

9th Beam Telescopes and Test Beams Workshop



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Status of the MUonE experiment

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The measurement of the muon $g-2$ presently exhibits a 3.5σ discrepancy from the Standard Model prediction. In the next years, it will be measured at Fermilab and J-PARC with even higher precision. Given this experimental effort, it is extremely important to reduce also the error on the theoretical prediction, which is dominated by the uncertainty on the hadronic contribution a_μ^{HLO} .

The MUonE experiment proposes a novel approach to determine a_μ^{HLO} by measuring the running of the electromagnetic coupling constant in the space-like region, via $\mu - e$ elastic scattering. The measurement will be performed by scattering a 150 GeV muon beam, currently available at CERN's North Area, on the atomic electrons of a low-Z target. A tracking system based on the 2S modules foreseen for the CMS High Luminosity LHC upgrade will be used to detect the outgoing particles with high precision. A Test Run on a reduced detector is planned in Fall 2021, to validate this proposal. The status of the experiment in view of the Test Run will be presented in this talk.

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