
HIROAKI KIKUCHI, Tsuda University

Existence of a ground state and blowup problem for a class of nonlinear Schrödinger equations

In this talk, we study the existence of the ground state and blowup problem for a class of nonlinear Schrödinger equations involving the mass and energy critical exponents. To show that a ground state exists, we solve a minimization problem related to the virial identity, so that we need to compare the minimization value to the best constant of the Gagliardo-Nirenberg inequality because our nonlinearities contain the mass critical nonlinearity. Once we obtain the ground state, we can introduce a subset $\mathcal{A}_{\omega,-}$ of $H^1(\mathbb{R}^d)$ for each $\omega > 0$ as in Berestycki and Cazenave (1981). Then, it turns out that any radial solution starting from $\mathcal{A}_{\omega,-}$ blows up in a finite time. This talk is based on a joint work with Minami Watanabe (Tsuda University).