

Abstract Submitted  
for the DAMOP12 Meeting of  
The American Physical Society

**Non-equilibrium dynamics of a 1D Bose gas in a flat optical lattice potential** AARON REINHARD, LAURA ZUNDEL, JEAN-FELIX RIOU, The Pennsylvania State University, JUAN CARRASQUILLA, MARCOS RIGOL, Georgetown University, DAVID WEISS, The Pennsylvania State University — We study the dynamics of a bundle of expanding 1D Bose gases in a nearly flat 1D optical lattice potential in the intermediate coupling regime, which presents a challenge to theory. We observe the time-evolving spatial and quasimomentum distributions at a range of 1D atom densities and 1D lattice depths. Since it is difficult to exactly model these non-equilibrium dynamics, we take a first step towards theoretical understanding by comparing our measurements to the results of a Gutzwiller mean-field model.

Aaron Reinhard  
The Pennsylvania State University

Date submitted: 26 Jan 2012

Electronic form version 1.4