Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

The effect of position within a laser focus on strong-field ionization JAY PAQUETTE, JAN CHALOUPKA, College of William & Mary — Atoms in an intense laser field can become doubly ionized through a direct process known as rescattering, where a single electron is liberated through tunnel ionization and is driven back to the ion core by the laser field, leading to impact ionization and release of a second electron. Not surprisingly, the trajectory of the first liberated electron in the field has a strong influence on the probability of release of a second electron. Using completely classical 3-D simulations, we have studied the effects of realistic focal conditions on the single and double ionization yields from a model two-electron atom. In particular, variations in the longitudinal electric field (E_z) throughout the focal volume can lead to interesting spatially dependent effects, due to an effective elliptical polarization even for a linearly polarized driving field. We will present our latest results from the simulation and discuss the likelihood of observing this effect experimentally.

Jay Paquette
College of William & Mary

Date submitted: 02 Feb 2008 Electronic form version 1.4