Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Measurement of atomic g factor ratios using laser cooled atoms[1]

IAIN CHAN, SCOTT BEATTIE, A. KUMARAKRISHNAN, Dept. of Physics and Astronomy, York University — We have used pulsed laser excitation to create a spatially periodic coherence grating between adjacent magnetic sublevels of the ground state in a cloud of trapped Rb atoms. The light scattered from the grating exhibits Larmor oscillations in the presence of a magnetic field with the frequency defined by the energy level splitting between magnetic sublevels. We describe the progress in our measurements of the atomic g factor ratio using the F=3 to F=4 transition in ^{85}Rb and the F=2 to F=3 in ^{87}Rb. The current level of precision is $\sim$25 ppm achieved by acquiring data for about four hours. We describe studies of systematic effects due to fluctuating ambient magnetic fields and AC Stark shifts with the goal of achieving a precision of less than 1 ppm.

[1]Work supported by CFI, OIT, NSERC, PRO and York University

A. Kumarakrishnan
Dept. of Physics and Astronomy, York University

Date submitted: 13 Mar 2006 Electronic form version 1.4