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Localization of interacting fermions with quasi-random disorder

Monday, 5 September 2016 11:00 (1 hour)

We consider interacting electrons in a one dimensional lattice with an incommensurate Aubry-Andre' potential in the regime when the single-particle eigenstates are localized. We rigorously establish persistence of ground state localization in presence of weak many-body interaction, for almost all the chemical potentials. The proof uses a quantum many body extension of methods adopted for the stability of tori of nearly integrable hamiltonian systems, and relies on number-theoretic properties of the potential incommensurate frequency.

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