Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Towards ultracold single neutral atoms in microscale optical dipole traps ADAM KAUFMAN, BRIAN LESTER, CINDY REGAL, JILA, University of Colorado at Boulder, UCB 440, Boulder, CO 80309 — We seek to create a small array of single neutral atoms laser-cooled to their motional ground state in microscale optical dipole traps. Experiments in such traps have demonstrated versatile capabilities in quantum logic and atom-light coupling, but to-date the atomic motion has often been uncontrolled and limiting. By cooling atoms in a few movable traps created with a high numerical aperture lens we envision abilities such as: Studying small arrays of interacting atoms with individual initialization of motion and spin, and coupling localized atoms to submicron optical modes. We present our initial studies of trapping and laser cooling a single ^{87}Rb atom.

Adam Kaufman
JILA, University of Colorado at Boulder, UCB 440, Boulder, CO 80309

Date submitted: 25 Jan 2012 Electronic form version 1.4