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MUonE experiment

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The anomalous magnetic moment of muon has been a long standing issue in the field of particle physics. The recent results by Fermilab have pointed to a possible discrepancy of 4.2 sigma with respect to the Standard Model prediction.

Although the future measurements will undoubtedly strengthen this result, the large uncertainty of the prediction, caused by its non-perturbative contributions, remains an issue.

The MUonE experiment is designed to provide an independent, precise measurement of such contribution, originating in the hadronic vacuum polarization, by employing a series of tracking stations, each with a low-Z target, to accurately determine the shape of differential cross-section of an elastic $ue \rightarrow ue$ scattering.

It is expected to increase the result's significance to at least 7 sigma, thus solidifying the discovery. The design of the detector allows also for searches of displaced vertices from New Physics phenomena.

Collaboration

MUonE

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