

# SFB 608

## Einladung zum Kolloquium

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

**Zeit:** Mittwoch, den 16. Oktober 2002, 15 Uhr c.t.

**Sprecher:** P.Bonville, CEA, DSM/DRECAM, Service de Physique de l'Etat Condensé, 91191 Gif-sur-Yvette, France

**Thema:** Transitions and spin liquid behaviour at very low temperature in the frustrated pyrochlores  $\text{Yb}_2\text{Ti}_2\text{O}_7$  and  $\text{Gd}_2\text{Sn}_2\text{O}_7$

The magnetic materials with pyrochlore lattice, which is the 3-dimensional analogue of the plane triangular lattice, present a geometrical frustration in some instances, for example when the interactions are isotropic and antiferromagnetic (AF Heisenberg). In this case, theory predicts the absence of a transition to a long-range magnetic order and the persistence of spin fluctuations down to 0K. In this talk, I will present a study of  $\text{Yb}_2\text{Ti}_2\text{O}_7$  (ferromagnetic with planar anisotropy) and  $\text{Gd}_2\text{Sn}_2\text{O}_7$  (AF Heisenberg) down to very low temperature (30mK), using Mössbauer spectroscopy on  $^{170}\text{Yb}$  and  $^{155}\text{Gd}$ , and muon spin relaxation ( $\mu\text{SR}$ ) measurements. Frustrated  $\text{Gd}_2\text{Sn}_2\text{O}_7$  shows deviations from the expected behaviour, and  $\text{Yb}_2\text{Ti}_2\text{O}_7$  presents a new kind of transition, in the time domain. In both compounds, strong evidences for 0K spin dynamics are found, consisting in spin waves as well as spin flips of the correlated magnetic moments. I will also discuss neutron diffraction experiments on a single crystal of  $\text{Yb}_2\text{Ti}_2\text{O}_7$ , which give insight into the magnetic short-range correlations in this compound.

gez. Abd-Elmeguid

