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Validating the Analysis Algorithms to Extract the Helicity Asymmetry in the $^2\mathrm{H}(\vec{e},e'p)n$ Reaction[1] LIAM MURRAY, GERARD GILFOYLE, University of Richmond, CLAS COLLABORATION — Nuclei can be described with hadronic degrees of freedom (proton and neutrons), but we know these hadrons are built of quarks and gluons. We expect new phenomena at higher energy to reveal this underlying quark-gluon structure. To understand quantitatively the transition between these descriptions we need a firm understanding of the hadronic model. The structure functions are an essential meeting ground of theory and experiment. We have measured the helicity asymmetry related to the imaginary part of the longitudinal-transverse (LT) interference term of the quasi-elastic $^2\mathrm{H}(\vec{e},e'p)n$ reaction at an electron beam energy of 2.6 GeV. The measurements were made with the CLAS detector at Jefferson Lab. This structure function has not been measured in this region before. To validate our results we tested the analysis in simulation. After fitting the measured helicity asymmetry A'_{LT}, we incorporated the fit results into the CLAS Monte Carlo simulation. We simulated both the normal and reversed torus polarities of CLAS used in the experiment. We performed the same analysis used to measure A'_{LT} on the simulated events. The helicity asymmetry extracted from the simulation was consistent with the input taken from the measured A'_{LT}.

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Gerard Gilfoyle
University of Richmond

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