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Track Reconstruction for Aluminum Scattering in the Qweak Experiment[1] MARIKA MCCARTHY, Willamette University — The Qweak experiment, conducted at Jefferson Lab in Newport News, VA, made the first determination of the proton's weak charge by investigating the scattering of an electron beam off of protons in a hydrogen target. The casing of the target was made out of aluminum, and as a result some of the electrons do scatter off of the target's aluminum walls. The walls have thin upstream and downstream "windows" to minimize electron-aluminum interaction, where the former is the location where the beam enters the target while the latter is the location at which the beam exits. As we are only concerned with the electron-proton scattering, it is necessary to investigate the electrons that scattered off aluminum in more detail to understand how this background noise affects the measurement on hydrogen. Using Monte Carlo simulations of the experiment and reconstruction of the tracks that the electrons take, discrepancies between simulations, track reconstruction, and experimentally collected data were found.

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