

Abstract Submitted
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The Data Quality and Analysis Status of the Proton Charge Radius (PRad) Experiment at JLab¹ WEIZHI XIONG, Duke University, PRAD COLLABORATION — In order to investigate the proton radius puzzle, the PRad experiment (E12-11-106²) was performed in 2016 in Hall B at Jefferson Lab. The experiment aims to extract the electric form factor of proton in an unprecedented low Q^2 region ($2 \times 10^{-4} - 0.1$ (GeV/c)²), with a sub-percent precision. The PRad experiment utilizes a non-magnetic calorimetric method with a high efficiency and high resolution calorimeter (HyCal), and two Gas Electron Multiplier (GEM) detectors. The systematic uncertainties are well controlled by two main advantages of the experiment: (1) The electron-proton ($e - p$) elastic scattering cross section is normalized to the well-known Møller scattering process, which is measured simultaneously during the experiment; (2) The H₂ gas flow target has no cell windows at both ends, which created primary backgrounds in the previous $e - p$ elastic scattering experiments. Thus the PRad experiment largely suppresses the two major systematic uncertainties in the previous magnetic spectrometric $e - p$ elastic scattering experiments. In this talk, we will discuss the data quality and analysis status, and present the first preliminary results from the current analysis process.

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