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Proton Impact Transfer-Ionization of Helium D.H. MADISON, M. FOSTER, J.L. PEACHER, University of Missouri - Rolla, M. SCHOEFFLER, R. DOERNER, Institut fur Kernphysik, Universitat Frankfurt — For the first time experimentally all the final state particles in the process of transfer ionization are measured in triple coincidence**.** Transfer-ionization is the process in which one electron is transferred to a fast proton and the other electron is ionized into the continuum. In this paper, we will present fully differential transfer-ionization cross section (FDTICS) for 630 keV p + He $\rightarrow$ H^0 + He^{2+} + e^-. In order to fully understand the electronic correlation in atoms such as helium, we will present 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 on equal footing. The 6DW approach also allows for the probing of high level electronic correlation effects in atoms such as helium. The atomic correlation effects can be studied in great detail through various types of (e, 2e) and ion impact collisions. The first of the impact collisions that will be examined is referred to as transfer-ionization. Preliminary results will be reported for both transfer-ionization of helium.

Lewis Foster
University of Missouri - Rolla

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