



TRR 80 Seminar

Am Dienstag, den 17. April um 16:00 Uhr

spricht

Dr. Vladimir Hutanu

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Forschungszentrum Jülich**

über das Thema

***New single crystal diffractometer with polarised neutrons
POLI at MLZ as a versatile tool for the detailed
investigation of magnetic structures***

Polarized neutron diffraction (PND) is a powerful method to investigate magnetic structures. It gives unique access to contributions from nuclear and magnetic scattering, their interference terms, and magnetic chirality and permits to distinguish between them. In contrast to the non-polarized neutron diffraction, where the scattered intensity depends as square on the magnetic structure factor, PND has a linear nuclear-magnetic interference term as part of the scattered intensity. This increases the precision in the determination of the ordered magnetic moment for at least one order of magnitude. Born in the late 50s of the last century and developed over decades by a small groups of devoted experts, PND became nowadays a wide spread, well established, and recognized technique to answer difficult scientific questions about the detailed magnetic ordering in topic materials, often intractable with other methods. Recently newest member of such instrumentation family POLI (Polarisation Investigator) has been built and commissioned on neutron source "Heinz Maier-Leibnitz" in Garching (MLZ). POLI is the first instrument routinely using ^3He spin filters both to produce and to analyze the neutron polarization in combination with double focusing non-polarized monochromators. This results in a relatively high flux of the polarized neutrons of the short wavelength and improved resolution in comparison with other similar instruments. Three different experimental techniques are implemented (or under development) on POLI: a) Spherical neutron polarimetry (SNP), called also 3D polarization analysis, using the third generation polarimeter device Cryopad, b) classical flipping ratio (FR) technique in applied magnetic field and c) non-polarised neutron diffraction under extreme conditions (high/low temperatures, magnetic/electric fields, pressure and their combination). We will present recent examples of using these techniques on POLI for the detailed determination of the magnetic structures in multiferroics, superconductors, heavy fermion compound and other interesting magnetic materials.

Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-288, Institut für Physik,
Universität Augsburg statt.

Gastgeber: Prof. Dr. István Kézsmárki
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