

GEn/GMn from Neutron Polarimetry at 4.5 GeV² with SBS

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The Super BigBite Spectrometer (SBS) program at JLab aims to measure nucleon electromagnetic form factors (EMFFs) at high momentum transfers. The GEn-RP experiment, the third in the SBS experiment series, concluded data taking in May 2024. This experiment is focused on measuring the neutron EMFF ratio G_E^n/G_M^n through recoil polarimetry at a $Q^2 = 4.5 \text{ (GeV/c)}^2$. Two polarimetry techniques have been used in this experiment: charge-exchange $np \rightarrow pn$ with a passive Fe analyzer, and conventional $np \rightarrow np$ scattering with an active CH analyzer. The results of this experiment will serve to optimize future even higher Q^2 experiments aimed at measuring G_E^n/G_M^n . Among the various detector subsystems, the gas electron multiplier detectors (GEMs) played a major role in particle tracking and polarimetry. An overview of the experiment and post-experiment data analysis efforts will be presented with a focus on contributions from the GEM detector subsystem.

US Department of Energy, Office of Science, Office of Nuclear Physics award number DE-FG02-03ER41240