

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Spatial dependence of polarization in optically-pumped Rb vapor cells JOAN DREILING, University of Nebraska, Lincoln, ERIC NORRGARD, DALE TUPA, TIMOTHY GAY — In optical-pumping of alkali-metal vapors, the polarization of the atoms is typically determined by probing along the entire length of the pumping beam, resulting in an averaged value of longitudinal polarization. Unfortunately, these measurements do not give any information about spatial variations of the polarization along the pump beam's propagation distance. Using a probe beam oriented perpendicular to the pumping beam, we have demonstrated a heuristic method for determining the polarization in a column transverse to the pump beam's axis, allowing us to map the polarization in a rectangular Rb vapor cell. The limits of the accuracy of this method are discussed, and a comparison is made with previously demonstrated techniques for polarization mapping [1].

[1] A.R. Young et al. Appl. Phys. Lett. 70 3081 (1997).

Joan Dreiling
University of Nebraska, Lincoln

Date submitted: 07 Feb 2011

Electronic form version 1.4