

Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Radiative corrections to the elastic e-p and mu-p scattering in Monte Carlo simulation approach OLEKSANDR KOSHCHII, ANDREI AFANASEV, George Washington University, MUSE COLLABORATION — In this paper, we calculated exactly lepton mass corrections for the elastic e-p and mu-p scatterings using the ELRADGEN 2.1 Monte Carlo generator. These estimations are essential to be used in the MUSE experiment that is designed to solve the proton radius puzzle. This puzzle is due to the fact that two methods of measuring proton radius (the spectroscopy method, which measures proton energy levels in hydrogen, and the electron scattering experiment) predicted the radius to be 0.8768 ± 0.0069 fm, whereas the experiment that used muonic hydrogen provided the value that is 5% smaller. Since the radiative corrections are different for electrons and muons due to their mass difference, these corrections are extremely important for analysis and interpretation of upcoming MUSE data.

Andrei Afanasev
George Washington University

Date submitted: 08 Jan 2015

Electronic form version 1.4