Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Strong field ionization tomography with two-color circularly polarized femtosecond laser fields MAITHREYI GOPALAKRISHNAN, CHRIS MANCUSO, DANIEL HICKSTEIN, PATRIK GRYCHTOL, RONNY KNUT, FRANKLIN DOLLAR, DMITRIY ZUSIN, CHRISTIAN GENTRY, EMRAH TURGUT, JENNIFER ELLIS, HENRY KAPTEYN, MARGARET MURNANE, JILA and Department of Physics, University of Colorado Boulder and NIST, OFER KFIR, OREN COHEN, Solid State Institute and Physics Department, Technion, AVNER FLEISCHER, Solid State Institute and Physics Department, Technion and Department of Physics and Optical Engineering, Ort Braude College, XIAO-MIN TONG, Division of Material Science, Faculty of Pure and Applied Science, University of Tsukuba, MING-CHANG CHEN, Institute of Photonics Technologies, National Tsing Hua University — Recent experiments using two-color circularly polarized laser fields have demonstrated that high-harmonic generation (HHG), a versatile tabletop source of extreme ultraviolet (EUV) light, can be now extended to from linear to circular polarization. Here we present the first experiments using these uniquely polarized light fields to study strong field ionization (SFI), which is the complementary process to HHG. Using a velocity map imaging photoelectron spectroscopy and tomographic reconstruction techniques, we identify low-energy structures in the 3D photoelectron angular distributions that correspond to the rescattering of electrons with the ion. The observation of rescattering structures confirms the proposed explanation for HHG under two-color fields and paves the way for next-generation spectroscopies to investigate molecular structure.

Maithreyi Gopalakrishnan
JILA and Department of Physics, University of Colorado Boulder and NIST

Date submitted: 14 Nov 2014 Electronic form version 1.4