

Chez Pierre

Presents ...

Monday, April 1, 2024

12:00 pm -1:00 pm

Duboc Room – 4-331



Chez Pierre Seminar

Andrea Cavalleri

Max Planck Institute for the Structure and Dynamics of Matter,
Department of Physics, University of Oxford

“Controlling ferroelectrics with light.”

I will discuss how irradiation of ferroelectrics with intense, far and mid-infrared pulses, which are made resonant with certain phonon modes, can be used to manipulate the ferroelectric polarization. Two cases have been identified so far. On the one side, irradiation of a low temperature ferroelectric phase (e.g. in LiNbO_3) can achieve switching of the polarization. In incipient ferroelectric phases (e.g. in SrTiO_3), can lead to the formation of a long range ordered phase with stronger ferroelectricity than the paraelectric ground state. The microscopic physics of these phenomena are only in part clear, and I will discuss progress in this area.