

Spin-lattice coupling from ns to fs time-scales

Monday, 31 May 2021 14:30 (30 minutes)

Although often neglected the coupling of spin and lattice motion plays a role on many length and timescales. Novel spintronic applications aim at controlling magnetization precession and spin currents via lattice strain waves while also angular momentum transfer via the Einstein-de Haas effect can play a role. In this presentation I will give an overview how synchrotrons and x-ray free electron lasers can be used to follow magneto-elastic coupling in non-linear nanoscale magnetic textures. I will also give an outlook how time-resolved electron diffraction promises an interesting alternative to using large-scale facilities.

About the speaker:

Hermann Dürr is a professor at the Department of Physics and Astronomy, FREIA Laboratory in Uppsala University. Before he was a group leader researcher at the Stanford Institute for Materials and Energy Sciences, in SLAC National Accelerator Laboratory.

Prof. Dürr research research encompasses the use of ultrashort (10^{-15} sec) nonlinear laser, x-ray and electron spectroscopies to probe various aspects of condensed matter systems.

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Session Classification: Session IIIa