

Non-equilibrium almost-stationary states in extended quantum systems with gapped ground states and local interactions.

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Abstract

We consider quantum spin systems or systems of fermions on a lattice with local interactions and a gapped ground state. In the case of fermions, such systems describe (topological) insulators. I explain some recent results concerning the response of such systems to perturbations that close the spectral gap. It turns out that when such a perturbation is adiabatically turned on, the initial ground state of the unperturbed system dynamically evolves into an almost-stationary non-equilibrium state of the perturbed system. This observation is also directly related to the validity of linear response theory for such systems.