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Physical Design and Progress of Multi-purpose Physics Neutron Diffractometer of CSNS

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The multi-purpose Physics Neutron Diffractometer will be built at the China Spallation Neutron Source in the coming year. It is a time of flight diffractometer dedicated to the study of complex crystalline materials and the disordered materials by pair distribution function (PDF) technique. The MP diffractometer will be able to determine the PDF of the materials from atomic to nanometer scale. In this manuscript, we present the main physical parameters of this diffractometer through Monte Carlo simulation. In particular, the moderator choice, guide system, placement of the chopper system, the shielding design and the detector choice and its layout are investigated. The best momentum transfer resolution $\Delta Q/Q$ is expected to be 0.3% at the backscattering direction, the flux at the sample position is of the order of $10^7/\text{cm}^2/\text{s}$ and the momentum transfer range from 0.1 to 50 \AA^{-1} . The construction progress of this diffractometer is also presented in the manuscript.

Poster back-up

No

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