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CAMEA —A multiplexing analyzer for neutron spectroscopy

Monday, 20 March 2023 16:00 (2 hours)

CAMEA (Continuous Angle Multiple Energy Analysis) is a novel crystal analyzer concept optimized for neutron detection efficiency in the horizontal scattering plane [1]. The design comprises consecutive, upward scattering analyzer arcs set to analyze different neutron energies and an array of position sensitive detectors. CAMEA enables rapid mapping of excitations and is in particular compatible with the geometrical restrictions imposed by extreme sample environments. A focusing arrangement of the analyzer crystals together with distance collimation facilitate prismatic analysis of the scattered neutrons [2] and result in a quasi-continuous energy coverage with improved energy resolution.

As part of the upgrade program of the Swiss Spallation Neutron Source SINQ, an elliptical neutron guide and a large double focusing monochromatic was installed resulting in a fivefold increase of the neutron flux at the sample position. We will present the spectrometer design, engineering solutions for the analyzer detector system and first data taken during the initial operation phase of the instrument. The results demonstrate the large performance gain for overview studies of low-energy dynamics.

[1] F. Groitl et al., Review of Scientific Instruments 87, 035109 (2016).
[2] J. O. Birk et al., Review of Scientific Instruments 85, 113908 (2014).

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