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Electronic Population Transfer via Impulsive Stimulated X-ray Raman Scattering[1] JORDAN O'NEAL, Department of Physics, Stanford University; Stanford PULSE Institute, SLAC National Accelerator Laboratory, RAZIB OBAID, Department of Physics, University of Connecuit, ELIO CHAMPENOIS, Stanford PULSE Institute, SLAC National Accelerator Laboratory, CHRISTOPH BOSTEDT, Argonne National Lab, JAMES CRYAN, Stanford PULSE Institute, SLAC National Accelerator Laboratory; Linac Coherent Light Source, SLAC National Accelerator Laboratory, LS05 COLLABORATION COLLABORATION — Impulsive stimulated X-ray Raman scattering (impulsive SXRS) has been proposed as a technique to prepare an electronic wavepacket in a molecular system. However, to leverage this method, impulsive SXRS must be experimentally established. To this end, we performed an experiment at the Linac Coherent Light Source (LCLS) in NO pumped by broad bandwidth (˜6 eV) attosecond X-ray pulses generated via the Enhanced SASE technique. Excited state neutral molecules were probed with a 266 nm UV laser pulse. Using a time-of-flight ion spectrometer we found increased NO+ production of ˜5% with a delayed probe laser relative to the inverse arrangement. This signal increases with pulse energy and only appears near the 1s->π^* resonance.

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