Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Coherence and quasi-stable states in a strong infrared field[1]
CHANGCHUN ZHONG, FRANCIS ROBICHEAUX, Purdue Univ — We study the quasi-stability of UV-pulse-train-excited H atoms in a strong infrared (IR) laser as a function of the phase delay of the UV-pulse-train relative to the IR laser. The UV-pulse-train contains two frequency components. When the two components have frequencies separated by two IR photons, the population of surviving electrons is modulated by up to ten percent. When electrons are excited to right above or below the threshold, the survival probabilities have inverted phase delay dependence which can be explained classically. When the two frequencies are one IR-photon apart, the angular symmetry of the quasi-stable electrons is broken, and the asymmetry is also controlled by the phase delay. The asymmetrical distribution can be observed while the IR is on and smoothly evolves to a nonzero asymmetry that only weakly depends on the duration of the IR field.

[1]This work was supported by the U.S. Department of Energy, Office of Science, Basic Energy Sciences, under Award No. DE-SC0012193.

Changchun Zhong
Purdue Univ

Date submitted: 28 Jan 2016 Electronic form version 1.4