

Abstract Submitted
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Probing Floquet State Dynamics of a Strong Field Dressed He Atom Using Attosecond Pulse Trains NIRANJAN SHIVARAM, HENRY TIMMERS, XIAO-MIN TONG, University of Tsukuba, ARVINDER SANDHU, Department of Physics, University of Arizona — Atoms in a strong laser field can be well described by Floquet states with different Fourier components. We perform an experiment to investigate the quantum interference between Fourier components of Floquet states in the He atom using attosecond extreme-ultraviolet (XUV) and strong infra-red (IR) laser pulses. We use a configuration with XUV and two IR pulses (probe and driver), with one of the IR pulses (driver) phase-locked to the XUV pulse train. We then measure the He⁺ yield as a function of time delay between the XUV and probe pulses. This configuration allows us to measure the transition between Floquet states due to change in probe IR intensity as the delay is varied. In addition we can also measure the relative phase between the XUV pulse and the driver IR which generates the XUV pulse. Finally, we show that by tuning the energy of the high harmonics in the XUV pulse we can control ionization using this quantum interference process.

Niranjan Shivaram
Department of Physics, University of Arizona

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