

Abstract Submitted  
for the DAMOP15 Meeting of  
The American Physical Society

**Proposal for direct measurement of intense-field induced polarization in the continuum on the attosecond time scale using transient absorption**<sup>1</sup> C. WILLIAM MCCURDY, University of California, Davis and Lawrence Berkeley Natl Lab, DANIEL HAXTON, XUAN LI, Lawrence Berkeley Natl Lab — A procedure is proposed for using transient absorption spectroscopy above the ionization threshold to measure the polarization of the continuum induced by an intense optical pulse. In this way transient absorption measurement can be used to probe sub-femtosecond intense field dynamics in atoms and molecules and extract the high frequency polarization that plays a central role in high harmonic generation. The method is based on a robust approximation to the dependence of these spectra on time-delay between an attosecond XUV probe pulse and an intense pump pulse that is verified over a wide range of intensities and time delays by all-electrons-active calculations using the Multiconfiguration Time-Dependent Hartree Fock method. To demonstrate the extraction of the field-induced polarization, we study the transient absorption spectrum of atomic Neon.

<sup>1</sup>Work at LBNL supported by USDOE, Office of Basic Energy Sciences, Chemical Sciences, Geosciences, and Biosciences Division, and work at UC Davis supported by USDOE grant No. DESC0007182

C. McCurdy  
Lawrence Berkeley Natl Lab

Date submitted: 30 Jan 2015

Electronic form version 1.4