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Spectroscopic signatures of laser-induced non-adiabatic electron dynamics in H_2^+ MICHELLE MILLER, AGNIESZKA JARON-BECKER, ANDREAS BECKER, JILA and Department of Physics, University of Colorado, Boulder, CO — In this theoretical investigation of molecular high-order harmonic generation, we identify a new mechanism resulting in a spectral minimum and non-odd harmonic generation when H_2^+ is driven at extended internuclear distances (≈ 7.0 au) by a mid-infrared laser source ($1.4 \mu\text{m} - 1.8 \mu\text{m}$) of moderate intensity. Manifestation of this minimum is connected to the sub-half-field cycle transient localization of the electron upon alternating nuclear centers. We establish the sensitivity of this feature to driving field parameters, eliminating or increasing the number of minima by reducing the driving wavelength or increasing the laser intensity, respectively. The robustness of the minimum feature to distributions of laser field intensities, internuclear distances and carrier envelope phase is also demonstrated.

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