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Neutron depolarization imaging

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Marc Seifert

Heinz Maier-Leibnitz Zentrum, Technical University of Munich, Germany

Email: marc.seifert@frm2.tum.de

The neutron depolarization imaging (NDI) technique is based on the combination of a neutron imaging beam line with a neutron polarization analysis setup. It enables the spatially resolved measurement of the influence of a sample's magnetic field on the neutron polarization. As the spin of a neutron precesses in magnetic fields due to Larmor precession, ferromagnetic (FM) samples depolarize the polarized neutron beam. NDI therefore can for example reveal inhomogeneities in FM samples by measuring the Curie temperature across the sample. As neutrons easily penetrate common cryostats and pressure cells, the samples can be investigated under extreme conditions such as low temperatures and high pressures.

Primary author: SEIFERT, Marc

Presenter: SEIFERT, Marc

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