

Abstract Submitted
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Track Reconstruction and Determination of Kinematic Parameters for the Qweak Experiment RACHEL TAVERNER, WOUTER DECONINCK, The College of William and Mary — The Qweak experiment at Jefferson Lab aims to make a high-precision measurement of the weak charge of the proton by examining the asymmetry in the scattering rate of left-handed and right-handed electrons from a proton target. The weak charge of the proton, Q_{weak}^p , is related to the scattering asymmetry and to the momentum transfer, Q^2 . In order to determine Q_{weak}^p with small uncertainty, we must measure the value of Q^2 precisely, as well. Monte Carlo simulations of the experiment, under different configurations and conditions, are run to determine the values of various kinematic parameters, such as Q^2 , the scattering angle, θ , and the scattered energy, E' . By comparing the kinematic parameters obtained from the simulation files, after track reconstruction, to the parameters obtained from the experimental data, we can determine the accuracy of the simulations and reconstruct the value of Q^2 at the interaction vertex.

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