SFB 608

Einladung zum Kolloquium

Ort: Universität zu Köln
II. Physikalisches Institut
Seminarraum 201

Zeit: Donnerstag, 2. Juli 2009, 14:30 Uhr s.t.

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Thema: Collective spin-excitations in low-dimensional spin systems probed by high-resolution Resonant Inelastic X-ray Scattering

Resonant Inelastic X-ray Scattering (RIXS) is a powerful bulk-sensitive probe of the microscopic electronic properties of matter. In the soft x-ray range the excitation energy can be tuned such that the photon scattering cross section with the partially occupied electron states is greatly enhanced. For example in studies with copper-oxides by choosing the photon energy to the Cu L2,3 edge (Cu 2p -> 3d transition) the charge, orbital and spin degrees of freedom of the Cu 3d states can be investigated [1]. Here I will present high-resolution Cu L3-RIXS study of the magnetic excitations in the low-dimensional copper compounds Sr14Cu24O41 (spin-ladders) and Sr2CuO3 (spin-chains). The findings demonstrate that in the first system RIXS couples to the two-triplon collective excitations and in the second system to the two-spinon excitations. In contrast to Inelastic Neutron Scattering, the RIXS cross-section changes only moderately over the entire Brillouin Zone, revealing excellent sensitivity also at small momentum transfers [2]. The experiments were performed at the ADRESS beamline of the Swiss Light Source using the SAXES spectrometer [3].

gez. Schüßler-Langeheine