

MAX PLANCK INSTITUTE FOR THE STRUCTURE AND DYNAMICS OF MATTER



ANNOUNCEMENT - TALK

Title: X-ray probes of coherence and what they can tell us about coupling and phase transitions

Abstract:

I will talk about two recent examples of experiments where both time-resolved x-ray diffraction and spectroscopy are applied to study coherent dynamics in materials, highlighting the ways in which specific aspects of that coherence manifest in the different techniques. In CoF2, a material with antiferromagnetic order that is linked to strong piezomagnetism at low temperatures, we use terahertz excitation to drive a hybrid magnon-phonon that is activated by a magnetic dipole moment, which is in turn coupled to a pure phonon. Both x-ray diffraction and XMCD are used to observe the dynamics of both structure and spins curing this process. In GeTe, a model ferroelectric system, we use a combination of x-ray diffraction and x-ray spectroscopy at the Ge K-edge to characterize the long- and short-range order dynamics of the ferroelectric soft mode across the phase transition to the paraelectric phase. The results indicate a widely applicable technique to study the roles of configurational and dynamic entropy in structural phase transitions.

Date/Time: Location: Speaker: WEDNESDAY, July 31 at 13:00 MPSD Building 900, EG 136 PROF. DR. STEVEN JOHNSON (Institute for Quantum Electronics, ETH Zürich)