 + 3v\omega_2 + v\omega_3\omega_4 + v\omega_3^2 - 3v^2\omega_3\omega_2 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{8}\omega_4^2u^3 + \tfrac{1}{4}\omega_4\omega_1u^3 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1u - v\omega_4 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2u + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4u - \tfrac{1}{2}v\omega_3\omega_1u + v^2\omega_2 - \tfrac{1}{8}\omega_4\omega_1u^2 - \tfrac{1}{2}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2u^2 + \tfrac{1}{8}v^2\omega_3^2u + \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_4u\omega_2 + \tfrac{1}{4}v\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}v^2\omega_4\omega_1u - \tfrac{1}{4}v\omega_3\omega_4{c_s}^2 + \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{2}v^2\omega_4u\omega_2 + \tfrac{1}{2}v\omega_1u\omega_2 + \tfrac{1}{8}\omega_3^2u^3 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{2}v^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3u\omega_2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{8}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2u - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{2}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4u + \omega_1u + \tfrac{3}{8}v\omega_4^2 + \tfrac{1}{8}v^2\omega_3\omega_1 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{4}\omega_3\omega_1u^3 - \tfrac{1}{8}v\omega_3^2u^2 + \tfrac{3}{8}v^2\omega_4^2 + \tfrac{1}{4}v\omega_3\omega_4u^2 - \tfrac{3}{4}v^2\omega_4\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3u\omega_2 - \tfrac{1}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u - \tfrac{1}{2}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4u - \tfrac{1}{4}v^2\omega_3\omega_1u + \tfrac{1}{2}v\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{2}v^2\omega_3u\omega_2 + \tfrac{1}{8}v^3\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1u - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2u - \tfrac{1}{4}\omega_3^2{c_s}^2u - \tfrac{1}{4}v\omega_4u\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_2 + v^2\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3^2u - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4u + \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}\omega_3u,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_2],t-\delta_t} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}v\omega_3\omega_1u - \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 + v\omega_1u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3u\omega_2 - \omega_4 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{2}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_1u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{1}{2}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u - \tfrac{1}{2}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 -$$

$$\omega_4 u + v\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u - \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_3^2 u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}v^2\omega_3^2\omega_1 u^2 - \tfrac{1}{4}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{8}\omega_4^2 u^3 - \tfrac{5}{4}\omega_4\omega_1 u^3 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 u + v\omega_4 - 3\omega_1 u^2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2 u\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{3}{4}v\omega_4^2\omega_1 u^2 - \tfrac{3}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + v\omega_4\omega_1^2 u^3 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - v^2\omega_3 {c_s}^2\omega_2^2 - \tfrac{1}{8}\omega_3^2 u + \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 u + \tfrac{3}{2}v^2\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}v^3\omega_3\omega_2^2 - \tfrac{1}{4}\omega_3\omega_4 u - \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{1}{4}v\omega_3^2 u^3\omega_2 + \tfrac{3}{2}v^2\omega_3\omega_1 u\omega_2 - \tfrac{7}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{13}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{3}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{3}{8}v^2\omega_3^2 u - 2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{2}v\omega_1 u\omega_2^2 - \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{2}v^2\omega_3^2 - 2v\omega_1^2 u^3\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u + \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 u^3\omega_2 - \tfrac{9}{4}v\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_4\omega_1^2 u^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}v^2\omega_3^2\omega_2 - \tfrac{5}{4}v\omega_4 u^2\omega_2 - \tfrac{1}{2}v\omega_4^2\omega_1 u^3 - \tfrac{1}{4}v^4\omega_4^2\omega_2 - \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 u^3 + v^2\omega_3 - \tfrac{5}{8}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1 u^3 - \tfrac{1}{2}v^2\omega_4 u\omega_2 + 2v\omega_1 u\omega_2 + \omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{3}{8}\omega_3^2 u^3 - \tfrac{1}{2}v^2\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 + \tfrac{1}{4}v\omega_4 u^2\omega_2^2 - 2v^2\omega_1 u^2\omega_2^2 + \omega_3\omega_4\omega_1 u^3 + \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 u + \tfrac{1}{8}v\omega_4\omega_2 - \omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2 u^3 - \tfrac{1}{4}v\omega_3 u\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 + \tfrac{3}{2}\omega_1 u^2\omega_2 - \tfrac{3}{4}v\omega_3^2\omega_4 u^2 - \tfrac{5}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{4}v^3\omega_4\omega_2^2 + \tfrac{3}{8}\omega_4\omega_1 u + v\omega_3\omega_4 {c_s}^2\omega_1 u - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{2}v^2\omega_3 u^2\omega_2^2 - \tfrac{3}{2}v^2\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - v\omega_1^2 u^2\omega_2 + \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{4}v^3\omega_3^2 u\omega_2 - \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{4}v^2\omega_4^2 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2 u^3 - \tfrac{1}{2}\omega_1 + \tfrac{1}{2}v\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 u^2 - \tfrac{1}{2}v^2\omega_3^2\omega_4 {c_s}^2 - \tfrac{11}{8}\omega_3\omega_4 u^2 + \tfrac{3}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 u - \tfrac{1}{2}v^2\omega_3^2\omega_1 u - \tfrac{3}{2}\omega_1 u - \tfrac{3}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}v^4\omega_3^2\omega_2 + \tfrac{1}{4}v\omega_3^2 u^2\omega_2 + \tfrac{1}{2}v\omega_3^2\omega_4 u^3 - \tfrac{3}{4}v\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 u + \tfrac{3}{8}\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{2}v^3\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4^2 u^2 - v\omega_3 {c_s}^2\omega_1 u\omega_2 + v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_3^2 u^2\omega_2 + \omega_3 u^2 - \tfrac{1}{4}\omega_3^2\omega_4 u^3 - \tfrac{7}{4}\omega_3\omega_1 u^3 + \tfrac{1}{4}v^2\omega_4^2 u\omega_2 + \tfrac{1}{8}v\omega_3^2 u^2 + \tfrac{3}{8}v^2\omega_4^2 + \tfrac{9}{4}v\omega_3\omega_4 u^2 + \tfrac{3}{4}v\omega_3^2\omega_1 u^2 + v\omega_3\omega_1^2 u^3 + \tfrac{7}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}v\omega_3^2 u\omega_2 + \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}\omega_1^2 u^2\omega_2 + \tfrac{11}{8}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3^2\omega_4 u^2 - \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2 u - 2v\omega_3\omega_4\omega_1 u^3 + 5v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2 u^3 + \tfrac{1}{2}v^2\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2 u - v^2\omega_1 u\omega_2^2 - \tfrac{1}{4}v\omega_4^2 u^3\omega_2 + \tfrac{1}{2}v^4\omega_4\omega_2^2 + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_2^2 + \tfrac{3}{2}v\omega_3\omega_1 u^3\omega_2 - \tfrac{3}{4}v\omega_4\omega_1 u + \tfrac{1}{2}v\omega_3\omega_1^2 u^2 + \tfrac{3}{4}\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_1 u^3 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{5}{4}v\omega_3 u^2\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 u - \tfrac{3}{4}v^2\omega_3\omega_1 u - v^2\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{2}v\omega_4\omega_1 u^3\omega_2 - \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_2 + 2v^2\omega_3\omega_1 u^2\omega_2 - \omega_1^2 u^3\omega_2 + \tfrac{1}{4}v\omega_3 u^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{4}\omega_4^2\omega_1 u^3 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{2}v^2\omega_3 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{2}v^3\omega_4^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 u + 2\omega_1^2 u^3 + \tfrac{1}{2}v^2\omega_3^2\omega_4 u^2 + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 - \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{7}{8}\omega_3\omega_1 u + \tfrac{1}{2}v^2\omega_4 u^2\omega_2^2 + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2 u^2 + 2v^2\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_3\omega_4 {c_s}^2 u - v\omega_1 u^2\omega_2^2 - \tfrac{1}{4}\omega_3^2 u^3\omega_2 - \tfrac{3}{4}\omega_3^2 {c_s}^2 u - \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}\omega_3\omega_4 u^3\omega_2 + v^2\omega_1 u\omega_2 - \tfrac{5}{2}v\omega_4\omega_1 u^2 + \tfrac{3}{4}v\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{4}v^3\omega_4^2 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 u^3 + \tfrac{1}{4}v\omega_3^2 u - \tfrac{1}{2}v^2\omega_4 + \omega_1^2 u^2 - \tfrac{3}{4}v\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2 u^2 + \tfrac{1}{2}v\omega_3^2\omega_1 u + \tfrac{1}{2}\omega_3^2 {c_s}^2 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 u + \tfrac{1}{2}v^3\omega_4\omega_1 u\omega_2 - \tfrac{1}{2}v^4\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_4\omega_2^2 + \tfrac{1}{8}v\omega_3^2\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{4}v\omega_4^2 u^2\omega_2 + \tfrac{5}{2}v\omega_3 {c_s}^2\omega_2 + \tfrac{3}{4}v\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{2}v\omega_3\omega_4^2 {c_s}^2 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 - \tfrac{3}{4}v\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{8}v\omega_3\omega_4\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3 u,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_2],t-2\delta_t} = -2 + v\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_3^2 u\omega_2 - \tfrac{3}{2}v\omega_4 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{5}{2}\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u^2\omega_2 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + 2v\omega_3\omega_4^2 u + v\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1 u + \tfrac{1}{2}v\omega_4^2\omega_1 u^2 - \tfrac{3}{4}v\omega_4^2 u\omega_2 - 2v\omega_3\omega_2 - \tfrac{3}{2}\omega_3\omega_1 u^2\omega_2 + \omega_3^2 u - v^2\omega_3\omega_4 + \tfrac{7}{2}\omega_3\omega_4 u + \tfrac{1}{4}\omega_3^2\omega_1 u + v^2\omega_1\omega_2^2 - 2v^2\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3 u\omega_2^2 + \tfrac{1}{4}v\omega_4\omega_2^2 + 3v\omega_3\omega_1 u - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2 + 2v\omega_3^2\omega_4 u + \tfrac{3}{2}\omega_4\omega_1 u^2 - \tfrac{7}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2 u^2 + \tfrac{1}{2}\omega_4 u\omega_2 - 2v^2\omega_4\omega_1 u\omega_2 + v\omega_1 u\omega_2^2 - v^2\omega_4 u\omega_2^2 - \tfrac{3}{4}v^2\omega_3^2 + \tfrac{1}{2}v\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2 u - \tfrac{3}{4}v\omega_3^2\omega_4 - v\omega_4\omega_1^2 u^2 - \tfrac{1}{4}v^2\omega_3^2\omega_2 - 6v\omega_1 u\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2 u^2 - \tfrac{1}{2}v\omega_4\omega_1^2 u - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{1}{2}v\omega_3^2\omega_1 - 2v\omega_4\omega_2 + 3v\omega_3 u\omega_2 - 2v^2\omega_2^2 - v\omega_3^2\omega_4 u^2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{3}{2}\omega_4 - 2\omega_4\omega_1 u - v\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2 u - \tfrac{3}{2}v^2\omega_3\omega_4\omega_2 - \tfrac{3}{4}v\omega_4^2\omega_1 u - \tfrac{3}{2}\omega_3\omega_4\omega_1 u^2 - \omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}v\omega_3\omega_2^2 + 2v\omega_1^2 u^2\omega_2 - \tfrac{1}{2}\omega_3^2 u\omega_2 - \tfrac{3}{4}\omega_3^2 u^2 + \omega_1 + v\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 u^2 - \omega_3\omega_4 u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2 + \tfrac{1}{2}v^2\omega_3^2\omega_1 u + 4\omega_1 u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{2}\omega_1^2 u\omega_2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_3^2 u^2\omega_2 - v\omega_3\omega_4^2 u^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4 u^2\omega_2 - \tfrac{3}{2}v\omega_3\omega_4 u\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2 u^2 + 3v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3^2 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2 u\omega_2 + v\omega_1^2 u\omega_2 - \omega_1^2 u - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{1}{4}\omega_4^2\omega_1 u - v^2\omega_3\omega_4^2 u + \tfrac{1}{2}v\omega_3^2\omega_1 u^2 + \tfrac{3}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{3}{4}v\omega_3^2 u\omega_2 - 2v\omega_1\omega_2 + \omega_1^2 u^2\omega_2 + \tfrac{5}{2}\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_3^2\omega_4 u^2 - \tfrac{3}{4}v\omega_3\omega_4^2 + \tfrac{3}{2}\omega_3 u\omega_2 - \tfrac{1}{2}v\omega_4^2 u - \tfrac{5}{2}v\omega_3 + 2v^2\omega_1 u\omega_2^2 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4 u\omega_2^2 + \tfrac{1}{2}v^2\omega_3\omega_2^2 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{3}{2}v^2\omega_3\omega_1\omega_2 + 3v\omega_4\omega_1 u - v\omega_3\omega_1^2 u^2 - v\omega_2^2 - 2\omega_1 u\omega_2 + \tfrac{3}{2}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_4^2\omega_2 + 3v^2\omega_3\omega_4 u\omega_2 + \omega_2 - \tfrac{3}{2}\omega_4 u - v^2\omega_3 u\omega_2^2 - v^2\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1^2 u + \tfrac{1}{2}v\omega_4\omega_1\omega_2 + 4v\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}v\omega_3\omega_1^2 u + \tfrac{1}{2}\omega_3\omega_1\omega_2 + v^2\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 u^2 + \tfrac{7}{2}v\omega_3\omega_4 - \tfrac{3}{4}\omega_3^2\omega_4 u - 2\omega_3\omega_1 u + v\omega_3^2 + 3v\omega_4 u\omega_2 + \tfrac{5}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}\omega_3^2 - \tfrac{1}{2}v\omega_3^2 u - 2\omega_1^2 u^2 - 2v\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 u^2 - \tfrac{3}{4}v\omega_3^2\omega_1 u - 5v\omega_3\omega_4 u + \tfrac{1}{2}\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_1\omega_2^2 + \tfrac{1}{2}v^2\omega_4\omega_2^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_4^2 u^2\omega_2 - 2v\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 u - \tfrac{3}{4}\omega_3\omega_4^2 u + \tfrac{1}{2}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3\omega_1 u\omega_2 - \tfrac{3}{2}v\omega_3\omega_4\omega_1 u - \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = -\tfrac{1}{2}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_4^2 u^3 + \tfrac{5}{2}\omega_4\omega_1 u^3 - \tfrac{1}{4}v^2\omega_3^2 u\omega_2 - 3\omega_3 {c_s}^2\omega_1 u - v\omega_3^2 {c_s}^2 u\omega_2 - v\omega_3\omega_4^2 u - \tfrac{3}{2}v\omega_3\omega_1 u\omega_2 - \omega_3\omega_4\omega_1 u - 2v\omega_4\omega_1^2 u^3 - \tfrac{3}{4}\omega_3^2 u - \omega_3\omega_4^2 {c_s}^2 u - \tfrac{3}{2}\omega_3\omega_4 u + \tfrac{1}{2}v\omega_3^2 u^3\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_1 u\omega_2 - v\omega_3\omega_1 u - v\omega_3^2\omega_4 u - v\omega_3\omega_4 {c_s}^2 u\omega_2 -$$

$\frac{3}{4}v^2\omega_3^2u-\frac{1}{2}\omega_4u\omega_2+\frac{5}{2}v^2\omega_4\omega_1u\omega_2+4v\omega_1^2u^3\omega_2-\frac{1}{2}v^2\omega_4\omega_1u+v\omega_3\omega_4u^3\omega_2+v\omega_4^2\omega_1u^3-\omega_3\omega_4u^3+v^2\omega_4u\omega_2+3v\omega_1u\omega_2-\frac{3}{2}\omega_3\omega_1u^3\omega_2-\frac{3}{4}\omega_3^2u^3+\frac{1}{2}v\omega_4\omega_1^2u-2\omega_3\omega_4\omega_1u^3-\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2-v\omega_3\omega_4^2u^3-\frac{1}{2}v\omega_3u\omega_2-\frac{3}{2}\omega_4\omega_1u^3\omega_2+\frac{7}{2}\omega_4\omega_1u-2v\omega_3\omega_4{c_s}^2\omega_1u-\frac{3}{4}\omega_4^2u+\frac{1}{4}\omega_4^2u^3\omega_2+v\omega_4^2\omega_1u+\frac{1}{2}\omega_3\omega_4u\omega_2-\frac{1}{2}v^3\omega_3^2u\omega_2+\frac{1}{4}\omega_3^2u\omega_2+\frac{1}{4}v^2\omega_4^2u-\frac{1}{2}v^2\omega_3\omega_4u+\frac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u-\frac{1}{2}\omega_1^2u\omega_2-v\omega_3^2\omega_4u^3+2\omega_3\omega_4{c_s}^2\omega_1u+\frac{1}{2}v\omega_3\omega_4u\omega_2+2v\omega_3{c_s}^2\omega_1u\omega_2+\frac{1}{2}\omega_3^2\omega_4u^3+\frac{7}{2}\omega_3\omega_1u^3-\frac{3}{4}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2+\omega_1^2u-\frac{1}{2}\omega_4^2\omega_1u+\frac{1}{2}v^2\omega_3\omega_4^2u-2v\omega_3\omega_1^2u^3+\frac{1}{2}v\omega_3^2u\omega_2+v\omega_3^2\omega_4{c_s}^2u+4v\omega_3\omega_4\omega_1u^3+\frac{1}{2}\omega_3\omega_4^2u^3-\frac{1}{2}\omega_3u\omega_2+\frac{1}{2}v\omega_4^2u+\frac{1}{2}v\omega_4^2u^3\omega_2-3v\omega_3\omega_1u^3\omega_2-3v\omega_4\omega_1u+2\omega_1u\omega_2+v\omega_3^2\omega_1u^3-v^2\omega_3\omega_4u\omega_2+\omega_4u+\frac{1}{2}v^2\omega_3^2\omega_4u-\frac{1}{2}\omega_4\omega_1^2u+\frac{3}{2}v^2\omega_3\omega_1u-3v\omega_4\omega_1u^3\omega_2+\frac{1}{2}v\omega_3\omega_1^2u+2\omega_1^2u^3\omega_2-\omega_4^2\omega_1u^3+v^2\omega_3u\omega_2-v^2\omega_3\omega_4\omega_1u-4\omega_1^2u^3+\frac{1}{2}\omega_3^2\omega_4u+\frac{3}{2}\omega_3\omega_1u+\frac{3}{2}\omega_3\omega_4{c_s}^2u+\frac{1}{4}\omega_3^2u^3\omega_2+\frac{3}{2}\omega_3^2{c_s}^2u-\frac{1}{2}v\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_4u^3\omega_2-2v^2\omega_1u\omega_2+\frac{1}{2}v^3\omega_4^2u\omega_2+2\omega_4\omega_1^2u^3+\frac{1}{2}v\omega_3^2u+\frac{1}{4}\omega_4^2u\omega_2-\frac{1}{2}\omega_3^2{c_s}^2u\omega_2+v\omega_3\omega_4u-v^3\omega_4\omega_1u\omega_2-\omega_4\omega_1u\omega_2+v\omega_3\omega_4^2{c_s}^2u-\frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\frac{1}{2}v^2\omega_4^2\omega_1u+\frac{1}{2}\omega_3\omega_4^2u+v^3\omega_3\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_1u\omega_2+2v\omega_3\omega_4\omega_1u+\omega_3u,$

$\alpha^{[\mu_2],t-2\delta_t}_{x,y-\delta_l}=-2-2v\omega_4-\frac{1}{2}\omega_4^2u^2\omega_2-\frac{5}{2}\omega_4\omega_1+2\omega_4\omega_1u^2\omega_2-v\omega_4^2\omega_1u^2-\frac{1}{2}v\omega_3\omega_2-v\omega_4^2\omega_1+2\omega_3\omega_1u^2\omega_2-\omega_1^2-v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1u^2+\frac{1}{2}\omega_4^2u^2+\frac{1}{2}v^2\omega_3^2+\frac{1}{2}v\omega_3\omega_1\omega_2+2v\omega_4\omega_1^2u^2+\frac{1}{2}\omega_4\omega_1\omega_2-\frac{1}{2}v\omega_4\omega_2+2v\omega_3^2\omega_4u^2+2\omega_4+3\omega_3\omega_4\omega_1u^2-\frac{3}{2}\omega_1\omega_2-4v\omega_1^2u^2\omega_2+\frac{3}{2}\omega_3^2u^2+3\omega_1-2v\omega_3\omega_4u^2\omega_2+2\omega_3\omega_4u^2+v\omega_4^2+\frac{1}{2}\omega_4\omega_1^2-v\omega_3^2u^2\omega_2+v\omega_1^2\omega_2+2v\omega_3\omega_4^2u^2-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_1^2\omega_2-\frac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-6v\omega_3\omega_4\omega_1u^2-\frac{1}{2}\omega_3^2u^2\omega_2-\frac{1}{2}v^2\omega_4^2-v\omega_3^2\omega_1u^2+v^2\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1-3v\omega_1\omega_2-2\omega_1^2u^2\omega_2-5\omega_3\omega_1u^2-\omega_3^2\omega_4u^2-\frac{1}{2}\omega_4\omega_2+v^2\omega_3\omega_1\omega_2+2v\omega_3\omega_1^2u^2+\frac{1}{2}v\omega_3\omega_1+\omega_2+\frac{1}{2}v\omega_4\omega_1\omega_2+2v\omega_2-\frac{1}{2}v\omega_3\omega_1^2-2\omega_4\omega_1^2u^2+\frac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2+4\omega_1^2u^2+4v\omega_4\omega_1u^2\omega_2+\omega_4^2\omega_1u^2+\frac{1}{2}\omega_4^2\omega_1+\frac{5}{2}v\omega_4\omega_1-v\omega_4^2u^2\omega_2+4v\omega_3\omega_1u^2\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l}=-1+\frac{1}{2}v^2\omega_3^2\omega_1u^2-\frac{1}{4}v\omega_4\omega_1u\omega_2+\frac{1}{4}\omega_3^2\omega_4{c_s}^2+\frac{1}{8}\omega_4^2u^3-\frac{5}{4}\omega_4\omega_1u^3-\frac{5}{4}\omega_3{c_s}^2\omega_2+\frac{3}{2}\omega_3{c_s}^2\omega_1u-v\omega_4+3\omega_1u^2+\frac{1}{2}v\omega_3^2{c_s}^2u\omega_2-\frac{1}{8}\omega_4\omega_1+\frac{1}{4}\omega_3+\frac{1}{2}\omega_4\omega_1u^2\omega_2+\frac{1}{4}v\omega_3\omega_1u\omega_2-\frac{1}{8}\omega_3\omega_4\omega_1u-\frac{3}{4}v\omega_4^2\omega_1u^2+\frac{3}{8}v\omega_3\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+v\omega_4\omega_1^2u^3+\frac{1}{4}\omega_3\omega_1u^2\omega_2+v^2\omega_3{c_s}^2\omega_2^2-\frac{1}{8}\omega_3^2u+\frac{1}{4}\omega_3\omega_4^2{c_s}^2u-\frac{3}{2}v^2\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{8}v^2\omega_3\omega_4-\frac{1}{4}v^3\omega_3\omega_2^2-\frac{1}{4}\omega_3\omega_4u-\frac{1}{8}\omega_3^2\omega_1u-\frac{1}{4}v\omega_3^2u^3\omega_2+\frac{3}{2}v^2\omega_3\omega_1u\omega_2-\frac{7}{4}v\omega_3\omega_1u+\frac{1}{4}v^2\omega_4\omega_1\omega_2+v^2\omega_2+\frac{1}{2}v\omega_3\omega_4{c_s}^2u\omega_2+\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2-\frac{13}{8}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4^2{c_s}^2+\frac{3}{4}v^3\omega_4\omega_2-\frac{1}{8}\omega_3\omega_4+\frac{1}{8}\omega_4^2u^2+\frac{3}{8}v^2\omega_3^2u+2\omega_3{c_s}^2-\frac{1}{4}\omega_4u\omega_2-\frac{1}{2}v\omega_1u\omega_2^2+\frac{1}{4}v\omega_3^2{c_s}^2+\frac{1}{2}v^2\omega_3^2-2v\omega_1^2u^3\omega_2+\frac{1}{4}v^2\omega_4\omega_1u-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_4u^3\omega_2+\frac{9}{4}v\omega_3\omega_4{c_s}^2-\frac{1}{2}v\omega_4\omega_1^2u^2-\frac{1}{8}v^2\omega_4\omega_1-\frac{1}{8}v^2\omega_3^2\omega_2+\frac{5}{4}v\omega_4u^2\omega_2-\frac{1}{2}v\omega_4^2\omega_1u^3+\frac{1}{4}v^4\omega_4^2\omega_2+\frac{1}{2}v\omega_3^2{c_s}^2\omega_2+\frac{1}{2}\omega_3\omega_4u^3-v^2\omega_3+\frac{5}{8}\omega_3u^2\omega_2+\frac{1}{4}\omega_3^2\omega_1u^3-\frac{1}{2}v^2\omega_4u\omega_2+2v\omega_1u\omega_2+\omega_3\omega_1u^3\omega_2+\frac{1}{4}\omega_3\omega_1^2u^2+\frac{3}{8}\omega_3^2u^3+\frac{1}{2}v^2\omega_3\omega_4^2{c_s}^2-\frac{1}{4}v^3\omega_4\omega_1\omega_2-\frac{1}{8}\omega_3\omega_1-\frac{1}{4}v\omega_4u^2\omega_2^2+2v^2\omega_1u^2\omega_2^2+\omega_3\omega_4\omega_1u^3+\frac{1}{4}\omega_3^2\omega_4{c_s}^2u-\frac{1}{8}v\omega_4\omega_2-\omega_3{c_s}^2\omega_1u\omega_2-\frac{1}{2}v^2\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_4^2u^3-\frac{1}{4}v\omega_3u\omega_2+\frac{1}{2}\omega_4\omega_1u^3\omega_2-\frac{3}{2}\omega_1u^2\omega_2+\frac{3}{4}v\omega_3^2\omega_4u^2+\frac{5}{2}v\omega_3\omega_1u^2+\frac{3}{4}\omega_4+\frac{1}{4}v^3\omega_4\omega_2^2+\frac{3}{8}\omega_4\omega_1u+v\omega_3\omega_4{c_s}^2\omega_1u-\frac{1}{8}\omega_4^2u-\frac{1}{2}v^2\omega_3u^2\omega_2^2+\frac{3}{2}v^2\omega_3\omega_4u^2\omega_2+\frac{1}{8}v^2\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_1\omega_2+v\omega_1^2u^2\omega_2-\frac{1}{8}v^3\omega_3^2+\frac{1}{4}v^3\omega_3^2u\omega_2-\frac{1}{8}v^2\omega_4^2u+\frac{1}{4}\omega_3^2u^2+\frac{1}{4}v^2\omega_4^2u^2\omega_2-\frac{1}{2}\omega_3\omega_1^2u^3+\frac{1}{2}\omega_1-\frac{1}{2}v\omega_3\omega_4u^2\omega_2+\frac{1}{4}\omega_3^2\omega_1u^2+\frac{1}{2}v^2\omega_3^2\omega_4{c_s}^2+\frac{11}{8}\omega_3\omega_4u^2-\frac{3}{4}v^3\omega_3\omega_2+\frac{1}{4}v^2\omega_3\omega_4u-\frac{1}{2}v^2\omega_3^2\omega_1u-\frac{3}{2}\omega_1u+\frac{3}{8}v\omega_4^2+\frac{1}{4}v^2\omega_4^2\omega_2+\frac{3}{8}v^2\omega_3\omega_1-\frac{1}{4}v^4\omega_3^2\omega_2-\frac{1}{4}v\omega_3^2u^2\omega_2+\frac{1}{2}v\omega_3^2\omega_4u^3+\frac{3}{4}v\omega_3\omega_4^2u^2-\frac{1}{8}\omega_4^2+\frac{1}{2}v\omega_3{c_s}^2\omega_2^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u-\frac{3}{8}\omega_3\omega_4u^2\omega_2+\frac{1}{2}v^3\omega_3^2\omega_2-\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}v\omega_3\omega_4u\omega_2+\frac{1}{2}v^2\omega_4^2\omega_1u^2-\frac{1}{4}\omega_3\omega_4^2u^2-v\omega_3{c_s}^2\omega_1u\omega_2-v\omega_3\omega_4\omega_1u^2-\frac{1}{8}\omega_3^2u^2\omega_2-\omega_3u^2-\frac{1}{4}\omega_3^2\omega_4u^3-\frac{7}{4}\omega_3\omega_1u^3+\frac{1}{4}v^2\omega_4^2u\omega_2-\frac{1}{8}v\omega_3^2u^2-\frac{3}{8}v^2\omega_4^2-\frac{9}{4}v\omega_3\omega_4u^2-\frac{3}{4}v\omega_3^2\omega_1u^2+v\omega_3\omega_1^2u^3-\frac{7}{8}v^2\omega_4\omega_2-\frac{1}{4}v\omega_3^2u\omega_2-\frac{1}{4}v\omega_1\omega_2+\frac{1}{2}\omega_1^2u^2\omega_2-\frac{11}{8}\omega_3\omega_1u^2-\frac{1}{4}\omega_3^2\omega_4u^2-\frac{1}{2}v\omega_3^2\omega_4{c_s}^2u-2v\omega_3\omega_4\omega_1u^3-5v\omega_1u^2\omega_2-\frac{1}{4}\omega_3\omega_4^2u^3-\frac{1}{2}v^2\omega_3^2{c_s}^2\omega_2-\frac{1}{4}\omega_3u\omega_2-\frac{3}{4}\omega_3{c_s}^2\omega_1+\frac{1}{4}v\omega_4^2u-v^2\omega_1u\omega_2^2-\frac{1}{4}v\omega_4^2u^3\omega_2-\frac{1}{2}v^4\omega_4\omega_2^2-\frac{1}{4}\omega_4\omega_2-\frac{1}{4}v^2\omega_3\omega_2^2+\frac{3}{2}v\omega_3\omega_1u^3\omega_2-\frac{3}{4}v\omega_4\omega_1u-\frac{1}{2}v\omega_3\omega_1^2u^2+\frac{3}{4}\omega_1u\omega_2-\frac{1}{2}v\omega_3^2\omega_1u^3+\frac{1}{4}v\omega_3\omega_1+\frac{5}{4}v\omega_3u^2\omega_2+\frac{1}{4}v^2\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_2+\frac{1}{2}\omega_4u-\frac{3}{4}v^2\omega_3\omega_1u+v^2\omega_3\omega_4\omega_1u^2+\frac{3}{2}v\omega_4\omega_1u^3\omega_2+\frac{1}{4}v^3\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_2-2v^2\omega_3\omega_1u^2\omega_2-\omega_1^2u^3\omega_2-\frac{1}{4}v\omega_3u^2\omega_2^2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\frac{1}{2}\omega_4u^2-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{4}\omega_4^2\omega_1u^3+\frac{1}{4}\omega_3^2{c_s}^2\omega_2-\frac{1}{2}v^2\omega_3u\omega_2+\frac{1}{8}\omega_4u^2\omega_2+\frac{1}{8}v^3\omega_4^2-\frac{1}{2}v^3\omega_4^2\omega_2-\frac{1}{2}v^2\omega_3\omega_4\omega_1u+2\omega_1^2u^3-\frac{1}{2}v^2\omega_3^2\omega_4u^2-\frac{3}{2}\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_4\omega_1^2u^2+\frac{1}{4}v\omega_3\omega_4+\frac{7}{8}\omega_3\omega_1u-\frac{1}{2}v^2\omega_4u^2\omega_2^2-\frac{1}{8}v\omega_3^2-\frac{1}{8}v\omega_4^2u^2-2v^2\omega_4\omega_1u^2\omega_2-\frac{3}{4}\omega_3\omega_4{c_s}^2u+v\omega_1u^2\omega_2^2-\frac{1}{4}\omega_3^2u^3\omega_2-\frac{3}{4}\omega_3^2{c_s}^2u-\frac{1}{4}v\omega_4u\omega_2-\frac{1}{8}v^2\omega_3\omega_2-\frac{1}{4}\omega_3\omega_4u^3\omega_2+v^2\omega_1u\omega_2+\frac{5}{2}v\omega_4\omega_1u^2-\frac{3}{4}v\omega_3\omega_4^2{c_s}^2-\frac{1}{4}v^3\omega_4^2u\omega_2+\frac{1}{4}v^2\omega_3^2u^2\omega_2-\frac{1}{2}\omega_4\omega_1^2u^3+\frac{1}{4}v\omega_3^2u+\frac{1}{2}v^2\omega_4-\omega_1^2u^2+\frac{3}{4}v\omega_4\omega_1u^2\omega_2+\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_3\omega_4^2u^2+\frac{1}{2}v\omega_3^2\omega_1u+\frac{1}{2}\omega_3^2{c_s}^2u\omega_2+\frac{1}{2}v\omega_3\omega_4u+\frac{1}{2}v^3\omega_4\omega_1u\omega_2+\frac{1}{2}v^4\omega_3\omega_2^2+\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{4}v\omega_4\omega_1-\frac{1}{4}v\omega_4^2u^2\omega_2-\frac{5}{2}v\omega_3{c_s}^2\omega_2-\frac{3}{4}v\omega_3^2\omega_4{c_s}^2-\frac{1}{2}v\omega_3\omega_4^2{c_s}^2u+\frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\frac{3}{4}v\omega_3\omega_1u^2\omega_2-\frac{1}{8}v\omega_3\omega_4\omega_2-\frac{1}{2}v^3\omega_3\omega_1u\omega_2+\frac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{2}v\omega_3\omega_4\omega_1u+\frac{1}{2}\omega_3u,$

$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y-\delta_l}=$
$-2-v\omega_4\omega_1u\omega_2-\frac{1}{2}v^2\omega_3^2u\omega_2-\frac{3}{2}v\omega_4+\frac{1}{8}\omega_3^2\omega_2-\frac{3}{8}\omega_4\omega_1+\frac{5}{2}\omega_3-\frac{1}{2}\omega_4\omega_1u^2\omega_2+\frac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1u+\frac{1}{2}v\omega_4^2\omega_1u^2+\frac{3}{4}v\omega_4^2u\omega_2-2v\omega_3\omega_2-\frac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\frac{7}{2}\omega_3\omega_4u-\frac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+$

$$2v^2\omega_3\omega_1 u\omega_2+\tfrac{1}{2}v\omega_3 u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1 u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4 u+\tfrac{3}{2}\omega_4\omega_1 u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4 u\omega_2+$$
$$2v^2\omega_4\omega_1 u\omega_2-v\omega_1 u\omega_2^2+v^2\omega_4 u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1 u\omega_2+$$
$$\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2-3v\omega_3 u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1 u-$$
$$v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1 u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4 u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-$$
$$\tfrac{3}{4}\omega_3^2u^2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u+\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+$$
$$\tfrac{1}{2}v\omega_3^2u^2\omega_2-v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2-$$
$$v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2-2v\omega_1\omega_2+\omega_1^2u^2\omega_2+$$
$$\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2-\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u-\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+$$
$$\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u-v\omega_3\omega_1^2u^2-v\omega_2^2+2\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+$$
$$v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+$$
$$\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u+v\omega_3^2-3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-$$
$$\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_3^2\omega_1u+5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+$$
$$\tfrac{1}{2}v\omega_4^2u^2\omega_2-2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$$\alpha_{x-\delta_t,y}^{[\mu_1],t-2\delta_t}=1+v^2\omega_3^2\omega_1u^2+\tfrac{1}{4}\omega_4^2u^3-\tfrac{1}{2}\omega_4\omega_1u^3-\tfrac{1}{4}v^2\omega_3^2u\omega_2-\omega_3{c_s}^2\omega_1u-\omega_1u^2+\tfrac{1}{4}\omega_4^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_3+$$
$$\tfrac{1}{4}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2+2v^2\omega_3{c_s}^2\omega_2^2-\tfrac{1}{4}\omega_3^2u-3v^2\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4-$$
$$\tfrac{1}{2}\omega_3\omega_4u-\omega_1u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1\omega_2+2v^2\omega_2-\tfrac{1}{4}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{4}v^2\omega_3^2u+\tfrac{1}{2}\omega_3{c_s}^2-$$
$$\tfrac{1}{2}\omega_4u\omega_2-\tfrac{3}{2}v^2\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{4}\omega_3u^2\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_1u+\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3^2\omega_2+\tfrac{1}{2}v^4\omega_4^2\omega_2-\tfrac{1}{4}v^2\omega_3+$$
$$v^2\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_1u^3\omega_2-\tfrac{1}{4}\omega_3^2u^3+v^2\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1-\tfrac{1}{4}\omega_4^2\omega_2+4v^2\omega_1u^2\omega_2^2+\omega_3{c_s}^2\omega_1u\omega_2-$$
$$v^2\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1u^3\omega_2+2\omega_1u^2\omega_2-\tfrac{5}{4}\omega_4+\tfrac{1}{2}\omega_4\omega_1u-\tfrac{1}{4}\omega_4^2u-v^2\omega_3u^2\omega_2^2-\tfrac{1}{4}\omega_4^2u^3\omega_2+3v^2\omega_3\omega_4u^2\omega_2+$$
$$\tfrac{1}{4}v^2\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}\omega_3^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2u+\tfrac{1}{2}v^2\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_1+v^2\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_4u^2-$$
$$\tfrac{1}{2}v^2\omega_3\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u-\tfrac{3}{2}\omega_1u-\tfrac{1}{2}\omega_3{c_s}^2\omega_2^2-\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{2}v^4\omega_3^2\omega_2+\tfrac{1}{4}\omega_4^2-\tfrac{1}{4}\omega_3\omega_4u^2\omega_2+$$
$$v^2\omega_4^2\omega_1u^2-\tfrac{1}{4}\omega_3u^2+\tfrac{1}{2}\omega_3\omega_1u^3-\tfrac{1}{4}v^2\omega_4^2u\omega_2+\tfrac{3}{4}v^2\omega_4^2-\tfrac{5}{2}v^2\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_2^2+\tfrac{1}{4}\omega_3\omega_1u^2-v^2\omega_3^2{c_s}^2\omega_2-$$
$$\tfrac{1}{2}\omega_3u\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1+2v^2\omega_1u\omega_2^2-v^4\omega_4\omega_2^2+\tfrac{3}{2}\omega_4\omega_2-\tfrac{5}{4}v^2\omega_3\omega_2^2+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2+2\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4u\omega_2-$$
$$\omega_2+\tfrac{1}{4}\omega_4u^2\omega_2^2+\tfrac{1}{2}\omega_4u+\tfrac{1}{2}v^2\omega_3\omega_1u+2v^2\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_1\omega_2-4v^2\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}\omega_1u\omega_2^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+$$
$$\tfrac{3}{4}\omega_4u^2+v^2\omega_3u\omega_2-\omega_4u^2\omega_2+v^2\omega_3\omega_4\omega_1u-v^2\omega_3^2\omega_4u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_1u-v^2\omega_4u^2\omega_2^2-4v^2\omega_4\omega_1u^2\omega_2+$$
$$\tfrac{1}{2}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{1}{4}\omega_4\omega_2^2+\tfrac{1}{2}\omega_3^2{c_s}^2u+\tfrac{1}{2}v^2\omega_3\omega_2-2v^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2u^2\omega_2-\tfrac{3}{4}v^2\omega_4+\tfrac{1}{4}\omega_4^2u\omega_2-$$
$$v^2\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-\tfrac{1}{2}\omega_4\omega_1u\omega_2+v^4\omega_3\omega_2^2+\tfrac{5}{4}v^2\omega_4\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1u-\tfrac{1}{2}\omega_3\omega_1u\omega_2+\tfrac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_t,y}^{[\mu_2],t-2\delta_t}=-2-v^2\omega_3^2u\omega_2+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1-\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_1u^2\omega_2+2v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2+$$
$$4v^2\omega_3\omega_1u\omega_2+2v^2\omega_4\omega_1\omega_2+\omega_4\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2+\tfrac{5}{2}\omega_4u\omega_2+4v^2\omega_4\omega_1u\omega_2+2v^2\omega_4u\omega_2^2+\tfrac{3}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+$$
$$\tfrac{1}{2}\omega_4^2\omega_2+4v^2\omega_2^2+2\omega_4-\tfrac{1}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4u\omega_2^2+\omega_4^2u+3v^2\omega_3\omega_4\omega_2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_3^2u^2+\omega_1-v^2\omega_3\omega_4^2-$$
$$v^2\omega_3^2\omega_1u+2\omega_1u+v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_3^2u^2\omega_2-v^2\omega_4^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2+2v^2\omega_3\omega_4^2u-3v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-$$
$$\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3u\omega_2-4v^2\omega_1u\omega_2^2-\tfrac{5}{2}\omega_4\omega_2+2v^2\omega_3\omega_1\omega_2-3\omega_1u\omega_2-6v^2\omega_3\omega_4u\omega_2-\omega_2^2+3\omega_2-2\omega_4u+$$
$$2v^2\omega_3u\omega_2^2+2v^2\omega_3^2\omega_4u-v^2\omega_3\omega_4\omega_1+\omega_1u\omega_2^2-2v^2\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3\omega_1u-\tfrac{1}{2}\omega_3u\omega_2^2+\tfrac{1}{2}\omega_4\omega_2^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-$$
$$5v^2\omega_3\omega_2-\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4\omega_1u\omega_2-2v^2\omega_4\omega_2^2-v^2\omega_4^2\omega_1u-v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1u\omega_2,$$

$$\alpha_{x,y}^{[\mu_1],t-2\delta_t}=-\tfrac{1}{2}\omega_4^2u^3+\omega_4\omega_1u^3+v^2\omega_3^2u\omega_2+2\omega_3{c_s}^2\omega_1u-\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3^2u+\omega_3\omega_4^2{c_s}^2u-\omega_3\omega_4u-\tfrac{1}{2}\omega_3^2\omega_1u-$$
$$2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2u-2v^2\omega_4\omega_1u\omega_2-v^2\omega_4\omega_1u-\omega_3\omega_1^2u-\omega_3^2\omega_1u^3-2v^2\omega_4u\omega_2+\tfrac{1}{2}\omega_3^2u^3+\omega_3^2\omega_4{c_s}^2u+$$
$$\tfrac{3}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4^2u+\tfrac{1}{2}v^2\omega_4^2u+2\omega_3\omega_1^2u^3+v^2\omega_3\omega_4u-4\omega_1u-2\omega_3\omega_4{c_s}^2\omega_1u-\omega_3\omega_1u^3+v^2\omega_4^2u\omega_2+\omega_1^2u-$$
$$v^2\omega_3\omega_4^2u+2v^2\omega_3\omega_4u\omega_2+\omega_4u-v^2\omega_3^2\omega_4u-v^2\omega_3\omega_1u+\omega_4^2\omega_1u^3-2v^2\omega_3u\omega_2+2v^2\omega_3\omega_4\omega_1u+\tfrac{7}{2}\omega_3\omega_1u-$$
$$\omega_3\omega_4{c_s}^2u-\omega_3^2{c_s}^2u+4v^2\omega_1u\omega_2-2\omega_4\omega_1^2u^3+\omega_3u,$$

$$\alpha_{x,y}^{[\mu_2],t-2\delta_t}=-4+\tfrac{1}{2}\omega_3^2\omega_2-\tfrac{1}{2}\omega_4\omega_1+5\omega_3+\tfrac{1}{2}\omega_3\omega_4\omega_2-\omega_1^2-2\omega_4\omega_1u^2-\omega_3\omega_4+\omega_4^2u^2-v^2\omega_3^2+\omega_3\omega_1^2+v^2\omega_3^2\omega_2-$$
$$2\omega_3\omega_1^2u^2-\tfrac{7}{2}\omega_3\omega_1+\omega_4-\omega_3^2u^2+3\omega_1+\omega_3^2\omega_1u^2-v^2\omega_4^2\omega_2+v^2\omega_4^2-2v^2\omega_4\omega_2+\omega_3\omega_2^2+2\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_1-$$
$$\tfrac{1}{2}\omega_4\omega_2-2v^2\omega_3\omega_2^2+\tfrac{1}{2}\omega_3\omega_4\omega_1-\omega_2^2+3\omega_2+2\omega_4\omega_1^2u^2+2v^2\omega_3\omega_2-\omega_3^2-\omega_4^2\omega_1u^2+2v^2\omega_4\omega_2^2-\tfrac{7}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_t,y}^{[\mu_1],t-2\delta_t}=-1-v^2\omega_3^2\omega_1u^2+\tfrac{1}{4}\omega_4^2u^3-\tfrac{1}{2}\omega_4\omega_1u^3-\tfrac{1}{4}v^2\omega_3^2u\omega_2-\omega_3{c_s}^2\omega_1u+\omega_1u^2-\tfrac{1}{4}\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_3-$$
$$\tfrac{1}{4}\omega_4\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-2v^2\omega_3{c_s}^2\omega_2^2-\tfrac{1}{4}\omega_3^2u+3v^2\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4-$$
$$\tfrac{1}{2}\omega_3\omega_4u+\omega_1u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-2v^2\omega_2+\tfrac{1}{4}\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{4}v^2\omega_3^2u-\tfrac{1}{2}\omega_3{c_s}^2-$$

$$\tfrac{1}{2}\omega_4 u\omega_2 - \tfrac{3}{2}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_3^2 - \tfrac{1}{4}\omega_3 u^2\omega_2^2 + \tfrac{1}{2}v^2\omega_4\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3^2\omega_2 - \tfrac{1}{2}v^4\omega_4^2\omega_2 + \tfrac{1}{4}v^2\omega_3 + v^2\omega_4 u\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_3^2 u^3 - v^2\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 + \tfrac{1}{4}\omega_4^2\omega_2 - 4v^2\omega_1 u^2\omega_2^2 + \omega_3 {c_s}^2\omega_1 u\omega_2 + v^2\omega_1\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 - 2\omega_1 u^2\omega_2 + \tfrac{5}{4}\omega_4 + \tfrac{1}{2}\omega_4\omega_1 u - \tfrac{1}{4}\omega_4^2 u + v^2\omega_3 u^2\omega_2^2 - \tfrac{1}{4}\omega_4^2 u^3\omega_2 - 3v^2\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3^2 u\omega_2 - \tfrac{1}{4}v^2\omega_4^2 u - \tfrac{1}{2}v^2\omega_4^2 u^2\omega_2 + \tfrac{1}{2}\omega_1 - v^2\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_3\omega_4 u + \tfrac{1}{2}v^2\omega_3^2\omega_1 u - \tfrac{3}{2}\omega_1 u + \tfrac{1}{2}\omega_3 {c_s}^2\omega_2^2 + \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1 + \tfrac{1}{2}v^4\omega_3^2\omega_2 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4 u^2\omega_2 - v^2\omega_4^2\omega_1 u^2 + \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{2}\omega_3\omega_1 u^3 - \tfrac{1}{4}v^2\omega_4^2 u\omega_2 - \tfrac{3}{4}v^2\omega_4^2 + \tfrac{5}{2}v^2\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_2^2 - \tfrac{1}{4}\omega_3\omega_1 u^2 + v^2\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3 u\omega_2 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 + 2v^2\omega_1 u\omega_2^2 + v^4\omega_4\omega_2^2 - \tfrac{3}{2}\omega_4\omega_2 + \tfrac{5}{4}v^2\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + 2\omega_1 u\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4 u\omega_2 + \omega_2 - \tfrac{1}{4}\omega_4 u^2\omega_2^2 + \tfrac{1}{2}\omega_4 u + \tfrac{1}{2}v^2\omega_3\omega_1 u - 2v^2\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_1\omega_2 + 4v^2\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_1 u\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{3}{4}\omega_4 u^2 + v^2\omega_3 u\omega_2 + \omega_4 u^2\omega_2 + v^2\omega_3\omega_4\omega_1 u + v^2\omega_3^2\omega_4 u^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_1 u + v^2\omega_4 u^2\omega_2^2 + 4v^2\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u + \tfrac{1}{4}\omega_3^2 u^3\omega_2 + \tfrac{1}{4}\omega_4\omega_2^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 u - \tfrac{1}{2}v^2\omega_3\omega_2 - 2v^2\omega_1 u\omega_2 - \tfrac{1}{2}v^2\omega_3^2 u^2\omega_2 + \tfrac{3}{4}v^2\omega_4 + \tfrac{1}{4}\omega_4^2 u\omega_2 + v^2\omega_3\omega_4^2 u^2 - \tfrac{1}{2}\omega_3^2 {c_s}^2 u\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u\omega_2 - v^4\omega_3\omega_2^2 - \tfrac{5}{4}v^2\omega_4\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 u - \tfrac{1}{2}\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y} = -2 + v^2\omega_3^2 u\omega_2 + \tfrac{1}{2}\omega_4^2 u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 - \omega_4\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_1 u^2\omega_2 + 2v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 - 4v^2\omega_3\omega_1 u\omega_2 + 2v^2\omega_4\omega_1\omega_2 + \omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_4^2 u^2 - \tfrac{5}{2}\omega_4 u\omega_2 - 4v^2\omega_4\omega_1 u\omega_2 - 2v^2\omega_4 u\omega_2^2 + \tfrac{3}{2}v^2\omega_3^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_4^2\omega_2 + 4v^2\omega_2^2 + 2\omega_4 + \tfrac{1}{2}\omega_4\omega_1 u + \tfrac{1}{2}\omega_4 u\omega_2^2 - \omega_4^2 u + 3v^2\omega_3\omega_4\omega_2 - \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{2}\omega_3^2 u^2 + \omega_1 - v^2\omega_3\omega_4^2 + v^2\omega_3^2\omega_1 u - 2\omega_1 u + v^2\omega_4^2\omega_2 - \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_3^2 u^2\omega_2 + v^2\omega_4^2 u\omega_2 + \tfrac{1}{2}v^2\omega_4^2 - 2v^2\omega_3\omega_4^2 u - 3v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_3 u\omega_2 + 4v^2\omega_1 u\omega_2^2 - \tfrac{5}{2}\omega_4\omega_2 + 2v^2\omega_3\omega_1\omega_2 + 3\omega_1 u\omega_2 + 6v^2\omega_3\omega_4 u\omega_2 - \omega_2^2 + 3\omega_2 + 2\omega_4 u - 2v^2\omega_3 u\omega_2^2 - 2v^2\omega_3^2\omega_4 u - v^2\omega_3\omega_4\omega_1 - \omega_1 u\omega_2^2 + 2v^2\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{2}\omega_3 u\omega_2^2 + \tfrac{1}{2}\omega_4\omega_2^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 - 5v^2\omega_3\omega_2 + \omega_4^2 u\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u\omega_2 - 2v^2\omega_4\omega_2^2 + v^2\omega_4^2\omega_1 u - v^2\omega_3^2\omega_4 - \tfrac{1}{2}\omega_3\omega_1 u\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y+\delta_l} = 1 - \tfrac{1}{2}v^2\omega_3^2\omega_1 u^2 + \tfrac{1}{4}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{8}\omega_4^2 u^3 - \tfrac{5}{4}\omega_4\omega_1 u^3 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 u - v\omega_4 - 3\omega_1 u^2 - \tfrac{1}{2}v\omega_3^2 {c_s}^2 u\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 u\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u - \tfrac{3}{4}v\omega_4^2\omega_1 u^2 + \tfrac{3}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - v\omega_4\omega_1^2 u^3 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - v^2\omega_3 {c_s}^2\omega_2^2 - \tfrac{1}{8}\omega_3^2 u + \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 u + \tfrac{3}{2}v^2\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}v^3\omega_3\omega_2^2 - \tfrac{1}{4}\omega_3\omega_4 u - \tfrac{1}{8}\omega_3^2\omega_1 u + \tfrac{1}{4}v\omega_3^2 u^3\omega_2 + \tfrac{3}{2}v^2\omega_3\omega_1 u\omega_2 + \tfrac{7}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{13}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{3}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2 u^2 + \tfrac{3}{8}v^2\omega_3^2 u - 2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 + \tfrac{1}{2}v\omega_1 u\omega_2^2 + \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{2}v^2\omega_3^2 + 2v\omega_1^2 u^3\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 u^3\omega_2 + \tfrac{9}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}v\omega_4\omega_1^2 u^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}v^2\omega_3^2\omega_2 + \tfrac{5}{4}v\omega_4 u^2\omega_2 + \tfrac{1}{2}v\omega_4^2\omega_1 u^3 - \tfrac{1}{4}v^4\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_3\omega_4 u^3 + v^2\omega_3 - \tfrac{5}{8}\omega_3 u^2\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1 u^3 - \tfrac{1}{2}v^2\omega_4 u\omega_2 - 2v\omega_1 u\omega_2 + \omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{3}{8}\omega_3^2 u^3 - \tfrac{1}{2}v^2\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}v\omega_4 u^2\omega_2^2 - 2v^2\omega_1 u^2\omega_2^2 + \omega_3\omega_4\omega_1 u^3 + \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 u - \tfrac{1}{8}v\omega_4\omega_2 - \omega_3 {c_s}^2\omega_1\omega_2 u + \tfrac{1}{2}v^2\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4^2 u^3 + \tfrac{1}{4}v\omega_3 u\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 + \tfrac{3}{2}\omega_1 u^2\omega_2 + \tfrac{3}{4}v\omega_3^2\omega_4 u^2 + \tfrac{5}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{4}v^3\omega_4\omega_2^2 + \tfrac{3}{8}\omega_4\omega_1 u - v\omega_3\omega_4 {c_s}^2\omega_1 u - \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{2}v^2\omega_3 u^2\omega_2^2 - \tfrac{3}{2}v^2\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + v\omega_1^2 u^2\omega_2 - \tfrac{1}{8}v^3\omega_3^2 - \tfrac{1}{4}v^3\omega_3^2 u\omega_2 - \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{4}v^2\omega_4^2 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2 u^3 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 u^2 - \tfrac{1}{2}v^2\omega_3^2\omega_4 {c_s}^2 - \tfrac{11}{8}\omega_3\omega_4 u^2 - \tfrac{3}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 u - \tfrac{1}{2}v^2\omega_3^2\omega_1 u - \tfrac{3}{2}\omega_1 u + \tfrac{3}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}v^4\omega_3^2\omega_2 - \tfrac{1}{4}v\omega_3^2 u^2\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4 u^3 + \tfrac{3}{4}v\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 u + \tfrac{3}{8}\omega_3\omega_4 u^2\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4^2 u^2 + v\omega_3 {c_s}^2\omega_1 u\omega_2 - v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_3^2 u^2\omega_2 + \omega_3 u^2 - \tfrac{1}{4}\omega_3^2\omega_4 u^3 - \tfrac{7}{4}\omega_3\omega_1 u^3 + \tfrac{1}{4}v^2\omega_4^2 u\omega_2 - \tfrac{1}{8}v\omega_3^2 u^2 + \tfrac{3}{8}v^2\omega_4^2 - \tfrac{9}{4}v\omega_3\omega_4 u^2 - \tfrac{3}{4}v\omega_3^2\omega_1 u^2 - v\omega_3\omega_1^2 u^3 + \tfrac{7}{8}v^2\omega_4\omega_2 + \tfrac{1}{4}v\omega_3^2 u\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}\omega_1^2 u^2\omega_2 + \tfrac{11}{8}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3^2\omega_4 u^2 + \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2 u + 2v\omega_3\omega_4\omega_1 u^3 - 5v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_4^2 u^3 + \tfrac{1}{2}v^2\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 - \tfrac{1}{4}v\omega_4^2 u - v^2\omega_1 u\omega_2^2 + \tfrac{1}{4}v\omega_4^2 u^3\omega_2 + \tfrac{1}{2}v^4\omega_4\omega_2^2 + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_2^2 - \tfrac{3}{2}v\omega_3\omega_1 u^3\omega_2 + \tfrac{3}{4}v\omega_4\omega_1 u - \tfrac{1}{2}v\omega_3\omega_1^2 u^2 + \tfrac{3}{4}\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3^2\omega_1 u^3 + \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{5}{4}v\omega_3 u^2\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 + \tfrac{1}{2}\omega_4 u - \tfrac{3}{4}v^2\omega_3\omega_1 u - v^2\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{2}v\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_2 + 2v^2\omega_3\omega_1 u^2\omega_2 - \omega_1^2 u^3\omega_2 - \tfrac{1}{4}v\omega_3 u^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{4}\omega_4^2\omega_1 u^3 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{2}v^2\omega_3 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 - \tfrac{1}{2}v^3\omega_4^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 u + 2\omega_1^2 u^3 + \tfrac{1}{2}v^2\omega_3^2\omega_4 u^2 + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 + \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{7}{8}\omega_3\omega_1 u + \tfrac{1}{2}v^2\omega_4 u^2\omega_2^2 - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2 u^2 + 2v^2\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_3\omega_4 {c_s}^2 u + v\omega_1 u^2\omega_2^2 - \tfrac{1}{4}\omega_3^2 u^3\omega_2 - \tfrac{3}{4}\omega_3^2 {c_s}^2 u + \tfrac{1}{4}v\omega_4 u\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}\omega_3\omega_4 u^3\omega_2 + v^2\omega_1 u\omega_2 + \tfrac{5}{2}v\omega_4\omega_1 u^2 - \tfrac{3}{4}v\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{4}v^3\omega_4^2 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 u^3 - \tfrac{1}{4}v\omega_3^2 u - \tfrac{1}{2}v^2\omega_4 + \omega_1^2 u^2 + \tfrac{3}{4}v\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2 u^2 - \tfrac{1}{2}v\omega_3^2\omega_1 u + \tfrac{1}{2}\omega_3^2 {c_s}^2 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 u - \tfrac{1}{2}v^3\omega_4\omega_1 u\omega_2 - \tfrac{1}{2}v^4\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_4\omega_2^2 - \tfrac{1}{8}v\omega_3^2\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{4}v\omega_4^2 u^2\omega_2 - \tfrac{5}{2}v\omega_3 {c_s}^2\omega_2 - \tfrac{3}{4}v\omega_3^2\omega_4 {c_s}^2 + \tfrac{1}{2}v\omega_3\omega_4^2 {c_s}^2 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{3}{4}v\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 u + \tfrac{1}{2}\omega_3 u,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x-\delta_l,y+\delta_l} = -2 - v\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_3^2 u\omega_2 + \tfrac{3}{2}v\omega_4 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{5}{2}\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u^2\omega_2 + \tfrac{3}{8}\omega_3\omega_4\omega_2 - 2v\omega_3\omega_4^2 u - v\omega_3\omega_1 u\omega_2 +$$

$$\tfrac{1}{2}\omega_3\omega_4\omega_1 u-\tfrac{1}{2}v\omega_4^2\omega_1 u^2+\tfrac{3}{4}v\omega_4^2 u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1 u^2\omega_2+\omega_3^2 u-v^2\omega_3\omega_4+\tfrac{7}{2}\omega_3\omega_4 u+\tfrac{1}{4}\omega_3^2\omega_1 u+v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1 u\omega_2+\tfrac{1}{2}v\omega_3 u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1 u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4 u+\tfrac{3}{2}\omega_4\omega_1 u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2 u^2+\tfrac{1}{2}\omega_4 u\omega_2-2v^2\omega_4\omega_1 u\omega_2-v\omega_1 u\omega_2^2-v^2\omega_4 u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1^2 u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2 u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1 u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2 u^2+\tfrac{1}{2}v\omega_4\omega_1^2 u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2-3v\omega_3 u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4 u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4-2\omega_4\omega_1 u+v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4^2 u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1 u-\tfrac{3}{2}\omega_3\omega_4\omega_1 u^2-\omega_3\omega_4 u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2 u^2\omega_2-\tfrac{1}{2}\omega_3^2 u\omega_2-\tfrac{3}{4}\omega_3^2 u^2+\omega_1-v\omega_3\omega_4 u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1 u^2-\omega_3\omega_4 u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v^2\omega_3^2\omega_1 u+4\omega_1 u-\tfrac{1}{2}v\omega_4^2+\tfrac{1}{2}\omega_1^2 u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2 u^2\omega_2+v\omega_3\omega_4^2 u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4 u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4 u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2 u^2-3v\omega_3\omega_4\omega_1 u^2+\tfrac{1}{2}\omega_3^2 u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2 u\omega_2-v\omega_1^2 u\omega_2-\omega_1^2 u-\tfrac{1}{4}v^2\omega_4^2+\tfrac{1}{4}\omega_4^2\omega_1 u-v^2\omega_3\omega_4^2 u-\tfrac{1}{2}v\omega_3^2\omega_1 u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2 u\omega_2+2v\omega_1\omega_2+\omega_1^2 u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1 u^2+\tfrac{1}{2}\omega_3^2\omega_4 u^2+\tfrac{3}{4}v\omega_3\omega_4^2+\tfrac{3}{2}\omega_3 u\omega_2+\tfrac{1}{2}v\omega_4^2 u+\tfrac{5}{2}v\omega_3+2v^2\omega_1 u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4 u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1 u+v\omega_3\omega_1^2 u^2+v\omega_2^2-2\omega_1 u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4 u\omega_2+\omega_2-\tfrac{3}{2}\omega_4 u-v^2\omega_3 u\omega_2^2-v^2\omega_3^2\omega_4 u+\tfrac{1}{4}\omega_4\omega_1^2 u-\tfrac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2 u+\tfrac{1}{2}\omega_3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1 u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2 u^2-\tfrac{7}{2}v\omega_3\omega_4-\tfrac{3}{4}\omega_3^2\omega_4 u-2\omega_3\omega_1 u-v\omega_3^2-3v\omega_4 u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2 u-2\omega_1^2 u^2+2v\omega_4\omega_1 u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1 u^2+\tfrac{3}{4}v\omega_3^2\omega_1 u+5v\omega_3\omega_4 u+\tfrac{1}{2}\omega_4\omega_1 u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2 u^2\omega_2+2v\omega_3\omega_1 u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1 u-\tfrac{3}{4}\omega_3\omega_4^2 u-\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1 u\omega_2+\tfrac{3}{2}v\omega_3\omega_4\omega_1 u-\tfrac{5}{2}\omega_3 u,$$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=$

$$\tfrac{1}{2}v\omega_4\omega_1 u\omega_2-\tfrac{1}{4}\omega_4^2 u^3+\tfrac{5}{2}\omega_4\omega_1 u^3-\tfrac{1}{4}v^2\omega_3^2 u\omega_2-3\omega_3 {c_s}^2\omega_1 u+v\omega_3^2 {c_s}^2 u\omega_2+v\omega_3\omega_4^2 u+\tfrac{3}{2}v\omega_3\omega_1 u\omega_2-\omega_3\omega_4\omega_1 u+2v\omega_4\omega_1^2 u^3-\tfrac{3}{4}\omega_3^2 u-\omega_3\omega_4^2 {c_s}^2 u-\tfrac{3}{2}\omega_3\omega_4 u-\tfrac{1}{2}v\omega_3^2 u^3\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1 u\omega_2+v\omega_3\omega_1 u+v\omega_3^2\omega_4 u+v\omega_3\omega_4 {c_s}^2 u\omega_2-\tfrac{3}{4}v^2\omega_3^2 u-\tfrac{1}{2}\omega_4 u\omega_2+\tfrac{5}{2}v^2\omega_4\omega_1 u\omega_2-4v\omega_1^2 u^3\omega_2-\tfrac{1}{2}v^2\omega_4\omega_1 u-v\omega_3\omega_4 u^3\omega_2-v\omega_4^2\omega_1 u^3-\omega_3\omega_4 u^3+v^2\omega_4 u\omega_2-3v\omega_1 u\omega_2-\tfrac{3}{2}\omega_3\omega_1 u^3\omega_2-\tfrac{3}{4}\omega_3^2 u^3-\tfrac{1}{2}v\omega_4\omega_1^2 u-2\omega_3\omega_4\omega_1 u^3-\omega_3^2\omega_4 {c_s}^2 u+\omega_3 {c_s}^2\omega_1 u\omega_2+v\omega_3\omega_4^2 u^3+\tfrac{1}{2}v\omega_3 u\omega_2-\tfrac{3}{2}\omega_4\omega_1 u^3\omega_2+\tfrac{7}{2}\omega_4\omega_1 u+2v\omega_3\omega_4 {c_s}^2\omega_1 u-\tfrac{3}{4}\omega_4^2 u+\tfrac{1}{4}\omega_4^2 u^3\omega_2-v\omega_4^2\omega_1 u+\tfrac{1}{2}\omega_3\omega_4 u\omega_2+\tfrac{1}{2}v^3\omega_3^2 u\omega_2+\tfrac{1}{4}\omega_3^2 u\omega_2+\tfrac{1}{4}v^2\omega_4^2 u-\tfrac{1}{2}v^2\omega_3\omega_4 u+\tfrac{1}{2}v^2\omega_3^2\omega_1 u-4\omega_1 u-\tfrac{1}{2}\omega_1^2 u\omega_2+v\omega_3^2\omega_4 u^3+2\omega_3\omega_4 {c_s}^2\omega_1 u-\tfrac{1}{2}v\omega_3\omega_4 u\omega_2-2v\omega_3 {c_s}^2\omega_1 u\omega_2+\tfrac{1}{2}\omega_3^2\omega_4 u^3+\tfrac{7}{2}\omega_3\omega_1 u^3-\tfrac{3}{4}v^2\omega_4^2 u\omega_2+v\omega_1^2 u\omega_2+\omega_1^2 u-\tfrac{1}{2}\omega_4^2\omega_1 u+\tfrac{1}{2}v^2\omega_3\omega_4^2 u+2v\omega_3\omega_1^2 u^3-\tfrac{1}{2}v\omega_3^2 u\omega_2-v\omega_3^2\omega_4 {c_s}^2 u-4v\omega_3\omega_4\omega_1 u^3+\tfrac{1}{2}\omega_3\omega_4^2 u^3-\tfrac{1}{2}\omega_3 u\omega_2-\tfrac{1}{2}v\omega_4^2 u-\tfrac{1}{2}v\omega_4^2 u^3\omega_2+3v\omega_3\omega_1 u^3\omega_2+3v\omega_4\omega_1 u+2\omega_1 u\omega_2-v\omega_3^2\omega_1 u^3-v^2\omega_3\omega_4 u\omega_2+\omega_4 u+\tfrac{1}{2}v^2\omega_3^2\omega_4 u-\tfrac{1}{2}\omega_4\omega_1^2 u+\tfrac{3}{2}v^2\omega_3\omega_1 u+3v\omega_4\omega_1 u^3\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2 u+2\omega_1^2 u^3\omega_2-\omega_4^2\omega_1 u^3+v^2\omega_3 u\omega_2-v^2\omega_3\omega_4\omega_1 u-4\omega_1^2 u^3+\tfrac{1}{2}\omega_3^2\omega_4 u+\tfrac{3}{2}\omega_3\omega_1 u+\tfrac{3}{2}\omega_3\omega_4 {c_s}^2 u+\tfrac{1}{4}\omega_3^2 u^3\omega_2+\tfrac{3}{2}\omega_3^2 {c_s}^2 u+\tfrac{1}{2}v\omega_4 u\omega_2+\tfrac{1}{2}\omega_3\omega_4 u^3\omega_2-2v^2\omega_1 u\omega_2-\tfrac{1}{2}v^3\omega_4^2 u\omega_2+2\omega_4\omega_1^2 u^3-\tfrac{1}{2}v\omega_3^2 u+\tfrac{1}{4}\omega_4^2 u\omega_2-\tfrac{1}{2}\omega_3^2 {c_s}^2 u\omega_2-v\omega_3\omega_4 u+v^3\omega_4\omega_1 u\omega_2-\omega_4\omega_1 u\omega_2-v\omega_3\omega_4^2 {c_s}^2 u-\tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1 u+\tfrac{1}{2}\omega_3\omega_4^2 u-v^3\omega_3\omega_1 u\omega_2-\tfrac{1}{2}\omega_3\omega_1 u\omega_2-2v\omega_3\omega_4\omega_1 u+\omega_3 u,$$

$\alpha^{[\mu_2],t-2\delta_t}_{x,y+\delta_l}=-2+2v\omega_4-\tfrac{1}{2}\omega_4^2 u^2\omega_2-\tfrac{5}{2}\omega_4\omega_1+2\omega_4\omega_1 u^2\omega_2+v\omega_4^2\omega_1 u^2+\tfrac{1}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+2\omega_3\omega_1 u^2\omega_2-\omega_1^2-v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1 u^2+\tfrac{1}{2}\omega_4^2 u^2+\tfrac{1}{2}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2-2v\omega_4\omega_1^2 u^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}v\omega_4\omega_2-2v\omega_3^2\omega_4 u^2+2\omega_4+3\omega_3\omega_4\omega_1 u^2-\tfrac{3}{2}\omega_1\omega_2+4v\omega_1^2 u^2\omega_2+\tfrac{3}{2}\omega_3^2 u^2+3\omega_1+2v\omega_3\omega_4 u^2\omega_2+2\omega_3\omega_4 u^2-v\omega_4^2+\tfrac{1}{2}\omega_4\omega_1^2+v\omega_3^2 u^2\omega_2-v\omega_1^2\omega_2-2v\omega_3\omega_4^2 u^2-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4 u^2\omega_2-\omega_3\omega_4^2 u^2+6v\omega_3\omega_4\omega_1 u^2-\tfrac{1}{2}\omega_3^2 u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2+v\omega_3^2\omega_1 u^2+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1+3v\omega_1\omega_2-2\omega_1^2 u^2\omega_2-5\omega_3\omega_1 u^2-\omega_3^2\omega_4 u^2-\tfrac{1}{2}\omega_4\omega_2+v^2\omega_3\omega_1\omega_2-2v\omega_3\omega_1^2 u^2-\tfrac{1}{2}v\omega_3\omega_1+\omega_2-\tfrac{1}{2}v\omega_4\omega_1\omega_2-2v\omega_2+\tfrac{1}{2}v\omega_3\omega_1^2-2\omega_4\omega_1^2 u^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2+4\omega_1^2 u^2-4v\omega_4\omega_1 u^2\omega_2+\omega_4^2\omega_1 u^2+\tfrac{1}{2}\omega_4^2\omega_1-\tfrac{5}{2}v\omega_4\omega_1+v\omega_4^2 u^2\omega_2-4v\omega_3\omega_1 u^2\omega_2,$

