

Abstract Submitted  
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**Rubidium Optical Pumping for an Electron Spin Filter**<sup>1</sup> ERIC NORRGARD, University of Nebraska — Our group is designing a novel polarized electron source based on spin exchange between an incident beam of electrons and an optically-pumped rubidium vapor target [1,2]. An overview of the spin filter design will be provided. I will then discuss optical pumping of rubidium and techniques for measuring spin polarization. An anomalous Rb polarization reversal detected when varying the wavelength of a pump laser with a spectral width of about 6 percent of the absorption profile of the Rb D2 transition width over the absorption profile will be examined. In the rubidium electron spin filter, viable spin exchange is thought to occur in the immediate vicinity of the exit aperture of the optical pumping region. Therefore, optical techniques for mapping the spatial dependence of a pumped Rb sample will be discussed, and measurements of Rb polarization throughout the optically-pump region will be presented.

[1] H. Batelaan *et al.*, Phys. Rev. Lett., **82**, 4216 (1999).

[2] M.A. Rosenberry, J.P. Reyes, D. Tupa, T.J. Gay Phys. Rev. A **75**, 023401 (2007).

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