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Quench dynamics of a strongly interacting resonant Bose gas[1]
XIAO YIN, LEO RADZIHOVSKY, Department of Physics, University of Colorado at Boulder — We explore the dynamics of a resonant Bose gas following its quench to a strongly interacting regime near a Feshbach resonance. For such deep quenches, we utilize a self-consistent dynamic mean-field approximation and find that after an initial regime of many-body Rabi-like oscillations between the condensate and finite-momentum quasiparticle pairs, at long times, the gas reaches a prethermalized nonequilibrium steady state. We explore the resulting state through its broad stationary momentum distribution function, that exhibits a power-law high momentum tail. We study the associated enhanced depletion, quench-rate dependent excitation energy, Tan's contact, structure function and radio frequency spectroscopy. We find these predictions to be in a qualitative agreement with recent experiments

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