$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l}=-1+\tfrac{1}{2}v^2\omega_3^2\omega_1 u^2+\tfrac{1}{4}v\omega_4\omega_1 u\omega_2+\tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2+\tfrac{1}{8}\omega_4^2 u^3-\tfrac{5}{4}\omega_4\omega_1 u^3-\tfrac{5}{4}\omega_3 {c_s}^2\omega_2+\tfrac{3}{2}\omega_3 {c_s}^2\omega_1 u+v\omega_4+3\omega_1 u^2-\tfrac{1}{2}v\omega_3^2 {c_s}^2 u\omega_2-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{4}\omega_3+\tfrac{1}{2}\omega_4\omega_1 u^2\omega_2-\tfrac{1}{4}v\omega_3\omega_1 u\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1 u+\tfrac{3}{4}v\omega_4^2\omega_1 u^2-\tfrac{3}{8}v\omega_3\omega_2+\tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2-v\omega_4\omega_1^2 u^3+\tfrac{1}{4}\omega_3\omega_1 u^2\omega_2+v^2\omega_3 {c_s}^2\omega_2^2-\tfrac{1}{8}\omega_3^2 u+\tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 u-\tfrac{3}{2}v^2\omega_3\omega_4 {c_s}^2\omega_2+\tfrac{1}{8}v^2\omega_3\omega_4+\tfrac{1}{4}v^3\omega_3\omega_2^2-\tfrac{1}{4}\omega_3\omega_4 u-\tfrac{1}{8}\omega_3^2\omega_1 u+\tfrac{1}{4}v\omega_3^2 u^3\omega_2+\tfrac{3}{2}v^2\omega_3\omega_1 u\omega_2+\tfrac{7}{4}v\omega_3\omega_1 u+\tfrac{1}{4}v^2\omega_4\omega_1\omega_2+v^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 u\omega_2-\tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2-\tfrac{13}{8}\omega_4\omega_1 u^2+\tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2-\tfrac{3}{4}v^3\omega_4\omega_2-\tfrac{1}{8}\omega_3\omega_4+\tfrac{1}{8}\omega_4^2 u^2+\tfrac{3}{8}v^2\omega_3^2 u+2\omega_3 {c_s}^2-\tfrac{1}{4}\omega_4 u\omega_2+\tfrac{1}{2}v\omega_1 u\omega_2^2-\tfrac{1}{4}v\omega_3^2 {c_s}^2+\tfrac{1}{2}v^2\omega_3^2+2v\omega_1^2 u^3\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1 u+\tfrac{1}{4}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4 u^3\omega_2-\tfrac{9}{4}v\omega_3\omega_4 {c_s}^2+\tfrac{1}{2}v\omega_4\omega_1^2 u^2-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{8}v^2\omega_3^2\omega_2-\tfrac{5}{4}v\omega_4 u^2\omega_2+\tfrac{1}{2}v\omega_4^2\omega_1 u^3+\tfrac{1}{4}v^4\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_2+\tfrac{1}{2}\omega_3\omega_4 u^3-v^2\omega_3+\tfrac{5}{8}\omega_3 u^2\omega_2+\tfrac{1}{4}\omega_3^2\omega_1 u^3-\tfrac{1}{2}v^2\omega_4 u\omega_2-2v\omega_1 u\omega_2+\omega_3\omega_1 u^3\omega_2+\tfrac{1}{4}\omega_3\omega_1^2 u^2+\tfrac{3}{8}\omega_3^2 u^3+\tfrac{1}{2}v^2\omega_3\omega_4^2 {c_s}^2+\tfrac{1}{4}v^3\omega_4\omega_1\omega_2-\tfrac{1}{8}\omega_3\omega_1+\tfrac{1}{4}v\omega_4 u^2\omega_2^2+2v^2\omega_1 u^2\omega_2^2+\omega_3\omega_4\omega_1 u^3+\tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 u+\tfrac{1}{8}v\omega_4\omega_2-\omega_3 {c_s}^2\omega_1 u\omega_2-\tfrac{1}{2}v^2\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_4^2 u^3+\tfrac{1}{4}v\omega_3 u\omega_2+\tfrac{1}{2}\omega_4\omega_1 u^3\omega_2-\tfrac{3}{2}\omega_1 u^2\omega_2-\tfrac{3}{4}v\omega_3^2\omega_4 u^2-\tfrac{5}{2}v\omega_3\omega_1 u^2+\tfrac{3}{4}\omega_4-\tfrac{1}{4}v^3\omega_4\omega_2^2+\tfrac{3}{8}\omega_4\omega_1 u-v\omega_3\omega_4 {c_s}^2\omega_1 u-\tfrac{1}{8}\omega_4^2 u-\tfrac{1}{2}v^2\omega_3 u^2\omega_2^2+\tfrac{3}{2}v^2\omega_3\omega_4 u^2\omega_2+\tfrac{1}{8}v^2\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1 u^2+\tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1-\tfrac{1}{4}\omega_1\omega_2-v\omega_1^2 u^2\omega_2+\tfrac{1}{8}v^3\omega_3^2-\tfrac{1}{4}v^3\omega_3^2 u\omega_2-\tfrac{1}{8}v^2\omega_4^2 u+\tfrac{1}{4}\omega_3^2 u^2+\tfrac{1}{4}v^2\omega_4^2 u^2\omega_2-\tfrac{1}{2}\omega_3\omega_1^2 u^3+\tfrac{1}{2}\omega_1+\tfrac{1}{2}v\omega_3\omega_4 u^2\omega_2+\tfrac{1}{4}\omega_3^2\omega_1 u^2+\tfrac{1}{2}v^2\omega_3^2\omega_4 {c_s}^2+\tfrac{11}{8}\omega_3\omega_4 u^2+\tfrac{3}{4}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4 u-\tfrac{1}{2}v^2\omega_3^2\omega_1 u-\tfrac{3}{2}\omega_1 u-\tfrac{3}{8}v\omega_4^2+\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{3}{8}v^2\omega_3\omega_1-$$

$$\tfrac{1}{4}v^4\omega_3^2\omega_2+\tfrac{1}{4}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_3^2\omega_4u^3-\tfrac{3}{4}v\omega_3\omega_4^2u^2-\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{3}{8}\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}v^3\omega_3^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4^2u^2+v\omega_3{c_s}^2\omega_1u\omega_2+v\omega_3\omega_4\omega_1u^2-\tfrac{1}{8}\omega_3^2u^2\omega_2-\omega_3u^2-\tfrac{1}{4}\omega_3^2\omega_4u^3-\tfrac{7}{4}\omega_3\omega_1u^3+\tfrac{1}{4}v^2\omega_4^2u\omega_2+\tfrac{1}{8}v\omega_3^2u^2-\tfrac{3}{8}v^2\omega_4^2+\tfrac{9}{4}v\omega_3\omega_4u^2+\tfrac{3}{4}v\omega_3^2\omega_1u^2-v\omega_3\omega_1^2u^3-\tfrac{7}{8}v^2\omega_4\omega_2+\tfrac{1}{4}v\omega_3^2u\omega_2+\tfrac{1}{4}v\omega_1\omega_2+\tfrac{1}{2}\omega_1^2u^2\omega_2-\tfrac{11}{8}\omega_3\omega_1u^2-\tfrac{1}{4}\omega_3^2\omega_4u^2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u+2v\omega_3\omega_4\omega_1u^3+5v\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4^2u^3-\tfrac{1}{2}v^2\omega_3^2{c_s}^2\omega_2-\tfrac{1}{4}\omega_3u\omega_2-\tfrac{3}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_4^2u-v^2\omega_1u\omega_2^2+\tfrac{1}{4}v\omega_4^2u^3\omega_2-\tfrac{1}{2}v^4\omega_4\omega_2^2-\tfrac{1}{4}\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{3}{2}v\omega_3\omega_1u^3\omega_2+\tfrac{3}{4}v\omega_4\omega_1u+\tfrac{1}{2}v\omega_3\omega_1^2u^2+\tfrac{3}{4}\omega_1u\omega_2+\tfrac{1}{2}v\omega_3^2\omega_1u^3-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{5}{4}v\omega_3u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_4u-\tfrac{3}{4}v^2\omega_3\omega_1u+v^2\omega_3\omega_4\omega_1u^2-\tfrac{3}{2}v\omega_4\omega_1u^3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_2-2v^2\omega_3\omega_1u^2\omega_2-\omega_1^2u^3\omega_2+\tfrac{1}{4}v\omega_3u^2\omega_2^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4u^2-\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{4}\omega_4^2\omega_1u^3+\tfrac{1}{4}\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2-\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{2}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+2\omega_1^2u^3-\tfrac{1}{2}v^2\omega_3^2\omega_4u^2-\tfrac{3}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4+\tfrac{7}{8}\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4u^2\omega_2^2+\tfrac{1}{8}v\omega_3^2+\tfrac{1}{8}v\omega_4^2u^2-2v^2\omega_4\omega_1u^2\omega_2-\tfrac{3}{4}\omega_3\omega_4{c_s}^2u-v\omega_1u^2\omega_2^2-\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{3}{4}\omega_3^2{c_s}^2u+\tfrac{1}{4}v\omega_4u\omega_2-\tfrac{1}{8}v^2\omega_3\omega_2-\tfrac{1}{4}\omega_3\omega_4u^3\omega_2+v^2\omega_1u\omega_2-\tfrac{5}{2}v\omega_4\omega_1u^2+\tfrac{3}{4}v\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_4^2u\omega_2+\tfrac{1}{4}v^2\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^3-\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{2}v^2\omega_4-\omega_1^2u^2-\tfrac{3}{4}v\omega_4\omega_1u^2\omega_2+\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_3\omega_4^2u^2-\tfrac{1}{2}v\omega_3^2\omega_1u+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-\tfrac{1}{2}v\omega_3\omega_4u-\tfrac{1}{2}v^3\omega_4\omega_1u\omega_2+\tfrac{1}{2}v^4\omega_3\omega_2^2+\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1+\tfrac{1}{4}v\omega_4^2u^2\omega_2+\tfrac{5}{2}v\omega_3{c_s}^2\omega_2+\tfrac{3}{4}v\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{3}{4}v\omega_3\omega_1u^2\omega_2+\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^3\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_3u,$$

$$\alpha^{[\mu_2],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$$
$$-2+v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2+\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2u+v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2+3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u+v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u-\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2u^2\omega_2+v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2+v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u+\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2+2\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u-\tfrac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u-v\omega_3^2+3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2+2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_3^2\omega_1u-5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2u^2\omega_2+2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-v^2\omega_3\omega_4^2\omega_1u+\tfrac{7}{2}v\omega_4\omega_1u\omega_2+\tfrac{1}{4}\omega_4^2u^3-\tfrac{1}{2}\omega_4\omega_1u^3-\tfrac{3}{4}v^2\omega_3^2u\omega_2-\omega_3{c_s}^2\omega_1u+v\omega_3\omega_4^2u+\tfrac{7}{2}v\omega_3\omega_1u\omega_2+\tfrac{17}{4}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_3^2\omega_4u\omega_2+v\omega_3\omega_4\omega_1^2u+\tfrac{3}{4}\omega_3^2u-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u+\tfrac{3}{2}\omega_3\omega_4u+\tfrac{3}{4}\omega_3^2\omega_1u+\tfrac{1}{2}v^2\omega_3^2\omega_4u\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1u\omega_2+\tfrac{7}{2}v\omega_3\omega_1u+v\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_3^2u+\tfrac{1}{2}\omega_4u\omega_2-\tfrac{1}{2}v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_1^2u\omega_2+\tfrac{3}{2}v\omega_3\omega_4^2\omega_1u+\tfrac{1}{2}v^2\omega_4\omega_1u+\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_1u^3+v^2\omega_4u\omega_2-6v\omega_1u\omega_2-v^2\omega_4\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_1u^3\omega_2-\tfrac{1}{2}v\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2u^3-\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2-v^2\omega_3\omega_1u\omega_2^2+\tfrac{1}{2}v\omega_3u\omega_2+\tfrac{1}{2}\omega_4\omega_1u^3\omega_2-v^2\omega_3^2\omega_4\omega_1u-\tfrac{17}{4}\omega_4\omega_1u-\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\tfrac{3}{4}\omega_4^2u-\tfrac{1}{4}\omega_4^2u^3\omega_2-v\omega_4^2\omega_1u-\tfrac{1}{2}v\omega_3\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_4u\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4\omega_1u-\tfrac{1}{4}\omega_3^2\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2u-\omega_3\omega_1^2u^3+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u\omega_2+5\omega_1u+\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{3}{4}\omega_3\omega_4\omega_1u\omega_2+\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{1}{2}\omega_3^2\omega_4\omega_1u-\tfrac{1}{2}v\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1u^3-\tfrac{3}{4}v^2\omega_4^2u\omega_2+v\omega_1^2u\omega_2+\omega_3\omega_1^2u^3\omega_2-\omega_1^2u+\tfrac{1}{2}\omega_4^2\omega_1u+\tfrac{1}{2}v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_4^2\omega_1u\omega_2-\omega_4\omega_1^2u^3\omega_2+\tfrac{1}{2}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u+2v^2\omega_1u\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1u\omega_2+\tfrac{7}{2}v\omega_4\omega_1u-\tfrac{5}{2}\omega_1u\omega_2-\tfrac{3}{2}v^2\omega_3\omega_4u\omega_2-\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}v^2\omega_3\omega_1u+2v^2\omega_3\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{1}{2}\omega_4^2\omega_1u^3\omega_2+v^2\omega_3u\omega_2-\tfrac{1}{2}v\omega_4\omega_1^2u\omega_2-\tfrac{1}{2}\omega_3^2\omega_4u-\tfrac{21}{4}\omega_3\omega_1u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2u+\tfrac{1}{2}v\omega_4u\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^3\omega_2-2v^2\omega_1u\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2u\omega_2-\tfrac{1}{2}\omega_3\omega_4^2\omega_1u+\omega_4\omega_1^2u^3-\tfrac{1}{2}v\omega_3^2u-\tfrac{1}{4}\omega_4^2u\omega_2-v\omega_3^2\omega_1u-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-v\omega_3\omega_4u+\tfrac{5}{4}\omega_4\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1^2u+\tfrac{1}{2}v^2\omega_4^2\omega_1u-\tfrac{1}{2}\omega_3\omega_4^2u+\tfrac{9}{4}\omega_3\omega_1u\omega_2-8v\omega_3\omega_4\omega_1u-\omega_3u,$$

$$\alpha^{[\mu_2],t-3\delta_t}_{x,y-\delta_l}=3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2+\tfrac{5}{2}v\omega_4+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_2+\tfrac{13}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3-\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1-\tfrac{3}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2+\tfrac{7}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+\omega_3\omega_1u^2\omega_2+\omega_1^2+v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2-\tfrac{1}{2}v\omega_4\omega_2^2+v^2\omega_3\omega_4^2\omega_1+2v^2\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1^2\omega_2-v\omega_3\omega_4\omega_1^2+\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3^2-4v\omega_3\omega_1\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4-\omega_3\omega_1^2+\tfrac{1}{2}v^2\omega_3^2\omega_2+$$

$$\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2^2+\tfrac{1}{2}\omega_3\omega_4^2\omega_1-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{19}{4}\omega_3\omega_1+v\omega_3^2\omega_1+\tfrac{7}{2}v\omega_4\omega_2+2v^2\omega_2^2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4+7v\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_4\omega_1^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+3v^2\omega_3\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+2\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_2^2+\tfrac{1}{2}\omega_3^2u^2-4\omega_1-\tfrac{1}{2}\omega_3^2\omega_1u^2-v^2\omega_3\omega_4^2+\tfrac{1}{2}v\omega_4^2\omega_1\omega_2-v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2-v\omega_1^2\omega_2+\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1^2+\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2-\tfrac{3}{2}v\omega_3^2\omega_4\omega_1-2v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1+6v\omega_1\omega_2-\omega_3\omega_1u^2+\tfrac{3}{2}v\omega_3\omega_4^2+\tfrac{5}{2}v\omega_3-\tfrac{3}{4}\omega_3^2\omega_1+\tfrac{3}{4}\omega_4\omega_2-v^2\omega_3\omega_2^2-\tfrac{15}{4}\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1\omega_2+v\omega_2^2-3v\omega_3\omega_1-\tfrac{1}{2}v\omega_4^2\omega_2-\tfrac{3}{2}\omega_2-\tfrac{3}{2}v\omega_3\omega_4^2\omega_1-4v\omega_4\omega_1\omega_2-5v\omega_2-v^2\omega_3\omega_4\omega_1-\tfrac{9}{4}\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_1^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4+\tfrac{1}{2}v\omega_4\omega_1\omega_2^2-\omega_4\omega_1^2u^2-6v\omega_3\omega_4+\tfrac{1}{2}v\omega_3\omega_1^2\omega_2-\omega_3\omega_1^2u^2\omega_2-v\omega_3^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-2v^2\omega_3\omega_2-3v^2\omega_3\omega_4\omega_1\omega_2+v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+\tfrac{1}{2}\omega_3\omega_4\omega_1^2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2-v\omega_1\omega_2^2+v\omega_3\omega_4\omega_1\omega_2-v^2\omega_4\omega_2^2+\tfrac{7}{4}\omega_3\omega_2-\tfrac{1}{2}\omega_4^2\omega_1-\tfrac{1}{2}v\omega_3^2\omega_2-3v\omega_4\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1\omega_2-v\omega_3\omega_4\omega_2-v^2\omega_3^2\omega_4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t}=-1+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}\omega_4^2u^3+\tfrac{3}{2}\omega_4\omega_1u^3+\tfrac{1}{4}v^2\omega_3^2u\omega_2-\tfrac{5}{2}\omega_3{c_s}^2\omega_2-\omega_3{c_s}^2\omega_1u+4\omega_1u^2-\tfrac{1}{4}\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}\omega_3-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2+\tfrac{13}{4}\omega_4\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4^2u^3\omega_2+\tfrac{13}{4}\omega_3\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3^2u-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u+\tfrac{1}{2}\omega_3^2\omega_4u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u+\omega_1u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-\tfrac{11}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{4}v^2\omega_3^2u+2\omega_3{c_s}^2+\tfrac{1}{2}\omega_4u\omega_2+\tfrac{3}{2}v^2\omega_4\omega_1u\omega_2+\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{4}\omega_3u^2\omega_2^2-\tfrac{1}{2}v^2\omega_4\omega_1u-\tfrac{1}{4}v^2\omega_4\omega_1-\tfrac{3}{4}v^2\omega_3^2\omega_2-\tfrac{1}{2}\omega_3\omega_4u^3-\tfrac{1}{2}\omega_3^2\omega_4u^3\omega_2-v^2\omega_3+\tfrac{5}{4}\omega_3u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^3-v^2\omega_4\omega_1u\omega_2^2-\tfrac{3}{2}\omega_3\omega_1u^3\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{4}\omega_3^2u^3+\tfrac{1}{4}\omega_4\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1+\tfrac{1}{4}\omega_4^2\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2\omega_2-2\omega_3\omega_4\omega_1u^3-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2+v^2\omega_3\omega_1u\omega_2^2-\tfrac{3}{2}\omega_4\omega_1u^3\omega_2-5\omega_1u^2\omega_2+\tfrac{5}{4}\omega_4-\tfrac{3}{4}\omega_4\omega_1u-\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\tfrac{1}{4}\omega_4^2u+\tfrac{1}{4}\omega_4^2u^3\omega_2-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2u\omega_2+\tfrac{1}{4}v^2\omega_4^2u+\tfrac{1}{4}\omega_3^2u^2+\omega_3\omega_1^2u^3+\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_3\omega_1u^2\omega_2^2+\tfrac{1}{2}\omega_3^2\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2+\tfrac{5}{2}\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3^2\omega_1u+2\omega_1u+\tfrac{1}{2}\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2+\tfrac{3}{4}v^2\omega_4^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_3\omega_4\omega_1u\omega_2-\tfrac{1}{4}\omega_4^2+\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-3\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_3^2u^2\omega_2-\omega_3u^2+\tfrac{1}{2}\omega_3^2\omega_4u^3+\tfrac{3}{2}\omega_3\omega_1u^3-\tfrac{1}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{2}\omega_3\omega_1u\omega_2^2-\omega_3\omega_1^2u^3\omega_2-\tfrac{3}{4}v^2\omega_4^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_2^2-\omega_4\omega_1^2u^3\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2+\omega_1^2u^2\omega_2-\tfrac{11}{4}\omega_3\omega_1u^2-\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{1}{2}\omega_3\omega_4^2u^3+\tfrac{1}{2}\omega_3u\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1+\tfrac{1}{2}v^2\omega_4^2\omega_1u\omega_2-\tfrac{3}{2}\omega_4\omega_2+\tfrac{3}{4}v^2\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{5}{2}\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2+\omega_2-\tfrac{1}{4}\omega_4u^2\omega_2^2-\tfrac{1}{2}\omega_4u-\tfrac{1}{2}v^2\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1u+\tfrac{1}{4}\omega_3\omega_1\omega_2+2\omega_1^2u^3\omega_2+\tfrac{1}{2}\omega_1u\omega_2^2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^2\omega_2+2\omega_3\omega_4\omega_1u^3\omega_2+3\omega_3\omega_4{c_s}^2\omega_2-\omega_4u^2-\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^3\omega_2+\tfrac{5}{4}\omega_4u^2\omega_2-2\omega_1^2u^3-\tfrac{5}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{4}\omega_3\omega_1u-\tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{1}{4}\omega_4\omega_2^2+\tfrac{1}{2}\omega_3^2{c_s}^2u+\tfrac{1}{4}v^2\omega_3\omega_2+\tfrac{1}{2}\omega_3\omega_4u^3\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^3\omega_2+\omega_4\omega_1^2u^3+v^2\omega_4-\omega_1^2u^2-\tfrac{1}{4}\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2+\tfrac{3}{4}\omega_4\omega_1u\omega_2-\tfrac{3}{4}v^2\omega_4\omega_2^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{9}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y}^{[\mu_2],t-3\delta_t}=3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{3}{4}\omega_3^2\omega_2+\tfrac{3}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3+2\omega_4\omega_1u^2\omega_2-\tfrac{15}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2-\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_1\omega_2^2-\omega_3\omega_4u\omega_2^2+2\omega_3\omega_1u^2\omega_2-\omega_3^2u+\omega_3^2\omega_4u^2\omega_2-6\omega_3\omega_4u-\tfrac{1}{2}\omega_3^2\omega_1u+\tfrac{1}{2}\omega_4\omega_1^2u\omega_2-v^2\omega_4\omega_1\omega_2-2\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_4^2u^2-3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_3^2-\tfrac{1}{2}\omega_3\omega_1^2u-\tfrac{1}{2}v^2\omega_3^2\omega_2-\omega_3\omega_1^2u^2-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{1}{2}\omega_4^2\omega_2+\omega_3\omega_4^2u^2\omega_2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4+\tfrac{7}{2}\omega_4\omega_1u+\tfrac{1}{2}\omega_4u\omega_2^2-\omega_4^2u+\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+3\omega_3\omega_4\omega_1u^2+7\omega_3\omega_4u\omega_2+2\omega_1\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u\omega_2+\omega_3^2u\omega_2+\tfrac{1}{2}\omega_3^2u^2-\tfrac{3}{2}\omega_1+\tfrac{1}{2}\omega_3^2\omega_1u^2+\omega_3\omega_4u^2+\tfrac{1}{2}\omega_4^2\omega_1u\omega_2-5\omega_1u-\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_2+\omega_3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4\omega_2^2-\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_1u\omega_2^2+\omega_1^2u-\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_2^2-3\omega_3\omega_4\omega_1u^2\omega_2-2\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_4\omega_1u\omega_2^2-2\omega_3\omega_1u^2-\omega_3^2\omega_4u^2-3\omega_3u\omega_2-\tfrac{3}{2}\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2\omega_1+\tfrac{13}{4}\omega_4\omega_2+v^2\omega_3\omega_2^2-\tfrac{3}{4}\omega_3\omega_4\omega_1+v^2\omega_3\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2^2+6\omega_1u\omega_2+\omega_2^2-4\omega_2+\tfrac{5}{2}\omega_4u-\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4\omega_2-\tfrac{9}{4}\omega_3\omega_1\omega_2-\omega_1u\omega_2^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\omega_4\omega_1^2u^2+\tfrac{3}{2}\omega_3^2\omega_4u+\tfrac{7}{2}\omega_3\omega_1u+\omega_3\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3u\omega_2^2-\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2-v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+2\omega_1^2u^2+\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_4\omega_1u\omega_2-v^2\omega_4\omega_2^2+\tfrac{19}{4}\omega_3\omega_2+\tfrac{3}{2}\omega_3\omega_4^2u-\tfrac{3}{2}\omega_3^2\omega_4u\omega_2-4\omega_3\omega_1u\omega_2+\tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=2v^2\omega_3\omega_4^2\omega_1u-2\omega_4\omega_1u^3+v^2\omega_3^2u\omega_2+4\omega_3{c_s}^2\omega_1u+2\omega_3\omega_4\omega_1u+\omega_3\omega_4^2u^3\omega_2+\omega_3^2u+2\omega_3\omega_4^2{c_s}^2u+2\omega_3\omega_4u-\omega_4\omega_1^2u\omega_2-v^2\omega_3^2\omega_4u\omega_2+4v^2\omega_3\omega_1u\omega_2+v^2\omega_3^2u+\omega_4u\omega_2-2v^2\omega_4\omega_1u\omega_2+\omega_3\omega_4u^3+\omega_3^2\omega_4u^3\omega_2-2v^2\omega_4u\omega_2+4v^2\omega_4\omega_1u\omega_2^2+4\omega_3\omega_1u^3\omega_2+\omega_3^2u^3+4\omega_3\omega_4\omega_1u^3+2\omega_3^2\omega_4{c_s}^2u-4\omega_3{c_s}^2\omega_1u\omega_2+2\omega_4\omega_1u^3\omega_2+2v^2\omega_3^2\omega_4\omega_1u-6\omega_4\omega_1u+4\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\omega_4^2u-2\omega_3\omega_4u\omega_2-\omega_3^2u\omega_2-2\omega_3\omega_4^2{c_s}^2u\omega_2+v^2\omega_3\omega_4u-2v^2\omega_3^2\omega_1u-v^2\omega_3\omega_4^2u\omega_2-\omega_4^2\omega_1u\omega_2+5\omega_1u+\omega_1^2u\omega_2-2\omega_3\omega_4\omega_1u\omega_2-4\omega_3\omega_4{c_s}^2\omega_1u-\omega_3^2\omega_4u^3-4\omega_3\omega_1u^3+2v^2\omega_4^2u\omega_2-\omega_1^2u+\omega_4^2\omega_1u-v^2\omega_3\omega_4^2u+4\omega_4\omega_1^2u^3\omega_2-\omega_4\omega_1u\omega_2^2-\omega_3\omega_4^2u^3+\omega_3u\omega_2-4v^2\omega_1u\omega_2^2+\omega_3\omega_4^2u\omega_2-2v^2\omega_4^2\omega_1u\omega_2-6\omega_1u\omega_2+3v^2\omega_3\omega_4u\omega_2-\omega_4u-v^2\omega_3^2\omega_4u+\omega_4\omega_1^2u-2v^2\omega_3\omega_1u-4v^2\omega_3\omega_4\omega_1u\omega_2-4\omega_1^2u^3\omega_2+\omega_1u\omega_2^2-2\omega_3^2\omega_4{c_s}^2u\omega_2-4\omega_3\omega_4\omega_1u^3\omega_2+2\omega_4^2\omega_1u^3-2\omega_4^2\omega_1u^3\omega_2-2v^2\omega_3u\omega_2+4\omega_1^2u^3-\omega_3^2\omega_4u-2\omega_3\omega_1u-2\omega_3\omega_4{c_s}^2u-\omega_3^2u^3\omega_2-2\omega_3^2{c_s}^2u-\omega_3\omega_4u^3\omega_2+4v^2\omega_1u\omega_2-4\omega_4\omega_1^2u^3-\omega_4^2u\omega_2+2\omega_3^2{c_s}^2u\omega_2+7\omega_4\omega_1u\omega_2+2\omega_3\omega_4{c_s}^2u\omega_2-\omega_3\omega_4^2u+\omega_3^2\omega_4u\omega_2+2\omega_3\omega_1u\omega_2-\omega_3u,$$

$$\alpha_{x,y}^{[\mu_2],t-3\delta_t} = 3+5\omega_4\omega_1-2\omega_4\omega_1u^2\omega_2-2v^2\omega_3^2\omega_4\omega_1-\omega_1\omega_2^2-6\omega_3\omega_1u^2\omega_2-2\omega_3^2\omega_4u^2\omega_2+\omega_1^2-2v^2\omega_3\omega_4+4v^2\omega_1\omega_2^2-2v^2\omega_3\omega_4^2\omega_1-2v^2\omega_4\omega_1\omega_2+2\omega_4\omega_1u^2-2v^2\omega_3^2+\omega_4\omega_1\omega_2^2-6\omega_4\omega_1\omega_2-\omega_4^2\omega_2-2\omega_3\omega_4^2u^2\omega_2-4v^2\omega_2^2-4v^2\omega_4\omega_1\omega_2^2-4\omega_4-6v^2\omega_3\omega_4\omega_2-6\omega_3\omega_4\omega_1u^2+5\omega_1\omega_2-2\omega_3^2u^2-4\omega_1-2\omega_3\omega_4u^2+2v^2\omega_3\omega_4^2-2v^2\omega_4^2\omega_2-\omega_4\omega_1^2+\omega_4^2-\omega_1^2\omega_2+2\omega_3\omega_4u^2\omega_2+\omega_4^2\omega_1\omega_2+2\omega_3\omega_4^2u^2+2\omega_3^2u^2\omega_2+2\omega_4^2\omega_1u^2\omega_2+2v^2\omega_4\omega_2+2v^2\omega_3^2\omega_1+6\omega_3\omega_4\omega_1u^2\omega_2+4\omega_1^2u^2\omega_2+6\omega_3\omega_1u^2+2\omega_3^2\omega_4u^2+5\omega_4\omega_2+\omega_4\omega_1^2\omega_2-6v^2\omega_3\omega_1\omega_2+\omega_2^2-4\omega_2+2v^2\omega_3\omega_4\omega_1-4\omega_4\omega_1^2u^2\omega_2+4\omega_4\omega_1^2u^2-\omega_4\omega_2^2+6v^2\omega_3\omega_2+6v^2\omega_3\omega_4\omega_1\omega_2-4\omega_1^2u^2-2\omega_4^2\omega_1u^2+2v^2\omega_4^2\omega_1\omega_2+4v^2\omega_4\omega_2^2-\omega_4^2\omega_1+2v^2\omega_3^2\omega_4,$$

$$\alpha_{x+\delta_t,y}^{[\mu_1],t-3\delta_t} = 1-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{4}\omega_4^2u^3+\tfrac{3}{2}\omega_4\omega_1u^3+\tfrac{1}{4}v^2\omega_3^2u\omega_2+\tfrac{5}{2}\omega_3{c_s}^2\omega_2-\omega_3{c_s}^2\omega_1u-4\omega_1u^2+\tfrac{1}{4}\omega_4^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_3+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2-\tfrac{13}{4}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4^2u^3\omega_2-\tfrac{13}{4}\omega_3\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3^2u-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3^2\omega_4u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u-\omega_1u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2+\tfrac{11}{4}\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{4}v^2\omega_3^2u-2\omega_3{c_s}^2+\tfrac{1}{2}\omega_4u\omega_2+\tfrac{3}{2}v^2\omega_4\omega_1u\omega_2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{4}\omega_3u^2\omega_2^2-\tfrac{1}{2}v^2\omega_4\omega_1u+\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{3}{4}v^2\omega_3^2\omega_2-\tfrac{1}{2}\omega_3\omega_4u^3-\tfrac{1}{2}\omega_3^2\omega_4u^3\omega_2+v^2\omega_3-\tfrac{5}{4}\omega_3u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^3-v^2\omega_4\omega_1u\omega_2^2-\tfrac{3}{2}\omega_3\omega_1u^3\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{4}\omega_3^2u^3-\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1-\tfrac{1}{4}\omega_4^2\omega_2-\tfrac{1}{2}\omega_3\omega_4^2u^2\omega_2-2\omega_3\omega_4\omega_1u^3-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2+v^2\omega_3\omega_1u\omega_2^2-\tfrac{3}{2}\omega_4\omega_1u^3\omega_2+5\omega_1u^2\omega_2-\tfrac{5}{4}\omega_4-\tfrac{3}{4}\omega_4\omega_1u-\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\tfrac{1}{4}\omega_4^2u+\tfrac{1}{4}\omega_4^2u^3\omega_2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2u\omega_2+\tfrac{1}{4}v^2\omega_4^2u-\tfrac{1}{4}\omega_3^2u^2+\omega_3\omega_1^2u^3-\tfrac{1}{2}\omega_1+\tfrac{1}{2}\omega_3\omega_1u^2\omega_2^2-\tfrac{1}{2}\omega_3^2\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2-\tfrac{5}{2}\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3^2\omega_1u+2\omega_1u-\tfrac{1}{2}\omega_3{c_s}^2\omega_2^2+\tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2-\tfrac{3}{4}v^2\omega_4^2\omega_2-\tfrac{1}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_3\omega_4\omega_1u\omega_2+\tfrac{1}{4}\omega_4^2+\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2+3\omega_3\omega_4u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+\tfrac{1}{4}\omega_3^2u^2\omega_2+\omega_3u^2+\tfrac{1}{2}\omega_3^2\omega_4u^3+\tfrac{3}{2}\omega_3\omega_1u^3-\tfrac{1}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{2}\omega_3\omega_1u\omega_2^2-\omega_3\omega_1^2u^3\omega_2+\tfrac{3}{4}v^2\omega_4^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{1}{4}v^2\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_2^2-\omega_4\omega_1^2u^3\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2-\omega_1^2u^2\omega_2+\tfrac{11}{4}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{1}{2}\omega_3\omega_4^2u^3+\tfrac{1}{2}\omega_3u\omega_2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1+\tfrac{1}{2}v^2\omega_4^2\omega_1u\omega_2+\tfrac{3}{2}\omega_4\omega_2-\tfrac{3}{4}v^2\omega_3\omega_2^2+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{5}{2}\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2-\omega_2+\tfrac{1}{4}\omega_4u^2\omega_2^2-\tfrac{1}{2}\omega_4u-\tfrac{1}{2}v^2\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1u-\tfrac{1}{4}\omega_3\omega_1\omega_2+2\omega_1^2u^3\omega_2+\tfrac{1}{2}\omega_1u\omega_2^2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2+\tfrac{1}{2}\omega_4\omega_1^2u^2\omega_2+2\omega_3\omega_4\omega_1u^3\omega_2-3\omega_3\omega_4{c_s}^2\omega_2+\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3-\tfrac{1}{2}\omega_3^2{c_s}^2\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^3\omega_2-\tfrac{5}{4}\omega_4u^2\omega_2-2\omega_1^2u^3+\tfrac{5}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{4}\omega_3\omega_1u+\tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{1}{4}\omega_4\omega_2^2+\tfrac{1}{2}\omega_3^2{c_s}^2u-\tfrac{1}{4}v^2\omega_3\omega_2+\tfrac{1}{2}\omega_3\omega_4u^3\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^3\omega_2+\omega_4\omega_1^2u^3-v^2\omega_4+\omega_1^2u^2-\tfrac{1}{4}\omega_4^2u\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2+\tfrac{3}{4}\omega_4\omega_1u\omega_2+\tfrac{3}{4}v^2\omega_4\omega_2^2-\tfrac{1}{2}\omega_3\omega_4u^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{9}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3u,$$

$$\alpha_{x+\delta_t,y}^{[\mu_2],t-3\delta_t} = 3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{3}{4}\omega_3^2\omega_2+\tfrac{3}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3+2\omega_4\omega_1u^2\omega_2-\tfrac{15}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2+\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_4u\omega_2^2+2\omega_3\omega_1u^2\omega_2+\omega_3^2u+\omega_3^2\omega_4u^2\omega_2+6\omega_3\omega_4u+\tfrac{1}{2}\omega_3^2\omega_1u-\tfrac{1}{2}\omega_4\omega_1^2u\omega_2-v^2\omega_4\omega_1\omega_2-2\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_4^2u^2+3\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_3\omega_1^2u-\tfrac{1}{2}v^2\omega_3^2\omega_2-\omega_3\omega_1^2u^2-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{1}{2}\omega_4^2\omega_2+\omega_3\omega_4^2u^2\omega_2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4-\tfrac{7}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4u\omega_2^2+\omega_4^2u+\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+3\omega_3\omega_4\omega_1u^2-7\omega_3\omega_4u\omega_2+2\omega_1\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u\omega_2-\omega_3^2u\omega_2+\tfrac{1}{2}\omega_3^2u^2-\tfrac{3}{2}\omega_1+\tfrac{1}{2}\omega_3^2\omega_1u^2+\omega_3\omega_4u^2-\tfrac{1}{2}\omega_4^2\omega_1u\omega_2+5\omega_1u+\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_2-\omega_3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4\omega_2^2-\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_3\omega_1u\omega_2^2-\omega_1^2u-\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_2^2-3\omega_3\omega_4\omega_1u^2\omega_2-2\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1u\omega_2^2-2\omega_3\omega_1u^2-\omega_3^2\omega_4u^2+3\omega_3u\omega_2+\tfrac{3}{2}\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2\omega_1+\tfrac{13}{4}\omega_4\omega_2+v^2\omega_3\omega_2^2-\tfrac{3}{4}\omega_3\omega_4\omega_1+v^2\omega_3\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2^2-6\omega_1u\omega_2+\omega_2^2-4\omega_2-\tfrac{5}{2}\omega_4u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4\omega_2-\tfrac{9}{4}\omega_3\omega_1\omega_2+\omega_1u\omega_2^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\omega_4\omega_1^2u^2-\tfrac{3}{2}\omega_3^2\omega_4u-\tfrac{7}{2}\omega_3\omega_1u+\omega_3\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3u\omega_2^2-\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2-v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+2\omega_1^2u^2-\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4^2\omega_2+4\omega_4\omega_1u\omega_2-v^2\omega_4\omega_2^2+\tfrac{19}{4}\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_4^2u+\tfrac{3}{2}\omega_3^2\omega_4u\omega_2+4\omega_3\omega_1u\omega_2-\tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y+\delta_t}^{[\mu_1],t-3\delta_t} = -v^2\omega_3\omega_4^2\omega_1u-\tfrac{7}{2}v\omega_4\omega_1u\omega_2+\tfrac{1}{4}\omega_4^2u^3-\tfrac{1}{2}\omega_4\omega_1u^3-\tfrac{3}{4}v^2\omega_3^2u\omega_2-\omega_3{c_s}^2\omega_1u-v\omega_3\omega_4^2u-\tfrac{7}{2}v\omega_3\omega_1u\omega_2+\tfrac{17}{4}\omega_3\omega_4\omega_1u+\tfrac{1}{2}v\omega_3^2\omega_4u\omega_2-v\omega_3\omega_4\omega_1^2u+\tfrac{3}{4}\omega_3^2u-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u+\tfrac{3}{2}\omega_3\omega_4u+\tfrac{3}{4}\omega_3^2\omega_1u+\tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1u\omega_2-\tfrac{7}{2}v\omega_3\omega_1u-v\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_3^2u+\tfrac{1}{2}\omega_4u\omega_2-\tfrac{1}{2}v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_1^2u\omega_2-\tfrac{3}{2}v\omega_3\omega_4^2\omega_1u+\tfrac{1}{2}v^2\omega_4\omega_1u+\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_1u^3+v^2\omega_4u\omega_2+6v\omega_1u\omega_2-v^2\omega_4\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_1u^3\omega_2+\tfrac{1}{2}v\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2u^3+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2-v^2\omega_3\omega_1u\omega_2^2-\tfrac{1}{2}v\omega_3u\omega_2+\tfrac{1}{2}\omega_4\omega_1u^3\omega_2-v^2\omega_3^2\omega_4\omega_1u-\tfrac{17}{4}\omega_4\omega_1u-\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\tfrac{3}{4}\omega_4^2u-\tfrac{1}{4}\omega_4^2u^3\omega_2+v\omega_4^2\omega_1u+\tfrac{1}{2}v\omega_3\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_4u\omega_2-\tfrac{3}{2}v\omega_3^2\omega_4\omega_1u-\tfrac{1}{4}\omega_3^2\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2u-\omega_3\omega_1^2u^3+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u+\tfrac{1}{2}v\omega_4\omega_1u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u\omega_2+5\omega_1u+\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{3}{4}\omega_3\omega_4\omega_1u\omega_2+\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{1}{2}\omega_3^2\omega_4\omega_1u+\tfrac{1}{2}v\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1u^3-\tfrac{3}{4}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2+\omega_3\omega_1^2u^3\omega_2-\omega_1^2u+\tfrac{1}{2}\omega_4^2\omega_1u+\tfrac{1}{2}v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_4^2\omega_1u\omega_2-\omega_4\omega_1^2u^3\omega_2+\tfrac{1}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u+2v^2\omega_1u\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1u\omega_2-\tfrac{7}{2}v\omega_4\omega_1u-\tfrac{5}{2}\omega_1u\omega_2-\tfrac{3}{2}v^2\omega_3\omega_4u\omega_2-\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}v^2\omega_3\omega_1u+2v^2\omega_3\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{1}{2}\omega_4^2\omega_1u^3\omega_2+v^2\omega_3u\omega_2+\tfrac{1}{2}v\omega_4\omega_1^2u\omega_2-\tfrac{1}{2}\omega_3^2\omega_4u-\tfrac{21}{4}\omega_3\omega_1u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2u-\tfrac{1}{2}v\omega_4u\omega_2-$$

$\frac{1}{2}\omega_3^2\omega_1u^3\omega_2 - 2v^2\omega_1u\omega_2 + \frac{1}{2}v\omega_3\omega_1^2u\omega_2 - \frac{1}{2}\omega_3\omega_4^2\omega_1u + \omega_4\omega_1^2u^3 + \frac{1}{2}v\omega_3^2u - \frac{1}{4}\omega_4^2u\omega_2 + v\omega_3^2\omega_1u - \frac{1}{2}\omega_3^2{c_s}^2u\omega_2 + v\omega_3\omega_4u + \frac{5}{4}\omega_4\omega_1u\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1^2u + \frac{1}{2}v^2\omega_4^2\omega_1u - \frac{1}{2}\omega_3\omega_4^2u + \frac{9}{4}\omega_3\omega_1u\omega_2 + 8v\omega_3\omega_4\omega_1u - \omega_3u,$

$\alpha_{x,y+\delta_l}^{[\mu_2],t-3\delta_t} = 3 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \frac{5}{2}v\omega_4 + \frac{1}{2}\omega_4^2u^2\omega_2 - \frac{1}{4}\omega_3^2\omega_2 + \frac{13}{4}\omega_4\omega_1 - \frac{15}{4}\omega_3 - \omega_4\omega_1u^2\omega_2 + v^2\omega_3^2\omega_4\omega_1 - \frac{3}{4}\omega_3\omega_4\omega_2 + \frac{1}{4}\omega_3^2\omega_1\omega_2 - \frac{7}{2}v\omega_3\omega_2 - v\omega_4^2\omega_1 + \omega_3\omega_1u^2\omega_2 + \omega_1^2 + v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 + \frac{1}{2}v\omega_4\omega_2^2 + v^2\omega_3\omega_4^2\omega_1 + 2v^2\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1^2\omega_2 + v\omega_3\omega_4\omega_1^2 + \omega_4\omega_1u^2 + \frac{13}{4}\omega_3\omega_4 - \frac{1}{2}\omega_4^2u^2 + \frac{1}{2}v^2\omega_3^2 + 4v\omega_3\omega_1\omega_2 - \frac{3}{2}v\omega_3^2\omega_4 - \omega_3\omega_1^2 + \frac{1}{2}v^2\omega_3^2\omega_2 + \omega_3\omega_1^2u^2 - \frac{1}{2}v\omega_3\omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_4^2\omega_1 - \frac{3}{4}\omega_4\omega_1\omega_2 + \frac{19}{4}\omega_3\omega_1 - v\omega_3^2\omega_1 - \frac{7}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 + v^2\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{11}{4}\omega_4 - 7v\omega_3\omega_4\omega_1 - \frac{1}{2}v\omega_4\omega_1^2\omega_2 + \frac{1}{2}\omega_3^2\omega_4\omega_1 + 3v^2\omega_3\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 2\omega_1\omega_2 + \frac{1}{2}v\omega_3\omega_2^2 + \frac{1}{2}\omega_3^2u^2 - 4\omega_1 - \frac{1}{2}\omega_3^2\omega_1u^2 - v^2\omega_3\omega_4^2 - \frac{1}{2}v\omega_4^2\omega_1\omega_2 + v\omega_4^2 + \frac{1}{2}v^2\omega_4^2\omega_2 - \frac{1}{2}\omega_4\omega_1^2 + v\omega_1^2\omega_2 + \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_1^2\omega_2 - \frac{1}{2}v\omega_4\omega_1^2 + \frac{1}{2}\omega_3^2\omega_1u^2\omega_2 - \frac{1}{2}\omega_3^2u^2\omega_2 + \frac{1}{2}v^2\omega_4^2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 + \frac{3}{2}v\omega_3^2\omega_4\omega_1 - 2v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - 6v\omega_1\omega_2 - \omega_3\omega_1u^2 - \frac{3}{2}v\omega_3\omega_4^2 - \frac{5}{2}v\omega_3 - \frac{3}{4}\omega_3^2\omega_1 + \frac{3}{4}\omega_4\omega_2 - v^2\omega_3\omega_2^2 - \frac{15}{4}\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_1\omega_2 - v\omega_2^2 + 3v\omega_3\omega_1 + \frac{1}{2}v\omega_4^2\omega_2 - \frac{3}{2}\omega_2 + \frac{3}{2}v\omega_3\omega_4^2\omega_1 + 4v\omega_4\omega_1\omega_2 + 5v\omega_2 - v^2\omega_3\omega_4\omega_1 - \frac{9}{4}\omega_3\omega_1\omega_2 - \frac{1}{2}v\omega_3\omega_1^2 + \omega_4\omega_1^2u^2\omega_2 - \frac{1}{2}\omega_3^2\omega_4 - \frac{1}{2}v\omega_4\omega_1\omega_2^2 - \omega_4\omega_1^2u^2 + 6v\omega_3\omega_4 - \frac{1}{2}v\omega_3\omega_1^2\omega_2 - \omega_3\omega_1^2u^2\omega_2 + v\omega_3^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 2v^2\omega_3\omega_2 - 3v^2\omega_3\omega_4\omega_1\omega_2 + v^2\omega_3\omega_1\omega_2^2 + \frac{3}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_4\omega_1^2 + \frac{1}{2}\omega_4^2\omega_1u^2 - \frac{1}{2}v^2\omega_4^2\omega_1\omega_2 + v\omega_1\omega_2^2 - v\omega_3\omega_4\omega_1\omega_2 - v^2\omega_4\omega_2^2 + \frac{7}{4}\omega_3\omega_2 - \frac{1}{2}\omega_4^2\omega_1 + \frac{1}{2}v\omega_3^2\omega_2 + 3v\omega_4\omega_1 - \frac{1}{2}v\omega_3^2\omega_1\omega_2 + v\omega_3\omega_4\omega_2 - v^2\omega_3^2\omega_4,$

$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = -\omega_3\omega_4\omega_1u\omega_2^2 - 8\omega_3\omega_4\omega_1u - \omega_3^2u - 2\omega_3\omega_4u - \omega_3^2\omega_1u + \omega_4\omega_1^2u\omega_2 - \omega_4u\omega_2 + \omega_3\omega_1^2u\omega_2 - \omega_3\omega_1^2u - \omega_3^2\omega_4\omega_1u\omega_2 + 7\omega_4\omega_1u - \omega_4^2u + 2\omega_3\omega_4u\omega_2 + \omega_3^2\omega_1u\omega_2 + \omega_3^2u\omega_2 + \omega_4^2\omega_1u\omega_2 - 6\omega_1u - \omega_1^2u\omega_2 + 9\omega_3\omega_4\omega_1u\omega_2 + \omega_3^2\omega_4\omega_1u + \omega_3\omega_1u\omega_2^2 + \omega_1^2u - \omega_4^2\omega_1u + \omega_4\omega_1u\omega_2^2 - \omega_3u\omega_2 - \omega_3\omega_4^2u\omega_2 + 7\omega_1u\omega_2 - \omega_3\omega_4\omega_1^2u\omega_2 + \omega_4u - \omega_4\omega_1^2u - \omega_1u\omega_2^2 + \omega_3^2\omega_4u + 7\omega_3\omega_1u + \omega_3\omega_4^2\omega_1u - \omega_3\omega_4^2\omega_1u\omega_2 + \omega_4^2u\omega_2 - 8\omega_4\omega_1u\omega_2 + \omega_3\omega_4\omega_1^2u + \omega_3\omega_4^2u - \omega_3^2\omega_4u\omega_2 - 8\omega_3\omega_1u\omega_2 + \omega_3u,$

$\alpha_{x,y}^{[\mu_2],t-4\delta_t} = -4 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_3^2\omega_2 - 6\omega_4\omega_1 + 5\omega_3 + 7\omega_3\omega_4\omega_2 - \omega_3^2\omega_1\omega_2 + \omega_1\omega_2^2 - \omega_1^2 - \omega_3\omega_1^2\omega_2 - 6\omega_3\omega_4 - \omega_4\omega_1\omega_2^2 + \omega_3\omega_1^2 - \omega_3\omega_4^2\omega_1 + 7\omega_4\omega_1\omega_2 - 6\omega_3\omega_1 + \omega_4^2\omega_2 + \omega_3\omega_4^2 + 5\omega_4 - \omega_3^2\omega_4\omega_1 - 6\omega_1\omega_2 + 5\omega_1 + \omega_3\omega_4\omega_1\omega_2^2 + \omega_4\omega_1^2 - \omega_4^2 - \omega_3\omega_4\omega_2^2 + \omega_1^2\omega_2 - \omega_4^2\omega_1\omega_2 + \omega_3^2\omega_4\omega_1\omega_2 + \omega_3\omega_2^2 + \omega_3^2\omega_1 - 6\omega_4\omega_2 + 7\omega_3\omega_4\omega_1 - \omega_4\omega_1^2\omega_2 - \omega_3\omega_1\omega_2^2 - \omega_2^2 + 5\omega_2 - \omega_3^2\omega_4\omega_2 + 7\omega_3\omega_1\omega_2 + \omega_3^2\omega_4 + \omega_3\omega_4^2\omega_1\omega_2 + \omega_4\omega_2^2 - \omega_3^2 - \omega_3\omega_4\omega_1^2 + \omega_3\omega_4\omega_1^2\omega_2 - \omega_3\omega_4^2\omega_2 - 6\omega_3\omega_2 + \omega_4^2\omega_1,$

8.4 EFDE for μ_3

$$\mu_{3,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1} \alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_3],t-\ell\delta_t}\mu_{3,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t} = 1 + \frac{1}{2}v\omega_4 - \frac{1}{4}\omega_3 + v^2\omega_2 + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}v^2\omega_3 - \frac{1}{4}\omega_4 - \frac{1}{4}\omega_3u^2 + \frac{1}{2}v\omega_3 - \frac{1}{2}\omega_2 - \frac{1}{2}v\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{4}v^2\omega_4.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t} = -1 + \frac{1}{2}v\omega_4 + \frac{1}{4}\omega_3 - v^2\omega_2 - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}v^2\omega_3 + \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3u^2 + \frac{1}{2}v\omega_3 + \frac{1}{2}\omega_2 - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4u^2 + \frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}\omega_4^2u^3 - \frac{1}{2}\omega_4\omega_1u^3 + \frac{1}{4}\omega_3{c_s}^2\omega_2 - \frac{1}{2}v\omega_4 - \omega_1u^2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3 - \frac{1}{4}v\omega_3\omega_2 - \frac{1}{8}\omega_3^2u - \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4u + \frac{1}{4}v\omega_3\omega_1u + \frac{3}{4}\omega_4\omega_1u^2 + \frac{1}{4}v^3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4 - \frac{3}{8}\omega_4^2u^2 - \frac{1}{8}v^2\omega_3^2u - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v\omega_3^2{c_s}^2 - \frac{1}{4}v\omega_3\omega_4{c_s}^2 - \frac{1}{4}v\omega_4u^2\omega_2 + \frac{1}{4}v^2\omega_3 - \frac{1}{8}\omega_3u^2\omega_2 - \frac{1}{2}v\omega_1u\omega_2 - \frac{1}{8}\omega_3^2u^3 - \frac{1}{4}v\omega_4\omega_2 + \frac{1}{2}v\omega_3u\omega_2 + \frac{1}{2}\omega_1u^2\omega_2 - \frac{1}{2}v\omega_3\omega_1u^2 + \frac{3}{4}\omega_4 + \frac{3}{8}\omega_4^2u - \frac{1}{4}\omega_1\omega_2 + \frac{1}{8}v^3\omega_3^2 - \frac{1}{8}v^2\omega_4^2u + \frac{1}{4}\omega_3^2u^2 + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4u^2 - \frac{1}{4}v^3\omega_3\omega_2 + \frac{1}{4}v^2\omega_3\omega_4u + \frac{1}{2}\omega_1u + \frac{1}{8}v\omega_4^2 - \frac{1}{8}\omega_4^2 + \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_3\omega_1u^3 + \frac{1}{8}v\omega_3^2u^2 + \frac{1}{8}v^2\omega_4^2 + \frac{1}{4}v\omega_3\omega_4u^2 + \frac{1}{8}v^2\omega_4\omega_2 - \frac{1}{2}v\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2 + v\omega_1u^2\omega_2 + \frac{1}{4}\omega_3u\omega_2 - \frac{1}{4}v\omega_4^2u - \frac{1}{2}v\omega_3 - \frac{1}{8}\omega_4\omega_2 + \frac{1}{4}v\omega_4\omega_1u - \frac{1}{4}\omega_1u\omega_2 + \frac{1}{4}v\omega_3\omega_1 - \frac{1}{4}v\omega_3u^2\omega_2 + \frac{1}{2}\omega_2 - \omega_4u + v\omega_2 + \frac{1}{4}\omega_4u^2 - \frac{1}{8}\omega_4u^2\omega_2 - \frac{1}{8}v^3\omega_4^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 + \frac{1}{4}v\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_1u + \frac{1}{8}v\omega_3^2 + \frac{1}{8}v\omega_4^2u^2 - \frac{1}{4}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2{c_s}^2u + \frac{1}{2}v\omega_4u\omega_2 - \frac{1}{8}v^2\omega_3\omega_2 - \frac{1}{2}v\omega_4\omega_1u^2 - \frac{1}{4}v\omega_3^2u - \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4u - \frac{1}{8}\omega_3\omega_2 + \frac{1}{4}v\omega_4\omega_1 + \frac{1}{2}v\omega_3{c_s}^2\omega_2,$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4^2 u^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 + v\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3 u\omega_2 - \omega_4 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 - \omega_1 u - \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{1}{2}v\omega_4^2 u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u + \tfrac{1}{2}\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 + \omega_4 u - v\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u - \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_3^2 u - \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 + 2\omega_1 u^2 + \tfrac{1}{4}\omega_3 - 2v^3\omega_2^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + 2v^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u^2 + v^3\omega_4\omega_2 + 2\omega_3 {c_s}^2 + v\omega_3^2 {c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 + v\omega_3\omega_4 {c_s}^2 - v^2\omega_3 + \tfrac{1}{2}\omega_3 u^2\omega_2 - \omega_1 u^2\omega_2 - v^2\omega_2^2 + v\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_4 - \tfrac{1}{2}v^3\omega_3^2 + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{1}{4}\omega_3\omega_4 u^2 + 2v^3\omega_3\omega_2 - \omega_3 u^2 - \tfrac{1}{2}v\omega_3^2 u^2 - \tfrac{1}{2}v\omega_3\omega_4 u^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u^2 - 2v\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3 - \tfrac{1}{2}v^3\omega_3\omega_4 + v\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_2 + v\omega_2 - \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + v\omega_4\omega_1 u^2 - 2v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + \tfrac{1}{2}v\omega_4 - \tfrac{5}{4}\omega_3 + \tfrac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 + \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \tfrac{1}{4}\omega_4 - v^2\omega_4\omega_2 + \tfrac{5}{2}v\omega_3 + v\omega_2^2 - \tfrac{1}{2}\omega_2 - 3v\omega_2 - v\omega_3\omega_4 - v\omega_3^2 - 3v^2\omega_3\omega_2 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{8}\omega_4^2 u^3 + \tfrac{1}{2}\omega_4\omega_1 u^3 + \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 - \omega_1 u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2 u - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4 u - \tfrac{1}{4}v\omega_3\omega_1 u + \tfrac{3}{4}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2 u^2 + \tfrac{1}{8}v^2\omega_3^2 u - \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}v\omega_4 u^2\omega_2 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_1 u\omega_2 + \tfrac{1}{8}\omega_3^2 u^3 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3 u\omega_2 + \tfrac{1}{2}\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2 + \tfrac{3}{4}\omega_4 - \tfrac{3}{8}\omega_4^2 u - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2 u + \tfrac{1}{4}\omega_3^2 u^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 u - \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^3 + \tfrac{1}{8}v\omega_3^2 u^2 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}v\omega_3\omega_4 u^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{1}{4}v\omega_4^2 u - \tfrac{1}{2}v\omega_3 - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 u + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{4}v\omega_3 u^2\omega_2 + \tfrac{1}{2}\omega_2 + \omega_4 u + v\omega_2 + \tfrac{1}{4}\omega_4 u^2 - \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2 u^2 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 u - \tfrac{1}{4}\omega_3^2 {c_s}^2 u - \tfrac{1}{2}v\omega_4 u\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u^2 + \tfrac{1}{4}v\omega_3^2 u - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4 u - \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_3],t-\delta_t} = 1 + v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4^2 u^2 + \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 - v\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3 u\omega_2 - \omega_4 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \omega_1 u - \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3 u\omega_2 - \tfrac{1}{2}v\omega_4^2 u + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \omega_4 u - v\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_3^2 u - \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 - \omega_3^2 u - \omega_3\omega_4 u - \omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_4\omega_1 u + \omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4 u^2 - 3\omega_1 u + \omega_1^2 u - 3\omega_3\omega_1 u^2 + \tfrac{1}{2}\omega_4 u + \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2 u^2 + \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -v\omega_4 + 4v^3\omega_2^2 - v\omega_3\omega_2 - 3v^3\omega_4\omega_2 - v\omega_3^2 {c_s}^2 - v\omega_3\omega_4 {c_s}^2 + v\omega_4 u^2\omega_2 - v\omega_4\omega_2 + \tfrac{1}{2}v^3\omega_3^2 - 3v^3\omega_3\omega_2 + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{2}v\omega_3^2 u^2 - v\omega_3 + v^3\omega_3\omega_4 - v\omega_2^2 - v\omega_3 u^2\omega_2 + 3v\omega_2 + \tfrac{1}{2}v^3\omega_4^2 + v\omega_3\omega_4 + \tfrac{1}{2}v\omega_3^2 - \tfrac{1}{2}v\omega_4^2 u^2 + 2v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x,y}^{[\mu_3],t-\delta_t} = 2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4\omega_4\omega_1 u^2 - \omega_4^2 u^2 - v^2\omega_3^2 - 4v^2\omega_2^2 - \omega_3^2 u^2 - 2\omega_1 - 2\omega_3\omega_4 u^2 - v^2\omega_4^2 + 4v^2\omega_4\omega_2 + 4\omega_3\omega_1 u^2 + \omega_2^2 - 2\omega_2 + 4v^2\omega_3\omega_2 - 4\omega_1^2 u^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_3],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \omega_3^2 u + \omega_3\omega_4 u - \omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_4\omega_1 u + \omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4 u^2 + 3\omega_1 u - \omega_1^2 u - 3\omega_3\omega_1 u^2 - \tfrac{1}{2}\omega_4 u - \tfrac{1}{2}\omega_3\omega_1 u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2 u^2 - \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 - \tfrac{1}{8}\omega_4^2 u^3 + \tfrac{1}{2}\omega_4\omega_1 u^3 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 + \omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2 u + \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4 u + \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{3}{4}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{8}\omega_4^2 u^2 + \tfrac{1}{8}v^2\omega_3^2 u + \tfrac{1}{2}\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}v\omega_4 u^2\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}v\omega_1 u\omega_2 + \tfrac{1}{8}\omega_3^2 u^3 - \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3 u\omega_2 - \tfrac{1}{2}\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 - \tfrac{3}{8}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 u - \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}v\omega_4^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{4}\omega_3 u^2 - \tfrac{1}{2}\omega_3\omega_1 u^3 + \tfrac{1}{8}v\omega_3^2 u^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}v\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 - \tfrac{1}{4}v\omega_4^2 u - \tfrac{1}{2}v\omega_3 + \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 u + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{4}v\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_2 + \omega_4 u + v\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{8}v^3\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2 u^2 + \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 u - \tfrac{1}{4}\omega_3^2 {c_s}^2 u + \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u^2 - \tfrac{1}{4}v\omega_3^2 u + \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{2}v\omega_3\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4^2 u^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 - v\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3 u\omega_2 - \omega_4 + \tfrac{1}{4}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 - \omega_1 u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_3 u\omega_2 - \tfrac{1}{2}v\omega_4^2 u + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 u + \tfrac{1}{2}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 +$$

$$\omega_4 u + v\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_3^2 u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 + \omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 - 2\omega_1 u^2 - \tfrac{1}{4}\omega_3 - 2v^3\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_4 - 2v^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u^2 + v^3\omega_4\omega_2 - 2\omega_3 {c_s}^2 + v\omega_3^2 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 + v\omega_3\omega_4 {c_s}^2 + v^2\omega_3 - \tfrac{1}{2}\omega_3 u^2\omega_2 + \omega_1 u^2\omega_2 + v^2\omega_2^2 + v\omega_3\omega_1 u^2 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}v^3\omega_3^2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{4}\omega_3\omega_4 u^2 + 2v^3\omega_3\omega_2 + \omega_3 u^2 - \tfrac{1}{2}v\omega_3^2 u^2 - \tfrac{1}{2}v\omega_3\omega_4 u^2 + \tfrac{1}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 - 2v\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3 - \tfrac{1}{2}v^3\omega_3\omega_4 + v\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_2 + v\omega_2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + v\omega_4\omega_1 u^2 - 2v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - \tfrac{1}{2}v\omega_4 - \tfrac{5}{4}\omega_3 - \tfrac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 - \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \tfrac{1}{4}\omega_4 - v^2\omega_4\omega_2 - \tfrac{5}{2}v\omega_3 - v\omega_2^2 - \tfrac{1}{2}\omega_2 + 3v\omega_2 + v\omega_3\omega_4 + v\omega_3^2 - 3v^2\omega_3\omega_2 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = 1 + \tfrac{1}{8}\omega_4^2 u^3 - \tfrac{1}{2}\omega_4\omega_1 u^3 - \tfrac{1}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 + \omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{8}\omega_3^2 u + \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 u - \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{3}{4}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{8}\omega_4^2 u^2 - \tfrac{1}{8}v^2\omega_3^2 u + \tfrac{1}{2}\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}v\omega_4 u^2\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{8}\omega_3 u^2\omega_2 + \tfrac{1}{2}v\omega_1 u\omega_2 - \tfrac{1}{8}\omega_3^2 u^3 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3 u\omega_2 - \tfrac{1}{2}\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 + \tfrac{3}{8}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}v^3\omega_3^2 - \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 u + \tfrac{1}{2}\omega_1 u + \tfrac{1}{8}v\omega_4^2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{4}\omega_3 u^2 + \tfrac{1}{2}\omega_3\omega_1 u^3 + \tfrac{1}{8}v\omega_3^2 u^2 - \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}v\omega_3\omega_4 u^2 - \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1 u^2 + v\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{1}{4}v\omega_4^2 u - \tfrac{1}{2}v\omega_3 + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 u - \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{4}v\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_2 - \omega_4 u + v\omega_2 - \tfrac{1}{4}\omega_4 u^2 + \tfrac{1}{8}\omega_4 u^2\omega_2 - \tfrac{1}{8}v^3\omega_4^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1 u + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2 u + \tfrac{1}{4}\omega_3^2 {c_s}^2 u - \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u^2 + \tfrac{1}{4}v\omega_3^2 u + \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4 u + \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-\delta_t} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u - \tfrac{1}{2}\omega_4\omega_1 u^2 + \tfrac{1}{4}\omega_4^2 u^2 + \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 + v\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3 u\omega_2 - \omega_4 - \tfrac{1}{4}\omega_4\omega_1 u + \tfrac{1}{2}\omega_4^2 u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{2}\omega_1 + \omega_1 u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{1}{2}v\omega_4^2 u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u - \tfrac{1}{2}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \omega_4 u + v\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u - \tfrac{1}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_3^2 u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{4}v^2\omega_3^2\omega_1 u^2 - \tfrac{1}{4}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_4^2 u^3 - \tfrac{3}{4}\omega_4\omega_1 u^3 + \tfrac{3}{4}v^2\omega_3^2 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_2 + \tfrac{5}{2}\omega_3 {c_s}^2\omega_1 u + \tfrac{1}{2}v\omega_4 - \omega_1 u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1 u^2\omega_2 + v^3\omega_3\omega_4\omega_2 + 2v^3\omega_2^2 + \tfrac{1}{4}v\omega_3\omega_1 u\omega_2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u + \tfrac{1}{4}v\omega_4^2\omega_1 u^2 + \tfrac{7}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_4\omega_1 u - v^2\omega_1^2 u\omega_2 + \tfrac{1}{8}\omega_3^2 u + \tfrac{3}{4}\omega_3\omega_4^2 {c_s}^2 u - \tfrac{1}{4}v^3\omega_3^2\omega_1 u - \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{1}{2}v^3\omega_3\omega_2^2 + \tfrac{1}{2}\omega_4\omega_1^2 u^4 - \tfrac{1}{4}\omega_3\omega_4 u + \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{1}{2}v^2\omega_1\omega_2^2 - \tfrac{3}{4}v^2\omega_3\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 u - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2 - 3v^2\omega_2 + v\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1^2 u^2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{7}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{4}v^3\omega_3^2\omega_1 - \tfrac{5}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{8}\omega_4^2 u^2 + \tfrac{1}{8}v^2\omega_3^2 u - 2\omega_3 {c_s}^2 - \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{3}{4}v^2\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_4 u\omega_2^2 - \tfrac{3}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}\omega_4^2\omega_1 u^4 - \tfrac{5}{4}v^2\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{3}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}\omega_3^2\omega_4 {c_s}^2 u^2 - \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3^2\omega_2 + \tfrac{1}{4}v\omega_4 u^2\omega_2 - \tfrac{1}{4}v\omega_4^2\omega_1 u^3 + v^2\omega_3 - \tfrac{3}{8}\omega_3 u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1 u^3 - \tfrac{5}{2}v^2\omega_4 u\omega_2 + 2v\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3\omega_1 u^3\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2 u^2 + \tfrac{1}{8}\omega_3^2 u^3 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{4}v^3\omega_3^2\omega_4 + \tfrac{3}{4}\omega_3^2\omega_4 {c_s}^2 u + \tfrac{3}{8}v\omega_4\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{3}{2}v^2\omega_1\omega_2 - \tfrac{7}{4}v\omega_3 u\omega_2 + \tfrac{1}{4}\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{2}\omega_1 u^2\omega_2 + v^2\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}v^3\omega_4\omega_2^2 + \tfrac{1}{8}\omega_4\omega_1 u + \tfrac{1}{4}v^2\omega_3\omega_1^2 u + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 u - \tfrac{3}{8}\omega_4^2 u - v^2\omega_3\omega_4 u^2\omega_2 + v^3\omega_4 u\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1 u^2 - 2v^3\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - v\omega_1^2 u^2\omega_2 + \tfrac{3}{8}v^3\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4^2 {c_s}^2 u^2 - \tfrac{1}{2}v^3\omega_3^2 u\omega_2 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_1 + \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{2}\omega_3^2 u^2 - \tfrac{1}{2}v^2\omega_4^2 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2 u^3 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 u^2\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1 u^2 - \tfrac{1}{8}\omega_3\omega_4 u^2 - \tfrac{7}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4^2 + \tfrac{9}{4}v^2\omega_3\omega_4 u + \tfrac{1}{4}v^2\omega_3^2\omega_1 u + \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_1 u - \tfrac{1}{2}\omega_1 u - \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}v\omega_3^2 u^2\omega_2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 u + \tfrac{1}{4}v^3\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{4}v^2\omega_4^2\omega_1 u^2 - v\omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_1 u^2 + \omega_3 u^2 + \tfrac{3}{4}\omega_3\omega_1 u^3 + \tfrac{3}{4}v^2\omega_4^2 u\omega_2 - \tfrac{1}{2}v\omega_1^2\omega_2 + \tfrac{3}{8}v\omega_3^2 u^2 - \omega_3 {c_s}^2\omega_1^2 u^2 - \tfrac{1}{8}v^2\omega_4^2 - v^3\omega_1\omega_2^2 - \tfrac{1}{4}v^3\omega_4^2\omega_1 u - \tfrac{3}{4}v^2\omega_3\omega_4^2 u - \tfrac{1}{2}\omega_3\omega_1^2 u^4 + \tfrac{1}{4}v\omega_3\omega_4 u^2 + \tfrac{13}{8}v^2\omega_4\omega_2 + \tfrac{1}{8}v^2\omega_3^2\omega_1 + \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3^2 u\omega_2 + \tfrac{3}{4}v\omega_1\omega_2 - \tfrac{1}{2}\omega_3^2 {c_s}^2\omega_1 u + \tfrac{1}{8}\omega_3\omega_1 u^2 - \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2 u + \tfrac{1}{2}v^2\omega_4\omega_1^2 u^2 + v\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2 u + \tfrac{1}{2}v\omega_3 - v^2\omega_1 u\omega_2^2 + \tfrac{1}{2}v^3\omega_3\omega_4 + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 u - \tfrac{1}{4}v^3\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_1 u\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_1 u^3 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{3}{4}v\omega_3 u^2\omega_2 + v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 + \omega_4 u + \tfrac{1}{2}v^2\omega_3 u\omega_2^2 - \tfrac{3}{4}v^2\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_3^2\omega_1 u^4 - \tfrac{5}{4}v^2\omega_3\omega_1 u - \tfrac{3}{2}v^2\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}v\omega_4\omega_1 u^3\omega_2 + v^3\omega_3\omega_1\omega_2 - \tfrac{3}{2}v\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_1 u^2\omega_2 - 2v^3\omega_1 u\omega_2^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_4 u^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 + \tfrac{1}{2}\omega_4^2\omega_1 u^3 - \tfrac{5}{2}v^2\omega_3 u\omega_2 + \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}v^3\omega_4^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 u + \tfrac{1}{2}v^2\omega_3^2\omega_4 u^2 + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 - \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{2}v^3\omega_3^2\omega_4 u + \tfrac{1}{4}v^2\omega_4\omega_1^2 u - \tfrac{3}{8}\omega_3\omega_1 u - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2 u^2 + v^3\omega_3 u\omega_2^2 + 2v^2\omega_4\omega_1 u^2\omega_2 - \tfrac{9}{4}\omega_3\omega_4 {c_s}^2 u - \tfrac{1}{4}\omega_3^2 {c_s}^2 u - \tfrac{3}{4}v\omega_4 u\omega_2 + \tfrac{11}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v^3\omega_3\omega_2^2 + 5v^2\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 u^2 + \tfrac{1}{4}v\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{2}v^3\omega_4^2 u\omega_2 - \tfrac{1}{2}v^2\omega_3^2 u^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1^2 u^3 + \tfrac{1}{4}v\omega_3^2 u + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2 u - \tfrac{1}{4}\omega_4^2\omega_1 u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2 u^2 - \tfrac{1}{4}v\omega_3^2\omega_1 u + \tfrac{1}{2}v\omega_3\omega_4 u + \tfrac{3}{2}v^3\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}\omega_3^2 {c_s}^2\omega_1 u^2 - \tfrac{1}{4}v^2\omega_4\omega_2^2 + \tfrac{1}{8}\omega_3\omega_2 - 2v^2\omega_1^2 u^2\omega_2 - \tfrac{1}{8}v\omega_3^2\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2\omega_1 u^2 + \tfrac{3}{2}v\omega_3 {c_s}^2\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{2}v\omega_3\omega_4^2 {c_s}^2 u + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{3}{2}v\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 u - \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{3}{2}v^3\omega_3\omega_1 u\omega_2 - v\omega_3 {c_s}^2\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{2}v^3\omega_3\omega_4^2 u + \tfrac{1}{4}\omega_3\omega_1 u\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_1 u,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$
$$-2+v\omega_4\omega_1 u\omega_2+\tfrac{1}{2}v^2\omega_3^2 u\omega_2-\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1 u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2 u+v\omega_3\omega_1 u\omega_2+$$
$$\tfrac{1}{2}\omega_3\omega_4\omega_1 u+\tfrac{1}{2}v\omega_4^2\omega_1 u^2-\tfrac{3}{4}v\omega_4^2 u\omega_2-2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1 u^2\omega_2+\omega_3^2 u-v^2\omega_3\omega_4+\tfrac{7}{2}\omega_3\omega_4 u+\tfrac{1}{4}\omega_3^2\omega_1 u+v^2\omega_1\omega_2^2-$$
$$2v^2\omega_3\omega_1 u\omega_2-\tfrac{1}{2}v\omega_3 u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1 u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4 u+\tfrac{3}{2}\omega_4\omega_1 u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2 u^2+\tfrac{1}{2}\omega_4 u\omega_2-$$
$$2v^2\omega_4\omega_1 u\omega_2+v\omega_1 u\omega_2^2-v^2\omega_4 u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1^2 u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2 u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1 u\omega_2+$$
$$\tfrac{1}{2}\omega_3\omega_1^2 u^2-\tfrac{1}{2}v\omega_4\omega_1^2 u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2+3v\omega_3 u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4 u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4-2\omega_4\omega_1 u-$$
$$v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4^2 u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1 u-\tfrac{3}{2}\omega_3\omega_4\omega_1 u^2-\omega_3\omega_4 u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2 u^2\omega_2-\tfrac{1}{2}\omega_3^2 u\omega_2-$$
$$\tfrac{3}{4}\omega_3^2 u^2+\omega_1+v\omega_3\omega_4 u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1 u^2-\omega_3\omega_4 u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v^2\omega_3^2\omega_1 u+4\omega_1 u+\tfrac{1}{2}v\omega_4^2+\tfrac{1}{2}\omega_1^2 u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+$$
$$\tfrac{1}{2}v\omega_3^2 u^2\omega_2-v\omega_3\omega_4^2 u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4 u^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4 u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2 u^2+3v\omega_3\omega_4\omega_1 u^2+\tfrac{1}{2}\omega_3^2 u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2 u\omega_2+$$
$$v\omega_1^2 u\omega_2-\omega_1^2 u-\tfrac{1}{4}v^2\omega_4^2+\tfrac{1}{4}\omega_4^2\omega_1 u-v^2\omega_3\omega_4^2 u+\tfrac{1}{2}v\omega_3^2\omega_1 u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{3}{4}v\omega_3^2 u\omega_2-2v\omega_1\omega_2+\omega_1^2 u^2\omega_2+$$
$$\tfrac{5}{2}\omega_3\omega_1 u^2+\tfrac{1}{2}\omega_3^2\omega_4 u^2-\tfrac{3}{4}v\omega_3\omega_4^2+\tfrac{3}{2}\omega_3 u\omega_2-\tfrac{1}{2}v\omega_4^2 u-\tfrac{5}{2}v\omega_3+2v^2\omega_1 u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{1}{2}v\omega_4 u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+$$
$$\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1 u-v\omega_3\omega_1^2 u^2-v\omega_2^2-2\omega_1 u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4 u\omega_2+\omega_2-\tfrac{3}{2}\omega_4 u-$$
$$v^2\omega_3 u\omega_2^2-v^2\omega_3^2\omega_4 u+\tfrac{1}{4}\omega_4\omega_1^2 u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_3\omega_1^2 u+\tfrac{1}{2}\omega_3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1 u+\tfrac{1}{4}\omega_3^2\omega_4+$$
$$\tfrac{1}{2}\omega_4\omega_1^2 u^2+\tfrac{7}{2}v\omega_3\omega_4-\tfrac{3}{4}\omega_3^2\omega_4 u-2\omega_3\omega_1 u+v\omega_3^2+3v\omega_4 u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}v\omega_3^2 u-2\omega_1^2 u^2-2v\omega_4\omega_1 u^2\omega_2-$$
$$\tfrac{1}{4}\omega_4^2\omega_1 u^2-\tfrac{3}{4}v\omega_3^2\omega_1 u-5v\omega_3\omega_4 u+\tfrac{1}{2}\omega_4\omega_1 u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+$$
$$\tfrac{1}{2}v\omega_4^2 u^2\omega_2-2v\omega_3\omega_1 u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1 u-\tfrac{3}{4}\omega_3\omega_4^2 u+\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1 u\omega_2-\tfrac{3}{2}v\omega_3\omega_4\omega_1 u-\tfrac{5}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l} = 1+\tfrac{1}{2}v^2\omega_3^2\omega_1 u^2-\tfrac{1}{2}\omega_3 {c_s}^2\omega_2+\tfrac{1}{2}v\omega_4+2\omega_1 u^2+\tfrac{1}{4}v^2\omega_3\omega_1^2+\tfrac{3}{2}\omega_4\omega_1-\tfrac{1}{4}\omega_3+\tfrac{1}{4}\omega_4\omega_1 u^2\omega_2-\tfrac{1}{4}v\omega_4^2\omega_1 u^2+$$
$$\tfrac{1}{2}v\omega_3\omega_2+\tfrac{1}{4}v\omega_4^2\omega_1+\tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1 u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4-\omega_4\omega_1^2 u^4+\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-v^2\omega_2-v^2\omega_3\omega_1^2 u^2-$$
$$\tfrac{5}{2}\omega_4\omega_1 u^2+\tfrac{1}{4}v^3\omega_3^2\omega_1-\tfrac{1}{2}v^3\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4+\tfrac{3}{4}\omega_4^2 u^2+\tfrac{1}{2}\omega_3 {c_s}^2+\tfrac{1}{2}v\omega_3^2 {c_s}^2+\tfrac{1}{2}\omega_4^2\omega_1 u^4-\tfrac{1}{2}v\omega_3\omega_1\omega_2+$$
$$\tfrac{1}{2}v\omega_3\omega_4 {c_s}^2+\omega_3^2\omega_4 {c_s}^2 u^2+\tfrac{1}{4}\omega_3\omega_1^2-v^2\omega_4\omega_1+\tfrac{1}{2}v\omega_4 u^2\omega_2-\tfrac{1}{4}v^2\omega_3+\tfrac{1}{4}\omega_3 u^2\omega_2-\tfrac{5}{4}\omega_3\omega_1^2 u^2+\tfrac{1}{2}v^3\omega_4\omega_1\omega_2-$$
$$\tfrac{1}{4}\omega_4\omega_1\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{4}v\omega_3^2\omega_1+\tfrac{1}{2}v\omega_4\omega_2+2v^2\omega_1\omega_2-\omega_1 u^2\omega_2+v\omega_3\omega_1 u^2-\tfrac{5}{4}\omega_4+\tfrac{1}{2}v\omega_3\omega_4\omega_1+$$
$$2v^2\omega_3\omega_4 u^2\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1 u^2+\tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1+\tfrac{1}{2}\omega_1\omega_2+2v\omega_1^2 u^2\omega_2-\tfrac{1}{4}v^3\omega_3^2+\omega_3\omega_4^2 {c_s}^2 u^2-\tfrac{1}{2}\omega_3^2 u^2+$$
$$v^2\omega_4^2 u^2\omega_2-\omega_1+v\omega_3\omega_4 u^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_1 u^2+\tfrac{1}{4}\omega_3\omega_4 u^2+\tfrac{1}{2}v^3\omega_3\omega_2-\tfrac{1}{4}v^3\omega_4^2\omega_1-\tfrac{1}{4}v\omega_4^2-\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{1}{2}v\omega_3^2 u^2\omega_2-$$
$$\tfrac{1}{2}v\omega_1^2\omega_2+\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1+\tfrac{1}{2}v^2\omega_4^2\omega_1 u^2-\tfrac{1}{2}v\omega_3\omega_4\omega_1 u^2-\tfrac{1}{4}\omega_3 u^2-\tfrac{1}{4}v\omega_3^2 u^2+2\omega_3 {c_s}^2\omega_1^2 u^2-\tfrac{1}{4}v^2\omega_4^2+$$
$$\omega_3\omega_1^2 u^4-\tfrac{1}{2}v\omega_3\omega_4 u^2-\tfrac{1}{4}v\omega_3^2\omega_1 u^2-\tfrac{1}{4}v^2\omega_4\omega_2-\tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_1+2v\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1 u^2-v^2\omega_4\omega_1^2 u^2-2v\omega_1 u^2\omega_2+$$
$$\tfrac{1}{2}v\omega_3+\tfrac{1}{4}\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1-v^2\omega_1^2\omega_2+\tfrac{1}{2}v\omega_3 u^2\omega_2-\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_3^2\omega_1 u^4-\tfrac{1}{2}v\omega_4\omega_1\omega_2+$$
$$3v^2\omega_3\omega_4\omega_1 u^2-\tfrac{1}{2}v^3\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_3\omega_1\omega_2-4v^2\omega_3\omega_1 u^2\omega_2-\tfrac{3}{4}\omega_4 u^2+\tfrac{1}{4}\omega_4 u^2\omega_2+\tfrac{1}{4}v^3\omega_4^2-$$
$$v^2\omega_3^2\omega_4 u^2-\tfrac{1}{2}\omega_3\omega_4 {c_s}^2+\tfrac{5}{4}\omega_4\omega_1^2 u^2-\tfrac{1}{2}v\omega_3\omega_4-\tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2-\tfrac{1}{4}v\omega_3^2-\tfrac{1}{4}v\omega_4^2 u^2-4v^2\omega_4\omega_1 u^2\omega_2+\tfrac{1}{4}v^2\omega_4^2\omega_1+$$
$$\tfrac{1}{4}v^2\omega_3\omega_2+v\omega_4\omega_1 u^2+v^2\omega_3^2 u^2\omega_2+\tfrac{3}{4}v^2\omega_4-\tfrac{3}{2}v\omega_4\omega_1 u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1 u^2-v^2\omega_3\omega_4^2 u^2-\omega_3^2 {c_s}^2\omega_1 u^2+\tfrac{1}{4}\omega_3\omega_2-$$
$$\tfrac{1}{4}\omega_4^2\omega_1+4v^2\omega_1^2 u^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2 u^2\omega_2-3\omega_3\omega_4 {c_s}^2\omega_1 u^2-v\omega_3 {c_s}^2\omega_2-\tfrac{3}{2}v\omega_3\omega_1 u^2\omega_2+v\omega_3 {c_s}^2\omega_1\omega_2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y-\delta_l} = -2-2v\omega_4-\tfrac{1}{2}\omega_4^2 u^2\omega_2-\tfrac{5}{2}\omega_4\omega_1+2\omega_4\omega_1 u^2\omega_2-v\omega_4^2\omega_1 u^2-\tfrac{1}{2}v\omega_3\omega_2-v\omega_4^2\omega_1+2\omega_3\omega_1 u^2\omega_2-\omega_1^2-$$
$$v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1 u^2+\tfrac{1}{2}\omega_4^2 u^2+\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2+2v\omega_4\omega_1^2 u^2+\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{1}{2}v\omega_4\omega_2+2v\omega_3^2\omega_4 u^2+$$
$$2\omega_4+3\omega_3\omega_4\omega_1 u^2-\tfrac{3}{2}\omega_1\omega_2-4v\omega_1^2 u^2\omega_2+\tfrac{3}{2}\omega_3^2 u^2+3\omega_1-2v\omega_3\omega_4 u^2\omega_2+2\omega_3\omega_4 u^2+v\omega_4^2+\tfrac{1}{2}\omega_4\omega_1^2-$$
$$v\omega_3^2 u^2\omega_2+v\omega_1^2\omega_2+2v\omega_3\omega_4^2 u^2-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4 u^2\omega_2-\omega_3\omega_4^2 u^2-6v\omega_3\omega_4\omega_1 u^2-$$
$$\tfrac{1}{2}\omega_3^2 u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2-v\omega_3^2\omega_1 u^2+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-3v\omega_1\omega_2-2\omega_1^2 u^2\omega_2-5\omega_3\omega_1 u^2-\omega_3^2\omega_4 u^2-\tfrac{1}{2}\omega_4\omega_2+$$
$$v^2\omega_3\omega_1\omega_2+2v\omega_3\omega_1^2 u^2+\tfrac{1}{2}v\omega_3\omega_1+\omega_2+\tfrac{1}{2}v\omega_4\omega_1\omega_2+2v\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2-2\omega_4\omega_1^2 u^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2+$$
$$4\omega_1^2 u^2+4v\omega_4\omega_1 u^2\omega_2+\omega_4^2\omega_1 u^2+\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{5}{2}v\omega_4\omega_1-v\omega_4^2 u^2\omega_2+4v\omega_3\omega_1 u^2\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l} = 1-\tfrac{1}{4}v^2\omega_3^2\omega_1 u^2+\tfrac{1}{4}v\omega_4\omega_1 u\omega_2-\tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2+\tfrac{1}{8}\omega_4^2 u^3+\tfrac{3}{4}\omega_4\omega_1 u^3-\tfrac{3}{4}v^2\omega_3^2 u\omega_2+\tfrac{3}{4}\omega_3 {c_s}^2\omega_2-\tfrac{5}{2}\omega_3 {c_s}^2\omega_1 u+$$
$$\tfrac{1}{2}v\omega_4-\omega_1 u^2+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_3-\tfrac{1}{4}\omega_4\omega_1 u^2\omega_2+v^3\omega_3\omega_4\omega_2+2v^3\omega_2^2-\tfrac{1}{4}v\omega_3\omega_1 u\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1 u+\tfrac{1}{4}v\omega_4^2\omega_1 u^2+$$
$$\tfrac{1}{8}v\omega_3\omega_2-\tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3\omega_4\omega_1 u+v^2\omega_1^2 u\omega_2-\tfrac{1}{8}\omega_3^2 u-\tfrac{3}{4}\omega_3\omega_4^2 {c_s}^2 u+\tfrac{1}{4}v^3\omega_3^2\omega_1 u-\tfrac{11}{8}v^2\omega_3\omega_4-\tfrac{1}{2}v^3\omega_3\omega_2^2+$$
$$\tfrac{1}{2}\omega_4\omega_1^2 u^4+\tfrac{1}{4}\omega_3\omega_4 u-\tfrac{1}{8}\omega_3^2\omega_1 u-\tfrac{1}{2}v^2\omega_1\omega_2^2+\tfrac{3}{4}v^2\omega_3\omega_1 u\omega_2+\tfrac{1}{4}v\omega_3\omega_1 u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-3v^2\omega_2-v\omega_3\omega_4 {c_s}^2 u\omega_2+$$
$$\tfrac{1}{2}v^2\omega_3\omega_1^2 u^2-\tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2+\tfrac{7}{8}\omega_4\omega_1 u^2-\tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2-\tfrac{1}{4}v^3\omega_3^2\omega_1-\tfrac{5}{4}v^3\omega_4\omega_2+\tfrac{1}{8}\omega_3\omega_4+\tfrac{3}{8}\omega_4^2 u^2-\tfrac{1}{8}v^2\omega_3^2 u-2\omega_3 {c_s}^2+$$
$$\tfrac{1}{4}\omega_4 u\omega_2+\tfrac{3}{4}v^2\omega_4\omega_1 u\omega_2-\tfrac{1}{2}v^2\omega_4 u\omega_2^2-\tfrac{3}{4}v\omega_3^2 {c_s}^2-\tfrac{1}{4}v^2\omega_3^2-\tfrac{1}{4}\omega_4^2\omega_1 u^4+\tfrac{5}{4}v^2\omega_4\omega_1 u-\tfrac{1}{4}v\omega_3\omega_1\omega_2-\tfrac{3}{4}v\omega_3\omega_4 {c_s}^2-$$
$$\tfrac{1}{2}\omega_3^2\omega_4 {c_s}^2 u^2-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{4}v^2\omega_3^2\omega_2+\tfrac{1}{4}v\omega_4 u^2\omega_2+\tfrac{1}{4}v\omega_4^2\omega_1 u^3+v^2\omega_3-\tfrac{3}{8}\omega_3 u^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_1 u^3+\tfrac{5}{2}v^2\omega_4 u\omega_2-$$
$$2v\omega_1 u\omega_2+\tfrac{1}{4}\omega_3\omega_1 u^3\omega_2+\tfrac{1}{4}\omega_3\omega_1^2 u^2-\tfrac{1}{8}\omega_3^2 u^3+\tfrac{1}{2}v^3\omega_4\omega_1\omega_2-\tfrac{1}{4}v^3\omega_3^2\omega_4-\tfrac{3}{4}\omega_3^2\omega_4 {c_s}^2 u+\tfrac{3}{8}v\omega_4\omega_2+\tfrac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2+$$
$$\tfrac{3}{2}v^2\omega_1\omega_2+\tfrac{7}{4}v\omega_3 u\omega_2-\tfrac{1}{4}\omega_4\omega_1 u^3\omega_2+\tfrac{1}{2}\omega_1 u^2\omega_2+v^2\omega_2^2-\tfrac{1}{2}v\omega_3\omega_1 u^2-\tfrac{3}{4}\omega_4-\tfrac{1}{2}v^3\omega_4\omega_2^2-\tfrac{1}{8}\omega_4\omega_1 u-\tfrac{1}{4}v^2\omega_3\omega_1^2 u-$$

$$\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{3}{8}\omega_4^2u-v^2\omega_3\omega_4u^2\omega_2-v^3\omega_4u\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u^2+2v^3\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_1\omega_2-v\omega_1^2u^2\omega_2+\tfrac{3}{8}v^3\omega_3^2-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u^2+\tfrac{1}{2}v^3\omega_3^2u\omega_2-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1-\tfrac{1}{8}v^2\omega_4^2u-\tfrac{1}{2}\omega_3^2u^2-\tfrac{1}{2}v^2\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u^3-\tfrac{1}{2}\omega_1-\tfrac{1}{2}v\omega_3\omega_4u^2\omega_2+\tfrac{1}{8}\omega_3^2\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4u^2-\tfrac{7}{4}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4^2-\tfrac{9}{4}v^2\omega_3\omega_4u-\tfrac{1}{4}v^2\omega_3^2\omega_1u-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1u+\tfrac{1}{2}\omega_1u-\tfrac{1}{8}v\omega_4^2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{5}{8}v^2\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2u^2\omega_2+\tfrac{1}{8}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{1}{4}v^3\omega_3^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}v\omega_3\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u^2+v\omega_3{c_s}^2\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_4\omega_1u^2+\omega_3u^2-\tfrac{3}{4}\omega_3\omega_1u^3-\tfrac{3}{4}v^2\omega_4^2u\omega_2+\tfrac{1}{2}v\omega_1^2u\omega_2+\tfrac{3}{8}v\omega_3^2u^2-\omega_3{c_s}^2\omega_1^2u^2-\tfrac{1}{8}v^2\omega_4^2-v^3\omega_1\omega_2^2+\tfrac{1}{4}v^3\omega_4^2\omega_1u+\tfrac{3}{4}v^2\omega_3\omega_4^2u-\tfrac{1}{2}\omega_3\omega_1^2u^4+\tfrac{1}{4}v\omega_3\omega_4u^2+\tfrac{13}{8}v^2\omega_4\omega_2+\tfrac{1}{8}v^2\omega_3^2\omega_1+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1-\tfrac{1}{2}v\omega_3^2u\omega_2+\tfrac{3}{4}v\omega_1\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u+\tfrac{1}{8}\omega_3\omega_1u^2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u+\tfrac{1}{2}v^2\omega_4\omega_1^2u^2+v\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3u\omega_2+\tfrac{5}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_4^2u+\tfrac{1}{2}v\omega_3+v^2\omega_1u\omega_2^2+\tfrac{1}{2}v^3\omega_3\omega_4+\tfrac{1}{8}\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_1u^3\omega_2+\tfrac{1}{4}v\omega_4\omega_1u-\tfrac{1}{4}v^3\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_1u\omega_2-\tfrac{1}{4}v\omega_3^2\omega_1u^3-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{3}{4}v\omega_3u^2\omega_2-v^2\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_2-\omega_4u-\tfrac{1}{2}v^2\omega_3u\omega_2^2+\tfrac{3}{4}v^2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u^4+\tfrac{5}{4}v^2\omega_3\omega_1u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}v\omega_4\omega_1u^3\omega_2+v^3\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_2+\tfrac{3}{8}v^2\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1u^2\omega_2+2v^3\omega_1u\omega_2^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{5}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2+\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{4}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4-\tfrac{1}{2}v^3\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_4\omega_1^2u+\tfrac{3}{8}\omega_3\omega_1u-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2-v^3\omega_3u\omega_2^2+2v^2\omega_4\omega_1u^2\omega_2+\tfrac{9}{4}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2{c_s}^2u+\tfrac{3}{4}v\omega_4u\omega_2+\tfrac{11}{8}v^2\omega_3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_4^2-5v^2\omega_1u\omega_2-\tfrac{1}{2}v\omega_4\omega_1u^2+\tfrac{1}{4}v\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}v^3\omega_4^2u\omega_2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2u^3-\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2u-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2+\tfrac{1}{4}v\omega_3^2\omega_1u-\tfrac{1}{2}v\omega_3\omega_4u-\tfrac{3}{2}v^3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}\omega_3\omega_2-2v^2\omega_1^2u^2\omega_2-\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1+\tfrac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2+\tfrac{3}{2}v\omega_3{c_s}^2\omega_2+\tfrac{1}{4}v\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u-\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{3}{2}v^3\omega_3\omega_1u\omega_2-v\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v^2\omega_3^2\omega_4-\tfrac{1}{2}v^3\omega_3\omega_4^2u-\tfrac{1}{4}\omega_3\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_4\omega_1u,$$

