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Data Analysis and Preliminary Results of the Proton Charge Radius Experiment (PRad) at JLab[1] WEIZHI XIONG, CHAO PENG, Duke University, 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 1.1 and 2.2 GeV unpolarized electron beam on a windowless H_2 gas flow target. The experiment aims to extract the electric form factor of the proton in an unprecedented low squared momentum transfer region ($Q^2 = 2 \times 10^{-4} - 0.06$ $(GeV/c)^2$), 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 control 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 experimental acceptances. Both the luminosity and the energy independent part of the detector acceptance and efficiency are canceled out in the ratio. In this talk, we will discuss details of the data analysis and present the preliminary physics results from the 2.2 GeV data.

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