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Traveling-waves for a quasilinear Schrödinger equation

jeudi 1 février 2024 10:35 (45 minutes)

We consider a defocusing quasilinear nonlinear Schrödinger equation in dimension one with nonzero conditions at infinity. The talk aims to present the classification of the traveling-wave solutions of this equation in terms of two parameters: the strength of the quasilinear term and the speed of the wave.
With access to the theory of ODEs, we found multiple branches of solutions coexisting in the same region of parameters:
A branch of breather-type solution common to the semilinear case and to other nonlinear dispersive PDEs arising in fluid mechanics; but also branches of localized solutions with lower regularity, on which we will provide some properties and illustrations.
In a second time, we will address the stability of breather-type solutions which are minimizers of the energy at fixed momentum.

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