

SFB 608

Einladung zum Kolloquium

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

Zeit: Freitag, 10. Juni 2005, 14 Uhr c.t.

Sprecher: Dr. Jean Pascal Rueff
Paris

Thema: Transition-Metal Oxides at High Pressure : A Full Multiplet Approach to the Magnetic Collapse"

The magnetic properties of transition metal oxides Fe_2O_3 , MnO and CoO under very high pressure have been investigated by x-ray emission spectroscopy at the K β emission line. The local magnetic moment of the transition-metal ion is found to collapse at pressures of 50, 80 and 140 GPa respectively. The results were analyzed using of a full multiplet approach within the Anderson impurity model. The calculations include ligand crystal field, charge transfer (Δ) and O-metal hybridization energies. In addition, they explicitly take into account the finite ligand-bandwidth. The pressure dependence of the emission lineshape is well accounted for by changes of the crystal field and O-2p bandwidth. This work proposes to reconcile in a unified picture both localized and delocalized aspects of the d-electron properties under pressure.

Gez. Prof. M- Abd-Elmeguid