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Elastic Electron Scattering from the 6P and 5D Levels of Ba JEFF HEIN, PETER ZETNER, University of Manitoba — Measurements of elastic electron scattering from excited atoms are relatively scarce and, hence, the ability to test theoretical descriptions of such a scattering process is rather limited. Here, we present experimental data for the differential cross section (DCS) and the P_3 Stokes parameter for elastic scattering from the 6P and 5D levels of Ba at collision energies of 10 and 20 eV. The P_3 parameter quantifies the dependence of elastic scattering on the orientation of the atomic target state. Oriented target states (5D and 6P) are produced using circularly polarized light to prepare the excited atoms. The present measurements extend the work of Trajmar et al.[1] undertaken with aligned Ba 6P atoms prepared by linear polarized laser light. Excellent agreement with convergent close coupling theory [2,3] has been found for the DCS. Significant orientation dependence of elastic scattering has been observed but agreement with theory is less satisfactory. 1. S. Trajmar et al. J.Phys.B:At.Mol.Opt.Phys. **32** 2801 (1999) 2. I. Bray et al. J.Phys.B:At.Mol.Opt.Phys. **35** R117 (2002) 3. D. Fursa Private communication (2006)

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