Contribution submission to the conference München 2019

Ultrafast Symmetry Control of Solids by an Intense Terahertz Field — •Haoyu Huang[1,2], Liwei Song[1,3], Nicolas Tancogne-dejean[1,4,5], Nicolai Klemke[1,2], Angel Rubio[1,2,4,5], Franz X. Kärtner[1,2,6], and Oliver D. Mücke[1,6] — [1]CFEL, DESY, Hamburg, Germany — [2]Department of Physics, University of Hamburg, Hamburg, Germany — [3]SIOM, CAS, Shanghai, China — [4]Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany — [5]European Theoretical Spectroscopy Facility (ETSF) — [6]The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany

Since the first observation of high-harmonic generation (HHG) from solids in 2011, several works have elucidated the decisive role of the crystal symmetry on the properties of the emitted harmonic radiation. Here we demonstrate transient control of the crystal symmetry by an additional intense 3-THz electric field. As striking evidence of transient symmetry reduction, we observe even-order harmonic generation in both insulator (diamond) and semiconductor (silicon) samples originating from THz-dressing of the crystal. We demonstrate the flexibility of the scheme by investigating different polarization configurations of the THz-dressing field with respect to the IR driver pulses at 1750 nm. Moreover, high-harmonic spectra are studied versus delay between the THz-dressing and IR driver pulses. In addition, we investigate the harmonics' yields depending on the angles of the linear IR and THz polarizations with respect to the crystal axes. This work might extend the toolbox for ultrafast manipulation of information for PHz electronics and controlling nonperturbative light-matter interactions.

Part:	**K**
Type:	**Vortrag;Talk**
Topic:	**4.2 Laserstrahlwechselwirkungen;4.2 laser-beam material interaction**
Email:	**haoyu.huang@desy.de**