$\alpha^{[\mu_3],t-2\delta_t}_{x+\delta_l,y-\delta_l}$ =

$$-2-v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2-\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u+\tfrac{1}{2}v\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_4^2u\omega_2-2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2-3v\omega_3u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u-v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u+\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2-2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2-\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u-\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u-v\omega_3\omega_1^2u^2-v\omega_2^2+2\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u+v\omega_3^2-3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_3^2\omega_1u+5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2-2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}$ $= -\tfrac{1}{2}v\omega_4\omega_1u\omega_2+v\omega_4-2v^3\omega_3\omega_4\omega_2-4v^3\omega_2^2-v\omega_3\omega_4^2u-\tfrac{3}{2}v\omega_3\omega_1u\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1u^2+v\omega_4^2u\omega_2+\tfrac{3}{2}v\omega_3\omega_2+\tfrac{1}{4}v\omega_4^2\omega_1+v^3\omega_3\omega_4\omega_1u+\tfrac{1}{2}v^3\omega_3^2\omega_1u+\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{2}v\omega_4\omega_2^2-\tfrac{1}{2}v\omega_3\omega_1u-v\omega_3^2\omega_4u-2v\omega_3\omega_4{c_s}^2u\omega_2+2v\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{4}v^3\omega_3^2\omega_1+\tfrac{5}{2}v^3\omega_4\omega_2-v\omega_1u\omega_2^2+\tfrac{3}{2}v\omega_3^2{c_s}^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3^2\omega_4+\tfrac{3}{2}v\omega_3\omega_4{c_s}^2-\tfrac{1}{2}v\omega_4u^2\omega_2+\tfrac{1}{2}v\omega_4^2\omega_1u^3+3v\omega_1u\omega_2-\tfrac{3}{2}v^3\omega_4\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3^2\omega_4+\tfrac{1}{4}v\omega_3^2\omega_1+\tfrac{7}{2}v\omega_4\omega_2-v\omega_3u\omega_2+\tfrac{1}{2}v\omega_3^2\omega_4u^2+v\omega_3\omega_1u^2+2v^3\omega_4\omega_2^2+\tfrac{1}{2}v\omega_3\omega_4\omega_1-v\omega_3\omega_4{c_s}^2\omega_1u-2v^3\omega_4u\omega_2^2+4v^3\omega_3\omega_4u\omega_2-\tfrac{3}{4}v^3\omega_3^2+v^3\omega_3^2u\omega_2-v\omega_3\omega_4u^2\omega_2+\tfrac{7}{2}v^3\omega_3\omega_2+\tfrac{1}{4}v^3\omega_4^2\omega_1-v\omega_3^2{c_s}^2\omega_1u-\tfrac{3}{4}v\omega_4^2+\tfrac{1}{2}v\omega_3^2u^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4^2u^2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1+2v\omega_3\omega_4u\omega_2+2v\omega_3{c_s}^2\omega_1u\omega_2-v\omega_3\omega_4\omega_1u^2-\tfrac{3}{4}v\omega_3^2u^2+2v^3\omega_1\omega_2^2+\tfrac{1}{2}v^3\omega_4^2\omega_1u-\tfrac{1}{2}v\omega_3\omega_4u^2-\tfrac{1}{4}v\omega_3^2\omega_1u^2-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+2v\omega_1\omega_2+v\omega_3^2\omega_4{c_s}^2u+\tfrac{1}{2}v\omega_3\omega_4^2-2v\omega_1u^2\omega_2+\tfrac{1}{2}v\omega_4^2u+v\omega_3-v^3\omega_3\omega_4+\tfrac{1}{2}v\omega_4u\omega_2^2+v\omega_3\omega_1u^3\omega_2-\tfrac{1}{2}v\omega_4\omega_1u+\tfrac{1}{2}v^3\omega_3\omega_4\omega_1+v\omega_2^2-\tfrac{1}{2}v\omega_3^2\omega_1u^3-\tfrac{1}{2}v\omega_3\omega_1-\tfrac{1}{2}v\omega_4^2\omega_2+\tfrac{3}{2}v\omega_3u^2\omega_2-v\omega_4\omega_1\omega_2-v\omega_4\omega_1u^3\omega_2-\tfrac{3}{2}v^3\omega_3\omega_1\omega_2-4v\omega_2+4v^3\omega_1u\omega_2^2-\tfrac{1}{4}v^3\omega_4^2-v^3\omega_4^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4-v^3\omega_3^2\omega_4u-\tfrac{3}{4}v\omega_3^2+\tfrac{1}{4}v\omega_4^2u^2-2v^3\omega_3u\omega_2^2-3v\omega_4u\omega_2+\tfrac{1}{2}v^3\omega_3\omega_4^2+v\omega_4\omega_1u^2-v\omega_3\omega_4^2{c_s}^2+v^3\omega_4^2u\omega_2+\tfrac{1}{2}v\omega_3^2u+\tfrac{5}{2}v\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}v\omega_3^2\omega_1u+v\omega_3\omega_4u-3v^3\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2u^2\omega_2-3v\omega_3{c_s}^2\omega_2-v\omega_3^2\omega_4{c_s}^2+v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}v\omega_3\omega_1u^2\omega_2-v\omega_3\omega_4\omega_2-3v^3\omega_3\omega_1u\omega_2+v\omega_3{c_s}^2\omega_1\omega_2-v^3\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3\omega_4\omega_1u,$$

$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y}$ $= -2-v^2\omega_3^2u\omega_2+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1-\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_1u^2\omega_2+2v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2+4v^2\omega_3\omega_1u\omega_2+2v^2\omega_4\omega_1\omega_2+\omega_4\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2+\tfrac{5}{2}\omega_4u\omega_2+4v^2\omega_4\omega_1u\omega_2+2v^2\omega_4u\omega_2^2+\tfrac{3}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+$

$\frac{1}{2}\omega_4^2\omega_2 + 4v^2\omega_2^2 + 2\omega_4 - \frac{1}{2}\omega_4\omega_1 u - \frac{1}{2}\omega_4 u\omega_2^2 + \omega_4^2 u + 3v^2\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3^2 u^2 + \omega_1 - v^2\omega_3\omega_4^2 - v^2\omega_3^2\omega_1 u + 2\omega_1 u + v^2\omega_4^2\omega_2 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_3^2 u^2\omega_2 - v^2\omega_4^2 u\omega_2 + \frac{1}{2}v^2\omega_4^2 + 2v^2\omega_3\omega_4^2 u - 3v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_1 u^2 + \frac{1}{2}\omega_3 u\omega_2 - 4v^2\omega_1 u\omega_2^2 - \frac{5}{2}\omega_4\omega_2 + 2v^2\omega_3\omega_1\omega_2 - 3\omega_1 u\omega_2 - 6v^2\omega_3\omega_4 u\omega_2 - \omega_2^2 + 3\omega_2 - 2\omega_4 u + 2v^2\omega_3 u\omega_2^2 + 2v^2\omega_3^2\omega_4 u - v^2\omega_3\omega_4\omega_1 + \omega_1 u\omega_2^2 - 2v^2\omega_3\omega_4\omega_1 u - \frac{1}{2}\omega_3\omega_1 u - \frac{1}{2}\omega_3 u\omega_2^2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 5v^2\omega_3\omega_2 - \omega_4^2 u\omega_2 + \frac{1}{2}\omega_4\omega_1 u\omega_2 - 2v^2\omega_4\omega_2^2 - v^2\omega_4^2\omega_1 u - v^2\omega_3^2\omega_4 + \frac{1}{2}\omega_3\omega_1 u\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = v\omega_4 + v\omega_4^2\omega_1 u^2 + \frac{7}{2}v\omega_3\omega_2 + 2v^3\omega_3\omega_2^2 - 2v\omega_3\omega_4 {c_s}^2\omega_2 + v^3\omega_4\omega_2 - v\omega_3^2 {c_s}^2 - v\omega_3\omega_4 {c_s}^2 - v\omega_4 u^2\omega_2 + \frac{3}{2}v\omega_4\omega_2 - v\omega_3^2\omega_4 u^2 - 2v\omega_3\omega_1 u^2 - 2v^3\omega_4\omega_2^2 - v\omega_3\omega_2^2 + \frac{1}{2}v^3\omega_3^2 + 2v\omega_3\omega_4 u^2\omega_2 - v^3\omega_3\omega_2 - \frac{1}{2}v\omega_4^2 - v\omega_3\omega_4^2 u^2 - v^3\omega_3^2\omega_2 + 2v\omega_3\omega_4\omega_1 u^2 + \frac{1}{2}v\omega_3^2 u^2 + v\omega_3\omega_4 u^2 + v\omega_3^2\omega_1 u^2 + 4v\omega_1 u^2\omega_2 + v\omega_3 + v\omega_2^2 - v\omega_3 u^2\omega_2 - 4v\omega_2 - \frac{1}{2}v^3\omega_4^2 + v^3\omega_4^2\omega_2 - v\omega_3\omega_4 - \frac{1}{2}v\omega_3^2 + \frac{1}{2}v\omega_4^2 u^2 - 2v\omega_4\omega_1 u^2 + v\omega_3\omega_4^2 {c_s}^2 - 2v\omega_4\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3^2\omega_2 + 2v\omega_3 {c_s}^2\omega_2 + v\omega_3^2\omega_4 {c_s}^2 - 2v\omega_3\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3\omega_4\omega_2,$

$\alpha_{x,y}^{[\mu_3],t-2\delta_t} = -4 + \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_4\omega_1 + 5\omega_3 + \frac{1}{2}\omega_3\omega_4\omega_2 - \omega_1^2 - 2\omega_4\omega_1 u^2 - \omega_3\omega_4 + \omega_4^2 u^2 - v^2\omega_3^2 + \omega_3\omega_1^2 + v^2\omega_3^2\omega_2 - 2\omega_3\omega_1^2 u^2 - \frac{7}{2}\omega_3\omega_1 + \omega_4 - \omega_3^2 u^2 + 3\omega_1 + \omega_3^2\omega_1 u^2 - v^2\omega_4^2\omega_2 + v^2\omega_4^2 - 2v^2\omega_4\omega_2 + \omega_3\omega_2^2 + 2\omega_3\omega_1 u^2 + \frac{1}{2}\omega_3^2\omega_1 - \frac{1}{2}\omega_4\omega_2 - 2v^2\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2 + 3\omega_2 + 2\omega_4\omega_1^2 u^2 + 2v^2\omega_3\omega_2 - \omega_3^2 - \omega_4^2\omega_1 u^2 + 2v^2\omega_4\omega_2^2 - \frac{7}{2}\omega_3\omega_2,$

$\alpha_{x+\delta_t,y}^{[\mu_1],t-2\delta_t} = \frac{1}{2}v\omega_4\omega_1 u\omega_2 + v\omega_4 - 2v^3\omega_3\omega_4\omega_2 - 4v^3\omega_2^2 + v\omega_3\omega_4^2 u + \frac{3}{2}v\omega_3\omega_1 u\omega_2 - \frac{3}{4}v\omega_4^2\omega_1 u^2 - v\omega_4^2 u\omega_2 + \frac{3}{2}v\omega_3\omega_2 + \frac{1}{4}v\omega_4^2\omega_1 - v^3\omega_3\omega_4\omega_1 u - \frac{1}{2}v^3\omega_3^2\omega_1 u - \frac{1}{2}v\omega_3 u\omega_2^2 - \frac{1}{2}v\omega_4\omega_2^2 + \frac{1}{2}v\omega_3\omega_1 u + v\omega_3^2\omega_4 u + 2v\omega_3\omega_4 {c_s}^2 u\omega_2 + 2v\omega_3\omega_4 {c_s}^2\omega_2 + \frac{1}{4}v^3\omega_3^2\omega_1 + \frac{5}{2}v^3\omega_4\omega_2 + v\omega_1 u\omega_2^2 + \frac{3}{2}v\omega_3^2 {c_s}^2 - \frac{1}{2}v\omega_3\omega_1\omega_2 + \frac{1}{2}v\omega_3^2\omega_4 + \frac{3}{2}v\omega_3\omega_4 {c_s}^2 - \frac{1}{2}v\omega_4 u^2\omega_2 - \frac{1}{2}v\omega_4^2\omega_1 u^3 - 3v\omega_1 u\omega_2 - \frac{3}{2}v^3\omega_4\omega_1\omega_2 + \frac{1}{2}v^3\omega_3^2\omega_4 + \frac{1}{4}v\omega_3^2\omega_1 + \frac{7}{2}v\omega_4\omega_2 + v\omega_3 u\omega_2 + \frac{1}{2}v\omega_3^2\omega_4 u^2 + v\omega_3\omega_1 u^2 + 2v^3\omega_4\omega_2^2 + \frac{1}{2}v\omega_3\omega_4\omega_1 + v\omega_3\omega_4 {c_s}^2\omega_1 u + 2v^3\omega_4 u\omega_2^2 - 4v^3\omega_3\omega_4 u\omega_2 - \frac{3}{4}v^3\omega_3^2 - v^3\omega_3^2 u\omega_2 - v\omega_3\omega_4 u^2\omega_2 + \frac{7}{2}v^3\omega_3\omega_2 + \frac{1}{4}v^3\omega_4^2\omega_1 + v\omega_3^2 {c_s}^2\omega_1 u - \frac{3}{4}v\omega_4^2 + \frac{1}{2}v\omega_3^2 u^2\omega_2 + \frac{1}{2}v\omega_3\omega_4^2 u^2 - \frac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 - 2v\omega_3\omega_4 u\omega_2 - 2v\omega_3 {c_s}^2\omega_1 u\omega_2 - v\omega_3\omega_4\omega_1 u^2 - \frac{3}{4}v\omega_3^2 u^2 + 2v^3\omega_1\omega_2^2 - \frac{1}{2}v^3\omega_4^2\omega_1 u - \frac{1}{2}v\omega_3\omega_4 u^2 - \frac{1}{4}v\omega_3^2\omega_1 u^2 - \frac{1}{2}v\omega_3^2 {c_s}^2\omega_1 + 2v\omega_1\omega_2 - v\omega_3^2\omega_4 {c_s}^2 u + \frac{1}{2}v\omega_3\omega_4^2 - 2v\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_4^2 u + v\omega_3 - v^3\omega_3\omega_4 - \frac{1}{2}v\omega_4 u\omega_2^2 - v\omega_3\omega_1 u^3\omega_2 + \frac{1}{2}v\omega_4\omega_1 u + \frac{1}{2}v^3\omega_3\omega_4\omega_1 + v\omega_2^2 + \frac{1}{2}v\omega_3^2\omega_1 u^3 - \frac{1}{2}v\omega_3\omega_1 - \frac{1}{2}v\omega_4^2\omega_2 + \frac{3}{2}v\omega_3 u^2\omega_2 - v\omega_4\omega_1\omega_2 + v\omega_4\omega_1 u^3\omega_2 - \frac{3}{2}v^3\omega_3\omega_1\omega_2 - 4v\omega_2 - 4v^3\omega_1 u\omega_2^2 - \frac{1}{4}v^3\omega_4^2 - v^3\omega_4^2\omega_2 - \frac{3}{2}v\omega_3\omega_4 + v^3\omega_3^2\omega_4 u - \frac{3}{4}v\omega_3^2 + \frac{1}{4}v\omega_4^2 u^2 + 2v^3\omega_3 u\omega_2^2 + 3v\omega_4 u\omega_2 + \frac{1}{2}v^3\omega_3\omega_4^2 + v\omega_4\omega_1 u^2 - v\omega_3\omega_4^2 {c_s}^2 - v^3\omega_4^2 u\omega_2 - \frac{1}{2}v\omega_3^2 u + \frac{5}{2}v\omega_4\omega_1 u^2\omega_2 - \frac{1}{2}v\omega_3^2\omega_1 u - v\omega_3\omega_4 u + 3v^3\omega_4\omega_1 u\omega_2 - \frac{1}{2}v\omega_1\omega_2^2 - \frac{1}{2}v\omega_4\omega_1 - \frac{1}{2}v\omega_4^2 u^2\omega_2 - 3v\omega_3 {c_s}^2\omega_2 - v\omega_3^2\omega_4 {c_s}^2 - v\omega_3\omega_4^2 {c_s}^2 u - \frac{1}{2}v\omega_3\omega_1 u^2\omega_2 - v\omega_3\omega_4\omega_2 + 3v^3\omega_3\omega_1 u\omega_2 + v\omega_3 {c_s}^2\omega_1\omega_2 + v^3\omega_3\omega_4^2 u - \frac{1}{2}v\omega_3\omega_4\omega_1 u,$

$\alpha_{x+\delta_t,y}^{[\mu_3],t-2\delta_t} = -2 + v^2\omega_3^2 u\omega_2 + \frac{1}{2}\omega_4^2 u^2\omega_2 - \frac{1}{2}\omega_4\omega_1 - \omega_4\omega_1 u^2\omega_2 + \frac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_1 u^2\omega_2 + 2v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 - 4v^2\omega_3\omega_1 u\omega_2 + 2v^2\omega_4\omega_1\omega_2 + \omega_4\omega_1 u^2 - \frac{1}{2}\omega_4^2 u^2 - \frac{5}{2}\omega_4 u\omega_2 - 4v^2\omega_4\omega_1 u\omega_2 - 2v^2\omega_4 u\omega_2^2 + \frac{3}{2}v^2\omega_3^2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4^2\omega_2 + 4v^2\omega_2^2 + 2\omega_4 + \frac{1}{2}\omega_4\omega_1 u + \frac{1}{2}\omega_4 u\omega_2^2 - \omega_4^2 u + 3v^2\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3^2 u^2 + \omega_1 - v^2\omega_3\omega_4^2 + v^2\omega_3^2\omega_1 u - 2\omega_1 u + v^2\omega_4^2\omega_2 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_3^2 u^2\omega_2 + v^2\omega_4^2 u\omega_2 + \frac{1}{2}v^2\omega_4^2 - 2v^2\omega_3\omega_4^2 u - 3v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_1 u^2 - \frac{1}{2}\omega_3 u\omega_2 + 4v^2\omega_1 u\omega_2^2 - \frac{5}{2}\omega_4\omega_2 + 2v^2\omega_3\omega_1\omega_2 + 3\omega_1 u\omega_2 + 6v^2\omega_3\omega_4 u\omega_2 - \omega_2^2 + 3\omega_2 + 2\omega_4 u - 2v^2\omega_3 u\omega_2^2 - 2v^2\omega_3^2\omega_4 u - v^2\omega_3\omega_4\omega_1 - \omega_1 u\omega_2^2 + 2v^2\omega_3\omega_4\omega_1 u + \frac{1}{2}\omega_3\omega_1 u + \frac{1}{2}\omega_3 u\omega_2^2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 5v^2\omega_3\omega_2 + \omega_4^2 u\omega_2 - \frac{1}{2}\omega_4\omega_1 u\omega_2 - 2v^2\omega_4\omega_2^2 + v^2\omega_4^2\omega_1 u - v^2\omega_3^2\omega_4 - \frac{1}{2}\omega_3\omega_1 u\omega_2,$

$\alpha_{x-\delta_t,y+\delta_t}^{[\mu_1],t-2\delta_t} = -1 + \frac{1}{4}v^2\omega_3^2\omega_1 u^2 - \frac{1}{4}v\omega_4\omega_1 u\omega_2 + \frac{1}{4}\omega_3^2\omega_4 {c_s}^2 + \frac{1}{8}\omega_4^2 u^3 + \frac{3}{4}\omega_4\omega_1 u^3 - \frac{3}{4}v^2\omega_3^2 u\omega_2 - \frac{3}{4}\omega_3 {c_s}^2\omega_2 - \frac{5}{2}\omega_3 {c_s}^2\omega_1 u + \frac{1}{2}v\omega_4 + \omega_1 u^2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3 + \frac{1}{4}\omega_4\omega_1 u^2\omega_2 + v^3\omega_3\omega_4\omega_2 + 2v^3\omega_2^2 + \frac{1}{4}v\omega_3\omega_1 u\omega_2 - \frac{1}{8}\omega_3\omega_4\omega_1 u + \frac{1}{4}v\omega_4^2\omega_1 u^2 + \frac{7}{8}v\omega_3\omega_2 + \frac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 - \frac{1}{2}v^3\omega_3\omega_4\omega_1 u + v^2\omega_1^2 u\omega_2 - \frac{1}{8}\omega_3^2 u - \frac{3}{4}\omega_3\omega_4^2 {c_s}^2 u - \frac{1}{4}v^3\omega_3^2\omega_1 u + \frac{11}{8}v^2\omega_3\omega_4 - \frac{1}{2}v^3\omega_3\omega_2^2 - \frac{1}{2}\omega_4\omega_1^2 u^4 + \frac{1}{4}\omega_3\omega_4 u - \frac{1}{8}\omega_3^2\omega_1 u + \frac{1}{2}v^2\omega_1\omega_2^2 + \frac{3}{4}v^2\omega_3\omega_1 u\omega_2 - \frac{1}{4}v\omega_3\omega_1 u + \frac{1}{2}v^2\omega_4\omega_1\omega_2 + 3v^2\omega_2 + v\omega_3\omega_4 {c_s}^2 u\omega_2 - \frac{1}{2}v^2\omega_3\omega_1^2 u^2 - \frac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2 - \frac{7}{8}\omega_4\omega_1 u^2 + \frac{1}{4}\omega_3\omega_4^2 {c_s}^2 - \frac{1}{4}v^3\omega_3^2\omega_1 - \frac{5}{4}v^3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4 - \frac{3}{8}\omega_4^2 u^2 - \frac{1}{8}v^2\omega_3^2 u + 2\omega_3 {c_s}^2 + \frac{1}{4}\omega_4 u\omega_2 + \frac{3}{4}v^2\omega_4\omega_1 u\omega_2 - \frac{1}{2}v^2\omega_4 u\omega_2^2 - \frac{3}{4}v\omega_3^2 {c_s}^2 + \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}\omega_4^2\omega_1 u^4 + \frac{5}{4}v^2\omega_4\omega_1 u - \frac{1}{4}v\omega_3\omega_1\omega_2 - \frac{3}{4}v\omega_3\omega_4 {c_s}^2 + \frac{1}{2}\omega_3^2\omega_4 {c_s}^2 u^2 + \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{4}v^2\omega_3^2\omega_2 + \frac{1}{4}v\omega_4 u^2\omega_2 - \frac{1}{4}v\omega_4^2\omega_1 u^3 - v^2\omega_3 + \frac{3}{8}\omega_3 u^2\omega_2 + \frac{1}{2}\omega_3^2\omega_1 u^3 + \frac{5}{2}v^2\omega_4 u\omega_2 + 2v\omega_1 u\omega_2 + \frac{1}{4}\omega_3\omega_1 u^3\omega_2 - \frac{1}{4}\omega_3\omega_1^2 u^2 - \frac{1}{8}\omega_3^2 u^3 + \frac{1}{2}v^3\omega_4\omega_1\omega_2 - \frac{1}{4}v^3\omega_3^2\omega_4 - \frac{3}{4}\omega_3^2\omega_4 {c_s}^2 u + \frac{3}{8}v\omega_4\omega_2 + \frac{1}{2}\omega_3 {c_s}^2\omega_1 u\omega_2 - \frac{3}{2}v^2\omega_1\omega_2 - \frac{7}{4}v\omega_3 u\omega_2 - \frac{1}{4}\omega_4\omega_1 u^3\omega_2 - \frac{1}{2}\omega_1 u^2\omega_2 - v^2\omega_2^2 - \frac{1}{2}v\omega_3\omega_1 u^2 + \frac{3}{4}\omega_4 - \frac{1}{2}v^3\omega_4\omega_2^2 - \frac{1}{8}\omega_4\omega_1 u - \frac{1}{4}v^2\omega_3\omega_1^2 u + \frac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 u + \frac{3}{8}\omega_4^2 u + v^2\omega_3\omega_4 u^2\omega_2 + v^3\omega_4 u\omega_2^2 + \frac{1}{4}v^2\omega_3\omega_4\omega_2 + \frac{1}{8}\omega_3\omega_4\omega_1 u^2 - 2v^3\omega_3\omega_4 u\omega_2 + \frac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 - \frac{1}{4}\omega_1\omega_2 - v\omega_1^2 u^2\omega_2 + \frac{3}{8}v^3\omega_3^2 + \frac{1}{2}\omega_3\omega_4^2 {c_s}^2 u^2 - \frac{1}{2}v^3\omega_3^2 u\omega_2 + \frac{1}{4}\omega_3^2 {c_s}^2\omega_1 - \frac{1}{8}v^2\omega_4^2 u + \frac{1}{2}\omega_3^2 u^2 + \frac{1}{2}v^2\omega_4^2 u^2\omega_2 - \frac{1}{4}\omega_3\omega_1^2 u^3 + \frac{1}{2}\omega_1 - \frac{1}{2}v\omega_3\omega_4 u^2\omega_2 - \frac{1}{8}\omega_3^2\omega_1 u^2 + \frac{1}{8}\omega_3\omega_4 u^2 - \frac{7}{4}v^3\omega_3\omega_2 - \frac{1}{4}v^2\omega_3\omega_4^2 - \frac{9}{4}v^2\omega_3\omega_4 u - \frac{1}{4}v^2\omega_3^2\omega_1 u + \frac{1}{2}v\omega_3^2 {c_s}^2\omega_1 u + \frac{1}{2}\omega_1 u - \frac{1}{8}v\omega_4^2 + \frac{1}{4}v^2\omega_4^2\omega_2 + \frac{5}{8}v^2\omega_3\omega_1 - \frac{1}{2}v\omega_3^2 u^2\omega_2 - \frac{1}{8}\omega_4^2 + \frac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 u + \frac{1}{4}v^3\omega_3^2\omega_2 + \frac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 +$

$$\tfrac{1}{2}v\omega_3\omega_4 u\omega_2+\tfrac{1}{4}v^2\omega_4^2\omega_1u^2-v\omega_3{c_s}^2\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_4\omega_1u^2-\omega_3u^2-\tfrac{3}{4}\omega_3\omega_1u^3-\tfrac{3}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{2}v\omega_1^2u\omega_2+\tfrac{3}{8}v\omega_3^2u^2+\omega_3{c_s}^2\omega_1^2u^2+\tfrac{1}{8}v^2\omega_4^2-v^3\omega_1\omega_2^2-\tfrac{1}{4}v^3\omega_4^2\omega_1u+\tfrac{3}{4}v^2\omega_3\omega_4^2u+\tfrac{1}{2}\omega_3\omega_1^2u^4+\tfrac{1}{4}v\omega_3\omega_4u^2-\tfrac{13}{8}v^2\omega_4\omega_2-\tfrac{1}{8}v^2\omega_3^2\omega_1+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+\tfrac{1}{2}v\omega_3^2u\omega_2+\tfrac{3}{4}v\omega_1\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u-\tfrac{1}{8}\omega_3\omega_1u^2-\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u-\tfrac{1}{2}v^2\omega_4\omega_1^2u^2+v\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3u\omega_2-\tfrac{5}{4}\omega_3{c_s}^2\omega_1+\tfrac{1}{4}v\omega_4^2u+\tfrac{1}{2}v\omega_3+v^2\omega_1u\omega_2^2+\tfrac{1}{2}v^3\omega_3\omega_4-\tfrac{1}{8}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2^2+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1u^3\omega_2-\tfrac{1}{4}v\omega_4\omega_1u-\tfrac{1}{4}v^3\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_1u\omega_2+\tfrac{1}{4}v\omega_3^2\omega_1u^3-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{3}{4}v\omega_3u^2\omega_2-v^2\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_2-\omega_4u-\tfrac{1}{2}v^2\omega_3u\omega_2^2+\tfrac{3}{4}v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u^4+\tfrac{5}{4}v^2\omega_3\omega_1u+\tfrac{3}{2}v^2\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}v\omega_4\omega_1u^3\omega_2+v^3\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_2-\tfrac{3}{8}v^2\omega_3\omega_4\omega_1-2v^2\omega_3\omega_1u^2\omega_2-2v^3\omega_1u\omega_2^2+\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_4u^2-\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{5}{2}v^2\omega_3u\omega_2-\tfrac{1}{8}\omega_4u^2\omega_2+\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{4}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u-\tfrac{1}{2}v^2\omega_3^2\omega_4u^2-\tfrac{3}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4+\tfrac{1}{2}v^3\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_4\omega_1^2u+\tfrac{3}{8}\omega_3\omega_1u-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2+v^3\omega_3u\omega_2^2-2v^2\omega_4\omega_1u^2\omega_2+\tfrac{9}{4}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2{c_s}^2u-\tfrac{3}{4}v\omega_4u\omega_2-\tfrac{11}{8}v^2\omega_3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_4^2-5v^2\omega_1u\omega_2-\tfrac{1}{2}v\omega_4\omega_1u^2+\tfrac{1}{4}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}v^3\omega_4^2u\omega_2+\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2u^3+\tfrac{1}{4}v\omega_3^2u-\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2u+\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_3\omega_4^2u^2-\tfrac{1}{4}v\omega_3^2\omega_1u+\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{3}{2}v^3\omega_4\omega_1u\omega_2-\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u^2+\tfrac{1}{4}v^2\omega_4\omega_2^2-\tfrac{1}{8}\omega_3\omega_2+2v^2\omega_1^2u^2\omega_2-\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1-\tfrac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2+\tfrac{3}{2}v\omega_3{c_s}^2\omega_2+\tfrac{1}{4}v\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u-\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{3}{2}v^3\omega_3\omega_1u\omega_2-v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}v^2\omega_3^2\omega_4+\tfrac{1}{2}v^3\omega_3\omega_4^2u-\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_4\omega_1u,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x-\delta_l,y+\delta_l}=$$
$$-2-v\omega_4\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2u\omega_2+\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2+\omega_3^2u-v^2\omega_3\omega_4+\tfrac{7}{2}\omega_3\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2+\tfrac{1}{2}\omega_4u\omega_2-2v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2-v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1^2u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2-3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4-2\omega_4\omega_1u+v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2-\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v^2\omega_3^2\omega_1u+4\omega_1u-\tfrac{1}{2}v\omega_4^2+\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2u^2\omega_2+v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2-\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2+\tfrac{1}{4}\omega_4^2\omega_1u-v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{3}{4}v\omega_3\omega_4^2+\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u+\tfrac{5}{2}v\omega_3+2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2-2\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4u\omega_2+\omega_2-\tfrac{3}{2}\omega_4u-v^2\omega_3u\omega_2^2-v^2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_4\omega_1^2u-\tfrac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{2}v\omega_3\omega_4-\tfrac{3}{4}\omega_3^2\omega_4u-2\omega_3\omega_1u-v\omega_3^2-3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2+2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_3^2\omega_1u+5v\omega_3\omega_4u+\tfrac{1}{2}\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2u^2\omega_2+2v\omega_3\omega_1u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1u-\tfrac{3}{4}\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_4\omega_1u-\tfrac{5}{2}\omega_3u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=-1-\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+\tfrac{1}{2}\omega_3{c_s}^2\omega_2+\tfrac{1}{2}v\omega_4-2\omega_1u^2-\tfrac{1}{4}v^2\omega_3\omega_1^2-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{4}\omega_3-\tfrac{1}{4}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}v\omega_4^2\omega_1u^2+\tfrac{1}{2}v\omega_3\omega_2+\tfrac{1}{4}v\omega_4^2\omega_1-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4+\omega_4\omega_1^2u^4-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2+v^2\omega_2+v^2\omega_3\omega_1^2u^2+\tfrac{5}{2}\omega_4\omega_1u^2+\tfrac{1}{4}v^3\omega_3^2\omega_1-\tfrac{1}{2}v^3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4-\tfrac{3}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{2}v\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^4-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2-\omega_3^2\omega_4{c_s}^2u^2-\tfrac{1}{4}\omega_3\omega_1^2+v^2\omega_4\omega_1+\tfrac{1}{2}v\omega_4u^2\omega_2+\tfrac{1}{4}v^2\omega_3-\tfrac{1}{4}\omega_3u^2\omega_2+\tfrac{5}{4}\omega_3\omega_1^2u^2+\tfrac{1}{2}v^3\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4\omega_1\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{4}v\omega_3^2\omega_1+\tfrac{1}{2}v\omega_4\omega_2-2v^2\omega_1\omega_2+\omega_1u^2\omega_2+v\omega_3\omega_1u^2+\tfrac{5}{4}\omega_4+\tfrac{1}{2}v\omega_3\omega_4\omega_1-2v^2\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_1\omega_2+2v\omega_1^2u^2\omega_2-\tfrac{1}{4}v^3\omega_3^2-\omega_3\omega_4^2{c_s}^2u^2+\tfrac{1}{2}\omega_3^2u^2-v^2\omega_4^2u^2\omega_2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4u^2+\tfrac{1}{2}v^3\omega_3\omega_2-\tfrac{1}{4}v^3\omega_4^2\omega_1-\tfrac{1}{4}v\omega_4^2+\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_1^2\omega_2-\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2-\tfrac{1}{2}v\omega_3\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3u^2-\tfrac{1}{4}v\omega_3^2u^2-2\omega_3{c_s}^2\omega_1^2u^2+\tfrac{1}{4}v^2\omega_4^2-\omega_3\omega_1^2u^4-\tfrac{1}{2}v\omega_3\omega_4u^2-\tfrac{1}{4}v\omega_3^2\omega_1u^2+\tfrac{1}{4}v^2\omega_4\omega_2-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+2v\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_1u^2+v^2\omega_4\omega_1^2u^2-2v\omega_1u^2\omega_2+\tfrac{1}{2}v\omega_3-\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1+v^2\omega_1^2\omega_2+\tfrac{1}{2}v\omega_3u^2\omega_2+\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^4-\tfrac{1}{2}v\omega_4\omega_1\omega_2-3v^2\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}v^3\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4\omega_1+\tfrac{1}{4}\omega_3\omega_1\omega_2+4v^2\omega_3\omega_1u^2\omega_2+\tfrac{3}{4}\omega_4u^2-\tfrac{1}{4}\omega_4u^2\omega_2+\tfrac{1}{4}v^3\omega_4^2+v^2\omega_3^2\omega_4u^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2-\tfrac{5}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2-\tfrac{1}{4}v\omega_3^2-\tfrac{1}{4}v\omega_4^2u^2+4v^2\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1-\tfrac{1}{4}v^2\omega_3\omega_2+v\omega_4\omega_1u^2-v^2\omega_3^2u^2\omega_2-\tfrac{3}{4}v^2\omega_4-\tfrac{3}{2}v\omega_4\omega_1u^2\omega_2+\tfrac{1}{4}\omega_4^2\omega_1u^2+v^2\omega_3\omega_4^2u^2+\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{4}\omega_4^2\omega_1-4v^2\omega_1^2u^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1u^2-v\omega_3{c_s}^2\omega_2-\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2+v\omega_3{c_s}^2\omega_1\omega_2,$$

$$\alpha^{[\mu_3],t-2\delta_t}_{x,y+\delta_l}=-2+2v\omega_4-\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{5}{2}\omega_4\omega_1+2\omega_4\omega_1u^2\omega_2+v\omega_4^2\omega_1u^2+\tfrac{1}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+2\omega_3\omega_1u^2\omega_2-\omega_1^2-v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2-2v\omega_4\omega_1^2u^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}v\omega_4\omega_2-2v\omega_3^2\omega_4u^2+2\omega_4+3\omega_3\omega_4\omega_1u^2-\tfrac{3}{2}\omega_1\omega_2+4v\omega_1^2u^2\omega_2+\tfrac{3}{2}\omega_3^2u^2+3\omega_1+2v\omega_3\omega_4u^2\omega_2+2\omega_3\omega_4u^2-v\omega_4^2+\tfrac{1}{2}\omega_4\omega_1^2+v\omega_3^2u^2\omega_2-v\omega_1^2\omega_2-2v\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2+6v\omega_3\omega_4\omega_1u^2-$$

$\frac{1}{2}\omega_3^2u^2\omega_2 - \frac{1}{2}v^2\omega_4^2 + v\omega_3^2\omega_1u^2 + v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 + 3v\omega_1\omega_2 - 2\omega_1^2u^2\omega_2 - 5\omega_3\omega_1u^2 - \omega_3^2\omega_4u^2 - \frac{1}{2}\omega_4\omega_2 + v^2\omega_3\omega_1\omega_2 - 2v\omega_3\omega_1^2u^2 - \frac{1}{2}v\omega_3\omega_1 + \omega_2 - \frac{1}{2}v\omega_4\omega_1\omega_2 - 2v\omega_2 + \frac{1}{2}v\omega_3\omega_1^2 - 2\omega_4\omega_1^2u^2 + \frac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 + 4\omega_1^2u^2 - 4v\omega_4\omega_1u^2\omega_2 + \omega_4^2\omega_1u^2 + \frac{1}{2}\omega_4^2\omega_1 - \frac{5}{2}v\omega_4\omega_1 + v\omega_4^2u^2\omega_2 - 4v\omega_3\omega_1u^2\omega_2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = -1+\frac{1}{4}v^2\omega_3^2\omega_1u^2+\frac{1}{4}v\omega_4\omega_1u\omega_2+\frac{1}{4}\omega_3^2\omega_4{c_s}^2-\frac{1}{8}\omega_4^2u^3-\frac{3}{4}\omega_4\omega_1u^3+\frac{3}{4}v^2\omega_3^2u\omega_2-\frac{3}{4}\omega_3{c_s}^2\omega_2+\frac{5}{2}\omega_3{c_s}^2\omega_1u+\frac{1}{2}v\omega_4+\omega_1u^2-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_3+\frac{1}{4}\omega_4\omega_1u^2\omega_2+v^3\omega_3\omega_4\omega_2+2v^3\omega_2^2-\frac{1}{4}v\omega_3\omega_1u\omega_2+\frac{1}{8}\omega_3\omega_4\omega_1u+\frac{1}{4}v\omega_4^2\omega_1u^2+\frac{7}{8}v\omega_3\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2+\frac{1}{2}v^3\omega_3\omega_4\omega_1u-v^2\omega_1^2u\omega_2+\frac{1}{8}\omega_3^2u+\frac{3}{4}\omega_3\omega_4^2{c_s}^2u+\frac{1}{4}v^3\omega_3^2\omega_1u+\frac{11}{8}v^2\omega_3\omega_4-\frac{1}{2}v^3\omega_3\omega_2^2-\frac{1}{2}\omega_4\omega_1^2u^4-\frac{1}{4}\omega_3\omega_4u+\frac{1}{8}\omega_3^2\omega_1u+\frac{1}{2}v^2\omega_1\omega_2^2-\frac{3}{4}v^2\omega_3\omega_1u\omega_2+\frac{1}{4}v\omega_3\omega_1u+\frac{1}{2}v^2\omega_4\omega_1\omega_2+3v^2\omega_2-v\omega_3\omega_4{c_s}^2u\omega_2-\frac{1}{2}v^2\omega_3\omega_1^2u^2-\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2-\frac{7}{8}\omega_4\omega_1u^2+\frac{1}{4}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}v^3\omega_3^2\omega_1-\frac{5}{4}v^3\omega_4\omega_2-\frac{1}{8}\omega_3\omega_4-\frac{3}{8}\omega_4^2u^2+\frac{1}{8}v^2\omega_3^2u+2\omega_3{c_s}^2-\frac{1}{4}\omega_4u\omega_2-\frac{3}{4}v^2\omega_4\omega_1u\omega_2+\frac{1}{2}v^2\omega_4u\omega_2^2-\frac{3}{4}v\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_3^2+\frac{1}{4}\omega_4^2\omega_1u^4-\frac{5}{4}v^2\omega_4\omega_1u-\frac{1}{4}v\omega_3\omega_1\omega_2-\frac{3}{4}v\omega_3\omega_4{c_s}+\frac{1}{2}\omega_3^2\omega_4{c_s}^2u^2+\frac{1}{8}v^2\omega_4\omega_1+\frac{1}{4}v^2\omega_3^2\omega_2+\frac{1}{4}v\omega_4u^2\omega_2+\frac{1}{4}v\omega_4^2\omega_1u^3-v^2\omega_3+\frac{3}{8}\omega_3u^2\omega_2-\frac{1}{2}\omega_3^2\omega_1u^3-\frac{5}{2}v^2\omega_4u\omega_2-2v\omega_1u\omega_2-\frac{1}{4}\omega_3\omega_1u^3\omega_2-\frac{1}{4}\omega_3\omega_1^2u^2+\frac{1}{8}\omega_3^2u^3+\frac{1}{2}v^3\omega_4\omega_1\omega_2-\frac{1}{4}v^3\omega_3^2\omega_4+\frac{3}{4}\omega_3^2\omega_4{c_s}^2u+\frac{3}{8}v\omega_4\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2-\frac{3}{2}v^2\omega_1\omega_2+\frac{7}{4}v\omega_3u\omega_2+\frac{1}{4}\omega_4\omega_1u^3\omega_2-\frac{1}{2}\omega_1u^2\omega_2-v^2\omega_2^2-\frac{1}{2}v\omega_3\omega_1u^2+\frac{3}{4}\omega_4-\frac{1}{2}v^3\omega_4\omega_2^2+\frac{1}{8}\omega_4\omega_1u+\frac{1}{4}v^2\omega_3\omega_1^2u-\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u-\frac{3}{8}\omega_4^2u+v^2\omega_3\omega_4u^2\omega_2-v^3\omega_4u\omega_2^2+\frac{1}{4}v^2\omega_3\omega_4\omega_2+\frac{1}{8}\omega_3\omega_4\omega_1u^2+2v^3\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{4}\omega_1\omega_2-v\omega_1^2u^2\omega_2+\frac{3}{8}v^3\omega_3^2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2u^2+\frac{1}{2}v^3\omega_3^2u\omega_2+\frac{1}{4}\omega_3^2{c_s}^2\omega_1+\frac{1}{8}v^2\omega_4^2u+\frac{1}{2}\omega_3^2u^2+\frac{1}{2}v^2\omega_4^2u^2\omega_2+\frac{1}{4}\omega_3\omega_1^2u^3+\frac{1}{2}\omega_1-\frac{1}{2}v\omega_3\omega_4u^2\omega_2-\frac{1}{8}\omega_3^2\omega_1u^2+\frac{1}{8}\omega_3\omega_4u^2-\frac{7}{4}v^3\omega_3\omega_2-\frac{1}{4}v^2\omega_3\omega_4^2+\frac{9}{4}v^2\omega_3\omega_4u+\frac{1}{4}v^2\omega_3^2\omega_1u-\frac{1}{2}v\omega_3^2{c_s}^2\omega_1u-\frac{1}{2}\omega_1u-\frac{1}{8}v\omega_4^2+\frac{1}{4}v^2\omega_4^2\omega_2+\frac{5}{8}v^2\omega_3\omega_1-\frac{1}{2}v\omega_3^2u^2\omega_2-\frac{1}{8}\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u+\frac{1}{4}v^3\omega_3^2\omega_2+\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}v\omega_3\omega_4u\omega_2+\frac{1}{4}v^2\omega_4^2\omega_1u^2+v\omega_3{c_s}^2\omega_1u\omega_2+\frac{1}{4}v\omega_3\omega_4\omega_1u^2-\omega_3u^2+\frac{3}{4}\omega_3\omega_1u^3+\frac{3}{4}v^2\omega_4^2u\omega_2+\frac{1}{2}v\omega_1^2u\omega_2+\frac{3}{8}v\omega_3^2u^2+\omega_3{c_s}^2\omega_1^2u^2+\frac{1}{8}v^2\omega_4^2-v^3\omega_1\omega_2^2+\frac{1}{4}v^3\omega_4^2\omega_1u-\frac{3}{4}v^2\omega_3\omega_4^2u+\frac{1}{2}\omega_3\omega_1^2u^4+\frac{1}{4}v\omega_3\omega_4u^2-\frac{13}{8}v^2\omega_4\omega_2-\frac{1}{8}v^2\omega_3^2\omega_1+\frac{1}{2}v\omega_3^2{c_s}^2\omega_1-\frac{1}{2}v\omega_3^2u\omega_2+\frac{3}{4}v\omega_1\omega_2-\frac{1}{2}\omega_3^2{c_s}^2\omega_1u-\frac{1}{8}\omega_3\omega_1u^2+\frac{1}{2}v\omega_3^2\omega_4{c_s}^2u-\frac{1}{2}v^2\omega_4\omega_1^2u^2+v\omega_1u^2\omega_2-\frac{1}{4}\omega_3u\omega_2-\frac{5}{4}\omega_3{c_s}^2\omega_1-\frac{1}{4}v\omega_4^2u+\frac{1}{2}v\omega_3-v^2\omega_1u\omega_2^2+\frac{1}{2}v^3\omega_3\omega_4-\frac{1}{8}\omega_4\omega_2+\frac{1}{4}v^2\omega_3\omega_2^2+\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_1u^3\omega_2+\frac{1}{4}v\omega_4\omega_1u-\frac{1}{4}v^3\omega_3\omega_4\omega_1+\frac{1}{4}\omega_1u\omega_2-\frac{1}{4}v\omega_3^2\omega_1u^3-\frac{1}{4}v\omega_3\omega_1-\frac{3}{4}v\omega_3u^2\omega_2+v^2\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_2+\omega_4u+\frac{1}{2}v^2\omega_3u\omega_2^2-\frac{3}{4}v^2\omega_3^2\omega_4u-\frac{1}{4}\omega_3^2\omega_1u^4-\frac{5}{4}v^2\omega_3\omega_1u+\frac{3}{2}v^2\omega_3\omega_4\omega_1u^2-\frac{1}{2}v\omega_4\omega_1u^3\omega_2+v^3\omega_3\omega_1\omega_2-\frac{3}{2}v\omega_2-\frac{3}{8}v^2\omega_3\omega_4\omega_1-2v^2\omega_3\omega_1u^2\omega_2+2v^3\omega_1u\omega_2^2+\frac{1}{4}\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{2}\omega_4u^2-\frac{1}{2}\omega_3^2{c_s}^2+\frac{1}{2}\omega_4^2\omega_1u^3-\frac{5}{2}v^2\omega_3u\omega_2-\frac{1}{8}\omega_4u^2\omega_2+\frac{1}{8}v^3\omega_4^2+\frac{1}{4}v^3\omega_4^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1u-\frac{1}{2}v^2\omega_3^2\omega_4u^2-\frac{3}{2}\omega_3\omega_4{c_s}^2+\frac{1}{4}\omega_4\omega_1^2u^2-\frac{1}{4}v\omega_3\omega_4-\frac{1}{2}v^3\omega_3^2\omega_4u+\frac{1}{4}v^2\omega_4\omega_1^2u-\frac{3}{8}\omega_3\omega_1u-\frac{1}{8}v\omega_3^2-\frac{1}{8}v\omega_4^2u^2-v^3\omega_3u\omega_2^2-2v^2\omega_4\omega_1u^2\omega_2-\frac{9}{4}\omega_3\omega_4{c_s}^2u-\frac{1}{4}\omega_3^2{c_s}^2u+\frac{3}{4}v\omega_4u\omega_2-\frac{11}{8}v^2\omega_3\omega_2-\frac{1}{4}v^3\omega_3\omega_4^2+5v^2\omega_1u\omega_2-\frac{1}{2}v\omega_4\omega_1u^2+\frac{1}{4}v\omega_3\omega_4^2{c_s}^2+\frac{1}{2}v^3\omega_4^2u\omega_2+\frac{1}{2}v^2\omega_3^2u^2\omega_2-\frac{1}{4}\omega_4\omega_1^2u^3-\frac{1}{4}v\omega_3^2u-\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_3{c_s}^2\omega_1^2u+\frac{1}{4}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_3\omega_4^2u^2+\frac{1}{4}v\omega_3^2\omega_1u-\frac{1}{2}v\omega_3\omega_4u-\frac{3}{2}v^3\omega_4\omega_1u\omega_2-\frac{1}{2}\omega_3^2{c_s}^2\omega_1u^2+\frac{1}{4}v^2\omega_4\omega_2^2-\frac{1}{8}\omega_3\omega_2+2v^2\omega_1^2u^2\omega_2-\frac{1}{8}v\omega_3^2\omega_2-\frac{1}{4}v\omega_4\omega_1-\frac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2+\frac{3}{2}v\omega_3{c_s}^2\omega_2+\frac{1}{4}v\omega_3^2\omega_4{c_s}^2+\frac{1}{2}v\omega_3\omega_4^2{c_s}^2u+\frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\frac{3}{2}v\omega_3\omega_1u^2\omega_2+\frac{1}{4}v^2\omega_4^2\omega_1u-\frac{1}{8}v\omega_3\omega_4\omega_2-\frac{3}{2}v^3\omega_3\omega_1u\omega_2-v\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{4}v^2\omega_3^2\omega_4-\frac{1}{2}v^3\omega_3\omega_4^2u+\frac{1}{4}\omega_3\omega_1u\omega_2+\frac{1}{4}v\omega_3\omega_4\omega_1u,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_3],t-2\delta_t} =$
$-2+v\omega_4\omega_1u\omega_2-\frac{1}{2}v^2\omega_3^2u\omega_2+\frac{3}{2}v\omega_4+\frac{1}{8}\omega_3^2\omega_2-\frac{3}{8}\omega_4\omega_1+\frac{5}{2}\omega_3-\frac{1}{2}\omega_4\omega_1u^2\omega_2+\frac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2u+v\omega_3\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1u-\frac{1}{2}v\omega_4^2\omega_1u^2-\frac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\frac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\frac{7}{2}\omega_3\omega_4u-\frac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2-\frac{1}{2}v\omega_3u\omega_2^2-\frac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1u-\frac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4u+\frac{3}{2}\omega_4\omega_1u^2-\frac{7}{4}\omega_3\omega_4-\frac{1}{4}\omega_4^2u^2-\frac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\frac{3}{4}v^2\omega_3^2-\frac{1}{2}v\omega_3\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1^2u+\frac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\frac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1u\omega_2+\frac{1}{2}\omega_3\omega_1^2u^2-\frac{1}{2}v\omega_4\omega_1^2u-\frac{9}{8}\omega_3\omega_1+\frac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2+3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\frac{1}{4}\omega_3\omega_4^2+\frac{3}{2}\omega_4+2\omega_4\omega_1u+v\omega_3\omega_4\omega_1-\frac{1}{2}\omega_4^2u-\frac{3}{2}v^2\omega_3\omega_4\omega_2-\frac{3}{4}v\omega_4^2\omega_1u-\frac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\frac{1}{2}\omega_1\omega_2-\frac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2+\frac{1}{2}\omega_3^2u\omega_2-\frac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\frac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\frac{1}{2}v^2\omega_3\omega_4^2-\frac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u-\frac{1}{2}v\omega_4^2-\frac{1}{2}\omega_1^2u\omega_2-\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{2}v\omega_3^2\omega_2^2+v\omega_3\omega_4^2u^2-\frac{1}{4}\omega_4^2+\frac{1}{2}\omega_3\omega_4u^2\omega_2-\frac{3}{2}v\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\frac{1}{2}\omega_3^2u^2\omega_2-\frac{1}{2}v^2\omega_4^2\omega_2+v\omega_1^2u\omega_2+\omega_1^2u-\frac{1}{4}v^2\omega_4^2-\frac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u-\frac{1}{2}v\omega_3^2\omega_1u^2+\frac{3}{2}v^2\omega_4\omega_2+\frac{1}{2}v^2\omega_3^2\omega_1-\frac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\frac{5}{2}\omega_3\omega_1u^2+\frac{1}{2}\omega_3^2\omega_4u^2+\frac{3}{4}v\omega_3\omega_4^2-\frac{3}{2}\omega_3u\omega_2-\frac{1}{2}v\omega_4^2u+\frac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\frac{1}{8}\omega_3^2\omega_1-\frac{3}{8}\omega_4\omega_2-\frac{1}{2}v\omega_4u\omega_2^2+\frac{1}{2}v^2\omega_3\omega_2^2+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2+2\omega_1u\omega_2-\frac{3}{2}v\omega_3\omega_1-\frac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\frac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\frac{1}{4}\omega_4\omega_1^2u-\frac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1-\frac{1}{2}v\omega_3\omega_1^2u+\frac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\frac{1}{4}\omega_3^2\omega_4+\frac{1}{2}\omega_4\omega_1^2u^2-\frac{7}{2}v\omega_3\omega_4+\frac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u-v\omega_3^2+3v\omega_4u\omega_2+\frac{5}{2}v^2\omega_3\omega_2-\frac{1}{2}\omega_3^2-\frac{1}{2}v\omega_3^2u-2\omega_1^2u^2+2v\omega_4\omega_1u^2\omega_2-\frac{1}{4}\omega_4^2\omega_1u^2-\frac{3}{4}v\omega_3^2\omega_1u-5v\omega_3\omega_4u-\frac{1}{2}\omega_4\omega_1u\omega_2-\frac{1}{2}v\omega_1\omega_2^2+\frac{1}{2}v^2\omega_4\omega_2^2-\frac{9}{8}\omega_3\omega_2-\frac{1}{4}v\omega_3^2\omega_2-\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}v\omega_4^2u^2\omega_2+2v\omega_3\omega_1u^2\omega_2-\frac{1}{2}v^2\omega_4^2\omega_1u+\frac{3}{4}\omega_3\omega_4^2u-\frac{1}{2}v\omega_3\omega_4\omega_2+\frac{1}{2}v^2\omega_3^2\omega_4-\frac{1}{2}\omega_3\omega_1u\omega_2-\frac{3}{2}v\omega_3\omega_4\omega_1u+\frac{5}{2}\omega_3u,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-3\delta_t} = -1+\frac{1}{2}\omega_3^2\omega_4{c_s}^2-\frac{1}{2}\omega_3{c_s}^2\omega_2-\frac{1}{2}v\omega_4+2v^3\omega_3\omega_4\omega_1\omega_2-\frac{1}{4}v^2\omega_3\omega_1^2-\frac{3}{2}\omega_4\omega_1+\frac{1}{4}\omega_3+\frac{1}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{2}v^3\omega_3^2\omega_1\omega_2-2v^3\omega_3\omega_4\omega_2+\frac{1}{2}v^2\omega_3^2\omega_4\omega_1-2v^3\omega_2^2-\frac{1}{4}v\omega_4^2\omega_1u^2+\frac{1}{2}v\omega_3^2\omega_4{c_s}^2\omega_1-\frac{7}{4}v\omega_3\omega_2-\frac{1}{4}v\omega_4^2\omega_1+$

$$\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{4}\omega_3\omega_1u^2\omega_2+\frac{5}{2}v^2\omega_3\omega_4+v^3\omega_3\omega_2^2+v^2\omega_1\omega_2^2+\frac{1}{2}v^2\omega_3\omega_4^2\omega_1+\frac{13}{4}v^2\omega_4\omega_1\omega_2+4v^2\omega_2-v\omega_4\omega_1^2u^2\omega_2+v\omega_3\omega_4{c_s}^2\omega_2-\frac{1}{4}\omega_4\omega_1u^2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2+\frac{1}{4}v^3\omega_3^2\omega_1+\frac{3}{2}v^3\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4-\frac{3}{4}\omega_4^2u^2+2\omega_3{c_s}^2+\frac{1}{2}v\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_3^2+\frac{9}{4}v\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_4{c_s}^2-v^3\omega_4\omega_1\omega_2^2+v\omega_3\omega_1^2u^2\omega_2-\frac{1}{4}\omega_3\omega_1^2+\frac{5}{4}v^2\omega_4\omega_1+\frac{1}{2}v^2\omega_3^2\omega_2-\frac{1}{2}v\omega_4u^2\omega_2-v^2\omega_3+\frac{1}{4}\omega_3u^2\omega_2+\frac{1}{2}v\omega_3\omega_4^2{c_s}^2\omega_1+\frac{3}{4}\omega_3\omega_1^2u^2-\frac{3}{2}v^3\omega_4\omega_1\omega_2-\frac{1}{2}v^3\omega_3\omega_4^2\omega_1+\frac{1}{4}\omega_4\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_1^2\omega_2+\frac{1}{2}v^3\omega_3^2\omega_4-v\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}v\omega_3^2\omega_1-\frac{3}{4}v\omega_4\omega_2-5v^2\omega_1\omega_2-v^2\omega_2^2-\frac{1}{2}v^2\omega_4\omega_1\omega_2^2+\frac{5}{4}\omega_4+v^3\omega_4\omega_2^2-\frac{1}{2}v\omega_3\omega_4\omega_1+\frac{1}{2}v^2\omega_3\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1\omega_2-\frac{1}{2}v^3\omega_3^2\omega_4\omega_1+3\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_1\omega_2-\frac{1}{4}v^3\omega_3^2+\frac{1}{2}\omega_3^2{c_s}^2\omega_1+\frac{3}{4}\omega_3^2u^2+\omega_1-\frac{3}{4}\omega_3^2\omega_1u^2+\frac{3}{2}v^3\omega_3\omega_2+\frac{1}{4}v^3\omega_4^2\omega_1-\frac{1}{2}v^2\omega_3\omega_4^2-\frac{1}{2}v\omega_3^2\omega_1u^2\omega_2+\frac{1}{4}v\omega_4^2+\frac{1}{2}v^2\omega_4^2\omega_2+\frac{5}{4}v^2\omega_3\omega_1+\frac{1}{4}\omega_4\omega_1^2+\frac{1}{2}v\omega_3^2u^2\omega_2+\frac{1}{2}v\omega_1^2\omega_2-\frac{1}{4}\omega_4^2+\frac{1}{2}v\omega_4^2\omega_1u^2\omega_2+\frac{1}{2}v^3\omega_4^2\omega_1\omega_2-\frac{1}{2}v^3\omega_3^2\omega_2-\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\omega_3u^2-\frac{1}{4}v\omega_3^2u^2+\frac{1}{4}v^2\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2+2v^3\omega_1\omega_2^2+\frac{1}{4}v\omega_3^2\omega_1u^2-\frac{11}{4}v^2\omega_4\omega_2-\frac{1}{4}v^2\omega_3^2\omega_1-\frac{1}{2}v\omega_3^2{c_s}^2\omega_1-\frac{5}{2}v\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1u^2-\frac{5}{2}\omega_3{c_s}^2\omega_1-\frac{1}{2}v\omega_3-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-\frac{1}{2}v^3\omega_3\omega_4-\frac{1}{4}\omega_4\omega_2+\frac{1}{2}v^2\omega_3\omega_2^2+\frac{1}{4}\omega_3\omega_4\omega_1+\frac{13}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{2}v^3\omega_3\omega_4\omega_1+\frac{1}{2}v^2\omega_3\omega_4\omega_1^2-v^3\omega_3\omega_1\omega_2^2+\frac{1}{2}v\omega_3\omega_1+v^2\omega_1^2\omega_2+\frac{1}{2}v\omega_3u^2\omega_2+\frac{1}{2}\omega_2+\frac{3}{4}v\omega_4\omega_1\omega_2-\frac{3}{2}v^3\omega_3\omega_1\omega_2+2v\omega_2-3v^2\omega_3\omega_4\omega_1-\frac{1}{2}v^2\omega_4\omega_1^2\omega_2+\frac{1}{4}\omega_3\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\omega_4u^2-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{4}\omega_4u^2\omega_2-\frac{1}{4}v^3\omega_4^2-\frac{1}{2}v^3\omega_4^2\omega_2-\frac{5}{2}\omega_3\omega_4{c_s}^2-\frac{3}{4}\omega_4\omega_1^2u^2+\frac{1}{2}v\omega_3\omega_4-\frac{1}{2}v\omega_3\omega_1^2\omega_2+\frac{1}{2}\omega_3{c_s}^2\omega_1^2+\frac{1}{4}v\omega_3^2+\frac{1}{4}v\omega_4^2u^2-\frac{1}{4}v^2\omega_4^2\omega_1-\frac{11}{4}v^2\omega_3\omega_2+\frac{1}{2}v^3\omega_3\omega_4^2-\frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_1\omega_2^2-\frac{1}{2}v\omega_3\omega_4^2{c_s}^2-v^2\omega_4+\frac{3}{2}v\omega_4\omega_1u^2\omega_2+\frac{3}{4}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_4^2\omega_1\omega_2-\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}v^2\omega_4\omega_2^2-\frac{1}{4}\omega_3\omega_2+\frac{1}{4}\omega_4^2\omega_1+\frac{1}{4}v\omega_3^2\omega_2+\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}v\omega_4^2u^2\omega_2-v\omega_3{c_s}^2\omega_2-\frac{1}{2}v\omega_3^2\omega_4{c_s}^2-\frac{3}{2}v\omega_3\omega_1u^2\omega_2-\frac{1}{4}v\omega_3^2\omega_1\omega_2+\frac{1}{4}v\omega_3\omega_4\omega_2+v\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}v^2\omega_3^2\omega_4-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_3],t-3\delta_t}=3+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{5}{2}v\omega_4+\frac{1}{2}\omega_4^2u^2\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{13}{4}\omega_4\omega_1-\frac{15}{4}\omega_3-\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1-\frac{3}{4}\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2+\frac{7}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+\omega_3\omega_1u^2\omega_2+\omega_1^2+v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2-\frac{1}{2}v\omega_4\omega_2^2+v^2\omega_3\omega_4^2\omega_1+2v^2\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-v\omega_3\omega_4\omega_1^2+\omega_4\omega_1u^2+\frac{13}{4}\omega_3\omega_4-\frac{1}{2}\omega_4^2u^2+\frac{1}{2}v^2\omega_3^2-4v\omega_3\omega_1\omega_2+\frac{3}{2}v\omega_3^2\omega_4-\omega_3\omega_1^2+\frac{1}{2}v^2\omega_3^2\omega_2+\omega_3\omega_1^2u^2+\frac{1}{2}v\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\frac{3}{4}\omega_4\omega_1\omega_2+\frac{19}{4}\omega_3\omega_1+v\omega_3^2\omega_1+\frac{7}{2}v\omega_4\omega_2+2v^2\omega_2^2+v^2\omega_4\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{11}{4}\omega_4+7v\omega_3\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1^2\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_1+3v^2\omega_3\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1\omega_2+2\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_2^2+\frac{1}{2}\omega_3^2u^2-4\omega_1-\frac{1}{2}\omega_3^2\omega_1u^2-v^2\omega_3\omega_4^2+\frac{1}{2}v\omega_4^2\omega_1\omega_2-v\omega_4^2+\frac{1}{2}v^2\omega_4^2\omega_2-\frac{1}{2}\omega_4\omega_1^2-v\omega_1^2\omega_2+\frac{1}{2}\omega_4^2-\frac{1}{2}\omega_1^2\omega_2+\frac{1}{2}v\omega_4\omega_1^2+\frac{1}{2}\omega_3^2\omega_1u^2\omega_2-\frac{1}{2}\omega_3^2u^2\omega_2+\frac{1}{2}v^2\omega_4^2-\frac{1}{2}\omega_4^2\omega_1u^2\omega_2-\frac{3}{2}v\omega_3^2\omega_4\omega_1-2v^2\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1+6v\omega_1\omega_2-\omega_3\omega_1u^2+\frac{3}{2}v\omega_3\omega_4^2+\frac{5}{2}v\omega_3-\frac{3}{4}\omega_3^2\omega_1+\frac{3}{4}\omega_4\omega_2-v^2\omega_3\omega_2^2-\frac{15}{4}\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1\omega_2+v\omega_2^2-3v\omega_3\omega_1-\frac{1}{2}v\omega_4^2\omega_2-\frac{3}{2}\omega_2-\frac{3}{2}v\omega_3\omega_4^2\omega_1-4v\omega_4\omega_1\omega_2-5v\omega_2-v^2\omega_3\omega_4\omega_1-\frac{9}{4}\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_1^2+\omega_4\omega_1^2u^2\omega_2-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}v\omega_4\omega_1\omega_2^2-\omega_4\omega_1^2u^2-6v\omega_3\omega_4+\frac{1}{2}v\omega_3\omega_1^2\omega_2-\omega_3\omega_1^2u^2\omega_2-v\omega_3^2-\frac{1}{2}v^2\omega_4^2\omega_1-2v^2\omega_3\omega_2-3v^2\omega_3\omega_4\omega_1\omega_2+v^2\omega_3\omega_1\omega_2^2+\frac{3}{4}\omega_3^2+\frac{1}{2}\omega_3\omega_4\omega_1^2+\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_4^2\omega_1\omega_2-v\omega_1\omega_2^2+v\omega_3\omega_4\omega_1\omega_2-v^2\omega_4\omega_2^2+\frac{7}{4}\omega_3\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}v\omega_3^2\omega_2-3v\omega_4\omega_1+\frac{1}{2}v\omega_3^2\omega_1\omega_2-v\omega_3\omega_4\omega_2-v^2\omega_3^2\omega_4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t}=\frac{7}{2}v\omega_4\omega_1u\omega_2-v\omega_4-\frac{1}{2}v^3\omega_3^2\omega_1\omega_2+v\omega_3\omega_4^2u+\frac{7}{2}v\omega_3\omega_1u\omega_2-\frac{3}{4}v\omega_4^2\omega_1u^2+\frac{1}{2}v\omega_3^2\omega_4{c_s}^2\omega_1+\frac{3}{2}v\omega_3^2\omega_4u\omega_2-v\omega_4^2u\omega_2-\frac{21}{4}v\omega_3\omega_2-\frac{1}{4}v\omega_4^2\omega_1+\frac{1}{2}v\omega_3^2\omega_4\omega_1u^2-v^3\omega_3\omega_2^2-\frac{1}{2}v\omega_3\omega_4^2\omega_2-\frac{1}{2}v\omega_3u\omega_2^2+\frac{1}{2}v\omega_4\omega_2^2+\frac{1}{2}v\omega_3\omega_1u+v\omega_3^2\omega_4u-v\omega_4\omega_1^2u^2\omega_2+v\omega_3\omega_4{c_s}^2\omega_2+\frac{1}{4}v^3\omega_3^2\omega_1-\frac{1}{2}v^3\omega_4\omega_2+v\omega_1u\omega_2^2+\frac{1}{2}v\omega_3^2{c_s}^2-\frac{1}{2}v\omega_3\omega_4^2\omega_1u+\frac{9}{4}v\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_3^2\omega_4\omega_2-\frac{1}{2}v\omega_3^2\omega_4+\frac{1}{2}v\omega_3\omega_4{c_s}^2-v^3\omega_4\omega_1\omega_2^2-v\omega_3\omega_1^2u^2\omega_2+\frac{1}{2}v\omega_4u^2\omega_2+\frac{1}{2}v\omega_3\omega_4^2\omega_1u^2+2v\omega_3\omega_4\omega_1u^2\omega_2-6v\omega_1u\omega_2+\frac{1}{2}v\omega_3\omega_4^2{c_s}^2\omega_1+\frac{3}{2}v\omega_3\omega_4^2u\omega_2-\frac{1}{2}v\omega_3\omega_1\omega_2^2+\frac{1}{2}v^3\omega_4\omega_1\omega_2-v\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{4}v\omega_3^2\omega_1-\frac{17}{4}v\omega_4\omega_2+\frac{7}{2}v\omega_3u\omega_2+\frac{1}{2}v\omega_3^2\omega_4u^2+v\omega_3\omega_1u^2+v^3\omega_4\omega_2^2-\frac{1}{2}v\omega_3\omega_4\omega_1-\frac{1}{2}v\omega_3\omega_1u\omega_2^2-\frac{1}{2}v\omega_3^2\omega_4\omega_1u+v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2-\frac{1}{4}v^3\omega_3^2+\frac{1}{2}v^3\omega_3\omega_2-\frac{1}{4}v^3\omega_4^2\omega_1+\frac{1}{2}v\omega_3^2\omega_1u^2\omega_2-\frac{1}{2}v\omega_4\omega_1u\omega_2^2+\frac{3}{4}v\omega_4^2+\frac{1}{2}v\omega_3^2u^2\omega_2+\frac{1}{2}v\omega_3\omega_4^2u^2+\frac{1}{2}v\omega_4^2\omega_1u^2\omega_2+\frac{1}{2}v^3\omega_4^2\omega_1\omega_2+\frac{1}{2}v^3\omega_3^2\omega_2-\frac{1}{2}v\omega_3^2\omega_1u\omega_2-\frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-8v\omega_3\omega_4u\omega_2-\frac{1}{2}v\omega_3\omega_4\omega_2^2-\frac{3}{2}v\omega_3\omega_4\omega_1u^2+v\omega_1^2u\omega_2-\frac{1}{4}v\omega_3^2u^2-\frac{1}{2}v\omega_3\omega_4u^2-\frac{3}{4}v\omega_3^2\omega_1u^2-\frac{1}{2}v\omega_4^2\omega_1u\omega_2-\frac{1}{2}v\omega_3^2{c_s}^2\omega_1-v\omega_3^2u\omega_2-\frac{5}{2}v\omega_1\omega_2-v\omega_3\omega_4^2u^2\omega_2-\frac{1}{2}v\omega_3\omega_4^2-2v\omega_1u^2\omega_2-\frac{1}{2}v\omega_4^2u-v\omega_3-\frac{1}{2}v\omega_4u\omega_2^2+\frac{1}{2}v\omega_4\omega_1u+v^3\omega_3\omega_1\omega_2^2-v\omega_2^2+\frac{1}{2}v\omega_3\omega_1+\frac{1}{2}v\omega_4^2\omega_2+\frac{1}{2}v\omega_3u^2\omega_2+\frac{5}{4}v\omega_4\omega_1\omega_2-\frac{1}{2}v^3\omega_3\omega_1\omega_2+5v\omega_2+\frac{1}{4}v^3\omega_4^2-\frac{1}{2}v^3\omega_4^2\omega_2-\frac{1}{2}v\omega_4\omega_1^2u\omega_2+\frac{3}{2}v\omega_3\omega_4+\frac{3}{4}v\omega_3^2-\frac{1}{4}v\omega_4^2u^2+\frac{7}{2}v\omega_4u\omega_2-\frac{1}{2}v\omega_3\omega_1^2u\omega_2+v\omega_4\omega_1u^2-\frac{1}{2}v\omega_3\omega_4^2{c_s}^2-\frac{1}{2}v\omega_3^2u-\frac{1}{2}v\omega_4\omega_1u^2\omega_2-v\omega_3\omega_4u+\frac{1}{2}v\omega_1\omega_2^2-\frac{3}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{3}{4}v\omega_3^2\omega_2+\frac{1}{2}v\omega_4\omega_1+\frac{1}{2}v\omega_4^2u^2\omega_2-v\omega_3{c_s}^2\omega_2-\frac{1}{2}v\omega_3^2\omega_4{c_s}^2-v\omega_3^2\omega_4u^2\omega_2-\frac{1}{2}v\omega_3\omega_1u^2\omega_2-\frac{1}{4}v\omega_3^2\omega_1\omega_2+v\omega_3\omega_4u\omega_2^2+\frac{17}{4}v\omega_3\omega_4\omega_2+v\omega_3{c_s}^2\omega_1\omega_2,$$

$$\alpha_{x-\delta_l,y}^{[\mu_3],t-3\delta_t}=3+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2u^2\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{3}{4}\omega_4\omega_1-\frac{15}{4}\omega_3+2\omega_4\omega_1u^2\omega_2-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\omega_3\omega_4\omega_1u-\frac{1}{2}\omega_1\omega_2^2-\omega_3\omega_4u\omega_2^2+2\omega_3\omega_1u^2\omega_2-\omega_3^2u+\omega_3^2\omega_4u^2\omega_2-6\omega_3\omega_4u-\frac{1}{2}\omega_3^2\omega_1u+\frac{1}{2}\omega_4\omega_1^2u\omega_2-v^2\omega_4\omega_1\omega_2-2\omega_4\omega_1u^2+\frac{13}{4}\omega_3\omega_4+\frac{1}{2}\omega_4^2u^2-3\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_1^2u\omega_2+\frac{1}{2}v^2\omega_3^2-\frac{1}{2}\omega_3\omega_1^2u-\frac{1}{2}v^2\omega_3^2\omega_2-\omega_3\omega_1^2u^2-\frac{3}{4}\omega_4\omega_1\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_4^2\omega_2+\omega_3\omega_4^2u^2\omega_2+v^2\omega_4\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{11}{4}\omega_4+\frac{7}{2}\omega_4\omega_1u+\frac{1}{2}\omega_4u\omega_2^2-\omega_4^2u+\frac{1}{2}v^2\omega_3^2\omega_1\omega_2+3\omega_3\omega_4\omega_1u^2+7\omega_3\omega_4u\omega_2+2\omega_1\omega_2+\frac{1}{2}\omega_3^2\omega_1u\omega_2+\omega_3^2u\omega_2+\frac{1}{2}\omega_3^2u^2-\frac{3}{2}\omega_1+\frac{1}{2}\omega_3^2\omega_1u^2+\omega_3\omega_4u^2+\frac{1}{2}\omega_4^2\omega_1u\omega_2-5\omega_1u-\omega_1^2u\omega_2+\frac{1}{2}v^2\omega_4^2\omega_2+\omega_3\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{1}{2}\omega_3^2\omega_1u^2\omega_2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-\frac{1}{2}\omega_3^2u^2\omega_2+\frac{1}{2}\omega_3\omega_1u\omega_2^2+$$

$$\omega_1^2 u - \tfrac{1}{2}v^2\omega_4^2 - \tfrac{1}{2}\omega_4^2\omega_1 u^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 u + v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_2^2 - 3\omega_3\omega_4\omega_1 u^2\omega_2 - 2\omega_1^2 u^2\omega_2 + \tfrac{1}{2}\omega_4\omega_1 u\omega_2^2 - 2\omega_3\omega_1 u^2 - \omega_3^2\omega_4 u^2 - 3\omega_3 u\omega_2 - \tfrac{3}{2}\omega_3\omega_4^2 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 + \tfrac{13}{4}\omega_4\omega_2 + v^2\omega_3\omega_2^2 - \tfrac{3}{4}\omega_3\omega_4\omega_1 + v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2^2 + 6\omega_1 u\omega_2 + \omega_2^2 - 4\omega_2 + \tfrac{5}{2}\omega_4 u - \tfrac{1}{2}\omega_4\omega_1^2 u + \tfrac{1}{2}\omega_3^2\omega_4\omega_2 - \tfrac{9}{4}\omega_3\omega_1\omega_2 - \omega_1 u\omega_2^2 + \omega_4\omega_1^2 u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4 - \omega_4\omega_1^2 u^2 + \tfrac{3}{2}\omega_3^2\omega_4 u + \tfrac{7}{2}\omega_3\omega_1 u + \omega_3\omega_1^2 u^2\omega_2 + \tfrac{1}{2}\omega_3 u\omega_2^2 - \tfrac{1}{2}\omega_4\omega_2^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 - v^2\omega_3\omega_1\omega_2^2 + \tfrac{3}{4}\omega_3^2 + 2\omega_1^2 u^2 + \omega_4^2 u\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1 u^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_2 - 4\omega_4\omega_1 u\omega_2 - v^2\omega_4\omega_2^2 + \tfrac{19}{4}\omega_3\omega_2 + \tfrac{3}{2}\omega_3\omega_4^2 u - \tfrac{3}{2}\omega_3^2\omega_4 u\omega_2 - 4\omega_3\omega_1 u\omega_2 + \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -v\omega_4 - 4v^3\omega_3\omega_4\omega_1\omega_2 + 4v^3\omega_3\omega_4\omega_2 + 4v^3\omega_2^2 + 2v\omega_4^2\omega_1 u^2 - 2v\omega_3^2\omega_4 {c_s}^2\omega_1 - 2v\omega_3\omega_2 - v\omega_4^2\omega_1 - v\omega_3^2\omega_4\omega_1 u^2 + v\omega_4\omega_2^2 + 4v\omega_4\omega_1^2 u^2\omega_2 - 4v\omega_3\omega_4 {c_s}^2\omega_2 - v^3\omega_3^2\omega_1 - 2v^3\omega_4\omega_2 - 2v\omega_3^2 {c_s}^2 + 2v\omega_3\omega_1\omega_2 - v\omega_3^2\omega_4 - 2v\omega_3\omega_4 {c_s}^2 + 4v^3\omega_4\omega_1\omega_2^2 - v\omega_3\omega_4^2\omega_1 u^2 - 4v\omega_3\omega_4\omega_1 u^2\omega_2 - 2v\omega_3\omega_4^2 {c_s}^2\omega_1 + 2v^3\omega_4\omega_1\omega_2 + v^3\omega_3\omega_4^2\omega_1 - v^3\omega_3^2\omega_4 + 4v\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - v\omega_3^2\omega_1 - 6v\omega_4\omega_2 - v\omega_3^2\omega_4 u^2 - 2v\omega_3\omega_1 u^2 - 4v^3\omega_4\omega_2^2 - 2v\omega_3\omega_4\omega_1 - v\omega_4\omega_1^2\omega_2 + v^3\omega_3^2\omega_4\omega_1 - 4v\omega_1^2 u^2\omega_2 + v^3\omega_3^2 - 4v^3\omega_3\omega_2 - v\omega_4^2\omega_1\omega_2 + v\omega_4^2 - 2v\omega_3^2 u^2\omega_2 + v\omega_1^2\omega_2 - v\omega_3\omega_4^2 u^2 - 2v\omega_4^2\omega_1 u^2\omega_2 - 2v^3\omega_4^2\omega_1\omega_2 + 2v\omega_3\omega_4 {c_s}^2\omega_1 + 3v\omega_3\omega_4\omega_1 u^2 + v\omega_3^2 u^2 - 4v^3\omega_1\omega_2^2 + v\omega_3^2\omega_4\omega_1 + v\omega_3\omega_4 u^2 + v\omega_3^2\omega_1 u^2 + 2v\omega_3^2 {c_s}^2\omega_1 - 6v\omega_1\omega_2 + 2v\omega_3\omega_4^2 u^2\omega_2 - v\omega_3\omega_4^2 + 4v\omega_1 u^2\omega_2 - v\omega_3 + v^3\omega_3\omega_4 - v^3\omega_3\omega_4\omega_1 - v\omega_2^2 + v\omega_3\omega_1 + v\omega_4^2\omega_2 - 2v\omega_3 u^2\omega_2 + v\omega_3\omega_4^2\omega_1 + 7v\omega_4\omega_1\omega_2 + 4v^3\omega_3\omega_1\omega_2 + 5v\omega_2 + 2v^3\omega_4^2\omega_2 - v\omega_4\omega_1\omega_2^2 + 2v\omega_3\omega_4 + v\omega_3^2 - v^3\omega_3\omega_4^2 - 2v\omega_4\omega_1 u^2 + 2v\omega_3\omega_4^2 {c_s}^2 - 2v\omega_4\omega_1 u^2\omega_2 + v\omega_1\omega_2^2 - 2v\omega_3\omega_4\omega_1\omega_2 + v\omega_4\omega_1 + 4v\omega_3 {c_s}^2\omega_2 + 2v\omega_3^2\omega_4 {c_s}^2 + 2v\omega_3^2\omega_4 u^2\omega_2 + 4v\omega_3\omega_1 u^2\omega_2 + 2v\omega_3\omega_4\omega_2 - 4v\omega_3 {c_s}^2\omega_1\omega_2,$$

$$\alpha_{x,y}^{[\mu_3],t-3\delta_t} = 3 + 5\omega_4\omega_1 - 2\omega_4\omega_1 u^2\omega_2 - 2v^2\omega_3^2\omega_4\omega_1 - \omega_1\omega_2^2 - 6\omega_3\omega_1 u^2\omega_2 - 2\omega_3^2\omega_4 u^2\omega_2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4v^2\omega_1\omega_2^2 - 2v^2\omega_3\omega_4^2\omega_1 - 2v^2\omega_4\omega_1\omega_2 + 2\omega_4\omega_1 u^2 - 2v^2\omega_3^2 + \omega_4\omega_1\omega_2^2 - 6\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 - 2\omega_3\omega_4^2 u^2\omega_2 - 4v^2\omega_2^2 - 4v^2\omega_4\omega_1\omega_2^2 - 4\omega_4 - 6v^2\omega_3\omega_4\omega_2 - 6\omega_3\omega_4\omega_1 u^2 + 5\omega_1\omega_2 - 2\omega_3^2 u^2 - 4\omega_1 - 2\omega_3\omega_4 u^2 + 2v^2\omega_3\omega_4^2 - 2v^2\omega_4^2\omega_2 - \omega_4\omega_1^2 + \omega_4^2 - \omega_1^2\omega_2 + 2\omega_3\omega_4 u^2\omega_2 + \omega_4^2\omega_1\omega_2 + 2\omega_3\omega_4^2 u^2 + 2\omega_3^2 u^2\omega_2 + 2\omega_4^2\omega_1 u^2\omega_2 + 2v^2\omega_4\omega_2 + 2v^2\omega_3^2\omega_1 + 6\omega_3\omega_4\omega_1 u^2\omega_2 + 4\omega_1^2 u^2\omega_2 + 6\omega_3\omega_1 u^2 + 2\omega_3^2\omega_4 u^2 + 5\omega_4\omega_2 + \omega_4\omega_1^2\omega_2 - 6v^2\omega_3\omega_1\omega_2 + \omega_2^2 - 4\omega_2 + 2v^2\omega_3\omega_4\omega_1 - 4\omega_4\omega_1^2 u^2\omega_2 + 4\omega_4\omega_1^2 u^2 - \omega_4\omega_2^2 + 6v^2\omega_3\omega_2 + 6v^2\omega_3\omega_4\omega_1\omega_2 - 4\omega_1^2 u^2 - 2\omega_4^2\omega_1 u^2 + 2v^2\omega_4^2\omega_1\omega_2 + 4v^2\omega_4\omega_2^2 - \omega_4^2\omega_1 + 2v^2\omega_3^2\omega_4,$$

