

Abstract Submitted
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Nonadiabatic dynamics in strong field molecular ionization with few cycle laser pulses¹ VINCENT TAGLIAMONTI, PÉTER SÁNDOR, ARTHUR ZHAO, Stony Brook University, Stony Brook, NY, TAMÁS ROZGONYI, Institute of Materials and Environmental Chemistry of the H.A.S, Budapest, PHILIPP MARQUETAND, University of Vienna, Institute of Theoretical Chemistry, Wien, Austria, THOMAS WEINACHT, Stony Brook University, Stony Brook, NY — We study strong field ionization in several small molecules using few (4-10) cycle laser pulses. Using a supercontinuum light source, we are able to tune the laser wavelength (photon energy) over ~ 200 nm (500 meV). We measure the photoelectron spectrum as a function of laser intensity, frequency, and bandwidth and demonstrate some control over the final state of the molecule in the ionization process. We find that intermediate multiphoton resonances and coupled electron nuclear dynamics result in ionization to different ionic continua. Interestingly, not only do these resonances strongly influence the final states produced in the cation, they can also dominate the PES whether the bandwidth is broad or narrow.

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