

The Neutron Spin Echo Spectrometer at the NIST Center for Neutron Research: Characteristics and Scientific Highlights

Antonio FARAONE

NIST Center for Neutron Research, National Institute of Standards and Technology, 100
Bureau Drive, Gaithersburg MD 20899-8562, U. S. A.

The neutron spin echo (NSE) spectrometer at the National Institute of Standards and Technology (NIST) Center for Neutron Research in USA is the only NSE spectrometer currently operating in North America. It is accessible to researchers through reviewed proposals up to ~65% of its beam time (~175 days a year). The spectrometer can measure wave-vector transfers from 0.02 to 1.6Å⁻¹. The accessible time range extends to nearly 10⁻⁷s at the longest accessible wavelength. These characteristics make the NSE spectrometer valuable for the investigation of soft condensed matter systems, such as polymers, glass formers, complex fluids, proteins... On the other hand, by using polarized neutrons, it provides an intrinsic separation of magnetic and nuclear scattering, making data analysis easy and the interpretation unambiguous for this kind of experiments. In this contribution, we present the characteristics and specificity of the spectrometer. Moreover, we will also report a few example of the research carried on with the instrument.

E-mail for corresponding author: afaraone@nist.gov