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The Qweak Experiment : Design of Quartz Čerenkov Detectors for a Measurement of the Proton Weak Charge¹

MICHAEL GERICKE, Jefferson National Laboratory and University of Manitoba, QWEAK COLLABORATION — The Qweak experiment at Jefferson Lab aims to make a 4% measurement of the parity-violating asymmetry in elastic scattering at very low Q^2 of a longitudinally polarized electron beam on a proton target. The experiment will measure the weak charge of the proton, and thus the weak mixing angle at low energy scale, providing a precision test of the Standard Model. The experiment is currently being constructed and is scheduled for a 2200 hour measurement starting in 2009, employing: an 80% polarized, 180 μ A, 1.2 GeV electron beam; a 35 cm liquid hydrogen target; and a toroidal magnet to focus electrons scattered at 9° forward angle, corresponding to $Q^2 = 0.03$ (GeV/c)². The experiment will run at an event rate of over 6 GHz. This requires current mode detection of the scattered electrons, using synthetic quartz Čerenkov detectors. In this talk we will present a brief introduction to the experiment, with a focus on the design and status of the main Čerenkov detectors.

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Prefer Oral Session
 Prefer Poster Session

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