



TRR 80 Sonderseminar

Am Mittwoch, den 7. Dezember um 13:30 Uhr

spricht

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über das Thema

Phase separation in $Rb_2Fe_4Se_5$ superconducting single crystals

Recently discovered intercalated iron-selenide superconductors have attracted much attention due to superconductivity with a rather high transition temperature on the order of 30 K coexisting with exceptionally strong antiferromagnetism with Neel temperatures up to 550 K. Significant experimental evidence has been obtained suggesting inherent electronic phase separation in these systems. However, it remains unclear what the relative fractions of the phases are, on what scale the separation occurs, as well as what shape the paramagnetic domains have. Here we use a unique combination of scattering-type scanning near-field optical microscopy (s-SNOM) and low-energy muon spin rotation (LE-muSR) to shed light on the type of phase separation in $Rb_2Fe_4Se_5$ (RFS) single crystals. We demonstrate that the phase separation occurs on the nanoscale out of plane, while the characteristic size of the paramagnetic domains in plane reaches 10~ μ m. By means of LE-muSR we further show that the antiferromagnetic semiconducting phase is strongly weakened near the sample surface. This knowledge is indispensable for an adequate analysis of data obtained with various experimental probes on iron-selenide superconductors.

Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-403/ Institut für Physik, Universität Augsburg statt.

Gastgeber: Dr. Joachim Deisenhofer
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