

Abstract Submitted  
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**Diagnosis of a High Harmonic Beam Using COLTRIMS** PRE-DRAG RANITOVIC, ALI ALNASER, CHAKRA MAHARJAN, BING SHAN, ZENGHU CHANG, IGOR LITVINYUK, LEWIS COCKE, Kansas State University — We are developing an apparatus for performing time-resolved pump-probe photoelectron/photoion momentum spectroscopy experiments. The pump will be a short infrared pulse; the probe will be a soft x-ray generated by harmonic generation. The higher harmonics are generated through focusing 50 fs, 1 mJ Ti:sapphire laser pulses into argon and neon gases. We detect and measure in coincidence the momenta of the electrons and ions generated by the ionization of a diffusive argon jet gas by the harmonic beam. We use the COLTRIMS (COLd Target Recoil Ion Momentum Spectroscopy) technique to measure the momenta. The spectrometer electric field separates ions and electrons which are detected by time- and position-sensitive detectors. We measure the orders of the harmonics, the intensity of the each harmonic, the x-ray beam angular divergence and the total photon flux from the momenta and yields of the photoelectrons. The characteristics of the harmonic beam will be presented and discussed. This work is supported by Chemical Sciences, Geosciences and Biosciences Division, Office of Basics Energy Sciences, Office of Science, U.S. Department of Energy.

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