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Comparison of "integrating" and "tracking" modes of operation in the Qweak experiment ROB MAHURIN, University of Manitoba / JLab, QWEAK COLLABORATION — The Qweak experiment the first direct measurement of the proton's weak charge Q_W^p, has recently completed data collection at Jefferson Lab. Polarized, 1.165 GeV electrons were scattered from protons and focused onto an array of large (2 m×0.18 m) fused-silica Cherenkov detectors. We have proposed to measure the parity-violating asymmetry associated with Q_W^p to a precision of 5 ppb. To meet this statistical requirement, the bulk of the data were collected using "integrating" electronics (with typical event rates ∼800 MHz per detector). However, the observed asymmetry also depends on the distribution of momentum transfer Q^2 accepted by the experiment. Measurements of Q^2 were made by inserting wire chamber detectors — but only with the beam current reduced by three to six orders of magnitude. For these "tracking" measurements, the main detectors were connected to electronics able to resolve single events. As a bridge between integrating and tracking modes, a small (1 cm×1 cm) Cherenkov detector on a motion stage had freedom to scan over one of the large Cherenkov detectors; the small size permitted use of the same electronics at all beam currents. In this talk I will discuss the consistency of results from these various modes of operation.

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