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DNS - diffuse neutron scattering spectrometer at MLZ

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DNS is a polarised high intensity cold-neutron time-of-flight spectrometer at MLZ. It is situated between MIRA and SPHERES on neutron guide 6 and uses a wavelength between 2.4 Å and 6 Å. DNS has the capability to allow unambiguous separations of nuclear coherent, spin incoherent and magnetic scattering contributions simultaneously by polarization analysis over a large range of scattering vectors.

It is mainly used for the studies of complex magnetic correlations in frustrated quantum magnets, strongly correlated electron systems, and nanoscale magnetic systems. DNS has a number of unique features such as wide-angle polarization analysis which can be used in parallel to the non-polarization-analyzing position-sensitive detector array covering 1.9 sr.

A 300 Hz disc chopper system for inelastic experiments was commissioned in 2018 and allows an efficient measurements in all four dimensions of $S(Q,E)$. A newly installed Fe/Si based polariser, increased the polarized flux at the sample position about 50%, largely due to an optimal focussing.

Primary authors: Dr SU, Yixi (JCNS-MLZ); MUELLER, Thomas (JCNS)

Presenter: MUELLER, Thomas (JCNS)

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