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**Systematic Studies with the Qweak Tracking System** JOHN LECKEY, William and Mary, QWEAK COLLABORATION — Qweak is an upcoming experiment at the Thomas Jefferson National Accelerator Lab that will use parity-violating elastic electron-proton scattering to measure the weak charge of the proton ($Q^P_{weak}$). This experiment will be a sensitive test for physics beyond the standard model, as $Q^P_{weak}$ is well predicted in the Standard Model. Longitudinally polarized electrons will scatter off a liquid hydrogen target and pass through a toroidal-field magnetic spectrometer. In order to perform a 4% measurement of $Q^P_{weak}$, we will need to measure the momentum transfer ($Q^2$) to 0.5%. The $Q^2$ will be measured using a tracking system consisting of two gas electron multipliers (GEM), four horizontal drift chambers (HDC), and four vertical drift chambers (VDC). In this talk I will outline the design and status of each tracking device and discuss the details of the $Q^2$ measurement, as well as several systematic studies that will be performed with this tracking system.

John Leckey
William and Mary

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