

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Towards a Rb-Li Ring Interferometer G. EDWARD MARTI, ENRICO VOGT, ANTON OETTI, RYAN OLF, DAN STAMPER-KURN, Department of Physics, UC Berkeley — Our novel setup is a second-generation magnetic ring trap where we will employ specialized, micro-fabricated magnetic coils with 3D integration housed in a low magnetic field noise environment. These coils will generate very precise, smooth and tightly confining trapping fields. The diameter of the magnetic ring trap can be controlled and adjusted over a wide range from tens of microns to several millimeters. When employing the ring trap as a Sagnac-type atom interferometer with a pulsed source of thermal atoms, a large enclosed area is advantageous to increase the resolution of the gyroscope. However, we will decrease the radius to fill the ring with degenerate quantum gases and study the effects of a non-trivial topology on coherence and dynamics of Bose-Einstein condensates. We will load the ring trap with both rubidium and lithium atoms, which will allow us to explore diverse regimes of matterwave interferometry with bosonic and fermionic atoms of differing interaction strengths, including attractive and repulsive condensates.

G. Edward Marti
Department of Physics, UC Berkeley

Date submitted: 28 Jan 2009

Electronic form version 1.4