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The MUSE Measurement of the Proton Radius at PSI πM1: Beam Studies VINCENT SULKOSKY, MIT, MUSE COLLABORATION — The MUon proton Scattering Experiment (MUSE) measurements at the Paul Scherrer Institut (PSI) πM1 beam line utilizes a mixed $e/\mu/\pi$ beam to measure $\mu^{\pm}p$ and $e^{\pm}p$ elastic scattering. The beam properties have not previously been characterized at the level needed for MUSE. In 2012 and 2013, we used systems of fast scintillators, scintillating fiber detectors, beam Cerenkovs, and GEM chambers to characterize the beam properties (particle fluxes, emittances, and RF time separation of particles) and to test whether the beam is indeed adequate for the planned MUSE measurements. In this talk, I will describe the test beam measurements and the obtained results.

Vincent Sulkosky
MIT

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