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

Toby Badman

August 26, 2014

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.