Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Multiple ionization bursts from hydrogen molecular ion within a half-cycle of intense laser pulses[1] NORIO TAKEMOTO, JILA, University of Colorado, Boulder, CO 80309-0440, ANDREAS BECKER, JILA and Department of Physics, University of Colorado, Boulder, CO 80309-0440 — Ionization dynamics of hydrogen molecular ion in intense near-infrared laser light is investigated on the attosecond time scale. In contrast to the quasi-static tunnel ionization picture which predicts that the ionization takes place predominantly around the peaks of the electric field, results of our numerical simulations indicate that there can be multiple bursts of ionization within a half cycle of the field oscillation. We show that these ionization bursts coincide with transient electron localization at one of the nuclei. By using a perturbation expansion of the Floquet states of a two state model, a simple formula has been derived to predict the instants of the electron localization and the ionization bursts from the vector potential of the laser light, the transition dipole between the ground and first-excited states, and the mixing angle of the two Floquet states.

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Date submitted: 21 Jan 2010 Electronic form version 1.4