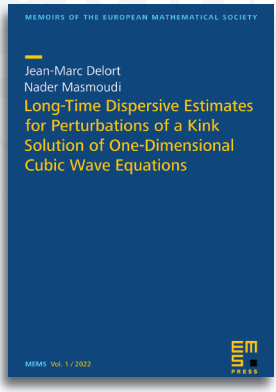

Long-Time Dispersive Estimates for Perturbations of a Kink Solution of One-Dimensional Cubic Wave Equations

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A kink is a stationary solution to a cubic one-dimensional wave equation $(\partial_{t2} - \partial_x^2)\phi = \phi - \phi_3$ that has different limits when x goes to $-\infty$ and $+\infty$, like $H(x) = \tanh(x/\sqrt{2})$). Asymptotic stability of this solution under small odd perturbation in the energy space has been studied in a recent work of Kowalczyk, Martel, and Muñoz. They have been able to show that the perturbation may be written as the sum $a(t)Y(x) + \psi(t,x)$, where Y is a function in Schwartz space, $a(t)$ a function of time having some decay properties at infinity, and $\psi(t,x)$ satisfies some *local in space* dispersive estimate. These results are likely to be optimal when the initial data belong to the energy space. On the other hand, for initial data that are smooth and have some decay at infinity, one may ask if precise dispersive time decay rates for the solution in the whole space-time, and not just for x in a compact set, may be obtained. The goal of this work is to attack these questions.

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