

Singularities and instabilities in some space-time nonlocal equations

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Abstract

Over the last several years, the Ablowitz-Musslimani class of nonlinear PDEs have attracted considerable interest. These equations have the unusual property that they are space-time nonlocal, yet are still integrable. A two-dimensional extension of these equations is investigated. Extensive numerical simulations highlight the peculiarities of these systems relative to their local counterparts. Collapse and transverse instability are explored.