$$\alpha_{x+\delta_t,y}^{[\mu_1],t-3\delta_t} = -\tfrac{7}{2}v\omega_4\omega_1 u\omega_2 - v\omega_4 - \tfrac{1}{2}v^3\omega_3^2\omega_1\omega_2 - v\omega_3\omega_4^2 u - \tfrac{7}{2}v\omega_3\omega_1 u\omega_2 - \tfrac{3}{4}v\omega_4^2\omega_1 u^2 + \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2\omega_1 - \tfrac{3}{2}v\omega_3^2\omega_4 u\omega_2 + v\omega_4^2 u\omega_2 - \tfrac{21}{4}v\omega_3\omega_2 - \tfrac{1}{4}v\omega_4^2\omega_1 + \tfrac{1}{2}v\omega_3^2\omega_4\omega_1 u^2 - v^3\omega_3\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_3 u\omega_2^2 + \tfrac{1}{2}v\omega_4\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_1 u - v\omega_3^2\omega_4 u - v\omega_4\omega_1^2 u^2\omega_2 + v\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{4}v^3\omega_3^2\omega_1 - \tfrac{1}{2}v^3\omega_4\omega_2 - v\omega_1 u\omega_2^2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2 + \tfrac{1}{2}v\omega_3\omega_4^2\omega_1 u + \tfrac{9}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 - v^3\omega_4\omega_1\omega_2^2 - v\omega_3\omega_1^2 u^2\omega_2 + \tfrac{1}{2}v\omega_4 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2\omega_1 u^2 + 2v\omega_3\omega_4\omega_1 u^2\omega_2 + 6v\omega_1 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2 {c_s}^2\omega_1 - \tfrac{3}{2}v\omega_3\omega_4^2 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - v\omega_3\omega_4 {c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_1 - \tfrac{17}{4}v\omega_4\omega_2 - \tfrac{7}{2}v\omega_3 u\omega_2 + \tfrac{1}{2}v\omega_3^2\omega_4 u^2 + v\omega_3\omega_1 u^2 + v^3\omega_4\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 + \tfrac{1}{2}v\omega_3\omega_1 u\omega_2^2 + \tfrac{1}{2}v\omega_3^2\omega_4\omega_1 u + v\omega_3\omega_2^2 + 2v\omega_1^2 u^2\omega_2 - \tfrac{1}{4}v^3\omega_3^2 + \tfrac{1}{2}v^3\omega_3\omega_2 - \tfrac{1}{4}v^3\omega_4^2\omega_1 + \tfrac{1}{2}v\omega_3^2\omega_1 u^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 u\omega_2^2 + \tfrac{3}{4}v\omega_4^2 + \tfrac{1}{2}v\omega_3^2 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2 u^2 + \tfrac{1}{2}v\omega_4^2\omega_1 u^2\omega_2 + \tfrac{1}{2}v^3\omega_4^2\omega_1\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_3^2\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 + 8v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v\omega_3\omega_4\omega_2^2 - \tfrac{3}{2}v\omega_3\omega_4\omega_1 u^2 - v\omega_1^2 u\omega_2 - \tfrac{1}{4}v\omega_3^2 u^2 - \tfrac{1}{2}v\omega_3\omega_4 u^2 - \tfrac{3}{4}v\omega_3^2\omega_1 u^2 + \tfrac{1}{2}v\omega_4^2\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_1 + v\omega_3^2 u\omega_2 - \tfrac{5}{2}v\omega_1\omega_2 - v\omega_3\omega_4^2 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4^2 - 2v\omega_1 u^2\omega_2 + \tfrac{1}{2}v\omega_4^2 u - v\omega_3 + \tfrac{1}{2}v\omega_4 u\omega_2^2 - \tfrac{1}{2}v\omega_4\omega_1 u + v^3\omega_3\omega_1\omega_2^2 - v\omega_2^2 + \tfrac{1}{2}v\omega_3\omega_1 + \tfrac{1}{2}v\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_3 u^2\omega_2 + \tfrac{5}{4}v\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_1\omega_2 + 5v\omega_2 + \tfrac{1}{4}v^3\omega_4^2 - \tfrac{1}{2}v^3\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1^2 u\omega_2 + \tfrac{3}{2}v\omega_3\omega_4 + \tfrac{3}{4}v\omega_3^2 - \tfrac{1}{4}v\omega_4^2 u^2 - \tfrac{7}{2}v\omega_4 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_1^2 u\omega_2 + v\omega_4\omega_1 u^2 - \tfrac{1}{2}v\omega_3\omega_4^2 {c_s}^2 + \tfrac{1}{2}v\omega_3^2 u - \tfrac{1}{2}v\omega_4\omega_1 u^2\omega_2 + v\omega_3\omega_4 u + \tfrac{1}{2}v\omega_1\omega_2^2 - \tfrac{3}{4}v\omega_3\omega_4\omega_1\omega_2 + \tfrac{3}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_4^2 u^2\omega_2 - v\omega_3 {c_s}^2\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2 - v\omega_3^2\omega_4 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_1\omega_2 - v\omega_3\omega_4 u\omega_2^2 + \tfrac{17}{4}v\omega_3\omega_4\omega_2 + v\omega_3 {c_s}^2\omega_1\omega_2,$$

$$\alpha_{x+\delta_t,y}^{[\mu_3],t-3\delta_t} = 3 + \tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{2}\omega_4^2 u^2\omega_2 - \tfrac{3}{4}\omega_3^2\omega_2 + \tfrac{3}{4}\omega_4\omega_1 - \tfrac{15}{4}\omega_3 + 2\omega_4\omega_1 u^2\omega_2 - \tfrac{15}{4}\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1\omega_2 + \omega_3\omega_4\omega_1 u - \tfrac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_4 u\omega_2^2 + 2\omega_3\omega_1 u^2\omega_2 + \omega_3^2 u + \omega_3^2\omega_4 u^2\omega_2 + 6\omega_3\omega_4 u + \tfrac{1}{2}\omega_3^2\omega_1 u - \tfrac{1}{2}\omega_4\omega_1^2 u\omega_2 - v^2\omega_4\omega_1\omega_2 - 2\omega_4\omega_1 u^2 + \tfrac{13}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_4^2 u^2 + 3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2 u\omega_2 + \tfrac{1}{2}v^2\omega_3^2 + \tfrac{1}{2}\omega_3\omega_1^2 u - \tfrac{1}{2}v^2\omega_3^2\omega_2 - \omega_3\omega_1^2 u^2 - \tfrac{3}{4}\omega_4\omega_1\omega_2 + \tfrac{7}{4}\omega_3\omega_1 - \tfrac{1}{2}\omega_4^2\omega_2 + \omega_3\omega_4^2 u^2\omega_2 + v^2\omega_4\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4^2 - \tfrac{11}{4}\omega_4 - \tfrac{7}{2}\omega_4\omega_1 u - \tfrac{1}{2}\omega_4 u\omega_2^2 + \omega_4^2 u + \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 3\omega_3\omega_4\omega_1 u^2 - 7\omega_3\omega_4 u\omega_2 + 2\omega_1\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1 u\omega_2 - \omega_3^2 u\omega_2 + \tfrac{1}{2}\omega_3^2 u^2 - \tfrac{3}{2}\omega_1 + \tfrac{1}{2}\omega_3^2\omega_1 u^2 + \omega_3\omega_4 u^2 - \tfrac{1}{2}\omega_4^2\omega_1 u\omega_2 + 5\omega_1 u + \omega_1^2 u\omega_2 + \tfrac{1}{2}v^2\omega_4^2\omega_2 - \omega_3\omega_4\omega_1 u\omega_2 + \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4\omega_2^2 - \tfrac{1}{2}\omega_3^2\omega_1 u^2\omega_2 - \omega_3\omega_4 u^2\omega_2 - \omega_3\omega_4^2 u^2 - \tfrac{1}{2}\omega_3^2 u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1 u\omega_2^2 - \omega_1^2 u - \tfrac{1}{2}v^2\omega_4^2 - \tfrac{1}{2}\omega_4^2\omega_1 u^2\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1 u + v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_2^2 - 3\omega_3\omega_4\omega_1 u^2\omega_2 - 2\omega_1^2 u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u\omega_2^2 - 2\omega_3\omega_1 u^2 - \omega_3^2\omega_4 u^2 + 3\omega_3 u\omega_2 + \tfrac{3}{2}\omega_3\omega_4^2 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 + \tfrac{13}{4}\omega_4\omega_2 + v^2\omega_3\omega_2^2 - \tfrac{3}{4}\omega_3\omega_4\omega_1 + v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1\omega_2^2 - 6\omega_1 u\omega_2 + \omega_2^2 - 4\omega_2 - \tfrac{5}{2}\omega_4 u + \tfrac{1}{2}\omega_4\omega_1^2 u + \tfrac{1}{2}\omega_3^2\omega_4\omega_2 - \tfrac{9}{4}\omega_3\omega_1\omega_2 + \omega_1 u\omega_2^2 + \omega_4\omega_1^2 u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4 - \omega_4\omega_1^2 u^2 - \tfrac{3}{2}\omega_3^2\omega_4 u - \tfrac{7}{2}\omega_3\omega_1 u + \omega_3\omega_1^2 u^2\omega_2 - \tfrac{1}{2}\omega_3 u\omega_2^2 - \tfrac{1}{2}\omega_4\omega_2^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 - v^2\omega_3\omega_1\omega_2^2 + \tfrac{3}{4}\omega_3^2 + 2\omega_1^2 u^2 - \omega_4^2 u\omega_2 + \tfrac{1}{2}\omega_4^2\omega_1 u^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_2 + 4\omega_4\omega_1 u\omega_2 - v^2\omega_4\omega_2^2 + \tfrac{19}{4}\omega_3\omega_2 - \tfrac{3}{2}\omega_3\omega_4^2 u + \tfrac{3}{2}\omega_3^2\omega_4 u\omega_2 + 4\omega_3\omega_1 u\omega_2 - \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t} = 1 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 + 2v^3\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_1\omega_2 - 2v^3\omega_3\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1 - 2v^3\omega_2^2 - \tfrac{1}{4}v\omega_4^2\omega_1u^2 + \tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2\omega_1 - \tfrac{7}{4}v\omega_3\omega_2 - \tfrac{1}{4}v\omega_4^2\omega_1 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2 + \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 - \tfrac{5}{2}v^2\omega_3\omega_4 + v^3\omega_3\omega_2^2 - v^2\omega_1\omega_2^2 - \tfrac{1}{2}v^2\omega_3\omega_4^2\omega_1 - \tfrac{13}{4}v^2\omega_4\omega_1\omega_2 - 4v^2\omega_2 - v\omega_4\omega_1^2u^2\omega_2 + v\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{1}{4}\omega_4\omega_1u^2 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{4}v^3\omega_3^2\omega_1 + \tfrac{3}{2}v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_4^2u^2 - 2\omega_3{c_s}^2 + \tfrac{1}{2}v\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 + \tfrac{9}{4}v\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4{c_s}^2 - v^3\omega_4\omega_1\omega_2^2 + v\omega_3\omega_1^2u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2 - \tfrac{5}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_4u^2\omega_2 + v^2\omega_3 - \tfrac{1}{4}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{3}{4}\omega_3\omega_1^2u^2 - \tfrac{3}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_4^2\omega_1 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1^2\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_4 - v\omega_3\omega_4{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}v\omega_3^2\omega_1 - \tfrac{3}{4}v\omega_4\omega_2 + 5v^2\omega_1\omega_2 + v^2\omega_2^2 + \tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2 - \tfrac{5}{4}\omega_4 + v^3\omega_4\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3^2\omega_4\omega_1 - 3\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}v^3\omega_3^2 - \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1 - \tfrac{3}{4}\omega_3^2u^2 - \omega_1 + \tfrac{3}{4}\omega_3^2\omega_1u^2 + \tfrac{3}{2}v^3\omega_3\omega_2 + \tfrac{1}{4}v^3\omega_4^2\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4^2 - \tfrac{1}{2}v\omega_3^2\omega_1u^2\omega_2 + \tfrac{1}{4}v\omega_4^2 - \tfrac{1}{2}v^2\omega_4^2\omega_2 - \tfrac{5}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{2}v\omega_3^2u^2\omega_2 + \tfrac{1}{2}v\omega_1^2\omega_2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}v\omega_4^2\omega_1u^2\omega_2 + \tfrac{1}{2}v^3\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 + \omega_3u^2 - \tfrac{1}{4}v\omega_3^2u^2 - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + 2v^3\omega_1\omega_2^2 + \tfrac{1}{4}v\omega_3^2\omega_1u^2 + \tfrac{11}{4}v^2\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3^2\omega_1 - \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1 - \tfrac{5}{2}v\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2 + \tfrac{5}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{2}v^3\omega_3\omega_4 + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_2^2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{13}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1^2 - v^3\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}v\omega_3\omega_1 - v^2\omega_1^2\omega_2 + \tfrac{1}{2}v\omega_3u^2\omega_2 - \tfrac{1}{2}\omega_2 + \tfrac{3}{4}v\omega_4\omega_1\omega_2 - \tfrac{3}{2}v^3\omega_3\omega_1\omega_2 + 2v\omega_2 + 3v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \omega_4u^2 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{4}\omega_4u^2\omega_2 - \tfrac{1}{4}v^3\omega_4^2 - \tfrac{1}{2}v^3\omega_4^2\omega_2 + \tfrac{5}{2}\omega_3\omega_4{c_s}^2 + \tfrac{3}{4}\omega_4\omega_1^2u^2 + \tfrac{1}{2}v\omega_3\omega_4 - \tfrac{1}{2}v\omega_3\omega_1^2\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 + \tfrac{1}{4}v\omega_3^2 + \tfrac{1}{4}v\omega_4^2u^2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 + \tfrac{11}{4}v^2\omega_3\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_4^2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2 + v^2\omega_4 + \tfrac{3}{2}v\omega_4\omega_1u^2\omega_2 - \tfrac{3}{4}\omega_4^2\omega_1u^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_4\omega_2^2 + \tfrac{1}{4}\omega_3\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_4^2u^2\omega_2 - v\omega_3{c_s}^2\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2 - \tfrac{3}{2}v\omega_3\omega_1u^2\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_1\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 + v\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_3],t-3\delta_t} = 3 + \tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \tfrac{5}{2}v\omega_4 + \tfrac{1}{2}\omega_4^2u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_2 + \tfrac{13}{4}\omega_4\omega_1 - \tfrac{15}{4}\omega_3 - \omega_4\omega_1u^2\omega_2 + v^2\omega_3^2\omega_4\omega_1 - \tfrac{3}{4}\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1\omega_2 - \tfrac{7}{2}v\omega_3\omega_2 - v\omega_4^2\omega_1 + \omega_3\omega_1u^2\omega_2 + \omega_1^2 + v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 + \tfrac{1}{2}v\omega_4\omega_2^2 + v^2\omega_3\omega_4^2\omega_1 + 2v^2\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2\omega_2 + v\omega_3\omega_4\omega_1^2 + \omega_4\omega_1u^2 + \tfrac{13}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4^2u^2 + \tfrac{1}{2}v^2\omega_3^2 + 4v\omega_3\omega_1\omega_2 - \tfrac{3}{2}v\omega_3^2\omega_4 - \omega_3\omega_1^2 + \tfrac{1}{2}v^2\omega_3^2\omega_2 + \omega_3\omega_1^2u^2 - \tfrac{1}{2}v\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_1 - \tfrac{3}{4}\omega_4\omega_1\omega_2 + \tfrac{19}{4}\omega_3\omega_1 - v\omega_3^2\omega_1 - \tfrac{7}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 + v^2\omega_4\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4^2 - \tfrac{11}{4}\omega_4 - 7v\omega_3\omega_4\omega_1 - \tfrac{1}{2}v\omega_4\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4\omega_1 + 3v^2\omega_3\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 2\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_2^2 + \tfrac{1}{2}\omega_3^2u^2 - 4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_1u^2 - v^2\omega_3\omega_4^2 - \tfrac{1}{2}v\omega_4^2\omega_1\omega_2 + v\omega_4^2 + \tfrac{1}{2}v^2\omega_4^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 + v\omega_1^2\omega_2 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_1^2 + \tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2 - \tfrac{1}{2}\omega_3^2u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2 - \tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2 + \tfrac{3}{2}v\omega_3^2\omega_4\omega_1 - 2v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - 6v\omega_1\omega_2 - \omega_3\omega_1u^2 - \tfrac{3}{2}v\omega_3\omega_4^2 - \tfrac{5}{2}v\omega_3 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{3}{4}\omega_4\omega_2 - v^2\omega_3\omega_2^2 - \tfrac{15}{4}\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_1\omega_2 - v\omega_2^2 + 3v\omega_3\omega_1 + \tfrac{1}{2}v\omega_4^2\omega_2 - \tfrac{3}{2}\omega_2 + \tfrac{3}{2}v\omega_3\omega_4^2\omega_1 + 4v\omega_4\omega_1\omega_2 + 5v\omega_2 - v^2\omega_3\omega_4\omega_1 - \tfrac{9}{4}\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_1^2 + \omega_4\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4 - \tfrac{1}{2}v\omega_4\omega_1\omega_2^2 - \omega_4\omega_1^2u^2 + 6v\omega_3\omega_4 - \tfrac{1}{2}v\omega_3\omega_1^2\omega_2 - \omega_3\omega_1^2u^2\omega_2 + v\omega_3^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 - 2v^2\omega_3\omega_2 - 3v^2\omega_3\omega_4\omega_1\omega_2 + v^2\omega_3\omega_1\omega_2^2 + \tfrac{3}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4^2\omega_1u^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 + v\omega_1\omega_2^2 - v\omega_3\omega_4\omega_1\omega_2 - v^2\omega_4\omega_2^2 + \tfrac{7}{4}\omega_3\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 + \tfrac{1}{2}v\omega_3^2\omega_2 + 3v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3^2\omega_1\omega_2 + v\omega_3\omega_4\omega_2 - v^2\omega_3^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t} = v\omega_4 - v\omega_3\omega_4\omega_1^2\omega_2 + 7v\omega_3\omega_2 + v\omega_4^2\omega_1 + v\omega_3\omega_4^2\omega_2 - v\omega_3\omega_4^2\omega_1\omega_2 - v\omega_4\omega_2^2 - 8v\omega_3\omega_1\omega_2 + v\omega_3^2\omega_4\omega_2 + v\omega_3^2\omega_4 + v\omega_3\omega_1\omega_2^2 + v\omega_3^2\omega_1 + 7v\omega_4\omega_2 + 2v\omega_3\omega_4\omega_1 + v\omega_4\omega_1^2\omega_2 - v\omega_3\omega_2^2 + v\omega_4^2\omega_1\omega_2 - v\omega_3^2\omega_4\omega_1\omega_2 - v\omega_4^2 - v\omega_1^2\omega_2 + v\omega_3\omega_4\omega_2^2 - v\omega_3^2\omega_4\omega_1 - v\omega_3\omega_4\omega_1\omega_2^2 + 7v\omega_1\omega_2 + v\omega_3\omega_4^2 + v\omega_3 + v\omega_2^2 - v\omega_3\omega_1 - v\omega_4^2\omega_2 - v\omega_3\omega_4^2\omega_1 - 8v\omega_4\omega_1\omega_2 - 6v\omega_2 + v\omega_4\omega_1\omega_2^2 - 2v\omega_3\omega_4 + v\omega_3\omega_1^2\omega_2 - v\omega_3^2 - v\omega_1\omega_2^2 + 9v\omega_3\omega_4\omega_1\omega_2 - v\omega_3^2\omega_2 - v\omega_4\omega_1 + v\omega_3^2\omega_1\omega_2 - 8v\omega_3\omega_4\omega_2,$$

$$\alpha_{x,y}^{[\mu_3],t-4\delta_t} = -4 - 8\omega_3\omega_4\omega_1\omega_2 + \omega_3^2\omega_2 - 6\omega_4\omega_1 + 5\omega_3 + 7\omega_3\omega_4\omega_2 - \omega_3^2\omega_1\omega_2 + \omega_1\omega_2^2 - \omega_1^2 - \omega_3\omega_1^2\omega_2 - 6\omega_3\omega_4 - \omega_4\omega_1\omega_2^2 + \omega_3\omega_1^2 - \omega_3\omega_4^2\omega_1 + 7\omega_4\omega_1\omega_2 - 6\omega_3\omega_1 + \omega_4^2\omega_2 + \omega_3\omega_4^2 + 5\omega_4 - \omega_3^2\omega_4\omega_1 - 6\omega_1\omega_2 + 5\omega_1 + \omega_3\omega_4\omega_1\omega_2^2 + \omega_4\omega_1^2 - \omega_4^2 - \omega_3\omega_4\omega_2^2 + \omega_1^2\omega_2 - \omega_4^2\omega_1\omega_2 + \omega_3^2\omega_4\omega_1\omega_2 + \omega_3\omega_2^2 + \omega_3^2\omega_1 - 6\omega_4\omega_2 + 7\omega_3\omega_4\omega_1 - \omega_4\omega_1^2\omega_2 - \omega_3\omega_1\omega_2^2 - \omega_2^2 + 5\omega_2 - \omega_3^2\omega_4\omega_2 + 7\omega_3\omega_1\omega_2 + \omega_3^2\omega_4 + \omega_3\omega_4^2\omega_1\omega_2 + \omega_4\omega_2^2 - \omega_3^2 - \omega_3\omega_4\omega_1^2 + \omega_3\omega_4\omega_1^2\omega_2 - \omega_3\omega_4^2\omega_2 - 6\omega_3\omega_2 + \omega_4^2\omega_1,$$

8.5 EFDE for μ_4

$$\mu_{4,x,y}^{t+\delta_t} = \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t} + \sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_4],t-\ell\delta_t}\mu_{4,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$$\alpha^{[\mu_1],t}_{x-\delta_l,y} = 1+\omega_1u^2-\tfrac{1}{4}\omega_3+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{4}v^2\omega_3-\tfrac{1}{4}\omega_4-\tfrac{1}{2}\omega_1-\tfrac{1}{2}\omega_1u-\tfrac{1}{4}\omega_3u^2+\tfrac{1}{2}\omega_4u-\tfrac{1}{4}\omega_4u^2+\tfrac{1}{4}v^2\omega_4+\tfrac{1}{2}\omega_3u.$$

$$\alpha^{[\mu_1],t}_{x+\delta_l,y} = 1+\omega_1u^2-\tfrac{1}{4}\omega_3+\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{4}v^2\omega_3-\tfrac{1}{4}\omega_4-\tfrac{1}{2}\omega_1+\tfrac{1}{2}\omega_1u-\tfrac{1}{4}\omega_3u^2-\tfrac{1}{2}\omega_4u-\tfrac{1}{4}\omega_4u^2+\tfrac{1}{4}v^2\omega_4-\tfrac{1}{2}\omega_3u.$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y-\delta_l} = {}&-1-\tfrac{1}{8}\omega_4^2u^3+\tfrac{1}{4}\omega_4\omega_1u^3+\tfrac{1}{2}\omega_3{c_s}^2\omega_1u-v\omega_4-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{4}\omega_3-\tfrac{1}{4}v\omega_3\omega_2+\tfrac{1}{8}\omega_3^2u-\tfrac{1}{8}v^2\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_4u+\\&\tfrac{1}{2}v\omega_3\omega_1u-v^2\omega_2+\tfrac{1}{8}\omega_4\omega_1u^2-\tfrac{1}{2}v^3\omega_4\omega_2-\tfrac{1}{8}\omega_3\omega_4+\tfrac{1}{8}\omega_4^2u^2+\tfrac{1}{8}v^2\omega_3^2u-\tfrac{1}{2}\omega_3{c_s}^2+\tfrac{1}{4}\omega_4u\omega_2+\tfrac{1}{4}v\omega_3^2{c_s}^2+\\&\tfrac{1}{4}v^2\omega_3^2-\tfrac{1}{4}v^2\omega_4\omega_1u-\tfrac{1}{4}v\omega_3\omega_4{c_s}^2-\tfrac{1}{8}v^2\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3-\tfrac{1}{2}v^2\omega_4u\omega_2-\tfrac{1}{2}v\omega_1u\omega_2+\tfrac{1}{8}\omega_3^2u^3-\tfrac{1}{8}\omega_3\omega_1+\tfrac{1}{2}v^2\omega_1\omega_2+\\&\tfrac{1}{4}v\omega_3u\omega_2+\tfrac{3}{4}\omega_4-\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{8}\omega_4^2u-\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{8}v^3\omega_3^2+\tfrac{1}{8}v^2\omega_4^2u+\tfrac{1}{2}\omega_1-\tfrac{1}{8}\omega_3\omega_4u^2+\tfrac{1}{2}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u+\\&\omega_1u+\tfrac{3}{8}v\omega_4^2-\tfrac{1}{8}v^2\omega_3\omega_1-\tfrac{1}{8}\omega_4^2+\tfrac{1}{4}\omega_3u^2-\tfrac{1}{4}\omega_3\omega_1u^3-\tfrac{1}{8}v\omega_3^2u^2-\tfrac{3}{8}v^2\omega_4^2+\tfrac{1}{4}v\omega_3\omega_4u^2+\tfrac{3}{4}v^2\omega_4\omega_2-\tfrac{1}{4}v\omega_1\omega_2-\\&\tfrac{1}{8}\omega_3\omega_1u^2+\tfrac{1}{4}\omega_3u\omega_2+\tfrac{1}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_4^2u-\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{2}v\omega_4\omega_1u-\tfrac{1}{2}\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_1+\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_4u-\\&\tfrac{1}{4}v^2\omega_3\omega_1u+\tfrac{1}{2}v\omega_2-\tfrac{1}{4}\omega_4u^2-\tfrac{1}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{4}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}v\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_1u-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2-\\&\tfrac{1}{4}\omega_3\omega_4{c_s}^2u-\tfrac{1}{4}\omega_3^2{c_s}^2u+\tfrac{1}{4}v\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2+v^2\omega_1u\omega_2-\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{4}v^2\omega_4-\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{1}{4}v\omega_4\omega_1-\tfrac{1}{2}\omega_3u,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y-\delta_l} = {}&1+v\omega_4+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}v\omega_3\omega_2-\tfrac{1}{2}v\omega_3\omega_1u-\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{4}\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_3^2+v\omega_1u\omega_2+\\&\tfrac{1}{4}v\omega_4\omega_2-\tfrac{1}{2}v\omega_3u\omega_2-\omega_4+\tfrac{1}{4}\omega_4\omega_1u-\tfrac{1}{2}\omega_4^2u+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2u^2-\tfrac{1}{2}\omega_1-\omega_1u-\tfrac{1}{2}v\omega_4^2+\tfrac{1}{4}\omega_4^2+\tfrac{1}{4}v^2\omega_4^2-\\&\tfrac{1}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1u^2-\tfrac{1}{4}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u+\tfrac{1}{4}\omega_4\omega_2-\tfrac{1}{2}v\omega_4\omega_1u+\tfrac{1}{2}\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{1}{2}\omega_2+\\&\omega_4u-v\omega_2+\tfrac{1}{4}\omega_3\omega_1u-\tfrac{1}{2}v\omega_4u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_2+\tfrac{1}{2}v\omega_3^2u-\tfrac{1}{4}v\omega_4\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_4],t-\delta_t}_{x,y-\delta_l} = {}&1+\tfrac{1}{2}v\omega_4-\tfrac{5}{4}\omega_3+\tfrac{1}{2}v\omega_3\omega_2+v^2\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_4+v^2\omega_3^2+\tfrac{1}{2}v\omega_4\omega_2+2v^2\omega_2^2-\tfrac{1}{4}\omega_4-v^2\omega_4\omega_2+\tfrac{5}{2}v\omega_3+\\&v\omega_2^2-\tfrac{1}{2}\omega_2-3v\omega_2-v\omega_3\omega_4-v\omega_3^2-3v^2\omega_3\omega_2+\tfrac{1}{4}\omega_3^2+\tfrac{1}{2}\omega_3\omega_2,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y-\delta_l} = {}&-1+\tfrac{1}{8}\omega_4^2u^3-\tfrac{1}{4}\omega_4\omega_1u^3-\tfrac{1}{2}\omega_3{c_s}^2\omega_1u-v\omega_4-\tfrac{1}{8}\omega_4\omega_1+\tfrac{1}{4}\omega_3-\tfrac{1}{4}v\omega_3\omega_2-\tfrac{1}{8}\omega_3^2u-\tfrac{1}{8}v^2\omega_3\omega_4-\tfrac{1}{4}\omega_3\omega_4u-\\&\tfrac{1}{2}v\omega_3\omega_1u-v^2\omega_2+\tfrac{1}{8}\omega_4\omega_1u^2-\tfrac{1}{2}v^3\omega_4\omega_2-\tfrac{1}{8}\omega_3\omega_4+\tfrac{1}{8}\omega_4^2u^2-\tfrac{1}{8}v^2\omega_3^2u-\tfrac{1}{2}\omega_3{c_s}^2-\tfrac{1}{4}\omega_4u\omega_2+\tfrac{1}{4}v\omega_3^2{c_s}^2+\\&\tfrac{1}{4}v^2\omega_3^2+\tfrac{1}{4}v^2\omega_4\omega_1u-\tfrac{1}{4}v\omega_3\omega_4{c_s}^2-\tfrac{1}{8}v^2\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3+\tfrac{1}{2}v^2\omega_4u\omega_2+\tfrac{1}{2}v\omega_1u\omega_2-\tfrac{1}{8}\omega_3^2u^3-\tfrac{1}{8}\omega_3\omega_1+\tfrac{1}{2}v^2\omega_1\omega_2-\\&\tfrac{1}{4}v\omega_3u\omega_2+\tfrac{3}{4}\omega_4+\tfrac{1}{4}\omega_4\omega_1u-\tfrac{1}{8}\omega_4^2u-\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{8}v^3\omega_3^2-\tfrac{1}{8}v^2\omega_4^2u+\tfrac{1}{2}\omega_1-\tfrac{1}{8}\omega_3\omega_4u^2+\tfrac{1}{2}v^3\omega_3\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4u-\\&\omega_1u+\tfrac{3}{8}v\omega_4^2-\tfrac{1}{8}v^2\omega_3\omega_1-\tfrac{1}{8}\omega_4^2+\tfrac{1}{4}\omega_3u^2+\tfrac{1}{4}\omega_3\omega_1u^3-\tfrac{1}{8}v\omega_3^2u^2-\tfrac{3}{8}v^2\omega_4^2+\tfrac{1}{4}v\omega_3\omega_4u^2+\tfrac{3}{4}v^2\omega_4\omega_2-\tfrac{1}{4}v\omega_1\omega_2-\\&\tfrac{1}{8}\omega_3\omega_1u^2-\tfrac{1}{4}\omega_3u\omega_2+\tfrac{1}{4}\omega_3{c_s}^2\omega_1+\tfrac{1}{4}v\omega_4^2u-\tfrac{1}{4}\omega_4\omega_2-\tfrac{1}{2}v\omega_4\omega_1u+\tfrac{1}{2}\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_1+\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_4u+\\&\tfrac{1}{4}v^2\omega_3\omega_1u+\tfrac{1}{2}v\omega_2-\tfrac{1}{4}\omega_4u^2+\tfrac{1}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{4}\omega_3\omega_4{c_s}^2+\tfrac{1}{4}v\omega_3\omega_4+\tfrac{1}{4}\omega_3\omega_1u-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2+\\&\tfrac{1}{4}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2{c_s}^2u-\tfrac{1}{4}v\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2-v^2\omega_1u\omega_2+\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{4}v^2\omega_4+\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{1}{4}v\omega_4\omega_1+\tfrac{1}{2}\omega_3u,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_4],t-\delta_t}_{x+\delta_l,y-\delta_l} = {}&1+v\omega_4+\tfrac{1}{4}\omega_4\omega_1+\tfrac{1}{4}v\omega_3\omega_2+\tfrac{1}{2}v\omega_3\omega_1u-\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_4^2u^2+\tfrac{1}{4}\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_3^2-v\omega_1u\omega_2+\\&\tfrac{1}{4}v\omega_4\omega_2+\tfrac{1}{2}v\omega_3u\omega_2-\omega_4-\tfrac{1}{4}\omega_4\omega_1u+\tfrac{1}{2}\omega_4^2u+\tfrac{1}{4}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2u^2-\tfrac{1}{2}\omega_1+\omega_1u-\tfrac{1}{2}v\omega_4^2+\tfrac{1}{4}\omega_4^2+\tfrac{1}{4}v^2\omega_4^2-\\&\tfrac{1}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1u^2+\tfrac{1}{4}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u+\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{2}v\omega_4\omega_1u-\tfrac{1}{2}\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{1}{2}\omega_2-\\&\omega_4u-v\omega_2-\tfrac{1}{4}\omega_3\omega_1u+\tfrac{1}{2}v\omega_4u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_2-\tfrac{1}{2}v\omega_3^2u-\tfrac{1}{4}v\omega_4\omega_1,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x-\delta_l,y} = {}&-1+\omega_4\omega_1u^3-2\omega_3{c_s}^2\omega_1u+2\omega_1u^2+\tfrac{1}{4}\omega_3+\tfrac{1}{4}v^2\omega_3\omega_4+2v^2\omega_2-\tfrac{1}{2}\omega_4\omega_1u^2-\tfrac{1}{2}v^2\omega_3^2u+2\omega_3{c_s}^2+\\&\tfrac{1}{4}v^2\omega_3^2-\tfrac{1}{2}\omega_3\omega_4u^3-v^2\omega_3+v^2\omega_4u\omega_2-\tfrac{1}{2}\omega_3^2u^3-v^2\omega_1\omega_2+\tfrac{1}{4}\omega_4+\tfrac{1}{4}\omega_3^2u^2+\tfrac{1}{2}\omega_1+\tfrac{1}{4}\omega_3\omega_4u^2-\tfrac{1}{2}v^2\omega_3\omega_4u+\\&\omega_1u+\tfrac{1}{2}v^2\omega_3\omega_1-\omega_3u^2+2\omega_3\omega_1u^3-\tfrac{1}{2}v^2\omega_4\omega_2-\omega_3{c_s}^2\omega_1-\tfrac{1}{2}\omega_4u+v^2\omega_3\omega_1u-\tfrac{1}{2}\omega_3^2{c_s}^2+v^2\omega_3u\omega_2-\\&2\omega_1^2u^3-\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\omega_3\omega_4{c_s}^2u+\omega_3^2{c_s}^2u-\tfrac{1}{2}v^2\omega_3\omega_2-2v^2\omega_1u\omega_2-\omega_1^2u^2-\tfrac{1}{2}\omega_3u,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_4],t-\delta_t}_{x-\delta_l,y} = {}&1-\tfrac{5}{4}\omega_3-\omega_3^2u-\omega_3\omega_4u-\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_3\omega_1-\tfrac{1}{4}\omega_4+\tfrac{1}{2}\omega_4\omega_1u+\omega_3^2u^2-\tfrac{1}{2}\omega_1+\omega_3\omega_4u^2-\\&3\omega_1u+\omega_1^2u-3\omega_3\omega_1u^2+\tfrac{1}{2}\omega_4u+\tfrac{1}{2}\omega_3\omega_1u+\tfrac{1}{4}\omega_3^2+2\omega_1^2u^2+\tfrac{5}{2}\omega_3u,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x,y} = {}&-2-2\omega_1u^2-\tfrac{1}{2}\omega_4\omega_1+\tfrac{1}{2}\omega_3-\omega_1^2-\tfrac{7}{2}\omega_4\omega_1u^2+\omega_4^2u^2-\omega_3{c_s}^2+\tfrac{1}{2}v^2\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3-\tfrac{1}{2}\omega_3\omega_1+\tfrac{1}{2}\omega_4+\\&\omega_3^2u^2+3\omega_1+2\omega_3\omega_4u^2-\tfrac{1}{2}v^2\omega_3\omega_1+\tfrac{1}{2}\omega_3u^2-\tfrac{7}{2}\omega_3\omega_1u^2+\omega_3{c_s}^2\omega_1+\tfrac{1}{2}\omega_4u^2-\tfrac{1}{2}v^2\omega_4+4\omega_1^2u^2,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_4],t-\delta_t}_{x,y} = {}&2+\omega_1^2-2v^2\omega_3\omega_4+4\omega_4\omega_1u^2-\omega_4^2u^2-v^2\omega_3^2-4v^2\omega_2^2-\omega_3^2u^2-2\omega_1-2\omega_3\omega_4u^2-v^2\omega_4^2+4v^2\omega_4\omega_2+\\&4\omega_3\omega_1u^2+\omega_2^2-2\omega_2+4v^2\omega_3\omega_2-4\omega_1^2u^2,\end{aligned}$$

$$\begin{aligned}\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y} = {}&-1-\omega_4\omega_1u^3+2\omega_3{c_s}^2\omega_1u+2\omega_1u^2+\tfrac{1}{4}\omega_3+\tfrac{1}{4}v^2\omega_3\omega_4+2v^2\omega_2-\tfrac{1}{2}\omega_4\omega_1u^2+\tfrac{1}{2}v^2\omega_3^2u+2\omega_3{c_s}^2+\end{aligned}$$

$\frac{1}{4}v^2\omega_3^2 + \frac{1}{2}\omega_3\omega_4u^3 - v^2\omega_3 - v^2\omega_4u\omega_2 + \frac{1}{2}\omega_3^2u^3 - v^2\omega_1\omega_2 + \frac{1}{4}\omega_4 + \frac{1}{4}\omega_3^2u^2 + \frac{1}{2}\omega_1 + \frac{1}{4}\omega_3\omega_4u^2 + \frac{1}{2}v^2\omega_3\omega_4u - \omega_1u + \frac{1}{2}v^2\omega_3\omega_1 - \omega_3u^2 - 2\omega_3\omega_1u^3 - \frac{1}{2}v^2\omega_4\omega_2 - \omega_3{c_s}^2\omega_1 + \frac{1}{2}\omega_4u - v^2\omega_3\omega_1u - \frac{1}{2}\omega_3^2{c_s}^2 - v^2\omega_3u\omega_2 + 2\omega_1^2u^3 - \frac{1}{2}\omega_3\omega_4{c_s}^2 - \omega_3\omega_4{c_s}^2u - \omega_3^2{c_s}^2u - \frac{1}{2}v^2\omega_3\omega_2 + 2v^2\omega_1u\omega_2 - \omega_1^2u^2 + \frac{1}{2}\omega_3u,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-\delta_t} = 1 - \frac{5}{4}\omega_3 + \omega_3^2u + \omega_3\omega_4u - \omega_4\omega_1u^2 + \frac{1}{4}\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_1 - \frac{1}{4}\omega_4 - \frac{1}{2}\omega_4\omega_1u + \omega_3^2u^2 - \frac{1}{2}\omega_1 + \omega_3\omega_4u^2 + 3\omega_1u - \omega_1^2u - 3\omega_3\omega_1u^2 - \frac{1}{2}\omega_4u - \frac{1}{2}\omega_3\omega_1u + \frac{1}{4}\omega_3^2 + 2\omega_1^2u^2 - \frac{5}{2}\omega_3u,$

$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \frac{1}{8}\omega_4^2u^3 + \frac{1}{4}\omega_4\omega_1u^3 + \frac{1}{2}\omega_3{c_s}^2\omega_1u + v\omega_4 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3 + \frac{1}{4}v\omega_3\omega_2 + \frac{1}{8}\omega_3^2u - \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4u - \frac{1}{2}v\omega_3\omega_1u - v^2\omega_2 + \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}v^3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2u^2 + \frac{1}{8}v^2\omega_3^2u - \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v\omega_3^2{c_s}^2 + \frac{1}{4}v^2\omega_3^2 - \frac{1}{4}v^2\omega_4\omega_1u + \frac{1}{4}v\omega_3\omega_4{c_s}^2 - \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{4}v^2\omega_3 - \frac{1}{2}v^2\omega_4u\omega_2 + \frac{1}{2}v\omega_1u\omega_2 + \frac{1}{8}\omega_3^2u^3 - \frac{1}{8}\omega_3\omega_1 + \frac{1}{2}v^2\omega_1\omega_2 - \frac{1}{4}v\omega_3u\omega_2 + \frac{3}{4}\omega_4 - \frac{1}{4}\omega_4\omega_1u + \frac{1}{8}\omega_4^2u - \frac{1}{4}\omega_1\omega_2 + \frac{1}{8}v^3\omega_3^2 + \frac{1}{8}v^2\omega_4^2u + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4u^2 - \frac{1}{2}v^3\omega_3\omega_2 + \frac{1}{4}v^2\omega_3\omega_4u + \omega_1u - \frac{3}{8}v\omega_4^2 - \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{8}\omega_4^2 + \frac{1}{4}\omega_3u^2 - \frac{1}{4}\omega_3\omega_1u^3 + \frac{1}{8}v\omega_3^2u^2 - \frac{3}{8}v^2\omega_4^2 - \frac{1}{4}v\omega_3\omega_4u^2 + \frac{3}{4}v^2\omega_4\omega_2 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{4}\omega_3u\omega_2 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v\omega_4^2u - \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u + \frac{1}{2}\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_1 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4u + \frac{1}{4}v^2\omega_3\omega_1u - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_3u\omega_2 - \frac{1}{8}v^3\omega_4^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}v\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_1u + \frac{1}{8}v\omega_3^2 + \frac{1}{8}v\omega_4^2u^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2{c_s}^2u + \frac{1}{4}v\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3\omega_2 - v^2\omega_1u\omega_2 - \frac{1}{4}v\omega_3^2u + \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4u - \frac{1}{4}v\omega_4\omega_1 + \frac{1}{2}\omega_3u,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - v\omega_4 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}v\omega_3\omega_2 - \frac{1}{2}v\omega_3\omega_1u - \frac{1}{2}\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2u^2 - \frac{1}{4}\omega_4u\omega_2 + \frac{1}{4}v^2\omega_3^2 - v\omega_1u\omega_2 - \frac{1}{4}v\omega_4\omega_2 + \frac{1}{2}v\omega_3u\omega_2 - \omega_4 + \frac{1}{4}\omega_4\omega_1u - \frac{1}{2}\omega_4^2u + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_1 - \omega_1u + \frac{1}{2}v\omega_4^2 + \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4^2 - \frac{1}{2}v^2\omega_4\omega_2 - \frac{1}{2}v\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1u^2 - \frac{1}{4}\omega_3u\omega_2 - \frac{1}{2}v\omega_4^2u + \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u + \frac{1}{2}\omega_1u\omega_2 + \frac{1}{4}v\omega_3\omega_1 - \frac{1}{2}\omega_2 + \omega_4u + v\omega_2 + \frac{1}{4}\omega_3\omega_1u + \frac{1}{2}v\omega_4u\omega_2 + \frac{1}{2}v^2\omega_3\omega_2 - \frac{1}{2}v\omega_3^2u + \frac{1}{4}v\omega_4\omega_1,$

$\alpha_{x,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - \frac{1}{2}v\omega_4 - \frac{5}{4}\omega_3 - \frac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 - \frac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \frac{1}{4}\omega_4 - v^2\omega_4\omega_2 - \frac{5}{2}v\omega_3 - v\omega_2^2 - \frac{1}{2}\omega_2 + 3v\omega_2 + v\omega_3\omega_4 + v\omega_3^2 - 3v^2\omega_3\omega_2 + \frac{1}{4}\omega_3^2 + \frac{1}{2}\omega_3\omega_2,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \frac{1}{8}\omega_4^2u^3 - \frac{1}{4}\omega_4\omega_1u^3 - \frac{1}{2}\omega_3{c_s}^2\omega_1u + v\omega_4 - \frac{1}{8}\omega_4\omega_1 + \frac{1}{4}\omega_3 + \frac{1}{4}v\omega_3\omega_2 - \frac{1}{8}\omega_3^2u - \frac{1}{8}v^2\omega_3\omega_4 - \frac{1}{4}\omega_3\omega_4u + \frac{1}{2}v\omega_3\omega_1u - v^2\omega_2 + \frac{1}{8}\omega_4\omega_1u^2 + \frac{1}{2}v^3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4 + \frac{1}{8}\omega_4^2u^2 - \frac{1}{8}v^2\omega_3^2u - \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v\omega_3^2{c_s}^2 + \frac{1}{4}v^2\omega_3^2 + \frac{1}{4}v^2\omega_4\omega_1u + \frac{1}{4}v\omega_3\omega_4{c_s}^2 - \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{4}v^2\omega_3 + \frac{1}{2}v^2\omega_4u\omega_2 - \frac{1}{2}v\omega_1u\omega_2 - \frac{1}{8}\omega_3^2u^3 - \frac{1}{8}\omega_3\omega_1 + \frac{1}{2}v^2\omega_1\omega_2 + \frac{1}{4}v\omega_3u\omega_2 + \frac{3}{4}\omega_4 + \frac{1}{4}\omega_4\omega_1u - \frac{1}{8}\omega_4^2u - \frac{1}{4}\omega_1\omega_2 + \frac{1}{8}v^3\omega_3^2 - \frac{1}{8}v^2\omega_4^2u + \frac{1}{2}\omega_1 - \frac{1}{8}\omega_3\omega_4u^2 - \frac{1}{2}v^3\omega_3\omega_2 - \frac{1}{4}v^2\omega_3\omega_4u - \omega_1u - \frac{3}{8}v\omega_4^2 - \frac{1}{8}v^2\omega_3\omega_1 - \frac{1}{8}\omega_4^2 + \frac{1}{4}\omega_3u^2 + \frac{1}{4}\omega_3\omega_1u^3 + \frac{1}{8}v\omega_3^2u^2 - \frac{3}{8}v^2\omega_4^2 - \frac{1}{4}v\omega_3\omega_4u^2 + \frac{3}{4}v^2\omega_4\omega_2 + \frac{1}{4}v\omega_1\omega_2 - \frac{1}{8}\omega_3\omega_1u^2 - \frac{1}{4}\omega_3u\omega_2 + \frac{1}{4}\omega_3{c_s}^2\omega_1 - \frac{1}{4}v\omega_4^2u - \frac{1}{4}\omega_4\omega_2 + \frac{1}{2}v\omega_4\omega_1u + \frac{1}{2}\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_1 + \frac{1}{2}\omega_2 + \frac{1}{2}\omega_4u + \frac{1}{4}v^2\omega_3\omega_1u - \frac{1}{2}v\omega_2 - \frac{1}{4}\omega_4u^2 + \frac{1}{2}v^2\omega_3u\omega_2 - \frac{1}{8}v^3\omega_4^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2 - \frac{1}{4}v\omega_3\omega_4 + \frac{1}{4}\omega_3\omega_1u + \frac{1}{8}v\omega_3^2 + \frac{1}{8}v\omega_4^2u^2 + \frac{1}{4}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2{c_s}^2u + \frac{1}{4}v\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3\omega_2 - v^2\omega_1u\omega_2 - \frac{1}{4}v\omega_3^2u + \frac{1}{4}v^2\omega_4 - \frac{1}{2}v\omega_3\omega_4u - \frac{1}{4}v\omega_4\omega_1 + \frac{1}{2}\omega_3u,$

$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_4],t-\delta_t} = 1 - v\omega_4 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}v\omega_3\omega_2 - \frac{1}{2}v\omega_3\omega_1u - \frac{1}{2}\omega_4\omega_1u^2 + \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}\omega_4u\omega_2 - \frac{1}{4}v^2\omega_3^2 + v\omega_1u\omega_2 - \frac{1}{4}v\omega_4\omega_2 - \frac{1}{2}v\omega_3u\omega_2 - \omega_4 - \frac{1}{4}\omega_4\omega_1u + \frac{1}{2}\omega_4^2u + \frac{1}{4}\omega_1\omega_2 - \frac{1}{4}\omega_3^2u^2 - \frac{1}{2}\omega_1 + \omega_1u + \frac{1}{2}v\omega_4^2 + \frac{1}{4}\omega_4^2 + \frac{1}{4}v^2\omega_4^2 - \frac{1}{2}v^2\omega_4\omega_2 - \frac{1}{2}v\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1u^2 + \frac{1}{4}\omega_3u\omega_2 + \frac{1}{2}v\omega_4^2u + \frac{1}{4}\omega_4\omega_2 - \frac{1}{2}v\omega_4\omega_1u - \frac{1}{2}\omega_1u\omega_2 + \frac{1}{4}v\omega_3\omega_1 - \frac{1}{2}\omega_2 - \omega_4u + v\omega_2 - \frac{1}{4}\omega_3\omega_1u - \frac{1}{2}v\omega_4u\omega_2 + \frac{1}{2}v^2\omega_3\omega_2 + \frac{1}{2}v\omega_3^2u + \frac{1}{4}v\omega_4\omega_1,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \frac{1}{2}v^2\omega_3^2\omega_1u^2 - \frac{1}{4}v\omega_4\omega_1u\omega_2 - \frac{1}{4}\omega_3^2\omega_4{c_s}^2 + \frac{1}{8}\omega_4^2u^3 - \frac{5}{4}\omega_4\omega_1u^3 + \frac{5}{4}\omega_3{c_s}^2\omega_2 + \frac{3}{2}\omega_3{c_s}^2\omega_1u + v\omega_4 - 3\omega_1u^2 + \frac{1}{2}v\omega_3^2{c_s}^2u\omega_2 + \frac{1}{8}\omega_4\omega_1 - \frac{1}{4}\omega_3 - \frac{1}{2}\omega_4\omega_1u^2\omega_2 + \frac{1}{4}v\omega_3\omega_1u\omega_2 - \frac{1}{8}\omega_3\omega_4\omega_1u + \frac{3}{4}v\omega_4^2\omega_1u^2 - \frac{3}{8}v\omega_3\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + v\omega_4\omega_1^2u^3 - \frac{1}{4}\omega_3\omega_1u^2\omega_2 - v^2\omega_3{c_s}^2\omega_2^2 - \frac{1}{8}\omega_3^2u + \frac{1}{4}\omega_3\omega_4^2{c_s}^2u + \frac{3}{2}v^2\omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{8}v^2\omega_3\omega_4 + \frac{1}{4}v^3\omega_3\omega_2^2 - \frac{1}{4}\omega_3\omega_4u - \frac{1}{8}\omega_3^2\omega_1u - \frac{1}{4}v\omega_3^2u^3\omega_2 + \frac{3}{2}v^2\omega_3\omega_1u\omega_2 - \frac{7}{4}v\omega_3\omega_1u - \frac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \frac{1}{2}v\omega_3\omega_4{c_s}^2u\omega_2 - \frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2 + \frac{13}{8}\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4^2{c_s}^2 - \frac{3}{4}v^3\omega_4\omega_2 + \frac{1}{8}\omega_3\omega_4 - \frac{1}{8}\omega_4^2u^2 + \frac{3}{8}v^2\omega_3^2u - 2\omega_3{c_s}^2 - \frac{1}{4}\omega_4u\omega_2 - \frac{1}{2}v\omega_1u\omega_2^2 - \frac{1}{4}v\omega_3^2{c_s}^2 - \frac{1}{2}v^2\omega_3^2 - 2v\omega_1^2u^3\omega_2 + \frac{1}{4}v^2\omega_4\omega_1u + \frac{1}{4}v\omega_3\omega_1\omega_2 - \frac{1}{2}v\omega_3\omega_4u^3\omega_2 - \frac{9}{4}v\omega_3\omega_4{c_s}^2 + \frac{1}{2}v\omega_4\omega_1^2u^2 + \frac{1}{8}v^2\omega_4\omega_1 + \frac{1}{8}v^2\omega_3^2\omega_2 - \frac{5}{4}v\omega_4u^2\omega_2 - \frac{1}{2}v\omega_4^2\omega_1u^3 - \frac{1}{4}v^4\omega_4^2\omega_2 - \frac{1}{2}v\omega_3^2{c_s}^2\omega_2 + \frac{1}{2}\omega_3\omega_4u^3 + v^2\omega_3 - \frac{5}{8}\omega_3u^2\omega_2 + \frac{1}{4}\omega_3^2\omega_1u^3 - \frac{1}{2}v^2\omega_4u\omega_2 + 2v\omega_1u\omega_2 + \omega_3\omega_1u^3\omega_2 - \frac{1}{4}\omega_3\omega_1^2u^2 + \frac{3}{8}\omega_3^2u^3 - \frac{1}{2}v^2\omega_3\omega_4^2{c_s}^2 + \frac{1}{4}v^3\omega_4\omega_1\omega_2 + \frac{3}{8}\omega_3\omega_1 + \frac{1}{4}v\omega_4u^2\omega_2^2 - 2v^2\omega_1u^2\omega_2^2 + \omega_3\omega_4\omega_1u^3 + \frac{1}{4}\omega_3^2\omega_4{c_s}^2u + \frac{1}{8}v\omega_4\omega_2 - \omega_3{c_s}^2\omega_1u\omega_2 + \frac{1}{2}v^2\omega_1\omega_2 + \frac{1}{2}v\omega_3\omega_4^2u^3 - \frac{1}{4}v\omega_3u\omega_2 + \frac{1}{2}\omega_4\omega_1u^3\omega_2 + \frac{3}{2}\omega_1u^2\omega_2 - \frac{3}{4}v\omega_3^2\omega_4u^2 - \frac{5}{2}v\omega_3\omega_1u^2 - \frac{3}{4}\omega_4 - \frac{1}{4}v^3\omega_4\omega_2^2 + \frac{3}{8}\omega_4\omega_1u + v\omega_3\omega_4{c_s}^2\omega_1u - \frac{1}{8}\omega_4^2u + \frac{1}{2}v^2\omega_3u^2\omega_2^2 - \frac{3}{2}v^2\omega_3\omega_4u^2\omega_2 - \frac{1}{8}v^2\omega_3\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_1\omega_2 - v\omega_1^2u^2\omega_2 + \frac{1}{8}v^3\omega_3^2 + \frac{1}{4}v^3\omega_3^2u\omega_2 - \frac{1}{8}v^2\omega_4^2u - \frac{1}{4}\omega_3^2u^2 - \frac{1}{4}v^2\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_3\omega_1^2u^3 - \frac{1}{2}\omega_1 + \frac{1}{2}v\omega_3\omega_4u^2\omega_2 - \frac{1}{4}\omega_3^2\omega_1u^2 -$

$$\tfrac{1}{2}v^2\omega_3^2\omega_4{c_s}^2-\tfrac{11}{8}\omega_3\omega_4u^2+\tfrac{3}{4}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u-\tfrac{1}{2}v^2\omega_3^2\omega_1u-\tfrac{3}{2}\omega_1u-\tfrac{3}{8}v\omega_4^2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{3}{8}v^2\omega_3\omega_1+\tfrac{1}{4}v^4\omega_3^2\omega_2+\tfrac{1}{4}v\omega_3^2u^2\omega_2+\tfrac{1}{2}v\omega_3^2\omega_4u^3-\tfrac{3}{4}v\omega_3\omega_4^2u^2+\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{3}{8}\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}v^3\omega_3^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{4}v\omega_3\omega_4u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4^2u^2-v\omega_3{c_s}^2\omega_1u\omega_2+v\omega_3\omega_4\omega_1u^2+\tfrac{1}{8}\omega_3^2u^2\omega_2+\omega_3u^2-\tfrac{1}{4}\omega_3^2\omega_4u^3-\tfrac{7}{4}\omega_3\omega_1u^3+\tfrac{1}{4}v^2\omega_4^2u\omega_2+\tfrac{1}{8}v\omega_3^2u^2+\tfrac{3}{8}v^2\omega_4^2+\tfrac{9}{4}v\omega_3\omega_4u^2+\tfrac{3}{4}v\omega_3^2\omega_1u^2+v\omega_3\omega_1^2u^3+\tfrac{7}{8}v^2\omega_4\omega_2-\tfrac{1}{4}v\omega_3^2u\omega_2+\tfrac{1}{4}v\omega_1\omega_2-\tfrac{1}{2}\omega_1^2u^2\omega_2+\tfrac{11}{8}\omega_3\omega_1u^2+\tfrac{1}{4}\omega_3^2\omega_4u^2-\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u-2v\omega_3\omega_4\omega_1u^3+5v\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4^2u^3+\tfrac{1}{2}v^2\omega_3^2{c_s}^2\omega_2-\tfrac{1}{4}\omega_3u\omega_2+\tfrac{3}{4}\omega_3{c_s}^2\omega_1+\tfrac{1}{4}v\omega_4^2u-v^2\omega_1u\omega_2^2-\tfrac{1}{4}v\omega_4^2u^3\omega_2+\tfrac{1}{2}v^4\omega_4\omega_2^2+\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2^2+\tfrac{3}{2}v\omega_3\omega_1u^3\omega_2-\tfrac{3}{4}v\omega_4\omega_1u+\tfrac{1}{2}v\omega_3\omega_1^2u^2+\tfrac{3}{4}\omega_1u\omega_2-\tfrac{1}{2}v\omega_3^2\omega_1u^3-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{5}{4}v\omega_3u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_4u-\tfrac{3}{4}v^2\omega_3\omega_1u-v^2\omega_3\omega_4\omega_1u^2+\tfrac{3}{2}v\omega_4\omega_1u^3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_2+2v^2\omega_3\omega_1u^2\omega_2-\omega_1^2u^3\omega_2+\tfrac{1}{4}v\omega_3u^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{4}\omega_4^2\omega_1u^3-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}v^2\omega_3u\omega_2-\tfrac{1}{8}\omega_4u^2\omega_2-\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{2}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+2\omega_1^2u^3+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4+\tfrac{7}{8}\omega_3\omega_1u+\tfrac{1}{2}v^2\omega_4u^2\omega_2^2+\tfrac{1}{8}v\omega_3^2+\tfrac{1}{8}v\omega_4^2u^2+2v^2\omega_4\omega_1u^2\omega_2-\tfrac{3}{4}\omega_3\omega_4{c_s}^2u-v\omega_1u^2\omega_2^2-\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{3}{4}\omega_3^2{c_s}^2u-\tfrac{1}{4}v\omega_4u\omega_2+\tfrac{1}{8}v^2\omega_3\omega_2-\tfrac{1}{4}\omega_3\omega_4u^3\omega_2+v^2\omega_1u\omega_2-\tfrac{5}{2}v\omega_4\omega_1u^2+\tfrac{3}{4}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}v^3\omega_4^2u\omega_2-\tfrac{1}{4}v^2\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^3+\tfrac{1}{4}v\omega_3^2u-\tfrac{1}{2}v^2\omega_4+\omega_1^2u^2-\tfrac{3}{4}v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2+\tfrac{1}{2}v\omega_3^2\omega_1u+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2+\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{1}{2}v^3\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^4\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1+\tfrac{1}{4}v\omega_4^2u^2\omega_2+\tfrac{5}{2}v\omega_3{c_s}^2\omega_2+\tfrac{3}{4}v\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{3}{4}v\omega_3\omega_1u^2\omega_2+\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{1}{2}v^3\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_3u,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x-\delta_l,y-\delta_l}=$$
$$-2+v\omega_4\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2u\omega_2-\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2u+v\omega_3\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1u+\tfrac{1}{2}v\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_4^2u\omega_2-2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2+\omega_3^2u-v^2\omega_3\omega_4+\tfrac{7}{2}\omega_3\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2+\tfrac{1}{2}\omega_4u\omega_2-2v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2-v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1^2u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2+3v\omega_3u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4-2\omega_4\omega_1u-v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2-\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v^2\omega_3^2\omega_1u+4\omega_1u+\tfrac{1}{2}v\omega_4^2+\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2u\omega_2+v\omega_1^2u\omega_2-\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2+\tfrac{1}{4}\omega_4^2\omega_1u-v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{3}{4}v\omega_3^2u\omega_2-2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2-\tfrac{3}{4}v\omega_3\omega_4^2+\tfrac{3}{2}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u-\tfrac{5}{2}v\omega_3+2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1u-v\omega_3\omega_1^2u^2-v\omega_2^2-2\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4u\omega_2+\omega_2-\tfrac{3}{2}\omega_4u-v^2\omega_3u\omega_2^2-v^2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_4\omega_1^2u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{7}{2}v\omega_3\omega_4-\tfrac{3}{4}\omega_3^2\omega_4u-2\omega_3\omega_1u+v\omega_3^2+3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_3^2\omega_1u-5v\omega_3\omega_4u+\tfrac{1}{2}\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2-2v\omega_3\omega_1u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1u-\tfrac{3}{4}\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_4\omega_1u-\tfrac{5}{2}\omega_3u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y-\delta_l}=2-\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+2v\omega_4+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{4}v^2\omega_3\omega_1^2+\tfrac{7}{4}\omega_4\omega_1-\tfrac{1}{2}\omega_3-2\omega_4\omega_1u^2\omega_2+\tfrac{5}{4}v\omega_4^2\omega_1u^2+\tfrac{1}{2}v\omega_3\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1-2\omega_3\omega_1u^2\omega_2+\omega_1^2+\tfrac{1}{4}v^2\omega_3\omega_4+\omega_4\omega_1^2u^4+\tfrac{3}{2}v^2\omega_4\omega_1\omega_2+2v^2\omega_2+v^2\omega_3\omega_1^2u^2+\tfrac{17}{4}\omega_4\omega_1u^2-\tfrac{1}{4}v^3\omega_3^2\omega_1+v^3\omega_4\omega_2+\tfrac{1}{4}\omega_3\omega_4-\tfrac{5}{4}\omega_4^2u^2+\omega_3{c_s}^2-\tfrac{1}{2}v\omega_3^2{c_s}^2-\tfrac{1}{2}v^2\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_1u^4-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2-2v\omega_4\omega_1^2u^2-\omega_3^2\omega_4{c_s}^2u^2-\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{3}{4}v^2\omega_4\omega_1-\tfrac{1}{2}v^2\omega_3+\tfrac{5}{4}\omega_3\omega_1^2u^2-v^3\omega_4\omega_1\omega_2-\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{3}{4}\omega_3\omega_1-\tfrac{1}{4}v^2\omega_4\omega_1^2-\tfrac{1}{4}v\omega_3^2\omega_1-3v^2\omega_1\omega_2-2v\omega_3^2\omega_4u^2-\tfrac{3}{2}\omega_4+\tfrac{1}{2}v\omega_3\omega_4\omega_1-2v^2\omega_3\omega_4u^2\omega_2-\tfrac{11}{4}\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{3}{2}\omega_1\omega_2+2v\omega_1^2u^2\omega_2+\tfrac{1}{4}v^3\omega_3^2-\omega_3\omega_4^2{c_s}^2u^2-\omega_3^2u^2-v^2\omega_4^2u^2\omega_2-3\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4u^2-v^3\omega_3\omega_2+\tfrac{1}{4}v^3\omega_4^2\omega_1-\tfrac{3}{4}v\omega_4^2+\tfrac{3}{4}v^2\omega_3\omega_1-\tfrac{1}{4}\omega_4\omega_1^2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_1^2\omega_2-2v\omega_3\omega_4^2u^2+\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}\omega_1^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1^2+\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2+\omega_3\omega_4^2u^2+\tfrac{11}{2}v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_3u^2+\tfrac{1}{4}v\omega_3^2u^2-2\omega_3{c_s}^2\omega_1^2u^2+\tfrac{3}{4}v^2\omega_4^2-\omega_3\omega_1^2u^4-\tfrac{1}{2}v\omega_3\omega_4u^2+\tfrac{5}{4}v\omega_3^2\omega_1u^2-\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+\tfrac{3}{2}v\omega_1\omega_2+2\omega_1^2u^2\omega_2+\tfrac{15}{4}\omega_3\omega_1u^2+\omega_3^2\omega_4u^2+v^2\omega_4\omega_1^2u^2-\tfrac{3}{2}\omega_3{c_s}^2\omega_1+\tfrac{1}{2}\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1-\tfrac{1}{2}v^2\omega_3\omega_1\omega_2-2v\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_1+v^2\omega_1^2\omega_2-\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^4-3v^2\omega_3\omega_4\omega_1u^2+v^3\omega_3\omega_1\omega_2-v\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1+4v^2\omega_3\omega_1u^2\omega_2+\tfrac{1}{2}v\omega_3\omega_1^2+\tfrac{1}{2}\omega_4u^2-\tfrac{1}{4}v^3\omega_4^2+v^2\omega_3^2\omega_4u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\tfrac{3}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2+\tfrac{1}{4}v\omega_3^2+\tfrac{1}{4}v\omega_4^2u^2+4v^2\omega_4\omega_1u^2\omega_2-\tfrac{3}{4}v^2\omega_4^2\omega_1+\tfrac{1}{2}v^2\omega_3\omega_2-v^2\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4-4\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-\tfrac{3}{4}\omega_4^2\omega_1u^2+v^2\omega_3\omega_4^2u^2+\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}\omega_4^2\omega_1-4v^2\omega_1^2u^2\omega_2-\tfrac{5}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1u^2-2v\omega_3\omega_1u^2\omega_2,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x,y-\delta_l}=-2-2v\omega_4-\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{5}{2}\omega_4\omega_1+2\omega_4\omega_1u^2\omega_2-v\omega_4^2\omega_1u^2-\tfrac{1}{2}v\omega_3\omega_2-v\omega_4^2\omega_1+2\omega_3\omega_1u^2\omega_2-\omega_1^2-v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2+2v\omega_4\omega_1^2u^2+\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{1}{2}v\omega_4\omega_2+2v\omega_3^2\omega_4u^2+$$

$$2\omega_4+3\omega_3\omega_4\omega_1u^2-\tfrac{3}{2}\omega_1\omega_2-4v\omega_1^2u^2\omega_2+\tfrac{3}{2}\omega_3^2u^2+3\omega_1-2v\omega_3\omega_4u^2\omega_2+2\omega_3\omega_4u^2+v\omega_4^2+\tfrac{1}{2}\omega_4\omega_1^2-v\omega_3^2u^2\omega_2+v\omega_1^2\omega_2+2v\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-6v\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2-v\omega_3^2\omega_1{u^2}+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-3v\omega_1\omega_2-2\omega_1^2u^2\omega_2-5\omega_3\omega_1u^2-\omega_3^2\omega_4u^2-\tfrac{1}{2}\omega_4\omega_2+v^2\omega_3\omega_1\omega_2+2v\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_3\omega_1+\omega_2+\tfrac{1}{2}v\omega_4\omega_1\omega_2+2v\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2-2\omega_4\omega_1^2u^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2+4\omega_1^2u^2+4v\omega_4\omega_1u^2\omega_2+\omega_4^2\omega_1u^2+\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{5}{2}v\omega_4\omega_1-v\omega_4^2u^2\omega_2+4v\omega_3\omega_1u^2\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y-\delta_l}=1-\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+\tfrac{1}{4}v\omega_4\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{8}\omega_4^2u^3+\tfrac{5}{4}\omega_4\omega_1u^3+\tfrac{5}{4}\omega_3{c_s}^2\omega_2-\tfrac{3}{2}\omega_3{c_s}^2\omega_1u+v\omega_4-3\omega_1u^2-\tfrac{1}{2}v\omega_3^2{c_s}^2u\omega_2+\tfrac{1}{8}\omega_4\omega_1-\tfrac{1}{4}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}v\omega_3\omega_1u\omega_2+\tfrac{1}{8}\omega_3\omega_4\omega_1u+\tfrac{3}{4}v\omega_4^2\omega_1u^2-\tfrac{3}{8}v\omega_3\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-v\omega_4\omega_1^2u^3-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-v^2\omega_3{c_s}^2\omega_2^2+\tfrac{1}{8}\omega_3^2u-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2u+\tfrac{3}{2}v^2\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{8}v^2\omega_3\omega_4+\tfrac{1}{4}v^3\omega_3\omega_2^2+\tfrac{1}{4}\omega_3\omega_4u+\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{1}{4}v\omega_3^2u^3\omega_2-\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2+\tfrac{7}{4}v\omega_3\omega_1u-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-v^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2+\tfrac{13}{8}\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2-\tfrac{3}{4}v^3\omega_4\omega_2+\tfrac{1}{8}\omega_3\omega_4-\tfrac{1}{8}\omega_4^2u^2-\tfrac{3}{8}v^2\omega_3^2u-2\omega_3{c_s}^2+\tfrac{1}{4}\omega_4u\omega_2+\tfrac{1}{2}v\omega_1u\omega_2^2-\tfrac{1}{4}v\omega_3^2{c_s}^2-\tfrac{1}{2}v^2\omega_3^2+2v\omega_1^2u^3\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1u+\tfrac{1}{4}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4u^3\omega_2-\tfrac{9}{4}v\omega_3\omega_4{c_s}^2+\tfrac{1}{2}v\omega_4\omega_1^2u^2+\tfrac{1}{8}v^2\omega_4\omega_1+\tfrac{1}{8}v^2\omega_3^2\omega_2-\tfrac{5}{4}v\omega_4u^2\omega_2+\tfrac{1}{2}v\omega_4^2\omega_1u^3-\tfrac{1}{4}v^4\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}\omega_3\omega_4u^3+v^2\omega_3-\tfrac{5}{8}\omega_3u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^3+\tfrac{1}{2}v^2\omega_4u\omega_2-2v\omega_1u\omega_2-\omega_3\omega_1u^3\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u^2-\tfrac{3}{8}\omega_3^2u^3-\tfrac{1}{2}v^2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_4\omega_1\omega_2+\tfrac{1}{8}\omega_3\omega_1+\tfrac{1}{4}v\omega_4u^2\omega_2^2-2v^2\omega_1u^2\omega_2^2-\omega_3\omega_4\omega_1u^3-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2u+\tfrac{1}{8}v\omega_4\omega_2+\omega_3{c_s}^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_4^2u^3+\tfrac{1}{4}v\omega_3u\omega_2-\tfrac{1}{2}\omega_4\omega_1u^3\omega_2+\tfrac{3}{2}\omega_1u^2\omega_2-\tfrac{3}{4}v\omega_3^2\omega_4u^2-\tfrac{5}{2}v\omega_3\omega_1u^2-\tfrac{3}{4}\omega_4-\tfrac{1}{4}v^3\omega_4\omega_2^2-\tfrac{3}{8}\omega_4\omega_1u-v\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{1}{8}\omega_4^2u+\tfrac{1}{2}v^2\omega_3u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_4u^2\omega_2-\tfrac{1}{8}v^2\omega_3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_1\omega_2-v\omega_1^2u^2\omega_2+\tfrac{1}{8}v^3\omega_3^2-\tfrac{1}{4}v^3\omega_3^2u\omega_2+\tfrac{1}{8}v^2\omega_4^2u-\tfrac{1}{4}\omega_3^2u^2-\tfrac{1}{4}v^2\omega_4^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^3-\tfrac{1}{2}\omega_1+\tfrac{1}{2}v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\tfrac{1}{2}v^2\omega_3^2\omega_4{c_s}^2-\tfrac{11}{8}\omega_3\omega_4u^2+\tfrac{3}{4}v^3\omega_3\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u+\tfrac{3}{2}\omega_1u-\tfrac{3}{8}v\omega_4^2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{3}{8}v^2\omega_3\omega_1+\tfrac{1}{4}v^4\omega_3^2\omega_2+\tfrac{1}{4}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_3^2\omega_4u^3-\tfrac{3}{4}v\omega_3\omega_4^2u^2+\tfrac{1}{8}\omega_4^2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_2^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{3}{8}\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}v^3\omega_3^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}v\omega_3\omega_4u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4^2u^2+v\omega_3{c_s}^2\omega_1u\omega_2+v\omega_3\omega_4\omega_1u^2+\tfrac{1}{8}\omega_3^2u^2\omega_2+\omega_3u^2+\tfrac{1}{4}\omega_3^2\omega_4u^3+\tfrac{7}{4}\omega_3\omega_1u^3-\tfrac{1}{4}v^2\omega_4^2u\omega_2+\tfrac{1}{8}v\omega_3^2u^2+\tfrac{3}{8}v^2\omega_4^2+\tfrac{9}{4}v\omega_3\omega_4u^2+\tfrac{3}{4}v\omega_3^2\omega_1u^2-v\omega_3\omega_1^2u^3+\tfrac{7}{8}v^2\omega_4\omega_2+\tfrac{1}{4}v\omega_3^2u\omega_2+\tfrac{1}{4}v\omega_1\omega_2-\tfrac{1}{2}\omega_1^2u^2\omega_2+\tfrac{11}{8}\omega_3\omega_1u^2+\tfrac{1}{4}\omega_3^2\omega_4u^2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u+2v\omega_3\omega_4\omega_1u^3+5v\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3\omega_4^2u^3+\tfrac{1}{2}v^2\omega_3^2{c_s}^2\omega_2+\tfrac{1}{4}\omega_3u\omega_2+\tfrac{3}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_4^2u+v^2\omega_1u\omega_2^2+\tfrac{1}{4}v\omega_4^2u^3\omega_2+\tfrac{1}{2}v^4\omega_4\omega_2^2+\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{3}{2}v\omega_3\omega_1u^3\omega_2+\tfrac{3}{4}v\omega_4\omega_1u+\tfrac{1}{2}v\omega_3\omega_1^2u^2-\tfrac{3}{4}\omega_1u\omega_2+\tfrac{1}{2}v\omega_3^2\omega_1u^3-\tfrac{1}{4}v\omega_3\omega_1-\tfrac{5}{4}v\omega_3u^2\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_2-\tfrac{1}{2}\omega_4u+\tfrac{3}{4}v^2\omega_3\omega_1u-v^2\omega_3\omega_4\omega_1u^2-\tfrac{3}{2}v\omega_4\omega_1u^3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_2+2v^2\omega_3\omega_1u^2\omega_2+\omega_1^2u^3\omega_2+\tfrac{1}{4}v\omega_3u^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{4}\omega_4^2\omega_1u^3-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_2+\tfrac{1}{2}v^2\omega_3u\omega_2-\tfrac{1}{8}\omega_4u^2\omega_2-\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{2}v^3\omega_4^2\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u-2\omega_1^2u^3+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4-\tfrac{7}{8}\omega_3\omega_1u+\tfrac{1}{2}v^2\omega_4u^2\omega_2^2+\tfrac{1}{8}v\omega_3^2+\tfrac{1}{8}v\omega_4^2u^2+2v^2\omega_4\omega_1u^2\omega_2+\tfrac{3}{4}\omega_3\omega_4{c_s}^2u-v\omega_1u^2\omega_2^2+\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{3}{4}\omega_3^2{c_s}^2u+\tfrac{1}{4}v\omega_4u\omega_2+\tfrac{1}{8}v^2\omega_3\omega_2+\tfrac{1}{4}\omega_3\omega_4u^3\omega_2-v^2\omega_1u\omega_2-\tfrac{5}{2}v\omega_4\omega_1u^2+\tfrac{3}{4}v\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_4^2u\omega_2-\tfrac{1}{4}v^2\omega_3^2u^2\omega_2+\tfrac{1}{2}\omega_4\omega_1^2u^3-\tfrac{1}{4}v\omega_3^2u-\tfrac{1}{2}v^2\omega_4+\omega_1^2u^2-\tfrac{3}{4}v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2-\tfrac{1}{2}v\omega_3^2\omega_1u-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-\tfrac{1}{2}v\omega_3\omega_4u-\tfrac{1}{2}v^3\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^4\omega_3\omega_2^2+\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1+\tfrac{1}{4}v\omega_4^2u^2\omega_2+\tfrac{5}{2}v\omega_3{c_s}^2\omega_2+\tfrac{3}{4}v\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{3}{4}v\omega_3\omega_1u^2\omega_2+\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^3\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3u,$$

$$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y-\delta_l}=$$
$$-2-v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2-\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u+\tfrac{1}{2}v\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_4^2u\omega_2-2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2-3v\omega_3u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u-v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u+\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2-2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2-\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u-\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u-v\omega_3\omega_1^2u^2-v\omega_2^2+2\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u+v\omega_3^2-3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_3^2\omega_1u+5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+$$

$\frac{1}{2}v\omega_4^2u^2\omega_2 - 2v\omega_3\omega_1u^2\omega_2 - \frac{1}{2}v^2\omega_4^2\omega_1u + \frac{3}{4}\omega_3\omega_4^2u + \frac{1}{2}v\omega_3\omega_4\omega_2 + \frac{1}{2}v^2\omega_3^2\omega_4 - \frac{1}{2}\omega_3\omega_1u\omega_2 + \frac{3}{2}v\omega_3\omega_4\omega_1u + \frac{5}{2}\omega_3u,$

$\alpha_{x-\delta_t,y}^{[\mu_1],t-2\delta_t} = 1 + v^2\omega_3^2\omega_1u^2 + \frac{1}{4}\omega_4^2u^3 - \frac{1}{2}\omega_4\omega_1u^3 - \frac{1}{4}v^2\omega_3^2u\omega_2 - \omega_3{c_s}^2\omega_1u - \omega_1u^2 + \frac{1}{4}\omega_4^2u^2\omega_2 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_4\omega_1u^2\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2\omega_2 + 2v^2\omega_3{c_s}^2\omega_2^2 - \frac{1}{4}\omega_3^2u - 3v^2\omega_3\omega_4{c_s}^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_4 - \frac{1}{2}\omega_3\omega_4u - \omega_1u^2\omega_2^2 - \frac{3}{2}v^2\omega_3\omega_1u\omega_2 + \frac{1}{4}v^2\omega_4\omega_1\omega_2 + 2v^2\omega_2 - \frac{1}{4}\omega_4\omega_1u^2 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4^2u^2 - \frac{1}{4}v^2\omega_3^2u + \frac{1}{2}\omega_3{c_s}^2 - \frac{1}{2}\omega_4u\omega_2 - \frac{3}{2}v^2\omega_4\omega_1u\omega_2 - \frac{1}{2}v^2\omega_3^2 + \frac{1}{4}\omega_3u^2\omega_2^2 + \frac{1}{2}v^2\omega_4\omega_1u + \frac{1}{4}v^2\omega_4\omega_1 + \frac{1}{2}v^2\omega_3^2\omega_2 + \frac{1}{2}v^4\omega_4^2\omega_2 - \frac{1}{4}v^2\omega_3 + v^2\omega_4u\omega_2 - \frac{1}{2}\omega_3\omega_1u^3\omega_2 - \frac{1}{4}\omega_3^2u^3 + v^2\omega_3\omega_4^2{c_s}^2 - \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_1 - \frac{1}{4}\omega_4^2\omega_2 + 4v^2\omega_1u^2\omega_2^2 + \omega_3{c_s}^2\omega_1u\omega_2 - v^2\omega_1\omega_2 + \frac{1}{2}\omega_4\omega_1u^3\omega_2 + 2\omega_1u^2\omega_2 - \frac{5}{4}\omega_4 + \frac{1}{2}\omega_4\omega_1u - \frac{1}{4}\omega_4^2u - v^2\omega_3u^2\omega_2^2 - \frac{1}{4}\omega_4^2u^3\omega_2 + 3v^2\omega_3\omega_4u^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_3\omega_4u\omega_2 + \frac{1}{2}\omega_1\omega_2 + \frac{1}{4}\omega_3^2u\omega_2 - \frac{1}{4}v^2\omega_4^2u + \frac{1}{2}v^2\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_1 + v^2\omega_3^2\omega_4{c_s}^2 + \frac{1}{4}\omega_3\omega_4u^2 - \frac{1}{2}v^2\omega_3\omega_4u + \frac{1}{2}v^2\omega_3^2\omega_1u - \frac{3}{2}\omega_1u - \frac{1}{2}\omega_3{c_s}^2\omega_2^2 - \frac{1}{4}v^2\omega_4^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_1 - \frac{1}{2}v^4\omega_3^2\omega_2 + \frac{1}{4}\omega_4^2 - \frac{1}{4}\omega_3\omega_4u^2\omega_2 + v^2\omega_4^2\omega_1u^2 - \frac{1}{4}\omega_3u^2 + \frac{1}{2}\omega_3\omega_1u^3 - \frac{1}{4}v^2\omega_4^2u\omega_2 + \frac{3}{4}v^2\omega_4^2 - \frac{5}{2}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_2^2 + \frac{1}{4}\omega_3\omega_1u^2 - v^2\omega_3^2{c_s}^2\omega_2 - \frac{1}{2}\omega_3u\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1 + 2v^2\omega_1u\omega_2^2 - v^4\omega_4\omega_2^2 + \frac{3}{2}\omega_4\omega_2 - \frac{5}{4}v^2\omega_3\omega_2^2 + \frac{1}{4}v^2\omega_3\omega_1\omega_2 + 2\omega_1u\omega_2 - \frac{1}{2}v^2\omega_3\omega_4u\omega_2 - \omega_2 + \frac{1}{4}\omega_4u^2\omega_2^2 + \frac{1}{2}\omega_4u + \frac{1}{2}v^2\omega_3\omega_1u + 2v^2\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_1\omega_2 - 4v^2\omega_3\omega_1u^2\omega_2 - \frac{1}{2}\omega_1u\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 + \frac{3}{4}\omega_4u^2 + v^2\omega_3u\omega_2 - \omega_4u^2\omega_2 + v^2\omega_3\omega_4\omega_1u - v^2\omega_3^2\omega_4u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2 + \frac{1}{2}\omega_3\omega_1u - v^2\omega_4u^2\omega_2^2 - 4v^2\omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2u^3\omega_2 - \frac{1}{4}\omega_4\omega_2^2 + \frac{1}{2}\omega_3^2{c_s}^2u + \frac{1}{2}v^2\omega_3\omega_2 - 2v^2\omega_1u\omega_2 + \frac{1}{2}v^2\omega_3^2u^2\omega_2 - \frac{3}{4}v^2\omega_4 + \frac{1}{4}\omega_4^2u\omega_2 - v^2\omega_3\omega_4^2u^2 - \frac{1}{2}\omega_3^2{c_s}^2u\omega_2 - \frac{1}{2}\omega_4\omega_1u\omega_2 + v^4\omega_3\omega_2^2 + \frac{5}{4}v^2\omega_4\omega_2^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2 + \frac{1}{2}v^2\omega_4^2\omega_1u - \frac{1}{2}\omega_3\omega_1u\omega_2 + \frac{1}{2}\omega_3u,$

