

Prethermalization and beyond in the quench dynamics of a weakly non-integrable system

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A full description of the time-evolution of a quantum system following a quantum quench in which integrability is broken remains an outstanding problem. In this talk, we consider quantum quenches in a chain with tunable integrability breaking interactions. For weak interactions, we show that local observables relax to a prethermalized regime for intermediate times after the quantum quench. We will show that this prethermalization plateau can be described by a density matrix of a generalized Gibbs ensemble constructed with approximately conserved charges. Following this we will discuss some recent results on moving beyond prethermalization, towards the observation of thermalization in weakly non-integrable quantum systems.

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