Classical Ensemble Studies of Double Ionization at 390 nm\textsuperscript{1} S.L. HAAN, Z.S. SMITH, Calvin College — An ensemble of 400,000 classical 3d atoms is employed to investigate double ionization of helium for laser wavelength 390 nm and intensity 1.1PW/cm\textsuperscript{2}. It has previously been shown by Parker et al. \cite{1} that electrons of energy above 2U\textsubscript{p} are produced under these conditions. Such electrons are also produced in the classical model. Trajectories which lead to energy above 2U\textsubscript{p} are analyzed and shown to have a median time delay of 0.56 cycle between recollision and final ionization, with over 99\% having time delay of at least 0.16 cycle. Two characteristic recollision sequences are presented in detail, one of which can be described as excitation-backscatter-escape and the other as recapture ionization with prompt nuclear scattering. It is shown how the nuclear and laser forces combine in each case to give an electron—usually the struck electron—final energy above the usual 2U\textsubscript{p} cap. \cite{1} J. S. Parker, \textit{et al.}, Phys. Rev. Lett. \textbf{96}, 133001 (2006).

\textsuperscript{1}Supported by the National Science Foundation under Grants No. 0355035 and 0653526 to Calvin College

Stan Haan
Calvin College

Date submitted: 01 Feb 2007

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