

Polarization analysis for the thermal chopper spectrometer TOPAS

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Abstract

© 2015 Owned by the authors, published by EDP Sciences. We report on the progress of the construction of the thermal time-of-flight spectrometer with polarization analysis TOPAS at the Mayer-Leibnitz Zentrum (MLZ). The instrument components approach the status to be ready for installation. The special feature of the instrument is its capability for wide-angle polarization analysis in the thermal spectral range. Here we describe a novel approach to rotate the neutron spin adiabatically into the X, Y or Z direction of the laboratory frame by combination of permanent magnets aligned as Halbach rings and electrically generated fields. Despite the severe spatial restrictions the design exhibits a very high adiabaticity and interacts only weakly with the coil layout for the analyzing ^3He spin filter cell (SFC).

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