

Advanced magnetic systems for neutron instrumentation

Polarized neutron experiments are an important of the scientific motivation for large scale neutron sources. These experiments often involve the use both the highest available fields and at other times techniques or instrumentation that are highly sensitive to changing magnetic fields or field gradients. This can lead to reduced polarized neutron instrument performance and undesired cross talk between instruments. ^3He spin-filter systems at times need to be compatible with operation in the vicinity of high field magnets, such as the 8T magnet for POLI. Hot polarized neutrons must be adiabatically transported for both high field applications and 0-field cryopol applications. Neutron spin-echo should be stable and independent of interference from nearby instruments. Wide angle polarization analysis should be robust, i.e. in the case wide angle ^3He spin-filters, or for large area guide fields. This presentation will focus on the developments and concepts for magnetic systems at the JCNS to enable robust polarized neutron instrumentation.

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Track Classification: TBD