

On-line SPICE-SPIN+X Seminars



Wednesday, 7th December 2022, 15:00 (CET)

The seminar will be via Zoom ([Meeting ID: 833 0044 8799](#)) and live streamed in the SPICE YouTube Channel.

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Light-driven phonomagnetism



Light in the form of ultrashort pulses made it possible to control magnetism at the ultimate time and length scales where traditional excitation with magnetic fields fails. In particular, it has opened a novel pathway to highly efficient control antiferromagnets – materials that do not possess any net magnetization and thus are notoriously known to be insensitive to magnetic fields. One of the latest breakthroughs in the optical control of magnetism is the resonant driving of elementary lattice excitations - phonons. While phonons are intuitively associated with heating, which only destroys magnetism, recent experiments have shown that when driven by the light the phonons can be used to control and even induce magnetic order.

Here I will show you how light-driven phonons can lead to a net distortion of the crystalline lattice, able to switch between various symmetry antiferromagnetic phases and even induce a net magnetization in initially not magnetized media, all on the ultrafast timescale.