

Leading hadronic contribution to muon $g-2$ from lattice QCD and the MUonE experiment

Wednesday, July 25, 2018 9:30 AM (30 minutes)

The dominating uncertainty in the Standard Model prediction of the muon $g-2$ is coming from the hadronic contributions. The Muon $g-2$ experiment at Fermilab has started the major data collection and the aimed four-fold increase in precision will shed light on the current discrepancy between the theory prediction and the measured value. A reciprocal effort to directly measure the hadronic contributions to the running of the fine structure constant has been proposed by the MUonE experiment, which is part of the Physics Beyond Colliders program at CERN. MUonE will get a measurement of the HVP contribution from the scattering of the high-energy muons on the fixed electron target.

Lattice QCD and MUonE experiment measure high accuracy HVP in the complementary momenta ranges. Thus, a hybrid strategy including both experimental and lattice data sets is expected to give an independent check of the current dispersive results from e^+e^- annihilation, which dominate the current world average. In this talk, I will present a first estimate of the lattice contribution to the hybrid HVP, which will be combined with the outcome of the MUonE experiment. Furthermore, using a physically motivated model for the $I=1$ vacuum polarization (Golterman et al.'13), we give the projected precision for the MUonE's measurement of the HVP in the low momentum region.

Primary author: Prof. MARINA, Krstic Marinkovic (CERN/Trinity College Dublin)

Presenter: Prof. MARINA, Krstic Marinkovic (CERN/Trinity College Dublin)

Session Classification: Plenary