$$\dot u = u'' + \gamma u - u^3, \tag{1}$$

$$u'(0,t) \ = 0, \qquad u'(1,t) \ = \alpha\, u(x_0,t), \tag{2}$$

$\alpha, \gamma \in \mathbb{R},\ x_0 \in [0,1).$

$$\dot u = u'' + \gamma u, \tag{3}$$

$$u'(0,t) \ = 0, \qquad u'(1,t) \ = \alpha\, u(x_0,t). \tag{4}$$

$u(x,t) = e^{\lambda t}\, v(x).$

$$v'' + (\gamma - \lambda) v = 0, \tag{5}$$

$$v'(0) \ = 0, \qquad v'(1) \ = \alpha\, v(x_0). \tag{6}$$

$\mu = \sqrt{-\gamma + \lambda},\ v(x) = c\,\mathrm{ch}\mu x,\ c \in \mathbb{R}.$

$$\mu\,\mathrm{sh}\mu \ = \ \alpha \mathrm{ch}\mu x_0,$$

$$\alpha_{cr} = \frac{\mu\,\mathrm{sh}\mu}{\mathrm{ch}\mu x_0}. \tag{7}$$

$$\dot u_j = n^2(u_{j+1} - 2u_j + u_{j-1}) + \gamma u_j - u_j^3, \quad j = \overline{1,n}. \tag{8}$$

$$u_0 = u_1, \quad u_{n+1} = u_n + \frac{\alpha_c}{n}\, u_1. \tag{9}$$

$$u = \sqrt{\varepsilon} u_0 + \varepsilon u_1 + \varepsilon^{\frac{3}{2}} u_2 + O(\varepsilon^2). \tag{10}$$

$$v'' + \gamma v = 0, \tag{11}$$

$$v'(0) = 0, \quad v'(1) = \alpha_{cr}\, v(x_0). \tag{12}$$

$$\frac{\partial u_0}{\partial s} + \dot u_2 = u_2'' + \gamma u_2 - u_0^3, \tag{13}$$

$$u_2'(0,t) = 0, \quad u_2'(1,t) = \alpha_{cr}\, u_2(x_0,t) + u_0(x_0,t). \tag{14}$$

$s = \varepsilon t.$

$\lambda = 0 : \mu = \sqrt{-\gamma},\ \alpha_{cr} = \alpha_d,\ \varepsilon = \alpha - \alpha_d.$

$$u_0 = \rho(s)\mathrm{ch}\mu x. \tag{15}$$

$$\rho' = \phi\rho + d\rho^3, \tag{16}$$

$$\phi = \frac{2\mu\mathrm{ch}\mu x_0}{\mu\mathrm{ch}\mu + \mathrm{sh}\mu - \alpha_d x_0 \mathrm{sh}\mu x_0},$$

$$d = \frac{-3\gamma\mathrm{sh}3\mu - 12\mathrm{sh}\mu - 12\mu\mathrm{ch}\mu - \alpha_d\mu\mathrm{ch}3\mu x_0 + 12\alpha_d x_0\mathrm{sh}\mu x_0}{16(\mathrm{sh}\mu + \mu\mathrm{ch}\mu - \alpha_d x_0\mathrm{sh}\mu x_0)}.$$

$\lambda = i\omega : \mu = \sqrt{-\gamma + i\omega},\ \alpha_{cr} = \alpha_c,\ \varepsilon = \alpha_c - \alpha.$

$$u_0 = z(s)e^{i\omega t}\mathrm{ch}\mu x + \overline{z(s)}e^{-i\omega t}\overline{\mathrm{ch}\mu x}. \tag{17}$$

$$z' = \phi z + dz|z|^2. \tag{18}$$

$$\phi = \frac{2\mu\mathrm{ch}\mu x_0}{\mu\mathrm{ch}\mu + \mathrm{sh}\mu - \alpha_c x_0 \mathrm{sh}\mu x_0},$$

$$d = \frac{3\mu(G(\mu + 2\,\mathrm{Re}\mu) + G(\mu + 2i\,\mathrm{Im}\mu) + 2G(\overline{\mu}))}{2(\mu\mathrm{ch}\mu + \mathrm{sh}\mu - \alpha_c x_0\mathrm{sh}\mu x_0)},$$

$$G(y) = \frac{\alpha_c - y\,\mathrm{sh}y}{y^2 + \gamma - i\omega}.$$