The MUSE Measurement of the Proton Radius at PSI πM1: Overview

EVANGELINE J. DOWNIE, The George Washington University, MUSE COLLABORATION — The Proton Radius Puzzle, the difference between the proton radius measured using muonic hydrogen and the same quantity measured using atomic hydrogen and electron-proton elastic scattering, remains unresolved after three years. The MUon proton Scattering Experiment (MUSE) at the Paul Scherrer Institut (PSI) πM1 beam line is intended to help resolve the Puzzle through measurements of $\mu^\pm p$ and $e^\pm p$ elastic scattering. Measuring scattering of electrons and muons at the same time should provide a direct $e/\mu$ comparison with reduced systematic uncertainties. Measuring with both positive and negative beam charges allows two-photon exchange contributions to be studied. This talk will provide an overview of the MUSE motivation, measurements, schedule and expected results.

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