Miniworkshop on Dispersive PDEs : Theory & Computation

Date : The 13th of September, 2024

Venue : 1801 Guanghua East Tower

Schedule

2:30-3:30 Cai Yongyong (Beijing Normal University)

Title : *Improved error estimates of the splitting methods for the long time dynamics for the weakly nonlinear Schrödinger equations*

Abstract : *We establish improved uniform error bounds for the time-splitting methods for the long-time dynamics of the nonlinear Schr\"odinger equation (NLSE) with weak nonlinearity. By a new technique of regularity compensation oscillation (RCO) in which the high frequency modes are controlled by regularity and the low frequency modes are analyzed by phase cancellation, an improved uniform error bound is established. Numerical results are reported to validate our error estimates and to demonstrate that they are sharp.*

4:00-5:00 Xu Guixiang (Beijing Normal University)

Title : *Long time dynamics of radial threshold solutions for the focusing, energy-critical Hartree equation*

Abstract : *In this report, we consider long time dynamics of radial threshold solutions for the focusing, generalized energy-critical Hartree equation and classify all radial threshold solutions. The main arguments are the spectral theory of the linearized operator, the modulational analysis and the concentration compactness rigidity argument developed by T. Duyckaerts and F. Merle to classify all threshold solutions for the energy critical NLS and, later by D. Li and X. Zhang in higher dimensions. The new ingredient here is to solve the nondegeneracy of positive bubble solutions with nonlocal structure in $\dot H^1(\R^N)$ by the nondegeneracy result of positive bubble solution in $L^{\infty}(\R^N)$ and the Moser iteration method. It is a joint work with X. Li, C. Liu, X. Tang.*

Organizers : Chen Xi, He Danqing