A water wave model with a non local viscous dispersive term.

We study the water wave model with a nonlocal viscous term

\[ u_t + u_x + \beta u_{xxx} + \sqrt{\nu} \frac{\partial}{\partial t} \int_0^t \frac{u(s)}{\sqrt{t-s}} ds + uu_x = \nu u_{xx}, \]

where \( \frac{1}{\sqrt{\pi}} \frac{\partial}{\partial t} \int_0^t \frac{u(s)}{\sqrt{t-s}} ds \) is the Riemann-Liouville half-order derivative. Here \( x \) belongs to \( \mathbb{R} \) and \( \nu > 0, \beta \) are parameters.

We study the initial value problem and the decay rate of solutions to the equilibrium. We follow here the references below.

References


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