



Contribution ID: 118

Type: **not specified**

The MUonE experiment

We propose a new approach to measure very precisely the hadronic leading order corrections to the muon $g - 2$, the $\mu - e$ differential cross section in order to determine a_μ^{HLO} , with space-like data, measuring the hadronic contribution to the effective electromagnetic coupling α , by means of the elastic scattering $\mu - e$ of 150 GeV muons (currently available at CERN North area) off atomic electrons. Such a direct measurement of a_μ^{HLO} will provide a new independent determination and will consolidate the theoretical prediction of the muon $g - 2$ in the Standard Model, which currently shows a 3.5σ discrepancy between theory and experiments. This project is part of the Physics Beyond Colliders Working Group.

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Track Classification: Flavour Physics and CP violation (quarks, charged leptons and rare processes)