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First result from the magic-PASTIS using large ^3He SEOP-polarized GE180 doughnut cell

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Abstract

We report on the first results of the newly proposed and prototyped PASTIS coil set, enabling for XYZ polarization analysis on the future thermal time-of flight spectrometers. Our setup uses a wide-angle banana shaped ^3He Neutron Spin Filter cell (NSF) to cover a large range of scattering solid angle. The design assures relative magnetic field gradients $< 10^{-3} \text{ cm}^{-1}$ and large solid angle areas not interrupted by either coils or supports. In the vertical direction nearly 40° are open and the blind spots in the horizontal scattering plane comprise only 3° in 180° due to the square X and Y compensation coils. We present the first results of the field mapping and relaxations time measurements using a large ^3He SEOP polarized GE180 doughnut cell.

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