

Slow quench dynamics in ultracold atoms

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Atomic gases cooled to Nanokelvin temperatures are a new exciting tool to study a broad range of quantum phenomena. In particular, the outstanding degree of control which has been achieved over these quantum systems facilitates access to the dynamics of strongly correlated quantum many body physics. We analyze the effect of different perturbation to a one-dimensional Bose-gas to an optical lattice. The evolution of different observables such as the experimentally accessible onsite particle distribution are studied using the time-dependent exact diagonalization and density-matrix renormalization group techniques.

Author: KOLLATH, Corinna (University of Geneva)

Presenter: KOLLATH, Corinna (University of Geneva)

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