

April 1st, 2011 - 15:00h

Seminar Room 108, DESY Bldg. 49



Max Planck
Research
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Ultrafast changes in lattice symmetry probed by coherent phonons in VO₂

The effect of an ultrafast change in crystal symmetry on the coherent response of the lattice is investigated using the photoinduced semiconductor-metal phase transition in VO₂. Below the photoinduced phase transition threshold, the four lowest Ag phonon modes of the monoclinic phase modulate the transient reflectivity. As the pump intensity is increased, a photoinduced phase transition occurs resulting in a prompt change in the phonon dynamics. These measurements observe lattice dynamics on a timescale previously inaccessible to current lattice probes and show that the photoinduced phase transition is driven by excited electrons changing the lattice potential symmetry.

