

Abstract Submitted
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Projected Vertical Drift Chamber Geometry Adjustments of the Qweak Experiment¹ DANIEL NEMES, The College of New Jersey — The goal of the Qweak experiment, a parity-violating electron scattering experiment at Jefferson Laboratory, is to measure the weak charge of the proton to a high precision, within 4% of its value. In order to make this precise measurement, the asymmetry of the scattering of right and left-handed electrons, and the momentum transfer of these electrons, must be known to a high enough precision to meet the budgeted uncertainty. The momentum transfer is ultimately determined through Monte Carlo simulations in GEANT4, which must agree with the data received from the experiment. However, we observed a slight discrepancy between simulation and experimental data caused by the track reconstruction program. The energies of the scattered electrons calculated from the experimental data had an octant dependence, which, along with some other evidence, signified a possible tilt in the drift chambers used to determine the location and direction of the scattered electrons. The tracking code was modified to account for any tilt of the detectors. After the code was modified, the octant dependence was mitigated and the scattered energies from the simulation and from the experimental data appear to be in better agreement.

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