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Probing Nucleon Spin Structure with Deep Inelastic Scattering: Neutron 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 deep 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 will be performed in Hall C using a longitudinally polarized about 11 GeV electron beam and polarized helium-3 target. The combination of Super High Momentum Spectrometer (SHMS) and High Momentum Spectrometer (HMS) will allow us to run the experiment for four truly constant Q^2 values over a wide range of x_{Bj} for the first time. Physics will be explored to test several existing theoretical predictions including Lattice QCD. An overview (the present status) of the experiment will be presented.

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☒ Prefer Oral Session
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