

Abstract Submitted  
for the DNP06 Meeting of  
The American Physical Society

**The Qweak Experiment : Design of Quartz Čerenkov Detectors for a Measurement of the Proton Weak Charge**<sup>1</sup> 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  $\mu$  A, 1.2 GeV electron beam; a 35 cm liquid hydrogen target; and a toroidal magnet to focus electrons scattered at  $9^\circ$  forward angle, corresponding to  $Q^2 = 0.03$  (GeV/c)<sup>2</sup>. 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.

<sup>1</sup>Supported by: DOE, NSF, NSERC.

Michael Gericke  
Jefferson National Laboratory and University of Manitoba

Date submitted: 06 Jul 2006

Electronic form version 1.4