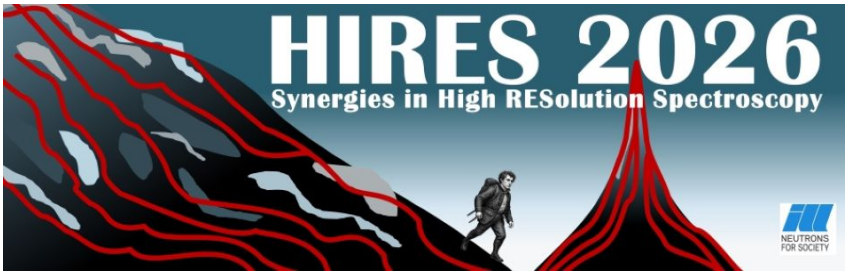

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Polarization and Analysis for High Energy Resolution On SPHERES: technical aspects

We have been working to develop the instrumentation concept for PA HEROS. The application of PA to high resolution neutron backscattering requires many considerations for the instrumental realization. We have been studying these aspects from incident beam polarization to polarization transport in the primary and secondary spectrometer and PST chopper to novel implementation of a wide angle polarization analyzer (WAPA). The practical aspects of polarized 3He type WAPA vs. super mirror (SM) transmission WAPA and rigorous simulation of performance have been performed, We have commissioned the construction of an SM tWAPA prototype to test the implementation of several innovations of the proposed tWAPA solution. Of particular note are a modular geometry matched to the SPHERES secondary spectrometer and detector geometry, and a novel radial magnetic cavity concept for the SM tWAPA to both provide high >300G saturation field for the SMs over a large vertical angle/height (ca. 30°/40 cm) and full horizontal scattering angle (140°) of SPHERES and also serve as the polarized neutron guide field in the secondary spectrometer. A section of this new SM magnetic system has also been produced for testing. This poster will provide an overview of the technical considerations and study as well as the status of prototyping and testing.

Session

Instrumentation

Primary author: BABCOCK, Earl (JCNS at the MLZ)

Co-authors: Dr SOLTNER, Helmut (ITE FZ-Juelich); VOIGT, Joerg (Forschungszentrum Jülich GmbH); ZAMPONI, Michaela (Forschungszentrum Juelich GmbH); HUANG, chuyi (Jülich Centre for Neutron Science)

Presenter: BABCOCK, Earl (JCNS at the MLZ)

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