

Abstract Submitted
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Onset of thermalization in a Quantum Newton's Cradle JOSHUA WILSON, NEEL MALVANIA, JEAN-FELIX RIOU, LAURA ZUNDEL, LIN XIA, DAVID WEISS, Pennsylvania State University — Bosons trapped in a blue-detuned 2D optical lattice can be made to approximate the integrable Lieb-Liniger model, but the approximation is imperfect. So while integrability would constrain an out-of-equilibrium Lieb-Liniger gas from thermalizing, slight non-integrability in quasi-1D gases can lead to thermalization. We study such gasses (Quantum Newtons cradles) with a range of initial energies and 2D lattice depths and measure the evolution of their total energy. After accounting for the effects of spontaneous emission and 3-body loss, we infer that there is evaporative cooling, which implies the onset of thermalization.

Joshua Wilson
Pennsylvania State University

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