Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Precision Measurement of the Proton Elastic Cross Section at High Q^2 LONGWU OU, Massachusetts Institute of Technology, E12-07-108 COLLABORATION — The measurement of proton electromagnetic form factors (FF) is a powerful way to understand the internal structure of proton and gain insight into the nature of the strong interaction. Current data of FF at high Q^2 have large statistical and systematic uncertainties, which translate into large uncertainties in the extracted cross section in this kinematic range. The GMp experiment in Hall A at Jefferson Lab, starting from 2014, performed precision measurements of elastic *ep* scattering cross section in the Q^2 range from 7 to 14 $(\mathrm{GeV}/c)^2$. These measurements will improve the precision on the cross section in the covered Q^2 range to about 2%. They represent a great complement to the world's cross section data set and will be key inputs for future electromagnetic form factor experiments at similar kinematics. In this talk, the instrumentation and techniques used in the experiment will be described, and the current status of the analysis will be presented.

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Date submitted: 30 Sep 2016 Electronic form version 1.4