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Trajectory selective study of photoelectrons in strong fields[1] ANDREW PIPER, DIETRICH KIESEWETTER, The Ohio State University, JENS BAEKHOJ, KENNETH SCHAFER, Louisiana State University, PIERRE AGOSTINI, LOUIS DIMAURO, The Ohio State University — The recollision of an electron photoionized by a high intensity laser pulse is commonly understood using the semi-classical model. This model explains a variety of strong field phenomena such as high harmonic generation, the production of high energy electrons and non-sequential double ionization. In the first step, the laser tunnel ionizes the atom and the released electron enters a continuum state. Then, the electron is accelerated by the light field. Finally, the electron can recollide with the parent ion. We plan to investigate the last two steps in the recollision process by modifying the first, photoionizing atoms with an XUV attosecond pulse train (APT) in the presence of a phase locked IR field. The APT will allow us to resolve the dynamics of individual trajectories, by seeding the photoionization process. This experiment will serve as a fundamental study of electron correlations in the strong field limit. We report initial measurements demonstrating the viability of this approach and the design of a novel interferometer to carry out further investigations.

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