

# Measurement of the anomalous spin precession frequency $\omega_a$ in the Muon $g - 2$ experiment at Fermilab

*Thursday 18 July 2024 11:00 (15 minutes)*

The Muon  $g-2$  Experiment at Fermilab aims to measure the muon magnetic moment anomaly,  $a_\mu = (g-2)/2$ , with a final accuracy of 0.14 parts per million (ppm). A 3.1-GeV muon beam is injected into a storage ring of 14 m diameter, in the presence of a 1.45 T magnetic field. The anomaly  $a_\mu$  can be extracted by accurately measuring the anomalous muon spin precession frequency  $\omega_a$ , based on the arrival time distribution of decay positrons observed by 24 calorimeters, and the magnetic field. In 2023, the experiment published a result based on the 2019 and 2020 datasets, reaching the unprecedented sensitivity of 0.20 ppm. In this talk, I will outline the major systematic uncertainties on the  $\omega_a$  frequency and provide an overview of the ongoing  $\omega_a$  analysis for the last three datasets, collected from 2020 to 2023, along with the projected uncertainties on the final Muon  $g - 2$  measurement at Fermilab.

## Alternate track

1. Beyond the Standard Model

## I read the instructions above

Yes

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**Session Classification:** Quark and Lepton Flavour Physics

**Track Classification:** 05. Quark and Lepton Flavour Physics