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Releasing the trapped 1d Bose gas: from integrability and renormalization to Generalized Gibbs ensembles¹

JEAN-SÉBASTIEN CAUX, University of Amsterdam

In this talk, we consider the out-of-equilibrium evolution of a one-dimensional bosonic gas (as described by the Lieb-Liniger model) after release from a parabolic trapping potential. We present a new method based on combining the theory of integrable models with numerical renormalization, which allows to reconstruct the post-quench dynamics of the gas all the way to infinite time. We also present a framework by which the generalized Gibbs ensemble, which has been suggested as the effective theory governing this dynamics, can be explicitly constructed. We compare predictions for reequilibration from this ensemble against the long-time dynamics observed using our method.

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