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Electron localization and nonadiabatic dynamics in laser driven H_3^{2+1} DANIEL WEFLEN, JILA and Department of Physics, University of Colorado Boulder, ANTONIO PICON, Argonne National Laboratory, AGNIESZKA JARON-BECKER, ANDREAS BECKER, JILA and Department of Physics, University of Colorado Boulder — We study the laser driven dynamics of molecules with pairs of tightly coupled, nearly degenerate energy eigenstates using H_3^{2+} and other single-active-electron molecules as model systems. In H_2^+, with nuclei fixed 7 a.u. apart, the dynamics of two nearly-degenerate energy eigenstates (the ground and first excited state) cause transient localization of the electron on each nucleus, which in turn results in multiple ionization bursts per cycle [1-2]. We present the results of similar calculations. For example, the first two excited states of H_3^{2+} are also nearly-degenerate and closely coupled. Specifically, we reproduce the transient localization of the electron on the outer nuclei found in H_2^+, and study the effect of these states on charge resonance enhanced ionization (CREI).

[1] N. Takemoto and A. Becker, Phys. Rev. Lett **105**, 203004 (2010)
[2] N. Takemoto and A. Becker, Phys. Rev. A **84**, 023401 (2011)

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