

Abstract Submitted
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**The MUSE Measurement of the Proton Radius at PSI π M1:
Radiative Corrections and Two-Photon Exchange** ANDREI AFANASEV,
George Washington University, MUSE COLLABORATION — The MUon proton
Scattering Experiment (MUSE) at the Paul Scherrer Institut (PSI) π M1 beam line
is intended to measure the proton charge radius from $\mu^\pm p$ and $e^\pm p$ elastic scattering.
In this talk we present calculations and discuss the role of electromagnetic radiative
corrections for the MUSE experiment. Since the muon is heavier than an electron,
the bremsstrahlung corrections are reduced in the muon case. However, the two-
photon corrections and the interference between lepton and proton bremsstrahlung
are less dependent on the lepton mass. Model estimates of the two-photon correc-
tions are presented. The MUSE experiment will provide a capability to measure
two-photon effects by analyzing lepton charge dependence of the scattering cross
sections.

Andrei Afanasev
George Washington University

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