



Contribution ID: 14

Type: **not specified**

Testing the Standard Model with Most Accurate Muon $g-2$ Measurements ($17'+3'$)

Tuesday, October 8, 2024 5:35 PM (20 minutes)

The magnetic moment anomaly of the muon, that relates the cyclotron and spin precession frequency, provides one of the most stringent tests of the Standard Model of Particle Physics since it is measured and theoretically predicted to very high precision. Deviations between theoretical prediction and experimental measurements can be used to investigate tensions in the methods or can be interpreted as hints for physics beyond the Standard Model. In August 2023, the Fermilab Muon $g-2$ experiment reported its result from measurement campaigns 2 and 3, which in combination with run 1 increased the precision to now 200 ppb. The increase in precision is both due to increased statistics and reduced systematics. This milestone puts the Muon $g-2$ experiment well on its way to surpass its design precision of 140 ppb with final statistics. In this contribution we review the measurement principle of the Muon $g-2$, point out experimental improvements in the recent measurement and put the measurement in the context of the current theoretical effort.

Author: REIMANN, René (Johannes Gutenberg University, Mainz)

Presenter: REIMANN, René (Johannes Gutenberg University, Mainz)

Session Classification: Lepton flavor violating processes