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Model Sensitivities in the Extraction of $Q_w(p)$ from PVES Data[1]

GREGORY SMITH, Jefferson Lab, QWEAK COLLABORATION — As the Q_{weak} collaboration prepares to unblind our final result, studies have been performed to quantify the sensitivities of the fit used to extract the proton's weak charge $Q_w(p)$ from the body of existing parity-violating electron scattering (PVES) data. The results of these sensitivity studies will be used to freeze choices associated with the fitting procedure before unblinding. Under study are the effects of including PVES data on D2 and He targets in the fit, and restrictions on the angular and Q^2 range of the data in the fit. The impact of different electromagnetic form factor (EM FF) fits, and the separate impact of the uncertainties associated with the EM FF fits themselves on the fit used to extract $Q_w(p)$ from the body of (mostly) $\vec{e}p$ data have been studied. The impact of recent lattice QCD calculations of charge symmetry effects on our fit result will be assessed. A comparison will be made using recent lattice calculations of ρ_s and μ_s in our $Q_w(p)$ determination, or floating these parameters in our fit. The dipole mass sensitivity in the strange and axial FFs will be assessed. The impact of floating the isoscalar and/or isovector axial FFs to theory or floating them freely in the fit will also be studied.

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