GEM Detectors and Preliminary Analysis of Proton Charge Radius (PRad) Experiment at Jefferson Lab *

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The PRad experiment was performed in June 2016 at Jefferson Lab Hall B, the experiment was designed to measure the proton charge radius through the elastic electron proton scattering process, using a non-magnetic-spectrometer method. The experiment reaches very low ep sattering angles and thus an unprecedented low four-momentum transfer squared region, Q^2 from 2×10^{-4} to $0.1(GeV/c)^2$. Gas Electron Multiplier (GEM) detectors have contributed to reach the experimental goal. Besides COMPASS experiment, PRad experiment is another experiment that have implemented GEM detectors. The experiment measures the proton charge radius by extracting the electric form factor of proton with a sub-percent precision. The experiment utillizes two world-largest, high spatial resolution GEM detectors, and a non-magnetic calorimeter(HyCal). In this talk, we will present the efficiency and other charactoristics of GEM detectors approached in this experiment, and preliminary analysis of the experimental data.

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