

Title: Dispersive Estimate and zero energy resonances for the fourth order Schrödinger Equation

Abstract: The fourth order Schrödinger equation $iu_t = \Delta^2 + V$ were introduced by Karpman and Shagalov to account for small fourth-order dispersion in the propagation of laser beams in a bulk medium with Kerr nonlinearity. The corresponding nonlinear equation have been studied in various contexts in recent years.

We considered the linear equation in dimension three and four in $L^1 \rightarrow L^\infty$ settings with a potential V real and decaying. In this talk, I will present the dispersive results that we obtained. In particular, I will give the full classification of the types of zero energy resonances in dimensions three and four, and discuss their effects on $L^1 \rightarrow L^\infty$ decay estimate. This is a joint work with M. Burak Erdoğan and William Green.