

Resonant Inelastic X-ray Scattering on Elementary Excitations

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Abstract

Resonant Inelastic X-ray Scattering (RIXS) provides direct access to elementary charge, spin and orbital excitations in complex oxides [1]. As a technique it has made tremendous progress with the advent high-brilliance synchrotron X-ray sources. From the theoretical perspective the fundamental question is to precisely which low-energy correlation functions RIXS is sensitive. Depending on the experimental RIXS setup, the measured charge dynamics can include charge-transfer, phonon, d-d and orbital excitations. In the past years RIXS has for instance established itself as a valuable experimental probe of the spin dynamics of high-T_c cuprates [2-4] and of the combined magnetic and orbital modes in strongly spin-orbit coupled iridium-oxides [5-7].

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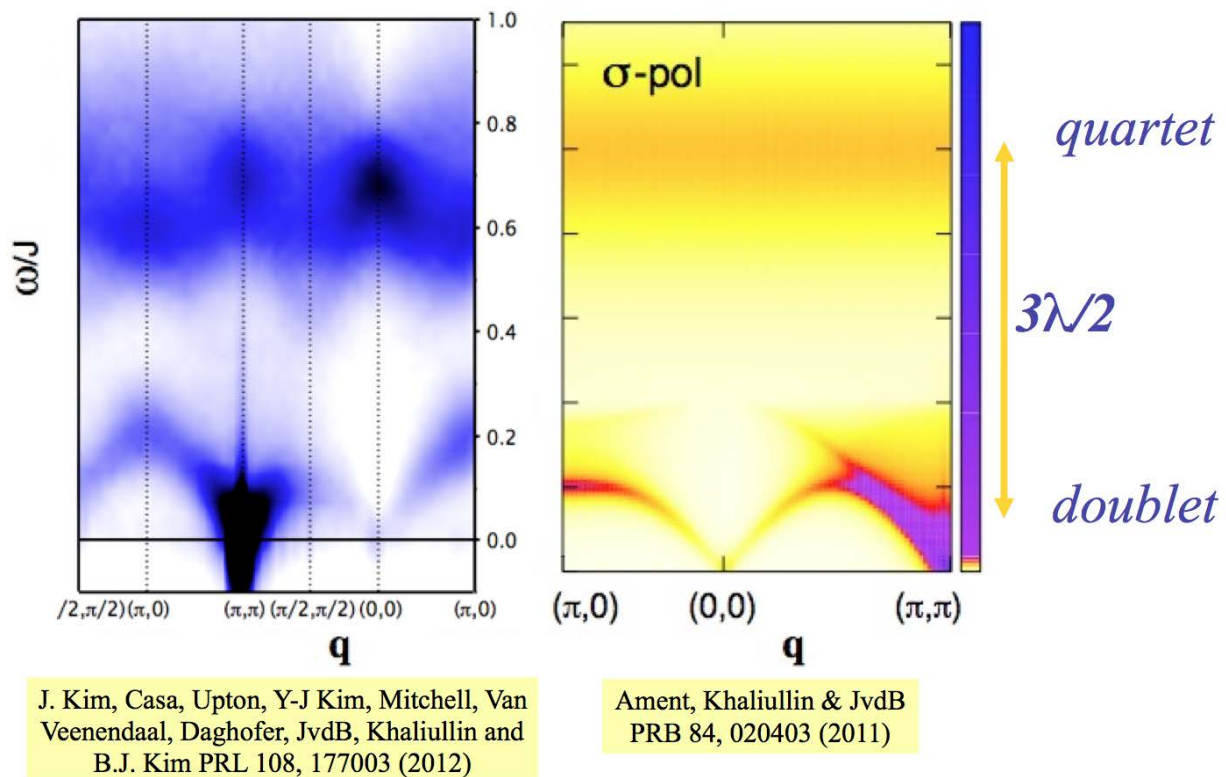


FIG. 1: Magnetic RIXS on Sr₂IrO₄ - observed RIXS spectrum at the Ir L-edge (left) and predicted magnetic response (right).

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