



EINLADUNG zum IFP-SEMINAR

- Thema: **Macroscopic effects from a singlet state: weakly coupled tetramers in SeCuO_3**
- Vortragender: **Ivica Živković**
Institute of Physics, Zagreb, Croatia
- Termin: **Donnerstag, 27 November 2014, 16 Uhr**
- Ort: Institut für Festkörperphysik, TU Wien
Wiedner Hauptstraße 8-10, 1040 Wien
Veranstaltungsraum des Dekanats, FH, 9. OG (grüne Leitfarbe)
- Host: Neven Barišić und Silke Bühler-Paschen
- Förderer: ERC-AdG-227378 QuantumPuzzle

Abstract:

Low-dimensional magnetic systems with spin-1/2 exhibit a variety of ground states, due to different exchange interactions and the presence of strong quantum fluctuations. Many of them have proven to be a good approximation to long-studied theoretical problems. In this talk I will discuss the case of a quasi-0D magnetic system, which is composed of a network of weakly coupled tetramers of magnetic moments residing on copper ions [1,2]. The intratetramer interactions are at the order of 200 K, and the magnetic susceptibility can be described with the tetramer model even above the room temperature. On the other hand, the inter-tetramer interactions are much weaker, resulting in a 3D AFM order below 8 K. ESR and torque measurements show a substantial rotation of magnetic axes, which can be explained by taking into account the formation of the singlet state on tetramers. The gap between the ground state and the first excited state can be observed with the inelastic neutron scattering to be present even within the ordered state, which resembles the similar case of weakly coupled tetrahedra in $\text{Cu}_2\text{Te}_2\text{O}_5\text{X}_2$ [3].

[1] I. Živković et al., PRB 86, 054405 (2012)

[2] M. Herak et al., PRB 89, 184411 (2014)

[3] K. Prša et al., PRL 102, 177202 (2009)

