

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Spin-Domain and Superfluid Transition in a shaken optical lattice¹ LI-CHUNG HA, COLIN V. PARKER, KARINA JIMENEZ-GARCIA, CHENG CHIN, University of Chicago — Recently, we have developed a resonant lattice shaking technique to induce an effective ferromagnetic transition in a cesium Bose condensate. By phase modulating the optical lattice beam at the frequency near the band gap, we create a double well structure in the energy dispersion. Based on in situ imaging, we observe spatial domains of condensates pinned to one of the two wells. In this work, we extend this technique to form a desired domain structure based by imprinting a potential grating to the sample. We also explore the superfluid transition at finite temperatures in optical lattices.

¹This work was supported by NSF MRSEC (DMR-0820054), NSF Grant No. PHY-0747907 and ARO Grant No. W911NF0710576 with funds from the DARPA OLE Program.

Li-Chung Ha
University of Chicago

Date submitted: 30 Jan 2014

Electronic form version 1.4