

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Correlated Electron Pairs and Recollision Excitation in Double Ionization¹ STAN HAAN, ZACH SMITH, JOHN VANDYKE, Calvin College — In strong-field (10^{14} - 10^{15} W/cm²) double ionization of atoms, the production of correlated electron pairs is widely associated with recollision ionization. In this talk we will consider recollision excitation with ionization of the excited electron during the next field maximum. We employ 3d classical ensembles and 1d quantum models to show the important role this process plays in producing correlated electron pairs. We also consider how this process, when combined with backscattering off the nucleus, can lead to electrons with longitudinal momentum exceeding $2\sqrt{U_p}$, where U_p is the ponderomotive energy, such as were reported in [1]. [1] J.S. Parker, *et al.*, Phys. Rev. Lett. **96**, 133001 (2006); A. Staudte, *et al.*, *ibid.* **99**, 263002 (2007); A. Rudenko, *et al.*, *ibid.* **99**, 263003 (2007).

¹This work supported by the National Science Foundation through grant No. 0653526

Stanley Haan
Calvin College

Date submitted: 01 Feb 2008

Electronic form version 1.4