

Abstract Submitted
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Electron-impact Fully Differential Cross Sections of Helium for Simultaneous Excitation- Ionization M. FOSTER, D.H. MADISON, J.L. PEACHER, A.L. HARRIS, University of Missouri - Rolla, LABORATORY FOR ATOMIC, MOLECULAR AND OPTICAL RESEARCH TEAM — We have examined fully differential cross sections for electron- impact ionization of helium with simultaneous excitation of the atomic electron to either the 2s or 2p state. This process has attracted considerable attention due to the fact that second order effects are known to be very important and there have been several studies within the framework of the second Born approach which treats the projectile-atom interaction to second order. We will report results for a complete quantum mechanical four-body model known as the 6DW (six-distorted-wave) model. The 6DW model takes all two particle Coulomb interactions (six in total) into account exactly which means that all two-particle interactions are taken into account to all orders of perturbation theory. One of the advantages of this approach is that the importance of each two-particle subsystem can be independently studied. 6DW results will be compared with experimental data and other theoretical approaches.

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