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Stability of embedded solitons at the edge of the continuum

We consider the problem of two hump solutions of the modified NLS equation which describes short optical pulses.

Multihump solutions are obtained asymptotically using a modulation formulation on the Lagrangian coupled to a free boundary for the radiation. We study the one sided stability using the modulation coupled with the radiation.

The effects which produce the multiple humps and their instabilty are exponentially small in the distance between humps.

We show that the asymptotic theory explains completely the numerics in the dynamical evolution.

We commment on the possibility of making rigorous this asymptotic theory.