

Abstract Submitted
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Attosecond Time-Resolved Spectroscopy of Electron Dynamics in Atoms, Molecules, and Solids MICHAEL CHINI, Univ of Central Florida — Attosecond light pulses hold the promise for real-time measurement and control on the natural timescale of electron motion, allowing researchers to “film” the first steps of photo-induced chemical reactions and opening the door to laser-steered electronics at light frequencies. However, the experimental application of attosecond pulses, particularly to targets more complex than noble gas atoms, has proven challenging. In this talk, I will discuss the application of attosecond pulses using a relatively new technique – attosecond transient absorption spectroscopy (ATAS) – to probe the dynamics of electrons subjected to a strong laser field. Specifically, I will present time-domain ATAS studies of electron-electron interactions in atoms and coupled electronic and vibrational motion in small molecules. Finally, I will describe how new ultrafast laser architectures based on parametric amplification are currently enabling the first attosecond studies in condensed matter systems.

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