Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

An Attempt to Observe Mott Scattering Optically in Krypton.[1]
J.W. MASEBERG, T.J. GAY, University of Nebraska — We present recent measurements of the relative Stokes parameters for the 811 nm Kr $(4p^5 5p)[5/2]\ ^3D_3 \rightarrow (4p^5 5s)[3/2]\ ^3P_2$ transition excited by polarized electron impact. Of particular interest is the spin-normalized linear polarization fraction P_2/P_e. Because the upper excited state is well *LS*-coupled, a near-threshold observable non-zero value of P_2 implies spin-orbit coupling between the target and continuum electron (an optical analog of Mott scattering) [1]. This work is a continuation of a previous paper wherein a cascade free measured P_2/P_e of 0.028(26) is compared to a theoretical 31-state Breit-Pauli R-matrix calculation which predicts a value of 0.032 [2]. Thus our earlier data is consistent with both the theory and zero. Our current effort is to increase the precision of these measurements.

[1] N. Anderson and K. Bartschat, *Polarization, Alignment, and Orientation in Atomic Collisions*, (Springer-Verlag, New York, 2001).
[2] B.G. Birdsey *et al.*, Phys. Rev. A **60**, 1046 (1999).

[1]Supported by NSF Grant PHY-0354946.

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Date submitted: 05 Feb 2007 Electronic form version 1.4