

Abstract Submitted
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$N \rightarrow \Delta$ Asymmetry at Low Q^2 JOHN LEACOCK, Virginia Tech, QWEAK COLLABORATION — The Qweak collaboration at Jefferson Lab is determining the weak charge of the proton. This is done by measuring the parity-violating asymmetry of polarized electrons scattered elastically from the proton at a low Q^2 of $0.026 (GeV/c)^2$. The measured asymmetry is partially diluted by polarized electrons inelastically scattered off the proton. Some Qweak experiment running time was used to measure the asymmetry in the inelastic region, which is dominated by the $N \rightarrow \Delta$ transition. In addition to constraining backgrounds for Qweak the $N \rightarrow \Delta$ asymmetry measurement is sensitive to a weakly constrained and theoretically uncertain low energy constant d_Δ . The term involving d_Δ (the “Siegert” term) is non-vanishing in the limit $Q^2 \rightarrow 0$, thus it can dominate the asymmetry at low Q^2 . This hadronic electroweak radiative correction is driven by the same matrix element responsible for the large SU(3) breaking effects observed in hyperon decays. An update on the analysis will be presented.

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