Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

**Experimental Evaluation of Chip-scale Atomic Magnetometer Sensitivity** JIAYAN DAI, University of Colorado at Boulder and National Institute of Standards and Technology, ETHAN PRATT, SVENJA KNAPPE, JOHN KITCHING, National Institute of Standards and Technology — We evaluate the performance of spin-exchange relaxation free magnetometry in a $1mm$ thick microfabricated vapor cell experimentally and compare it with theoretical predictions at the $5\frac{fT}{\sqrt{Hz}}$ sensitivity level. The magnetometer is operated by monitoring the polarization rotation of a linearly-polarized probe beam that traverses the cell perpendicular to a circularly-polarized pump beam. Specifically, we investigate the contribution of frequency and amplitude noise of the pump laser to the magnetometer noise.

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Date submitted: 24 Jan 2013 Electronic form version 1.4