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Developing Neutron Polarimetry for time-of-flight Neutron

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Polarized neutron experiment probes magnetic structures and distinguish contribution from incoherent scattering, nuclear scattering and magnetic scattering1. While polarized neutron measurement are widely used among current neutron beamlines, the applications are usually limited to depolarization measurement among a single direction. More complexed polarimetry technique such as xyz polarimetry2 or spherical neutron polarimetry3 limit their application to single wavelength beamline. This limitation is caused by the neutron polarization manipulation process of polarimetry measurement, which involves controlled neutron precession. To expand the application of Neutron Polarimetry onto time-of-flight neutron, it is necessary to explore new experiment method and develop new magnetic field restraining equipment4. In this presentation, we introduce our research plan and effort to explore the combination of neutron polarimetry and time-of-flight neutron. The research is performed through designing new polarimetry instrument using high-Tc superconductor and developing new algorithm of polarimetry analysis through time-of-flight neutron.

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Summary

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