

## The MUonE experiment: theory status

*Tuesday, 16 August 2022 18:00 (25 minutes)*

The CERN MUonE experiment aims at a new and independent determination of the leading order correction to the muon anomalous magnetic moment, through a high-precision measurement of the hadronic contribution to the running of the QED coupling constant in elastic  $\mu e \rightarrow \mu e$  events, by exploiting 160 GeV muons scattering on atomic electrons. The required precision in the measurement of the differential cross sections at the 10ppm level demands for theory predictions at the same level of accuracy for a meaningful data analysis. In this context, the talk will review the efforts completed in the last years by an active theory community to calculate radiative corrections to the elastic process at NNLO in QED and their implementation into Monte Carlo event generators. Finally, the talk will indicate future developments needed to achieve the ultimate theoretical accuracy.

### Category

talk

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