

Abstract Submitted
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Quench dynamics of one-dimensional interacting bosons in a disordered potential: Elastic dephasing and critical speeding-up of thermalization¹ MARCO TAVORA, New York Univ NYU, ACHIM ROSCH, University of Cologne, ADITI MITRA, New York Univ NYU — The dynamics of interacting bosons in one dimension following the sudden switching on of a weak disordered potential is investigated. On time scales before quasiparticles scatter (prethermalized regime), the dephasing from random elastic forward scattering causes all correlations to decay exponentially fast, but the system remains far from thermal equilibrium. For longer times, the combined effect of disorder and interactions gives rise to inelastic scattering and to thermalization. A novel quantum kinetic equation accounting for both disorder and interactions is employed to study the dynamics. Thermalization turns out to be most effective close to the superfluid-Bose glass critical point where nonlinearities become more and more important. The numerically obtained thermalization times are found to agree well with analytic estimates.

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Aditi Mitra
New York Univ NYU

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