The Proton Spin-Dependent Structure Function g2 at Low Q2

Jixie Zhang

University of Virginia and

For Jefferson Lab G2P(E08-027) Collaboration

(Dated: July 12, 2016)

Measurements of the nucleon spin-dependent structure functions have provided powerful tools to test the validity of effective theories of Quantum Chromodynamics (QCD). The neutron spin structure functions, g_1^n and g_2^n, and the proton spin structure function, g_1^p, have been measured over a wide kinematic range. However, the proton spin structure function, g_2^p, is mostly unknown. Recently an experiment (E08-027, also named G2P) is carried out at Jefferson Lab in Hall A to measure the proton g_2 structure function in the low momentum transfer region covering $0.02 < Q^2 < 0.20(GeV^2)$. In this kinematic region, this experiment allows us to extract the generalized longitudinal-transverse spin polarizability (δ^{LT}) in order to provide benchmark test to the Chiral Perturbation Theory (χ^{PT}) , and also to test the Burkhardt-Cottingham sum rule at low Q^2. The details of the experiment and the preliminary results will be presented.