

Abstract Submitted
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Non-equilibrium behavior of the formation of a Bose-Einstein condensate in a disordered one-dimensional optical lattice EMILY EDWARDS, MATTHEW BEELER, TAO HONG, STEVEN ROLSTON, Joint Quantum Institute, Department of Physics, University of Maryland, National Institute of Standards and Technology — Equilibrium many-body dynamics is well described by statistical thermodynamics, but non-equilibrium systems are more common in nature and also much more difficult to study. A familiar example of a system driven by non-equilibrium thermodynamics is a laser. Some other notable laboratory examples are experiments in superfluid ^3He , liquid crystals, and superconducting films. There are fundamental questions, such as how a closed system reaches equilibrium, global or local. Does the final state retain memory of the initial state? The control and measurement tools available in ultra-cold atom experiments make for a promising laboratory to study these quantum dynamics. We will report on the progress of experiments investigating the many-body dynamics of condensation formation in a single period and disordered one-dimensional optical lattice. This work is partially supported by the ARO.

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