

Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Results of the Proton Charge Radius Experiment (PRad) at JLab¹ WEIZHI XIONG, Duke University, PRAD COLLABORATION — In order to investigate the proton charge radius puzzle, the PRad experiment (E12-11-106) 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 ($Q^2 = 2 \times 10^{-4} - 0.06 \text{ (GeV/c)}^2$), with a sub-percent precision. The PRad experiment utilizes a calorimetric method that is magnetic spectrometer free. Its detector setup includes 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 was measured simultaneously within similar kinematics and detector acceptances. The windowless H₂-gas-flow target utilized in the experiment largely removes a typical background source, the target cell windows. In this talk, we will present results of the experiment.

¹This work is supported in part by the NSF MRI award PHY-1229153, the U.S. Department of Energy under Contract No. DE-FG02-03ER41231, Thomas Jefferson National Accelerator Facility and Duke University

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Date submitted: 11 Jul 2019

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