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Linear Regression Systematics of the Q-weak Main Detector Asymmetry DAVID MACK, TJNAF, Q-WEAK COLLABORATION — The Q-weak collaboration has made the first direct measurement of the proton's weak charge at Jefferson Lab to tightly constrain new, parity-violating electron-quark interactions at the multi-TeV scale. Our experiment measured the ∼200 ppb parity-violating asymmetry in the scattering of longitudinally polarized electrons from an unpolarized liquid hydrogen target at a luminosity of $1.8\text{x}10^{39}$. Careful setup of the injector helped to suppress helicity correlated differences in beam position, angle, and energy which create false asymmetries due to changes in detector acceptance and the kinematic dependences of the e+p cross section. Measured differences in beam position were consistent among all 6 beam position monitors in front of the target, with a precision of ∼1 nanometer. The size of corrections depends on the helicity correlated beam parameter differences, and averaged about 35 ppb per shift of data. The data were regressed using 10 different sets of Independent Variables. These were expected to give similar corrections yet showed differences at the +- 10 ppb level. In this presentation I'll summarize how these different schemes have not only been helpful in understanding the sensitivities of the main detector but in assigning errors to the corrections.

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