Contribution ID: **209** Type: **Poster**

The high resolution neutron backscattering spectrometer SPHERES

Wednesday 9 December 2020 17:40 (20 minutes)

The neutron backscattering spectrometer SPHERES (SPectrometer for High Energy RESolution) at MLZ is a third generation backscattering spectrometer with focusing optics and phase-space transform (PST) chopper. It covers a dynamic range of ± 31μeV with a high resolution of about 0.66μeV and a good signal-to-noise ratio. The instrument performance has been improved over the recent years by different measures. The intensity has been more than doubled by the upgrade of the PST chopper and the focusing guide. The signal-to-noise ratio can be significantly improved by employing the new background chopper.
SPHERES enables investigations on a broad range of scientific topics from the classical applications of backscattering like hyperfine splitting or rotational tunneling to investigations on new materials like high temperature polymer electrolyte fuel cells or novel nano-composites. It is in particular sensitive to the incoherent scattering from hydrogen and allows to access dynamic processes up to a timescale of a few ns. It is hence well suited to study the dynamics in soft-matter materials like polymers or proteins, or to observe the motion of water in confined geometry. Other typical applications include relaxation in viscous liquids or diffusion processes in various systems.

Primary author: ZAMPONI, Michaela (Forschungszentrum Jülich GmbH, Jülich Centre for Neutron Science at Heinz Maier-Leibnitz Zentrum)

Co-author: Dr BERG, Marcella (Forschungszentrum Juelich GmbH)

Presenter: ZAMPONI, Michaela (Forschungszentrum Jülich GmbH, Jülich Centre for Neutron Science at Heinz Maier-Leibnitz Zentrum)

Session Classification: Joint poster session of MLZ User Meeting and DN2020

Track Classification: DN: Instrumentation