Complete linear polarimetry analysis of X-ray diffraction in Resonant regime: combined techniques to single out microscopic information in strongly correlated electron systems

Claudio MAZZOLI

ESRF, Grenoble, France

Strongly correlated electron systems characterized by the direct interaction of several degrees of freedom, like charge, orbital and spin, are challenging both from a fundamental point of view and for advanced applications.
In this talk, I present some recent studies on prototypical strongly correlated electron systems performed by Resonant X-Ray Scattering under complete light polarisation control.
The linear analysis of the diffracted beam as a function of the linear polarisation direction of the beam impinging on the sample is a promising investigation tool. When used on a resonant signal, it can provide precious information on ground state determined by several competing interactions. In particular, magnetic, charge and orbital degrees of freedom can be studied in details even in demanding sample environments, as in situ application of electric and magnetic fields.