

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

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Jefferson Lab has been at the forefront of a program to measure the spin-dependent structure functions over the past several decades. Measurements of these nucleon spin structure functions have been proven to be powerful tools in testing the validity of effective theories of Quantum Chromodynamics. The neutron spin structure functions, $g_{1,2}^n$, the proton spin structure function, g_1^p , have been measured over a very wide kinematic range. However, the second proton spin structure function g_2^p remains largely unmeasured. The recent Jefferson Lab Hall A g_2^p experiment is an inclusive measurement of the proton g_2 structure function in the low Q^2 region ($0.02 < Q^2 < 0.2 \text{ GeV}^2$) for the first time. The measured data will provide an unambiguous benchmark test of Chiral Perturbation Theory (χ PT) calculations by extracting the generalized longitudinal-transverse polarizability δ_{LT} and also help test the Burkhardt-Cottingham Sum Rule at low Q^2 . This talk will present the details of the experiment, the analysis status and preliminary results.