Seminar/Talk

Integrability, Thermalization, and Quantum Scars in a constrained Hamiltonian

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We study the quantum dynamics of a simple translation invariant, center-of-mass preserving model of interacting fermions in one dimension, which arises in multiple experimentally realizable contexts. We show that this model exhibits a Hilbert space that fractures into exponentially many dynamically disconnected Krylov subspaces. We find examples of several integrable and non-integrable subspaces. This model thus exhibits phenomenology associated with quantum scars, i.e. the fate of an initial product state under time-evolution depends on the properties of the Krylov subspaces it has weights in. In addition, some of the non-integrable Krylov subspaces show conventional quantum scars, which manifest themselves as revivals and slow thermalization of certain charge density wave configurations.

Friday, November 29, 2019 02:00pm - 03:00pm
Heinzel Seminar Room / Office Bldg West (I21.EG.101)

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