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Experimental and Theoretical study of the Fully Differential Cross Section both in and out of the Scattering Plane for Electron-Impact Ionization of Magnesium M. FOSTER, D.H. MADISON, J.L. PEACHER, A. WALTERS, University of Missouri - Rolla, R. VANBOEYEN, M. COPLAN, University of Maryland, Department of Physics, LABORATORY FOR ATOMIC, MOLECULAR AND OPTICAL RESEARCH COLLABORATION, UNIVERSITY OF MARYLAND, DEPARTMENT OF PHYSICS COLLABORATION — Most of the experimental and theoretical studies of electron- impact ionization of atoms, normally referred to as (e,2e), have concentrated on the scattering plane defined by the initial and final momentum vectors of the projectile. The assumption has been that all the important physical effects will be observable in the scattering plane. However, very recently it has been shown that, for C^{6+} -helium ionization, experiment and theory are in nice agreement in the scattering plane and in very bad agreement out of the scattering plane. This lack of agreement between experiment and theory has been explained in terms of higher order scattering effects between the projectile and ion which would never be seen in the scattering plane. In this paper we will examine electron-impact ionization of magnesium to see if similar higher order effects might be present here as well.

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