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Status of the MUonE experiment

Friday 1 October 2021 14:50 (20 minutes)

The latest measurement of the muon g-2, recently announced at Fermilab, exhibits a 4.2σ discrepancy from the currently accepted Standard Model prediction. The leading hadronic contribution a_μ^{HLO} represents the main source of uncertainty on the theoretical value, and is traditionally determined by a data-driven dispersive approach. In contrast, a recent evaluation of a_μ^{HLO} based on lattice QCD weakens the discrepancy between theory and experiment to 1.5σ. Therefore, an independent crosscheck of a_μ^{HLO} is required to solve this tension and consolidate the theoretical prediction.
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 160 GeV muon beam, currently available at CERN's North Area, on the atomic electrons of a low-Z target. A Test Run on a reduced detector is planned in 2021-2022, to validate this proposal. The status of the experiment in view of the Test Run will be presented.

What is your topic?

Anomalous Magnetic Moment of the muon

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