

Dr. Michael Baenitz

Department of Solid State Physics, Senior research associate since May 1998

Research Profile:

Magnetic resonance (NMR/NQR) on magnetic 3d- and 4f-intermetallics and oxides. NMR on low- γ -nuclei over a wide Field/frequency range. Field-sweep NMR and ferromagnetic resonance.

Topics: systems close to magnetic instability (afm/fm quantum criticality), heavy fermion metals and semimetals, low dimensional/helical spin systems, superconductors

Kondo Insulators ($\text{U}_2\text{Ru}_2\text{Sn}$, CeRu_4Sn_6 , FeSb_2)

1111-Cer- transition metals Pnictides $\text{CeT}(\text{P/As})\text{O}$ (T :Fe, Ru, Os, Co)

142-Yb-Pnictides (YbNi_4P_2)

122-Eu- transition metals Pnictides $\text{EuT}_2(\text{P/As})_2$ (T :Ni,Fe)

Heavy fermion metals ($\text{Yb}(\text{Rh/Ir/Co})_2\text{Si}_2$, $\text{EuCu}_2(\text{Si/Ge})_2$)

Cage compounds

$\text{Fe}_4\text{Sb}_{12}$ - Skutterudites ($\text{XFe}_4\text{Sb}_{12}$ (X :K, Na, Ba, Tl, La)

$\text{Pt}_4\text{Ge}_{12}$ - Skutterudites ($\text{XPt}_4\text{Ge}_{12}$ (X: Sr, Ba, Sm, La, Ce, Pr, U, Th)

1-2-10 Intermetallics ($\text{ReT}_2\text{Al}_{10}$, Re :Ce, Yb, T : Fe, Ru, Os)

3-4-13 Intermetallics ($\text{Ce}_3\text{Ru}_4\text{Sn}_{13}$)

Chiral ferromagnets (FeGe)

Low dimensional spin systems (Cuprates, Vanadates)

CuSiO_3 , LiCu_2O_2 , $\text{Sr}_2\text{Cu}_3\text{O}_4\text{Cl}_2$, $\text{Cu}_2(\text{PO}_3)_2\text{CH}_2$, $\text{K}_2\text{CuP}_2\text{O}_7$, $\text{Pb}_2(\text{VO})(\text{PO}_4)_2$

Low dimensional superconductors Sc_3CoC_4 (Vortex dynamic)

Mercury based HTSC (Hg-Ba-Ca-Cu-O) (Vortex dynamic)

Equipment:

-Three combined field-sweep/Fourier-transform NMR Spectrometers (fields up to 14 T and T= 1.7-300K, NMR frequencies 1 MHz-500 MHz).

-One high resolution 300 MHz FT-NMR Spectrometer (7 T, 1.8-700K) with MAS technique.

-One home made NQR Spectrometer (1.7-300K).

-Responsible for Quantum Design-multi-user devices at Dept. Solid State Physics (Prof Steglich) [four PPMS, one MPMS and one SQUID-VSM].

NMR group members:

Dr. Rajib Sarkar (PostDoc)

Dr. Phanchanan Khuntia (PostDoc)

NMR-visiting scientist / collaborators:

Prof. Dr. Klaus Lüders (Free University Berlin)

Prof. Dr. Andree Strydom (Univ. of Johannesburg, South Africa, DFG project)

Prof. Dr. Andrei Gippius (Moscow State University)

Prof. Dr. Ramesh Nath (Institute of Science Education and Research, Thiruvananthapuram, India, Max Planck-Indian fellow)

Former NMR group members:

Dr. Eva Bruening (PhD Student/PostDoc), Dr. R. Nath (PostDoc),

Dr. A. Rajarajan (PostDoc), Dr. H. Mohammad (PhD student),

Dr. A. Rabis (PostDoc), Dr. R. Michalak (PostDoc)

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