Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Update on Tests of the Standard Model from the Qweak Experiment[1] GREGORY SMITH, ROGER CARLINI, Jefferson Lab, WILLEM VAN OERS, Univ. of Manitoba, Manitoba, Canada and TRIUMF, Vancouver, Canada, MARK PITT, Virginia Tech, Blacksburg, VA — The final results of the Qweak collaboration were published last year (Androic, et al., Nature 557, 207 (2018)). That work describes how the proton's weak charge was extracted from the parity-violating asymmetry measured in ep scattering at Q^2 =0.0248 (GeV/c)^2. Here we describe a new fitting technique which has the advantage that the extrapolation is linear in Q^2. The weak charge obtained in this new procedure is consistent with that obtained in the recent publication. We provide some new and interesting comparisons of the Qweak $\sin^2\theta_W$ result with the predicted running and Z-pole results. We explore the flavor dependence of the mass reach from the Qweak experiment in the context of potential new weak-charge experiments on the proton and in atomic nuclei. We also show the dependence of the mass reach on coupling strength, highlighting a few examples of the limits set for specific new physics.

[1]This work was supported by DOE Contract No. DEAC05-06OR23177, under which Jefferson Science Associates, LLC operates Thomas Jefferson National Accelerator Facility.

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Date submitted: 01 Jul 2019 Electronic form version 1.4