Contribution ID: **3** Type: **not specified**

The Muon g-2 Experiment in 10 minutes

Tuesday, 27 June 2023 13:30 (15 minutes)

The Muon $g-2$ Experiment at Fermilab is a very high-precision experiment that aims to measure the muon magnetic anomaly with the unprecedented precision of 140 parts per billion. The muon anomaly, which is the relative deviation of the muon g-factor from 2, encodes all the possible virtual interactions between the muon and a magnetic field. In April 2021, the collaboration published the first measurement relative to the first year of data taking with a precision of 460 ppb. The result confirmed the previous experiment at BNL and increased the tension with the Standard Model prediction to 4.2 σ. This exciting discrepancy could be a hint of new physics and/or indirect detection of unknown particles. However, improved theoretical calculations involving Lattice QCD techniques are bringing new tensions within the theory side of the muon anomaly. A new measurement with twice the precision will be published later this summer. This talk will try to convey the importance of the g-2 experiment and the fascinating complexities involved when performing a sub-ppm measurement.

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Session Classification: Muons: Mu2e and g-2