Speaker: Federica Maria SURACE (Caltech, USA)

Title Quasiconservation Laws and Suppressed Transport in Weakly Interacting Localized Models

The stability of localization in the presence of interactions remains an open problem, with finite-size effects posing significant challenges to numerical studies. In this work, we investigate the perturbative stability of noninteracting localization under weak interactions, which allows us to analyze much larger system sizes. Focusing on disordered Anderson and quasiperiodic Aubry-André models in one dimension, we compute first-order corrections to noninteracting local integrals of motion (LIOMs). Additionally, we introduce and study the charge-transport capacity of this weakly interacting model. Our results demonstrate that localization is perturbatively stable to weak interactions at first order, implying that, at the very least, localization persists for parametrically long times in the inverse interaction strength