

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Optimizing the Kinematics, Backgrounds and Technology for a Next Generation Q^p_{weak} Measurement ROGER CARLINI, Jefferson Laboratory, QWEAK COLLABORATION — The recent Q^p_{weak} measurement at JLab was optimized to deliver the highest possible precision within the constraints of the available beam time, energies, polarized beam current, target technology, beam quality and kinematic requirements for the suppression of theoretical uncertainties. Applying what we have learned towards maximizing the figure-of-merit of a possible more precise next generation measurement suggests focusing on decreasing the beam energy (and Q^2), but only enough to sufficiently suppress theoretical correction uncertainties, while still keeping the scattering asymmetry as high as possible. This insures that the running time remains reasonable and demands on helicity correlated beam properties stay within practical limits. Of equal importance is to remain sufficiently high in electron beam energy (400 MeV to 600 MeV) that proven technologies can be employed for the most critical ancillary measurements - such as precision laser backscattering beam polarimetry. The above conditions seem at least technically feasible if given the availability of a lower energy electron beam, sufficient running time and polarized beam current while still allowing the use of much of the previous generation Q_{weak} instrumentation and methodology.

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Date submitted: 23 Jun 2014

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