

Abstract Submitted
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Effect of Exchange Distortion on Spin Polarized Electron-Xenon Scattering Z. STEGEN, D.H. MADISON, University of Missouri-Rolla, H. SAHA, University of Central Florida, K. BARTSCHAT, Drake University, R. PANAJOTOVIC, S. BELLM, J. LOWER, ERICH WEIGOLD, Australia National University

— It has been known for some time that the possibility for exchange between continuum electrons and bound electrons (normally called exchange distortion) can have an important effect on the outcome of electron-atom collisions particularly if the continuum electron is spin polarized. The proper way to treat this exchange would be through a Hartree-Fock or R-matrix calculation for the continuum electron wavefunction. Such calculations are sufficiently difficult that it has been common practice to use the Furness-McCarthy (FM) local potential approximation. Although the FM approximation normally gives improved agreement between experiment and theory, there is good evidence which indicates that the FM approximation should not work. We will examine the accuracy of the FM approximation for ionization of xenon by spin polarized electron-scattering via comparing individual partial waves obtained from the Hartree-Fock method, the R-Matrix method and the FM approximation. The theoretical results will be compared with some new measurements of the spin asymmetry for electron-impact ionization of xenon from ANU.

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