Abstract Submitted
for the SES19 Meeting of
The American Physical Society

Control of the Photoemission Process at the Attosecond Time-Scale BRADY UNZICKER, SPENSER BURROWS, BREE TATUM, JOHN VAUGHAN, TREVOR HART, DAVIS ARTHUR, GUILLAUME LAURENT, Auburn University — The generation of high-harmonics of an intense IR field is a nonlinear process capable of producing attosecond pulses comprised of a comb of odd-harmonics reaching into the extreme ultraviolet (XUV). By adding a low-intensity second harmonic to the fundamental infrared driving field, both odd and even harmonics of the fundamental field can be generated, which in turn leads to the generation of attosecond pulses with tunable temporal profiles. In this work, we have employed such a tunability to control the photoemission process from atoms. Attosecond pulses with well-defined temporal profiles were used to ionize an atomic target in the presence of an IR field. An asymmetric electron emission resulting from the interference between one- and two-photon quantum transitions is produced. By controlling the intensity ratio and phase delay between the fundamental field and its second harmonic, we show that the direction of emitted photoelectrons can be varied along the polarization axis of the driving field.

Brady Unzicker
Auburn University

Date submitted: 30 Sep 2019 Electronic form version 1.4