$\alpha_{x-\delta_t,y}^{[\mu_4],t-2\delta_t} = -2 - v^2\omega_3^2u\omega_2 + \frac{1}{2}\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_4\omega_1 - \omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_1u^2\omega_2 + 2v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 + 4v^2\omega_3\omega_1u\omega_2 + 2v^2\omega_4\omega_1\omega_2 + \omega_4\omega_1u^2 - \frac{1}{2}\omega_4^2u^2 + \frac{5}{2}\omega_4u\omega_2 + 4v^2\omega_4\omega_1u\omega_2 + 2v^2\omega_4u\omega_2^2 + \frac{3}{2}v^2\omega_3^2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4^2\omega_2 + 4v^2\omega_2^2 + 2\omega_4 - \frac{1}{2}\omega_4\omega_1u - \frac{1}{2}\omega_4u\omega_2^2 + \omega_4^2u + 3v^2\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3^2u^2 + \omega_1 - v^2\omega_3\omega_4^2 - v^2\omega_3^2\omega_1u + 2\omega_1u + v^2\omega_4^2\omega_2 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_3^2u^2\omega_2 - v^2\omega_4^2u\omega_2 + \frac{1}{2}v^2\omega_4^2 + 2v^2\omega_3\omega_4^2u - 3v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_1u^2 + \frac{1}{2}\omega_3u\omega_2 - 4v^2\omega_1u\omega_2^2 - \frac{5}{2}\omega_4\omega_2 + 2v^2\omega_3\omega_1\omega_2 - 3\omega_1u\omega_2 - 6v^2\omega_3\omega_4u\omega_2 - \omega_2^2 + 3\omega_2 - 2\omega_4u + 2v^2\omega_3u\omega_2^2 + 2v^2\omega_3^2\omega_4u - v^2\omega_3\omega_4\omega_1 + \omega_1u\omega_2^2 - 2v^2\omega_3\omega_4\omega_1u - \frac{1}{2}\omega_3\omega_1u - \frac{1}{2}\omega_3u\omega_2^2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 5v^2\omega_3\omega_2 - \omega_4^2u\omega_2 + \frac{1}{2}\omega_4\omega_1u\omega_2 - 2v^2\omega_4\omega_2^2 - v^2\omega_4^2\omega_1u - v^2\omega_3^2\omega_4 + \frac{1}{2}\omega_3\omega_1u\omega_2,$

$\alpha_{x,y}^{[\mu_1],t-2\delta_t} = 2 + v^2\omega_3^2\omega_1u^2 - 4\omega_1u^2 + v^2\omega_3\omega_1^2 + \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3 + \omega_1^2 - \frac{1}{2}v^2\omega_3\omega_4 - 2\omega_4\omega_1^2u^4 - v^2\omega_4\omega_1\omega_2 - 4v^2\omega_2 - 2v^2\omega_3\omega_1^2u^2 + 5\omega_4\omega_1u^2 - \omega_4^2u^2 - 4\omega_3{c_s}^2 - \frac{1}{2}v^2\omega_3^2 + \omega_4^2\omega_1u^4 + 2\omega_3^2\omega_4{c_s}^2u^2 + 2v^2\omega_3 - \omega_3\omega_1^2u^2 + \frac{1}{2}\omega_3\omega_1 + 6v^2\omega_1\omega_2 - \frac{1}{2}\omega_4 + 4v^2\omega_3\omega_4u^2\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2 - \omega_3\omega_4{c_s}^2\omega_1 + 2\omega_3\omega_4^2{c_s}^2u^2 - \omega_3^2{c_s}^2\omega_1 - \frac{3}{2}\omega_3^2u^2 + 2v^2\omega_4^2u^2\omega_2 - 3\omega_1 - \frac{1}{2}\omega_3^2\omega_1u^2 - \frac{5}{2}\omega_3\omega_4u^2 - 3v^2\omega_3\omega_1 + v^2\omega_4^2\omega_1u^2 + 2\omega_3u^2 + 4\omega_3{c_s}^2\omega_1^2u^2 + 2\omega_3\omega_1^2u^4 + v^2\omega_4\omega_2 + \frac{1}{2}v^2\omega_3^2\omega_1 + 6\omega_3\omega_1u^2 - 2v^2\omega_4\omega_1^2u^2 + 6\omega_3{c_s}^2\omega_1 - v^2\omega_3\omega_1\omega_2 - 2v^2\omega_1^2\omega_2 - \omega_3^2\omega_1u^4 + 6v^2\omega_3\omega_4\omega_1u^2 + \frac{1}{2}v^2\omega_3\omega_4\omega_1 - 8v^2\omega_3\omega_1u^2\omega_2 + \omega_3^2{c_s}^2 - 2v^2\omega_3^2\omega_4u^2 + \omega_3\omega_4{c_s}^2 - 2\omega_3{c_s}^2\omega_1^2 - 8v^2\omega_4\omega_1u^2\omega_2 + v^2\omega_3\omega_2 + 2v^2\omega_3^2u^2\omega_2 - 2\omega_1^2u^2 - 2v^2\omega_3\omega_4^2u^2 - 2\omega_3^2{c_s}^2\omega_1u^2 + 8v^2\omega_1^2u^2\omega_2 - 6\omega_3\omega_4{c_s}^2\omega_1u^2,$

$\alpha_{x,y}^{[\mu_4],t-2\delta_t} = -4 + \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_4\omega_1 + 5\omega_3 + \frac{1}{2}\omega_3\omega_4\omega_2 - \omega_1^2 - 2\omega_4\omega_1u^2 - \omega_3\omega_4 + \omega_4^2u^2 - v^2\omega_3^2 + \omega_3\omega_1^2 + v^2\omega_3^2\omega_2 - 2\omega_3\omega_1^2u^2 - \frac{7}{2}\omega_3\omega_1 + \omega_4 - \omega_3^2u^2 + 3\omega_1 + \omega_3^2\omega_1u^2 - v^2\omega_4^2\omega_2 + v^2\omega_4^2 - 2v^2\omega_4\omega_2 + \omega_3\omega_2^2 + 2\omega_3\omega_1u^2 + \frac{1}{2}\omega_3^2\omega_1 - \frac{1}{2}\omega_4\omega_2 - 2v^2\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2 + 3\omega_2 + 2\omega_4\omega_1^2u^2 + 2v^2\omega_3\omega_2 - \omega_3^2 - \omega_4^2\omega_1u^2 + 2v^2\omega_4\omega_2^2 - \frac{7}{2}\omega_3\omega_2,$

$\alpha_{x+\delta_t,y}^{[\mu_1],t-2\delta_t} = 1 + v^2\omega_3^2\omega_1u^2 - \frac{1}{4}\omega_4^2u^3 + \frac{1}{2}\omega_4\omega_1u^3 + \frac{1}{4}v^2\omega_3^2u\omega_2 + \omega_3{c_s}^2\omega_1u - \omega_1u^2 + \frac{1}{4}\omega_4^2u^2\omega_2 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3 + \frac{1}{4}\omega_4\omega_1u^2\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_2 + \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1u^2\omega_2 + 2v^2\omega_3{c_s}^2\omega_2^2 + \frac{1}{4}\omega_3^2u - 3v^2\omega_3\omega_4{c_s}^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_4u - \omega_1u^2\omega_2^2 + \frac{3}{2}v^2\omega_3\omega_1u\omega_2 + \frac{1}{4}v^2\omega_4\omega_1\omega_2 + 2v^2\omega_2 - \frac{1}{4}\omega_4\omega_1u^2 + \frac{1}{4}\omega_3\omega_4 - \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}v^2\omega_3^2u + \frac{1}{2}\omega_3{c_s}^2 + \frac{1}{2}\omega_4u\omega_2 + \frac{3}{2}v^2\omega_4\omega_1u\omega_2 - \frac{1}{2}v^2\omega_3^2 + \frac{1}{4}\omega_3u^2\omega_2^2 - \frac{1}{2}v^2\omega_4\omega_1u + \frac{1}{4}v^2\omega_4\omega_1 + \frac{1}{2}v^2\omega_3^2\omega_2 + \frac{1}{2}v^4\omega_4^2\omega_2 - \frac{1}{4}v^2\omega_3 - v^2\omega_4u\omega_2 + \frac{1}{2}\omega_3\omega_1u^3\omega_2 + \frac{1}{4}\omega_3^2u^3 + v^2\omega_3\omega_4^2{c_s}^2 - \frac{1}{4}\omega_4\omega_1\omega_2 + \frac{1}{4}\omega_3\omega_1 - \frac{1}{4}\omega_4^2\omega_2 + 4v^2\omega_1u^2\omega_2^2 - \omega_3{c_s}^2\omega_1u\omega_2 - v^2\omega_1\omega_2 - \frac{1}{2}\omega_4\omega_1u^3\omega_2 + 2\omega_1u^2\omega_2 - \frac{5}{4}\omega_4 - \frac{1}{2}\omega_4\omega_1u + \frac{1}{4}\omega_4^2u - v^2\omega_3u^2\omega_2^2 + \frac{1}{4}\omega_4^2u^3\omega_2 + 3v^2\omega_3\omega_4u^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4u\omega_2 + \frac{1}{2}\omega_1\omega_2 - \frac{1}{4}\omega_3^2u\omega_2 + \frac{1}{4}v^2\omega_4^2u + \frac{1}{2}v^2\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_1 + v^2\omega_3^2\omega_4{c_s}^2 + \frac{1}{4}\omega_3\omega_4u^2 + \frac{1}{2}v^2\omega_3\omega_4u - \frac{1}{2}v^2\omega_3^2\omega_1u + \frac{3}{2}\omega_1u - \frac{1}{2}\omega_3{c_s}^2\omega_2^2 - \frac{1}{4}v^2\omega_4^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_1 - \frac{1}{2}v^4\omega_3^2\omega_2 + \frac{1}{4}\omega_4^2 - \frac{1}{4}\omega_3\omega_4u^2\omega_2 + v^2\omega_4^2\omega_1u^2 - \frac{1}{4}\omega_3u^2 - \frac{1}{2}\omega_3\omega_1u^3 + \frac{1}{4}v^2\omega_4^2u\omega_2 + \frac{3}{4}v^2\omega_4^2 - \frac{5}{2}v^2\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_2^2 + \frac{1}{4}\omega_3\omega_1u^2 - v^2\omega_3^2{c_s}^2\omega_2 + \frac{1}{2}\omega_3u\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1 - 2v^2\omega_1u\omega_2^2 - v^4\omega_4\omega_2^2 + \frac{3}{2}\omega_4\omega_2 - \frac{5}{4}v^2\omega_3\omega_2^2 + \frac{1}{4}v^2\omega_3\omega_1\omega_2 - 2\omega_1u\omega_2 + \frac{1}{2}v^2\omega_3\omega_4u\omega_2 - \omega_2 + \frac{1}{4}\omega_4u^2\omega_2^2 - \frac{1}{2}\omega_4u - \frac{1}{2}v^2\omega_3\omega_1u + 2v^2\omega_3\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_1\omega_2 - 4v^2\omega_3\omega_1u^2\omega_2 + \frac{1}{2}\omega_1u\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 + \frac{3}{4}\omega_4u^2 - v^2\omega_3u\omega_2 - \omega_4u^2\omega_2 - v^2\omega_3\omega_4\omega_1u - v^2\omega_3^2\omega_4u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_1u - v^2\omega_4u^2\omega_2^2 - 4v^2\omega_4\omega_1u^2\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2u - \frac{1}{4}\omega_3^2u^3\omega_2 - \frac{1}{4}\omega_4\omega_2^2 - \frac{1}{2}\omega_3^2{c_s}^2u + \frac{1}{2}v^2\omega_3\omega_2 + 2v^2\omega_1u\omega_2 + \frac{1}{2}v^2\omega_3^2u^2\omega_2 - \frac{3}{4}v^2\omega_4 - \frac{1}{4}\omega_4^2u\omega_2 -$

$$v^2\omega_3\omega_4^2u^2+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2+\tfrac{1}{2}\omega_4\omega_1u\omega_2+v^4\omega_3\omega_2^2+\tfrac{5}{4}v^2\omega_4\omega_2^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{1}{2}\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3u,$$

$$\alpha_{x+\delta_l,y}^{[\mu_4],t-2\delta_t}=-2+v^2\omega_3^2u\omega_2+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1-\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_1u^2\omega_2+2v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2-4v^2\omega_3\omega_1u\omega_2+2v^2\omega_4\omega_1\omega_2+\omega_4\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2-\tfrac{5}{2}\omega_4u\omega_2-4v^2\omega_4\omega_1u\omega_2-2v^2\omega_4u\omega_2^2+\tfrac{3}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4^2\omega_2+4v^2\omega_2^2+2\omega_4+\tfrac{1}{2}\omega_4\omega_1u+\tfrac{1}{2}\omega_4u\omega_2^2-\omega_4^2u+3v^2\omega_3\omega_4\omega_2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_3^2u^2+\omega_1-v^2\omega_3\omega_4^2+v^2\omega_3^2\omega_1u-2\omega_1u+v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_3^2u^2\omega_2+v^2\omega_4^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2-2v^2\omega_3\omega_4^2u-3v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_1u^2-\tfrac{1}{2}\omega_3u\omega_2+4v^2\omega_1u\omega_2^2-\tfrac{5}{2}\omega_4\omega_2+2v^2\omega_3\omega_1\omega_2+3\omega_1u\omega_2+6v^2\omega_3\omega_4u\omega_2-\omega_2^2+3\omega_2+2\omega_4u-2v^2\omega_3u\omega_2^2-2v^2\omega_3^2\omega_4u-v^2\omega_3\omega_4\omega_1-\omega_1u\omega_2^2+2v^2\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_3\omega_1u+\tfrac{1}{2}\omega_3u\omega_2^2+\tfrac{1}{2}\omega_4\omega_2^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-5v^2\omega_3\omega_2+\omega_4^2u\omega_2-\tfrac{1}{2}\omega_4\omega_1u\omega_2-2v^2\omega_4\omega_2^2+v^2\omega_4^2\omega_1u-v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t}=1-\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+\tfrac{1}{4}v\omega_4\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{8}\omega_4^2u^3-\tfrac{5}{4}\omega_4\omega_1u^3+\tfrac{5}{4}\omega_3{c_s}^2\omega_2+\tfrac{3}{2}\omega_3{c_s}^2\omega_1u-v\omega_4-3\omega_1u^2-\tfrac{1}{2}v\omega_3^2{c_s}^2u\omega_2+\tfrac{1}{8}\omega_4\omega_1-\tfrac{1}{4}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}v\omega_3\omega_1u\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u-\tfrac{3}{4}v\omega_4^2\omega_1u^2+\tfrac{3}{8}v\omega_3\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-v\omega_4\omega_1^2u^3-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2-v^2\omega_3{c_s}^2\omega_2^2-\tfrac{1}{8}\omega_3^2u+\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2u+\tfrac{3}{2}v^2\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{8}v^2\omega_3\omega_4-\tfrac{1}{4}v^3\omega_3\omega_2^2-\tfrac{1}{4}\omega_3\omega_4u-\tfrac{1}{8}\omega_3^2\omega_1u+\tfrac{1}{4}v\omega_3^2u^3\omega_2+\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2+\tfrac{7}{4}v\omega_3\omega_1u-\tfrac{1}{4}v^2\omega_4\omega_1\omega_2-v^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2+\tfrac{13}{8}\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2+\tfrac{3}{4}v^3\omega_4\omega_2+\tfrac{1}{8}\omega_3\omega_4-\tfrac{1}{8}\omega_4^2u^2+\tfrac{3}{8}v^2\omega_3^2u-2\omega_3{c_s}^2-\tfrac{1}{4}\omega_4u\omega_2+\tfrac{1}{2}v\omega_1u\omega_2^2+\tfrac{1}{4}v\omega_3^2{c_s}^2-\tfrac{1}{2}v^2\omega_3^2+2v\omega_1^2u^3\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1u-\tfrac{1}{4}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4u^3\omega_2+\tfrac{9}{4}v\omega_3\omega_4{c_s}^2-\tfrac{1}{2}v\omega_4\omega_1^2u^2+\tfrac{1}{8}v^2\omega_4\omega_1+\tfrac{1}{8}v^2\omega_3^2\omega_2+\tfrac{5}{4}v\omega_4u^2\omega_2+\tfrac{1}{2}v\omega_4^2\omega_1u^3-\tfrac{1}{4}v^4\omega_4^2\omega_2+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_2+\tfrac{1}{2}\omega_3\omega_4u^3+v^2\omega_3-\tfrac{5}{8}\omega_3u^2\omega_2+\tfrac{1}{4}\omega_3^2\omega_1u^3-\tfrac{1}{2}v^2\omega_4u\omega_2-2v\omega_1u\omega_2+\omega_3\omega_1u^3\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u^2+\tfrac{3}{8}\omega_3^2u^3-\tfrac{1}{2}v^2\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}v^3\omega_4\omega_1\omega_2+\tfrac{1}{8}\omega_3\omega_1-\tfrac{1}{4}v\omega_4u^2\omega_2^2-2v^2\omega_1u^2\omega_2^2+\omega_3\omega_4\omega_1u^3+\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2u-\tfrac{1}{8}v\omega_4\omega_2-\omega_3{c_s}^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_4^2u^3+\tfrac{1}{4}v\omega_3u\omega_2+\tfrac{1}{2}\omega_4\omega_1u^3\omega_2+\tfrac{3}{2}\omega_1u^2\omega_2+\tfrac{3}{4}v\omega_3^2\omega_4u^2+\tfrac{5}{2}v\omega_3\omega_1u^2-\tfrac{3}{4}\omega_4+\tfrac{1}{4}v^3\omega_4\omega_2^2+\tfrac{3}{8}\omega_4\omega_1u-v\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{1}{8}\omega_4^2u+\tfrac{1}{2}v^2\omega_3u^2\omega_2^2-\tfrac{3}{2}v^2\omega_3\omega_4u^2\omega_2-\tfrac{1}{8}v^2\omega_3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_1\omega_2+v\omega_1^2u^2\omega_2-\tfrac{1}{8}v^3\omega_3^2+\tfrac{1}{4}v^3\omega_3^2u\omega_2-\tfrac{1}{8}v^2\omega_4^2u-\tfrac{1}{4}\omega_3^2u^2-\tfrac{1}{4}v^2\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u^3-\tfrac{1}{2}\omega_1-\tfrac{1}{2}v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\tfrac{1}{2}v^2\omega_3^2\omega_4{c_s}^2-\tfrac{11}{8}\omega_3\omega_4u^2-\tfrac{3}{4}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u-\tfrac{1}{2}v^2\omega_3^2\omega_1u-\tfrac{3}{2}\omega_1u+\tfrac{3}{8}v\omega_4^2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{3}{8}v^2\omega_3\omega_1+\tfrac{1}{4}v^4\omega_3^2\omega_2-\tfrac{1}{4}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_3^2\omega_4u^3+\tfrac{3}{4}v\omega_3\omega_4^2u^2+\tfrac{1}{8}\omega_4^2+\tfrac{1}{2}v\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{3}{8}\omega_3\omega_4u^2\omega_2+\tfrac{1}{2}v^3\omega_3^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}v\omega_3\omega_4uw_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4^2u^2+v\omega_3{c_s}^2\omega_1u\omega_2-v\omega_3\omega_4\omega_1u^2+\tfrac{1}{8}\omega_3^2u^2\omega_2+\omega_3u^2-\tfrac{1}{4}\omega_3^2\omega_4u^3-\tfrac{7}{4}\omega_3\omega_1u^3+\tfrac{1}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{8}v\omega_3^2u^2+\tfrac{3}{8}v^2\omega_4^2-\tfrac{9}{4}v\omega_3\omega_4u^2-\tfrac{3}{4}v\omega_3^2\omega_1u^2-v\omega_3\omega_1^2u^3+\tfrac{7}{8}v^2\omega_4\omega_2+\tfrac{1}{4}v\omega_3^2u\omega_2-\tfrac{1}{4}v\omega_1\omega_2-\tfrac{1}{2}\omega_1^2u^2\omega_2+\tfrac{11}{8}\omega_3\omega_1u^2+\tfrac{1}{4}\omega_3^2\omega_4u^2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u+2v\omega_3\omega_4\omega_1u^3-5v\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4^2u^3+\tfrac{1}{2}v^2\omega_3^2{c_s}^2\omega_2-\tfrac{1}{4}\omega_3u\omega_2+\tfrac{3}{4}\omega_3{c_s}^2\omega_1-\tfrac{1}{4}v\omega_4^2u-v^2\omega_1u\omega_2^2+\tfrac{1}{4}v\omega_4^2u^3\omega_2+\tfrac{1}{2}v^4\omega_4\omega_2^2+\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{3}{2}v\omega_3\omega_1u^3\omega_2+\tfrac{3}{4}v\omega_4\omega_1u-\tfrac{1}{2}v\omega_3\omega_1^2u^2+\tfrac{3}{4}\omega_1u\omega_2+\tfrac{1}{2}v\omega_3^2\omega_1u^3+\tfrac{1}{4}v\omega_3\omega_1+\tfrac{5}{4}v\omega_3u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_2+\tfrac{1}{2}\omega_4u-\tfrac{3}{4}v^2\omega_3\omega_1u-v^2\omega_3\omega_4\omega_1u^2-\tfrac{3}{2}v\omega_4\omega_1u^3\omega_2+\tfrac{1}{4}v^3\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_2+2v^2\omega_3\omega_1u^2\omega_2-\omega_1^2u^3\omega_2-\tfrac{1}{4}v\omega_3u^2\omega_2^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2+\tfrac{1}{4}\omega_4^2\omega_1u^3-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}v^2\omega_3u\omega_2-\tfrac{1}{8}\omega_4u^2\omega_2+\tfrac{1}{8}v^3\omega_4^2-\tfrac{1}{2}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+2\omega_1^2u^3+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2+\tfrac{1}{4}v\omega_3\omega_4+\tfrac{7}{8}\omega_3\omega_1u+\tfrac{1}{2}v^2\omega_4u^2\omega_2^2-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2+2v^2\omega_4\omega_1u^2\omega_2-\tfrac{3}{4}\omega_3\omega_4{c_s}^2u+v\omega_1u^2\omega_2^2-\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{3}{4}\omega_3^2{c_s}^2u+\tfrac{1}{4}v\omega_4uw_2+\tfrac{1}{8}v^2\omega_3\omega_2-\tfrac{1}{4}\omega_3\omega_4u^3\omega_2+v^2\omega_1uw_2+\tfrac{5}{2}v\omega_4\omega_1u^2-\tfrac{3}{4}v\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_4^2u\omega_2-\tfrac{1}{4}v^2\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^3-\tfrac{1}{4}v\omega_3^2u-\tfrac{1}{2}v^2\omega_4+\omega_1^2u^2+\tfrac{3}{4}v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2-\tfrac{1}{2}v\omega_3^2\omega_1u+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-\tfrac{1}{2}v\omega_3\omega_4u-\tfrac{1}{2}v^3\omega_4\omega_1uw_2-\tfrac{1}{2}v^4\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_4\omega_2^2-\tfrac{1}{8}v\omega_3^2\omega_2+\tfrac{1}{4}v\omega_4\omega_1-\tfrac{1}{4}v\omega_4^2u^2\omega_2-\tfrac{5}{2}v\omega_3{c_s}^2\omega_2-\tfrac{3}{4}v\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{3}{4}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^3\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3\omega_4\omega_1u+\tfrac{1}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_4],t-2\delta_t}=$$
$$-2-v\omega_4\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3^2u\omega_2+\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2+\omega_3^2u-v^2\omega_3\omega_4+\tfrac{7}{2}\omega_3\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2+\tfrac{1}{2}\omega_4u\omega_2-2v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2-v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1^2u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2-3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4-2\omega_4\omega_1u+v\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2-\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v^2\omega_3^2\omega_1u+4\omega_1u-\tfrac{1}{2}v\omega_4^2+\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2u^2\omega_2+v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2-\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2+\tfrac{1}{4}\omega_4^2\omega_1u-v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{3}{4}v\omega_3\omega_4^2+\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u+\tfrac{5}{2}v\omega_3+2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2-2\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4u\omega_2+\omega_2-\tfrac{3}{2}\omega_4u-$$

$$v^2\omega_3 u\omega_2^2 - v^2\omega_3^2\omega_4 u + \tfrac{1}{4}\omega_4\omega_1^2 u - \tfrac{1}{2}v\omega_4\omega_1\omega_2 - 4v\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 + \tfrac{1}{2}v\omega_3\omega_1^2 u + \tfrac{1}{2}\omega_3\omega_1\omega_2 + v^2\omega_3\omega_4\omega_1 u + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_4\omega_1^2 u^2 - \tfrac{7}{2}v\omega_3\omega_4 - \tfrac{3}{4}\omega_3^2\omega_4 u - 2\omega_3\omega_1 u - v\omega_3^2 - 3v\omega_4 u\omega_2 + \tfrac{5}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}\omega_3^2 + \tfrac{1}{2}v\omega_3^2 u - 2\omega_1^2 u^2 + 2v\omega_4\omega_1 u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 u^2 + \tfrac{3}{4}v\omega_3^2\omega_1 u + 5v\omega_3\omega_4 u + \tfrac{1}{2}\omega_4\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_1\omega_2^2 + \tfrac{1}{2}v^2\omega_4\omega_2^2 - \tfrac{9}{8}\omega_3\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_4^2 u^2\omega_2 + 2v\omega_3\omega_1 u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 u - \tfrac{3}{4}\omega_3\omega_4^2 u - \tfrac{1}{2}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3\omega_1 u\omega_2 + \tfrac{3}{2}v\omega_3\omega_4\omega_1 u - \tfrac{5}{2}\omega_3 u,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-2\delta_t} = 2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 u^2 - 2v\omega_4 + \tfrac{1}{2}\omega_4^2 u^2\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{7}{4}\omega_4\omega_1 - \tfrac{1}{2}\omega_3 - 2\omega_4\omega_1 u^2\omega_2 - \tfrac{5}{4}v\omega_4^2\omega_1 u^2 - \tfrac{1}{2}v\omega_3\omega_2 - \tfrac{3}{4}v\omega_4^2\omega_1 - 2\omega_3\omega_1 u^2\omega_2 + \omega_1^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + \omega_4\omega_1^2 u^4 + \tfrac{3}{2}v^2\omega_4\omega_1\omega_2 + 2v^2\omega_2 + v^2\omega_3\omega_1^2 u^2 + \tfrac{17}{4}\omega_4\omega_1 u^2 + \tfrac{1}{4}v^3\omega_3^2\omega_1 - v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 - \tfrac{5}{4}\omega_4^2 u^2 + \omega_3 {c_s}^2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2 - \tfrac{1}{2}v^2\omega_3^2 - \tfrac{1}{2}\omega_4^2\omega_1 u^4 + \tfrac{1}{2}v\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 + 2v\omega_4\omega_1^2 u^2 - \omega_3^2\omega_4 {c_s}^2 u^2 - \tfrac{1}{4}\omega_3\omega_1^2 + \tfrac{3}{4}v^2\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3 + \tfrac{5}{4}\omega_3\omega_1^2 u^2 + v^3\omega_4\omega_1\omega_2 - \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{3}{4}\omega_3\omega_1 - \tfrac{1}{4}v^2\omega_4\omega_1^2 + \tfrac{1}{4}v\omega_3^2\omega_1 - 3v^2\omega_1\omega_2 + 2v\omega_3^2\omega_4 u^2 - \tfrac{3}{2}\omega_4 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 - 2v^2\omega_3\omega_4 u^2\omega_2 - \tfrac{11}{4}\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{3}{2}\omega_1\omega_2 - 2v\omega_1^2 u^2\omega_2 - \tfrac{1}{4}v^3\omega_3^2 - \omega_3\omega_4^2 {c_s}^2 u^2 - \omega_3^2 u^2 - v^2\omega_4^2 u^2\omega_2 - 3\omega_1 - v\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1 u^2 - \tfrac{7}{4}\omega_3\omega_4 u^2 + v^3\omega_3\omega_2 - \tfrac{1}{4}v^3\omega_4^2\omega_1 + \tfrac{3}{4}v\omega_4^2 + \tfrac{3}{4}v^2\omega_3\omega_1 - \tfrac{1}{4}\omega_4\omega_1^2 - \tfrac{1}{2}v\omega_3^2 u^2\omega_2 + \tfrac{1}{2}v\omega_1^2\omega_2 + 2v\omega_3\omega_4^2 u^2 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_1^2 + \omega_3\omega_4 u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{2}v^2\omega_4^2\omega_1 u^2 + \omega_3\omega_4^2 u^2 - \tfrac{11}{2}v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_3^2 u^2\omega_2 - \tfrac{1}{2}\omega_3 u^2 - \tfrac{1}{4}v\omega_3^2 u^2 - 2\omega_3 {c_s}^2\omega_1^2 u^2 + \tfrac{3}{4}v^2\omega_4^2 - \omega_3\omega_1^2 u^4 + \tfrac{1}{2}v\omega_3\omega_4 u^2 - \tfrac{5}{4}v\omega_3^2\omega_1 u^2 - \tfrac{3}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_1 - \tfrac{3}{2}v\omega_1\omega_2 + 2\omega_1^2 u^2\omega_2 + \tfrac{15}{4}\omega_3\omega_1 u^2 + \omega_3^2\omega_4 u^2 + v^2\omega_4\omega_1^2 u^2 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{2}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_1\omega_2 + 2v\omega_3\omega_1^2 u^2 + \tfrac{1}{2}v\omega_3\omega_1 + v^2\omega_1^2\omega_2 - \omega_2 + \tfrac{1}{2}\omega_3^2\omega_1 u^4 - 3v^2\omega_3\omega_4\omega_1 u^2 - v^3\omega_3\omega_1\omega_2 + v\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 + 4v^2\omega_3\omega_1 u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1^2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{1}{4}v^3\omega_4^2 + v^2\omega_3^2\omega_4 u^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2 + \tfrac{3}{4}\omega_4\omega_1^2 u^2 + \tfrac{1}{2}v\omega_3\omega_4 + \tfrac{1}{2}\omega_3 {c_s}^2\omega_1^2 - \tfrac{1}{4}v\omega_3^2 - \tfrac{1}{4}v\omega_4^2 u^2 + 4v^2\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}v^2\omega_4^2\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_2 - v^2\omega_3^2 u^2\omega_2 - \tfrac{1}{2}v^2\omega_4 - 4\omega_1^2 u^2 + 2v\omega_4\omega_1 u^2\omega_2 - \tfrac{3}{4}\omega_4^2\omega_1 u^2 + v^2\omega_3\omega_4^2 u^2 + \omega_3^2 {c_s}^2\omega_1 u^2 - \tfrac{1}{4}\omega_4^2\omega_1 - 4v^2\omega_1^2 u^2\omega_2 + \tfrac{5}{2}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_4^2 u^2\omega_2 + 3\omega_3\omega_4 {c_s}^2\omega_1 u^2 + 2v\omega_3\omega_1 u^2\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-2\delta_t} = -2 + 2v\omega_4 - \tfrac{1}{2}\omega_4^2 u^2\omega_2 - \tfrac{5}{2}\omega_4\omega_1 + 2\omega_4\omega_1 u^2\omega_2 + v\omega_4^2\omega_1 u^2 + \tfrac{1}{2}v\omega_3\omega_2 + v\omega_4^2\omega_1 + 2\omega_3\omega_1 u^2\omega_2 - \omega_1^2 - v^2\omega_4\omega_1\omega_2 - 3\omega_4\omega_1 u^2 + \tfrac{1}{2}\omega_4^2 u^2 + \tfrac{1}{2}v^2\omega_3^2 - \tfrac{1}{2}v\omega_3\omega_1\omega_2 - 2v\omega_4\omega_1^2 u^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{2}v\omega_4\omega_2 - 2v\omega_3^2\omega_4 u^2 + 2\omega_4 + 3\omega_3\omega_4\omega_1 u^2 - \tfrac{3}{2}\omega_1\omega_2 + 4v\omega_1^2 u^2\omega_2 + \tfrac{3}{2}\omega_3^2 u^2 + 3\omega_1 + 2v\omega_3\omega_4 u^2\omega_2 + 2\omega_3\omega_4 u^2 - v\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1^2 + v\omega_3^2 u^2\omega_2 - v\omega_1^2\omega_2 - 2v\omega_3\omega_4^2 u^2 - \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1^2 - \omega_3\omega_4 u^2\omega_2 - \omega_3\omega_4^2 u^2 + 6v\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{2}\omega_3^2 u^2\omega_2 - \tfrac{1}{2}v^2\omega_4^2 + v\omega_3^2\omega_1 u^2 + v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 + 3v\omega_1\omega_2 - 2\omega_1^2 u^2\omega_2 - 5\omega_3\omega_1 u^2 - \omega_3^2\omega_4 u^2 - \tfrac{1}{2}\omega_4\omega_2 + v^2\omega_3\omega_1\omega_2 - 2v\omega_3\omega_1^2 u^2 - \tfrac{1}{2}v\omega_3\omega_1 + \omega_2 - \tfrac{1}{2}v\omega_4\omega_1\omega_2 - 2v\omega_2 + \tfrac{1}{2}v\omega_3\omega_1^2 - 2\omega_4\omega_1^2 u^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 + 4\omega_1^2 u^2 - 4v\omega_4\omega_1 u^2\omega_2 + \omega_4^2\omega_1 u^2 + \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{5}{2}v\omega_4\omega_1 + v\omega_4^2 u^2\omega_2 - 4v\omega_3\omega_1 u^2\omega_2,$$

$$\alpha_{x+\delta_l,y+\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{2}v^2\omega_3^2\omega_1 u^2 - \tfrac{1}{4}v\omega_4\omega_1 u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 - \tfrac{1}{8}\omega_4^2 u^3 + \tfrac{5}{4}\omega_4\omega_1 u^3 + \tfrac{5}{4}\omega_3 {c_s}^2\omega_2 - \tfrac{3}{2}\omega_3 {c_s}^2\omega_1 u - v\omega_4 - 3\omega_1 u^2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2 u\omega_2 + \tfrac{1}{8}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{2}\omega_4\omega_1 u^2\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 u\omega_2 + \tfrac{1}{8}\omega_3\omega_4\omega_1 u - \tfrac{3}{4}v\omega_4^2\omega_1 u^2 + \tfrac{3}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2 + v\omega_4\omega_1^2 u^3 - \tfrac{1}{4}\omega_3\omega_1 u^2\omega_2 - v^2\omega_3 {c_s}^2\omega_2^2 + \tfrac{1}{8}\omega_3^2 u - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 u + \tfrac{3}{2}v^2\omega_3\omega_4 {c_s}^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}v^3\omega_3\omega_2^2 + \tfrac{1}{4}\omega_3\omega_4 u + \tfrac{1}{8}\omega_3^2\omega_1 u - \tfrac{1}{4}v\omega_3^2 u^3\omega_2 - \tfrac{3}{2}v^2\omega_3\omega_1 u\omega_2 - \tfrac{7}{4}v\omega_3\omega_1 u - \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2 u\omega_2 + \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{13}{8}\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4^2 {c_s}^2 + \tfrac{3}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 - \tfrac{1}{8}\omega_4^2 u^2 - \tfrac{3}{8}v^2\omega_3^2 u - 2\omega_3 {c_s}^2 + \tfrac{1}{4}\omega_4 u\omega_2 - \tfrac{1}{2}v\omega_1 u\omega_2^2 + \tfrac{1}{4}v\omega_3^2 {c_s}^2 - \tfrac{1}{2}v^2\omega_3^2 - 2v\omega_1^2 u^3\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1 u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 u^3\omega_2 + \tfrac{9}{4}v\omega_3\omega_4 {c_s}^2 - \tfrac{1}{2}v\omega_4\omega_1^2 u^2 + \tfrac{1}{8}v^2\omega_4\omega_1 + \tfrac{1}{8}v^2\omega_3^2\omega_2 + \tfrac{5}{4}v\omega_4 u^2\omega_2 - \tfrac{1}{2}v\omega_4^2\omega_1 u^3 - \tfrac{1}{4}v^4\omega_4^2\omega_2 + \tfrac{1}{2}v\omega_3^2 {c_s}^2\omega_2 - \tfrac{1}{2}\omega_3\omega_4 u^3 + v^2\omega_3 - \tfrac{5}{8}\omega_3 u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 u^3 + \tfrac{1}{2}v^2\omega_4 u\omega_2 + 2v\omega_1 u\omega_2 - \omega_3\omega_1 u^3\omega_2 - \tfrac{1}{4}\omega_3\omega_1^2 u^2 - \tfrac{3}{8}\omega_3^2 u^3 - \tfrac{1}{2}v^2\omega_3\omega_4^2 {c_s}^2 - \tfrac{1}{4}v^3\omega_4\omega_1\omega_2 + \tfrac{1}{8}\omega_3\omega_1 - \tfrac{1}{4}v\omega_4 u^2\omega_2^2 - 2v^2\omega_1 u^2\omega_2^2 - \omega_3\omega_4\omega_1 u^3 - \tfrac{1}{4}\omega_3^2\omega_4 {c_s}^2 u - \tfrac{1}{8}v\omega_4\omega_2 + \omega_3 {c_s}^2\omega_1 u\omega_2 + \tfrac{1}{2}v^2\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2 u^3 - \tfrac{1}{4}v\omega_3 u\omega_2 - \tfrac{1}{2}\omega_4\omega_1 u^3\omega_2 + \tfrac{3}{2}\omega_1 u^2\omega_2 + \tfrac{3}{4}v\omega_3^2\omega_4 u^2 + \tfrac{5}{2}v\omega_3\omega_1 u^2 - \tfrac{3}{4}\omega_4 + \tfrac{1}{4}v^3\omega_4\omega_2^2 - \tfrac{3}{8}\omega_4\omega_1 u + v\omega_3\omega_4 {c_s}^2\omega_1 u + \tfrac{1}{8}\omega_4^2 u + \tfrac{1}{2}v^2\omega_3 u^2\omega_2^2 - \tfrac{3}{2}v^2\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 u^2 - \tfrac{1}{4}\omega_3\omega_4 {c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 + v\omega_1^2 u^2\omega_2 - \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{4}v^3\omega_3^2 u\omega_2 + \tfrac{1}{8}v^2\omega_4^2 u - \tfrac{1}{4}\omega_3^2 u^2 - \tfrac{1}{4}v^2\omega_4^2 u^2\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2 u^3 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}v\omega_3\omega_4 u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1 u^2 - \tfrac{1}{2}v^2\omega_3^2\omega_4 {c_s}^2 - \tfrac{11}{8}\omega_3\omega_4 u^2 - \tfrac{3}{4}v^3\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 u + \tfrac{1}{2}v^2\omega_3^2\omega_1 u + \tfrac{3}{2}\omega_1 u + \tfrac{3}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{3}{8}v^2\omega_3\omega_1 + \tfrac{1}{4}v^4\omega_3^2\omega_2 - \tfrac{1}{4}v\omega_3^2 u^2\omega_2 + \tfrac{1}{2}v\omega_3^2\omega_4 u^3 + \tfrac{3}{4}v\omega_3\omega_4^2 u^2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}v\omega_3 {c_s}^2\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1 u + \tfrac{3}{8}\omega_3\omega_4 u^2\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1 - \tfrac{1}{4}v\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 u^2 + \tfrac{1}{4}\omega_3\omega_4^2 u^2 - v\omega_3 {c_s}^2\omega_1 u\omega_2 - v\omega_3\omega_4\omega_1 u^2 + \tfrac{1}{8}\omega_3^2 u^2\omega_2 + \omega_3 u^2 + \tfrac{1}{4}\omega_3^2\omega_4 u^3 + \tfrac{7}{4}\omega_3\omega_1 u^3 - \tfrac{1}{4}v^2\omega_4^2 u\omega_2 - \tfrac{1}{8}v\omega_3^2 u^2 + \tfrac{3}{8}v^2\omega_4^2 - \tfrac{9}{4}v\omega_3\omega_4 u^2 - \tfrac{3}{4}v\omega_3^2\omega_1 u^2 + v\omega_3\omega_1^2 u^3 + \tfrac{7}{8}v^2\omega_4\omega_2 - \tfrac{1}{4}v\omega_3^2 u\omega_2 - \tfrac{1}{4}v\omega_1\omega_2 - \tfrac{1}{2}\omega_1^2 u^2\omega_2 + \tfrac{11}{8}\omega_3\omega_1 u^2 + \tfrac{1}{4}\omega_3^2\omega_4 u^2 - \tfrac{1}{2}v\omega_3^2\omega_4 {c_s}^2 u - 2v\omega_3\omega_4\omega_1 u^3 - 5v\omega_1 u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4^2 u^3 + \tfrac{1}{2}v^2\omega_3^2 {c_s}^2\omega_2 + \tfrac{1}{4}\omega_3 u\omega_2 + \tfrac{3}{4}\omega_3 {c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2 u + v^2\omega_1 u\omega_2^2 - \tfrac{1}{4}v\omega_4^2 u^3\omega_2 + \tfrac{1}{2}v^4\omega_4\omega_2^2 + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_2^2 + \tfrac{3}{2}v\omega_3\omega_1 u^3\omega_2 - \tfrac{3}{4}v\omega_4\omega_1 u - \tfrac{1}{2}v\omega_3\omega_1^2 u^2 - \tfrac{3}{4}\omega_1 u\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_1 u^3 + \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{5}{4}v\omega_3 u^2\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4 u\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_4 u + \tfrac{3}{4}v^2\omega_3\omega_1 u - v^2\omega_3\omega_4\omega_1 u^2 + \tfrac{3}{2}v\omega_4\omega_1 u^3\omega_2 + \tfrac{1}{4}v^3\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_2 + 2v^2\omega_3\omega_1 u^2\omega_2 + \omega_1^2 u^3\omega_2 - \tfrac{1}{4}v\omega_3 u^2\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4 {c_s}^2\omega_2 + \tfrac{1}{2}\omega_4 u^2 + \tfrac{1}{2}\omega_3^2 {c_s}^2 - \tfrac{1}{4}\omega_4^2\omega_1 u^3 - \tfrac{1}{4}\omega_3^2 {c_s}^2\omega_2 + \tfrac{1}{2}v^2\omega_3 u\omega_2 - \tfrac{1}{8}\omega_4 u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 - \tfrac{1}{2}v^3\omega_4^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 u - 2\omega_1^2 u^3 + \tfrac{1}{2}v^2\omega_3^2\omega_4 u^2 + \tfrac{3}{2}\omega_3\omega_4 {c_s}^2 - \tfrac{1}{4}\omega_4\omega_1^2 u^2 + \tfrac{1}{4}v\omega_3\omega_4 - \tfrac{7}{8}\omega_3\omega_1 u +$$

$$\tfrac{1}{2}v^2\omega_4u^2\omega_2^2-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2+2v^2\omega_4\omega_1u^2\omega_2+\tfrac{3}{4}\omega_3\omega_4{c_s}^2u+v\omega_1u^2\omega_2^2+\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{3}{4}\omega_3^2{c_s}^2u-\tfrac{1}{4}v\omega_4u\omega_2+\tfrac{1}{8}v^2\omega_3\omega_2+\tfrac{1}{4}\omega_3\omega_4u^3\omega_2-v^2\omega_1u\omega_2+\tfrac{5}{2}v\omega_4\omega_1u^2-\tfrac{3}{4}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}v^3\omega_4^2u\omega_2-\tfrac{1}{4}v^2\omega_3^2u^2\omega_2+\tfrac{1}{2}\omega_4\omega_1^2u^3+\tfrac{1}{4}v\omega_3^2u-\tfrac{1}{2}v^2\omega_4+\omega_1^2u^2+\tfrac{3}{4}v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2+\tfrac{1}{2}v\omega_3^2\omega_1u-\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2+\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{1}{2}v^3\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^4\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_4\omega_2^2-\tfrac{1}{8}v\omega_3^2\omega_2+\tfrac{1}{4}v\omega_4\omega_1-\tfrac{1}{4}v\omega_4^2u^2\omega_2-\tfrac{5}{2}v\omega_3{c_s}^2\omega_2-\tfrac{3}{4}v\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{3}{4}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{1}{2}v^3\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3u,$$

$\alpha^{[\mu_4],t-2\delta_t}_{x+\delta_l,y+\delta_l}=$

$$-2+v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2+\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2u+v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2+3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u+v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u-\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2u^2\omega_2+v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2-\tfrac{3}{5}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2+v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u+\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2+2\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u-\tfrac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u-v\omega_3^2+3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2+2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_3^2\omega_1u-5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2u^2\omega_2+2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l}=-2+\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{5}{2}\omega_3{c_s}^2\omega_2-2v\omega_4+6\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2\omega_2+v^2\omega_3\omega_1^2u^2\omega_2-\tfrac{3}{4}v^2\omega_3\omega_1^2-\tfrac{7}{4}\omega_4\omega_1+\tfrac{1}{2}\omega_3+\tfrac{13}{4}\omega_4\omega_1u^2\omega_2-v^3\omega_3^2\omega_1\omega_2-\tfrac{11}{4}v\omega_4^2\omega_1u^2+\tfrac{3}{2}v\omega_3^2\omega_4{c_s}^2\omega_1+\tfrac{3}{4}v\omega_3\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1+\tfrac{7}{2}\omega_3{c_s}^2\omega_1\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2+\tfrac{15}{4}\omega_3\omega_1u^2\omega_2+2v^2\omega_3{c_s}^2\omega_2^2-3v^2\omega_3\omega_4{c_s}^2\omega_2+v^2\omega_4\omega_1^2u^2\omega_2-\omega_1^2+\tfrac{1}{4}v^2\omega_3\omega_4-v\omega_3{c_s}^2\omega_1^2\omega_2-\tfrac{1}{2}v^3\omega_3\omega_2^2+\omega_4\omega_1^2u^4+\omega_3^2\omega_4{c_s}^2u^2\omega_2-v^2\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_3^2\omega_1u^4\omega_2+\tfrac{9}{4}v^2\omega_4\omega_1\omega_2-\tfrac{1}{2}v^3\omega_3\omega_1^2\omega_2+2v^2\omega_2-v^2\omega_3^2\omega_4\omega_1u^2-\tfrac{3}{2}v\omega_4\omega_1^2u^2\omega_2+v^2\omega_3\omega_1^2u^2+v\omega_3\omega_4{c_s}^2\omega_2+3v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2-\tfrac{33}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_3^2\omega_1+\tfrac{3}{2}v^3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4+\tfrac{5}{4}\omega_4^2u^2+4\omega_3{c_s}^2+\tfrac{1}{2}\omega_4^2\omega_1u^4\omega_2+\tfrac{1}{2}v\omega_3^2{c_s}^2+v^2\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_1u^4-\tfrac{5}{4}v\omega_3\omega_1\omega_2+\tfrac{9}{2}v\omega_3\omega_4{c_s}^2+v\omega_4\omega_1^2u^2-\tfrac{1}{2}v^3\omega_4\omega_1\omega_2^2-\tfrac{3}{2}v\omega_3\omega_1^2u^2\omega_2-\omega_3^2\omega_4{c_s}^2u^2+\tfrac{1}{4}\omega_3\omega_1^2-\tfrac{5}{4}v^2\omega_4\omega_1-\tfrac{1}{4}v^2\omega_3^2\omega_2+\tfrac{5}{2}v\omega_4u^2\omega_2+\tfrac{1}{2}v^4\omega_4^2\omega_2+v\omega_3^2{c_s}^2\omega_2-2v^2\omega_3+\tfrac{3}{2}v\omega_3\omega_4^2\omega_1u^2+\tfrac{5}{4}\omega_3u^2\omega_2+2v\omega_3\omega_4\omega_1u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{1}{4}\omega_3\omega_1^2u^2+v^2\omega_3\omega_4^2{c_s}^2-2v^3\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{3}{4}\omega_3\omega_1-v\omega_3\omega_4{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1^2-\tfrac{1}{2}v\omega_4u^2\omega_2^2+4v^2\omega_1u^2\omega_2^2+\tfrac{1}{4}v\omega_3^2\omega_1-\tfrac{1}{4}v\omega_4\omega_2-3v^2\omega_1\omega_2+v^2\omega_3^2{c_s}^2\omega_1\omega_2-3\omega_1u^2\omega_2-v^4\omega_3\omega_1\omega_2^2+\tfrac{7}{2}v\omega_3^2\omega_4u^2-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2+5v\omega_3\omega_1u^2+\tfrac{3}{2}\omega_4+\tfrac{1}{2}v^3\omega_4\omega_2^2-\tfrac{1}{2}v\omega_3\omega_4\omega_1-v^2\omega_3u^2\omega_2^2+v^2\omega_3\omega_4u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3^2\omega_1\omega_2+\tfrac{25}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}v^4\omega_4^2\omega_1\omega_2-v\omega_3^2{c_s}^2\omega_1\omega_2+\tfrac{7}{2}\omega_3\omega_4{c_s}^2\omega_1-\omega_4\omega_1^2u^4\omega_2-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{4}v^3\omega_3^2-\omega_3\omega_4^2{c_s}^2u^2+\omega_3^2{c_s}^2\omega_1+v\omega_3\omega_4\omega_1^2u^2+\tfrac{3}{2}\omega_3^2u^2-\tfrac{1}{2}v^2\omega_4^2u^2\omega_2+3\omega_1-2v\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}\omega_3^2\omega_1u^2+v^2\omega_3^2\omega_4{c_s}^2+\tfrac{19}{4}\omega_3\omega_4u^2-\tfrac{3}{2}v^3\omega_3\omega_2-\tfrac{1}{4}v^3\omega_4^2\omega_1-v^2\omega_3\omega_4^2\omega_1u^2-v^2\omega_3\omega_4^2{c_s}^2\omega_1+\omega_3\omega_1^2u^4\omega_2+\tfrac{3}{4}v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2+\tfrac{11}{4}v^2\omega_3\omega_1+2\omega_3{c_s}^2\omega_1^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{1}{2}v^4\omega_3^2\omega_2-v\omega_3^2u^2\omega_2+\tfrac{1}{2}v\omega_1^2\omega_2+\tfrac{7}{2}v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2+v\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}v\omega_4\omega_1^2-\tfrac{1}{4}\omega_3^2\omega_1u^2\omega_2-\tfrac{7}{4}\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1^2u^2-\omega_3^2{c_s}^2\omega_1u^2\omega_2+v^3\omega_4^2\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_1u^2\omega_2^2+v^3\omega_3^2\omega_2-v\omega_3{c_s}^2\omega_1\omega_2^2-\tfrac{11}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}v^2\omega_4^2\omega_1u^2-\tfrac{3}{2}\omega_3\omega_4^2u^2+\omega_3\omega_4^2{c_s}^2u^2\omega_2-\tfrac{25}{2}v\omega_3\omega_4\omega_1u^2-\tfrac{3}{4}\omega_3^2u^2\omega_2-2\omega_3u^2-\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2-\tfrac{1}{4}v\omega_3^2u^2-2\omega_3{c_s}^2\omega_1^2u^2-\tfrac{3}{4}v^2\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2+v^2\omega_3\omega_4^2u^2\omega_2-\omega_3\omega_1^2u^4-\tfrac{1}{2}v\omega_4\omega_1u^2\omega_2^2-\tfrac{9}{2}v\omega_3\omega_4u^2-\tfrac{11}{4}v\omega_3^2\omega_1u^2-\tfrac{7}{4}v^2\omega_4\omega_2-v^2\omega_3^2\omega_1-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1-\tfrac{3}{2}v\omega_1\omega_2-\tfrac{3}{4}\omega_3\omega_4\omega_1u^2\omega_2-\omega_1^2u^2\omega_2-v\omega_3\omega_4^2u^2\omega_2-\tfrac{35}{4}\omega_3\omega_1u^2-\tfrac{3}{2}\omega_3^2\omega_4u^2+v^2\omega_4\omega_1^2u^2-10v\omega_1u^2\omega_2-v^2\omega_4\omega_1u^2\omega_2^2-v^2\omega_3^2{c_s}^2\omega_2-\tfrac{11}{2}\omega_3{c_s}^2\omega_1-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-v^4\omega_4\omega_2^2-\tfrac{1}{2}\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4^2\omega_1u^2+\tfrac{1}{2}v^3\omega_4\omega_1^2\omega_2+v\omega_3\omega_1^2u^2+\tfrac{1}{2}v^3\omega_3\omega_1\omega_2^2+\tfrac{1}{2}v\omega_3\omega_1-v^2\omega_3\omega_1u^2\omega_2^2+v^2\omega_1^2\omega_2+\tfrac{5}{2}v\omega_3u^2\omega_2+\omega_2-2v^2\omega_3{c_s}^2\omega_1\omega_2^2-3\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^4+\tfrac{1}{4}v\omega_4\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u^2+2v^3\omega_3\omega_1\omega_2+v\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2-\tfrac{1}{2}v\omega_3u^2\omega_2^2-\tfrac{1}{2}v\omega_3\omega_1^2+\omega_3\omega_4{c_s}^2\omega_2+v^2\omega_3^2\omega_4u^2\omega_2-\omega_4u^2-\omega_3^2{c_s}^2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_2+\tfrac{1}{4}\omega_4u^2\omega_2+\tfrac{1}{4}v^3\omega_4^2-v^3\omega_4^2\omega_2-3\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2+\tfrac{1}{2}v\omega_3\omega_4+\tfrac{1}{2}v\omega_3\omega_1^2\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2-v^2\omega_4u^2\omega_2^2+\tfrac{3}{2}\omega_3{c_s}^2\omega_1^2-\tfrac{1}{4}v\omega_3^2-\tfrac{1}{4}v\omega_4^2u^2+2v\omega_1u^2\omega_2^2+\tfrac{3}{4}v^2\omega_4^2\omega_1-\tfrac{1}{4}v^2\omega_3\omega_2+v^4\omega_4\omega_1\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1\omega_2+5v\omega_4\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2-\tfrac{3}{2}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+v^2\omega_4+2\omega_1^2u^2+6v\omega_4\omega_1u^2\omega_2+\tfrac{5}{4}\omega_4^2\omega_1u^2-$$

$\frac{1}{2}v^2\omega_4^2\omega_1\omega_2+\frac{1}{2}v^4\omega_3^2\omega_1\omega_2+v^4\omega_3\omega_2^2+\omega_3^2{c_s}^2\omega_1u^2+\frac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\frac{1}{2}v^2\omega_4\omega_2^2+\frac{1}{4}\omega_4^2\omega_1-4v^2\omega_1^2u^2\omega_2-\frac{1}{4}v\omega_3^2\omega_2+\frac{5}{2}v\omega_4\omega_1-v\omega_4^2u^2\omega_2-\omega_3{c_s}^2\omega_1^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1u^2-5v\omega_3{c_s}^2\omega_2-\frac{3}{2}v\omega_3^2\omega_4{c_s}^2-v\omega_3^2\omega_4u^2\omega_2+6v\omega_3\omega_1u^2\omega_2+\frac{1}{4}v\omega_3^2\omega_1\omega_2+v\omega_3\omega_4{c_s}^2\omega_1^2-\frac{1}{4}v\omega_3\omega_4\omega_2+6v\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3^2\omega_4\omega_1u^2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_4],t-3\delta_t}=3+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2+\frac{5}{2}v\omega_4+\frac{1}{2}\omega_4^2u^2\omega_2-\frac{1}{4}\omega_3^2\omega_2+\frac{13}{4}\omega_4\omega_1-\frac{15}{4}\omega_3-\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1-\frac{3}{4}\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2+\frac{7}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+\omega_3\omega_1u^2\omega_2+\omega_1^2+v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2-\frac{1}{2}v\omega_4\omega_2^2+v^2\omega_3\omega_4^2\omega_1+2v^2\omega_4\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1^2\omega_2-v\omega_3\omega_4\omega_1^2+\omega_4\omega_1u^2+\frac{13}{4}\omega_3\omega_4-\frac{1}{2}\omega_4^2u^2+\frac{1}{2}v^2\omega_3^2-4v\omega_3\omega_1\omega_2+\frac{3}{2}v\omega_3^2\omega_4-\omega_3\omega_1^2+\frac{1}{2}v^2\omega_3^2\omega_2+\omega_3\omega_1^2u^2+\frac{1}{2}v\omega_3\omega_1\omega_2^2+\frac{1}{2}\omega_3\omega_4^2\omega_1-\frac{3}{4}\omega_4\omega_1\omega_2+\frac{19}{4}\omega_3\omega_1+v\omega_3^2\omega_1+\frac{7}{2}v\omega_4\omega_2+2v^2\omega_2^2+v^2\omega_4\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{11}{4}\omega_4+7v\omega_3\omega_4\omega_1+\frac{1}{2}v\omega_4\omega_1^2\omega_2+\frac{1}{2}\omega_3^2\omega_4\omega_1+3v^2\omega_3\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1\omega_2+2\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_2^2+\frac{1}{2}\omega_3^2u^2-4\omega_1-\frac{1}{2}\omega_3^2\omega_1u^2-v^2\omega_3\omega_4^2+\frac{1}{2}v\omega_4^2\omega_1\omega_2-v\omega_4^2+\frac{1}{2}v^2\omega_4^2\omega_2-\frac{1}{2}\omega_4\omega_1^2-v\omega_1^2\omega_2+\frac{1}{2}\omega_4^2-\frac{1}{2}\omega_1^2\omega_2+\frac{1}{2}v\omega_4\omega_1^2+\frac{1}{2}\omega_3^2\omega_1u^2\omega_2-\frac{1}{2}\omega_3^2u^2\omega_2+\frac{1}{2}v^2\omega_4^2-\frac{1}{2}\omega_4^2\omega_1u^2\omega_2-\frac{3}{2}v\omega_3^2\omega_4\omega_1-2v^2\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1+6v\omega_1\omega_2-\omega_3\omega_1u^2+\frac{3}{2}v\omega_3\omega_4^2+\frac{5}{2}v\omega_3-\frac{3}{4}\omega_3^2\omega_1+\frac{3}{4}\omega_4\omega_2-v^2\omega_3\omega_2^2-\frac{15}{4}\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1\omega_2+v\omega_2^2-3v\omega_3\omega_1-\frac{1}{2}v\omega_4^2\omega_2-\frac{3}{2}\omega_2-\frac{3}{2}v\omega_3\omega_4^2\omega_1-4v\omega_4\omega_1\omega_2-5v\omega_2-v^2\omega_3\omega_4\omega_1-\frac{9}{4}\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_1^2+\omega_4\omega_1^2u^2\omega_2-\frac{1}{2}\omega_3^2\omega_4+\frac{1}{2}v\omega_4\omega_1\omega_2^2-\omega_4\omega_1^2u^2-6v\omega_3\omega_4+\frac{1}{2}v\omega_3\omega_1^2\omega_2-\omega_3\omega_1^2u^2\omega_2-v\omega_3^2-\frac{1}{2}v^2\omega_4^2\omega_1-2v^2\omega_3\omega_2-3v^2\omega_3\omega_4\omega_1\omega_2+v^2\omega_3\omega_1\omega_2^2+\frac{3}{4}\omega_3^2+\frac{1}{2}\omega_3\omega_4\omega_1^2+\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_4^2\omega_1\omega_2-v\omega_1\omega_2^2+v\omega_3\omega_4\omega_1\omega_2-v^2\omega_4\omega_2^2+\frac{7}{4}\omega_3\omega_2-\frac{1}{2}\omega_4^2\omega_1-\frac{1}{2}v\omega_3^2\omega_2-3v\omega_4\omega_1+\frac{1}{2}v\omega_3^2\omega_1\omega_2-v\omega_3\omega_4\omega_2-v^2\omega_3^2\omega_4,$

$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t}=-1+\frac{1}{2}\omega_3^2\omega_4{c_s}^2-\frac{1}{4}\omega_4^2u^3+\frac{3}{2}\omega_4\omega_1u^3+\frac{1}{4}v^2\omega_3^2u\omega_2-\frac{5}{2}\omega_3{c_s}^2\omega_2-\omega_3{c_s}^2\omega_1u+4\omega_1u^2-\frac{1}{4}\omega_4^2u^2\omega_2-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_3-\frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2+\frac{13}{4}\omega_4\omega_1u^2\omega_2+\frac{1}{4}\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1u+\frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_3\omega_4^2u^3\omega_2+\frac{13}{4}\omega_3\omega_1u^2\omega_2+\frac{1}{4}\omega_3^2u-\frac{1}{2}\omega_3\omega_4^2{c_s}^2u+\frac{1}{2}\omega_3^2\omega_4u^2\omega_2+\frac{1}{2}\omega_3\omega_4u+\frac{1}{4}\omega_3^2\omega_1u+\omega_1u^2\omega_2^2-\frac{3}{2}v^2\omega_3\omega_1u\omega_2+\frac{1}{4}v^2\omega_4\omega_1\omega_2-\frac{11}{4}\omega_4\omega_1u^2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2-\frac{1}{4}\omega_3\omega_4+\frac{1}{4}\omega_4^2u^2-\frac{1}{4}v^2\omega_3^2u+2\omega_3{c_s}^2+\frac{1}{2}\omega_4u\omega_2+\frac{3}{2}v^2\omega_4\omega_1u\omega_2+\frac{3}{4}v^2\omega_3^2-\frac{1}{4}\omega_3u^2\omega_2^2-\frac{1}{2}v^2\omega_4\omega_1u-\frac{1}{4}v^2\omega_4\omega_1-\frac{3}{4}v^2\omega_3^2\omega_2-\frac{1}{2}\omega_3\omega_4u^3-\frac{1}{2}\omega_3^2\omega_4u^3\omega_2-v^2\omega_3+\frac{5}{4}\omega_3u^2\omega_2-\frac{1}{2}\omega_3^2\omega_1u^3-v^2\omega_4\omega_1u\omega_2^2-\frac{3}{2}\omega_3\omega_1u^3\omega_2+\frac{1}{2}\omega_3\omega_1^2u^2-\frac{1}{4}\omega_3^2u^3+\frac{1}{4}\omega_4\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1+\frac{1}{4}\omega_4^2\omega_2+\frac{1}{2}\omega_3\omega_4^2u^2\omega_2-2\omega_3\omega_4\omega_1u^3-\frac{1}{2}\omega_3^2\omega_4{c_s}^2u+\omega_3{c_s}^2\omega_1u\omega_2+v^2\omega_3\omega_1u\omega_2^2-\frac{3}{2}\omega_4\omega_1u^3\omega_2-5\omega_1u^2\omega_2+\frac{5}{4}\omega_4-\frac{3}{4}\omega_4\omega_1u-\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\frac{1}{4}\omega_4^2u+\frac{1}{4}\omega_4^2u^3\omega_2-\frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1u^2-\frac{1}{2}\omega_3\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1-\frac{1}{2}\omega_1\omega_2-\frac{1}{4}\omega_3^2\omega_1u\omega_2-\frac{1}{4}\omega_3^2u\omega_2+\frac{1}{4}v^2\omega_4^2u+\frac{1}{4}\omega_3^2u^2+\omega_3\omega_1^2u^3+\frac{1}{2}\omega_1-\frac{1}{2}\omega_3\omega_1u^2\omega_2^2+\frac{1}{2}\omega_3^2\omega_1u^2+\frac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2+\frac{5}{2}\omega_3\omega_4u^2+\frac{1}{2}v^2\omega_3^2\omega_1u+2\omega_1u+\frac{1}{2}\omega_3{c_s}^2\omega_2^2-\frac{1}{2}\omega_4\omega_1u^2\omega_2^2+\frac{3}{4}v^2\omega_4^2\omega_2+\frac{1}{4}v^2\omega_3\omega_1-\frac{1}{4}\omega_3\omega_4\omega_1u\omega_2-\frac{1}{4}\omega_4^2+\omega_3\omega_4{c_s}^2\omega_1u-\frac{1}{2}\omega_3^2\omega_1u^2\omega_2-3\omega_3\omega_4u^2\omega_2-\frac{1}{2}\omega_3\omega_4^2u^2-\frac{1}{4}\omega_3^2u^2\omega_2-\omega_3u^2+\frac{1}{2}\omega_3^2\omega_4u^3+\frac{3}{2}\omega_3\omega_1u^3-\frac{1}{4}v^2\omega_4^2u\omega_2-\frac{1}{2}\omega_3\omega_1u\omega_2^2-\omega_3\omega_1^2u^3\omega_2-\frac{3}{4}v^2\omega_4^2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-\frac{1}{2}\omega_4^2\omega_1u^2\omega_2-\frac{1}{4}v^2\omega_4\omega_2-\frac{1}{4}\omega_3\omega_2^2-\omega_4\omega_1^2u^3\omega_2-\frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2+\omega_1^2u^2\omega_2-\frac{11}{4}\omega_3\omega_1u^2-\frac{1}{2}\omega_3^2\omega_4u^2+\frac{1}{2}\omega_3\omega_4^2u^3+\frac{1}{2}\omega_3u\omega_2-\frac{1}{2}\omega_3{c_s}^2\omega_1+\frac{1}{2}v^2\omega_4^2\omega_1u\omega_2-\frac{3}{2}\omega_4\omega_2+\frac{3}{4}v^2\omega_3\omega_2^2-\frac{1}{4}v^2\omega_3\omega_1\omega_2-\frac{5}{2}\omega_1u\omega_2-\frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2+\omega_2-\frac{1}{4}\omega_4u^2\omega_2^2-\frac{1}{2}\omega_4u-\frac{1}{2}v^2\omega_3^2\omega_1u\omega_2+\frac{1}{2}v^2\omega_3\omega_1u+\frac{1}{4}\omega_3\omega_1\omega_2+2\omega_1^2u^3\omega_2+\frac{1}{2}\omega_1u\omega_2^2+\frac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2-\frac{1}{2}\omega_4\omega_1^2u^2\omega_2+2\omega_3\omega_4\omega_1u^3\omega_2+3\omega_3\omega_4{c_s}^2\omega_2-\omega_4u^2-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{2}\omega_4^2\omega_1u^3+\frac{1}{2}\omega_3^2{c_s}^2\omega_2+\frac{1}{2}\omega_4^2\omega_1u^3\omega_2+\frac{5}{4}\omega_4u^2\omega_2-2\omega_1^2u^3-\frac{5}{2}\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_4\omega_1^2u^2-\frac{7}{4}\omega_3\omega_1u-\frac{1}{2}\omega_3\omega_1^2u^2\omega_2+\frac{1}{2}\omega_3\omega_4{c_s}^2u+\frac{1}{4}\omega_3^2u^3\omega_2+\frac{1}{4}\omega_4\omega_2^2+\frac{1}{2}\omega_3^2{c_s}^2u+\frac{1}{4}v^2\omega_3\omega_2+\frac{1}{2}\omega_3\omega_4u^3\omega_2+\frac{1}{2}\omega_3^2\omega_1u^3\omega_2+\omega_4\omega_1^2u^3+v^2\omega_4-\omega_1^2u^2-\frac{1}{4}\omega_4^2u\omega_2+\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}\omega_3^2{c_s}^2u\omega_2+\frac{3}{4}\omega_4\omega_1u\omega_2-\frac{3}{4}v^2\omega_4\omega_2^2+\frac{1}{2}\omega_3\omega_4u^2\omega_2^2-\frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\frac{1}{2}v^2\omega_4^2\omega_1u+\frac{9}{4}\omega_3\omega_1u\omega_2-\frac{1}{2}\omega_3u,$

$\alpha_{x-\delta_l,y}^{[\mu_4],t-3\delta_t}=3+\frac{3}{4}\omega_3\omega_4\omega_1\omega_2-\frac{1}{2}\omega_4^2u^2\omega_2-\frac{3}{4}\omega_3^2\omega_2+\frac{3}{4}\omega_4\omega_1-\frac{15}{4}\omega_3+2\omega_4\omega_1u^2\omega_2-\frac{15}{4}\omega_3\omega_4\omega_2+\frac{1}{4}\omega_3^2\omega_1\omega_2-\omega_3\omega_4\omega_1u-\frac{1}{2}\omega_1\omega_2^2-\omega_3\omega_4u\omega_2^2+2\omega_3\omega_1u^2\omega_2-\omega_3^2u+\omega_3^2\omega_4u^2\omega_2-6\omega_3\omega_4u-\frac{1}{2}\omega_3^2\omega_1u+\frac{1}{2}\omega_4\omega_1^2u\omega_2-v^2\omega_4\omega_1\omega_2-2\omega_4\omega_1u^2+\frac{13}{4}\omega_3\omega_4+\frac{1}{2}\omega_4^2u^2-3\omega_4u\omega_2+\frac{1}{2}\omega_3\omega_1^2u\omega_2+\frac{1}{2}v^2\omega_3^2-\frac{1}{2}\omega_3\omega_1^2u-\frac{1}{2}v^2\omega_3^2\omega_2-\omega_3\omega_1^2u^2-\frac{3}{4}\omega_4\omega_1\omega_2+\frac{7}{4}\omega_3\omega_1-\frac{1}{2}\omega_4^2\omega_2+\omega_3\omega_4^2u^2\omega_2+v^2\omega_4\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_4^2-\frac{11}{4}\omega_4+\frac{7}{2}\omega_4\omega_1u+\frac{1}{2}\omega_4u\omega_2^2-\omega_4^2u+\frac{1}{2}v^2\omega_3^2\omega_1\omega_2+3\omega_3\omega_4\omega_1u^2+7\omega_3\omega_4u\omega_2+2\omega_1\omega_2+\frac{1}{2}\omega_3^2\omega_1u\omega_2+\omega_3^2u\omega_2+\frac{1}{2}\omega_3^2u^2-\frac{3}{2}\omega_1+\frac{1}{2}\omega_3^2\omega_1u^2+\omega_3\omega_4u^2+\frac{1}{2}\omega_4^2\omega_1u\omega_2-5\omega_1u-\omega_1^2u\omega_2+\frac{1}{2}v^2\omega_4^2\omega_2+\omega_3\omega_4\omega_1u\omega_2+\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_3\omega_4\omega_2^2-\frac{1}{2}\omega_3^2\omega_1u^2\omega_2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-\frac{1}{2}\omega_3^2u^2\omega_2+\frac{1}{2}\omega_3\omega_1u\omega_2^2+\omega_1^2u-\frac{1}{2}v^2\omega_4^2-\frac{1}{2}\omega_4^2\omega_1u^2\omega_2-\frac{1}{2}\omega_4^2\omega_1u+v^2\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_2^2-3\omega_3\omega_4\omega_1u^2\omega_2-2\omega_1^2u^2\omega_2+\frac{1}{2}\omega_4\omega_1u\omega_2^2-2\omega_3\omega_1u^2-\omega_3^2\omega_4u^2-3\omega_3u\omega_2-\frac{3}{2}\omega_3\omega_4^2u\omega_2-\frac{1}{4}\omega_3^2\omega_1+\frac{13}{4}\omega_4\omega_2+v^2\omega_3\omega_2^2-\frac{3}{4}\omega_3\omega_4\omega_1+v^2\omega_3\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1\omega_2^2+6\omega_1u\omega_2+\omega_2^2-4\omega_2+\frac{5}{2}\omega_4u-\frac{1}{2}\omega_4\omega_1^2u+\frac{1}{2}\omega_3^2\omega_4\omega_2-\frac{9}{4}\omega_3\omega_1\omega_2-\omega_1u\omega_2^2+\omega_4\omega_1^2u^2\omega_2-\frac{1}{2}\omega_3^2\omega_4-\omega_4\omega_1^2u^2+\frac{3}{2}\omega_3^2\omega_4u+\frac{7}{2}\omega_3\omega_1u+\omega_3\omega_1^2u^2\omega_2+\frac{1}{2}\omega_3u\omega_2^2-\frac{1}{2}\omega_4\omega_2^2+\frac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2-v^2\omega_3\omega_1\omega_2^2+\frac{3}{4}\omega_3^2+2\omega_1^2u^2+\omega_4^2u\omega_2+\frac{1}{2}\omega_4^2\omega_1u^2-\frac{1}{2}v^2\omega_4^2\omega_1\omega_2+\frac{1}{2}\omega_3\omega_4^2\omega_2-4\omega_4\omega_1u\omega_2-v^2\omega_4\omega_2^2+\frac{19}{4}\omega_3\omega_2+\frac{3}{2}\omega_3\omega_4^2u-\frac{3}{2}\omega_3^2\omega_4u\omega_2-4\omega_3\omega_1u\omega_2+\frac{5}{2}\omega_3u,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t}=-2-\frac{1}{2}\omega_3\omega_4\omega_1\omega_2-v^2\omega_3^2\omega_1u^2+2\omega_1u^2-\frac{3}{2}\omega_4^2u^2\omega_2-2v^2\omega_3\omega_1^2u^2\omega_2+\frac{1}{2}v^2\omega_3\omega_1^2-3\omega_4\omega_1+\frac{1}{2}\omega_3+\frac{11}{2}\omega_4\omega_1u^2\omega_2+\frac{1}{2}\omega_3\omega_4\omega_2+\omega_3{c_s}^2\omega_1\omega_2+\frac{9}{2}\omega_3\omega_1u^2\omega_2-4v^2\omega_3{c_s}^2\omega_2^2+6v^2\omega_3\omega_4{c_s}^2\omega_2-2v^2\omega_4\omega_1^2u^2\omega_2+2\omega_3^2\omega_4u^2\omega_2-\omega_1^2-\frac{1}{2}v^2\omega_3\omega_4-2\omega_4\omega_1^2u^4-2\omega_3^2\omega_4{c_s}^2u^2\omega_2+2\omega_1u^2\omega_2^2+2v^2\omega_3^2\omega_4{c_s}^2\omega_1+\omega_3^2\omega_1u^4\omega_2-$

$\frac{11}{2}v^2\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1^2\omega_2 - 4v^2\omega_2 + 2v^2\omega_3^2\omega_4\omega_1u^2 - 2v^2\omega_3\omega_1^2u^2 - 6v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2 - 5\omega_4\omega_1u^2 - \frac{1}{2}\omega_3\omega_4 + \frac{3}{2}\omega_4^2u^2 - \omega_3{c_s}^2 - \omega_4^2\omega_1u^4\omega_2 + v^2\omega_3^2 - \frac{1}{2}\omega_3u^2\omega_2^2 + \omega_4^2\omega_1u^4 - \frac{1}{2}\omega_4\omega_1\omega_2^2 + 2\omega_3^2\omega_4{c_s}^2u^2 + \frac{1}{2}\omega_3\omega_1^2 - 2v^2\omega_4\omega_1 - v^2\omega_3^2\omega_2 - v^4\omega_4^2\omega_2 + \frac{1}{2}v^2\omega_3 - \frac{5}{2}\omega_3\omega_1^2u^2 - 2v^2\omega_3\omega_4^2{c_s}^2 + \frac{7}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}v^2\omega_3\omega_1^2\omega_2 - \omega_3\omega_1 + \frac{1}{2}\omega_4^2\omega_2 + \frac{1}{2}v^2\omega_4\omega_1^2 - 8v^2\omega_1u^2\omega_2^2 + 2\omega_3\omega_4^2u^2\omega_2 + 6v^2\omega_1\omega_2 - 2v^2\omega_3^2{c_s}^2\omega_1\omega_2 - 4\omega_1u^2\omega_2 + 2v^4\omega_3\omega_1\omega_2^2 + \frac{5}{2}v^2\omega_4\omega_1\omega_2^2 + \frac{5}{2}\omega_4 + 2v^2\omega_3u^2\omega_2^2 - 2v^2\omega_3\omega_4u^2\omega_2 - \frac{1}{2}v^2\omega_3\omega_4\omega_2 + v^2\omega_3^2\omega_1\omega_2 + \frac{11}{2}\omega_3\omega_4\omega_1u^2 + v^4\omega_4^2\omega_1\omega_2 - \omega_3\omega_4{c_s}^2\omega_1 + 2\omega_4\omega_1^2u^4\omega_2 - 3\omega_1\omega_2 - \omega_3{c_s}^2\omega_1\omega_2^2 + 2\omega_3\omega_4^2{c_s}^2u^2 + \omega_3^2u^2 + v^2\omega_4^2u^2\omega_2 + 3\omega_1 - \frac{1}{2}\omega_3\omega_1u^2\omega_2^2 + \omega_3^2\omega_1u^2 - 2v^2\omega_3^2\omega_4{c_s}^2 + \frac{3}{2}\omega_3\omega_4u^2 + 2v^2\omega_3\omega_4^2\omega_1u^2 + 2v^2\omega_3\omega_4^2{c_s}^2\omega_1 - 2\omega_3\omega_1^2u^4\omega_2 + \omega_3{c_s}^2\omega_2^2 - \frac{1}{2}\omega_4\omega_1u^2\omega_2^2 + \frac{1}{2}v^2\omega_4^2\omega_2 - v^2\omega_3\omega_1 - 4\omega_3{c_s}^2\omega_1^2u^2\omega_2 + \frac{1}{2}\omega_4\omega_1^2 + v^4\omega_3^2\omega_2 - \frac{1}{2}\omega_4^2 + \omega_1^2\omega_2 - \omega_3^2\omega_1u^2\omega_2 - \frac{3}{2}\omega_3\omega_4u^2\omega_2 + 2\omega_3^2{c_s}^2\omega_1u^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1\omega_2 - v^2\omega_4^2\omega_1u^2 - 2\omega_3\omega_4^2u^2 - 2\omega_3\omega_4^2{c_s}^2u^2\omega_2 - \omega_3^2u^2\omega_2 + \frac{1}{2}\omega_3u^2 + 4\omega_3{c_s}^2\omega_1^2u^2 - \frac{3}{2}v^2\omega_4^2 + \omega_3\omega_4{c_s}^2\omega_1\omega_2 - 2v^2\omega_3\omega_4^2u^2\omega_2 - \frac{3}{2}\omega_4^2\omega_1u^2\omega_2 + 2\omega_3\omega_1^2u^4 + 5v^2\omega_4\omega_2 - v^2\omega_3^2\omega_1 - \frac{1}{2}\omega_3\omega_2^2 - \frac{11}{2}\omega_3\omega_4\omega_1u^2\omega_2 - 4\omega_1^2u^2\omega_2 - 4\omega_3\omega_1u^2 - 2\omega_3^2\omega_4u^2 - 2v^2\omega_4\omega_1^2u^2 + 2v^2\omega_4\omega_1u^2\omega_2^2 + 2v^2\omega_3^2{c_s}^2\omega_2 + 2\omega_3{c_s}^2\omega_1 + 2v^4\omega_4\omega_2^2 - 3\omega_4\omega_2 + \frac{5}{2}v^2\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1^2\omega_2 + \frac{1}{2}v^2\omega_3\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2^2 + 2v^2\omega_3\omega_1u^2\omega_2^2 - 2v^2\omega_1^2\omega_2 + 2\omega_2 - \frac{1}{2}\omega_4u^2\omega_2^2 + 4v^2\omega_3{c_s}^2\omega_1\omega_2^2 + 6\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2 - \omega_3^2\omega_1u^4 + 2v^2\omega_3\omega_4\omega_1u^2 + \frac{1}{2}v^2\omega_3\omega_4\omega_1 + \frac{1}{2}v^2\omega_4\omega_1^2\omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2 + \frac{3}{2}\omega_4\omega_1^2u^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_2 - 2v^2\omega_3^2\omega_4u^2\omega_2 - \frac{3}{2}\omega_4u^2 + 2\omega_4u^2\omega_2 + \omega_3\omega_4{c_s}^2 - \frac{3}{2}\omega_4\omega_1^2u^2 + \frac{5}{2}\omega_3\omega_1^2u^2\omega_2 + 2v^2\omega_4u^2\omega_2^2 - \omega_3{c_s}^2\omega_1^2 + \frac{1}{2}\omega_4\omega_2^2 + \frac{3}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 - 2v^4\omega_4\omega_1\omega_2^2 + \frac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 - \frac{5}{2}v^2\omega_3\omega_1\omega_2^2 + v^2\omega_3^2u^2\omega_2 + \frac{3}{2}v^2\omega_4 + 4\omega_1^2u^2 + \frac{3}{2}\omega_4^2\omega_1u^2 - \frac{1}{2}v^2\omega_4^2\omega_1\omega_2 - v^4\omega_3^2\omega_1\omega_2 - 2v^4\omega_3\omega_2^2 - 2\omega_3^2{c_s}^2\omega_1u^2 - \frac{5}{2}v^2\omega_4\omega_2^2 + \frac{1}{2}\omega_4^2\omega_1 + 8v^2\omega_1^2u^2\omega_2 + \omega_3{c_s}^2\omega_1^2\omega_2 - 6\omega_3\omega_4{c_s}^2\omega_1u^2,$

