

Analysis and Applied Mathematics Seminar

Stability of bound states for regularized nonlinear Schrödinger equations

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Abstract: Dumas, Lannes, and Szeftel have introduced a family of equations designed to model waves in nonlinear optics which have less symmetry than solutions of the nonlinear Schrödinger equation, in that they are not axisymmetric about the axis of propagation. Their equations can include regularization terms which are present in some but not all spatial directions. We study the stability of standing-wave solutions of such regularized nonlinear Schrödinger equations, and find that the regularization can increase the range of nonlinearities for which standing waves are stable. This effect is similar to that seen in the Benjamin-Bona-Mahony regularization of the Korteweg-de Vries equation, but notably, the effect is present even when the regularization terms are not present in all directions.

Monday, October 7 at 4:00 PM in 636 SEO