Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Parity-Violating Inelastic $\vec{e}p$ Asymmetry at 3.35 GeV JAMES DOWD, College of William & Mary, QWEAK COLLABORATION — The recently completed Qweak Experiment at Jefferson Lab will make the first direct measurement of the weak charge of the proton, Q_W^p, via a measurement of the parity-violating asymmetry in elastic electron-proton scattering with low four-momentum transfer. To reach the precision goal of Qweak, energy dependent radiative corrections in the parity-violating asymmetry must be accounted for. The most significant of these is the γZ box diagram. The asymmetry arising from this diagram depends on the γZ interference structure functions, $F_{1,3}^{\gamma Z}$, for which there is almost no experimental data. Using the Qweak apparatus, with modifications, an ancillary measurement was taken at a higher beam energy of 3.35 GeV. The chosen kinematics allows access to inelastic scattering, where the asymmetry depends on these structure functions, allowing tests of their theoretical description. A lead wall in front of one of the eight Cerenkov detectors was added to isolate the pion background in the asymmetry measurement. Pion contamination is the largest uncertainty for this measurement. Analysis of these data will provide additional validation of the theoretical models used to predict the γZ box contribution to the proton's weak charge.

James Dowd
College of William & Mary

Date submitted: 30 Jun 2014 Electronic form version 1.4