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Abstract for an Invited Paper for the DNP17 Meeting of the American Physical Society

The Proton Radius Experiment at Jefferson Lab (PRad)¹ ASHOT GASPARIAN, NC AT State University

The proton charge radius (Rp) is one of the most fundamental quantities in physics. Precision knowledge of its value is critically important for both nuclear and atomic physics – especially for the spectroscopy of atomic hydrogen. Recent high precision measurements of Rp using the muonic hydrogen atom demonstrated up to eight standard deviation smaller value than the accepted average from all previous experiments performed with different methods. This fact triggered the well known "*Proton Charge Radius Puzzle*" in hadronic physics. The PRad collaboration at Jefferson Lab for the last five years developed a novel magnetic-spectrometer-free e-p scattering experiment to address this puzzle. The experiment was successfully performed in May and June of 2016 with taking high statistics and rich experimental data. The specifics of the experiment together with the preliminary physics results from the data analysis process will be presented and discussed in this talk.

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