Optical Control in High T_c Superconductors

Andrea Cavalleri

[1] *Max Planck Institute for the Structure and Dynamics of Matter, Hamburg*
[2] *Department of Physics, University of Oxford*

In this talk, I will discuss some our recent work aimed at controlling the properties of high T_c cuprates with light. Especially innovative is our use of coherent THz and mid infrared radiation, driving excitations like phonons nonlinearly and manipulating emergent properties. I will cover our recent work on the light enhancement of coherence in the bilayer cuprate $YBa_2Cu_3O_{6+x}$, in which possible transient superconductivity above T_c is observed. I will discuss the combination of THz control also with Ultrafast X-ray probing, as achieved at the Diamond Light Source and at the LCLS Free Electron Laser.

Email corresponding author: andrea.cavelleri@mpsd.cfel.de