

Abstract Submitted
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Study of Radiative-Correction Uncertainties in MUSE with ESEPP¹ LIN LI, University of South Carolina, MUSE COLLABORATION COLLABORATION — The MUon Scattering Experiment (MUSE) at Paul Scherrer Institute (PSI) has been developed to measure elastic electron-proton and muon-proton scattering data with positively and negatively charged beams in a four-momentum-transfer range from 0.002 to 0.08 GeV². Each of the four sets of data will allow the extraction of the proton charge radius. In combination, the data test possible differences between the electron and muon interactions and additionally two-photon exchange effects. Accurate calculations of higher-order corrections to the Born cross section are an essential component in reducing uncertainties in measurements of the proton radius. In this talk, an event generator, ESEPP (Elastic Scattering of Electrons and Positrons on Protons), which takes account the first-order radiative corrections of elastic scattering of charged leptons (e^\pm and μ^\pm) on protons, is used to study the radiative corrections and their uncertainties in MUSE. The size of radiative corrections and uncertainties for electron and muon will be discussed.

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Lin Li
University of South Carolina

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