

Abstract Submitted  
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**Femtosecond Dynamics and Multiphoton Ionization driven with an Intense High Order Harmonic Source** JEROEN VAN TILBORG, TOM ALLISON, TRAVIS WRIGHT, MARC HERTLEIN, ROGER FALCONE, YANWEI LIU, Lawrence Berkeley National Laboratory, HAMED MERDJI, CEA Saclay, ALI BELKACEM, Lawrence Berkeley National Laboratory — We have constructed a high intensity high order harmonic source at the Lawrence Berkeley National Lab delivering  $\sim 10^9$  extreme ultraviolet photons/shot on a gas target and used it to observe multiphoton ionization and conduct femtosecond EUV-pump IR-probe experiments. Following excitation by 20-25 eV photons, we observed that the excited ethylene cation  $(\text{H}_2\text{C}-\text{CH}_2)^+$  experienced isomerization to the ethylidene configuration  $(\text{HC}-\text{CH}_3)^+$  in  $50 \pm 25$  fs, followed by an  $\text{H}_2$  stretch motion. Experimental data and analysis from several experiments as well as a future outlook of our efforts will be presented.

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