

Abstract Submitted
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Spin entanglement in elastic electron scattering from lithium atoms.¹ KLAUS BARTSCHAT, SAMANTHA FONSECA DOS SANTOS, Drake University — In two recent papers [1,2], the possibility of continuously varying the degree of entanglement between an elastically scattered electron and the valence electron of an alkali target was discussed. In order to estimate how well such a scheme may work in practice, we present results for elastic electron scattering from lithium in the energy regime of 1–5 eV and the full range of scattering angles $0^\circ - 180^\circ$. The most promising regime for Bell-correlations in this particular collision system are energies between about 1.5 eV and 3.0 eV, in an angular range around $110^\circ \pm 10^\circ$. In addition to the relative exchange asymmetry parameter, we present the differential cross section that is important when estimating the count rate and hence the feasibility of experiments using this system. [1] K. Blum and B. Lohmann, Phys. Rev. Lett. **116** (2016) 033201. [2] B. Lohmann, K. Blum, and B. Langer, Phys. Rev. A **94** (2016) 032331.

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