



ANNOUNCEMENT - TALK

Using light to control quantum materials in free space and optical cavities

Abstract:

The properties of complex quantum materials (QM), such as transition metal oxides, arise from the interplay of electrons, phonons, and magnons, making them highly sensitive to external parameters like pressure, doping, applied fields, and temperature. This susceptibility makes QM ideal for experiments where tailored electromagnetic fields can be used to induce novel properties on ultrafast timescales.

I will present our efforts to manipulate material properties through light, both in free space and optical cavities. I will start by discussing recent evidence of coherent control of dark states and address the thermodynamics of low dimensional magnetic systems. Building on our recent demonstration that a metal-insulator transition in 1T-TaS_2 can be controlled by resonant cavity coupling, I will outline our current research direction to control high temperature superconductors and sustain by cavity electrodynamic quantum coherence in condition where it is thermodynamically inhibited in free space.

Date & Time: **TUESDAY, FEBRUARY 17, at 13:00**

Location: **CFEL, SR IV**

Speaker: **DANIELE FAUSTI** (Department of Physics, Friedrich Alexander University of Erlangen-Nuremberg)