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Recent achievements and activities in neutron imaging at FRM II

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At the FRM II reactor in Garching, Germany the Heinz Maier-Leibnitz Zentrum operates the two neutron imaging facilities ANTARES and NECTAR. ANTARES provides a cold neutron spectrum which gives high sensitivity for even small changes of composition in a sample. Consequently ANTARES is used for neutron imaging with high spatial resolution as well as novel techniques such as imaging with polarized neutrons or neutron grating interferometry (nGI). The instrument NECTAR, in contrast, is a unique facility which provides a fast fission neutron spectrum which allows to investigate even very bulky samples and shows contrast complementary to X-rays or gammas.

In our contribution we will give an overview of recent achievements and activities of the MUnich Neutron Imaging Group (MUNIG). We have made several instrumental upgrades at both facilities. NECTAR is currently undergoing a complete redesign and an upgrade to additionally provide a thermal neutron spectrum which can be used when higher penetration than with cold neutrons is required in combination with high spatial resolution. Furthermore, at ANTARES we have designed and installed a dedicated ^3He cryostat for neutron imaging which allows to routinely reach temperatures as low as 500mK for imaging with polarized neutrons and nGI while allowing to keep the sample to detector position as short as 50mm. Additionally the nGI setup at ANTARES has undergone a major upgrade of the geometry and the employed gratings which allows us to achieve a visibility of 75% over the entire field-of-view. We will additionally show results of recently performed experiments at both beam lines which are of interest for the community.

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