$\alpha_{x,y}^{[\mu_4],t-3\delta_t} = 3 + 5\omega_4\omega_1 - 2\omega_4\omega_1u^2\omega_2 - 2v^2\omega_3^2\omega_4\omega_1 - \omega_1\omega_2^2 - 6\omega_3\omega_1u^2\omega_2 - 2\omega_3^2\omega_4u^2\omega_2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4v^2\omega_1\omega_2^2 - 2v^2\omega_3\omega_4^2\omega_1 - 2v^2\omega_4\omega_1\omega_2 + 2\omega_4\omega_1u^2 - 2v^2\omega_3^2 + \omega_4\omega_1\omega_2^2 - 6\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 - 2\omega_3\omega_4^2u^2\omega_2 - 4v^2\omega_2^2 - 4v^2\omega_4\omega_1\omega_2^2 - 4\omega_4 - 6v^2\omega_3\omega_4\omega_2 - 6\omega_3\omega_4\omega_1u^2 + 5\omega_1\omega_2 - 2\omega_3^2u^2 - 4\omega_1 - 2\omega_3\omega_4u^2 + 2v^2\omega_3\omega_4^2 - 2v^2\omega_4^2\omega_2 - \omega_4\omega_1^2 + \omega_4^2 - \omega_1^2\omega_2 + 2\omega_3\omega_4u^2\omega_2 + \omega_4^2\omega_1\omega_2 + 2\omega_3\omega_4^2u^2 + 2\omega_3^2u^2\omega_2 + 2\omega_4^2\omega_1u^2\omega_2 + 2v^2\omega_4\omega_2 + 2v^2\omega_3^2\omega_1 + 6\omega_3\omega_4\omega_1u^2\omega_2 + 4\omega_1^2u^2\omega_2 + 6\omega_3\omega_1u^2 + 2\omega_3^2\omega_4u^2 + 5\omega_4\omega_2 + \omega_4\omega_1^2\omega_2 - 6v^2\omega_3\omega_1\omega_2 + \omega_2^2 - 4\omega_2 + 2v^2\omega_3\omega_4\omega_1 - 4\omega_4\omega_1^2u^2\omega_2 + 4\omega_4\omega_1^2u^2 - \omega_4\omega_2^2 + 6v^2\omega_3\omega_2 + 6v^2\omega_3\omega_4\omega_1\omega_2 - 4\omega_1^2u^2 - 2\omega_4^2\omega_1u^2 + 2v^2\omega_4^2\omega_1\omega_2 + 4v^2\omega_4\omega_2^2 - \omega_4^2\omega_1 + 2v^2\omega_3^2\omega_4,$

$\alpha_{x+\delta_l,y}^{[\mu_1],t-3\delta_t} = -1 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 + \frac{1}{4}\omega_4^2u^3 - \frac{3}{2}\omega_4\omega_1u^3 - \frac{1}{4}v^2\omega_3^2u\omega_2 - \frac{5}{2}\omega_3{c_s}^2\omega_2 + \omega_3{c_s}^2\omega_1u + 4\omega_1u^2 - \frac{1}{4}\omega_4^2u^2\omega_2 - \frac{1}{4}\omega_4\omega_1 + \frac{1}{4}\omega_3 - \frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2 + \frac{13}{4}\omega_4\omega_1u^2\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_1u + \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2u^3\omega_2 + \frac{13}{4}\omega_3\omega_1u^2\omega_2 - \frac{1}{4}\omega_3^2u + \frac{1}{2}\omega_3\omega_4^2{c_s}^2u + \frac{1}{2}\omega_3^2\omega_4u^2\omega_2 - \frac{1}{2}\omega_3\omega_4u - \frac{1}{4}\omega_3^2\omega_1u + \omega_1u^2\omega_2^2 + \frac{3}{2}v^2\omega_3\omega_1u\omega_2 + \frac{1}{4}v^2\omega_4\omega_1\omega_2 - \frac{11}{4}\omega_4\omega_1u^2 + \frac{1}{2}\omega_3\omega_4^2{c_s}^2 - \frac{1}{4}\omega_3\omega_4 + \frac{1}{4}\omega_4^2u^2 + \frac{1}{4}v^2\omega_3^2u + 2\omega_3{c_s}^2 - \frac{1}{2}\omega_4u\omega_2 - \frac{3}{2}v^2\omega_4\omega_1u\omega_2 + \frac{3}{4}v^2\omega_3^2 - \frac{1}{4}\omega_3u^2\omega_2^2 + \frac{1}{2}v^2\omega_4\omega_1u - \frac{1}{4}v^2\omega_4\omega_1 - \frac{3}{4}v^2\omega_3^2\omega_2 + \frac{1}{2}\omega_3\omega_4u^3 + \frac{1}{2}\omega_3^2\omega_4u^3\omega_2 - v^2\omega_3 + \frac{5}{4}\omega_3u^2\omega_2 + \frac{1}{2}\omega_3^2\omega_1u^3 + v^2\omega_4\omega_1u\omega_2^2 + \frac{3}{2}\omega_3\omega_1u^3\omega_2 + \frac{1}{2}\omega_3\omega_1^2u^2 + \frac{1}{4}\omega_3^2u^3 + \frac{1}{4}\omega_4\omega_1\omega_2 - \frac{1}{4}\omega_3\omega_1 + \frac{1}{4}\omega_4^2\omega_2 + \frac{1}{2}\omega_3\omega_4^2u^2\omega_2 + 2\omega_3\omega_4\omega_1u^3 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2u - \omega_3{c_s}^2\omega_1u\omega_2 - v^2\omega_3\omega_1u\omega_2^2 + \frac{3}{2}\omega_4\omega_1u^3\omega_2 - 5\omega_1u^2\omega_2 + \frac{5}{4}\omega_4 + \frac{3}{4}\omega_4\omega_1u + \omega_3\omega_4{c_s}^2\omega_1u\omega_2 - \frac{1}{4}\omega_4^2u - \frac{1}{4}\omega_4^2u^3\omega_2 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2 + \frac{1}{2}\omega_3\omega_4\omega_1u^2 + \frac{1}{2}\omega_3\omega_4u\omega_2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 - \frac{1}{2}\omega_1\omega_2 + \frac{1}{4}\omega_3^2\omega_1u\omega_2 + \frac{1}{4}\omega_3^2u\omega_2 - \frac{1}{4}v^2\omega_4^2u + \frac{1}{4}\omega_3^2u^2 - \omega_3\omega_1^2u^3 + \frac{1}{2}\omega_1 - \frac{1}{2}\omega_3\omega_1u^2\omega_2^2 + \frac{1}{2}\omega_3^2\omega_1u^2 - \frac{1}{2}\omega_3\omega_4^2{c_s}^2u\omega_2 + \frac{5}{2}\omega_3\omega_4u^2 - \frac{1}{2}v^2\omega_3^2\omega_1u - 2\omega_1u + \frac{1}{2}\omega_3{c_s}^2\omega_2^2 - \frac{1}{2}\omega_4\omega_1u^2\omega_2^2 + \frac{3}{4}v^2\omega_4^2\omega_2 + \frac{1}{4}v^2\omega_3\omega_1 + \frac{1}{4}\omega_3\omega_4\omega_1u\omega_2 - \frac{1}{4}\omega_4^2 - \omega_3\omega_4{c_s}^2\omega_1u - \frac{1}{2}\omega_3^2\omega_1u^2\omega_2 - 3\omega_3\omega_4u^2\omega_2 - \frac{1}{2}\omega_3\omega_4^2u^2 - \frac{1}{4}\omega_3^2u^2\omega_2 - \omega_3u^2 - \frac{1}{2}\omega_3^2\omega_4u^3 - \frac{3}{2}\omega_3\omega_1u^3 + \frac{1}{4}v^2\omega_4^2u\omega_2 + \frac{1}{2}\omega_3\omega_1u\omega_2^2 + \omega_3\omega_1^2u^3\omega_2 - \frac{3}{4}v^2\omega_4^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \frac{1}{4}v^2\omega_4\omega_2 - \frac{1}{4}\omega_3\omega_2^2 + \omega_4\omega_1^2u^3\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2 + \omega_1^2u^2\omega_2 - \frac{11}{4}\omega_3\omega_1u^2 - \frac{1}{2}\omega_3^2\omega_4u^2 - \frac{1}{2}\omega_3\omega_4^2u^3 - \frac{1}{2}\omega_3u\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1 - \frac{1}{2}v^2\omega_4^2\omega_1u\omega_2 - \frac{3}{2}\omega_4\omega_2 + \frac{3}{4}v^2\omega_3\omega_2^2 - \frac{1}{4}v^2\omega_3\omega_1\omega_2 + \frac{5}{2}\omega_1u\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2 + \omega_2 - \frac{1}{4}\omega_4u^2\omega_2^2 + \frac{1}{2}\omega_4u + \frac{1}{2}v^2\omega_3^2\omega_1u\omega_2 - \frac{1}{2}v^2\omega_3\omega_1u + \frac{1}{4}\omega_3\omega_1\omega_2 - 2\omega_1^2u^3\omega_2 - \frac{1}{2}\omega_1u\omega_2^2 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2u\omega_2 - \frac{1}{2}\omega_4\omega_1^2u^2\omega_2 - 2\omega_3\omega_4\omega_1u^3\omega_2 + 3\omega_3\omega_4{c_s}^2\omega_2 - \omega_4u^2 - \frac{1}{2}\omega_3^2{c_s}^2 + \frac{1}{2}\omega_4^2\omega_1u^3 + \frac{1}{2}\omega_3^2{c_s}^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1u^3\omega_2 + \frac{5}{4}\omega_4u^2\omega_2 + 2\omega_1^2u^3 - \frac{5}{2}\omega_3\omega_4{c_s}^2 + \frac{1}{2}\omega_4\omega_1^2u^2 + \frac{7}{4}\omega_3\omega_1u - \frac{1}{2}\omega_3\omega_1^2u^2\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2u - \frac{1}{4}\omega_3^2u^3\omega_2 + \frac{1}{4}\omega_4\omega_2^2 - \frac{1}{2}\omega_3^2{c_s}^2u + \frac{1}{4}v^2\omega_3\omega_2 - \frac{1}{2}\omega_3\omega_4u^3\omega_2 - \frac{1}{2}\omega_3^2\omega_1u^3\omega_2 - \omega_4\omega_1^2u^3 + v^2\omega_4 - \omega_1^2u^2 + \frac{1}{4}\omega_4^2u\omega_2 + \frac{1}{2}\omega_4^2\omega_1u^2 + \frac{1}{2}\omega_3^2{c_s}^2u\omega_2 - \frac{3}{4}\omega_4\omega_1u\omega_2 - \frac{3}{4}v^2\omega_4\omega_2^2 + \frac{1}{2}\omega_3\omega_4u^2\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2 + \frac{1}{2}v^2\omega_4^2\omega_1u - \frac{9}{4}\omega_3\omega_1u\omega_2 + \frac{1}{2}\omega_3u,$

$\alpha_{x+\delta_l,y}^{[\mu_4],t-3\delta_t} = 3 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_4^2u^2\omega_2 - \frac{3}{4}\omega_3^2\omega_2 + \frac{3}{4}\omega_4\omega_1 - \frac{15}{4}\omega_3 + 2\omega_4\omega_1u^2\omega_2 - \frac{15}{4}\omega_3\omega_4\omega_2 + \frac{1}{4}\omega_3^2\omega_1\omega_2 + \omega_3\omega_4\omega_1u - \frac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_4u\omega_2^2 + 2\omega_3\omega_1u^2\omega_2 + \omega_3^2u + \omega_3^2\omega_4u^2\omega_2 + 6\omega_3\omega_4u + \frac{1}{2}\omega_3^2\omega_1u - \frac{1}{2}\omega_4\omega_1^2u\omega_2 - v^2\omega_4\omega_1\omega_2 - 2\omega_4\omega_1u^2 + \frac{13}{4}\omega_3\omega_4 + \frac{1}{2}\omega_4^2u^2 + 3\omega_4u\omega_2 - \frac{1}{2}\omega_3\omega_1^2u\omega_2 + \frac{1}{2}v^2\omega_3^2 + \frac{1}{2}\omega_3\omega_1^2u - \frac{1}{2}v^2\omega_3^2\omega_2 - \omega_3\omega_1^2u^2 - \frac{3}{4}\omega_4\omega_1\omega_2 + \frac{7}{4}\omega_3\omega_1 - \frac{1}{2}\omega_4^2\omega_2 + \omega_3\omega_4^2u^2\omega_2 + v^2\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{11}{4}\omega_4 - \frac{7}{2}\omega_4\omega_1u - \frac{1}{2}\omega_4u\omega_2^2 + \omega_4^2u + \frac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 3\omega_3\omega_4\omega_1u^2 - 7\omega_3\omega_4u\omega_2 + 2\omega_1\omega_2 - \frac{1}{2}\omega_3^2\omega_1u\omega_2 - \omega_3^2u\omega_2 + \frac{1}{2}\omega_3^2u^2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3^2\omega_1u^2 + \omega_3\omega_4u^2 - \frac{1}{2}\omega_4^2\omega_1u\omega_2 + 5\omega_1u + \omega_1^2u\omega_2 + \frac{1}{2}v^2\omega_4^2\omega_2 - \omega_3\omega_4\omega_1u\omega_2 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 - \frac{1}{2}\omega_3^2\omega_1u^2\omega_2 - \omega_3\omega_4u^2\omega_2 - \omega_3\omega_4^2u^2 - \frac{1}{2}\omega_3^2u^2\omega_2 - \frac{1}{2}\omega_3\omega_1u\omega_2^2 - \omega_1^2u - \frac{1}{2}v^2\omega_4^2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 + \frac{1}{2}\omega_4^2\omega_1u + v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_2^2 - 3\omega_3\omega_4\omega_1u^2\omega_2 - 2\omega_1^2u^2\omega_2 - \frac{1}{2}\omega_4\omega_1u\omega_2^2 -$

$$2\omega_3\omega_1u^2-\omega_3^2\omega_4u^2+3\omega_3u\omega_2+\tfrac{3}{2}\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2\omega_1+\tfrac{13}{4}\omega_4\omega_2+v^2\omega_3\omega_2^2-\tfrac{3}{4}\omega_3\omega_4\omega_1+v^2\omega_3\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2^2-6\omega_1u\omega_2+\omega_2^2-4\omega_2-\tfrac{5}{2}\omega_4u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4\omega_2-\tfrac{9}{4}\omega_3\omega_1\omega_2+\omega_1u\omega_2^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\omega_4\omega_1^2u^2-\tfrac{3}{2}\omega_3^2\omega_4u-\tfrac{7}{2}\omega_3\omega_1u+\omega_3\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3u\omega_2^2-\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2-v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+2\omega_1^2u^2-\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4^2\omega_2+4\omega_4\omega_1u\omega_2-v^2\omega_4\omega_2^2+\tfrac{19}{4}\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_4^2u+\tfrac{3}{2}\omega_3^2\omega_4u\omega_2+4\omega_3\omega_1u\omega_2-\tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-3\delta_t}=-2+\tfrac{1}{2}v^2\omega_3^2\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{5}{2}\omega_3{c_s}^2\omega_2+2v\omega_4+6\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2\omega_2+v^2\omega_3\omega_1^2u^2\omega_2-\tfrac{3}{4}v^2\omega_3\omega_1^2-\tfrac{7}{4}\omega_4\omega_1+\tfrac{1}{2}\omega_3+\tfrac{13}{4}\omega_4\omega_1u^2\omega_2+v^3\omega_3^2\omega_1\omega_2+\tfrac{11}{4}v\omega_4^2\omega_1u^2-\tfrac{3}{2}v\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{3}{4}v\omega_3\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1+\tfrac{7}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{3}{2}v\omega_3^2\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2+\tfrac{15}{4}\omega_3\omega_1u^2\omega_2+2v^2\omega_3{c_s}^2\omega_2^2-3v^2\omega_3\omega_4{c_s}^2\omega_2+v^2\omega_4\omega_1^2u^2\omega_2-\omega_1^2+\tfrac{1}{4}v^2\omega_3\omega_4+v\omega_3{c_s}^2\omega_1^2\omega_2+\tfrac{1}{2}v^3\omega_3\omega_2^2+\omega_4\omega_1^2u^4+\omega_3^2\omega_4{c_s}^2u^2\omega_2-v^2\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_3^2\omega_1u^4\omega_2+\tfrac{9}{4}v^2\omega_4\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3\omega_1^2\omega_2+2v^2\omega_2-v^2\omega_3^2\omega_4\omega_1u^2+\tfrac{3}{2}v\omega_4\omega_1^2u^2\omega_2+v^2\omega_3\omega_1^2u^2-v\omega_3\omega_4{c_s}^2\omega_2+3v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2-\tfrac{33}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}v^3\omega_3^2\omega_1-\tfrac{3}{2}v^3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4+\tfrac{5}{4}\omega_4^2u^2+4\omega_3{c_s}^2+\tfrac{1}{2}\omega_4^2\omega_1u^4\omega_2-\tfrac{1}{2}v\omega_3^2{c_s}^2+v^2\omega_3^2-\tfrac{1}{2}\omega_4^2\omega_1u^4+\tfrac{5}{4}v\omega_3\omega_1\omega_2-\tfrac{9}{2}v\omega_3\omega_4{c_s}^2-v\omega_4\omega_1^2u^2+\tfrac{1}{2}v^3\omega_4\omega_1\omega_2^2+\tfrac{3}{2}v\omega_3\omega_1^2u^2\omega_2-\omega_3^2\omega_4{c_s}^2u^2+\tfrac{1}{4}\omega_3\omega_1^2-\tfrac{5}{4}v^2\omega_4\omega_1-\tfrac{1}{4}v^2\omega_3^2\omega_2-\tfrac{5}{2}v\omega_4u^2\omega_2+\tfrac{1}{2}v^4\omega_4^2\omega_2-v\omega_3^2{c_s}^2\omega_2-2v^2\omega_3-\tfrac{3}{2}v\omega_3\omega_4^2\omega_1u^2+\tfrac{5}{4}\omega_3u^2\omega_2-2v\omega_3\omega_4\omega_1u^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{1}{4}\omega_3\omega_1^2u^2+v^2\omega_3\omega_4^2{c_s}^2+2v^3\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{3}{4}\omega_3\omega_1+v\omega_3\omega_4{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{2}v\omega_4u^2\omega_2^2+4v^2\omega_1u^2\omega_2^2-\tfrac{1}{4}v\omega_3^2\omega_1+\tfrac{1}{4}v\omega_4\omega_2-3v^2\omega_1\omega_2+v^2\omega_3^2{c_s}^2\omega_1\omega_2-3\omega_1u^2\omega_2-v^4\omega_3\omega_1\omega_2^2-\tfrac{7}{2}v\omega_3^2\omega_4u^2-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2-5v\omega_3\omega_1u^2+\tfrac{3}{2}\omega_4-\tfrac{1}{2}v^3\omega_4\omega_2^2+\tfrac{1}{2}v\omega_3\omega_4\omega_1-v^2\omega_3u^2\omega_2^2+v^2\omega_3\omega_4u^2\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3^2\omega_1\omega_2+\tfrac{25}{4}\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}v^4\omega_4^2\omega_1\omega_2+v\omega_3^2{c_s}^2\omega_1\omega_2+\tfrac{7}{2}\omega_3\omega_4{c_s}^2\omega_1-\omega_4\omega_1^2u^4\omega_2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{4}v^3\omega_3^2-\omega_3\omega_4^2{c_s}^2u^2+\omega_3^2{c_s}^2\omega_1-v\omega_3\omega_4\omega_1^2u^2+\tfrac{3}{2}\omega_3^2u^2-\tfrac{1}{2}v^2\omega_4^2u^2\omega_2+3\omega_1+2v\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}\omega_3^2\omega_1u^2+v^2\omega_3^2\omega_4{c_s}^2+\tfrac{19}{4}\omega_3\omega_4u^2+\tfrac{3}{2}v^3\omega_3\omega_2+\tfrac{1}{4}v^3\omega_4^2\omega_1-v^2\omega_3\omega_4^2\omega_1u^2-v^2\omega_3\omega_4^2{c_s}^2\omega_1+\omega_3\omega_1^2u^4\omega_2-\tfrac{3}{4}v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2+\tfrac{11}{4}v^2\omega_3\omega_1+2\omega_3{c_s}^2\omega_1^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{1}{2}v^4\omega_3^2\omega_2+v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_1^2\omega_2-\tfrac{7}{2}v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_1^2\omega_2-v\omega_3{c_s}^2\omega_2^2+\tfrac{1}{2}v\omega_4\omega_1^2-\tfrac{1}{4}\omega_3^2\omega_1u^2\omega_2-\tfrac{7}{4}\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1^2u^2-\omega_3^2{c_s}^2\omega_1u^2\omega_2-v^3\omega_4^2\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_1u^2\omega_2^2-v^3\omega_3^2\omega_2+v\omega_3{c_s}^2\omega_1\omega_2^2+\tfrac{11}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}v^2\omega_4^2\omega_1u^2-\tfrac{3}{2}\omega_3\omega_4^2u^2+\omega_3\omega_4^2{c_s}^2u^2\omega_2+\tfrac{25}{2}v\omega_3\omega_4\omega_1u^2-\tfrac{3}{4}\omega_3^2u^2\omega_2-2\omega_3u^2-\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v\omega_3^2u^2-2\omega_3{c_s}^2\omega_1^2u^2-\tfrac{3}{4}v^2\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2+v^2\omega_3\omega_4^2u^2\omega_2-\omega_3\omega_1^2u^4+\tfrac{1}{2}v\omega_4\omega_1u^2\omega_2^2+\tfrac{9}{2}v\omega_3\omega_4u^2+\tfrac{11}{4}v\omega_3^2\omega_1u^2-\tfrac{7}{4}v^2\omega_4\omega_2-v^2\omega_3^2\omega_1+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+\tfrac{3}{2}v\omega_1\omega_2-\tfrac{3}{4}\omega_3\omega_4\omega_1u^2\omega_2-\omega_1^2u^2\omega_2+v\omega_3\omega_4^2u^2\omega_2-\tfrac{35}{4}\omega_3\omega_1u^2-\tfrac{3}{2}\omega_3^2\omega_4u^2+v^2\omega_4\omega_1^2u^2+10v\omega_1u^2\omega_2-v^2\omega_4\omega_1u^2\omega_2^2-v^2\omega_3^2{c_s}^2\omega_2-\tfrac{11}{2}\omega_3{c_s}^2\omega_1-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1-v^4\omega_4\omega_2^2-\tfrac{1}{2}\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4^2\omega_1u^2-\tfrac{1}{2}v^3\omega_4\omega_1^2\omega_2-v\omega_3\omega_1^2u^2-\tfrac{1}{2}v^3\omega_3\omega_1\omega_2^2-\tfrac{1}{2}v\omega_3\omega_1-v^2\omega_3\omega_1u^2\omega_2^2+v^2\omega_1^2\omega_2-\tfrac{5}{2}v\omega_3u^2\omega_2+\omega_2-2v^2\omega_3{c_s}^2\omega_1\omega_2^2-3\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^4-\tfrac{1}{4}v\omega_4\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u^2-2v^3\omega_3\omega_1\omega_2-v\omega_2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2+\tfrac{1}{2}v\omega_3u^2\omega_2^2+\tfrac{1}{2}v\omega_3\omega_1^2+\omega_3\omega_4{c_s}^2\omega_2+v^2\omega_3^2\omega_4u^2\omega_2-\omega_4u^2-\omega_3^2{c_s}^2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_2+\tfrac{1}{4}\omega_4u^2\omega_2-\tfrac{1}{4}v^3\omega_4^2+v^3\omega_4^2\omega_2-3\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_4-\tfrac{1}{2}v\omega_3\omega_1^2\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2-v^2\omega_4u^2\omega_2^2+\tfrac{3}{2}\omega_3{c_s}^2\omega_1^2+\tfrac{1}{4}v\omega_3^2+\tfrac{1}{4}v\omega_4^2u^2-2v\omega_1u^2\omega_2^2+\tfrac{3}{4}v^2\omega_4^2\omega_1-\tfrac{1}{4}v^2\omega_3\omega_2+v^4\omega_4\omega_1\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_1\omega_2-5v\omega_4\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{2}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+v^2\omega_4+2\omega_1^2u^2-6v\omega_4\omega_1u^2\omega_2+\tfrac{5}{4}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}v^4\omega_3^2\omega_1\omega_2+v^4\omega_3\omega_2^2+\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\tfrac{1}{2}v^2\omega_4\omega_2^2+\tfrac{1}{4}\omega_4^2\omega_1-4v^2\omega_1^2u^2\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{5}{2}v\omega_4\omega_1+v\omega_4^2u^2\omega_2-\omega_3{c_s}^2\omega_1^2\omega_2+3\omega_3\omega_4{c_s}^2\omega_1u^2+5v\omega_3{c_s}^2\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4{c_s}^2+v\omega_3^2\omega_4u^2\omega_2-6v\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v\omega_3^2\omega_1\omega_2-v\omega_3\omega_4{c_s}^2\omega_1^2+\tfrac{1}{4}v\omega_3\omega_4\omega_2-6v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3^2\omega_4\omega_1u^2-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_4],t-3\delta_t}=3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2-\tfrac{5}{2}v\omega_4+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_2+\tfrac{13}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3-\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1-\tfrac{3}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2-\tfrac{7}{2}v\omega_3\omega_2-v\omega_4^2\omega_1+\omega_3\omega_1u^2\omega_2+\omega_1^2+v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2+\tfrac{1}{2}v\omega_4\omega_2^2+v^2\omega_3\omega_2^2\omega_1+2v^2\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1^2\omega_2+v\omega_3\omega_4\omega_1^2+\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3^2+4v\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_3^2\omega_4-\omega_3\omega_1^2+\tfrac{1}{2}v^2\omega_3^2\omega_2+\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2^2+\tfrac{1}{2}\omega_3\omega_4^2\omega_1-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{19}{4}\omega_3\omega_1-v\omega_3^2\omega_1-\tfrac{7}{2}v\omega_4\omega_2+2v^2\omega_2^2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4-7v\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+3v^2\omega_3\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+2\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_2^2+\tfrac{1}{2}\omega_3^2u^2-4\omega_1-\tfrac{1}{2}\omega_3^2\omega_1u^2-v^2\omega_3\omega_4^2-\tfrac{1}{2}v\omega_4^2\omega_1\omega_2+v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2+v\omega_1^2\omega_2+\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1^2+\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4\omega_1-2v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-6v\omega_1\omega_2-\omega_3\omega_1u^2-\tfrac{3}{2}v\omega_3\omega_4^2-\tfrac{5}{2}v\omega_3-\tfrac{3}{4}\omega_3^2\omega_1+\tfrac{3}{4}\omega_4\omega_2-v^2\omega_3\omega_2^2-\tfrac{15}{4}\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1\omega_2-v\omega_2^2+3v\omega_3\omega_1+\tfrac{1}{2}v\omega_4^2\omega_2-\tfrac{3}{2}\omega_2+\tfrac{3}{2}v\omega_3\omega_4^2\omega_1+4v\omega_4\omega_1\omega_2+5v\omega_2-v^2\omega_3\omega_4\omega_1-\tfrac{9}{4}\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\tfrac{1}{2}v\omega_4\omega_1\omega_2^2-\omega_4\omega_1^2u^2+6v\omega_3\omega_4-\tfrac{1}{2}v\omega_3\omega_1^2\omega_2-\omega_3\omega_1^2u^2\omega_2+v\omega_3^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-2v^2\omega_3\omega_2-3v^2\omega_3\omega_4\omega_1\omega_2+v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+\tfrac{1}{2}\omega_3\omega_4\omega_1^2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+v\omega_1\omega_2^2-v\omega_3\omega_4\omega_1\omega_2-v^2\omega_4\omega_2^2+\tfrac{7}{4}\omega_3\omega_2-\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{1}{2}v\omega_3^2\omega_2+3v\omega_4\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1\omega_2+v\omega_3\omega_4\omega_2-v^2\omega_3^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=2+\tfrac{1}{2}\omega_3\omega_4\omega_1\omega_2-\omega_3^2\omega_4{c_s}^2+5\omega_3{c_s}^2\omega_2-\omega_3\omega_4^2\omega_1u^2\omega_2-8\omega_1u^2+\tfrac{3}{2}\omega_4^2u^2\omega_2-\omega_3\omega_4^2{c_s}^2\omega_1\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1^2+3\omega_4\omega_1-\tfrac{1}{2}\omega_3+\omega_3\omega_4^2{c_s}^2\omega_2-13\omega_4\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_2-6\omega_3{c_s}^2\omega_1\omega_2+\omega_3\omega_4{c_s}^2\omega_1^2-13\omega_3\omega_1u^2\omega_2-3\omega_3^2\omega_4u^2\omega_2+\omega_1^2-2\omega_1u^2\omega_2^2-v^2\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1^2\omega_2+\tfrac{23}{2}\omega_4\omega_1u^2-\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_3\omega_4-\tfrac{3}{2}\omega_4^2u^2-4\omega_3{c_s}^2-$$

$\frac{3}{2}v^2\omega_3^2+\frac{1}{2}\omega_3u^2\omega_2^2+\frac{1}{2}\omega_4\omega_1\omega_2^2-\frac{1}{2}\omega_3\omega_1^2+\frac{5}{2}v^2\omega_4\omega_1+\frac{3}{2}v^2\omega_3^2\omega_2+2v^2\omega_3-\frac{5}{2}\omega_3u^2\omega_2+\frac{1}{2}\omega_3\omega_1^2u^2-\frac{7}{2}\omega_4\omega_1\omega_2-\frac{1}{2}v^2\omega_3\omega_1^2\omega_2+\omega_3\omega_1-\frac{1}{2}\omega_4^2\omega_2-\frac{1}{2}v^2\omega_4\omega_1^2-3\omega_3\omega_4^2u^2\omega_2-\omega_3\omega_4\omega_1^2u^2\omega_2+10\omega_1u^2\omega_2-\frac{3}{2}v^2\omega_4\omega_1\omega_2^2-\frac{5}{2}\omega_4+\omega_3^2\omega_4{c_s}^2\omega_2-\frac{3}{2}v^2\omega_3^2\omega_1\omega_2-12\omega_3\omega_4\omega_1u^2-6\omega_3\omega_4{c_s}^2\omega_1+3\omega_1\omega_2+\omega_3{c_s}^2\omega_1\omega_2^2-\omega_3^2{c_s}^2\omega_1-\frac{3}{2}\omega_3^2u^2-3\omega_1+\frac{3}{2}\omega_3\omega_1u^2\omega_2^2-\frac{5}{2}\omega_3^2\omega_1u^2-7\omega_3\omega_4u^2-\omega_3{c_s}^2\omega_2^2-\omega_3\omega_4{c_s}^2\omega_1^2\omega_2+\frac{3}{2}\omega_4\omega_1u^2\omega_2^2-\frac{3}{2}v^2\omega_4^2\omega_2-\frac{5}{2}v^2\omega_3\omega_1-\frac{1}{2}\omega_4\omega_1^2+\frac{1}{2}\omega_4^2-\omega_1^2\omega_2+\frac{5}{2}\omega_3^2\omega_1u^2\omega_2+8\omega_3\omega_4u^2\omega_2+\omega_3\omega_4\omega_1^2u^2+\frac{1}{2}\omega_4^2\omega_1\omega_2+3\omega_3\omega_4^2u^2+\frac{3}{2}\omega_3^2u^2\omega_2+2\omega_3u^2+\omega_3^2{c_s}^2\omega_1\omega_2+\frac{3}{2}v^2\omega_4^2+7\omega_3\omega_4{c_s}^2\omega_1\omega_2+\frac{5}{2}\omega_4^2\omega_1u^2\omega_2+\frac{1}{2}v^2\omega_4\omega_2+\frac{3}{2}v^2\omega_3^2\omega_1+\frac{1}{2}\omega_3\omega_2^2+13\omega_3\omega_4\omega_1u^2\omega_2+2\omega_1^2u^2\omega_2+\frac{23}{2}\omega_3\omega_1u^2+3\omega_3^2\omega_4u^2-\omega_3^2\omega_4{c_s}^2\omega_1\omega_2+5\omega_3{c_s}^2\omega_1+\omega_3\omega_4^2{c_s}^2\omega_1+3\omega_4\omega_2-\frac{3}{2}v^2\omega_3\omega_2^2-\frac{1}{2}\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4\omega_1^2\omega_2+v^2\omega_3\omega_1\omega_2+\omega_3\omega_4^2\omega_1u^2-\omega_3^2\omega_4\omega_1u^2\omega_2-\frac{1}{2}\omega_3\omega_1\omega_2^2+\omega_3\omega_4{c_s}^2\omega_2^2-2\omega_2+\frac{1}{2}\omega_4u^2\omega_2^2+\frac{1}{2}v^2\omega_4\omega_1^2\omega_2-\frac{1}{2}\omega_3\omega_1\omega_2-\frac{1}{2}\omega_4\omega_1^2u^2\omega_2-6\omega_3\omega_4{c_s}^2\omega_2+2\omega_4u^2+\omega_3^2{c_s}^2-\omega_3^2{c_s}^2\omega_2-\frac{5}{2}\omega_4u^2\omega_2+5\omega_3\omega_4{c_s}^2+\frac{1}{2}\omega_4\omega_1^2u^2-\frac{1}{2}\omega_3\omega_1^2u^2\omega_2-\omega_3{c_s}^2\omega_1^2-\frac{1}{2}\omega_4\omega_2^2-\frac{3}{2}v^2\omega_4^2\omega_1-\frac{1}{2}v^2\omega_3\omega_2+\frac{3}{2}v^2\omega_3\omega_1\omega_2^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2^2-2v^2\omega_4-2\omega_1^2u^2-\frac{5}{2}\omega_4^2\omega_1u^2+\frac{3}{2}v^2\omega_4^2\omega_1\omega_2-\omega_3\omega_4\omega_1u^2\omega_2^2+\frac{3}{2}v^2\omega_4\omega_2^2-\frac{1}{2}\omega_4^2\omega_1-\omega_3\omega_4u^2\omega_2^2+\omega_3{c_s}^2\omega_1^2\omega_2+\omega_3^2\omega_4\omega_1u^2+\omega_3^2\omega_4{c_s}^2\omega_1,$

$\alpha_{x,y}^{[\mu_4],t-4\delta_t}=-4-8\omega_3\omega_4\omega_1\omega_2+\omega_3^2\omega_2-6\omega_4\omega_1+5\omega_3+7\omega_3\omega_4\omega_2-\omega_3^2\omega_1\omega_2+\omega_1\omega_2^2-\omega_1^2-\omega_3\omega_1^2\omega_2-6\omega_3\omega_4-\omega_4\omega_1\omega_2^2+\omega_3\omega_1^2-\omega_3\omega_4^2\omega_1+7\omega_4\omega_1\omega_2-6\omega_3\omega_1+\omega_4^2\omega_2+\omega_3\omega_4^2+5\omega_4-\omega_3^2\omega_4\omega_1-6\omega_1\omega_2+5\omega_1+\omega_3\omega_4\omega_1\omega_2^2+\omega_4\omega_1^2-\omega_4^2-\omega_3\omega_4\omega_2^2+\omega_1^2\omega_2-\omega_4^2\omega_1\omega_2+\omega_3^2\omega_4\omega_1\omega_2+\omega_3\omega_2^2+\omega_3^2\omega_1-6\omega_4\omega_2+7\omega_3\omega_4\omega_1-\omega_4\omega_1^2\omega_2-\omega_3\omega_1\omega_2^2-\omega_2^2+5\omega_2-\omega_3^2\omega_4\omega_2+7\omega_3\omega_1\omega_2+\omega_3^2\omega_4+\omega_3\omega_4^2\omega_1\omega_2+\omega_4\omega_2^2-\omega_3^2-\omega_3\omega_4\omega_1^2+\omega_3\omega_4\omega_1^2\omega_2-\omega_3\omega_4^2\omega_2-6\omega_3\omega_2+\omega_4^2\omega_1,$

8.6 EFDE for μ_5

$$\mu_{5,x,y}^{t+\delta_t}=\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_1],t-\ell\delta_t}\mu_{x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t}+\sum_{\ell=0}^{4}\sum_{i,j=-\ell-1}^{\ell+1}\alpha_{x+i\delta_l,y+j\delta_l}^{[\mu_5],t-\ell\delta_t}\mu_{5,x+i\delta_l,y+j\delta_l}^{t-\ell\delta_t},$$

where the non-zero coefficients are given by:

$\alpha_{x,y-\delta_l}^{[\mu_1],t}=1+\frac{1}{2}v\omega_4-\frac{1}{4}\omega_3+v^2\omega_2+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{4}v^2\omega_3-\frac{1}{4}\omega_4-\frac{1}{4}\omega_3u^2+\frac{1}{2}v\omega_3-\frac{1}{2}\omega_2-\frac{1}{2}v\omega_2+\frac{1}{4}\omega_4u^2-\frac{1}{4}v^2\omega_4.$

$\alpha_{x,y+\delta_l}^{[\mu_1],t}=1-\frac{1}{2}v\omega_4-\frac{1}{4}\omega_3+v^2\omega_2+\frac{1}{2}\omega_3{c_s}^2-\frac{1}{4}v^2\omega_3-\frac{1}{4}\omega_4-\frac{1}{4}\omega_3u^2-\frac{1}{2}v\omega_3-\frac{1}{2}\omega_2+\frac{1}{2}v\omega_2+\frac{1}{4}\omega_4u^2-\frac{1}{4}v^2\omega_4.$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t}=-1+\frac{1}{8}\omega_4^2u^3-\frac{1}{2}\omega_4\omega_1u^3+\frac{1}{4}\omega_3{c_s}^2\omega_2-\frac{1}{2}v\omega_4-\omega_1u^2-\frac{1}{4}\omega_4\omega_1+\frac{1}{4}\omega_3-\frac{1}{4}v\omega_3\omega_2-\frac{1}{8}\omega_3^2u-\frac{1}{8}v^2\omega_3\omega_4+\frac{1}{4}\omega_3\omega_4u+\frac{1}{4}v\omega_3\omega_1u+\frac{3}{4}\omega_4\omega_1u^2+\frac{1}{4}v^3\omega_4\omega_2-\frac{1}{8}\omega_3\omega_4-\frac{3}{8}\omega_4^2u^2-\frac{1}{8}v^2\omega_3^2u-\frac{1}{2}\omega_3{c_s}^2+\frac{1}{4}\omega_4u\omega_2-\frac{1}{4}v\omega_3^2{c_s}^2-\frac{1}{4}v\omega_3\omega_4{c_s}^2-\frac{1}{4}v\omega_4u^2\omega_2+\frac{1}{4}v^2\omega_3-\frac{1}{8}\omega_3u^2\omega_2-\frac{1}{2}v\omega_1u\omega_2-\frac{1}{8}\omega_3^2u^3-\frac{1}{4}v\omega_4\omega_2+\frac{1}{2}v\omega_3u\omega_2+\frac{1}{2}\omega_1u^2\omega_2-\frac{1}{2}v\omega_3\omega_1u^2+\frac{3}{4}\omega_4+\frac{3}{8}\omega_4^2u-\frac{1}{4}\omega_1\omega_2+\frac{1}{8}v^3\omega_3^2-\frac{1}{8}v^2\omega_4^2u+\frac{1}{4}\omega_3^2u^2+\frac{1}{2}\omega_1-\frac{1}{8}\omega_3\omega_4u^2-\frac{1}{4}v^3\omega_3\omega_2+\frac{1}{4}v^2\omega_3\omega_4u+\frac{1}{2}\omega_1u+\frac{1}{8}v\omega_4^2-\frac{1}{8}\omega_4^2+\frac{1}{4}\omega_3u^2+\frac{1}{2}\omega_3\omega_1u^3+\frac{1}{8}v\omega_3^2u^2+\frac{1}{8}v^2\omega_4^2+\frac{1}{4}v\omega_3\omega_4u^2+\frac{1}{8}v^2\omega_4\omega_2-\frac{1}{2}v\omega_1\omega_2-\frac{1}{4}\omega_3\omega_1u^2+v\omega_1u^2\omega_2+\frac{1}{4}\omega_3u\omega_2-\frac{1}{4}v\omega_4^2u-\frac{1}{2}v\omega_3-\frac{1}{8}\omega_4\omega_2+\frac{1}{4}v\omega_4\omega_1u-\frac{1}{4}\omega_1u\omega_2+\frac{1}{4}v\omega_3\omega_1-\frac{1}{4}v\omega_3u^2\omega_2+\frac{1}{2}\omega_2-\omega_4u+v\omega_2+\frac{1}{4}\omega_4u^2-\frac{1}{8}\omega_4u^2\omega_2-\frac{1}{8}v^3\omega_4^2+\frac{1}{4}\omega_3\omega_4{c_s}^2+\frac{1}{4}v\omega_3\omega_4-\frac{1}{4}\omega_3\omega_1u+\frac{1}{8}v\omega_3^2+\frac{1}{8}v\omega_4^2u^2-\frac{1}{4}\omega_3\omega_4{c_s}^2u+\frac{1}{4}\omega_3^2{c_s}^2u+\frac{1}{2}v\omega_4u\omega_2-\frac{1}{8}v^2\omega_3\omega_2-\frac{1}{2}v\omega_4\omega_1u^2-\frac{1}{4}v\omega_3^2u-\frac{1}{4}v^2\omega_4-\frac{1}{2}v\omega_3\omega_4u-\frac{1}{8}\omega_3\omega_2+\frac{1}{4}v\omega_4\omega_1+\frac{1}{2}v\omega_3{c_s}^2\omega_2,$

$\alpha_{x-\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t}=1+v\omega_4+\frac{1}{4}\omega_4\omega_1+\frac{1}{4}v\omega_3\omega_2-\frac{1}{2}v\omega_3\omega_1u-\frac{1}{2}\omega_4\omega_1u^2+\frac{1}{4}\omega_4^2u^2-\frac{1}{4}\omega_4u\omega_2-\frac{1}{4}v^2\omega_3^2+v\omega_1u\omega_2+\frac{1}{4}v\omega_4\omega_2-\frac{1}{2}v\omega_3u\omega_2-\omega_4+\frac{1}{4}\omega_4\omega_1u-\frac{1}{2}\omega_4^2u+\frac{1}{4}\omega_1\omega_2-\frac{1}{4}\omega_3^2u^2-\frac{1}{2}\omega_1-\omega_1u-\frac{1}{2}v\omega_4^2+\frac{1}{4}\omega_4^2+\frac{1}{4}v^2\omega_4^2-\frac{1}{2}v^2\omega_4\omega_2+\frac{1}{2}v\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1u^2-\frac{1}{4}\omega_3u\omega_2+\frac{1}{2}v\omega_4^2u+\frac{1}{4}\omega_4\omega_2-\frac{1}{2}v\omega_4\omega_1u+\frac{1}{2}\omega_1u\omega_2-\frac{1}{4}v\omega_3\omega_1-\frac{1}{2}\omega_2+\omega_4u-v\omega_2+\frac{1}{4}\omega_3\omega_1u-\frac{1}{2}v\omega_4u\omega_2+\frac{1}{2}v^2\omega_3\omega_2+\frac{1}{2}v\omega_3^2u-\frac{1}{4}v\omega_4\omega_1,$

$\alpha_{x,y-\delta_l}^{[\mu_1],t-\delta_t}=-1-\omega_3{c_s}^2\omega_2-\frac{1}{2}v\omega_4+2\omega_1u^2+\frac{1}{4}\omega_3-2v^3\omega_2^2+\frac{1}{4}v^2\omega_3\omega_4+2v^2\omega_2-\frac{1}{2}\omega_4\omega_1u^2+v^3\omega_4\omega_2+2\omega_3{c_s}^2+v\omega_3^2{c_s}^2+\frac{1}{4}v^2\omega_3^2+v\omega_3\omega_4{c_s}^2-v^2\omega_3+\frac{1}{2}\omega_3u^2\omega_2-\omega_1u^2\omega_2-v^2\omega_2^2+v\omega_3\omega_1u^2+\frac{1}{4}\omega_4-\frac{1}{2}v^3\omega_3^2+\frac{1}{4}\omega_3^2u^2+\frac{1}{4}\omega_3\omega_4u^2+2v^3\omega_3\omega_2-\omega_3u^2-\frac{1}{2}v\omega_3^2u^2-\frac{1}{2}v\omega_3\omega_4u^2-\frac{1}{2}v^2\omega_4\omega_2-\frac{1}{2}\omega_3\omega_1u^2-2v\omega_1u^2\omega_2-\frac{1}{2}v\omega_3-\frac{1}{2}v^3\omega_3\omega_4+v\omega_3u^2\omega_2+\frac{1}{2}\omega_2+v\omega_2-\frac{1}{2}\omega_3^2{c_s}^2-\frac{1}{2}\omega_3\omega_4{c_s}^2+v\omega_4\omega_1u^2-2v\omega_3{c_s}^2\omega_2,$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 + \tfrac{1}{2}v\omega_4 - \tfrac{5}{4}\omega_3 + \tfrac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 + \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \tfrac{1}{4}\omega_4 - v^2\omega_4\omega_2 + \tfrac{5}{2}v\omega_3 + v\omega_2^2 - \tfrac{1}{2}\omega_2 - 3v\omega_2 - v\omega_3\omega_4 - v\omega_3^2 - 3v^2\omega_3\omega_2 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-\delta_t} = -1 - \tfrac{1}{8}\omega_4^2u^3 + \tfrac{1}{2}\omega_4\omega_1u^3 + \tfrac{1}{4}\omega_3{c_s}^2\omega_2 - \tfrac{1}{2}v\omega_4 - \omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2u - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4u - \tfrac{1}{4}v\omega_3\omega_1u + \tfrac{3}{4}\omega_4\omega_1u^2 + \tfrac{1}{4}v^3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2u^2 + \tfrac{1}{8}v^2\omega_3^2u - \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v\omega_3^2{c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}v\omega_4u^2\omega_2 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_1u\omega_2 + \tfrac{1}{8}\omega_3^2u^3 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3u\omega_2 + \tfrac{1}{2}\omega_1u^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_1u^2 + \tfrac{3}{4}\omega_4 - \tfrac{3}{8}\omega_4^2u - \tfrac{1}{4}\omega_1\omega_2 + \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2u + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4u^2 - \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4u - \tfrac{1}{2}\omega_1u + \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{2}\omega_3\omega_1u^3 + \tfrac{1}{8}v\omega_3^2u^2 + \tfrac{1}{8}v^2\omega_4^2 + \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2 + v\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{1}{4}v\omega_4^2u - \tfrac{1}{2}v\omega_3 - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v\omega_4\omega_1u + \tfrac{1}{4}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{4}v\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_2 + \omega_4u + v\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_4u^2\omega_2 - \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1u + \tfrac{1}{8}v\omega_3^2 + \tfrac{1}{8}v\omega_4^2u^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2u - \tfrac{1}{4}\omega_3^2{c_s}^2u - \tfrac{1}{2}v\omega_4u\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u^2 + \tfrac{1}{4}v\omega_3^2u - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4u - \tfrac{1}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3{c_s}^2\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_5],t-\delta_t} = 1 + v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u - \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 - v\omega_1u\omega_2 + \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3u\omega_2 - \omega_4 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{2}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_1u - \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3u\omega_2 - \tfrac{1}{2}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v\omega_4\omega_1u - \tfrac{1}{2}\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \omega_4u - v\omega_2 - \tfrac{1}{4}\omega_3\omega_1u + \tfrac{1}{2}v\omega_4u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_3^2u - \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x-\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 - \omega_3^2u - \omega_3\omega_4u - \omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 + \tfrac{1}{2}\omega_4\omega_1u + \omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4u^2 - 3\omega_1u + \omega_1^2u - 3\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_4u + \tfrac{1}{2}\omega_3\omega_1u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2u^2 + \tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y}^{[\mu_1],t-\delta_t} = -2 + \omega_3{c_s}^2\omega_2 + \tfrac{1}{2}\omega_3 + 2v^2\omega_3\omega_4 - 2v^2\omega_2 - \omega_3{c_s}^2 + v^2\omega_3^2 + \tfrac{1}{2}v^2\omega_3 - \tfrac{1}{2}\omega_3u^2\omega_2 + 4v^2\omega_2^2 + \tfrac{1}{2}\omega_4 + \tfrac{1}{2}\omega_3u^2 + v^2\omega_4^2 - \tfrac{7}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_4\omega_2 - \omega_2^2 + 3\omega_2 - \tfrac{1}{2}\omega_4u^2 + \tfrac{1}{2}\omega_4u^2\omega_2 - \tfrac{7}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha_{x,y}^{[\mu_5],t-\delta_t} = 2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4\omega_4\omega_1u^2 - \omega_4^2u^2 - v^2\omega_3^2 - 4v^2\omega_2^2 - \omega_3^2u^2 - 2\omega_1 - 2\omega_3\omega_4u^2 - v^2\omega_4^2 + 4v^2\omega_4\omega_2 + 4\omega_3\omega_1u^2 + \omega_2^2 - 2\omega_2 + 4v^2\omega_3\omega_2 - 4\omega_1^2u^2,$$

$$\alpha_{x+\delta_l,y}^{[\mu_5],t-\delta_t} = 1 - \tfrac{5}{4}\omega_3 + \omega_3^2u + \omega_3\omega_4u - \omega_4\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{1}{2}\omega_3\omega_1 - \tfrac{1}{4}\omega_4 - \tfrac{1}{2}\omega_4\omega_1u + \omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_3\omega_4u^2 + 3\omega_1u - \omega_1^2u - 3\omega_3\omega_1u^2 - \tfrac{1}{2}\omega_4u - \tfrac{1}{2}\omega_3\omega_1u + \tfrac{1}{4}\omega_3^2 + 2\omega_1^2u^2 - \tfrac{5}{2}\omega_3u,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 + \tfrac{1}{8}\omega_4^2u^3 - \tfrac{1}{2}\omega_4\omega_1u^3 + \tfrac{1}{4}\omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_4 - \omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{8}\omega_3^2u - \tfrac{1}{8}v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4u - \tfrac{1}{4}v\omega_3\omega_1u + \tfrac{3}{4}\omega_4\omega_1u^2 - \tfrac{1}{4}v^3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2u^2 - \tfrac{1}{8}v^2\omega_3^2u - \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{4}\omega_4u\omega_2 + \tfrac{1}{4}v\omega_3^2{c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}v\omega_4u^2\omega_2 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_1u\omega_2 - \tfrac{1}{8}\omega_3^2u^3 + \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3u\omega_2 + \tfrac{1}{2}\omega_1u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u^2 + \tfrac{3}{4}\omega_4 + \tfrac{3}{8}\omega_4^2u - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}v^3\omega_3^2 - \tfrac{1}{8}v^2\omega_4^2u + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4u + \tfrac{1}{2}\omega_1u - \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3u^2 + \tfrac{1}{2}\omega_3\omega_1u^3 - \tfrac{1}{8}v\omega_3^2u^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2 - v\omega_1u^2\omega_2 + \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{1}{4}v\omega_4^2u + \tfrac{1}{2}v\omega_3 - \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v\omega_4\omega_1u - \tfrac{1}{4}\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_2 - \omega_4u - v\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_4u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_1u - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2u^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2u + \tfrac{1}{4}\omega_3^2{c_s}^2u - \tfrac{1}{2}v\omega_4u\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_1u^2 + \tfrac{1}{4}v\omega_3^2u - \tfrac{1}{4}v^2\omega_4 + \tfrac{1}{2}v\omega_3\omega_4u - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3{c_s}^2\omega_2,$$

$$\alpha_{x-\delta_l,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u - \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_4^2u^2 - \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 - v\omega_1u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3u\omega_2 - \omega_4 + \tfrac{1}{4}\omega_4\omega_1u - \tfrac{1}{2}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 - \omega_1u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 - \tfrac{1}{4}\omega_3u\omega_2 - \tfrac{1}{2}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v\omega_4\omega_1u + \tfrac{1}{2}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 + \omega_4u + v\omega_2 + \tfrac{1}{4}\omega_3\omega_1u + \tfrac{1}{2}v\omega_4u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}v\omega_3^2u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_1],t-\delta_t} = -1 - \omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_4 + 2\omega_1u^2 + \tfrac{1}{4}\omega_3 + 2v^3\omega_2^2 + \tfrac{1}{4}v^2\omega_3\omega_4 + 2v^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1u^2 - v^3\omega_4\omega_2 + 2\omega_3{c_s}^2 - v\omega_3^2{c_s}^2 + \tfrac{1}{4}v^2\omega_3^2 - v\omega_3\omega_4{c_s}^2 - v^2\omega_3 + \tfrac{1}{2}\omega_3u^2\omega_2 - \omega_1u^2\omega_2 - v^2\omega_2^2 - v\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_4 + \tfrac{1}{2}v^3\omega_3^2 + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{1}{4}\omega_3\omega_4u^2 - 2v^3\omega_3\omega_2 - \omega_3u^2 + \tfrac{1}{2}v\omega_3^2u^2 + \tfrac{1}{2}v\omega_3\omega_4u^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}\omega_3\omega_1u^2 + 2v\omega_1u^2\omega_2 + \tfrac{1}{2}v\omega_3 + \tfrac{1}{2}v^3\omega_3\omega_4 - v\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_2 - v\omega_2 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 - v\omega_4\omega_1u^2 + 2v\omega_3{c_s}^2\omega_2,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-\delta_t} = 1 - \tfrac{1}{2}v\omega_4 - \tfrac{5}{4}\omega_3 - \tfrac{1}{2}v\omega_3\omega_2 + v^2\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_4 + v^2\omega_3^2 - \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 - \tfrac{1}{4}\omega_4 - v^2\omega_4\omega_2 - \tfrac{5}{2}v\omega_3 - v\omega_2^2 - \tfrac{1}{2}\omega_2 + 3v\omega_2 + v\omega_3\omega_4 + v\omega_3^2 - 3v^2\omega_3\omega_2 + \tfrac{1}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_2,$$

$$\alpha^{[\mu_1],t-\delta_t}_{x+\delta_l,y+\delta_l} = -1 - \tfrac{1}{8}\omega_4^2u^3 + \tfrac{1}{2}\omega_4\omega_1u^3 + \tfrac{1}{4}\omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_4 - \omega_1u^2 - \tfrac{1}{4}\omega_4\omega_1 + \tfrac{1}{4}\omega_3 + \tfrac{1}{4}v\omega_3\omega_2 + \tfrac{1}{8}\omega_3^2u - \tfrac{1}{8}v^2\omega_3\omega_4 - \tfrac{1}{4}\omega_3\omega_4u + \tfrac{1}{4}v\omega_3\omega_1u + \tfrac{3}{4}\omega_4\omega_1u^2 - \tfrac{1}{4}v^3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4 - \tfrac{3}{8}\omega_4^2u^2 + \tfrac{1}{8}v^2\omega_3^2u - \tfrac{1}{2}\omega_3{c_s}^2 - \tfrac{1}{4}\omega_4u\omega_2 + \tfrac{1}{4}v\omega_3^2{c_s}^2 + \tfrac{1}{4}v\omega_3\omega_4{c_s}^2 + \tfrac{1}{4}v\omega_4u^2\omega_2 + \tfrac{1}{4}v^2\omega_3 - \tfrac{1}{8}\omega_3u^2\omega_2 - \tfrac{1}{2}v\omega_1u\omega_2 + \tfrac{1}{8}\omega_3^2u^3 + \tfrac{1}{4}v\omega_4\omega_2 + \tfrac{1}{2}v\omega_3u\omega_2 + \tfrac{1}{2}\omega_1u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u^2 + \tfrac{3}{4}\omega_4 - \tfrac{3}{8}\omega_4^2u - \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{8}v^3\omega_3^2 + \tfrac{1}{8}v^2\omega_4^2u + \tfrac{1}{4}\omega_3^2u^2 + \tfrac{1}{2}\omega_1 - \tfrac{1}{8}\omega_3\omega_4u^2 + \tfrac{1}{4}v^3\omega_3\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4u - \tfrac{1}{2}\omega_1u - \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{8}\omega_4^2 + \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{2}\omega_3\omega_1u^3 - \tfrac{1}{8}v\omega_3^2u^2 + \tfrac{1}{8}v^2\omega_4^2 - \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{1}{8}v^2\omega_4\omega_2 + \tfrac{1}{2}v\omega_1\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^2 - v\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_3u\omega_2 - \tfrac{1}{4}v\omega_4^2u + \tfrac{1}{2}v\omega_3 - \tfrac{1}{8}\omega_4\omega_2 + \tfrac{1}{4}v\omega_4\omega_1u + \tfrac{1}{4}\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_2 + \omega_4u - v\omega_2 + \tfrac{1}{4}\omega_4u^2 - \tfrac{1}{8}\omega_4u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{4}\omega_3\omega_1u - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2u^2 + \tfrac{1}{4}\omega_3\omega_4{c_s}^2u - \tfrac{1}{4}\omega_3^2{c_s}^2u + \tfrac{1}{2}v\omega_4u\omega_2 - \tfrac{1}{8}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_4\omega_1u^2 - \tfrac{1}{4}v\omega_3^2u - \tfrac{1}{4}v^2\omega_4 - \tfrac{1}{2}v\omega_3\omega_4u - \tfrac{1}{8}\omega_3\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_3{c_s}^2\omega_2,$$

$$\alpha^{[\mu_5],t-\delta_t}_{x+\delta_l,y+\delta_l} = 1 - v\omega_4 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}v\omega_3\omega_2 - \tfrac{1}{2}v\omega_3\omega_1u - \tfrac{1}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_3^2 + v\omega_1u\omega_2 - \tfrac{1}{4}v\omega_4\omega_2 - \tfrac{1}{2}v\omega_3u\omega_2 - \omega_4 - \tfrac{1}{4}\omega_4\omega_1u + \tfrac{1}{2}\omega_4^2u + \tfrac{1}{4}\omega_1\omega_2 - \tfrac{1}{4}\omega_3^2u^2 - \tfrac{1}{2}\omega_1 + \omega_1u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{4}\omega_4^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 + \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{1}{2}v\omega_4^2u + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u - \tfrac{1}{2}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{1}{2}\omega_2 - \omega_4u + v\omega_2 - \tfrac{1}{4}\omega_3\omega_1u - \tfrac{1}{2}v\omega_4u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2 + \tfrac{1}{2}v\omega_3^2u + \tfrac{1}{4}v\omega_4\omega_1,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y-\delta_l} = 1 - \tfrac{1}{4}v^2\omega_3^2\omega_1u^2 - \tfrac{1}{4}v\omega_4\omega_1u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{8}\omega_4^2u^3 - \tfrac{3}{4}\omega_4\omega_1u^3 + \tfrac{3}{4}v^2\omega_3^2u\omega_2 + \tfrac{3}{4}\omega_3{c_s}^2\omega_2 + \tfrac{5}{2}\omega_3{c_s}^2\omega_1u + \tfrac{1}{2}v\omega_4 - \omega_1u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 + v^3\omega_3\omega_4\omega_2 + 2v^3\omega_2^2 + \tfrac{1}{4}v\omega_3\omega_1u\omega_2 + \tfrac{1}{8}\omega_3\omega_4\omega_1u + \tfrac{1}{4}v\omega_4^2\omega_1u^2 + \tfrac{7}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_4\omega_1u - v^2\omega_1^2u\omega_2 + \tfrac{1}{8}\omega_3^2u + \tfrac{3}{4}\omega_3\omega_4^2{c_s}^2u - \tfrac{1}{4}v^3\omega_3^2\omega_1u - \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{1}{2}v^3\omega_3\omega_2^2 + \tfrac{1}{2}\omega_4\omega_1^2u^4 - \tfrac{1}{4}\omega_3\omega_4u + \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{1}{2}v^2\omega_1\omega_2^2 - \tfrac{3}{4}v^2\omega_3\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_1u - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2 - 3v^2\omega_2 + v\omega_3\omega_4{c_s}^2u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1^2u^2 - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{7}{8}\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}v^3\omega_3^2\omega_1 - \tfrac{5}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{8}\omega_4^2u^2 + \tfrac{1}{8}v^2\omega_3^2u - 2\omega_3{c_s}^2 - \tfrac{1}{4}\omega_4u\omega_2 - \tfrac{3}{4}v^2\omega_4\omega_1u\omega_2 + \tfrac{1}{2}v^2\omega_4u\omega_2^2 - \tfrac{3}{4}v\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}\omega_4^2\omega_1u^4 - \tfrac{5}{4}v^2\omega_4\omega_1u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{3}{4}v\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u^2 - \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3^2\omega_2 + \tfrac{1}{4}v\omega_4u^2\omega_2 - \tfrac{1}{4}v\omega_4^2\omega_1u^3 + v^2\omega_3 - \tfrac{3}{8}\omega_3u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1u^3 - \tfrac{5}{2}v^2\omega_4u\omega_2 + 2v\omega_1u\omega_2 - \tfrac{1}{4}\omega_3\omega_1u^3\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2u^2 + \tfrac{1}{8}\omega_3^2u^3 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{4}v^3\omega_3^2\omega_4 + \tfrac{3}{4}\omega_3^2\omega_4{c_s}^2u + \tfrac{3}{8}v\omega_4\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2 + \tfrac{3}{2}v^2\omega_1\omega_2 - \tfrac{7}{4}v\omega_3u\omega_2 + \tfrac{1}{4}\omega_4\omega_1u^3\omega_2 + \tfrac{1}{2}\omega_1u^2\omega_2 + v^2\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_1u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}v^3\omega_4\omega_2^2 + \tfrac{1}{8}\omega_4\omega_1u + \tfrac{1}{4}v^2\omega_3\omega_1^2u + \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u - \tfrac{3}{8}\omega_4^2u - v^2\omega_3\omega_4u^2\omega_2 + v^3\omega_4u\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u^2 - 2v^3\omega_3\omega_4u\omega_2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - v\omega_1^2u^2\omega_2 + \tfrac{3}{8}v^3\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u^2 - \tfrac{1}{2}v^3\omega_3^2u\omega_2 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_1 + \tfrac{1}{8}v^2\omega_4^2u - \tfrac{1}{2}\omega_3^2u^2 - \tfrac{1}{2}v^2\omega_4^2u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2u^3 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}v\omega_3\omega_4u^2\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_4u^2 - \tfrac{7}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4^2 + \tfrac{9}{4}v^2\omega_3\omega_4u + \tfrac{1}{4}v^2\omega_3^2\omega_1u + \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1u - \tfrac{1}{2}\omega_1u - \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}v\omega_3^2u^2\omega_2 + \tfrac{1}{8}\omega_4^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u + \tfrac{1}{4}v^3\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_4^2\omega_1u^2 - v\omega_3{c_s}^2\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_1u^2 + \omega_3u^2 + \tfrac{3}{4}\omega_3\omega_1u^3 + \tfrac{3}{4}v^2\omega_4^2u\omega_2 - \tfrac{1}{2}v\omega_1^2u\omega_2 + \tfrac{3}{8}v\omega_3^2u^2 - \omega_3{c_s}^2\omega_1^2u^2 - \tfrac{1}{8}v^2\omega_4^2 - v^3\omega_1\omega_2^2 - \tfrac{1}{4}v^3\omega_4^2\omega_1u - \tfrac{3}{4}v^2\omega_3\omega_4^2u - \tfrac{1}{2}\omega_3\omega_1^2u^4 + \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{13}{8}v^2\omega_4\omega_2 + \tfrac{1}{8}v^2\omega_3^2\omega_1 + \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1 + \tfrac{1}{2}v\omega_3^2u\omega_2 + \tfrac{3}{4}v\omega_1\omega_2 - \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u + \tfrac{1}{8}\omega_3\omega_1u^2 - \tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u + \tfrac{1}{2}v^2\omega_4\omega_1^2u^2 + v\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{5}{4}\omega_3{c_s}^2\omega_1 + \tfrac{1}{4}v\omega_4^2u + \tfrac{1}{2}v\omega_3 - v^2\omega_1u\omega_2^2 + \tfrac{1}{2}v^3\omega_3\omega_4 + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_1u^3\omega_2 - \tfrac{1}{4}v\omega_4\omega_1u - \tfrac{1}{4}v^3\omega_3\omega_4\omega_1 + \tfrac{1}{4}\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_1u^3 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{3}{4}v\omega_3u^2\omega_2 + v^2\omega_3\omega_4u\omega_2 - \tfrac{1}{2}\omega_2 + \omega_4u + \tfrac{1}{2}v^2\omega_3u\omega_2^2 - \tfrac{3}{4}v^2\omega_3^2\omega_4u + \tfrac{1}{4}\omega_3^2\omega_1u^4 - \tfrac{5}{4}v^2\omega_3\omega_1u - \tfrac{3}{2}v^2\omega_3\omega_4\omega_1u^2 + \tfrac{1}{2}v\omega_4\omega_1u^3\omega_2 + v^3\omega_3\omega_1\omega_2 - \tfrac{3}{2}v\omega_2 + \tfrac{3}{8}v^2\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_1u^2\omega_2 - 2v^3\omega_1u\omega_2^2 - \tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2 - \tfrac{1}{2}\omega_4u^2 + \tfrac{1}{2}\omega_3^2{c_s}^2 + \tfrac{1}{2}\omega_4^2\omega_1u^3 - \tfrac{5}{2}v^2\omega_3u\omega_2 + \tfrac{1}{8}\omega_4u^2\omega_2 + \tfrac{1}{8}v^3\omega_4^2 + \tfrac{1}{4}v^3\omega_4^2\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1u + \tfrac{1}{2}v^2\omega_3^2\omega_4u^2 + \tfrac{3}{2}\omega_3\omega_4{c_s}^2 - \tfrac{1}{4}\omega_4\omega_1^2u^2 - \tfrac{1}{4}v\omega_3\omega_4 + \tfrac{1}{2}v^3\omega_3^2\omega_4u + \tfrac{1}{4}v^2\omega_4\omega_1^2u - \tfrac{3}{8}\omega_3\omega_1u - \tfrac{1}{8}v\omega_3^2 - \tfrac{1}{8}v\omega_4^2u^2 + v^3\omega_3u\omega_2^2 + 2v^2\omega_4\omega_1u^2\omega_2 - \tfrac{9}{4}\omega_3\omega_4{c_s}^2u - \tfrac{1}{4}\omega_3^2{c_s}^2u - \tfrac{3}{4}v\omega_4u\omega_2 + \tfrac{11}{8}v^2\omega_3\omega_2 - \tfrac{1}{4}v^3\omega_3\omega_4^2 + 5v^2\omega_1u\omega_2 - \tfrac{1}{2}v\omega_4\omega_1u^2 + \tfrac{1}{4}v\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{2}v^3\omega_4^2u\omega_2 - \tfrac{1}{2}v^2\omega_3^2u^2\omega_2 - \tfrac{1}{4}\omega_4\omega_1^2u^3 + \tfrac{1}{4}v\omega_3^2u + \tfrac{1}{2}v^2\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2u - \tfrac{1}{4}\omega_4^2\omega_1u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2u^2 - \tfrac{1}{4}v\omega_3^2\omega_1u + \tfrac{1}{2}v\omega_3\omega_4u + \tfrac{3}{2}v^3\omega_4\omega_1u\omega_2 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u^2 - \tfrac{1}{4}v^2\omega_4\omega_2^2 + \tfrac{1}{8}\omega_3\omega_2 - 2v^2\omega_1^2u^2\omega_2 - \tfrac{1}{8}v\omega_3^2\omega_2 - \tfrac{1}{4}v\omega_4\omega_1 + \tfrac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2 + \tfrac{3}{2}v\omega_3{c_s}^2\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_4{c_s}^2 - \tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u + \tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2 + \tfrac{3}{2}v\omega_3\omega_1u^2\omega_2 + \tfrac{1}{4}v^2\omega_4^2\omega_1u - \tfrac{1}{8}v\omega_3\omega_4\omega_2 + \tfrac{3}{2}v^3\omega_3\omega_1u\omega_2 - v\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_3^2\omega_4 + \tfrac{1}{2}v^3\omega_3\omega_4^2u + \tfrac{1}{4}\omega_3\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_1u,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y-\delta_l} =$$
$$-2 + v\omega_4\omega_1u\omega_2 + \tfrac{1}{2}v^2\omega_3^2u\omega_2 - \tfrac{3}{2}v\omega_4 + \tfrac{1}{8}\omega_3^2\omega_2 - \tfrac{3}{8}\omega_4\omega_1 + \tfrac{5}{2}\omega_3 - \tfrac{1}{2}\omega_4\omega_1u^2\omega_2 + \tfrac{3}{8}\omega_3\omega_4\omega_2 + 2v\omega_3\omega_4^2u + v\omega_3\omega_1u\omega_2 + \tfrac{1}{2}\omega_3\omega_4\omega_1u + \tfrac{1}{2}v\omega_4^2\omega_1u^2 - \tfrac{3}{4}v\omega_4^2u\omega_2 - 2v\omega_3\omega_2 - \tfrac{3}{2}\omega_3\omega_1u^2\omega_2 + \omega_3^2u - v^2\omega_3\omega_4 + \tfrac{7}{2}\omega_3\omega_4u + \tfrac{1}{4}\omega_3^2\omega_1u + v^2\omega_1\omega_2^2 - 2v^2\omega_3\omega_1u\omega_2 - \tfrac{1}{2}v\omega_3u\omega_2^2 + \tfrac{1}{4}v\omega_4\omega_2^2 + 3v\omega_3\omega_1u - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2 + 2v\omega_3^2\omega_4u + \tfrac{3}{2}\omega_4\omega_1u^2 - \tfrac{7}{4}\omega_3\omega_4 - \tfrac{1}{4}\omega_4^2u^2 + \tfrac{1}{2}\omega_4u\omega_2 - 2v^2\omega_4\omega_1u\omega_2 + v\omega_1u\omega_2^2 - v^2\omega_4u\omega_2^2 - \tfrac{3}{4}v^2\omega_3^2 + \tfrac{1}{2}v\omega_3\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2u - \tfrac{3}{4}v\omega_3^2\omega_4 - v\omega_4\omega_1^2u^2 - \tfrac{1}{4}v^2\omega_3^2\omega_2 - 6v\omega_1u\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2u^2 - \tfrac{1}{2}v\omega_4\omega_1^2u - \tfrac{9}{8}\omega_3\omega_1 - \tfrac{1}{2}v\omega_3^2\omega_1 - 2v\omega_4\omega_2 + 3v\omega_3u\omega_2 - 2v^2\omega_2^2 - v\omega_3^2\omega_4u^2 + \tfrac{1}{4}\omega_3\omega_4^2 + \tfrac{3}{2}\omega_4 - 2\omega_4\omega_1u - v\omega_3\omega_4\omega_1 + \tfrac{1}{2}\omega_4^2u - \tfrac{3}{2}v^2\omega_3\omega_4\omega_2 - \tfrac{3}{4}v\omega_4^2\omega_1u - \tfrac{3}{2}\omega_3\omega_4\omega_1u^2 - \omega_3\omega_4u\omega_2 - \tfrac{1}{2}\omega_1\omega_2 + \tfrac{1}{4}v\omega_3\omega_2^2 + 2v\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_3^2u\omega_2 - \tfrac{3}{4}\omega_3^2u^2 + \omega_1 + v\omega_3\omega_4u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_1u^2 - \omega_3\omega_4u^2 + \tfrac{1}{2}v^2\omega_3\omega_4^2 + \tfrac{1}{2}v^2\omega_3^2\omega_1u + 4\omega_1u + \tfrac{1}{2}v\omega_4^2 + \tfrac{1}{2}\omega_1^2u\omega_2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 +$$

$$\tfrac{1}{2}v\omega_3^2u^2\omega_2 - v\omega_3\omega_4^2u^2 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4u^2\omega_2 - \tfrac{3}{2}v\omega_3\omega_4u\omega_2 + \tfrac{1}{2}\omega_3\omega_4^2u^2 + 3v\omega_3\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_3^2u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2u\omega_2 + v\omega_1^2u\omega_2 - \omega_1^2u - \tfrac{1}{4}v^2\omega_4^2 + \tfrac{1}{4}\omega_4^2\omega_1u - v^2\omega_3\omega_4^2u + \tfrac{1}{2}v\omega_3^2\omega_1u^2 + \tfrac{3}{2}v^2\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_1 - \tfrac{3}{4}v\omega_3^2u\omega_2 - 2v\omega_1\omega_2 + \omega_1^2u^2\omega_2 + \tfrac{5}{2}\omega_3\omega_1u^2 + \tfrac{1}{2}\omega_3^2\omega_4u^2 - \tfrac{3}{4}v\omega_3\omega_4^2 + \tfrac{3}{2}\omega_3u\omega_2 - \tfrac{1}{2}v\omega_4^2u - \tfrac{5}{2}v\omega_3 + 2v^2\omega_1u\omega_2^2 + \tfrac{1}{8}\omega_3^2\omega_1 - \tfrac{3}{8}\omega_4\omega_2 - \tfrac{1}{2}v\omega_4u\omega_2^2 + \tfrac{1}{2}v^2\omega_3\omega_2^2 + \tfrac{3}{8}\omega_3\omega_4\omega_1 - \tfrac{3}{2}v^2\omega_3\omega_1\omega_2 + 3v\omega_4\omega_1u - v\omega_3\omega_1^2u^2 - v\omega_2^2 - 2\omega_1u\omega_2 + \tfrac{3}{2}v\omega_3\omega_1 + \tfrac{1}{4}v\omega_4^2\omega_2 + 3v^2\omega_3\omega_4u\omega_2 + \omega_2 - \tfrac{3}{2}\omega_4u - v^2\omega_3u\omega_2^2 - v^2\omega_3^2\omega_4u + \tfrac{1}{4}\omega_4\omega_1^2u + \tfrac{1}{2}v\omega_4\omega_1\omega_2 + 4v\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}v\omega_3\omega_1^2u + \tfrac{1}{2}\omega_3\omega_1\omega_2 + v^2\omega_3\omega_4\omega_1u + \tfrac{1}{4}\omega_3^2\omega_4 + \tfrac{1}{2}\omega_4\omega_1^2u^2 + \tfrac{7}{2}v\omega_3\omega_4 - \tfrac{3}{4}\omega_3^2\omega_4u - 2\omega_3\omega_1u + v\omega_3^2 + 3v\omega_4u\omega_2 + \tfrac{5}{2}v^2\omega_3\omega_2 - \tfrac{1}{2}\omega_3^2 - \tfrac{1}{2}v\omega_3^2u - 2\omega_1^2u^2 - 2v\omega_4\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1u^2 - \tfrac{3}{4}v\omega_3^2\omega_1u - 5v\omega_3\omega_4u + \tfrac{1}{2}\omega_4\omega_1u\omega_2 + \tfrac{1}{2}v\omega_1\omega_2^2 + \tfrac{1}{2}v^2\omega_4\omega_2^2 - \tfrac{9}{8}\omega_3\omega_2 + \tfrac{1}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_4^2u^2\omega_2 - 2v\omega_3\omega_1u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2\omega_1u - \tfrac{3}{4}\omega_3\omega_4^2u + \tfrac{1}{2}v\omega_3\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3^2\omega_4 + \tfrac{1}{2}\omega_3\omega_1u\omega_2 - \tfrac{3}{2}v\omega_3\omega_4\omega_1u - \tfrac{5}{2}\omega_3u,$$

$$\alpha_{x,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 + \tfrac{1}{2}v^2\omega_3^2\omega_1u^2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_2 + \tfrac{1}{2}v\omega_4 + 2\omega_1u^2 + \tfrac{1}{4}v^2\omega_3\omega_1^2 + \tfrac{3}{2}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 + \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 - \tfrac{1}{4}v\omega_4^2\omega_1u^2 + \tfrac{1}{2}v\omega_3\omega_2 + \tfrac{1}{4}v\omega_4^2\omega_1 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4 - \omega_4\omega_1^2u^4 + \tfrac{1}{4}v^2\omega_4\omega_1\omega_2 - v^2\omega_2 - v^2\omega_3\omega_1^2u^2 - \tfrac{5}{2}\omega_4\omega_1u^2 + \tfrac{1}{4}v^3\omega_3^2\omega_1 - \tfrac{1}{2}v^3\omega_4\omega_2 + \tfrac{1}{4}\omega_3\omega_4 + \tfrac{3}{4}\omega_4^2u^2 + \tfrac{1}{2}\omega_3{c_s}^2 + \tfrac{1}{2}v\omega_3^2{c_s}^2 + \tfrac{1}{2}\omega_4^2\omega_1u^4 - \tfrac{1}{2}v\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_4{c_s}^2 + \omega_3^2\omega_4{c_s}^2u^2 + \tfrac{1}{4}\omega_3\omega_1^2 - v^2\omega_4\omega_1 + \tfrac{1}{2}v\omega_4u^2\omega_2 - \tfrac{1}{4}v^2\omega_3 + \tfrac{1}{4}\omega_3u^2\omega_2 - \tfrac{5}{4}\omega_3\omega_1^2u^2 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{4}\omega_4\omega_1\omega_2 + \tfrac{1}{4}v^2\omega_4\omega_1^2 + \tfrac{1}{4}v\omega_3^2\omega_1 + \tfrac{1}{2}v\omega_4\omega_2 + 2v^2\omega_1\omega_2 - \omega_1u^2\omega_2 + v\omega_3\omega_1u^2 - \tfrac{5}{4}\omega_4 + \tfrac{1}{2}v\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_4u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}\omega_1\omega_2 + 2v\omega_1^2u^2\omega_2 - \tfrac{1}{4}v^3\omega_3^2 + \omega_3\omega_4^2{c_s}^2u^2 - \tfrac{1}{2}\omega_3^2u^2 + v^2\omega_4^2u^2\omega_2 - \omega_1 + v\omega_3\omega_4u^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_4u^2 + \tfrac{1}{2}v^3\omega_3\omega_2 - \tfrac{1}{4}v^3\omega_4^2\omega_1 - \tfrac{1}{4}v\omega_4^2 - \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{2}v\omega_3^2u^2\omega_2 - \tfrac{1}{2}v\omega_1^2\omega_2 + \tfrac{1}{4}\omega_4^2 - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{2}v^2\omega_4^2\omega_1u^2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3u^2 - \tfrac{1}{4}v\omega_3^2u^2 + 2\omega_3{c_s}^2\omega_1^2u^2 - \tfrac{1}{4}v^2\omega_4^2 + \omega_3\omega_1^2u^4 - \tfrac{1}{2}v\omega_3\omega_4u^2 - \tfrac{1}{4}v\omega_3^2\omega_1u^2 - \tfrac{1}{4}v^2\omega_4\omega_2 - \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1 + 2v\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u^2 - v^2\omega_4\omega_1^2u^2 - 2v\omega_1u^2\omega_2 + \tfrac{1}{2}v\omega_3 + \tfrac{1}{4}\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_1 - v^2\omega_1^2\omega_2 + \tfrac{1}{2}v\omega_3u^2\omega_2 - \tfrac{1}{2}\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1u^4 - \tfrac{1}{2}v\omega_4\omega_1\omega_2 + 3v^2\omega_3\omega_4\omega_1u^2 - \tfrac{1}{2}v^3\omega_3\omega_1\omega_2 - \tfrac{3}{2}v\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_3\omega_1\omega_2 - 4v^2\omega_3\omega_1u^2\omega_2 - \tfrac{3}{4}\omega_4u^2 + \tfrac{1}{4}\omega_4u^2\omega_2 + \tfrac{1}{4}v^3\omega_4^2 - v^2\omega_3^2\omega_4u^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2 + \tfrac{5}{4}\omega_4\omega_1^2u^2 - \tfrac{1}{2}v\omega_3\omega_4 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 - \tfrac{1}{4}v\omega_3^2 - \tfrac{1}{4}v\omega_4^2u^2 - 4v^2\omega_4\omega_1u^2\omega_2 + \tfrac{1}{4}v^2\omega_4^2\omega_1 + \tfrac{1}{4}v^2\omega_3\omega_2 + v\omega_4\omega_1u^2 + v^2\omega_3^2u^2\omega_2 + \tfrac{3}{4}v^2\omega_4 - \tfrac{3}{2}v\omega_4\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1u^2 - v^2\omega_3\omega_4^2u^2 - \omega_3^2{c_s}^2\omega_1u^2 + \tfrac{1}{4}\omega_3\omega_2 - \tfrac{1}{4}\omega_4^2\omega_1 + 4v^2\omega_1^2u^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_1 + \tfrac{1}{2}v\omega_4^2u^2\omega_2 - 3\omega_3\omega_4{c_s}^2\omega_1u^2 - v\omega_3{c_s}^2\omega_2 - \tfrac{3}{2}v\omega_3\omega_1u^2\omega_2 + v\omega_3{c_s}^2\omega_1\omega_2,$$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-2\delta_t} = -2 - 2v\omega_4 - \tfrac{1}{2}\omega_4^2u^2\omega_2 - \tfrac{5}{2}\omega_4\omega_1 + 2\omega_4\omega_1u^2\omega_2 - v\omega_4^2\omega_1u^2 - \tfrac{1}{2}v\omega_3\omega_2 - v\omega_4^2\omega_1 + 2\omega_3\omega_1u^2\omega_2 - \omega_1^2 - v^2\omega_4\omega_1\omega_2 - 3\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_4^2u^2 + \tfrac{1}{2}v^2\omega_3^2 + \tfrac{1}{2}v\omega_3\omega_1\omega_2 + 2v\omega_4\omega_1^2u^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 - \tfrac{1}{2}v\omega_4\omega_2 + 2v\omega_3^2\omega_4u^2 + 2\omega_4 + 3\omega_3\omega_4\omega_1u^2 - \tfrac{3}{2}\omega_1\omega_2 - 4v\omega_1^2u^2\omega_2 + \tfrac{3}{2}\omega_3^2u^2 + 3\omega_1 - 2v\omega_3\omega_4u^2\omega_2 + 2\omega_3\omega_4u^2 + v\omega_4^2 + \tfrac{1}{2}\omega_4\omega_1^2 - v\omega_3^2u^2\omega_2 + v\omega_1^2\omega_2 + 2v\omega_3\omega_4^2u^2 - \tfrac{1}{2}\omega_4^2 + \tfrac{1}{2}\omega_1^2\omega_2 - \tfrac{1}{2}v\omega_4\omega_1^2 - \omega_3\omega_4u^2\omega_2 - \omega_3\omega_4^2u^2 - 6v\omega_3\omega_4\omega_1u^2 - \tfrac{1}{2}\omega_3^2u^2\omega_2 - \tfrac{1}{2}v^2\omega_4^2 - v\omega_3^2\omega_1u^2 + v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 - 3v\omega_1\omega_2 - 2\omega_1^2u^2\omega_2 - 5\omega_3\omega_1u^2 - \omega_3^2\omega_4u^2 - \tfrac{1}{2}\omega_4\omega_2 + v^2\omega_3\omega_1\omega_2 + 2v\omega_3\omega_1^2u^2 + \tfrac{1}{2}v\omega_3\omega_1 + \omega_2 + \tfrac{1}{2}v\omega_4\omega_1\omega_2 + 2v\omega_2 - \tfrac{1}{2}v\omega_3\omega_1^2 - 2\omega_4\omega_1^2u^2 + \tfrac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 + 4\omega_1^2u^2 + 4v\omega_4\omega_1u^2\omega_2 + \omega_4^2\omega_1u^2 + \tfrac{1}{2}\omega_4^2\omega_1 + \tfrac{5}{2}v\omega_4\omega_1 - v\omega_4^2u^2\omega_2 + 4v\omega_3\omega_1u^2\omega_2,$$

$$\alpha_{x+\delta_l,y-\delta_l}^{[\mu_1],t-2\delta_t} = 1 - \tfrac{1}{4}v^2\omega_3^2\omega_1u^2 + \tfrac{1}{4}v\omega_4\omega_1u\omega_2 - \tfrac{1}{4}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{8}\omega_4^2u^3 + \tfrac{3}{4}\omega_4\omega_1u^3 - \tfrac{3}{4}v^2\omega_3^2u\omega_2 + \tfrac{3}{4}\omega_3{c_s}^2\omega_2 - \tfrac{5}{2}\omega_3{c_s}^2\omega_1u + \tfrac{1}{2}v\omega_4 - \omega_1u^2 + \tfrac{1}{4}\omega_4\omega_1 - \tfrac{1}{4}\omega_3 - \tfrac{1}{4}\omega_4\omega_1u^2\omega_2 + v^3\omega_3\omega_4\omega_2 + 2v^3\omega_2^2 - \tfrac{1}{4}v\omega_3\omega_1u\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u + \tfrac{1}{4}v\omega_4^2\omega_1u^2 + \tfrac{7}{8}v\omega_3\omega_2 - \tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_4\omega_1u + v^2\omega_1^2u\omega_2 - \tfrac{1}{8}\omega_3^2u - \tfrac{3}{4}\omega_3\omega_4^2{c_s}^2u + \tfrac{1}{4}v^3\omega_3^2\omega_1u - \tfrac{11}{8}v^2\omega_3\omega_4 - \tfrac{1}{2}v^3\omega_3\omega_2^2 + \tfrac{1}{2}\omega_4\omega_1^2u^4 + \tfrac{1}{4}\omega_3\omega_4u - \tfrac{1}{8}\omega_3^2\omega_1u - \tfrac{1}{2}v^2\omega_1\omega_2^2 + \tfrac{3}{4}v^2\omega_3\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_1u - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2 - 3v^2\omega_2 - v\omega_3\omega_4{c_s}^2u\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_1^2u^2 - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2 + \tfrac{7}{8}\omega_4\omega_1u^2 - \tfrac{1}{4}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}v^3\omega_3^2\omega_1 - \tfrac{5}{4}v^3\omega_4\omega_2 + \tfrac{1}{8}\omega_3\omega_4 + \tfrac{3}{8}\omega_4^2u^2 - \tfrac{1}{8}v^2\omega_3^2u - 2\omega_3{c_s}^2 + \tfrac{1}{4}\omega_4u\omega_2 + \tfrac{3}{4}v^2\omega_4\omega_1u\omega_2 - \tfrac{1}{2}v^2\omega_4u\omega_2^2 - \tfrac{3}{4}v\omega_3^2{c_s}^2 - \tfrac{1}{4}v^2\omega_3^2 - \tfrac{1}{4}\omega_4^2\omega_1u^4 + \tfrac{5}{4}v^2\omega_4\omega_1u - \tfrac{1}{4}v\omega_3\omega_1\omega_2 - \tfrac{3}{4}v\omega_3\omega_4{c_s}^2 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u^2 - \tfrac{1}{8}v^2\omega_4\omega_1 - \tfrac{1}{4}v^2\omega_3^2\omega_2 + \tfrac{1}{4}v\omega_4u^2\omega_2 + \tfrac{1}{4}v\omega_4^2\omega_1u^3 + v^2\omega_3 - \tfrac{3}{8}\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_1u^3 + \tfrac{5}{2}v^2\omega_4u\omega_2 - 2v\omega_1u\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^3\omega_2 + \tfrac{1}{4}\omega_3\omega_1^2u^2 - \tfrac{1}{8}\omega_3^2u^3 + \tfrac{1}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{4}v^3\omega_3^2\omega_4 - \tfrac{3}{4}\omega_3^2\omega_4{c_s}^2u + \tfrac{3}{8}v\omega_4\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2 + \tfrac{3}{2}v^2\omega_1\omega_2 + \tfrac{7}{4}v\omega_3u\omega_2 - \tfrac{1}{4}\omega_4\omega_1u^3\omega_2 + \tfrac{1}{2}\omega_1u^2\omega_2 + v^2\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_1u^2 - \tfrac{3}{4}\omega_4 - \tfrac{1}{2}v^3\omega_4\omega_2^2 - \tfrac{1}{8}\omega_4\omega_1u - \tfrac{1}{4}v^2\omega_3\omega_1^2u - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u + \tfrac{3}{8}\omega_4^2u - v^2\omega_3\omega_4u^2\omega_2 - v^3\omega_4u\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{8}\omega_3\omega_4\omega_1u^2 + 2v^3\omega_3\omega_4u\omega_2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \tfrac{1}{4}\omega_1\omega_2 - v\omega_1^2u^2\omega_2 + \tfrac{3}{8}v^3\omega_3^2 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u^2 + \tfrac{1}{2}v^3\omega_3^2u\omega_2 - \tfrac{1}{4}\omega_3^2{c_s}^2\omega_1 - \tfrac{1}{8}v^2\omega_4^2u - \tfrac{1}{2}\omega_3^2u^2 - \tfrac{1}{2}v^2\omega_4^2u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_1^2u^3 - \tfrac{1}{2}\omega_1 - \tfrac{1}{2}v\omega_3\omega_4u^2\omega_2 + \tfrac{1}{8}\omega_3^2\omega_1u^2 - \tfrac{1}{8}\omega_3\omega_4u^2 - \tfrac{7}{4}v^3\omega_3\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_4^2 - \tfrac{9}{4}v^2\omega_3\omega_4u - \tfrac{1}{4}v^2\omega_3^2\omega_1u - \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1u + \tfrac{1}{2}\omega_1u - \tfrac{1}{8}v\omega_4^2 - \tfrac{1}{4}v^2\omega_4^2\omega_2 - \tfrac{5}{8}v^2\omega_3\omega_1 - \tfrac{1}{2}v\omega_3^2u^2\omega_2 + \tfrac{1}{8}\omega_4^2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u + \tfrac{1}{4}v^3\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3\omega_4u\omega_2 - \tfrac{1}{4}v^2\omega_4^2\omega_1u^2 + v\omega_3{c_s}^2\omega_1u\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_1u^2 + \omega_3u^2 - \tfrac{3}{4}\omega_3\omega_1u^3 - \tfrac{3}{4}v^2\omega_4^2u\omega_2 + \tfrac{1}{2}v\omega_1^2u\omega_2 + \tfrac{3}{8}v\omega_3^2u^2 - \omega_3{c_s}^2\omega_1^2u^2 - \tfrac{1}{8}v^2\omega_4^2 - v^3\omega_1\omega_2^2 + \tfrac{1}{4}v^3\omega_4^2\omega_1u + \tfrac{3}{4}v^2\omega_3\omega_4^2u - \tfrac{1}{2}\omega_3\omega_1^2u^4 + \tfrac{1}{4}v\omega_3\omega_4u^2 + \tfrac{13}{8}v^2\omega_4\omega_2 + \tfrac{1}{8}v^2\omega_3^2\omega_1 + \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3^2u\omega_2 + \tfrac{3}{4}v\omega_1\omega_2 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u + \tfrac{1}{8}\omega_3\omega_1u^2 + \tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u + \tfrac{1}{2}v^2\omega_4\omega_1^2u^2 + v\omega_1u^2\omega_2 + \tfrac{1}{4}\omega_3u\omega_2 + \tfrac{5}{4}\omega_3{c_s}^2\omega_1 - \tfrac{1}{4}v\omega_4^2u + \tfrac{1}{2}v\omega_3 + v^2\omega_1u\omega_2^2 + \tfrac{1}{2}v^3\omega_3\omega_4 + \tfrac{1}{8}\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3\omega_2^2 - \tfrac{1}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_1u^3\omega_2 + \tfrac{1}{4}v\omega_4\omega_1u - \tfrac{1}{4}v^3\omega_3\omega_4\omega_1 - \tfrac{1}{4}\omega_1u\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_1u^3 - \tfrac{1}{4}v\omega_3\omega_1 - \tfrac{3}{4}v\omega_3u^2\omega_2 - v^2\omega_3\omega_4u\omega_2 - \tfrac{1}{2}\omega_2 - \omega_4u - \tfrac{1}{2}v^2\omega_3u\omega_2^2 +$$

$$\tfrac{3}{4}v^2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u^4+\tfrac{5}{4}v^2\omega_3\omega_1u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_1u^2-\tfrac{1}{2}v\omega_4\omega_1u^3\omega_2+v^3\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_2+\tfrac{3}{8}v^2\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1u^2\omega_2+2v^3\omega_1u\omega_2^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{5}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2+\tfrac{1}{8}v^3\omega_4^2+\tfrac{1}{4}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2-\tfrac{1}{4}v\omega_3\omega_4-\tfrac{1}{2}v^3\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_4\omega_1^2u+\tfrac{3}{8}\omega_3\omega_1u-\tfrac{1}{8}v\omega_3^2-\tfrac{1}{8}v\omega_4^2u^2-v^3\omega_3u\omega_2^2+2v^2\omega_4\omega_1u^2\omega_2+\tfrac{9}{4}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2{c_s}^2u+\tfrac{3}{4}v\omega_4u\omega_2+\tfrac{11}{8}v^2\omega_3\omega_2-\tfrac{1}{4}v^3\omega_3\omega_4^2-5v^2\omega_1u\omega_2-\tfrac{1}{2}v\omega_4\omega_1u^2+\tfrac{1}{4}v\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}v^3\omega_4^2u\omega_2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2u^3-\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2u-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2+\tfrac{1}{4}v\omega_3^2\omega_1u-\tfrac{1}{2}v\omega_3\omega_4u-\tfrac{3}{2}v^3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}\omega_3\omega_2-2v^2\omega_1^2u^2\omega_2-\tfrac{1}{8}v\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4\omega_1+\tfrac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2+\tfrac{3}{2}v\omega_3{c_s}^2\omega_2+\tfrac{1}{4}v\omega_3^2\omega_4{c_s}^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u-\tfrac{1}{8}v\omega_3\omega_4\omega_2-\tfrac{3}{2}v^3\omega_3\omega_1u\omega_2-v\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v^2\omega_3^2\omega_4-\tfrac{1}{2}v^3\omega_3\omega_4^2u-\tfrac{1}{4}\omega_3\omega_1u\omega_2+\tfrac{1}{4}v\omega_3\omega_4\omega_1u,$$

