

SEMINAR ANNOUNCEMENT

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"Investigation of complex material responses using ultrafast THz spectroscopy"

Abstract: Order parameter coupling is one of the hallmarks of transition metal oxides (TMOs), in which macroscopic properties arise from competition between microscopic interactions of electronic, structural, magnetic and orbital degrees of freedom. The richness of the resultant phase diagrams imbues these materials with extreme sensitivity to external perturbations which can be investigated using various time-resolved measurements. The THz range, broadly defined as 0.1 – 100 THz, is of particular interest for the study of TMOs since it spans the energy scales corresponding to e.g. free carrier responses, phonon and magnon resonances, and amplitude and phase modes of density waves.

I will describe how ultrafast THz spectroscopy can be used as a means to investigate the properties of complex materials, both at equilibrium and in the non-equilibrium state that follows photoexcitation. I will also discuss examples of the use of high THz field pulses to excite the system, either making use of the high electric field transient in a non-resonant configuration, or by tuning the THz frequency to be resonant to a specific mode of the material.

Interested persons are cordially invited to attend!