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Polarized neutron application at the China Spallation neutron source

Neutron beams generated at the China Spallation Neutron Source (CSNS) are dedicated for material characterization through scattering process. Polarization can be introduced before and after the neutron scatter with the sample so that neutron magnetic dipole interaction with local magnetization can be observed, know as polarized neutron scattering. The polarized neutron can be expanded to nuclear physics through observing the polarized neutron and polarized nuclei reaction. Some interesting interference and resonance method for can also be achieved through carefully arranged neutron polarization precession.
In this talk, we introduce the recently development of the polarized neutron experiment capability at the CSNS, focusing on effort of setting up polarized neutron for exotic measurement. Specifically, we give detailed demonstration on setting up polarization and analysis for eV level neutron for the purpose of symmetry violation measurement. Development of in-house made neutron adiabatic radio-frequency and its application on Ramsey resonance method shall also be introduced.

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