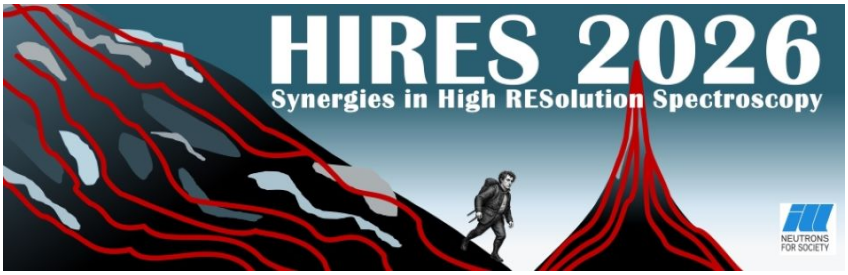

Contribution ID: **30** Type: **Oral**

Towards the development of polarization analysis with high energy resolution for SPHERES

Neutron polarization analysis provides profound additions of knowledge to the field of soft condensed matter research. The ability to separate the coherent and incoherent scattering contributions gives information on spatial correlations and collective motion, and information from single particles, respectively.
In this study, we focus on upgrading the SPHERES (SPectrometer for High Energy RESolution) backscattering instrument at JCNS [1,2] to meet the demands for high energy resolution and polarization analysis. Because of geometry constraints the polarization analyzer would need to be located between the sample and the Si111 analyzers. To meet this requirement, we investigate a transmission wide-angle supermirror polarization analyzer using Monte Carlo simulations [3]. We evaluate its performance in terms of transmission and polarization under realistic beam conditions and instrument geometry.
At this conference, we will present the resulting analyzer concept and discuss its implications for performing polarization analysis with the high-resolution capabilities of SPHERES.

[1] J.Wuttke, Rev. Sci. Instrum. 83, 075109 (2012)
[2] J.Wuttke, Rev. Sci. Instrum. 84, 115108 (2013)
[3] P. Böni, Nucl. Instrum. Methods Phys. Res. Sect. A 966, 163858 (2020)

Session

Instrumentation

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Session Classification: Instrumentation