$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y-\delta_l}=$

$$-2-v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2-\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2u-v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u+\tfrac{1}{2}v\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_4^2u\omega_2-2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2+\tfrac{1}{2}v\omega_3u\omega_2^2+\tfrac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2-v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2+\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u-\tfrac{3}{4}v\omega_3^2\omega_4-v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1-2v\omega_4\omega_2-3v\omega_3u\omega_2-2v^2\omega_2^2-v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u-v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2+\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_2^2+2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1+v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u+\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2+\tfrac{1}{2}v\omega_3^2u^2\omega_2-v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2+\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2+3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2-v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1+\tfrac{3}{4}v\omega_3^2u\omega_2-2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2-\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2+\tfrac{1}{2}v\omega_4^2u-\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2+\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1u-v\omega_3\omega_1^2u^2-v\omega_2^2+2\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_1+\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u+\tfrac{1}{2}v\omega_4\omega_1\omega_2+4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1+\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u+v\omega_3^2-3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2+\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2-2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{3}{4}v\omega_3^2\omega_1u+5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2+\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2+\tfrac{1}{4}v\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2-2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u+\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2+\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$\alpha^{[\mu_1],t-2\delta_t}_{x-\delta_l,y}=$

$$2-v^2\omega_3^2\omega_1u^2-\tfrac{1}{4}\omega_4^2u^3+\omega_4\omega_1u^3+\tfrac{5}{4}v^2\omega_3^2u\omega_2-\tfrac{3}{2}\omega_3{c_s}^2\omega_2+2\omega_1u^2-\tfrac{3}{4}\omega_4^2u^2\omega_2+\tfrac{1}{2}\omega_4\omega_1-\tfrac{1}{2}\omega_3+\tfrac{3}{2}\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_2-\tfrac{1}{2}\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_1u^2\omega_2-2v^2\omega_3{c_s}^2\omega_2^2+\tfrac{1}{4}\omega_3^2u+3v^2\omega_3\omega_4{c_s}^2\omega_2-\tfrac{7}{4}v^2\omega_3\omega_4-\tfrac{1}{2}\omega_3\omega_4u+\omega_1u^2\omega_2^2+2v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1u\omega_2-2v^2\omega_4\omega_1\omega_2-\tfrac{3}{2}\omega_4\omega_1u^2+\tfrac{1}{4}\omega_3\omega_4+\tfrac{3}{4}\omega_4^2u^2+\tfrac{1}{4}v^2\omega_3^2u+\omega_3{c_s}^2-\tfrac{5}{2}\omega_4u\omega_2-2v^2\omega_4\omega_1u\omega_2-2v^2\omega_4u\omega_2^2-v^2\omega_3^2-\tfrac{1}{4}\omega_3u^2\omega_2^2-\tfrac{1}{2}v^2\omega_3^2\omega_2-\tfrac{1}{2}v^4\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3+\tfrac{3}{4}\omega_3u^2\omega_2+\omega_3\omega_1u^3\omega_2+\tfrac{1}{4}\omega_3^2u^3-v^2\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}\omega_4\omega_1\omega_2-\tfrac{1}{4}\omega_4^2\omega_2-4v^2\omega_1u^2\omega_2^2-\omega_4\omega_1u^3\omega_2-3\omega_1u^2\omega_2-4v^2\omega_2^2-\tfrac{3}{2}\omega_4+\tfrac{1}{2}\omega_4u\omega_2^2-\tfrac{3}{4}\omega_4^2u+v^2\omega_3u^2\omega_2^2+\tfrac{1}{4}\omega_4^2u^3\omega_2-3v^2\omega_3\omega_4u^2\omega_2-\tfrac{11}{4}v^2\omega_3\omega_4\omega_2+\tfrac{1}{2}\omega_3\omega_4u\omega_2+\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2u\omega_2+\tfrac{1}{4}v^2\omega_4^2u-\tfrac{1}{2}\omega_3^2u^2-\tfrac{1}{2}v^2\omega_4^2u^2\omega_2-\omega_1-v^2\omega_3^2\omega_4{c_s}^2+\tfrac{1}{4}\omega_3\omega_4u^2+v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3\omega_4u+\tfrac{1}{2}v^2\omega_3^2\omega_1u-\omega_1u+\tfrac{1}{2}\omega_3{c_s}^2\omega_2^2-\tfrac{3}{4}v^2\omega_4^2\omega_2+\tfrac{1}{2}v^4\omega_3^2\omega_2+\tfrac{1}{4}\omega_4^2-\tfrac{1}{4}\omega_3\omega_4u^2\omega_2-v^2\omega_4^2\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_3u^2-\omega_3\omega_1u^3+\tfrac{5}{4}v^2\omega_4^2u\omega_2-\tfrac{5}{4}v^2\omega_4^2-2v^2\omega_3\omega_4^2u+\tfrac{17}{4}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{1}{4}\omega_3\omega_2^2+\tfrac{1}{2}\omega_3\omega_1u^2+v^2\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}\omega_3u\omega_2+2v^2\omega_1u\omega_2^2+v^4\omega_4\omega_2^2+\tfrac{7}{4}\omega_4\omega_2+\tfrac{5}{4}v^2\omega_3\omega_2^2-2v^2\omega_3\omega_1\omega_2+\tfrac{3}{2}\omega_1u\omega_2+\tfrac{11}{2}v^2\omega_3\omega_4u\omega_2+\omega_2^2-3\omega_2-\tfrac{1}{4}\omega_4u^2\omega_2^2+2\omega_4u-2v^2\omega_3u\omega_2^2-2v^2\omega_3^2\omega_4u-2v^2\omega_3\omega_4\omega_1u^2+v^2\omega_3\omega_4\omega_1+4v^2\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}\omega_1u\omega_2^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4u^2+\tfrac{3}{4}\omega_4u^2\omega_2+v^2\omega_3\omega_4\omega_1u+v^2\omega_3^2\omega_4u^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_3\omega_1u+v^2\omega_4u^2\omega_2^2+\tfrac{1}{2}\omega_3u\omega_2^2+4v^2\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2u-\tfrac{1}{4}\omega_3^2u^3\omega_2-\tfrac{1}{4}\omega_4\omega_2^2-\tfrac{1}{2}\omega_3^2{c_s}^2u+\tfrac{1}{2}v^2\omega_4^2\omega_1+\tfrac{15}{4}v^2\omega_3\omega_2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4+\tfrac{3}{4}\omega_4^2u\omega_2+v^2\omega_3\omega_4^2u^2+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-v^4\omega_3\omega_2^2+\tfrac{3}{4}v^2\omega_4\omega_2^2+\tfrac{3}{4}\omega_3\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_1u+v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2,$$

$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y}=$

$$-2-v^2\omega_3^2u\omega_2+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1-\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_1u^2\omega_2+2v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2+4v^2\omega_3\omega_1u\omega_2+2v^2\omega_4\omega_1\omega_2+\omega_4\omega_1u^2-\tfrac{1}{2}\omega_4^2u^2+\tfrac{5}{2}\omega_4u\omega_2+4v^2\omega_4\omega_1u\omega_2+2v^2\omega_4u\omega_2^2+\tfrac{3}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_4^2\omega_2+4v^2\omega_2^2+2\omega_4-\tfrac{1}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4u\omega_2^2+\omega_4^2u+3v^2\omega_3\omega_4\omega_2-\tfrac{3}{2}\omega_1\omega_2+\tfrac{1}{2}\omega_3^2u^2+\omega_1-v^2\omega_3\omega_4^2-v^2\omega_3^2\omega_1u+2\omega_1u+v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_3^2u^2\omega_2-v^2\omega_4^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2+2v^2\omega_3\omega_4^2u-3v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3u\omega_2-4v^2\omega_1u\omega_2^2-\tfrac{5}{2}\omega_4\omega_2+2v^2\omega_3\omega_1\omega_2-3\omega_1u\omega_2-6v^2\omega_3\omega_4u\omega_2-\omega_2^2+3\omega_2-2\omega_4u+2v^2\omega_3u\omega_2^2+2v^2\omega_3^2\omega_4u-v^2\omega_3\omega_4\omega_1+\omega_1u\omega_2^2-2v^2\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_3\omega_1u-\tfrac{1}{2}\omega_3u\omega_2^2+\tfrac{1}{2}\omega_4\omega_2^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-5v^2\omega_3\omega_2-\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4\omega_1u\omega_2-2v^2\omega_4\omega_2^2-v^2\omega_4^2\omega_1u-v^2\omega_3^2\omega_4+\tfrac{1}{2}\omega_3\omega_1u\omega_2,$$

$\alpha^{[\mu_1],t-2\delta_t}_{x,y}=$

$$2+2v^2\omega_3^2\omega_1u^2+6\omega_3{c_s}^2\omega_2-4\omega_1u^2-\tfrac{1}{2}\omega_3-\omega_4\omega_1u^2\omega_2-\omega_3\omega_1u^2\omega_2+4v^2\omega_3{c_s}^2\omega_2^2-6v^2\omega_3\omega_4{c_s}^2\omega_2-$$

$\frac{5}{2}v^2\omega_3\omega_4 - 2\omega_1u^2\omega_2^2 - 4v^2\omega_2 + \omega_4\omega_1u^2 - 4\omega_3{c_s}^2 - \frac{3}{2}v^2\omega_3^2 + \omega_3u^2\omega_2^2 - \frac{1}{2}v^2\omega_3^2\omega_2 + v^4\omega_4^2\omega_2 + 2v^2\omega_3 - 3\omega_3u^2\omega_2 + 2v^2\omega_3\omega_4^2{c_s}^2 + 8v^2\omega_1u^2\omega_2^2 + 6\omega_1u^2\omega_2 - 2v^2\omega_2^2 - \frac{1}{2}\omega_4 - 2v^2\omega_3u^2\omega_2^2 + 6v^2\omega_3\omega_4u^2\omega_2 - \frac{1}{2}v^2\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3^2u^2 + v^2\omega_4^2u^2\omega_2 + 2v^2\omega_3^2\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_4u^2 - 2\omega_3{c_s}^2\omega_2^2 - v^4\omega_3^2\omega_2 + \frac{1}{2}\omega_3\omega_4u^2\omega_2 + 2v^2\omega_4^2\omega_1u^2 + \frac{1}{2}\omega_3^2u^2\omega_2 + 2\omega_3u^2 - v^2\omega_4^2 + 5v^2\omega_4\omega_2 + \omega_3\omega_1u^2 - 2v^2\omega_3^2{c_s}^2\omega_2 - 2v^4\omega_4\omega_2^2 + \frac{1}{2}\omega_4\omega_2 - v^2\omega_3\omega_2^2 + \omega_2^2 - 3\omega_2 + 4v^2\omega_3\omega_4\omega_1u^2 - 8v^2\omega_3\omega_1u^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_2 + \omega_3^2{c_s}^2 - \omega_3^2{c_s}^2\omega_2 - 2v^2\omega_3^2\omega_4u^2 + \omega_3\omega_4{c_s}^2 - 2v^2\omega_4u^2\omega_2^2 - 8v^2\omega_4\omega_1u^2\omega_2 + 6v^2\omega_3\omega_2 + v^2\omega_3^2u^2\omega_2 - 2v^2\omega_3\omega_4^2u^2 + 2v^4\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_2,$

$\alpha_{x,y}^{[\mu_5],t-2\delta_t} = -4 + \frac{1}{2}\omega_3^2\omega_2 - \frac{1}{2}\omega_4\omega_1 + 5\omega_3 + \frac{1}{2}\omega_3\omega_4\omega_2 - \omega_1^2 - 2\omega_4\omega_1u^2 - \omega_3\omega_4 + \omega_4^2u^2 - v^2\omega_3^2 + \omega_3\omega_1^2 + v^2\omega_3^2\omega_2 - 2\omega_3\omega_1^2u^2 - \frac{7}{2}\omega_3\omega_1 + \omega_4 - \omega_3^2u^2 + 3\omega_1 + \omega_3^2\omega_1u^2 - v^2\omega_4^2\omega_2 + v^2\omega_4^2 - 2v^2\omega_4\omega_2 + \omega_3\omega_2^2 + 2\omega_3\omega_1u^2 + \frac{1}{2}\omega_3^2\omega_1 - \frac{1}{2}\omega_4\omega_2 - 2v^2\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \omega_2^2 + 3\omega_2 + 2\omega_4\omega_1^2u^2 + 2v^2\omega_3\omega_2 - \omega_3^2 - \omega_4^2\omega_1u^2 + 2v^2\omega_4\omega_2^2 - \frac{7}{2}\omega_3\omega_2,$

$\alpha_{x+\delta_t,y}^{[\mu_1],t-2\delta_t} = 2 - v^2\omega_3^2\omega_1u^2 + \frac{1}{4}\omega_4^2u^3 - \omega_4\omega_1u^3 - \frac{5}{4}v^2\omega_3^2u\omega_2 - \frac{3}{2}\omega_3{c_s}^2\omega_2 + 2\omega_1u^2 - \frac{3}{4}\omega_4^2u^2\omega_2 + \frac{1}{2}\omega_4\omega_1 - \frac{1}{2}\omega_3 + \frac{3}{2}\omega_4\omega_1u^2\omega_2 - \frac{1}{4}\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_1\omega_2^2 - \frac{1}{2}\omega_3\omega_1u^2\omega_2 - 2v^2\omega_3{c_s}^2\omega_2^2 - \frac{1}{4}\omega_3^2u + 3v^2\omega_3\omega_4{c_s}^2\omega_2 - \frac{7}{4}v^2\omega_3\omega_4 + \frac{1}{2}\omega_3\omega_4u + \omega_1u^2\omega_2^2 + 2v^2\omega_1\omega_2^2 + 2v^2\omega_3\omega_1u\omega_2 - 2v^2\omega_4\omega_1\omega_2 - \frac{3}{2}\omega_4\omega_1u^2 + \frac{1}{4}\omega_3\omega_4 + \frac{3}{4}\omega_4^2u^2 - \frac{1}{4}v^2\omega_3^2u + \omega_3{c_s}^2 + \frac{5}{2}\omega_4u\omega_2 + 2v^2\omega_4\omega_1u\omega_2 + 2v^2\omega_4u\omega_2^2 - v^2\omega_3^2 - \frac{1}{4}\omega_3u^2\omega_2^2 - \frac{1}{2}v^2\omega_3^2\omega_2 - \frac{1}{2}v^4\omega_4^2\omega_2 - \frac{1}{2}v^2\omega_3 + \frac{3}{4}\omega_3u^2\omega_2 - \omega_3\omega_1u^3\omega_2 - \frac{1}{4}\omega_3^2u^3 - v^2\omega_3\omega_4^2{c_s}^2 - \frac{1}{2}\omega_4\omega_1\omega_2 - \frac{1}{4}\omega_4^2\omega_2 - 4v^2\omega_1u^2\omega_2^2 + \omega_4\omega_1u^3\omega_2 - 3\omega_1u^2\omega_2 - 4v^2\omega_2^2 - \frac{3}{2}\omega_4 - \frac{1}{2}\omega_4u\omega_2^2 + \frac{3}{4}\omega_4^2u + v^2\omega_3u^2\omega_2^2 - \frac{1}{4}\omega_4^2u^3\omega_2 - 3v^2\omega_3\omega_4u^2\omega_2 - \frac{11}{4}v^2\omega_3\omega_4\omega_2 - \frac{1}{2}\omega_3\omega_4u\omega_2 + \frac{3}{2}\omega_1\omega_2 + \frac{1}{4}\omega_3^2u\omega_2 - \frac{1}{4}v^2\omega_4^2u - \frac{1}{2}\omega_3^2u^2 - \frac{1}{2}v^2\omega_4^2u^2\omega_2 - \omega_1 - v^2\omega_3^2\omega_4{c_s}^2 + \frac{1}{4}\omega_3\omega_4u^2 + v^2\omega_3\omega_4^2 + \frac{1}{2}v^2\omega_3\omega_4u - \frac{1}{2}v^2\omega_3^2\omega_1u + \omega_1u + \frac{1}{4}\omega_3{c_s}^2\omega_2^2 - \frac{3}{4}v^2\omega_4^2\omega_2 + \frac{1}{2}v^4\omega_3^2\omega_2 + \frac{1}{4}\omega_4^2 - \frac{1}{4}\omega_3\omega_4u^2\omega_2 - v^2\omega_4^2\omega_1u^2 + \frac{1}{2}\omega_3^2u^2\omega_2 - \frac{1}{2}\omega_3u^2 + \omega_3\omega_1u^3 - \frac{5}{4}v^2\omega_4^2u\omega_2 - \frac{5}{4}v^2\omega_4^2 + 2v^2\omega_3\omega_4^2u + \frac{17}{4}v^2\omega_4\omega_2 + \frac{1}{2}v^2\omega_3^2\omega_1 - \frac{1}{4}\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_1u^2 + v^2\omega_3^2{c_s}^2\omega_2 + \frac{1}{2}\omega_3u\omega_2 - 2v^2\omega_1u\omega_2^2 + v^4\omega_4\omega_2^2 + \frac{7}{4}\omega_4\omega_2 + \frac{5}{4}v^2\omega_3\omega_2^2 - 2v^2\omega_3\omega_1\omega_2 - \frac{3}{2}\omega_1u\omega_2 - \frac{11}{2}v^2\omega_3\omega_4u\omega_2 + \omega_2^2 - 3\omega_2 - \frac{1}{4}\omega_4u^2\omega_2^2 - 2\omega_4u + 2v^2\omega_3u\omega_2^2 + 2v^2\omega_3^2\omega_4u - 2v^2\omega_3\omega_4\omega_1u^2 + v^2\omega_3\omega_4\omega_1 + 4v^2\omega_3\omega_1u^2\omega_2 + \frac{1}{2}\omega_1u\omega_2^2 + \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 - \frac{1}{2}\omega_4u^2 + \frac{3}{4}\omega_4u^2\omega_2 - v^2\omega_3\omega_4\omega_1u + v^2\omega_3^2\omega_4u^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_1u + v^2\omega_4u^2\omega_2^2 - \frac{1}{2}\omega_3u\omega_2^2 + 4v^2\omega_4\omega_1u^2\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2u^3\omega_2 - \frac{1}{4}\omega_4\omega_2^2 + \frac{1}{2}\omega_3^2{c_s}^2u + \frac{1}{2}v^2\omega_4^2\omega_1 + \frac{15}{4}v^2\omega_3\omega_2 - \frac{1}{2}v^2\omega_3^2u^2\omega_2 + \frac{1}{2}v^2\omega_4 - \frac{3}{4}\omega_4^2u\omega_2 + v^2\omega_3\omega_4^2u^2 - \frac{1}{2}\omega_3^2{c_s}^2u\omega_2 - v^4\omega_3\omega_2^2 + \frac{3}{4}v^2\omega_4\omega_2^2 + \frac{3}{4}\omega_3\omega_2 + \frac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2 - \frac{1}{2}v^2\omega_4^2\omega_1u + v^2\omega_3^2\omega_4 + \frac{1}{2}\omega_3\omega_1u\omega_2,$

$\alpha_{x+\delta_t,y}^{[\mu_5],t-2\delta_t} = -2 + v^2\omega_3^2u\omega_2 + \frac{1}{2}\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_4\omega_1 - \omega_4\omega_1u^2\omega_2 + \frac{1}{2}\omega_1\omega_2^2 + \omega_3\omega_1u^2\omega_2 + 2v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 - 4v^2\omega_3\omega_1u\omega_2 + 2v^2\omega_4\omega_1\omega_2 + \omega_4\omega_1u^2 - \frac{1}{2}\omega_4^2u^2 - \frac{5}{2}\omega_4u\omega_2 - 4v^2\omega_4\omega_1u\omega_2 - 2v^2\omega_4u\omega_2^2 + \frac{3}{2}v^2\omega_3^2 + \frac{1}{2}\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_4^2\omega_2 + 4v^2\omega_2^2 + 2\omega_4 + \frac{1}{2}\omega_4\omega_1u + \frac{1}{2}\omega_4u\omega_2^2 - \omega_4^2u + 3v^2\omega_3\omega_4\omega_2 - \frac{3}{2}\omega_1\omega_2 + \frac{1}{2}\omega_3^2u^2 + \omega_1 - v^2\omega_3\omega_4^2 + v^2\omega_3^2\omega_1u - 2\omega_1u + v^2\omega_4^2\omega_2 - \frac{1}{2}\omega_4^2 - \frac{1}{2}\omega_3^2u^2\omega_2 + v^2\omega_4^2u\omega_2 + \frac{1}{2}v^2\omega_4^2 - 2v^2\omega_3\omega_4^2u - 3v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_1u^2 - \frac{1}{2}\omega_3u\omega_2 + 4v^2\omega_1u\omega_2^2 - \frac{5}{2}\omega_4\omega_2 + 2v^2\omega_3\omega_1\omega_2 + 3\omega_1u\omega_2 + 6v^2\omega_3\omega_4u\omega_2 - \omega_2^2 + 3\omega_2 + 2\omega_4u - 2v^2\omega_3u\omega_2^2 - 2v^2\omega_3^2\omega_4u - v^2\omega_3\omega_4\omega_1 - \omega_1u\omega_2^2 + 2v^2\omega_3\omega_4\omega_1u + \frac{1}{2}\omega_3\omega_1u + \frac{1}{2}\omega_3u\omega_2^2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{1}{2}v^2\omega_4^2\omega_1 - 5v^2\omega_3\omega_2 + \omega_4^2u\omega_2 - \frac{1}{2}\omega_4\omega_1u\omega_2 - 2v^2\omega_4\omega_2^2 + v^2\omega_4^2\omega_1u - v^2\omega_3^2\omega_4 - \frac{1}{2}\omega_3\omega_1u\omega_2,$

$\alpha_{x-\delta_t,y+\delta_t}^{[\mu_1],t-2\delta_t} = 1 - \frac{1}{4}v^2\omega_3^2\omega_1u^2 + \frac{1}{4}v\omega_4\omega_1u\omega_2 - \frac{1}{4}\omega_3^2\omega_4{c_s}^2 - \frac{1}{8}\omega_4^2u^3 - \frac{3}{4}\omega_4\omega_1u^3 + \frac{3}{4}v^2\omega_3^2u\omega_2 + \frac{3}{4}\omega_3{c_s}^2\omega_2 + \frac{5}{2}\omega_3{c_s}^2\omega_1u - \frac{1}{2}v\omega_4 - \omega_1u^2 + \frac{1}{4}\omega_4\omega_1 - \frac{1}{4}\omega_3 - \frac{1}{4}\omega_4\omega_1u^2\omega_2 - v^3\omega_3\omega_4\omega_2 - 2v^3\omega_2^2 - \frac{1}{4}v\omega_3\omega_1u\omega_2 + \frac{1}{8}\omega_3\omega_4\omega_1u - \frac{1}{4}v\omega_4^2\omega_1u^2 - \frac{1}{8}v\omega_3\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1\omega_2 + \frac{1}{2}v^3\omega_3\omega_4\omega_1u - v^2\omega_1^2u\omega_2 + \frac{1}{8}\omega_3^2u + \frac{3}{4}\omega_3\omega_4^2{c_s}^2u + \frac{1}{4}v^3\omega_3^2\omega_1u - \frac{11}{8}v^2\omega_3\omega_4 + \frac{1}{2}v^3\omega_3\omega_2^2 + \frac{1}{2}\omega_4\omega_1^2u^4 - \frac{1}{4}\omega_3\omega_4u + \frac{1}{8}\omega_3^2\omega_1u - \frac{1}{2}v^2\omega_1\omega_2^2 - \frac{3}{4}v^2\omega_3\omega_1u\omega_2 + \frac{1}{4}v\omega_3\omega_1u - \frac{1}{2}v^2\omega_4\omega_1\omega_2 - 3v^2\omega_2 - v\omega_3\omega_4{c_s}^2u\omega_2 + \frac{1}{2}v^2\omega_3\omega_1^2u^2 + \frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2 + \frac{7}{8}\omega_4\omega_1u^2 - \frac{1}{4}\omega_3\omega_4^2{c_s}^2 + \frac{1}{4}v^3\omega_3^2\omega_1 + \frac{5}{4}v^3\omega_4\omega_2 + \frac{1}{8}\omega_3\omega_4 + \frac{3}{8}\omega_4^2u^2 + \frac{1}{8}v^2\omega_3^2u - 2\omega_3{c_s}^2 - \frac{1}{4}\omega_4u\omega_2 - \frac{3}{4}v^2\omega_4\omega_1u\omega_2 + \frac{1}{2}v^2\omega_4u\omega_2^2 + \frac{3}{4}v\omega_3^2{c_s}^2 - \frac{1}{4}v^2\omega_3^2 - \frac{1}{4}\omega_4^2\omega_1u^4 - \frac{5}{4}v^2\omega_4\omega_1u + \frac{1}{4}v\omega_3\omega_1\omega_2 + \frac{3}{4}v\omega_3\omega_4{c_s}^2 - \frac{1}{2}\omega_3^2\omega_4{c_s}^2u^2 - \frac{1}{8}v^2\omega_4\omega_1 - \frac{1}{4}v^2\omega_3^2\omega_2 - \frac{1}{4}v\omega_4u^2\omega_2 + \frac{1}{4}v\omega_4^2\omega_1u^3 + v^2\omega_3 - \frac{3}{8}\omega_3u^2\omega_2 - \frac{1}{2}\omega_3^2\omega_1u^3 - \frac{5}{2}v^2\omega_4u\omega_2 - 2v\omega_1u\omega_2 - \frac{1}{4}\omega_3\omega_1u^3\omega_2 + \frac{1}{4}\omega_3\omega_1^2u^2 + \frac{1}{8}\omega_3^2u^3 - \frac{1}{2}v^3\omega_4\omega_1\omega_2 + \frac{1}{4}v^3\omega_3^2\omega_4 + \frac{3}{4}\omega_3^2\omega_4{c_s}^2u - \frac{3}{8}v\omega_4\omega_2 - \frac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2 + \frac{3}{2}v^2\omega_1\omega_2 + \frac{7}{4}v\omega_3u\omega_2 + \frac{1}{4}\omega_4\omega_1u^3\omega_2 + \frac{1}{2}\omega_1u^2\omega_2 + v^2\omega_2^2 + \frac{1}{2}v\omega_3\omega_1u^2 - \frac{3}{4}\omega_4 + \frac{1}{2}v^3\omega_4\omega_2^2 + \frac{1}{8}\omega_4\omega_1u + \frac{1}{4}v^2\omega_3\omega_1^2u - \frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u - \frac{3}{8}\omega_4^2u - v^2\omega_3\omega_4u^2\omega_2 - v^3\omega_4u\omega_2^2 - \frac{1}{4}v^2\omega_3\omega_4\omega_2 - \frac{1}{8}\omega_3\omega_4\omega_1u^2 + 2v^3\omega_3\omega_4u\omega_2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1 + \frac{1}{4}\omega_1\omega_2 + v\omega_1^2u^2\omega_2 - \frac{3}{8}v^3\omega_3^2 - \frac{1}{2}\omega_3\omega_4^2{c_s}^2u^2 + \frac{1}{2}v^3\omega_3^2u\omega_2 - \frac{1}{4}\omega_3^2{c_s}^2\omega_1 + \frac{1}{8}v^2\omega_4^2u - \frac{1}{2}\omega_3^2u^2 - \frac{1}{2}v^2\omega_4^2u^2\omega_2 + \frac{1}{4}\omega_3\omega_1^2u^3 - \frac{1}{2}\omega_1 + \frac{1}{2}v\omega_3\omega_4u^2\omega_2 + \frac{1}{8}\omega_3^2\omega_1u^2 - \frac{1}{8}\omega_3\omega_4u^2 + \frac{7}{4}v^3\omega_3\omega_2 + \frac{1}{4}v^2\omega_3\omega_4^2 + \frac{9}{4}v^2\omega_3\omega_4u + \frac{1}{4}v^2\omega_3^2\omega_1u - \frac{1}{2}v\omega_3^2{c_s}^2\omega_1u - \frac{1}{2}\omega_1u + \frac{1}{8}v\omega_4^2 - \frac{1}{4}v^2\omega_4^2\omega_2 - \frac{5}{8}v^2\omega_3\omega_1 + \frac{1}{2}v\omega_3^2u^2\omega_2 + \frac{1}{8}\omega_4^2 - \frac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u - \frac{1}{4}v^3\omega_3^2\omega_2 - \frac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 - \frac{1}{2}v\omega_3\omega_4u\omega_2 - \frac{1}{4}v^2\omega_4^2\omega_1u^2 + v\omega_3{c_s}^2\omega_1u\omega_2 - \frac{1}{4}v\omega_3\omega_4\omega_1u^2 + \omega_3u^2 + \frac{3}{4}\omega_3\omega_1u^3 + \frac{3}{4}v^2\omega_4^2u\omega_2 + \frac{1}{2}v\omega_1^2u\omega_2 - \frac{3}{8}v\omega_3^2u^2 - \omega_3{c_s}^2\omega_1^2u^2 - \frac{1}{8}v^2\omega_4^2 + v^3\omega_1\omega_2^2 + \frac{1}{4}v^3\omega_4^2\omega_1u - \frac{3}{4}v^2\omega_3\omega_4^2u - \frac{1}{2}\omega_3\omega_1^2u^4 - \frac{1}{4}v\omega_3\omega_4u^2 + \frac{13}{8}v^2\omega_4\omega_2 + \frac{1}{8}v^2\omega_3^2\omega_1 - \frac{1}{2}v\omega_3^2{c_s}^2\omega_1 - \frac{1}{2}v\omega_3^2u\omega_2 - \frac{3}{4}v\omega_1\omega_2 - \frac{1}{2}\omega_3^2{c_s}^2\omega_1u + \frac{1}{8}\omega_3\omega_1u^2 + \frac{1}{2}v\omega_3^2\omega_4{c_s}^2u + \frac{1}{2}v^2\omega_4\omega_1^2u^2 - v\omega_1u^2\omega_2 -$

$$\frac{1}{4}\omega_3 u\omega_2+\frac{5}{4}\omega_3 {c_s}^2\omega_1-\frac{1}{4}v\omega_4^2 u-\frac{1}{2}v\omega_3-v^2\omega_1 u\omega_2^2-\frac{1}{2}v^3\omega_3\omega_4+\frac{1}{8}\omega_4\omega_2-\frac{1}{4}v^2\omega_3\omega_2^2-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_1 u^3\omega_2+\frac{1}{4}v\omega_4\omega_1 u+\frac{1}{4}v^3\omega_3\omega_4\omega_1+\frac{1}{4}\omega_1 u\omega_2-\frac{1}{4}v\omega_3^2\omega_1 u^3+\frac{1}{4}v\omega_3\omega_1+\frac{3}{4}v\omega_3 u^2\omega_2+v^2\omega_3\omega_4 u\omega_2-\frac{1}{2}\omega_2+\omega_4 u+\frac{1}{2}v^2\omega_3 u\omega_2^2-\frac{3}{4}v^2\omega_3^2\omega_4 u+\frac{1}{4}\omega_3^2\omega_1 u^4-\frac{5}{4}v^2\omega_3\omega_1 u-\frac{3}{2}v^2\omega_3\omega_4\omega_1 u^2-\frac{1}{2}v\omega_4\omega_1 u^3\omega_2-v^3\omega_3\omega_1\omega_2+\frac{3}{2}v\omega_2+\frac{3}{8}v^2\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1 u^2\omega_2+2v^3\omega_1 u\omega_2^2-\frac{1}{4}\omega_3\omega_4 {c_s}^2\omega_2-\frac{1}{2}\omega_4 u^2+\frac{1}{2}\omega_3^2 {c_s}^2+\frac{1}{2}\omega_4^2\omega_1 u^3-\frac{5}{2}v^2\omega_3 u\omega_2+\frac{1}{8}\omega_4 u^2\omega_2-\frac{1}{8}v^3\omega_4^2-\frac{1}{4}v^3\omega_4^2\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1 u+\frac{1}{2}v^2\omega_3^2\omega_4 u^2+\frac{3}{2}\omega_3\omega_4 {c_s}^2-\frac{1}{4}\omega_4\omega_1^2 u^2+\frac{1}{4}v\omega_3\omega_4-\frac{1}{2}v^3\omega_3^2\omega_4 u+\frac{1}{4}v^2\omega_4\omega_1^2 u-\frac{3}{8}\omega_3\omega_1 u+\frac{1}{8}v\omega_3^2+\frac{1}{8}v\omega_4^2 u^2-v^3\omega_3 u\omega_2^2+2v^2\omega_4\omega_1 u^2\omega_2-\frac{9}{4}\omega_3\omega_4 {c_s}^2 u-\frac{1}{4}\omega_3^2 {c_s}^2 u+\frac{3}{4}v\omega_4 u\omega_2+\frac{11}{8}v^2\omega_3\omega_2+\frac{1}{4}v^3\omega_3\omega_4^2+5v^2\omega_1 u\omega_2+\frac{1}{2}v\omega_4\omega_1 u^2-\frac{1}{4}v\omega_3\omega_4^2 {c_s}^2+\frac{1}{2}v^3\omega_4^2 u\omega_2-\frac{1}{2}v^2\omega_3^2 u^2\omega_2-\frac{1}{4}\omega_4\omega_1^2 u^3-\frac{1}{4}v\omega_3^2 u+\frac{1}{2}v^2\omega_4-\frac{1}{2}\omega_3 {c_s}^2\omega_1^2 u-\frac{1}{4}\omega_4^2\omega_1 u^2+\frac{1}{2}v^2\omega_3\omega_4^2 u^2+\frac{1}{4}v\omega_3^2\omega_1 u-\frac{1}{2}v\omega_3\omega_4 u-\frac{3}{2}v^3\omega_4\omega_1 u\omega_2+\frac{1}{2}\omega_3^2 {c_s}^2\omega_1 u^2-\frac{1}{4}v^2\omega_4\omega_2^2+\frac{1}{8}\omega_3\omega_2-2v^2\omega_1^2 u^2\omega_2+\frac{1}{8}v\omega_3^2\omega_2+\frac{1}{4}v\omega_4\omega_1+\frac{3}{2}\omega_3\omega_4 {c_s}^2\omega_1 u^2-\frac{3}{2}v\omega_3 {c_s}^2\omega_2-\frac{1}{4}v\omega_3^2\omega_4 {c_s}^2+\frac{1}{2}v\omega_3\omega_4^2 {c_s}^2 u+\frac{1}{2}\omega_3\omega_4 {c_s}^2 u\omega_2-\frac{3}{2}v\omega_3\omega_1 u^2\omega_2+\frac{1}{4}v^2\omega_4^2\omega_1 u+\frac{1}{8}v\omega_3\omega_4\omega_2-\frac{3}{2}v^3\omega_3\omega_1 u\omega_2+v\omega_3 {c_s}^2\omega_1\omega_2+\frac{1}{4}v^2\omega_3^2\omega_4+\frac{1}{2}v^3\omega_3\omega_4^2 u+\frac{1}{4}\omega_3\omega_1 u\omega_2+\frac{1}{4}v\omega_3\omega_4\omega_1 u,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x-\delta_l,y+\delta_l}=$$
$$-2-v\omega_4\omega_1 u\omega_2+\frac{1}{2}v^2\omega_3^2 u\omega_2+\frac{3}{2}v\omega_4+\frac{1}{8}\omega_3^2\omega_2-\frac{3}{8}\omega_4\omega_1+\frac{5}{2}\omega_3-\frac{1}{2}\omega_4\omega_1 u^2\omega_2+\frac{3}{8}\omega_3\omega_4\omega_2-2v\omega_3\omega_4^2 u-v\omega_3\omega_1 u\omega_2+\frac{1}{2}\omega_3\omega_4\omega_1 u-\frac{1}{2}v\omega_4^2\omega_1 u^2+\frac{3}{4}v\omega_4^2 u\omega_2+2v\omega_3\omega_2-\frac{3}{2}\omega_3\omega_1 u^2\omega_2+\omega_3^2 u-v^2\omega_3\omega_4+\frac{7}{2}\omega_3\omega_4 u+\frac{1}{4}\omega_3^2\omega_1 u+v^2\omega_1\omega_2^2-2v^2\omega_3\omega_1 u\omega_2+\frac{1}{2}v\omega_3 u\omega_2^2-\frac{1}{4}v\omega_4\omega_2^2-3v\omega_3\omega_1 u-\frac{1}{2}v^2\omega_4\omega_1\omega_2-2v\omega_3^2\omega_4 u+\frac{3}{2}\omega_4\omega_1 u^2-\frac{7}{4}\omega_3\omega_4-\frac{1}{4}\omega_4^2 u^2+\frac{1}{2}\omega_4 u\omega_2-2v^2\omega_4\omega_1 u\omega_2-v\omega_1 u\omega_2^2-v^2\omega_4 u\omega_2^2-\frac{3}{4}v^2\omega_3^2-\frac{1}{2}v\omega_3\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1^2 u+\frac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2 u^2-\frac{1}{4}v^2\omega_3^2\omega_2+6v\omega_1 u\omega_2+\frac{1}{2}\omega_3\omega_1^2 u^2+\frac{1}{2}v\omega_4\omega_1^2 u-\frac{9}{8}\omega_3\omega_1+\frac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2-3v\omega_3 u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4 u^2+\frac{1}{4}\omega_3\omega_4^2+\frac{3}{2}\omega_4-2\omega_4\omega_1 u+v\omega_3\omega_4\omega_1+\frac{1}{2}\omega_4^2 u-\frac{3}{2}v^2\omega_3\omega_4\omega_2+\frac{3}{4}v\omega_4^2\omega_1 u-\frac{3}{2}\omega_3\omega_4\omega_1 u^2-\omega_3\omega_4 u\omega_2-\frac{1}{2}\omega_1\omega_2-\frac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2 u^2\omega_2-\frac{1}{2}\omega_3^2 u\omega_2-\frac{3}{4}\omega_3^2 u^2+\omega_1-v\omega_3\omega_4 u^2\omega_2-\frac{1}{4}\omega_3^2\omega_1 u^2-\omega_3\omega_4 u^2+\frac{1}{2}v^2\omega_3\omega_4^2+\frac{1}{2}v^2\omega_3^2\omega_1 u+4\omega_1 u-\frac{1}{2}v\omega_4^2+\frac{1}{2}\omega_1^2 u\omega_2-\frac{1}{4}v^2\omega_4^2\omega_2-\frac{1}{2}v\omega_3^2 u^2\omega_2+v\omega_3\omega_4^2 u^2-\frac{1}{4}\omega_4^2+\frac{1}{2}\omega_3\omega_4 u^2\omega_2+\frac{3}{2}v\omega_3\omega_4 u\omega_2+\frac{1}{2}\omega_3\omega_4^2 u^2-3v\omega_3\omega_4\omega_1 u^2+\frac{1}{2}\omega_3^2 u^2\omega_2+\frac{1}{2}v^2\omega_4^2 u\omega_2-v\omega_1^2 u\omega_2-\omega_1^2 u-\frac{1}{4}v^2\omega_4^2+\frac{1}{4}\omega_4^2\omega_1 u-v^2\omega_3\omega_4^2 u-\frac{1}{2}v\omega_3^2\omega_1 u^2+\frac{3}{2}v^2\omega_4\omega_2+\frac{1}{2}v^2\omega_3^2\omega_1+\frac{3}{4}v\omega_3^2 u\omega_2+2v\omega_1\omega_2+\omega_1^2 u^2\omega_2+\frac{5}{2}\omega_3\omega_1 u^2+\frac{1}{2}\omega_3^2\omega_4 u^2+\frac{3}{4}v\omega_3\omega_4^2+\frac{3}{2}\omega_3 u\omega_2+\frac{1}{2}v\omega_4^2 u+\frac{5}{2}v\omega_3+2v^2\omega_1 u\omega_2^2+\frac{1}{8}\omega_3^2\omega_1-\frac{3}{8}\omega_4\omega_2+\frac{1}{2}v\omega_4 u\omega_2^2+\frac{1}{2}v^2\omega_3\omega_2^2+\frac{3}{8}\omega_3\omega_4\omega_1-\frac{3}{2}v^2\omega_3\omega_1\omega_2-3v\omega_4\omega_1 u+v\omega_3\omega_1^2 u^2+v\omega_2^2-2\omega_1 u\omega_2-\frac{3}{2}v\omega_3\omega_1-\frac{1}{4}v\omega_4^2\omega_2+3v^2\omega_3\omega_4 u\omega_2+\omega_2-\frac{3}{2}\omega_4 u-v^2\omega_3 u\omega_2^2-v^2\omega_3^2\omega_4 u+\frac{1}{4}\omega_4\omega_1^2 u-\frac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\frac{1}{2}v^2\omega_3\omega_4\omega_1+\frac{1}{2}v\omega_3\omega_1^2 u+\frac{1}{2}\omega_3\omega_1\omega_2+v^2\omega_3\omega_4\omega_1 u+\frac{1}{4}\omega_3^2\omega_4+\frac{1}{2}\omega_4\omega_1^2 u^2-\frac{7}{2}v\omega_3\omega_4-\frac{3}{4}\omega_3^2\omega_4 u-2\omega_3\omega_1 u-v\omega_3^2-3v\omega_4 u\omega_2+\frac{5}{2}v^2\omega_3\omega_2-\frac{1}{2}\omega_3^2+\frac{1}{2}v\omega_3^2 u-2\omega_1^2 u^2+2v\omega_4\omega_1 u^2\omega_2-\frac{1}{4}\omega_4^2\omega_1 u^2+\frac{3}{4}v\omega_3^2\omega_1 u+5v\omega_3\omega_4 u+\frac{1}{2}\omega_4\omega_1 u\omega_2-\frac{1}{2}v\omega_1\omega_2^2+\frac{1}{2}v^2\omega_4\omega_2^2-\frac{9}{8}\omega_3\omega_2-\frac{1}{4}v\omega_3^2\omega_2-\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}v\omega_4^2 u^2\omega_2+2v\omega_3\omega_1 u^2\omega_2+\frac{1}{2}v^2\omega_4^2\omega_1 u-\frac{3}{4}\omega_3\omega_4^2 u-\frac{1}{2}v\omega_3\omega_4\omega_2+\frac{1}{2}v^2\omega_3^2\omega_4+\frac{1}{2}\omega_3\omega_1 u\omega_2+\frac{3}{2}v\omega_3\omega_4\omega_1 u-\frac{5}{2}\omega_3 u,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x,y+\delta_l}=1+\frac{1}{2}v^2\omega_3^2\omega_1 u^2-\frac{1}{2}\omega_3 {c_s}^2\omega_2-\frac{1}{2}v\omega_4+2\omega_1 u^2+\frac{1}{4}v^2\omega_3\omega_1^2+\frac{3}{2}\omega_4\omega_1-\frac{1}{4}\omega_3+\frac{1}{4}\omega_4\omega_1 u^2\omega_2+\frac{1}{4}v\omega_4^2\omega_1 u^2-\frac{1}{2}v\omega_3\omega_2-\frac{1}{4}v\omega_4^2\omega_1+\frac{1}{2}\omega_3 {c_s}^2\omega_1\omega_2+\frac{1}{4}\omega_3\omega_1 u^2\omega_2+\frac{1}{4}v^2\omega_3\omega_4-\omega_4\omega_1^2 u^4+\frac{1}{4}v^2\omega_4\omega_1\omega_2-v^2\omega_2-v^2\omega_3\omega_1^2 u^2-\frac{5}{2}\omega_4\omega_1 u^2-\frac{1}{4}v^3\omega_3^2\omega_1+\frac{1}{2}v^3\omega_4\omega_2+\frac{1}{4}\omega_3\omega_4+\frac{3}{4}\omega_4^2 u^2+\frac{1}{2}\omega_3 {c_s}^2-\frac{1}{2}v\omega_3^2 {c_s}^2+\frac{1}{2}\omega_4^2\omega_1 u^4+\frac{1}{2}v\omega_3\omega_1\omega_2-\frac{1}{2}v\omega_3\omega_4 {c_s}^2+\omega_3^2\omega_4 {c_s}^2 u^2+\frac{1}{4}\omega_3\omega_1^2-v^2\omega_4\omega_1-\frac{1}{2}v\omega_4 u^2\omega_2-\frac{1}{4}v^2\omega_3+\frac{1}{4}\omega_3 u^2\omega_2-\frac{5}{4}\omega_3\omega_1^2 u^2-\frac{1}{2}v^3\omega_4\omega_1\omega_2-\frac{1}{4}\omega_4\omega_1\omega_2+\frac{1}{4}v^2\omega_4\omega_1^2-\frac{1}{4}v\omega_3^2\omega_1-\frac{1}{2}v\omega_4\omega_2+2v^2\omega_1\omega_2-\omega_1 u^2\omega_2-v\omega_3\omega_1 u^2-\frac{5}{4}\omega_4-\frac{1}{2}v\omega_3\omega_4\omega_1+2v^2\omega_3\omega_4 u^2\omega_2+\frac{1}{4}\omega_3\omega_4\omega_1 u^2+\frac{1}{2}\omega_3\omega_4 {c_s}^2\omega_1+\frac{1}{2}\omega_1\omega_2-2v\omega_1^2 u^2\omega_2+\frac{1}{4}v^3\omega_3^2+\omega_3\omega_4^2 {c_s}^2 u^2-\frac{1}{2}\omega_3^2 u^2+v^2\omega_4^2 u^2\omega_2-\omega_1-v\omega_3\omega_4 u^2\omega_2+\frac{1}{2}\omega_3^2\omega_1 u^2+\frac{1}{4}\omega_3\omega_4 u^2-\frac{1}{2}v^3\omega_3\omega_2+\frac{1}{4}v^3\omega_4^2\omega_1+\frac{1}{4}v\omega_4^2-\frac{1}{4}\omega_4\omega_1^2-\frac{1}{2}v\omega_3^2 u^2\omega_2+\frac{1}{2}v\omega_1^2\omega_2+\frac{1}{4}\omega_4^2+\frac{1}{2}v\omega_3\omega_4 {c_s}^2\omega_1+\frac{1}{2}v^2\omega_4^2\omega_1 u^2+\frac{1}{2}v\omega_3\omega_4\omega_1 u^2-\frac{1}{4}\omega_3 u^2+\frac{1}{4}v\omega_3^2 u^2+2\omega_3 {c_s}^2\omega_1^2 u^2-\frac{1}{4}v^2\omega_4^2+\omega_3\omega_1^2 u^4+\frac{1}{2}v\omega_3\omega_4 u^2+\frac{1}{4}v\omega_3^2\omega_1 u^2-\frac{1}{4}v^2\omega_4\omega_2+\frac{1}{2}v\omega_3^2 {c_s}^2\omega_1-2v\omega_1\omega_2+\frac{1}{2}\omega_3\omega_1 u^2-v^2\omega_4\omega_1^2 u^2+2v\omega_1 u^2\omega_2-\frac{1}{2}v\omega_3+\frac{1}{4}\omega_4\omega_2-\frac{1}{4}\omega_3\omega_4\omega_1-\frac{1}{4}v^2\omega_3\omega_1\omega_2+\frac{1}{2}v\omega_3\omega_1-v^2\omega_1^2\omega_2-\frac{1}{2}v\omega_3 u^2\omega_2-\frac{1}{2}\omega_2-\frac{1}{2}\omega_3^2\omega_1 u^4+\frac{1}{2}v\omega_4\omega_1\omega_2+3v^2\omega_3\omega_4\omega_1 u^2+\frac{1}{2}v^3\omega_3\omega_1\omega_2+\frac{3}{2}v\omega_2-\frac{1}{4}v^2\omega_3\omega_4\omega_1-\frac{1}{4}\omega_3\omega_1\omega_2-4v^2\omega_3\omega_1 u^2\omega_2-\frac{3}{4}\omega_4 u^2+\frac{1}{4}\omega_4 u^2\omega_2-\frac{1}{4}v^3\omega_4^2-v^2\omega_3^2\omega_4 u^2-\frac{1}{2}\omega_3\omega_4 {c_s}^2+\frac{5}{4}\omega_4\omega_1^2 u^2+\frac{1}{2}v\omega_3\omega_4-\frac{1}{2}\omega_3 {c_s}^2\omega_1^2+\frac{1}{4}v\omega_3^2+\frac{1}{4}v\omega_4^2 u^2-4v^2\omega_4\omega_1 u^2\omega_2+\frac{1}{4}v^2\omega_4^2\omega_1+\frac{1}{4}v^2\omega_3\omega_2-v\omega_4\omega_1 u^2+v^2\omega_3^2 u^2\omega_2+\frac{3}{4}v^2\omega_4+\frac{3}{2}v\omega_4\omega_1 u^2\omega_2-\frac{1}{4}\omega_4^2\omega_1 u^2-v^2\omega_3\omega_4^2 u^2-\omega_3^2 {c_s}^2\omega_1 u^2+\frac{1}{4}\omega_3\omega_2-\frac{1}{4}\omega_4^2\omega_1+4v^2\omega_1^2 u^2\omega_2+\frac{1}{2}v\omega_4\omega_1-\frac{1}{2}v\omega_4^2 u^2\omega_2-3\omega_3\omega_4 {c_s}^2\omega_1 u^2+v\omega_3 {c_s}^2\omega_2+\frac{3}{2}v\omega_3\omega_1 u^2\omega_2-v\omega_3 {c_s}^2\omega_1\omega_2,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x,y+\delta_l}=-2+2v\omega_4-\frac{1}{2}\omega_4^2 u^2\omega_2-\frac{5}{2}\omega_4\omega_1+2\omega_4\omega_1 u^2\omega_2+v\omega_4^2\omega_1 u^2+\frac{1}{2}v\omega_3\omega_2+v\omega_4^2\omega_1+2\omega_3\omega_1 u^2\omega_2-\omega_1^2-v^2\omega_4\omega_1\omega_2-3\omega_4\omega_1 u^2+\frac{1}{2}\omega_4^2 u^2+\frac{1}{2}v^2\omega_3^2-\frac{1}{2}v\omega_3\omega_1\omega_2-2v\omega_4\omega_1^2 u^2+\frac{1}{2}\omega_4\omega_1\omega_2+\frac{1}{2}v\omega_4\omega_2-2v\omega_3^2\omega_4 u^2+2\omega_4+3\omega_3\omega_4\omega_1 u^2-\frac{3}{2}\omega_1\omega_2+4v\omega_1^2 u^2\omega_2+\frac{3}{2}\omega_3^2 u^2+3\omega_1+2v\omega_3\omega_4 u^2\omega_2+2\omega_3\omega_4 u^2-v\omega_4^2+\frac{1}{2}\omega_4\omega_1^2+v\omega_3^2 u^2\omega_2-v\omega_1^2\omega_2-2v\omega_3\omega_4^2 u^2-\frac{1}{2}\omega_4^2+\frac{1}{2}\omega_1^2\omega_2+\frac{1}{2}v\omega_4\omega_1^2-\omega_3\omega_4 u^2\omega_2-\omega_3\omega_4^2 u^2+6v\omega_3\omega_4\omega_1 u^2-\frac{1}{2}\omega_3^2 u^2\omega_2-\frac{1}{2}v^2\omega_4^2+v\omega_3^2\omega_1 u^2+v^2\omega_4\omega_2-\frac{1}{2}v^2\omega_3^2\omega_1+3v\omega_1\omega_2-2\omega_1^2 u^2\omega_2-5\omega_3\omega_1 u^2-\omega_3^2\omega_4 u^2-\frac{1}{2}\omega_4\omega_2+v^2\omega_3\omega_1\omega_2-2v\omega_3\omega_1^2 u^2-\frac{1}{2}v\omega_3\omega_1+\omega_2-\frac{1}{2}v\omega_4\omega_1\omega_2-2v\omega_2+\frac{1}{2}v\omega_3\omega_1^2-2\omega_4\omega_1^2 u^2+\frac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2+4\omega_1^2 u^2-4v\omega_4\omega_1 u^2\omega_2+\omega_4^2\omega_1 u^2+\frac{1}{2}\omega_4^2\omega_1-\frac{5}{2}v\omega_4\omega_1+v\omega_4^2 u^2\omega_2-4v\omega_3\omega_1 u^2\omega_2,$$

$$\alpha^{[\mu_1],t-2\delta_t}_{x+\delta_l,y+\delta_l} = 1-\tfrac{1}{4}v^2\omega_3^2\omega_1u^2-\tfrac{1}{4}v\omega_4\omega_1u\omega_2-\tfrac{1}{4}\omega_3^2\omega_4{c_s}^2+\tfrac{1}{8}\omega_4^2u^3+\tfrac{3}{4}\omega_4\omega_1u^3-\tfrac{3}{4}v^2\omega_3^2u\omega_2+\tfrac{3}{4}\omega_3{c_s}^2\omega_2-\tfrac{5}{2}\omega_3{c_s}^2\omega_1u-\tfrac{1}{2}v\omega_4-\omega_1u^2+\tfrac{1}{4}\omega_4\omega_1-\tfrac{1}{4}\omega_3-\tfrac{1}{4}\omega_4\omega_1u^2\omega_2-v^3\omega_3\omega_4\omega_2-2v^3\omega_2^2+\tfrac{1}{4}v\omega_3\omega_1u\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u-\tfrac{1}{4}v\omega_4^2\omega_1u^2-\tfrac{7}{8}v\omega_3\omega_2-\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}v^3\omega_3\omega_4\omega_1u+v^2\omega_1^2u\omega_2-\tfrac{1}{8}\omega_3^2u-\tfrac{3}{4}\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{4}v^3\omega_3^2\omega_1u-\tfrac{11}{8}v^2\omega_3\omega_4+\tfrac{1}{2}v^3\omega_3\omega_2^2+\tfrac{1}{2}\omega_4\omega_1^2u^4+\tfrac{1}{4}\omega_3\omega_4u-\tfrac{1}{8}\omega_3^2\omega_1u-\tfrac{1}{2}v^2\omega_1\omega_2^2+\tfrac{3}{4}v^2\omega_3\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2-3v^2\omega_2+v\omega_3\omega_4{c_s}^2u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1^2u^2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_2+\tfrac{7}{8}\omega_4\omega_1u^2-\tfrac{1}{4}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_3^2\omega_1+\tfrac{5}{4}v^3\omega_4\omega_2+\tfrac{1}{8}\omega_3\omega_4+\tfrac{3}{8}\omega_4^2u^2-\tfrac{1}{8}v^2\omega_3^2u-2\omega_3{c_s}^2+\tfrac{1}{4}\omega_4u\omega_2+\tfrac{3}{4}v^2\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_4u\omega_2^2+\tfrac{3}{4}v\omega_3^2{c_s}^2-\tfrac{1}{4}v^2\omega_3^2-\tfrac{1}{4}\omega_4^2\omega_1u^4+\tfrac{5}{4}v^2\omega_4\omega_1u+\tfrac{1}{4}v\omega_3\omega_1\omega_2+\tfrac{3}{4}v\omega_3\omega_4{c_s}^2-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2u^2-\tfrac{1}{8}v^2\omega_4\omega_1-\tfrac{1}{4}v^2\omega_3^2\omega_2-\tfrac{1}{4}v\omega_4u^2\omega_2-\tfrac{1}{4}v\omega_4^2\omega_1u^3+v^2\omega_3-\tfrac{3}{8}\omega_3u^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_1u^3+\tfrac{5}{2}v^2\omega_4u\omega_2+2v\omega_1u\omega_2+\tfrac{1}{4}\omega_3\omega_1u^3\omega_2+\tfrac{1}{4}\omega_3\omega_1^2u^2-\tfrac{1}{8}\omega_3^2u^3-\tfrac{1}{2}v^3\omega_4\omega_1\omega_2+\tfrac{1}{4}v^3\omega_3^2\omega_4-\tfrac{3}{4}\omega_3^2\omega_4{c_s}^2u-\tfrac{3}{8}v\omega_4\omega_2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1u\omega_2+\tfrac{3}{2}v^2\omega_1\omega_2-\tfrac{7}{4}v\omega_3u\omega_2-\tfrac{1}{4}\omega_4\omega_1u^3\omega_2+\tfrac{1}{2}\omega_1u^2\omega_2+v^2\omega_2^2+\tfrac{1}{2}v\omega_3\omega_1u^2-\tfrac{3}{4}\omega_4+\tfrac{1}{2}v^3\omega_4\omega_2^2-\tfrac{1}{8}\omega_4\omega_1u-\tfrac{1}{4}v^2\omega_3\omega_1^2u+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{3}{8}\omega_4^2u-v^2\omega_3\omega_4u^2\omega_2+v^3\omega_4u\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_4\omega_2-\tfrac{1}{8}\omega_3\omega_4\omega_1u^2-2v^3\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{4}\omega_1\omega_2+v\omega_1^2u^2\omega_2-\tfrac{3}{8}v^3\omega_3^2-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2u^2-\tfrac{1}{2}v^3\omega_3^2u\omega_2-\tfrac{1}{4}\omega_3^2{c_s}^2\omega_1-\tfrac{1}{8}v^2\omega_4^2u-\tfrac{1}{2}\omega_3^2u^2-\tfrac{1}{2}v^2\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u^3-\tfrac{1}{2}\omega_1+\tfrac{1}{2}v\omega_3\omega_4u^2\omega_2+\tfrac{1}{8}\omega_3^2\omega_1u^2-\tfrac{1}{8}\omega_3\omega_4u^2+\tfrac{7}{4}v^3\omega_3\omega_2+\tfrac{1}{4}v^2\omega_3\omega_4^2-\tfrac{9}{4}v^2\omega_3\omega_4u-\tfrac{1}{4}v^2\omega_3^2\omega_1u+\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1u+\tfrac{1}{2}\omega_1u+\tfrac{1}{8}v\omega_4^2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{5}{8}v^2\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2u^2\omega_2+\tfrac{1}{8}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1u-\tfrac{1}{4}v^3\omega_3^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1+\tfrac{1}{2}v\omega_3\omega_4u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u^2-v\omega_3{c_s}^2\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_4\omega_1u^2+\omega_3u^2-\tfrac{3}{4}\omega_3\omega_1u^3-\tfrac{3}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{2}v\omega_1^2u\omega_2-\tfrac{3}{8}v\omega_3^2u^2-\omega_3{c_s}^2\omega_1^2u^2-\tfrac{1}{8}v^2\omega_4^2+v^3\omega_1\omega_2^2-\tfrac{1}{4}v^3\omega_4^2\omega_1u+\tfrac{3}{4}v^2\omega_3\omega_4^2u-\tfrac{1}{2}\omega_3\omega_1^2u^4-\tfrac{1}{4}v\omega_3\omega_4u^2+\tfrac{13}{8}v^2\omega_4\omega_2+\tfrac{1}{8}v^2\omega_3^2\omega_1-\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+\tfrac{1}{2}v\omega_3^2u\omega_2-\tfrac{3}{4}v\omega_1\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u+\tfrac{1}{8}\omega_3\omega_1u^2-\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2u+\tfrac{1}{2}v^2\omega_4\omega_1^2u^2-v\omega_1u^2\omega_2+\tfrac{1}{4}\omega_3u\omega_2+\tfrac{5}{4}\omega_3{c_s}^2\omega_1+\tfrac{1}{4}v\omega_4^2u-\tfrac{1}{2}v\omega_3+v^2\omega_1u\omega_2^2-\tfrac{1}{2}v^3\omega_3\omega_4+\tfrac{1}{8}\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{1}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1u^3\omega_2-\tfrac{1}{4}v\omega_4\omega_1u+\tfrac{1}{4}v^3\omega_3\omega_4\omega_1-\tfrac{1}{4}\omega_1u\omega_2+\tfrac{1}{4}v\omega_3^2\omega_1u^3+\tfrac{1}{4}v\omega_3\omega_1+\tfrac{3}{4}v\omega_3u^2\omega_2-v^2\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_2-\omega_4u-\tfrac{1}{2}v^2\omega_3u\omega_2^2+\tfrac{3}{4}v^2\omega_3^2\omega_4u+\tfrac{1}{4}\omega_3^2\omega_1u^4+\tfrac{5}{4}v^2\omega_3\omega_1u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}v\omega_4\omega_1u^3\omega_2-v^3\omega_3\omega_1\omega_2+\tfrac{3}{2}v\omega_2+\tfrac{3}{8}v^2\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1u^2\omega_2-2v^3\omega_1u\omega_2^2-\tfrac{1}{4}\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{2}\omega_4u^2+\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{2}\omega_4^2\omega_1u^3+\tfrac{5}{2}v^2\omega_3u\omega_2+\tfrac{1}{8}\omega_4u^2\omega_2-\tfrac{1}{8}v^3\omega_4^2-\tfrac{1}{4}v^3\omega_4^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1u+\tfrac{1}{2}v^2\omega_3^2\omega_4u^2+\tfrac{3}{2}\omega_3\omega_4{c_s}^2-\tfrac{1}{4}\omega_4\omega_1^2u^2+\tfrac{1}{4}v\omega_3\omega_4+\tfrac{1}{2}v^3\omega_3^2\omega_4u-\tfrac{1}{4}v^2\omega_4\omega_1^2u+\tfrac{3}{8}\omega_3\omega_1u+\tfrac{1}{8}v\omega_3^2+\tfrac{1}{8}v\omega_4^2u^2+v^3\omega_3u\omega_2^2+2v^2\omega_4\omega_1u^2\omega_2+\tfrac{9}{4}\omega_3\omega_4{c_s}^2u+\tfrac{1}{4}\omega_3^2{c_s}^2u-\tfrac{3}{4}v\omega_4u\omega_2+\tfrac{11}{8}v^2\omega_3\omega_2+\tfrac{1}{4}v^3\omega_3\omega_4^2-5v^2\omega_1u\omega_2+\tfrac{1}{2}v\omega_4\omega_1u^2-\tfrac{1}{4}v\omega_3\omega_4^2{c_s}^2-\tfrac{1}{2}v^3\omega_4^2u\omega_2-\tfrac{1}{2}v^2\omega_3^2u^2\omega_2+\tfrac{1}{4}\omega_4\omega_1^2u^3+\tfrac{1}{4}v\omega_3^2u+\tfrac{1}{2}v^2\omega_4+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2u-\tfrac{1}{4}\omega_4^2\omega_1u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2u^2-\tfrac{1}{4}v\omega_3^2\omega_1u+\tfrac{1}{2}v\omega_3\omega_4u+\tfrac{3}{2}v^3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}v^2\omega_4\omega_2^2+\tfrac{1}{8}\omega_3\omega_2-2v^2\omega_1^2u^2\omega_2+\tfrac{1}{8}v\omega_3^2\omega_2+\tfrac{1}{4}v\omega_4\omega_1+\tfrac{3}{2}\omega_3\omega_4{c_s}^2\omega_1u^2-\tfrac{3}{2}v\omega_3{c_s}^2\omega_2-\tfrac{1}{4}v\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2u-\tfrac{1}{2}\omega_3\omega_4{c_s}^2u\omega_2-\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_1u+\tfrac{1}{8}v\omega_3\omega_4\omega_2+\tfrac{3}{2}v^3\omega_3\omega_1u\omega_2+v\omega_3{c_s}^2\omega_1\omega_2+\tfrac{1}{4}v^2\omega_3^2\omega_4+\tfrac{1}{2}v^3\omega_3\omega_4^2u-\tfrac{1}{4}\omega_3\omega_1u\omega_2-\tfrac{1}{4}v\omega_3\omega_4\omega_1u,$$

$$\alpha^{[\mu_5],t-2\delta_t}_{x+\delta_l,y+\delta_l} =$$
$$-2+v\omega_4\omega_1u\omega_2-\tfrac{1}{2}v^2\omega_3^2u\omega_2+\tfrac{3}{2}v\omega_4+\tfrac{1}{8}\omega_3^2\omega_2-\tfrac{3}{8}\omega_4\omega_1+\tfrac{5}{2}\omega_3-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2+\tfrac{3}{8}\omega_3\omega_4\omega_2+2v\omega_3\omega_4^2u+v\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1u-\tfrac{1}{2}v\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_4^2u\omega_2+2v\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_1u^2\omega_2-\omega_3^2u-v^2\omega_3\omega_4-\tfrac{7}{2}\omega_3\omega_4u-\tfrac{1}{4}\omega_3^2\omega_1u+v^2\omega_1\omega_2^2+2v^2\omega_3\omega_1u\omega_2-\tfrac{1}{2}v\omega_3u\omega_2^2-\tfrac{1}{4}v\omega_4\omega_2^2+3v\omega_3\omega_1u-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2+2v\omega_3^2\omega_4u+\tfrac{3}{2}\omega_4\omega_1u^2-\tfrac{7}{4}\omega_3\omega_4-\tfrac{1}{4}\omega_4^2u^2-\tfrac{1}{2}\omega_4u\omega_2+2v^2\omega_4\omega_1u\omega_2+v\omega_1u\omega_2^2+v^2\omega_4u\omega_2^2-\tfrac{3}{4}v^2\omega_3^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2-\tfrac{1}{4}\omega_3\omega_1^2u+\tfrac{3}{4}v\omega_3^2\omega_4+v\omega_4\omega_1^2u^2-\tfrac{1}{4}v^2\omega_3^2\omega_2-6v\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_4\omega_1^2u-\tfrac{9}{8}\omega_3\omega_1+\tfrac{1}{2}v\omega_3^2\omega_1+2v\omega_4\omega_2+3v\omega_3u\omega_2-2v^2\omega_2^2+v\omega_3^2\omega_4u^2+\tfrac{1}{4}\omega_3\omega_4^2+\tfrac{3}{2}\omega_4+2\omega_4\omega_1u+v\omega_3\omega_4\omega_1-\tfrac{1}{2}\omega_4^2u-\tfrac{3}{2}v^2\omega_3\omega_4\omega_2-\tfrac{3}{4}v\omega_4^2\omega_1u-\tfrac{3}{2}\omega_3\omega_4\omega_1u^2+\omega_3\omega_4u\omega_2-\tfrac{1}{2}\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_2^2-2v\omega_1^2u^2\omega_2+\tfrac{1}{2}\omega_3^2u\omega_2-\tfrac{3}{4}\omega_3^2u^2+\omega_1-v\omega_3\omega_4u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u^2-\omega_3\omega_4u^2+\tfrac{1}{2}v^2\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3^2\omega_1u-4\omega_1u-\tfrac{1}{2}v\omega_4^2-\tfrac{1}{2}\omega_1^2u\omega_2-\tfrac{1}{4}v^2\omega_4^2\omega_2-\tfrac{1}{2}v\omega_3^2u^2\omega_2+v\omega_3\omega_4^2u^2-\tfrac{1}{4}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4u^2\omega_2-\tfrac{3}{2}v\omega_3\omega_4u\omega_2+\tfrac{1}{2}\omega_3\omega_4^2u^2-3v\omega_3\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2u\omega_2+v\omega_1^2u\omega_2+\omega_1^2u-\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{4}\omega_4^2\omega_1u+v^2\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3^2\omega_1u^2+\tfrac{3}{2}v^2\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_1-\tfrac{3}{4}v\omega_3^2u\omega_2+2v\omega_1\omega_2+\omega_1^2u^2\omega_2+\tfrac{5}{2}\omega_3\omega_1u^2+\tfrac{1}{2}\omega_3^2\omega_4u^2+\tfrac{3}{4}v\omega_3\omega_4^2-\tfrac{3}{2}\omega_3u\omega_2-\tfrac{1}{2}v\omega_4^2u+\tfrac{5}{2}v\omega_3-2v^2\omega_1u\omega_2^2+\tfrac{1}{8}\omega_3^2\omega_1-\tfrac{3}{8}\omega_4\omega_2-\tfrac{1}{2}v\omega_4u\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{3}{8}\omega_3\omega_4\omega_1-\tfrac{3}{2}v^2\omega_3\omega_1\omega_2+3v\omega_4\omega_1u+v\omega_3\omega_1^2u^2+v\omega_2^2+2\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_1-\tfrac{1}{4}v\omega_4^2\omega_2-3v^2\omega_3\omega_4u\omega_2+\omega_2+\tfrac{3}{2}\omega_4u+v^2\omega_3u\omega_2^2+v^2\omega_3^2\omega_4u-\tfrac{1}{4}\omega_4\omega_1^2u-\tfrac{1}{2}v\omega_4\omega_1\omega_2-4v\omega_2+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_3\omega_1^2u+\tfrac{1}{2}\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1u+\tfrac{1}{4}\omega_3^2\omega_4+\tfrac{1}{2}\omega_4\omega_1^2u^2-\tfrac{7}{2}v\omega_3\omega_4+\tfrac{3}{4}\omega_3^2\omega_4u+2\omega_3\omega_1u-v\omega_3^2+3v\omega_4u\omega_2+\tfrac{5}{2}v^2\omega_3\omega_2-\tfrac{1}{2}\omega_3^2-\tfrac{1}{2}v\omega_3^2u-2\omega_1^2u^2+2v\omega_4\omega_1u^2\omega_2-\tfrac{1}{4}\omega_4^2\omega_1u^2-\tfrac{3}{4}v\omega_3^2\omega_1u-5v\omega_3\omega_4u-\tfrac{1}{2}\omega_4\omega_1u\omega_2-\tfrac{1}{2}v\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{9}{8}\omega_3\omega_2-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1-\tfrac{1}{2}v\omega_4^2u^2\omega_2+2v\omega_3\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_4^2\omega_1u+\tfrac{3}{4}\omega_3\omega_4^2u-\tfrac{1}{2}v\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3\omega_1u\omega_2-\tfrac{3}{2}v\omega_3\omega_4\omega_1u+\tfrac{5}{2}\omega_3u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y-\delta_l} = -1+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_2-\tfrac{1}{2}v\omega_4+2v^3\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{4}v^2\omega_3\omega_1^2-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{4}\omega_3+\tfrac{1}{4}\omega_4\omega_1u^2\omega_2+\tfrac{1}{2}v^3\omega_3^2\omega_1\omega_2-2v^3\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1-2v^3\omega_2^2-\tfrac{1}{4}v\omega_4^2\omega_1u^2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{7}{4}v\omega_3\omega_2-\tfrac{1}{4}v\omega_4^2\omega_1+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2+\tfrac{5}{2}v^2\omega_3\omega_4+v^3\omega_3\omega_2^2+v^2\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_4^2\omega_1+\tfrac{13}{4}v^2\omega_4\omega_1\omega_2+4v^2\omega_2-v\omega_4\omega_1^2u^2\omega_2+v\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2+\tfrac{1}{4}v^3\omega_3^2\omega_1+\tfrac{3}{2}v^3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4-\tfrac{3}{4}\omega_4^2u^2+2\omega_3{c_s}^2+\tfrac{1}{2}v\omega_3^2{c_s}^2+\tfrac{1}{4}v^2\omega_3^2+\tfrac{9}{4}v\omega_3\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2-v^3\omega_4\omega_1\omega_2^2+v\omega_3\omega_1^2u^2\omega_2-\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{5}{4}v^2\omega_4\omega_1+$$

