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Correcting for Beam Effects in the Qweak Experiment¹ DAVID SPECHT, College of William and Mary — Qweak is an experiment at Jefferson Lab to identify phenomena beyond the standard model by calculating the weak charge of the proton. A ring of quartz detectors measures the parity-violating asymmetry of polarized electronsS scattered against a liquid hydrogen target, a value proportional to the weak charge. The purpose of this research is to correct for effects of beam properties on measured asymmetries which affect the calculated weak charge. The beam slope, position, charge, and energy are known to affect measured asymmetries and are corrected for in a first pass through the data with linear regression. In a second pass, remaining correlations and associated errors are calculated between the corrected data and other beam properties, including linephase (phase of the AC power supply), beam position monitors, an additional quartz detector and bare photomultiplier tubes sensitive to backgrounds, raster position (where the beam is "painted" onto the target) and luminosity detectors. The corrected data are still correlated with some other beam properties, including luminosity, background detectors, and beam position monitors that are sensitive to beam energy. We are uncertain why these correlations remain and seek to determine if they should be the subject of future corrections.

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