A glimpse of RIXS and its application in quantum materials

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Resonant inelastic X-ray scattering (RIXS) is a photon-in photon-out spectroscopic technique utilising highly intense and monochromatized X-rays to probe the excitations in materials of interest. By selectively working at the resonant thresholds of an element, RIXS can probe in the energy-momentum space a wide variety of local excitations, collective excitations or ordered states, such as d-d excitations, magnons, orbitons, plasmons, phonons, and charge-density waves.

Thanks to its high cross-section and focused X-ray beam, RIXS is capable of measuring micron-size samples and nanometre-thick films, too small to be accessible to neutron scattering.

In this seminar, I will briefly introduce the principle of the technique and discuss some recent science cases in quantum materials.