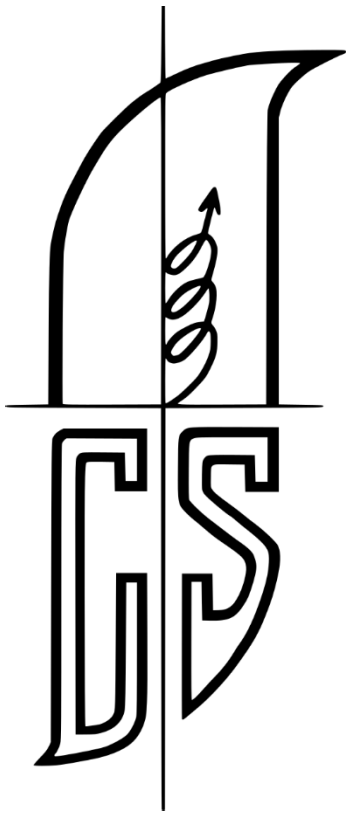
17th Czech and Slovak Conference on Magnetism



Book of Abstracts

June 3 – 7, 2019

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P R O G R A M M E

FRIDAY, JUNE 7

STRONGLY CORRELATED ELECTRON SYSTEMS, SUPERCONDUCTING MATERIALS

Peter Samuely, Chair

09:00 **I-19 (invited)**
SPIN-ORBIT COUPLING INDUCED WEYL POINTS IN A TWO-ELECTRON DOUBLE QUANTUM DOT
Z. Scherubl, A. Palyi, G. Frank, I. Lukacs, J. Nygard, G. Zarand and *Sz. Csonka*

09:30 **O7-01**
POSSIBLE TWO-GAP SUPERCONDUCTIVITY IN Mo_8Ga_{41} ADDRESSED BY THERMODYNAMIC AND SPECTROSCOPIC MEASUREMENTS
C. Marcenat, V. Yu. Verchenko, A. V. Shevelkov and P. Samuely

09:45 **O7-02**
OF THE NONCENTROSYMMETRIC Th_7Fe_3 SUPERCONDUCTOR
V. H. Tran and M. Sahakyan

10:00 **O7-03**
EXPLORING KONDO LATTICES WITH TWO INEQUIVALENT Ce-SITES
P. Opletal, S. Kambe and *J. Custers*

10:15 **O7-04**
ANTIFFEROMAGNETIC DOME AND QUANTUM PHASE TRANSITIONS IN HEAVY FERMION SYSTEM $Yb_2Pd_2In_{1-x}Sn_x$
G. Lamura, I. Onuorah, P. Bonf
J.-C. Orain, C. Baines, I. Curlik, A. Dzubinska, G. Pristas, *M. Reiffers*, F. Gastaldo, M. Giovannini, A. Martinelli, C. Ritter, E. Bauer, R. De Renzi and T. Shiroka

10:30 **Coffee break**

O7-04

ANTIFFEROMAGNETIC DOME AND QUANTUM PHASE TRANSITIONS IN HEAVY FERMION SYSTEM $Yb_2Pd_2In_{1-x}Sn_x$

G. Lamura[1], I. Onuorah[2] [2], S. Sanna[3], Z. Shermadini[4], R. Khasanov[4], J.-C. Orain[4], C. Baines[4], I. Curlik[5], A. Dzubinska[6], G. Pristas[7], *M. Reiffers*[5,7], F. Gastaldo[8], M. Giovannini[8], A. Martinelli[1], C. Ritter[9], E. Bauer[10], R. De Renzi[2] and T. Shiroka[4,11]

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[11] - -

The competition of Kondo coupling and RKKY interactions is known to determine the electronic properties of heavy-fermion intermetallic systems. In this respect, Yb-based compounds are particularly interesting. Thanks to the high sensitivity of Yb 4*f* electrons to chemical- and external pressure, an increase in pressure promotes a transition from a non-magnetic $4f^{14}$ (J = 0, .= 0) to a magnetic $4f^{13}$ (J в) state with antiferromagnetic (AF) order.

In this work we present the paradigmatic case of $Yb_2Pd_2In_{1-x}Sn_x$, where chemical pressure can be tuned through In-Sn substitution: at the phase-diagram boundaries [x(Sn) = 0 and 1] the system is nonmagnetic, and exhibits low temperature non Fermi-liquid (NFL) x -like region with long-range AF order and a (at ambient pressure). Preliminary muon- x = 1 case detected an unexpected AF dome, delimited by two pressure-driven quantum critical points at 1 and 4 GPa. -study of $Yb_2Pd_2In_{1-x}Sn_x$ as a function of both chemical substitution, x(Sn)=0, 0.3, 0.6, 0.8, and applied pressure, up to ~ 2.4 GPa and down to T = 0.25 K. Our experimental results allowed us to fully map the AF dome in the p-T-x space. We show that the magnetic ordering temperature, T_N, increases systematically with p, reaching ~ 4.9 K at 2.4 GPa for x = 0.6. Interestingly, the x = 0.3 compound, although nonmagnetic at ambient pressure, develops a robust AF order with T_N = 3.8 K at 2.4 GPa.