Jiansheng Geng

Title: Invariant tori for the nonlinear lattice one-dimensional Schr\"odinger equations with real analytic potential.

Abstract:In this talk, we seek time quasi-periodic solutions to the lattice Schr\"odinger equations in the form $${\rm i}\dot{q}_n+V_nq_n + |q_n|^2q_n+\delta(q_{n+1}+q_{n-1})=0,\quad n\in Z,$$ where $V_n=V(n{\alpha}+x)$, with V a nonconstant real analytic function on R/Z, α satisfying a certain Diophantine condition. By constructing an abstract KAM theorem, we prove that if δ is sufficiently small, the equation admits a Whitney smooth family of small-amplitude, time quasi-periodic solutions for a.e. $x\in R/Z$.This is a joint work with J. You and Z. Zhao.