

Abstract Submitted
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Non-Resonant Inelastic $\vec{e}p$ Scattering as a Probe of Hadron Structure¹ JAMES DOWD, The College of William Mary, QWEAK COLLABORATION — The Q_{weak} experiment at Jefferson Lab made the first direct measurement of the proton's weak charge, Q_W^p , via a measurement of the parity-violating asymmetry in elastic $\vec{e}p$ scattering with low four-momentum transfer. Energy-dependent electroweak radiative corrections must be applied to the measured asymmetry. The γZ box, where a photon and a Z-boson are simultaneously exchanged, is the most problematic correction. It cannot be calculated through the same perturbative methods as the rest of the corrections. The asymmetry arising from the γZ box depends on the γZ interference structure functions, $F_{1,3}^{\gamma Z}$, for which there is almost no data. Using the Q_{weak} apparatus, with modifications, a measurement of the parity-violating asymmetry of non-resonant inelastic $\vec{e}p$ scattering was made with 3.35 GeV incident electrons. The asymmetry of inelastically scattered electrons with $Q^2 \approx 0.09(GeV/c)^2$ and $W \approx 2.23 GeV$ was measured to experimentally validate and constrain theoretical predictions of the γZ box correction to the proton's weak charge and to probe the $F_{1,3}^{\gamma Z}$ structure functions. Final results will be presented and compared with theoretical predictions.

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