

Abstract Submitted
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Time Resolved 3D momentum imaging of Molecular Dynamics with VUV pulse pairs MAYA FABRIKANT, KIRK LARSEN, TAHIYAT RAHMAN, DANIEL SLAUGHTER, THORSTEN WEBER, Lawrence Berkeley Natl Lab — We report progress on an apparatus for running UV-VUV pump-probe experiments with Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS) for investigating ultrafast dynamics in polyatomic molecules upon VUV excitation. We loosely focus a high-power 400 nm pulsed laser into an argon filled 10 cm long gas cell to create a high-flux, coherent third harmonic (133nm) photon beam (10^9 photons/shot) via High Harmonic Generation (HHG). A custom, in-vacuum split-mirror interferometer creates VUV - VUV/UV pulse pairs for pump-probe studies with a relative delay range up to several picoseconds, and 170 as resolution. In the experimental end-station, the beam is back-focused into a supersonic jet by a spherical mirror at the exit of a COLTRIMS spectrometer, which measures the 3D momenta of charged particles that are produced.

Maya Fabrikant
Lawrence Berkeley Natl Lab

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