



## Relocation of the cold triple axis spectrometer FLEXX to MLZ, Munich: Larmor diffraction and inelastic scattering

Monday 20 March 2023 16:00 (2 hours)

The cold triple-axis spectrometer (TAS) FLEXX at HZB is a well-designed and upgraded instrument [1-4]. There is a strong wish that this excellent instrument should be preserved for the community after the shut-down of the HZB neutron source. One attractive gap in the present instrumentation suite of MLZ, is the Larmor-diffraction technique [5-6] (LD) and, as a natural extension, cold neutron resonant spin echo (NRSE). LD permits the exact measurement of lattice constants and their distribution (internal strains, structural distortions or magnetostriction). In addition, spin correlation lengths in antiferromagnets and antiferromagnetic domain sizes of up to 1  $\mu\text{m}$  can be determined. For looking at time-dependent processes one needs the NRSE mode. TAS comes at no extra cost, as is the main backbone of such an instrument.

The instrument will be placed on a cold neutron source. This will allow for a x4 increase in Q resolution, as well as most importantly access to the low Q region, as compared to the existing TRISP@MLZ. Further, new developments are under way to allow for application of magnetic fields at the sample, hitherto not possible [7-9]. This opens up new vistas in the exploration of materials. A last attractive option is the possibility to combine high magnetic fields together with cold TAS.

- [1] M. Skoulatos et al., NIMA 647, 100 (2011). [↗](#)
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- [3] F. Groitl et al., Rev. Sci. Instrum. 86 025110 (2015).
- [4] K. Habicht et al., EPJ Web of Conferences 83, 03007 (2015).
- [5] M.T. Rekveldt, Jour. Appl. Phys. 84, 31 (1998). [↗](#)
- [6] M.T. Rekveldt et al., Europhys. Lett. 54, 342 (2001). [↗](#)
- [7] Neutron Spin Echo - Proceedings of a Laue-Langevin Institut Workshop, Grenoble, Springer- Verlag, Ed: F. Mezei (1980). [↗](#)
- [8] M.T. Rekveldt et al., Jour. Appl. Cryst. 47, 436 (2014).
- [9] K. Habicht, "Neutron-Resonance Spin-Echo Spectroscopy: A High Resolution Look at Dispersive Excitations", Habilitation, University of Potsdam (2016).

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