Session 23V

Recent Trends in Heavy-Fermion Physics **23V1**

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We discuss UPd_2Al_3, $YbRh_2Si_2$ and U_2Ru_2Sn to illustrate recent developments in heavy-fermion physics. UPd_2Al_3 is the first unconventional superconductor for which tunneling and inelastic neutron-scattering results highlight a non-phononic, i.e., magnetic-exciton mediated, pair state. $YbRh_2Si_2$ represents a model system exhibiting a magnetic quantum critical point at which both the effective quasiparticle-quasiparticle scattering cross section and the effective quasiparticle mass appear to diverge. The strongly correlated semimetal U_2Ru_2Sn shows similarities to the prototypical Kondo insulator CeNiSn, albeit with a ten times larger pseudogap.
Work done in collaboration with: M. Baenitz, J. Custers, P. de V. du Plessis, P. Gegenwart, C. Geibel, S. Mederle, K. Neumaier, S. Paschen, N. Sato, G. Sparn, A.M. Strydom, H.V. Tran and H. Wilhelm.

Superconductivity in MgB_2 and its related new Boron compounds **23V2**

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In 2000, we reported the superconductivity at 39 K in MgB_2, of which transiton temperature is highet among the metal superconductor. In this conferrence, we review the present experimental situation of this material. We also discuss the new superconductors including borons with low-T_c discovered in my laboratory.