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A combined NRSE and MIEZE instrument for ESS

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Abstract

The Neutron Spin Echo (NSE) variant MIEZE (Modulation of IntEnsity by Zero Effort), where all beam manipulations are performed before the sample position, offers the possibility to perform low background SANS measurements in strong magnetic fields and depolarising samples. However, MIEZE is sensitive to differences ΔL in the length of neutron flight paths through the instrument and the sample. Therefore, we propose for the ESS a MIEZE/NRSE-type spectrometer covering a wide range of (q,t)-space. It is designed as a versatile instrument based on state of the art technology, focused on the investigation of slow dynamics in strongly incoherently scattering samples and samples under extreme conditions such as high magnetic fields and pressure.