Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Probing autoionization and AC Stark shift with attosecond transient absorption spectroscopy MICHAEL CHINI, University of Central Florida, HE WANG, CHANG-HUA ZHANG, FENG HE, SHOUYUAN CHEN, YAN CHENG, BAOZHEN ZHAO, Kansas State University, YI WU, University of Central Florida, UWE THUMM, Kansas State University, ZENGHU CHANG, University of Central Florida — The natural timescale for electronic motion in atoms and molecules is the atomic unit (1 a.u. = 24 as). Using synchronized isolated attosecond pulses from Double Optical Gating and intense few-cycle near-infrared lasers, we probe the autoionization process in argon atoms and the AC Stark shift in bound states of helium. In both cases, the infrared laser is used to modify the atomic states in a controlled manner and the probing attosecond pulse reveals dynamics evolving on both attosecond and femtosecond time scales. We experimentally demonstrate sub-laser-cycle dynamics in the AC stark shift for the first time.

Michael Chini
University of Central Florida

Date submitted: 04 Feb 2011 Electronic form version 1.4