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Wide-angle polarization analysis using ^3He spin filters on the LET spectrometer at ISIS

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LET is a cold time-of-flight chopper spectrometer installed on the second target station at the ISIS facility. With nearly π st. of continuous detector coverage, it is primarily used to map excitation spectra in single crystals of magnetic materials. Beyond this application, its high resolution makes it well suited for quasi-elastic scattering (QENS) studies of energy materials, soft matter, and biological systems. Here, we present the new uniaxial polarization analysis option on LET, which features a wide-angle ^3He spin filter analyser that provides access to the full LET detector. The potential of the instrument to perform polarized QENS experiments is illustrated by the example of D_2O , where the separation of the coherent and incoherent components of the cross section has proven essential to understand the evolution of the collective (coherent) and single-particle (incoherent) dynamics from atomic to intermediate length-scales.

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