

S. Fishman

Title:

The nonlinear Schroedinger equation with a random potential: results and puzzles

Abstract:

The nonlinear Schroedinger equation (NLSE) with a random potential is motivated by experiments in optics and in atom optics and is a paradigm for the competition between the randomness and nonlinearity. The analysis of the NLSE with a random (Anderson like) potential has been performed at various levels of control: numerical, analytical and rigorous. Yet this model equation presents us with a highly inconclusive and often contradictory picture. I will describe the main recent results obtained in this field and propose a list of specific problems to focus on, which we hope will enable to resolve these outstanding questions. The talk is based on the review: S. Fishman, Y. Krivolapov and A. Soffer, The Nonlinear Schroedinger Equation with a random potential: Results and Puzzles (invited review) *Nonlinearity* **25**, R53-R72 (2012).