

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Multi-Electron Effects in Charge Asymmetric Molecules Induced by Asymmetric Laser Fields VINCENT TAGLIAMONTI, HUI CHEN, GEORGE GIBSON, University of Connecticut — Using a 45 fs pump pulse at 800 nm, a wavepacket is created in a charge asymmetric dissociation channel of Iodine, $I_2^{2+} \rightarrow I^{2+} + I^{0+}$ (2,0). As the molecule dissociates, a two-color ($1\omega 2\omega$) probe pulse is used to study the dynamics as a function of internuclear separation R . We find a critical region of R in which there is spatially asymmetric enhanced ionization of the (2,0) channel to a counter-intuitive (1,2) channel. In this region the I^{0+} is ionized such that one electron is released to the continuum and another is transferred to the I^{2+} resulting in $I^{0+} \rightarrow I^{2+}$ and $I^{2+} \rightarrow I^{1+}$. At larger R , the ionization is consistent with simple one-electron ionization in a double-well where $I^{0+} \rightarrow I^{1+}$. We find qualitative agreement between simulations and experiment further highlighting the importance of multi-electron effects in the strong-field ionization of molecules.

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Date submitted: 09 Jan 2013

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