

Abstract Submitted
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Evolution of the Momentum Distribution of a Bose Gas Quenched to Unitarity CHRISTOPH EIGEN, JAKE GLIDDEN, RAPHAEL LOPES, University of Cambridge, ERIC CORNELL, JILA, NIST and University of Colorado, Boulder, ZORAN HADZIBABIC, ROBERT SMITH, University of Cambridge — We study the momentum distribution dynamics of a thermal homogeneous ^{39}K Bose gas quenched to unitarity, where the scattering length diverges. We observe a clear separation in the timescales for the ‘fast’ dynamics due to the change in coherent interactions and the ‘slow’ dynamics due to inelastic three-body loss. Focusing on the short-time dynamics, we find that the redistribution of particles occurs from low to high momentum states with an intermediate momentum shell where the population remains essentially unchanged. By taking measurements across a broad range of different initial atom numbers and temperatures we elucidate universal scaling laws that describe these redistribution dynamics.

Christoph Eigen
University of Cambridge

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