

Abstract Submitted  
for the DAMOP07 Meeting of  
The American Physical Society

**Deterministic Loading of Single Atoms in an Optical Cavity** SOO KIM, KEVIN FORTIER, MICHAEL GIBBONS, MICHAEL CHAPMAN, Georgia Institute of Technology — To utilize a single atom as a qubit in cavity QED requires exquisite control over both the internal and external degrees of freedom of the atom. In our experiment, a single rubidium atom is captured in a high gradient MOT. The atom is loaded into a 1-D optical lattice and then transported 8 mm to a high finesse optical cavity. The atoms are stored and continuously observed in the cavity for up to 10 s by employing a cavity-assisted cooling scheme. With submicron control of position of the atom, we have studied the spatial dependence of the atom-cavity coupling. We present our recent results and future prospects.

Soo Kim  
Georgia Inst. of Tech.

Date submitted: 05 Feb 2007

Electronic form version 1.4