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Data Analysis and Preliminary Results of the Proton Charge Radius Experiment (PRad) at JLab[1] WEIZHI XIONG, CHAO PENG, Duke Univ, PRAD COLLABORATION — In order to investigate the proton radius puzzle, the PRad experiment (E12-11-106[2]) was performed in 2016 in Hall B at Jefferson Lab, with both 1.1 and 2.2 GeV unpolarized electron beams. The experiment aims to measure the $e-p$ elastic scattering cross section in an unprecedented low values of momentum transfer squared region ($Q^2 = 2 \times 10^{-4} - 0.06$ $(\mathrm{GeV/c})^2$), with a sub-percent precision. The PRad experiment utilizes a non-magnetic calorimetric method with a large acceptance and high resolution calorimeter (HyCal), and two large area, high spatial resolution Gas Electron Multiplier (GEM) detectors. To have a better control over the systematic uncertainties, the absolute $e-p$ elastic scattering cross section is normalized to that of the well-known Møller scattering process, which is measured simultaneously within similar kinematics and geometrical acceptances. The windowless H_2-gas-flow target utilized in the experiment largely removes a typical background source, the target cell windows. In this talk, we will discuss details of the data analysis and present preliminary results from both beam energy settings.

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