Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Two-color probe of high harmonic generation from argon atoms
ZENGXIU ZHAO, JIANMIN YUAN, CHAO MENG, WENBO CHEN, National University of Defense Technology — Two-color control of high harmonic generation has been proven a powerful in situ tool to characterize the intrinsic chirp of attosecond bursts. The weak second harmonic pulse introduces a phase modulation of the strong field quantum processes, leading to the generation of even-order harmonic. We measure the yields of even-order harmonics from argon gases as a function of the phase delay between the fundamental and its second harmonic pulse. We found that the modulation of even-order harmonics exhibits a phase jump around the 28th harmonic (48eV), closely resembling the result from. However, we show by varying laser intensity that the phase jump is unlikely to be attributed to the switching from short to long trajectories of HHG near the cut-off. In addition, we demonstrate that the phase of jump depends on the driving laser wavelength. Single-active-electron simulation fails to reproduce the experimental observation. We therefore suspect that multielectron response comes into play for the two-color control of HHG from Argon. Preliminary analysis suggests that there exists competing pathways of HHG from inner orbitals, even for argon atoms whose interaction with strong laser fields is usually assumed well described by SAE approximation.

Zengxiu Zhao
No Company Provided

Date submitted: 11 Feb 2014 Electronic form version 1.4