Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Progress toward high bandwidth cold atom source MATTHEW SQUIRES, JAMES STICKNEY, PAUL BAKER, EVAN CARLSON, Air Force Research Labs, STEFAN FAGAN-KELLY, STEVEN MILLER, Air Force Research Labs — Confined cold and ultra-cold atomic devices have operated at bandwidths of significantly less than 1 Hz, because the laser cooling stage and the trapping stage typically occur in the same experimental region. The low bandwidth is a current limitation of cold atom devices (e.g. interferometers). One option for a high bandwidth source of cold atoms is concurrent laser cooling in one chamber and magnetic trapping in a second chamber so the magnetic trap can be continuously maintained. This dual chamber source of atoms will at least require: optical isolation, a method for transporting between the chambers, merging new atoms with existing atoms, and providing a stable trap during all of the cooling and transport operations. We present the simulation and results of transporting atoms with high efficiency, the optimization of magnetic trapping fields, and the transfer of atoms to an atom chip for cold atom interferometry.

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Date submitted: 22 Jan 2010 Electronic form version 1.4