Abstract Submitted
for the GEC06 Meeting of
The American Physical Society

Effects of Electron Exchange in Fully Differential Cross Sections for Charged Particle Ionization[1] A.L. HARRIS, M. FOSTER, J.L. PEACHER, D.H. MADISON, University of Missouri-Rolla, H.P. SAHA, University of Central Florida, K. BARTSCHAT, Drake University — Three dimensional fully differential cross sections (FDCS) for charged particle impact ionization of helium are examined. Previously, for heavy particle impact, the Three Distorted Wave (3DW) model had yielded good agreement with experiment in the scattering plane, but poor agreement outside the scattering plane. In particular, 3DW calculations for the perpendicular plane predicted a small flux of electrons with almost no structure, while experiment showed a much higher flux of electrons with structure. To better treat the ejected electron, the 3DW-Hartree Fock (3DW-HF) and 3DW-R Matrix (3DW-RM) theories are introduced. The primary improvement of these two calculations over a standard distorted wave treatment is that exchange between the continuum and bound electrons is treated properly. Results for ionization of helium by impact of both electrons and C^{6+} ions will be presented.

[1]Work Supported by NSF

Allison Harris
University of Missouri-Rolla

Date submitted: 16 Jun 2006 Electronic form version 1.4