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Beam focusing with nested mirror optics(NMO) at RESEDA

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The RESEDA(REsonance Spin Echo for Diverse Applications) instrument is a spectrometer that can use the MIEZE(Modulated IntEnsity with Zero Effort) method, a variant of neutron spin echo(NSE) that uses radio frequency(RF) spin flippers instead of static magnetic fields and that can measure samples that depolarize the beam.

As a next step for improving the experimental setup it was proposed that nested mirror optics should be integrated to focus the beam at various components of the instrument.

Focusing the beam at the sample might allow measurements of samples with smaller sizes, such as samples in a diamond anvil cell. It also might allow for measurements at higher scattering angles, as it could reduce phase aberrations for the MIEZE method.

Focusing the beam at the RF-flippers allows to build smaller AC-coils, leading to higher accessible frequencies, and consequently might lead to a better energy resolution of the spectrometer.

In order to create an efficient setup that does not introduce additional artifacts, careful consideration of all effects caused by inserting NMO is necessary.

Here we will present preliminary results of the simulations of NMO integration and discuss their potential.

Author: SCHOENLEITNER, Florian (TUM)

Co-authors: PFLEIDERER, Christian; METTUS, Denis (Technische Universität München); JOCHUM, Johanna

Presenter: SCHOENLEITNER, Florian (TUM)

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