



Invitation

LMU-Seminar

Title: Microwave absorption study of pinning regimes in iron-pnictide superconductors

Speaker: Dr. Nadezda Panarina

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Time: Thursday, November 15, 2012, 14:00

Place: WHGA/121

Abstract:

Magnetic field dependent modulated microwave absorption measurements have been carried out to investigate vortex pinning effects in polycrystalline $\text{SmO}_{1-x}\text{F}_x\text{FeAs}$ samples with three fluorine concentrations $x = 0.06, 0.08, \text{ and } 0.1$ and in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ single crystals with three different cobalt doping levels of $x = 0.07, 0.09, \text{ and } 0.11$. A particular interest in these iron-based high- T_c superconductors and the choice of the above-mentioned concentration ranges are explained by specific phase diagrams of these compounds, where superconducting and magnetic orders coexist at a certain level of dopant (so-called underdoped region). By applying a theoretical model of microwave absorption in superconductors, we were able to analyze the effect of the presence of a nonsuperconducting (magnetically ordered) phase on pinning strength in the systems under study, as well as to make quantitative estimates of the critical current density and other parameters characterizing the vortex matter. It was possible to distinguish different regimes of pinning in the samples with different content of the dopant, which allows us to suggest the contribution of additional pinning centers in the underdoped samples.