

Seminar talk, May 3rd 2018, building B, room 2.6. at 11 a.m.

Mr. Peter Gaal
University Hamburg

'Magnetoacoustics in thin films and membranes'

I will present spatiotemporal coherent control of coherent acoustic waves and incoherent thermal deformations in thin films and membranes. The method relies on inscribing a sequence of transient optical gratings in the sample. By using relative temporal and spatial phase of subsequent excitations we tailor the phonon spectrum and wavevector. The total deformation at the surface is probed using time-resolved X-ray reflectivity measurements at grazing incidence. This allows for measuring the transient out-of-plane excursion with sub-angstrom precision. We decompose the surface dynamics into thermal background and two coherent acoustic modes, namely a Rayleigh and a Surface Skimming Longitudinal Wave. Finally we demonstrate coherent control of these excitations. In the second part of my talk I will discuss measurements of the precession of the macroscopic magnetization in ferromagnetic Co/Pt multilayers induced by surface acoustic waves.