

SFB 608

Einladung zum Kolloquium

Ort: Universität zu Köln
II. Physikalisches Institut, Seminarraum 201

Zeit: Mittwoch, den 15. Januar 2003, 15 Uhr c.t.

Sprecher: Dr. Y. Sidis
Laboratoire Leon Brillouin, Saclay

Thema: Spin excitations in copper oxide superconductors as studied by inelastic neutron scattering

Neutron scattering spectroscopy is currently used to probe the spin excitation spectrum in High T_c copper oxide superconductors. Among the anomalous features brought to light by inelastic neutron scattering experiments, the appearance of a spin-1 collective mode in the superconducting state, the so-called magnetic resonance peak, is the most compelling result, which emphasizes the crucial role of spin fluctuations in the physics of cuprates. This excitation has been observed in three families of High T_c superconductors with T_c up to $\sim 90\text{K}$. The characteristic energy E_r of this excitation always scales with T_c : $E_r/T_c \sim 5$. We will review the main properties of the magnetic resonance peak and compare the evolution of the spin excitation spectrum between normal and superconducting states. The modification of the spin excitation spectrum by substitution of quantum impurities (such as Zn or Ni) for Cu in the CuO_2 planes will also be addressed.

Gez. Prof. M. Braden