

## Ultrafast Dynamics of CDW state in TbTe<sub>3</sub> via time-resolved resonant diffraction

*Tuesday 5 April 2011 15:40 (20 minutes)*

TbTe<sub>3</sub> is a model system that exhibits a two dimensional incommensurate charge density wave state due to the Fermi surface nesting. Ultrafast pump-probe dynamics of the CDW state in such system has attracted significant interest in the field. Although coherent phonon mode and the amplitude mode, a collective excitation of the CDW state, has been observed by time-resolved pump-probed reflectivity and ARPES measurements, direct observation of the CDW state through ultrafast x-ray diffraction is not yet available. Using the ultrafast XFEL pulse, we performed resonant diffraction experiment on the TbTe<sub>3</sub> to monitor the ultrafast response of the CDW diffraction peak. Results and comparison with the information obtained by time-resolved ARPES will be discussed.

**Author:** LEE, Wei-Sheng (SLAC National Accelerator Lab.)

**Co-authors:** LU, D. (SLAC National Accelerator Lab.); REIS, D. (SLAC National Accelerator Lab.); FISHER, I.R. (Stanford University); TURNER, J. (LCLS, SLAC National Accelerator Lab.); CHU, J.H (Stanford University); PATTHEY, L. (SLS, Paul Scherrer Institut); TRIGO, M. (SLAC National Accelerator Lab.); KRUPIN, O. (SLAC National Accelerator Lab.); KIRCHMANN, P. (SLAC National Accelerator Lab.); MOORE, Rob (SLAC National Accelerator Lab.); DEVEREAUX, T. P. (SLAC National Accelerator Lab.); SCHLOTTER, W. (LCLS, SLAC National Accelerator Lab.); CHUANG, Y. D. (ALS, Lawrence Berkeley Lab); HUSSAIN, Z. (ALS, Lawrence Berkeley Lab.); SHEN, Z. X. (SLAC National Accelerator Lab.)

**Presenter:** MOORE, Rob (SLAC National Accelerator Lab.)

**Session Classification:** Charge density waves II