Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Measurement of the magnetic dipole moment of the Cs $6s^2S_{1/2} \rightarrow 7s^2S_{1/2}$ transition using two-pathway coherent control[1] DIONYSIOS ANTYPAS, Department of Physics, Purdue University, West Lafayette, IN 47907, DANIEL S. ELLIOTT, School of Electrical and Computer Engineering and Department of Physics, Purdue University, West Lafayette, IN 47907 — We present results of our laboratory measurements of the magnetic dipole transition moment for the $6s^2S_{1/2} \rightarrow 7s^2S_{1/2}$ transition in atomic Cesium. Our experimental scheme is based on a novel two-pathway coherent control scheme, in which two coherent laser fields, one the second harmonic of the other, are employed to excite three distinct optical interactions. Observations of the interference between these transitions allow a determination of the transition moment M_1. The use of two laser fields provides a decreased sensitivity to systematic errors, compared to other single-beam experiments on weak transition moments. Our measurement is in good agreement with, but of higher precision than, previous measurements, and serves as a benchmark of our technique and apparatus. With this system, we are working towards a new measurement on the Parity-Violation effect on the same transition.

[1]Supported by NSF through Grant No. PHY-0970041.

Dionysios Antypas
Department of Physics, Purdue University, West Lafayette, IN 47907

Date submitted: 30 Jan 2013 Electronic form version 1.4