Abstract Submitted
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Tracing ultrafast molecular transitions in C_2H_4 using twocolor XUV pump XUV probe[1] D. RAY, F.P. STURM, T.W. WRIGHT, N. SHIVARAM, I. BOCHAROVA, A. BELKACEM, TH. WEBER, Lawrence Berkeley National Laboratory — We present the study of the ultrafast energy transfer near a conical intersection in C_2H_4, using an extreme ultraviolet (XUV) pump XUV probe scheme. The high harmonic pulses, which have sufficiently high flux to split into both pump and probe arms, are generated in a noble gas by IR pulses from our state of the art 30 mJ, 50 Hz laser system. The pulses are overlapped with the supersonic jet in our Momentum Imaging for TimE Resolved Studies (MISTERS) setup. The C_2H_4 is pumped by the 13.5 eV XUV pulses (9^{th} harmonic) to populate the excited valence state $(\pi^*)^2$ orbitals. The double ionization of these molecular cations from this transient state is triggered by the 15^{th} harmonic (22.5 eV) as the probe. The ionic fragments are imaged with the reaction microscope. The MISTERS setup allows us to do an ion-ion coincidence detection in full 3D momentum space. The Kinetic Energy Release (KER) distributions are studied as a function of pump probe delay to trace the evolution of the transient states.

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