

Abstract Submitted
for the DAMOP17 Meeting of
The American Physical Society

Spin entanglement in elastic electron scattering from quasi-one electron atoms.¹ SAMANTHA FONSECA DOS SANTOS, KLAUS BARTSCHAT, Drake University — We have extended our work on e-Li collisions [1] to investigate low-energy elastic electron collisions with atomic hydrogen and other alkali targets (Na,K,Rb). These systems have been suggested for the possibility of continuously varying the degree of entanglement between the elastically scattered projectile and the valence electron [2,3]. In order to estimate how well such a scheme may work in practice, we carried out overview calculations for energies between 0 and 10 eV and the full range of scattering angles $0^\circ - 180^\circ$. In addition to the relative exchange asymmetry parameter that characterizes the entanglement, we present the differential cross section in order to estimate whether the count rates in the most interesting energy-angle regimes are sufficient to make such experiments feasible in practice. [1] K. Bartschat and S. Fonseca dos Santos, arXiv:1611.06180. [2] K. Blum and B. Lohmann, Phys. Rev. Lett. **116** (2016) 033201. [3] B. Lohmann, K. Blum, and B. Langer, Phys. Rev. A **94** (2016) 032331.

¹Work supported by the NSF under PHY-1403245.

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Date submitted: 24 Jan 2017

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