$$\tfrac{1}{2}v^2\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_4u^2\omega_2 - v^2\omega_3 + \tfrac{1}{4}\omega_3u^2\omega_2 + \tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2\omega_1 + \tfrac{3}{4}\omega_3\omega_1^2u^2 - \tfrac{3}{2}v^3\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3\omega_4^2\omega_1 + \tfrac{1}{4}\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_1^2\omega_2 + \tfrac{1}{2}v^3\omega_3^2\omega_4 - v\omega_3\omega_4{c_s}^2\omega_1\omega_2 - \tfrac{1}{4}v^2\omega_4\omega_1^2 - \tfrac{1}{4}v\omega_3^2\omega_1 - \tfrac{3}{4}v\omega_4\omega_2 - 5v^2\omega_1\omega_2 - v^2\omega_2^2 - \tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2 + \tfrac{5}{4}\omega_4 + v^3\omega_4\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3^2\omega_4\omega_1 + 3\omega_3\omega_4{c_s}^2\omega_1 - \tfrac{1}{2}\omega_1\omega_2 - \tfrac{1}{4}v^3\omega_3^2 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1 + \tfrac{3}{4}\omega_3^2u^2 + \omega_1 - \tfrac{3}{4}\omega_3^2\omega_1u^2 + \tfrac{3}{2}v^3\omega_3\omega_2 + \tfrac{1}{4}v^3\omega_4^2\omega_1 - \tfrac{1}{2}v^2\omega_3\omega_4^2 - \tfrac{1}{2}v\omega_3^2\omega_1u^2\omega_2 + \tfrac{1}{4}v\omega_4^2 + \tfrac{1}{2}v^2\omega_4^2\omega_2 + \tfrac{5}{4}v^2\omega_3\omega_1 + \tfrac{1}{4}\omega_4\omega_1^2 + \tfrac{1}{2}v\omega_3^2u^2\omega_2 + \tfrac{1}{2}v\omega_1^2\omega_2 - \tfrac{1}{4}\omega_4^2 + \tfrac{1}{2}v\omega_4^2\omega_1u^2\omega_2 + \tfrac{1}{2}v^3\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}v^3\omega_3^2\omega_2 - \tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1 - \omega_3u^2 - \tfrac{1}{4}v\omega_3^2u^2 + \tfrac{1}{4}v^2\omega_4^2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2 + 2v^3\omega_1\omega_2^2 + \tfrac{1}{4}v\omega_3^2\omega_1u^2 - \tfrac{11}{4}v^2\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3^2\omega_1 - \tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1 - \tfrac{5}{2}v\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^2 - \tfrac{5}{2}\omega_3{c_s}^2\omega_1 - \tfrac{1}{2}v\omega_3 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1 - \tfrac{1}{2}v^3\omega_3\omega_4 - \tfrac{1}{4}\omega_4\omega_2 + \tfrac{1}{2}v^2\omega_3\omega_2^2 + \tfrac{1}{4}\omega_3\omega_4\omega_1 + \tfrac{13}{4}v^2\omega_3\omega_1\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_4\omega_1 + \tfrac{1}{2}v^2\omega_3\omega_4\omega_1^2 - v^3\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}v\omega_3\omega_1 + v^2\omega_1^2\omega_2 + \tfrac{1}{2}v\omega_3u^2\omega_2 + \tfrac{1}{2}\omega_2 + \tfrac{3}{4}v\omega_4\omega_1\omega_2 - \tfrac{3}{2}v^3\omega_3\omega_1\omega_2 + 2v\omega_2 - 3v^2\omega_3\omega_4\omega_1 - \tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2 + \tfrac{1}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2 + \omega_4u^2 - \tfrac{1}{2}\omega_3^2{c_s}^2 - \tfrac{1}{4}\omega_4u^2\omega_2 - \tfrac{1}{4}v^3\omega_4^2 - \tfrac{1}{2}v^3\omega_4^2\omega_2 - \tfrac{5}{2}\omega_3\omega_4{c_s}^2 - \tfrac{3}{4}\omega_4\omega_1^2u^2 + \tfrac{1}{2}v\omega_3\omega_4 - \tfrac{1}{2}v\omega_3\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3{c_s}^2\omega_1^2 + \tfrac{1}{4}v\omega_3^2 + \tfrac{1}{4}v\omega_4^2u^2 - \tfrac{1}{4}v^2\omega_4^2\omega_1 - \tfrac{11}{4}v^2\omega_3\omega_2 + \tfrac{1}{2}v^3\omega_3\omega_4^2 - \tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2 - \tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2 - v^2\omega_4 + \tfrac{3}{2}v\omega_4\omega_1u^2\omega_2 + \tfrac{3}{4}\omega_4^2\omega_1u^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 - \tfrac{1}{4}v\omega_3\omega_4\omega_1\omega_2 + \tfrac{1}{2}v^2\omega_4\omega_2^2 - \tfrac{1}{4}\omega_3\omega_2 + \tfrac{1}{4}\omega_4^2\omega_1 + \tfrac{1}{4}v\omega_3^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1 - \tfrac{1}{2}v\omega_4^2u^2\omega_2 - v\omega_3{c_s}^2\omega_2 - \tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2 - \tfrac{3}{2}v\omega_3\omega_1u^2\omega_2 - \tfrac{1}{4}v\omega_3^2\omega_1\omega_2 + \tfrac{1}{4}v\omega_3\omega_4\omega_2 + v\omega_3{c_s}^2\omega_1\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_4 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y-\delta_l}^{[\mu_5],t-3\delta_t} = 3 + \tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2 + \tfrac{5}{2}v\omega_4 + \tfrac{1}{2}\omega_4^2u^2\omega_2 - \tfrac{1}{4}\omega_3^2\omega_2 + \tfrac{13}{4}\omega_4\omega_1 - \tfrac{15}{4}\omega_3 - \omega_4\omega_1u^2\omega_2 + v^2\omega_3^2\omega_4\omega_1 - \tfrac{3}{4}\omega_3\omega_4\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1\omega_2 + \tfrac{7}{2}v\omega_3\omega_2 + v\omega_4^2\omega_1 + \omega_3\omega_1u^2\omega_2 + \omega_1^2 + v^2\omega_3\omega_4 - 2v^2\omega_1\omega_2^2 - \tfrac{1}{2}v\omega_4\omega_2^2 + v^2\omega_3\omega_4^2\omega_1 + 2v^2\omega_4\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1^2\omega_2 - v\omega_3\omega_4\omega_1^2 + \omega_4\omega_1u^2 + \tfrac{13}{4}\omega_3\omega_4 - \tfrac{1}{2}\omega_4^2u^2 + \tfrac{1}{2}v^2\omega_3^2 - 4v\omega_3\omega_1\omega_2 + \tfrac{3}{2}v\omega_3^2\omega_4 - \omega_3\omega_1^2 + \tfrac{1}{2}v^2\omega_3^2\omega_2 + \omega_3\omega_1^2u^2 + \tfrac{1}{2}v\omega_3\omega_1\omega_2^2 + \tfrac{1}{2}\omega_3\omega_4^2\omega_1 - \tfrac{3}{4}\omega_4\omega_1\omega_2 + \tfrac{19}{4}\omega_3\omega_1 + v\omega_3^2\omega_1 + \tfrac{7}{2}v\omega_4\omega_2 + 2v^2\omega_2^2 + v^2\omega_4\omega_1\omega_2^2 - \tfrac{1}{2}\omega_3\omega_4^2 - \tfrac{11}{4}\omega_4 + 7v\omega_3\omega_4\omega_1 + \tfrac{1}{2}v\omega_4\omega_1^2\omega_2 + \tfrac{1}{2}\omega_3^2\omega_4\omega_1 + 3v^2\omega_3\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 2\omega_1\omega_2 - \tfrac{1}{2}v\omega_3\omega_2^2 + \tfrac{1}{2}\omega_3^2u^2 - 4\omega_1 - \tfrac{1}{2}\omega_3^2\omega_1u^2 - v^2\omega_3\omega_4^2 + \tfrac{1}{2}v\omega_4^2\omega_1\omega_2 - v\omega_4^2 + \tfrac{1}{2}v^2\omega_4^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1^2 - v\omega_1^2\omega_2 + \tfrac{1}{2}\omega_4^2 - \tfrac{1}{2}\omega_1^2\omega_2 + \tfrac{1}{2}v\omega_4\omega_1^2 + \tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2 - \tfrac{1}{2}\omega_3^2u^2\omega_2 + \tfrac{1}{2}v^2\omega_4^2 - \tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \tfrac{3}{2}v\omega_3^2\omega_4\omega_1 - 2v^2\omega_4\omega_2 - \tfrac{1}{2}v^2\omega_3^2\omega_1 + 6v\omega_1\omega_2 - \omega_3\omega_1u^2 + \tfrac{3}{2}v\omega_3\omega_4^2 + \tfrac{5}{2}v\omega_3 - \tfrac{3}{4}\omega_3^2\omega_1 + \tfrac{3}{4}\omega_4\omega_2 - v^2\omega_3\omega_2^2 - \tfrac{15}{4}\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_1\omega_2 + v\omega_2^2 - 3v\omega_3\omega_1 - \tfrac{1}{2}v\omega_4^2\omega_2 - \tfrac{3}{2}\omega_2 - \tfrac{3}{2}v\omega_3\omega_4^2\omega_1 - 4v\omega_4\omega_1\omega_2 - 5v\omega_2 - v^2\omega_3\omega_4\omega_1 - \tfrac{9}{4}\omega_3\omega_1\omega_2 + \tfrac{1}{2}v\omega_3\omega_1^2 + \omega_4\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4 + \tfrac{1}{2}v\omega_4\omega_1\omega_2^2 - \omega_4\omega_1^2u^2 - 6v\omega_3\omega_4 + \tfrac{1}{2}v\omega_3\omega_1^2\omega_2 - \omega_3\omega_1^2u^2\omega_2 - v\omega_3^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1 - 2v^2\omega_3\omega_2 - 3v^2\omega_3\omega_4\omega_1\omega_2 + v^2\omega_3\omega_1\omega_2^2 + \tfrac{3}{4}\omega_3^2 + \tfrac{1}{2}\omega_3\omega_4\omega_1^2 + \tfrac{1}{2}\omega_4^2\omega_1u^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2 - v\omega_1\omega_2^2 + v\omega_3\omega_4\omega_1\omega_2 - v^2\omega_4\omega_2^2 + \tfrac{7}{4}\omega_3\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1 - \tfrac{1}{2}v\omega_3^2\omega_2 - 3v\omega_4\omega_1 + \tfrac{1}{2}v\omega_3^2\omega_1\omega_2 - v\omega_3\omega_4\omega_2 - v^2\omega_3^2\omega_4,$$

$$\alpha_{x-\delta_l,y}^{[\mu_1],t-3\delta_t} = -2 - v^2\omega_3\omega_4^2\omega_1u - \tfrac{1}{2}v^2\omega_3^2\omega_1u^2 + \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2 + \tfrac{1}{4}\omega_4^2u^3 + \tfrac{3}{2}\omega_4\omega_1u^3 - \tfrac{11}{4}v^2\omega_3^2u\omega_2 - \tfrac{11}{2}\omega_3{c_s}^2\omega_2 - 5\omega_3{c_s}^2\omega_1u + 2\omega_1u^2 + \tfrac{3}{4}\omega_4^2u^2\omega_2 - v^2\omega_3\omega_1^2u^2\omega_2 - \tfrac{1}{2}\omega_4\omega_1 + \tfrac{1}{2}\omega_3 - \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2 + \tfrac{9}{4}\omega_4\omega_1u^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1u - \tfrac{1}{2}v^2\omega_3\omega_4\omega_2^2 + \tfrac{7}{2}\omega_3{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_1\omega_2^2 + 2v^2\omega_1^2u\omega_2 + \tfrac{1}{4}\omega_3\omega_1u^2\omega_2 - 2v^2\omega_3{c_s}^2\omega_2^2 - \tfrac{1}{4}\omega_3^2u - \tfrac{3}{2}\omega_3\omega_4^2{c_s}^2u + 3v^2\omega_3\omega_4{c_s}^2\omega_2 - v^2\omega_4\omega_1^2u^2\omega_2 + \tfrac{19}{4}v^2\omega_3\omega_4 - \omega_4\omega_1^2u^4 + \tfrac{1}{2}\omega_3\omega_4u - \tfrac{1}{4}\omega_3^2\omega_1u - \omega_3^2\omega_4{c_s}^2u^2\omega_2 + \omega_1u^2\omega_2^2 + v^2\omega_3^2\omega_4{c_s}^2\omega_1 + \tfrac{3}{2}v^2\omega_3^2\omega_4u\omega_2 - v^2\omega_1\omega_2^2 + 6v^2\omega_3\omega_1u\omega_2 + \tfrac{1}{2}\omega_4\omega_1u^3\omega_2^2 + \tfrac{1}{2}\omega_3^2\omega_1u^4\omega_2 - \omega_3{c_s}^2\omega_1u\omega_2^2 + \tfrac{13}{4}v^2\omega_4\omega_1\omega_2 + 6v^2\omega_2 + v^2\omega_3^2\omega_4\omega_1u^2 - v^2\omega_3\omega_1^2u^2 - 3v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2 - \tfrac{7}{4}\omega_4\omega_1u^2 + \tfrac{1}{2}\omega_3\omega_4^2{c_s}^2 - \tfrac{1}{4}\omega_3\omega_4 - \tfrac{3}{4}\omega_4^2u^2 - \tfrac{1}{4}v^2\omega_3^2u + 4\omega_3{c_s}^2 + \tfrac{5}{2}\omega_4u\omega_2 + 6v^2\omega_4\omega_1u\omega_2 - \tfrac{1}{2}\omega_3\omega_1u^3\omega_2^2 - \tfrac{1}{2}\omega_4^2\omega_1u^4\omega_2 + v^2\omega_4u\omega_2^2 + \tfrac{3}{2}v^2\omega_3^2 - \tfrac{3}{4}\omega_3u^2\omega_2^2 + \tfrac{1}{2}\omega_4^2\omega_1u^4 + \tfrac{5}{2}v^2\omega_4\omega_1u + \omega_3^2\omega_4{c_s}^2u^2 + \tfrac{1}{4}v^2\omega_4\omega_1 + \tfrac{3}{2}v^2\omega_3^2\omega_2 - \tfrac{1}{2}v^4\omega_4^2\omega_2 - 2v^2\omega_3 + \tfrac{1}{4}\omega_3u^2\omega_2 + \omega_3^2\omega_1u^3 + 5v^2\omega_4u\omega_2 - \tfrac{3}{2}v^2\omega_4\omega_1u\omega_2^2 + 2\omega_3\omega_1u^3\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2u^2 - \tfrac{1}{4}\omega_3^2u^3 - v^2\omega_3\omega_4^2{c_s}^2 + \tfrac{1}{2}\omega_4\omega_1\omega_2 + \tfrac{1}{4}\omega_4^2\omega_2 - 4v^2\omega_1u^2\omega_2^2 - \tfrac{3}{2}\omega_3^2\omega_4{c_s}^2u + 6\omega_3{c_s}^2\omega_1u\omega_2 - 3v^2\omega_1\omega_2 - v^2\omega_3^2{c_s}^2\omega_1\omega_2 - \tfrac{3}{2}v^2\omega_3\omega_1u\omega_2^2 - 2\omega_4\omega_1u^3\omega_2 - 3\omega_1u^2\omega_2 - v^2\omega_3^2\omega_4\omega_1u + v^4\omega_3\omega_1\omega_2^2 + 2v^2\omega_2^2 + \tfrac{3}{2}\omega_4 - \tfrac{1}{4}\omega_4\omega_1u - \omega_3\omega_4{c_s}^2\omega_1u\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_1^2u - \tfrac{1}{2}\omega_4u\omega_2^2 + \tfrac{3}{4}\omega_4^2u + v^2\omega_3u^2\omega_2^2 - \tfrac{1}{4}\omega_4^2u^3\omega_2 - v^2\omega_3\omega_4u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2 + \tfrac{25}{4}v^2\omega_3\omega_4\omega_2 - \tfrac{1}{4}v^2\omega_3^2\omega_1\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1u^2 - \omega_3^2{c_s}^2\omega_1u\omega_2 + \tfrac{1}{2}v^4\omega_4^2\omega_1\omega_2 - \tfrac{1}{2}\omega_3\omega_4u\omega_2 + \omega_3\omega_4{c_s}^2\omega_1 + \omega_4\omega_1^2u^4\omega_2 - \tfrac{3}{2}\omega_1\omega_2 + \tfrac{1}{4}\omega_3^2\omega_1u\omega_2 - \omega_3{c_s}^2\omega_1\omega_2^2 + \omega_3\omega_4^2{c_s}^2u^2 + \tfrac{1}{4}\omega_3^2u\omega_2 + \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1 - \tfrac{1}{4}v^2\omega_4^2u + \omega_3^2u^2 + \tfrac{1}{2}v^2\omega_4^2u^2\omega_2 - \tfrac{1}{2}\omega_3\omega_1^2u^3 + \omega_1 - \tfrac{1}{4}\omega_3^2\omega_1u^2 - v^2\omega_3^2\omega_4{c_s}^2 + \tfrac{3}{2}\omega_3\omega_4^2{c_s}^2u\omega_2 + \tfrac{1}{4}\omega_3\omega_4u^2 - \tfrac{3}{2}v^2\omega_3\omega_4^2 - \tfrac{9}{2}v^2\omega_3\omega_4u - v^2\omega_3^2\omega_1u + v^2\omega_3\omega_4^2\omega_1u^2 + v^2\omega_3\omega_4^2{c_s}^2\omega_1 + \tfrac{3}{2}v^2\omega_3\omega_4^2u\omega_2 + \omega_1u - \omega_3\omega_1^2u^4\omega_2 + \tfrac{3}{2}\omega_3{c_s}^2\omega_2^2 - \tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2 + \tfrac{5}{4}v^2\omega_4^2\omega_2 + \tfrac{5}{4}v^2\omega_3\omega_1 - 2\omega_3{c_s}^2\omega_1^2u^2\omega_2 + \tfrac{1}{2}v^4\omega_3^2\omega_2 + \tfrac{1}{4}\omega_3\omega_4\omega_1u\omega_2 - \tfrac{1}{4}\omega_4^2 + \omega_3\omega_4{c_s}^2\omega_1u + \tfrac{1}{4}\omega_3^2\omega_1u^2\omega_2 - \tfrac{1}{4}\omega_3\omega_4u^2\omega_2 + \omega_3^2{c_s}^2\omega_1u^2\omega_2 - \tfrac{1}{2}v^2\omega_3\omega_4^2\omega_2 + \omega_3\omega_4{c_s}^2u\omega_2^2 - \tfrac{1}{2}v^2\omega_4^2\omega_1u^2 - \omega_3\omega_4^2{c_s}^2u^2\omega_2 - \omega_3^2u^2\omega_2 - 2\omega_3u^2 - \tfrac{3}{2}\omega_3\omega_1u^3 - \tfrac{11}{4}v^2\omega_4^2u\omega_2 - \tfrac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2 + \tfrac{1}{2}\omega_3\omega_1u\omega_2^2 + \tfrac{1}{2}\omega_3\omega_1^2u^3\omega_2 + 2\omega_3{c_s}^2\omega_1^2u^2 + \tfrac{5}{4}v^2\omega_4^2 - \omega_3\omega_4{c_s}^2\omega_1\omega_2 - v^2\omega_3\omega_4^2u^2\omega_2 - \tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2 + \tfrac{7}{2}v^2\omega_3\omega_4^2u + \omega_3\omega_1^2u^4 - \omega_3{c_s}^2\omega_1^2u\omega_2 - \tfrac{33}{4}v^2\omega_4\omega_2 - \tfrac{3}{4}v^2\omega_3^2\omega_1 + \tfrac{1}{4}\omega_3\omega_2^2 - \tfrac{1}{2}\omega_4\omega_1^2u^3\omega_2 - \tfrac{1}{4}\omega_3\omega_4\omega_1u^2\omega_2 + \omega_3^2{c_s}^2\omega_1u - \tfrac{1}{4}\omega_3\omega_1u^2 - v^2\omega_4\omega_1^2u^2 + v^2\omega_4\omega_1u^2\omega_2^2 + v^2\omega_3^2{c_s}^2\omega_2 + \tfrac{1}{2}\omega_3u\omega_2 - \tfrac{5}{2}\omega_3{c_s}^2\omega_1 + v^4\omega_4\omega_2^2 - \tfrac{7}{4}\omega_4\omega_2 + \tfrac{1}{4}v^2\omega_3\omega_2^2 - \tfrac{1}{2}v^2\omega_3^2\omega_4\omega_2 + \tfrac{15}{4}v^2\omega_3\omega_1\omega_2 - \tfrac{3}{2}\omega_1u\omega_2 - \tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2 + v^2\omega_3\omega_1u^2\omega_2^2 - \tfrac{25}{2}v^2\omega_3\omega_4u\omega_2 - \omega_2^2 + 3\omega_2 + \tfrac{1}{4}\omega_4u^2\omega_2^2 - 2\omega_4u + 2v^2\omega_3{c_s}^2\omega_1\omega_2^2 + v^2\omega_3u\omega_2^2 + \tfrac{7}{2}v^2\omega_3^2\omega_4u + 3\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2 - \tfrac{1}{2}\omega_3^2\omega_1u^4 + \tfrac{5}{2}v^2\omega_3\omega_1u + v^2\omega_3\omega_4\omega_1u^2 - \tfrac{7}{4}v^2\omega_3\omega_4\omega_1 + 2v^2\omega_3\omega_4\omega_1u\omega_2 + \tfrac{1}{2}\omega_1u\omega_2^2 +$$

$\frac{3}{2}\omega_3^2\omega_4{c_s}^2u\omega_2 - \frac{1}{2}\omega_4\omega_1^2u^2\omega_2 + \frac{7}{2}\omega_3\omega_4{c_s}^2\omega_2 - v^2\omega_3^2\omega_4u^2\omega_2 + \omega_4u^2 - \omega_3^2{c_s}^2 - \omega_4^2\omega_1u^3 + \omega_3^2{c_s}^2\omega_2 + \omega_4^2\omega_1u^3\omega_2 + 5v^2\omega_3u\omega_2 - \frac{5}{4}\omega_4u^2\omega_2 + v^2\omega_3\omega_4u\omega_2^2 - 2v^2\omega_3\omega_4\omega_1u - 3\omega_3\omega_4{c_s}^2 + \frac{1}{2}\omega_4\omega_1^2u^2 - \frac{1}{2}v^2\omega_4\omega_1^2u + \frac{3}{4}\omega_3\omega_1u + \frac{1}{2}\omega_3\omega_1^2u^2\omega_2 + v^2\omega_4u^2\omega_2^2 - \frac{1}{2}\omega_3u\omega_2^2 + \frac{9}{2}\omega_3\omega_4{c_s}^2u + \frac{1}{4}\omega_3^2u^3\omega_2 + \frac{1}{4}\omega_4\omega_2^2 + \frac{1}{2}\omega_3^2{c_s}^2u - \frac{1}{2}v^2\omega_4^2\omega_1 - \frac{35}{4}v^2\omega_3\omega_2 - \omega_3^2\omega_1u^3\omega_2 - 10v^2\omega_1u\omega_2 - v^4\omega_4\omega_1\omega_2^2 - \frac{3}{4}v^2\omega_3\omega_4\omega_1\omega_2 - \frac{1}{2}v^2\omega_3\omega_1\omega_2^2 + \frac{1}{2}v^2\omega_3^2u^2\omega_2 + \frac{1}{2}\omega_4\omega_1^2u^3 - v^2\omega_4 + \omega_3{c_s}^2\omega_1^2u - \frac{3}{4}\omega_4^2u\omega_2 + \frac{1}{2}\omega_4^2\omega_1u^2 - \frac{1}{2}\omega_3^2{c_s}^2u\omega_2 - \frac{1}{2}v^4\omega_3^2\omega_1\omega_2 + \frac{1}{4}\omega_4\omega_1u\omega_2 - v^4\omega_3\omega_2^2 - \frac{1}{2}v^2\omega_3\omega_1^2u\omega_2 - \omega_3^2{c_s}^2\omega_1u^2 - \frac{1}{4}v^2\omega_4\omega_2^2 - \frac{3}{4}\omega_3\omega_2 + 4v^2\omega_1^2u^2\omega_2 - 3\omega_3\omega_4{c_s}^2\omega_1u^2 - \frac{11}{2}\omega_3\omega_4{c_s}^2u\omega_2 - v^2\omega_4^2\omega_1u - \frac{3}{2}v^2\omega_3^2\omega_4 - \frac{1}{2}v^2\omega_4\omega_1^2u\omega_2 - \frac{5}{4}\omega_3\omega_1u\omega_2,$

$\alpha_{x-\delta_t,y}^{[\mu_5],t-3\delta_t} = 3 + \frac{3}{4}\omega_3\omega_4\omega_1\omega_2 - \frac{1}{2}\omega_4^2u^2\omega_2 - \frac{3}{4}\omega_3^2\omega_2 + \frac{3}{4}\omega_4\omega_1 - \frac{15}{4}\omega_3 + 2\omega_4\omega_1u^2\omega_2 - \frac{15}{4}\omega_3\omega_4\omega_2 + \frac{1}{4}\omega_3^2\omega_1\omega_2 - \omega_3\omega_4\omega_1u - \frac{1}{2}\omega_1\omega_2^2 - \omega_3\omega_4u\omega_2^2 + 2\omega_3\omega_1u^2\omega_2 - \omega_3^2u + \omega_3^2\omega_4u^2\omega_2 - 6\omega_3\omega_4u - \frac{1}{2}\omega_3^2\omega_1u + \frac{1}{2}\omega_4\omega_1^2u\omega_2 - v^2\omega_4\omega_1\omega_2 - 2\omega_4\omega_1u^2 + \frac{13}{4}\omega_3\omega_4 + \frac{1}{2}\omega_4^2u^2 - 3\omega_4u\omega_2 + \frac{1}{2}\omega_3\omega_1^2u\omega_2 + \frac{1}{2}v^2\omega_3^2 - \frac{1}{2}\omega_3\omega_1^2u - \frac{1}{2}v^2\omega_3^2\omega_2 - \omega_3\omega_1^2u^2 - \frac{3}{4}\omega_4\omega_1\omega_2 + \frac{7}{4}\omega_3\omega_1 - \frac{1}{2}\omega_4^2\omega_2 + \omega_3\omega_4^2u^2\omega_2 + v^2\omega_4\omega_1\omega_2^2 - \frac{1}{2}\omega_3\omega_4^2 - \frac{11}{4}\omega_4 + \frac{7}{2}\omega_4\omega_1u + \frac{1}{2}\omega_4u\omega_2^2 - \omega_4^2u + \frac{1}{2}v^2\omega_3^2\omega_1\omega_2 + 3\omega_3\omega_4\omega_1u^2 + 7\omega_3\omega_4u\omega_2 + 2\omega_1\omega_2 + \frac{1}{2}\omega_3^2\omega_1u\omega_2 + \omega_3^2u\omega_2 + \frac{1}{2}\omega_3^2u^2 - \frac{3}{2}\omega_1 + \frac{1}{2}\omega_3^2\omega_1u^2 + \omega_3\omega_4u^2 + \frac{1}{2}\omega_4^2\omega_1u\omega_2 - 5\omega_1u - \omega_1^2u\omega_2 + \frac{1}{2}v^2\omega_4^2\omega_2 + \omega_3\omega_4\omega_1u\omega_2 + \frac{1}{2}\omega_4^2 + \frac{1}{2}\omega_3\omega_4\omega_2^2 - \frac{1}{2}\omega_3^2\omega_1u^2\omega_2 - \omega_3\omega_4u^2\omega_2 - \omega_3\omega_4^2u^2 - \frac{1}{2}\omega_3^2u^2\omega_2 + \frac{1}{2}\omega_3\omega_1u\omega_2^2 + \omega_1^2u - \frac{1}{2}v^2\omega_4^2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1u + v^2\omega_4\omega_2 - \frac{1}{2}v^2\omega_3^2\omega_1 - \omega_3\omega_2^2 - 3\omega_3\omega_4\omega_1u^2\omega_2 - 2\omega_1^2u^2\omega_2 + \frac{1}{2}\omega_4\omega_1u\omega_2^2 - 2\omega_3\omega_1u^2 - \omega_3^2\omega_4u^2 - 3\omega_3u\omega_2 - \frac{3}{2}\omega_3\omega_4^2u\omega_2 - \frac{1}{4}\omega_3^2\omega_1 + \frac{13}{4}\omega_4\omega_2 + v^2\omega_3\omega_2^2 - \frac{3}{4}\omega_3\omega_4\omega_1 + v^2\omega_3\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2^2 + 6\omega_1u\omega_2 + \omega_2^2 - 4\omega_2 + \frac{5}{2}\omega_4u - \frac{1}{2}\omega_4\omega_1^2u + \frac{1}{2}\omega_3^2\omega_4\omega_2 - \frac{9}{4}\omega_3\omega_1\omega_2 - \omega_1u\omega_2^2 + \omega_4\omega_1^2u^2\omega_2 - \frac{1}{2}\omega_3^2\omega_4 - \omega_4\omega_1^2u^2 + \frac{3}{2}\omega_3^2\omega_4u + \frac{7}{2}\omega_3\omega_1u + \omega_3\omega_1^2u^2\omega_2 + \frac{1}{2}\omega_3u\omega_2^2 - \frac{1}{2}\omega_4\omega_2^2 + \frac{1}{2}v^2\omega_4^2\omega_1 - v^2\omega_3\omega_2 - v^2\omega_3\omega_1\omega_2^2 + \frac{3}{4}\omega_3^2 + 2\omega_1^2u^2 + \omega_4^2u\omega_2 + \frac{1}{2}\omega_4^2\omega_1u^2 - \frac{1}{2}v^2\omega_4^2\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_4^2\omega_2 - 4\omega_4\omega_1u\omega_2 - v^2\omega_4\omega_2^2 + \frac{19}{4}\omega_3\omega_2 + \frac{3}{2}\omega_3\omega_4^2u - \frac{3}{2}\omega_3^2\omega_4u\omega_2 - 4\omega_3\omega_1u\omega_2 + \frac{5}{2}\omega_3u,$

$\alpha_{x,y}^{[\mu_1],t-3\delta_t} = -2 - \frac{1}{2}\omega_3\omega_4\omega_1\omega_2 + v^2\omega_3^2\omega_1u^2 + 2\omega_3{c_s}^2\omega_2 - 4\omega_1u^2 + \frac{3}{2}\omega_4^2u^2\omega_2 + 2v^2\omega_3\omega_1^2u^2\omega_2 - \frac{1}{2}v^2\omega_3\omega_1^2 - 3\omega_4\omega_1 + \frac{1}{2}\omega_3 - \frac{11}{2}\omega_4\omega_1u^2\omega_2 + 2v^2\omega_3^2\omega_4\omega_1 + \frac{1}{2}\omega_3\omega_4\omega_2 - \omega_3{c_s}^2\omega_1\omega_2 + \omega_1\omega_2^2 + \frac{1}{2}\omega_3\omega_1u^2\omega_2 + 4v^2\omega_3{c_s}^2\omega_2^2 - 6v^2\omega_3\omega_4{c_s}^2\omega_2 + 2v^2\omega_4\omega_1^2u^2\omega_2 + \frac{3}{2}v^2\omega_3\omega_4 + 2\omega_4\omega_1^2u^4 + 2\omega_3^2\omega_4{c_s}^2u^2\omega_2 - 2\omega_1u^2\omega_2^2 - 2v^2\omega_3^2\omega_4{c_s}^2\omega_1 - 4v^2\omega_1\omega_2^2 - \omega_3^2\omega_1u^4\omega_2 + 2v^2\omega_3\omega_4^2\omega_1 + \frac{11}{2}v^2\omega_4\omega_1\omega_2 + \frac{1}{2}\omega_3\omega_1^2\omega_2 + 2v^2\omega_2 - 2v^2\omega_3^2\omega_4\omega_1u^2 + 2v^2\omega_3\omega_1^2u^2 + 6v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2 + 5\omega_4\omega_1u^2 - \frac{1}{2}\omega_3\omega_4 - \frac{3}{2}\omega_4^2u^2 - \omega_3{c_s}^2 + \omega_4^2\omega_1u^4\omega_2 + v^2\omega_3^2 + \frac{1}{2}\omega_3u^2\omega_2^2 - \omega_4^2\omega_1u^4 - \frac{1}{2}\omega_4\omega_1\omega_2^2 - 2\omega_3^2\omega_4{c_s}^2u^2 - \frac{1}{2}\omega_3\omega_1^2 + 2v^2\omega_4\omega_1 + v^2\omega_3^2\omega_2 + v^4\omega_4^2\omega_2 + \frac{1}{2}v^2\omega_3 - \omega_3u^2\omega_2 + \frac{5}{2}\omega_3\omega_1^2u^2 + 2v^2\omega_3\omega_4^2{c_s}^2 + \frac{7}{2}\omega_4\omega_1\omega_2 - \frac{1}{2}v^2\omega_3\omega_1^2\omega_2 + \frac{1}{2}\omega_4^2\omega_2 - \frac{1}{2}v^2\omega_4\omega_1^2 + 8v^2\omega_1u^2\omega_2^2 - 4v^2\omega_1\omega_2 + 2v^2\omega_3^2{c_s}^2\omega_1\omega_2 + 6\omega_1u^2\omega_2 - 2v^4\omega_3\omega_1\omega_2^2 + 4v^2\omega_2^2 + \frac{3}{2}v^2\omega_4\omega_1\omega_2^2 + \frac{5}{2}\omega_4 - 2v^2\omega_3u^2\omega_2^2 + 2v^2\omega_3\omega_4u^2\omega_2 + \frac{11}{2}v^2\omega_3\omega_4\omega_2 - v^2\omega_3^2\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_4\omega_1u^2 - v^4\omega_4^2\omega_1\omega_2 - \omega_3\omega_4{c_s}^2\omega_1 - 2\omega_4\omega_1^2u^4\omega_2 - 3\omega_1\omega_2 + \omega_3{c_s}^2\omega_1\omega_2^2 - 2\omega_3\omega_4^2{c_s}^2u^2 + \omega_3^2u^2 - v^2\omega_4^2u^2\omega_2 + 2\omega_1 + \frac{1}{2}\omega_3\omega_1u^2\omega_2^2 - \omega_3^2\omega_1u^2 + 2v^2\omega_3^2\omega_4{c_s}^2 - \frac{1}{2}\omega_3\omega_4u^2 - 2v^2\omega_3\omega_4^2 - 2v^2\omega_3\omega_4^2\omega_1u^2 - 2v^2\omega_3\omega_4^2{c_s}^2\omega_1 + 2\omega_3\omega_1^2u^4\omega_2 - \omega_3{c_s}^2\omega_2^2 + \frac{1}{2}\omega_4\omega_1u^2\omega_2^2 + \frac{3}{2}v^2\omega_4^2\omega_2 + 4\omega_3{c_s}^2\omega_1^2u^2\omega_2 + \frac{1}{2}\omega_4\omega_1^2 - v^4\omega_3^2\omega_2 - \frac{1}{2}\omega_4^2 + \omega_3^2\omega_1u^2\omega_2 + \frac{1}{2}\omega_3\omega_4u^2\omega_2 - 2\omega_3^2{c_s}^2\omega_1u^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1\omega_2 + v^2\omega_4^2\omega_1u^2 + 2\omega_3\omega_4^2{c_s}^2u^2\omega_2 - \omega_3^2u^2\omega_2 + \frac{1}{2}\omega_3u^2 - 4\omega_3{c_s}^2\omega_1^2u^2 + \frac{3}{2}v^2\omega_4^2 + \omega_3\omega_4{c_s}^2\omega_1\omega_2 + 2v^2\omega_3\omega_4^2u^2\omega_2 - \frac{1}{2}\omega_4^2\omega_1u^2\omega_2 - 2\omega_3\omega_1^2u^4 - 5v^2\omega_4\omega_2 - v^2\omega_3^2\omega_1 + \frac{1}{2}\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1u^2\omega_2 - \omega_3\omega_1u^2 + 2v^2\omega_4\omega_1^2u^2 - 2v^2\omega_4\omega_1u^2\omega_2^2 - 2v^2\omega_3^2{c_s}^2\omega_2 - 2v^4\omega_4\omega_2^2 - 3\omega_4\omega_2 - \frac{5}{2}v^2\omega_3\omega_2^2 + \frac{1}{2}\omega_3\omega_4\omega_1 - \frac{1}{2}\omega_4\omega_1^2\omega_2 + \frac{9}{2}v^2\omega_3\omega_1\omega_2 - \frac{1}{2}\omega_3\omega_1\omega_2^2 - 2v^2\omega_3\omega_1u^2\omega_2^2 + 2v^2\omega_1^2\omega_2 - \omega_2^2 + 3\omega_2 + \frac{1}{2}\omega_4u^2\omega_2^2 - 4v^2\omega_3{c_s}^2\omega_1\omega_2^2 - 6\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2 + \omega_3^2\omega_1u^4 - 2v^2\omega_3\omega_4\omega_1u^2 - \frac{3}{2}v^2\omega_3\omega_4\omega_1 - \frac{1}{2}v^2\omega_4\omega_1^2\omega_2 + \frac{1}{2}\omega_3\omega_1\omega_2 + \frac{5}{2}\omega_4\omega_1^2u^2\omega_2 - \omega_3\omega_4{c_s}^2\omega_2 + 2v^2\omega_3^2\omega_4u^2\omega_2 + \frac{3}{2}\omega_4u^2 - 2\omega_4u^2\omega_2 + \omega_3\omega_4{c_s}^2 - \frac{5}{2}\omega_4\omega_1^2u^2 - \frac{5}{2}\omega_3\omega_1^2u^2\omega_2 - 2v^2\omega_4u^2\omega_2^2 + \omega_3{c_s}^2\omega_1^2 + \frac{1}{2}\omega_4\omega_2^2 - \frac{3}{2}v^2\omega_4^2\omega_1 - 4v^2\omega_3\omega_2 + 2v^4\omega_4\omega_1\omega_2^2 - \frac{11}{2}v^2\omega_3\omega_4\omega_1\omega_2 + \frac{5}{2}v^2\omega_3\omega_1\omega_2^2 - v^2\omega_3^2u^2\omega_2 - \frac{3}{2}v^2\omega_4 + \frac{1}{2}\omega_4^2\omega_1u^2 - \frac{3}{2}v^2\omega_4^2\omega_1\omega_2 + v^4\omega_3^2\omega_1\omega_2 + 2v^4\omega_3\omega_2^2 + 2\omega_3^2{c_s}^2\omega_1u^2 - \frac{3}{2}v^2\omega_4\omega_2^2 - \omega_3\omega_2 + \frac{1}{2}\omega_4^2\omega_1 - 8v^2\omega_1^2u^2\omega_2 - \omega_3{c_s}^2\omega_1^2\omega_2 + 6\omega_3\omega_4{c_s}^2\omega_1u^2 - 2v^2\omega_3^2\omega_4,$

$\alpha_{x,y}^{[\mu_5],t-3\delta_t} = 3 + 5\omega_4\omega_1 - 2\omega_4\omega_1u^2\omega_2 - 2v^2\omega_3^2\omega_4\omega_1 - \omega_1\omega_2^2 - 6\omega_3\omega_1u^2\omega_2 - 2\omega_3^2\omega_4u^2\omega_2 + \omega_1^2 - 2v^2\omega_3\omega_4 + 4v^2\omega_1\omega_2^2 - 2v^2\omega_3\omega_4^2\omega_1 - 2v^2\omega_4\omega_1\omega_2 + 2\omega_4\omega_1u^2 - 2v^2\omega_3^2 + \omega_4\omega_1\omega_2^2 - 6\omega_4\omega_1\omega_2 - \omega_4^2\omega_2 - 2\omega_3\omega_4^2u^2\omega_2 - 4v^2\omega_2^2 - 4v^2\omega_4\omega_1\omega_2^2 - 4\omega_4 - 6v^2\omega_3\omega_4\omega_2 - 6\omega_3\omega_4\omega_1u^2 + 5\omega_1\omega_2 - 2\omega_3^2u^2 - 4\omega_1 - 2\omega_3\omega_4u^2 + 2v^2\omega_3\omega_4^2 - 2v^2\omega_4^2\omega_2 - \omega_4\omega_1^2 + \omega_4^2 - \omega_1^2\omega_2 + 2\omega_3\omega_4u^2\omega_2 + \omega_4^2\omega_1\omega_2 + 2\omega_3\omega_4^2u^2 + 2\omega_3^2u^2\omega_2 + 2\omega_4^2\omega_1u^2\omega_2 + 2v^2\omega_4\omega_2 + 2v^2\omega_3^2\omega_1 + 6\omega_3\omega_4\omega_1u^2\omega_2 + 4\omega_1^2u^2\omega_2 + 6\omega_3\omega_1u^2 + 2\omega_3^2\omega_4u^2 + 5\omega_4\omega_2 + \omega_4\omega_1^2\omega_2 - 6v^2\omega_3\omega_1\omega_2 + \omega_2^2 - 4\omega_2 + 2v^2\omega_3\omega_4\omega_1 - 4\omega_4\omega_1^2u^2\omega_2 + 4\omega_4\omega_1^2u^2 - \omega_4\omega_2^2 + 6v^2\omega_3\omega_2 + 6v^2\omega_3\omega_4\omega_1\omega_2 - 4\omega_1^2u^2 - 2\omega_4^2\omega_1u^2 + 2v^2\omega_4^2\omega_1\omega_2 + 4v^2\omega_4\omega_2^2 - \omega_4^2\omega_1 + 2v^2\omega_3^2\omega_4,$

$\alpha_{x+\delta_t,y}^{[\mu_1],t-3\delta_t} = -2 + v^2\omega_3\omega_4^2\omega_1u - \frac{1}{2}v^2\omega_3^2\omega_1u^2 + \frac{1}{2}\omega_3^2\omega_4{c_s}^2 - \frac{1}{4}\omega_4^2u^3 - \frac{3}{2}\omega_4\omega_1u^3 + \frac{11}{4}v^2\omega_3^2u\omega_2 - \frac{11}{2}\omega_3{c_s}^2\omega_2 + 5\omega_3{c_s}^2\omega_1u + 2\omega_1u^2 + \frac{3}{4}\omega_4^2u^2\omega_2 - v^2\omega_3\omega_1^2u^2\omega_2 - \frac{1}{2}\omega_4\omega_1 + \frac{1}{2}\omega_3 - \frac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_2 + \frac{9}{4}\omega_4\omega_1u^2\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_2 + \frac{1}{4}\omega_3\omega_4\omega_1u - \frac{1}{2}v^2\omega_3\omega_4\omega_2^2 + \frac{7}{2}\omega_3{c_s}^2\omega_1\omega_2 + \frac{1}{2}\omega_1\omega_2^2 - 2v^2\omega_1^2u\omega_2 + \frac{1}{4}\omega_3\omega_1u^2\omega_2 - 2v^2\omega_3{c_s}^2\omega_2^2 + \frac{1}{4}\omega_3^2u + \frac{3}{2}\omega_3\omega_4^2{c_s}^2u + 3v^2\omega_3\omega_4{c_s}^2\omega_2 - v^2\omega_4\omega_1^2u^2\omega_2 + \frac{19}{4}v^2\omega_3\omega_4 - \omega_4\omega_1^2u^4 - \frac{1}{2}\omega_3\omega_4u + \frac{1}{4}\omega_3^2\omega_1u - \omega_3^2\omega_4{c_s}^2u^2\omega_2 +$

$$\omega_1 u^2\omega_2^2+v^2\omega_3^2\omega_4{c_s}^2\omega_1-\tfrac{3}{2}v^2\omega_3^2\omega_4u\omega_2-v^2\omega_1\omega_2^2-6v^2\omega_3\omega_1u\omega_2-\tfrac{1}{2}\omega_4\omega_1u^3\omega_2^2+\tfrac{1}{2}\omega_3^2\omega_1u^4\omega_2+\omega_3{c_s}^2\omega_1u\omega_2^2+\tfrac{13}{4}v^2\omega_4\omega_1\omega_2+6v^2\omega_2+v^2\omega_3^2\omega_4\omega_1u^2-v^2\omega_3\omega_1^2u^2-3v^2\omega_3\omega_4{c_s}^2\omega_1\omega_2-\tfrac{7}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}\omega_3\omega_4-\tfrac{3}{4}\omega_4^2u^2+\tfrac{1}{4}v^2\omega_3^2u+4\omega_3{c_s}^2-\tfrac{5}{2}\omega_4u\omega_2-6v^2\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_3\omega_1u^3\omega_2^2-\tfrac{1}{2}\omega_4^2\omega_1u^4\omega_2-v^2\omega_4u\omega_2^2+\tfrac{3}{2}v^2\omega_3^2-\tfrac{3}{4}\omega_3u^2\omega_2^2+\tfrac{1}{2}\omega_4^2\omega_1u^4-\tfrac{5}{2}v^2\omega_4\omega_1u+\omega_3^2\omega_4{c_s}^2u^2+\tfrac{1}{4}v^2\omega_4\omega_1+\tfrac{3}{2}v^2\omega_3^2\omega_2-\tfrac{1}{2}v^4\omega_4^2\omega_2-2v^2\omega_3+\tfrac{11}{4}\omega_3u^2\omega_2-\omega_3^2\omega_1u^3-5v^2\omega_4u\omega_2+\tfrac{3}{2}v^2\omega_4\omega_1u\omega_2^2-2\omega_3\omega_1u^3\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u^2+\tfrac{1}{4}\omega_3^2u^3-v^2\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_4\omega_1\omega_2+\tfrac{1}{4}\omega_4^2\omega_2-4v^2\omega_1u^2\omega_2^2+\tfrac{3}{2}\omega_3^2\omega_4{c_s}^2u-6\omega_3{c_s}^2\omega_1u\omega_2-3v^2\omega_1\omega_2-v^2\omega_3^2{c_s}^2\omega_1\omega_2+\tfrac{3}{2}v^2\omega_3\omega_1u\omega_2^2+2\omega_4\omega_1u^3\omega_2-3\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1u+v^4\omega_3\omega_1\omega_2^2+2v^2\omega_2^2+\tfrac{3}{2}\omega_4+\tfrac{1}{4}\omega_4\omega_1u+\omega_3\omega_4{c_s}^2\omega_1u\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1^2u+\tfrac{1}{2}\omega_4u\omega_2^2-\tfrac{3}{4}\omega_4^2u+v^2\omega_3u^2\omega_2^2+\tfrac{1}{4}\omega_4^2u^3\omega_2-v^2\omega_3\omega_4u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_2+\tfrac{25}{4}v^2\omega_3\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3^2\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_4\omega_1u^2+\omega_3^2{c_s}^2\omega_1u\omega_2+\tfrac{1}{2}v^4\omega_4^2\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4u\omega_2+\omega_3\omega_4{c_s}^2\omega_1+\omega_4\omega_1^2u^4\omega_2-\tfrac{3}{2}\omega_1\omega_2-\tfrac{1}{4}\omega_3^2\omega_1u\omega_2-\omega_3{c_s}^2\omega_1\omega_2^2+\omega_3\omega_4^2{c_s}^2u^2-\tfrac{1}{4}\omega_3^2u\omega_2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1+\tfrac{1}{4}v^2\omega_4^2u+\omega_3^2u^2+\tfrac{1}{2}v^2\omega_4^2u^2\omega_2+\tfrac{1}{2}\omega_3\omega_1^2u^3+\omega_1-\tfrac{1}{4}\omega_3^2\omega_1u^2-v^2\omega_3^2\omega_4{c_s}^2-\tfrac{3}{2}\omega_3\omega_4^2{c_s}^2u\omega_2+\tfrac{1}{4}\omega_3\omega_4u^2-\tfrac{3}{2}v^2\omega_3\omega_4^2+\tfrac{9}{2}v^2\omega_3\omega_4u+v^2\omega_3^2\omega_1u+v^2\omega_3\omega_4^2\omega_1u^2+v^2\omega_3\omega_4^2{c_s}^2\omega_1-\tfrac{3}{2}v^2\omega_3\omega_4^2u\omega_2-\omega_1u-\omega_3\omega_1^2u^4\omega_2+\tfrac{3}{2}\omega_3{c_s}^2\omega_2^2-\tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2+\tfrac{5}{4}v^2\omega_4^2\omega_2+\tfrac{5}{4}v^2\omega_3\omega_1-2\omega_3{c_s}^2\omega_1^2u^2\omega_2+\tfrac{1}{2}v^4\omega_3^2\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u\omega_2-\tfrac{1}{4}\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1u+\tfrac{1}{4}\omega_3^2\omega_1u^2\omega_2-\tfrac{1}{4}\omega_3\omega_4u^2\omega_2+\omega_3^2{c_s}^2\omega_1u^2\omega_2-\tfrac{1}{2}v^2\omega_3\omega_4^2\omega_2-\omega_3\omega_4{c_s}^2u\omega_2^2-\tfrac{1}{2}v^2\omega_4^2\omega_1u^2-\omega_3\omega_4^2{c_s}^2u^2\omega_2-\omega_3^2u^2\omega_2-2\omega_3u^2+\tfrac{3}{2}\omega_3\omega_1u^3+\tfrac{11}{4}v^2\omega_4^2u\omega_2-\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_1u\omega_2^2-\tfrac{1}{2}\omega_3\omega_1^2u^3\omega_2+2\omega_3{c_s}^2\omega_1^2u^2+\tfrac{5}{4}v^2\omega_4^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2-v^2\omega_3\omega_4^2u^2\omega_2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2-\tfrac{7}{2}v^2\omega_3\omega_4^2u+\omega_3\omega_1^2u^4+\omega_3{c_s}^2\omega_1^2u\omega_2-\tfrac{33}{4}v^2\omega_4\omega_2-\tfrac{3}{4}v^2\omega_3^2\omega_1+\tfrac{1}{4}\omega_3\omega_2^2+\tfrac{1}{2}\omega_4\omega_1^2u^3\omega_2-\tfrac{1}{4}\omega_3\omega_4\omega_1u^2\omega_2-\omega_3^2{c_s}^2\omega_1u-\tfrac{1}{4}\omega_3\omega_1u^2-v^2\omega_4\omega_1^2u^2+v^2\omega_4\omega_1u^2\omega_2^2+v^2\omega_3^2{c_s}^2\omega_2-\tfrac{1}{2}\omega_3u\omega_2-\tfrac{5}{2}\omega_3{c_s}^2\omega_1+v^4\omega_4\omega_2^2-\tfrac{7}{4}\omega_4\omega_2+\tfrac{1}{4}v^2\omega_3\omega_2^2-\tfrac{1}{2}v^2\omega_3^2\omega_4\omega_2+\tfrac{15}{4}v^2\omega_3\omega_1\omega_2+\tfrac{3}{2}\omega_1u\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2^2+v^2\omega_3\omega_1u^2\omega_2^2+\tfrac{25}{2}v^2\omega_3\omega_4u\omega_2-\omega_2^2+3\omega_2+\tfrac{1}{4}\omega_4u^2\omega_2^2+2\omega_4u+2v^2\omega_3{c_s}^2\omega_1\omega_2^2-v^2\omega_3u\omega_2^2-\tfrac{7}{2}v^2\omega_3^2\omega_4u+3\omega_3\omega_4{c_s}^2\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u^4-\tfrac{5}{2}v^2\omega_3\omega_1u+v^2\omega_3\omega_4\omega_1u^2-\tfrac{7}{4}v^2\omega_3\omega_4\omega_1-2v^2\omega_3\omega_4\omega_1u\omega_2-\tfrac{1}{2}\omega_1u\omega_2^2-\tfrac{3}{2}\omega_3^2\omega_4{c_s}^2u\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^2\omega_2+\tfrac{7}{2}\omega_3\omega_4{c_s}^2\omega_2-v^2\omega_3^2\omega_4u^2\omega_2+\omega_4u^2-\omega_3^2{c_s}^2+\omega_4^2\omega_1u^3+\omega_3^2{c_s}^2\omega_2-\omega_4^2\omega_1u^3\omega_2-5v^2\omega_3u\omega_2-\tfrac{5}{4}\omega_4u^2\omega_2-v^2\omega_3\omega_4u\omega_2^2+2v^2\omega_3\omega_4\omega_1u-3\omega_3\omega_4{c_s}^2+\tfrac{1}{2}\omega_4\omega_1^2u^2+\tfrac{1}{2}v^2\omega_4\omega_1^2u-\tfrac{3}{4}\omega_3\omega_1u+\tfrac{1}{2}\omega_3\omega_1^2u^2\omega_2+v^2\omega_4u^2\omega_2^2+\tfrac{1}{2}\omega_3u\omega_2^2-\tfrac{9}{2}\omega_3\omega_4{c_s}^2u-\tfrac{1}{4}\omega_3^2u^3\omega_2+\tfrac{1}{4}\omega_4\omega_2^2-\tfrac{1}{2}\omega_3^2{c_s}^2u-\tfrac{1}{2}v^2\omega_4^2\omega_1-\tfrac{35}{4}v^2\omega_3\omega_2+\omega_3^2\omega_1u^3\omega_2+10v^2\omega_1u\omega_2-v^4\omega_4\omega_1\omega_2^2-\tfrac{3}{4}v^2\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2u^3-v^2\omega_4-\omega_3{c_s}^2\omega_1^2u+\tfrac{3}{4}\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2+\tfrac{1}{2}\omega_3^2{c_s}^2u\omega_2-\tfrac{1}{2}v^4\omega_3^2\omega_1\omega_2-\tfrac{1}{4}\omega_4\omega_1u\omega_2-v^4\omega_3\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_1^2u\omega_2-\omega_3^2{c_s}^2\omega_1u^2-\tfrac{1}{4}v^2\omega_4\omega_2^2-\tfrac{3}{4}\omega_3\omega_2+4v^2\omega_1^2u^2\omega_2-3\omega_3\omega_4{c_s}^2\omega_1u^2+\tfrac{11}{2}\omega_3\omega_4{c_s}^2u\omega_2+v^2\omega_4^2\omega_1u-\tfrac{3}{2}v^2\omega_3^2\omega_4+\tfrac{1}{2}v^2\omega_4\omega_1^2u\omega_2+\tfrac{5}{4}\omega_3\omega_1u\omega_2,$$

$$\alpha^{[\mu_5],t-3\delta_t}_{x+\delta_l,y}=3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{3}{4}\omega_3^2\omega_2+\tfrac{3}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3+2\omega_4\omega_1u^2\omega_2-\tfrac{15}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2+\omega_3\omega_4\omega_1u-\tfrac{1}{2}\omega_1\omega_2^2+\omega_3\omega_4u\omega_2^2+2\omega_3\omega_1u^2\omega_2+\omega_3^2u+\omega_3^2\omega_4u^2\omega_2+6\omega_3\omega_4u+\tfrac{1}{2}\omega_3^2\omega_1u-\tfrac{1}{2}\omega_4\omega_1^2u\omega_2-v^2\omega_4\omega_1\omega_2-2\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4+\tfrac{1}{2}\omega_4^2u^2+3\omega_4u\omega_2-\tfrac{1}{2}\omega_3\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_3\omega_1^2u-\tfrac{1}{2}v^2\omega_3^2\omega_2-\omega_3\omega_1^2u^2-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{7}{4}\omega_3\omega_1-\tfrac{1}{2}\omega_4^2\omega_2+\omega_3\omega_4^2u^2\omega_2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4-\tfrac{7}{2}\omega_4\omega_1u-\tfrac{1}{2}\omega_4u\omega_2^2+\omega_4^2u+\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+3\omega_3\omega_4\omega_1u^2-7\omega_3\omega_4u\omega_2+2\omega_1\omega_2-\tfrac{1}{2}\omega_3^2\omega_1u\omega_2-\omega_3^2u\omega_2+\tfrac{1}{2}\omega_3^2u^2-\tfrac{3}{2}\omega_1+\tfrac{1}{2}\omega_3^2\omega_1u^2+\omega_3\omega_4u^2-\tfrac{1}{2}\omega_4^2\omega_1u\omega_2+5\omega_1u+\omega_1^2u\omega_2+\tfrac{1}{2}v^2\omega_4^2\omega_2-\omega_3\omega_4\omega_1u\omega_2+\tfrac{1}{2}\omega_4^2+\tfrac{1}{2}\omega_3\omega_4\omega_2^2-\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\omega_3\omega_4u^2\omega_2-\omega_3\omega_4^2u^2-\tfrac{1}{2}\omega_3^2u^2\omega_2-\tfrac{1}{2}\omega_3\omega_1u\omega_2^2-\omega_1^2u-\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u+v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-\omega_3\omega_2^2-3\omega_3\omega_4\omega_1u^2\omega_2-2\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_4\omega_1u\omega_2^2-2\omega_3\omega_1u^2-\omega_3^2\omega_4u^2+3\omega_3u\omega_2+\tfrac{3}{2}\omega_3\omega_4^2u\omega_2-\tfrac{1}{4}\omega_3^2\omega_1+\tfrac{13}{4}\omega_4\omega_2+v^2\omega_3\omega_2^2-\tfrac{3}{4}\omega_3\omega_4\omega_1+v^2\omega_3\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1\omega_2^2-6\omega_1u\omega_2+\omega_2^2-4\omega_2-\tfrac{5}{2}\omega_4u+\tfrac{1}{2}\omega_4\omega_1^2u+\tfrac{1}{2}\omega_3^2\omega_4\omega_2-\tfrac{9}{4}\omega_3\omega_1\omega_2+\omega_1u\omega_2^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\omega_4\omega_1^2u^2-\tfrac{3}{2}\omega_3^2\omega_4u-\tfrac{7}{2}\omega_3\omega_1u+\omega_3\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3u\omega_2^2-\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{1}{2}v^2\omega_4^2\omega_1-v^2\omega_3\omega_2-v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+2\omega_1^2u^2-\omega_4^2u\omega_2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4^2\omega_2+4\omega_4\omega_1u\omega_2-v^2\omega_4\omega_2^2+\tfrac{19}{4}\omega_3\omega_2-\tfrac{3}{2}\omega_3\omega_4^2u+\tfrac{3}{2}\omega_3^2\omega_4u\omega_2+4\omega_3\omega_1u\omega_2-\tfrac{5}{2}\omega_3u,$$

$$\alpha^{[\mu_1],t-3\delta_t}_{x,y+\delta_l}=-1+\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2-\tfrac{1}{2}\omega_3{c_s}^2\omega_2+\tfrac{1}{2}v\omega_4-2v^3\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{4}v^2\omega_3\omega_1^2-\tfrac{3}{2}\omega_4\omega_1+\tfrac{1}{4}\omega_3+\tfrac{1}{4}\omega_4\omega_1u^2\omega_2-\tfrac{1}{2}v^3\omega_3^2\omega_1\omega_2+2v^3\omega_3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3^2\omega_4\omega_1+2v^3\omega_2^2+\tfrac{1}{4}v\omega_4^2\omega_1u^2-\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2\omega_1+\tfrac{7}{4}v\omega_3\omega_2+\tfrac{1}{4}v\omega_4^2\omega_1+\tfrac{1}{2}\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1^2-\tfrac{1}{4}\omega_3\omega_1u^2\omega_2+\tfrac{5}{2}v^2\omega_3\omega_4-v^3\omega_3\omega_2^2+v^2\omega_1\omega_2^2+\tfrac{1}{2}v^2\omega_3\omega_4^2\omega_1+\tfrac{13}{4}v^2\omega_4\omega_1\omega_2+4v^2\omega_2+v\omega_4\omega_1^2u^2\omega_2-v\omega_3\omega_4{c_s}^2\omega_2-\tfrac{1}{4}\omega_4\omega_1u^2+\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2-\tfrac{1}{4}v^3\omega_3^2\omega_1-\tfrac{3}{2}v^3\omega_4\omega_2-\tfrac{1}{4}\omega_3\omega_4-\tfrac{3}{4}\omega_4^2u^2+2\omega_3{c_s}^2-\tfrac{1}{2}v\omega_3^2{c_s}^2+\tfrac{1}{4}v^2\omega_3^2-\tfrac{9}{4}v\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_4{c_s}^2+v^3\omega_4\omega_1\omega_2^2-v\omega_3\omega_1^2u^2\omega_2-\tfrac{1}{4}\omega_3\omega_1^2+\tfrac{5}{4}v^2\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3^2\omega_2+\tfrac{1}{2}v\omega_4u^2\omega_2-v^2\omega_3+\tfrac{1}{4}\omega_3u^2\omega_2-\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{3}{4}\omega_3\omega_1^2u^2+\tfrac{3}{2}v^3\omega_4\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3\omega_4^2\omega_1+\tfrac{1}{4}\omega_4\omega_1\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1^2\omega_2-\tfrac{1}{2}v^3\omega_3^2\omega_4+v\omega_3\omega_4{c_s}^2\omega_1\omega_2-\tfrac{1}{4}v^2\omega_4\omega_1^2+\tfrac{1}{4}v\omega_3^2\omega_1+\tfrac{3}{4}v\omega_4\omega_2-5v^2\omega_1\omega_2-v^2\omega_2^2-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2+\tfrac{5}{4}\omega_4-v^3\omega_4\omega_2^2+\tfrac{1}{2}v\omega_3\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3^2\omega_4\omega_1+3\omega_3\omega_4{c_s}^2\omega_1-\tfrac{1}{2}\omega_1\omega_2+\tfrac{1}{4}v^3\omega_3^2+\tfrac{1}{2}\omega_3^2{c_s}^2\omega_1+\tfrac{3}{4}\omega_3^2u^2+\omega_1-\tfrac{3}{4}\omega_3^2\omega_1u^2-\tfrac{3}{2}v^3\omega_3\omega_2-\tfrac{1}{4}v^3\omega_4^2\omega_1-\tfrac{1}{2}v^2\omega_3\omega_4^2+\tfrac{1}{2}v\omega_3^2\omega_1u^2\omega_2-\tfrac{1}{4}v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2+\tfrac{5}{4}v^2\omega_3\omega_1+\tfrac{1}{4}\omega_4\omega_1^2-\tfrac{1}{2}v\omega_3^2u^2\omega_2-\tfrac{1}{2}v\omega_1^2\omega_2-\tfrac{1}{4}\omega_4^2-\tfrac{1}{2}v\omega_4^2\omega_1u^2\omega_2-\tfrac{1}{2}v^3\omega_4^2\omega_1\omega_2+\tfrac{1}{2}v^3\omega_3^2\omega_2+\tfrac{1}{2}v\omega_3\omega_4{c_s}^2\omega_1-\omega_3u^2+\tfrac{1}{4}v\omega_3^2u^2+\tfrac{1}{4}v^2\omega_4^2-\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_1\omega_2-2v^3\omega_1\omega_2^2-\tfrac{1}{4}v\omega_3^2\omega_1u^2-\tfrac{11}{4}v^2\omega_4\omega_2-\tfrac{1}{4}v^2\omega_3^2\omega_1+$$

$$\tfrac{1}{2}v\omega_3^2{c_s}^2\omega_1+\tfrac{5}{2}v\omega_1\omega_2+\tfrac{1}{4}\omega_3\omega_1u^2-\tfrac{5}{2}\omega_3{c_s}^2\omega_1+\tfrac{1}{2}v\omega_3-\tfrac{1}{2}\omega_3\omega_4^2{c_s}^2\omega_1+\tfrac{1}{2}v^3\omega_3\omega_4-\tfrac{1}{4}\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3\omega_2^2+\tfrac{1}{4}\omega_3\omega_4\omega_1+\tfrac{13}{4}v^2\omega_3\omega_1\omega_2-\tfrac{1}{2}v^3\omega_3\omega_4\omega_1+\tfrac{1}{2}v^2\omega_3\omega_4\omega_1^2+v^3\omega_3\omega_1\omega_2^2-\tfrac{1}{2}v\omega_3\omega_1+v^2\omega_1^2\omega_2-\tfrac{1}{2}v\omega_3u^2\omega_2+\tfrac{1}{2}\omega_2-\tfrac{3}{4}v\omega_4\omega_1\omega_2+\tfrac{3}{2}v^3\omega_3\omega_1\omega_2-2v\omega_2-3v^2\omega_3\omega_4\omega_1-\tfrac{1}{2}v^2\omega_4\omega_1^2\omega_2+\tfrac{1}{4}\omega_3\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_4{c_s}^2\omega_2+\omega_4u^2-\tfrac{1}{2}\omega_3^2{c_s}^2-\tfrac{1}{4}\omega_4u^2\omega_2+\tfrac{1}{4}v^3\omega_4^2+\tfrac{1}{2}v^3\omega_4^2\omega_2-\tfrac{5}{2}\omega_3\omega_4{c_s}^2-\tfrac{3}{4}\omega_4\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_4+\tfrac{1}{2}v\omega_3\omega_1^2\omega_2+\tfrac{1}{2}\omega_3{c_s}^2\omega_1^2-\tfrac{1}{4}v\omega_3^2-\tfrac{1}{4}v\omega_4^2u^2-\tfrac{1}{4}v^2\omega_4^2\omega_1-\tfrac{11}{4}v^2\omega_3\omega_2-\tfrac{1}{2}v^3\omega_3\omega_4^2-\tfrac{1}{2}v^2\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2+\tfrac{1}{2}v\omega_3\omega_4^2{c_s}^2-v^2\omega_4-\tfrac{3}{2}v\omega_4\omega_1u^2\omega_2+\tfrac{3}{4}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{4}v\omega_3\omega_4\omega_1\omega_2+\tfrac{1}{2}v^2\omega_4\omega_2^2-\tfrac{1}{4}\omega_3\omega_2+\tfrac{1}{4}\omega_4^2\omega_1-\tfrac{1}{4}v\omega_3^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1+\tfrac{1}{2}v\omega_4^2u^2\omega_2+v\omega_3{c_s}^2\omega_2+\tfrac{1}{2}v\omega_3^2\omega_4{c_s}^2+\tfrac{3}{2}v\omega_3\omega_1u^2\omega_2+\tfrac{1}{4}v\omega_3^2\omega_1\omega_2-\tfrac{1}{4}v\omega_3\omega_4\omega_2-v\omega_3{c_s}^2\omega_1\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_4-\tfrac{1}{2}\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y+\delta_l}^{[\mu_5],t-3\delta_t}=3+\tfrac{3}{4}\omega_3\omega_4\omega_1\omega_2-\tfrac{5}{2}v\omega_4+\tfrac{1}{2}\omega_4^2u^2\omega_2-\tfrac{1}{4}\omega_3^2\omega_2+\tfrac{13}{4}\omega_4\omega_1-\tfrac{15}{4}\omega_3-\omega_4\omega_1u^2\omega_2+v^2\omega_3^2\omega_4\omega_1-\tfrac{3}{4}\omega_3\omega_4\omega_2+\tfrac{1}{4}\omega_3^2\omega_1\omega_2-\tfrac{7}{2}v\omega_3\omega_2-v\omega_4^2\omega_1+\omega_3\omega_1u^2\omega_2+\omega_1^2+v^2\omega_3\omega_4-2v^2\omega_1\omega_2^2+\tfrac{1}{2}v\omega_4\omega_2^2+v^2\omega_3\omega_4^2\omega_1+2v^2\omega_4\omega_1\omega_2+\tfrac{1}{2}\omega_3\omega_1^2\omega_2+v\omega_3\omega_4\omega_1^2+\omega_4\omega_1u^2+\tfrac{13}{4}\omega_3\omega_4-\tfrac{1}{2}\omega_4^2u^2+\tfrac{1}{2}v^2\omega_3^2+4v\omega_3\omega_1\omega_2-\tfrac{3}{2}v\omega_3^2\omega_4-\omega_3\omega_1^2+\tfrac{1}{2}v^2\omega_3^2\omega_2+\omega_3\omega_1^2u^2-\tfrac{1}{2}v\omega_3\omega_1\omega_2^2+\tfrac{1}{2}\omega_3\omega_4^2\omega_1-\tfrac{3}{4}\omega_4\omega_1\omega_2+\tfrac{19}{4}\omega_3\omega_1-v\omega_3^2\omega_1-\tfrac{7}{2}v\omega_4\omega_2+2v^2\omega_2^2+v^2\omega_4\omega_1\omega_2^2-\tfrac{1}{2}\omega_3\omega_4^2-\tfrac{11}{4}\omega_4-7v\omega_3\omega_4\omega_1-\tfrac{1}{2}v\omega_4\omega_1^2\omega_2+\tfrac{1}{2}\omega_3^2\omega_4\omega_1+3v^2\omega_3\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1\omega_2+2\omega_1\omega_2+\tfrac{1}{2}v\omega_3\omega_2^2+\tfrac{1}{2}\omega_3^2u^2-4\omega_1-\tfrac{1}{2}\omega_3^2\omega_1u^2-v^2\omega_3\omega_4^2-\tfrac{1}{2}v\omega_4^2\omega_1\omega_2+v\omega_4^2+\tfrac{1}{2}v^2\omega_4^2\omega_2-\tfrac{1}{2}\omega_4\omega_1^2+v\omega_1^2\omega_2+\tfrac{1}{2}\omega_4^2-\tfrac{1}{2}\omega_1^2\omega_2-\tfrac{1}{2}v\omega_4\omega_1^2+\tfrac{1}{2}\omega_3^2\omega_1u^2\omega_2-\tfrac{1}{2}\omega_3^2u^2\omega_2+\tfrac{1}{2}v^2\omega_4^2-\tfrac{1}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{3}{2}v\omega_3^2\omega_4\omega_1-2v^2\omega_4\omega_2-\tfrac{1}{2}v^2\omega_3^2\omega_1-6v\omega_1\omega_2-\omega_3\omega_1u^2-\tfrac{3}{2}v\omega_3\omega_4^2-\tfrac{5}{2}v\omega_3-\tfrac{3}{4}\omega_3^2\omega_1+\tfrac{3}{4}\omega_4\omega_2-v^2\omega_3\omega_2^2-\tfrac{15}{4}\omega_3\omega_4\omega_1+2v^2\omega_3\omega_1\omega_2-v\omega_2^2+3v\omega_3\omega_1+\tfrac{1}{2}v\omega_4^2\omega_2-\tfrac{3}{2}\omega_2+\tfrac{3}{2}v\omega_3\omega_4^2\omega_1+4v\omega_4\omega_1\omega_2+5v\omega_2-v^2\omega_3\omega_4\omega_1-\tfrac{9}{4}\omega_3\omega_1\omega_2-\tfrac{1}{2}v\omega_3\omega_1^2+\omega_4\omega_1^2u^2\omega_2-\tfrac{1}{2}\omega_3^2\omega_4-\tfrac{1}{2}v\omega_4\omega_1\omega_2^2-\omega_4\omega_1^2u^2+6v\omega_3\omega_4-\tfrac{1}{2}v\omega_3\omega_1^2\omega_2-\omega_3\omega_1^2u^2\omega_2+v\omega_3^2-\tfrac{1}{2}v^2\omega_4^2\omega_1-2v^2\omega_3\omega_2-3v^2\omega_3\omega_4\omega_1\omega_2+v^2\omega_3\omega_1\omega_2^2+\tfrac{3}{4}\omega_3^2+\tfrac{1}{2}\omega_3\omega_4\omega_1^2+\tfrac{1}{2}\omega_4^2\omega_1u^2-\tfrac{1}{2}v^2\omega_4^2\omega_1\omega_2+v\omega_1\omega_2^2-v\omega_3\omega_4\omega_1\omega_2-v^2\omega_4\omega_2^2+\tfrac{7}{4}\omega_3\omega_2-\tfrac{1}{2}\omega_4^2\omega_1+\tfrac{1}{2}v\omega_3^2\omega_2+3v\omega_4\omega_1-\tfrac{1}{2}v\omega_3^2\omega_1\omega_2+v\omega_3\omega_4\omega_2-v^2\omega_3^2\omega_4,$$

$$\alpha_{x,y}^{[\mu_1],t-4\delta_t}=2+\tfrac{1}{2}\omega_3\omega_4\omega_1\omega_2-\omega_3^2\omega_4{c_s}^2+5\omega_3{c_s}^2\omega_2-\tfrac{3}{2}\omega_4^2u^2\omega_2-\omega_3\omega_4^2{c_s}^2\omega_1\omega_2+\tfrac{1}{2}v^2\omega_3\omega_1^2+3\omega_4\omega_1-\tfrac{1}{2}\omega_3+\omega_3\omega_4^2{c_s}^2\omega_2-\omega_4\omega_1u^2\omega_2-3v^2\omega_3^2\omega_4\omega_1-\tfrac{1}{2}\omega_3\omega_4\omega_2-v^2\omega_3\omega_4^2\omega_1\omega_2+v^2\omega_3\omega_4\omega_2^2-6\omega_3{c_s}^2\omega_1\omega_2-\omega_1\omega_2^2+\omega_3\omega_4{c_s}^2\omega_1^2+\omega_3\omega_1u^2\omega_2-7v^2\omega_3\omega_4+2v^2\omega_1\omega_2^2-3v^2\omega_3\omega_4^2\omega_1-13v^2\omega_4\omega_1\omega_2-\tfrac{1}{2}\omega_3\omega_1^2\omega_2-8v^2\omega_2+\tfrac{1}{2}\omega_4\omega_1u^2-\omega_3\omega_4^2{c_s}^2+\tfrac{1}{2}\omega_3\omega_4+\tfrac{3}{2}\omega_4^2u^2-4\omega_3{c_s}^2-\tfrac{3}{2}v^2\omega_3^2+\tfrac{1}{2}\omega_3u^2\omega_2^2+\tfrac{1}{2}\omega_4\omega_1\omega_2^2-v^2\omega_3\omega_4\omega_1^2\omega_2+\tfrac{1}{2}\omega_3\omega_1^2-\tfrac{5}{2}v^2\omega_4\omega_1-\tfrac{5}{2}v^2\omega_3^2\omega_2+2v^2\omega_3-\tfrac{5}{2}\omega_3u^2\omega_2-v^2\omega_3^2\omega_4\omega_1\omega_2-\tfrac{3}{2}\omega_3\omega_1^2u^2-\tfrac{7}{2}\omega_4\omega_1\omega_2+\tfrac{3}{2}v^2\omega_3\omega_1^2\omega_2-\tfrac{1}{2}\omega_4^2\omega_2+\tfrac{1}{2}v^2\omega_4\omega_1^2+10v^2\omega_1\omega_2-2v^2\omega_2^2-\tfrac{1}{2}v^2\omega_4\omega_1\omega_2^2-\tfrac{5}{2}\omega_4+\omega_3^2\omega_4{c_s}^2\omega_2-12v^2\omega_3\omega_4\omega_2+\tfrac{5}{2}v^2\omega_3^2\omega_1\omega_2-6\omega_3\omega_4{c_s}^2\omega_1+3\omega_1\omega_2+\omega_3{c_s}^2\omega_1\omega_2^2-\omega_3^2{c_s}^2\omega_1-\tfrac{3}{2}\omega_3^2u^2-2\omega_1-\tfrac{1}{2}\omega_3\omega_1u^2\omega_2^2+\tfrac{3}{2}\omega_3^2\omega_1u^2+3v^2\omega_3\omega_4^2-\omega_3{c_s}^2\omega_2^2-\omega_3\omega_4{c_s}^2\omega_1^2\omega_2+\tfrac{1}{2}\omega_4\omega_1u^2\omega_2^2-\tfrac{5}{2}v^2\omega_4^2\omega_2-\tfrac{5}{2}v^2\omega_3\omega_1-\tfrac{1}{2}\omega_4\omega_1^2+\tfrac{1}{2}\omega_4^2-\tfrac{3}{2}\omega_3^2\omega_1u^2\omega_2+\tfrac{1}{2}\omega_4^2\omega_1\omega_2+v^2\omega_3\omega_4^2\omega_2+\tfrac{3}{2}\omega_3^2u^2\omega_2+2\omega_3u^2+\omega_3^2{c_s}^2\omega_1\omega_2-\tfrac{3}{2}v^2\omega_4^2+7\omega_3\omega_4{c_s}^2\omega_1\omega_2+\tfrac{3}{2}\omega_4^2\omega_1u^2\omega_2+\tfrac{23}{2}v^2\omega_4\omega_2+\tfrac{3}{2}v^2\omega_3^2\omega_1-\tfrac{1}{2}\omega_3\omega_2^2-\tfrac{1}{2}\omega_3\omega_1u^2-\omega_3^2\omega_4{c_s}^2\omega_1\omega_2+5\omega_3{c_s}^2\omega_1+\omega_3\omega_4^2{c_s}^2\omega_1+3\omega_4\omega_2+\tfrac{1}{2}v^2\omega_3\omega_2^2+v^2\omega_3^2\omega_4\omega_2-\tfrac{1}{2}\omega_3\omega_4\omega_1+\tfrac{1}{2}\omega_4\omega_1^2\omega_2-13v^2\omega_3\omega_1\omega_2-v^2\omega_3\omega_4\omega_1\omega_2^2+\tfrac{1}{2}\omega_3\omega_1\omega_2^2-v^2\omega_3\omega_4\omega_1^2+\omega_3\omega_4{c_s}^2\omega_2^2-2v^2\omega_1^2\omega_2+\omega_2^2-3\omega_2-\tfrac{1}{2}\omega_4u^2\omega_2^2+8v^2\omega_3\omega_4\omega_1+\tfrac{3}{2}v^2\omega_4\omega_1^2\omega_2-\tfrac{1}{2}\omega_3\omega_1\omega_2-\tfrac{3}{2}\omega_4\omega_1^2u^2\omega_2-6\omega_3\omega_4{c_s}^2\omega_2-2\omega_4u^2+\omega_3^2{c_s}^2-\omega_3^2{c_s}^2\omega_2+\tfrac{5}{2}\omega_4u^2\omega_2+5\omega_3\omega_4{c_s}^2+\tfrac{3}{2}\omega_4\omega_1^2u^2+\tfrac{3}{2}\omega_3\omega_1^2u^2\omega_2-\omega_3{c_s}^2\omega_1^2-\tfrac{1}{2}\omega_4\omega_2^2+\tfrac{3}{2}v^2\omega_4^2\omega_1+\tfrac{23}{2}v^2\omega_3\omega_2+13v^2\omega_3\omega_4\omega_1\omega_2-\tfrac{1}{2}v^2\omega_3\omega_1\omega_2^2-\omega_3\omega_4{c_s}^2\omega_1\omega_2^2+2v^2\omega_4-\tfrac{3}{2}\omega_4^2\omega_1u^2+\tfrac{5}{2}v^2\omega_4^2\omega_1\omega_2+\tfrac{1}{2}v^2\omega_4\omega_2^2+\omega_3\omega_2-\tfrac{1}{2}\omega_4^2\omega_1+\omega_3{c_s}^2\omega_1^2\omega_2+3v^2\omega_3^2\omega_4+\omega_3^2\omega_4{c_s}^2\omega_1,$$

$$\alpha_{x,y}^{[\mu_5],t-4\delta_t}=-4-8\omega_3\omega_4\omega_1\omega_2+\omega_3^2\omega_2-6\omega_4\omega_1+5\omega_3+7\omega_3\omega_4\omega_2-\omega_3^2\omega_1\omega_2+\omega_1\omega_2^2-\omega_1^2-\omega_3\omega_1^2\omega_2-6\omega_3\omega_4-\omega_4\omega_1\omega_2^2+\omega_3\omega_1^2-\omega_3\omega_4^2\omega_1+7\omega_4\omega_1\omega_2-6\omega_3\omega_1+\omega_4^2\omega_2+\omega_3\omega_4^2+5\omega_4-\omega_3^2\omega_4\omega_1-6\omega_1\omega_2+5\omega_1+\omega_3\omega_4\omega_1\omega_2^2+\omega_4\omega_1^2-\omega_4^2-\omega_3\omega_4\omega_2^2+\omega_1^2\omega_2-\omega_4^2\omega_1\omega_2+\omega_3^2\omega_4\omega_1\omega_2+\omega_3\omega_2^2+\omega_3^2\omega_1-6\omega_4\omega_2+7\omega_3\omega_4\omega_1-\omega_4\omega_1^2\omega_2-\omega_3\omega_1\omega_2^2-\omega_2^2+5\omega_2-\omega_3^2\omega_4\omega_2+7\omega_3\omega_1\omega_2+\omega_3^2\omega_4+\omega_3\omega_4^2\omega_1\omega_2+\omega_4\omega_2^2-\omega_3^2-\omega_3\omega_4\omega_1^2+\omega_3\omega_4\omega_1^2\omega_2-\omega_3\omega_4^2\omega_2-6\omega_3\omega_2+\omega_4^2\omega_1,$$