

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Theoretical and Experimental Triple Differential Cross Sections for Electron Impact Ionization of Methane¹ HAARI CH, Missouri S and T, SHENYUE XU, Max-Planck-Institute for Nuclear Physics, CHUANGANG NING, Tsinghua University, DON MADISON, Missouri S and T, XUEGUANG REN, THOMAS PFLUEGER, ARNE SENFTLEBEN, ALEXANDER DORN, JOACHIM ULLRICH, Max-Planck-Institute for Nuclear Physics — Triple differential cross sections have been calculated and measured for 54 eV electron-impact ionization of the highest occupied molecular orbital (HOMO) $1t_2$ state of methane (CH_4). Results will be presented both for the scattering plane and a plane in which the ejected electron is perpendicular to the incident beam direction. A systematic comparison between theoretical DWBA (distorted wave Born approximation), M3DW (molecular 3-body distorted wave), and experiment will be given for ejected electron energies ranging between 5 eV to 20 eV and scattered projectile angles ranging between 20 degrees and 55 degrees. In the perpendicular plane, better qualitative agreement between experiment and theory was found for the smaller projectile scattering angles and higher ejected electron energies. In the scattering plane on the other hand, agreement between theory and experiment tended to be better for the lower ejected electron energies.

¹This work was supported by the National Science Foundation under Grant. No. PHY-0757749

Don Madison
Missouri S and T

Date submitted: 04 Feb 2011

Electronic form version 1.4