Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Effects of Polarization and Electron Correlation on the Electron Impact ionization of Helium atom HARIPADA SAHA, University of Central Florida, Orlando — We have extended the multi-configuration Hartree-Fock (MCHF) method [1] for electron impact ionization of atoms to investigate the effects of both polarization [2] and electron correlation of the target in the initial state on the electron impact ionization of atoms. To determine the importance of electron correlation between the two outgoing continuum electrons in the final state we have performed calculations in the HF and the vatiationally determined screening potential approximations [3-5]. We will report results of our calculation of triple differential cross sections for electron impact ionization of helium atom at excess energies ≤ 4 eV for the coplanar geometry for equal and unequal energy sharing of the two outgoing electrons. We will compare our results with the available experimental measurements and other theoretical calculations. [1] H.P. Saha (unpublished], [2] H.P. Saha, Phys. Rev. Lett. **65**, 2003 (1990), [3] M.R.H. Rudge and Seaton, Proc. R. Soc., London, Ser. A**283**, 262 (1965), [4] R.K. Peterkop, Theory of ionization of atoms by electron impact (Colorado Associated University Press, Boulder, (1977)), pp. 128 and 129. [5] Cheng Pan and Anthony F. Starace, Phys. Rev. Lett. **67** , 185 (1991); Phys. Rev. A **45** , 4588 (1992).

Haripada Saha
University of Central Florida, Orlando

Date submitted: 15 Jan 2009 Electronic form version 1.4