Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

**Double Ionization of Hydrogen Molecule by Intense Attosecond Laser Pulses**[1] TECK-GHEE LEE, M.S. PINDZOLA, F. ROBICHEAUX, Physics Department, Auburn University, Auburn, AL 36849 — Time-dependent close-coupling calculations within the fixed nuclei approximation are carried out for the double ionization of $H_2$ induced by an intense attosecond laser pulse at a photon energy of 40 eV. We consider here the two-photon absorption processes and examine the response of the ejected electrons, particularly the single- and the double-electron energy distributions, to linearly and circularly polarized pulse at laser intensities between $10^{15}$ W/cm$^2$ and $10^{16}$ W/cm$^2$. We find that, for both the linearly and circularly polarized pulses, sequential peaks and non-sequential wells appear in both the single- and double-electron energy distributions that are generally akin to the analogous two electrons photoemission processes in He atom driven by a linearly polarized intense attosecond pulse [1,2]. Furthermore, a clear signature of the sequential double-electron above threshold ionization process can be seen in the single- and double-electron energy distributions when a linearly polarized pulse is being used.

[1] I. F. Barna, J. Wang, and J. Burgdorfer, Phys. Rev. A. 73, 023402 (2006)
[2] T-G Lee, M. S. Pindzola and F. Robicheaux, Phys. Rev. A. 79, 053420 (2009)

[1]This work was supported in part by a grant from the US National Science Foundation and DOE.

Teck-Ghee Lee
Physics Department, Auburn University, Auburn, AL

Date submitted: 22 Jan 2010 Electronic form version 1.4