



Friday, June 17th 2016 - 15:30
CFEL, Bldg. 99, Seminar room IV

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Revealing Hidden Phases in Correlated Electron Systems using Nonlinear Optics

The iridium oxide family of correlated electron systems is predicted to host a variety of exotic electronic phases owing to a unique interplay of strong electron-electron interactions and spin-orbit coupling. There is particular interest in the perovskite iridate Sr_2IrO_4 due to its striking structural and electronic similarities to the parent compound of high- T_c cuprates La_2CuO_4 . Recent observations of Fermi arcs with a pseudogap behavior in doped Sr_2IrO_4 and the emergence of a d -wave gap at low temperatures further strengthen their phenomenological parallels. In this talk I will describe our recently developed nonlinear optical spectroscopy and wide field microscopy techniques, which are highly sensitive to both the lattice and electronic symmetries of crystals. I will present results on the Sr_2IrO_4 system that reveal a subtle structural distortion and a hidden electronic phase that have previously eluded other experimental probes. I will comment on its relevance to the pseudogap region and also draw comparisons with our recent nonlinear optical data in the pseudogap region of the cuprates.

Host: Andrea Cavalleri

