

Exploring dynamic processes in biological systems with SPHERES

Tuesday, 27 June 2017 17:30 (5 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 $\pm 31\mu\text{eV}$ with a high resolution of about $0.66\mu\text{eV}$ and a good signal-to-noise ratio. The intensity has been recently doubled by the upgrade of the PST chopper. Further improvement of the instrument performance is expected from the planned upgrade of the focusing guide and the introduction of a background chopper.

SPHERES enables investigations on a broad range of scientific topics. 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. Therefore it is well suited to study dynamic processes in various biological systems. Selective deuteration allows for example to follow the mobility of water on the surface of proteins (e.g. Y. Fichou et al., PNAS 112, 6365 (2015)) or measure internal protein motions (e.g. A. Stadler et al., Biophysical Journal 110, 1064 (2016)).

Primary author: ZAMPONI, Michaela (JCNS at MLZ, Forschungszentrum Juelich GmbH)

Co-authors: Dr STINGACIU, Laura Roxana (JCNS at MLZ); Dr KHANEFT, Marina (JCNS at MLZ)

Presenter: Dr STINGACIU, Laura Roxana (JCNS at MLZ)

Session Classification: Poster session A

Track Classification: Main conference