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Title:

Resonant elastic x-ray scattering

Abstract:

In strongly correlated materials, spin, charge and orbitally ordered phases often occur in association with interesting phenomena such as colossal magneto-resistance, multi-ferroicity or superconductivity. In this talk, I will detail a powerful technique, resonant x-ray scattering, to study these ordered phases. By tuning the photon energy to an x-ray absorption edge (resonance), x-ray diffraction obtains direct sensitivity to spatial modulations of the electronic structure (spin, charge, orbital, ...), with the energy and photon polarization dependence of the scattering providing important fingerprints of microscopic character of the order. I will describe the experimental and theoretical basis for the technique and discuss examples of RXS experiments including recent investigations of charge density wave order in cuprate superconductors.