

凝縮系物理学ゼミナール

Condensed Matter Seminar

Location: Room 413, School of Science Bldg. 5 (理学 5 号館 413 号室)

Date: 13:30-15:00, Wednesday, 10 October 2012

“Unconventional Superconductivity from Local Spin Fluctuations in the Kondo Lattice”

Speaker: **Prof. Thomas Pruschke** (Goettingen University)

Abstract: The explanation of heavy-fermion superconductivity is a long-standing challenge to theory. It is usually thought to be connected to non-local fluctuations of either spin or charge degrees of freedom and therefore of unconventional type. During the past decade, it moreover became evident that heavy-fermion superconductivity is typically observed close to a quantum critical point ubiquitous in these materials. We present dynamical mean-field theory results for the Kondo lattice model as one paradigmatic model to describe heavy-fermion compounds. We observe quite unexpectedly the appearance of a superconducting phase in the heavy-fermion state of this model, without additional external glue. We show that the appearance of this phase seems strongly connected to the disappearance of the antiferromagnetic phase and discuss possible scenarios for its origin.