

Abstract Submitted  
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**Using Electron-Impact Ionization results to Understand Out-of-the-Scattering Plane Structure seen For Heavy Particle Impact**<sup>1</sup> M. FOSTER, J.L. PEACHER, M. SCHULZ, D.H. MADISON, University of Missouri - Rolla

— The ionization of atoms by electron or ion impact has historically concentrated on the scattering plane. The scattering plane is defined by the initial and final momentum vectors of the projectile. The assumption has been that all the important physical effects would be observed in the scattering plane. Previous work on ion impact ionization of helium showed that experiment and theory are in good agreement in the scattering plane and in poor agreement out-of-the-scattering plane for  $C^{6+}$  projectile ions. In this paper, we will show that the same out-of-plane effects can be observed for electron-impact ionization of magnesium. Since the proper quantum mechanical treatment for electron-impact ionization involves fewer approximations than heavy ion ionization, the electron results can be used to determine the physical effects causing the unexplained out-of-the-plane structure for heavy particle collisions. This process revealed that the out-of-plane structure was caused by very close collisions between the projectile and nucleus.

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