

Abstract Submitted  
for the DNP19 Meeting of  
The American Physical Society

**The Role of Lepton Mass in QED Corrections for Muon Scattering on a Nucleon.**<sup>1</sup> ANDREI AFANASEV, George Washington University — In order to address the proton radius puzzle through measuring the muon-proton and electron-proton elastic cross sections in the same experiment (MUSE), QED corrections have to be taken into account. In this talk, we will report both kinematic and dynamical sources of the differences between muon-nucleon and electron-nucleon elastic scattering. In addition, single-spin asymmetries caused by muon beam polarization will be shown to affect the scattering cross section at 0.1 per cent level. Novel effects due to the lepton mass are incorporated into a Monte-Carlo code ELRADGEN.

<sup>1</sup>The author acknowledges collaboration with Oleksandr Koshchii and Alex Ilyichev. This work is supported in part by NSF PHY-1812343.

Andrei Afanasev  
George Washington University

Date submitted: 01 Jul 2019

Electronic form version 1.4