

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Quantum Degenerate Rubidium in an All-Optical Toroidal Trap

G. EDWARD MARTI, RYAN OLF, GABRIEL DUNN, DAN STAMPER-KURN,
UC Berkeley, Dept. of Physics — Quantum degenerate gases confined in a toroidal potential show persistent currents and other transport phenomena relating to coherent, unrestricted flow around the waveguide. Vortex states are particularly interesting in such traps because multiply-charged states are topologically stable, unlike in a simply connected condensate. Much as a SQUID attains high magnetic field sensitivity, atomic configurations containing vortices may allow for accurate, absolute rotation sensing. We report on the status of our all-optical toroidal trap for Bose-condensed rubidium-87. We will discuss techniques to generate angular momentum in the condensate as well as future prospects with spinor gases and quantum degenerate lithium.

G. Edward Marti
UC Berkeley, Dept. of Physics

Date submitted: 04 Feb 2011

Electronic form version 1.4