Various problems set-ups for

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We numerically solve the equation:

$$\eta_{tt} - \eta_{xx} = \mu^2 \left(\frac{1}{3}\eta_{xxxx} + \frac{\partial^2}{\partial x^2} \left[\frac{\eta^2}{2} + \left(\int_{-\infty}^{x} \eta_t \, \mathrm{d}x' \right)^2 \right] \right).$$

We set $\mu = 0.01$ in all the experiments.

1.
   - Filename: KinkyIC1
   - Number of points: 600
   - Initial conditions:
   $$\eta_t(x,0) = \mathrm{sech}(5x)^2 + \mathrm{sech}(5x-10)^2, \qquad \eta(x,0) = \mathrm{sech}(10x)^2 - \mathrm{sech}(10x-20)^2.$$
   - Other parameters: $t0 = 0, tf = 10, NumSteps = 50$.
2.
   - Filename: KinkyIC2
   - Number of points: 600
   - Initial conditions:
   $$\eta_t(x,0) = \mathrm{sech}(5x)^2 + \mathrm{sech}(5x-10)^2 + \mathrm{sech}(10x+10)^2, \qquad \eta(x,0) = \mathrm{sech}(10x-12)^2 - \mathrm{sech}(10x-20)^2$$
   - Other parameters: $t0 = 0, tf = 20, NumSteps = 160$.
3.
   - Filename: KinkyIC3
   - Number of points: 600
   - Initial conditions:
   $$\eta_t(x,0) = \mathrm{sech}(5x-10)^2 + \mathrm{sech}(10x+10)^2, \qquad \eta(x,0) = \mathrm{sech}(5x)^2 + \mathrm{sech}(10x-12)^2 - \mathrm{sech}(10x-20)^2$$
   - Other parameters: $t0 = 0, tf = 20, NumSteps = 120$.
4.
   - Filename: GaussianIC
   - Number of points: 600
   - Initial conditions:
   $$\eta_t(x,0) = \mathrm{sech}(x)^2, \qquad \eta(x,0) = \exp(-x^2).$$
   - Other parameters: $t0 = 0, tf = 10, NumSteps = 50$.