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Extracting the Fifth Structure Function of the ²H(e, e'p)n **Reaction**¹ LIAM MURRAY, GERARD GILFOYLE, University of Richmond — We have measured the imaginary part of the longitudinal-transverse interference term (the fifth structure function) of the ${}^{2}\mathrm{H}(e, e'p)n$ reaction to test the hadronic model of nuclear physics. At Thomas Jefferson National Accelerator Facility, a 2.6-GeV electron beam was incident on a deuterium target. The beam polarization was rapidly and pseudo-randomly flipped parallel or anti-parallel to the beam momentum. Using a large-solid-angle, magnetic spectrometer, the CEBAF Large Acceptance Spectrometer (CLAS), we obtained two sets of data in the range $Q^2 = 0.2 - 2.0 \ (GeV/c)^2$ using opposite polarizations of the toroidal magnetic field in CLAS. To extract the fifth structure function, we formed the helicity asymmetry A'_{LT} . We start by taking the ratio of the difference of events for the two beam polarizations divided by their sum as a function of their missing momentum p_m and ϕ_{pq} , the out-of-plane angle between the scattering and reaction planes. The data in each p_m bin were fitted as a function of ϕ_{pq} to a sinusoidal curve over the range $p_m = 0 - 0.7 \text{ GeV/c}$. The amplitude of the fit is A'_{LT} . The results were consistent with other methods for extracting A'_{LT} .

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