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Pion-Proton Scattering with MUSE Apparatus[1] IEVGEN LAVRUKHIN, Univ of Michigan - Ann Arbor, MUSE COLLABORATION — The Muon Proton Scattering Experiment (MUSE) was built to address the proton radius puzzle by simultaneously measuring the proton radius from both electron-proton and muon-proton elastic scattering in a momentum transfer range sensitive to the radius extraction. The experiment is carried out at the Paul Scherrer Institute (PSI) and uses a mixed e, μ, and π beam, alternating between positive and negative polarities, in the PiM1 secondary beam line. This, in combination with a large-acceptance, non-magnetic detector system also allows the MUSE apparatus to measure the absolute $\pi^{\pm}$p elastic cross sections and cross section ratios over a wide pion momentum range (115 to 210 MeV/c). In this talk I will present an opportunity to use the MUSE apparatus to fill gaps in the existing pion-proton elastic scattering data as well as a search for the proposed missing baryon resonances, below the $\Delta(1232)$.

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