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Exploring the Spin Structure of the Neutron by the Measurement of g_2 and d_2 ¹ MURCHHANA ROY, WOLFGANG KORSCH, University of Kentucky, E12-06-121 AND E12-06-110 COLLABORATION — The experiment E12-06-121 at Jefferson Lab aims to do a precision measurement of the neutron spin structure function g_2 using the inelastic scattering of electrons over the kinematic range $0.20 < x_{Bj} < 0.95$ and $2.5 < Q^2 < 6.0$ (GeV/c)². The large kinematic coverage will allow for the precision determination of d_2 , the third moment of the linear combination of the spin structure functions g_1 and g_2 . As one of the cleanest higher twist observables, g_2 contains information on quark-gluon correlations, and d_2 is connected to the “color polarizability” of the nucleon. The experiment was performed and successfully completed in Hall C using a longitudinally polarized 10.4 GeV electron beam and a polarized helium-3 gas target. The combination of Super High Momentum Spectrometer (SHMS) and High Momentum Spectrometer (HMS) allowed us to run the experiment for three constant Q^2 values over a wide range of x_{Bj} for the first time. The extraction of $d_2^n(Q^2)$ will serve as a benchmark to the predictions from Lattice QCD. An overview of the experiment and the present status of the experimental data analysis will be presented.

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- ☒ Prefer Oral Session
☐ Prefer Poster Session

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