

Abstract Submitted
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Quantum quenches and thermalization in one-dimensional systems¹ MARCOS RIGOL, Georgetown University — We use quantum quenches to study the dynamics and thermalization of hardcore bosons and fermions in finite one-dimensional lattices. We perform exact diagonalizations and find that, far away from integrability, few-body observables thermalize. We then study the breakdown of thermalization as one approaches an integrable point. This is found to be a smooth process in which the predictions of standard statistical mechanics continuously worsen as the system moves toward integrability. We establish a direct connection between the presence or absence of thermalization and the validity or failure of the eigenstate thermalization hypothesis, respectively.

References

M. Rigol, Phys. Rev. Lett. **103**, 100403 (2009); Phys. Rev. A **80**, 053607 (2009).

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