

Nonlinear resonance for dispersive equations with a potential. I

Samuel Walsh
University of Missouri

Abstract. In this talk we present a general framework for proving global in time existence and asymptotic properties of solutions for nonlinear dispersive equations with a potential. These problems arise naturally in many contexts, e.g., quantum mechanics, nonlinear optics, general relativity, and in the study of soliton stability. The main building block is a theory of space-time resonance generalized to the spectral setting of the corresponding Schrödinger operator. As an example of the technique, we provide the proof of small data global in time well-posedness and scattering for a quadratic nonlinear Schrödinger equation in three-dimensions.

This is joint work with Pierre Germain and Zaher Hani. For those interested, the material for the talk is contained in our preprint: <http://arxiv.org/abs/1303.4354>