

SFB 608

Einladung zum Kolloquium

- Ort:** Universität zu Köln
II. Physikalisches Institut, Seminarraum 201
- Zeit:** **Dienstag**, 17.04.07 at **16:00 s.t.**
- Sprecher:** Francisco Rivadulla
Physical-Chemistry Department
University of Santiago de Compostela, Spain
- Thema:** Approaching the metal-insulator transition
from both sides

Paramagnetic metals and Mott-Hubbard insulators represent two fundamentally different phases which can be interchanged by increasing/decreasing electronic correlations through a quantum phase transition (QPT). On approaching the QPT from the itinerant electron side, a strong renormalization of the effective mass and the Pauli susceptibility of the metal is expected, making conventional band-theory inadequate to describe this state. On the other hand, crystal-field theory is expected to breakdown at some point close to the QPT but still at the localized side. To describe the electronic properties of materials at this point, where neither band-theory nor crystal-field theory are adequate, is a major challenge. In this talk I will present experimental results in different systems approaching the QPT from both sides. The results demonstrate the departure of conventional behaviour even in simple systems, where chemical/structural complexity is not an issue. The possibility of a general phase diagram will be discussed.

Gez. Prof. D. Khomskii