

A Measurement of the Proton Spin Dependent Structure Function, g_2 , at Low Q^2

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Measurements of the nucleon spin-dependent structure functions have proven to be powerful tools in testing the validity of a number of effective theories of Quantum Chromodynamics. The neutron spin structure functions (g_1^n , g_2^n) and the proton spin structure function (g_1^p) have been measured to very high precision over a wide kinematic range. However, the proton structure function, g_2^p , remains largely unmeasured. The primary goal of JLab Hall A experiment E08-027 is to perform an inclusive measurement of the proton g_2 structure function in the low momentum transfer range of $0.02 < Q^2 < 0.2\text{GeV}^2$. The experiment will allow us to test the Burkhardt-Cottingham Sum Rule at low Q^2 as well as extract the longitudinal-transverse generalized spin polarizability and compare it to predictions made by Chiral Perturbation Theory. The experiment acquired data at Jefferson Lab in Hall A during March - May of 2012. The details of the experiment will be presented, along with online results and an overview of the analysis progress.