

The Muon $g-2$ Experiment

The Muon $g-2$ Experiment at Fermilab will measure the anomalous magnetic moment of the muon to a precision of 140 parts per billion, which is a factor of four improvement over the previous E821 measurement at Brookhaven. The experiment will also extend the search for the muon's electric dipole moment (EDM) by approximately two orders of magnitude with a sensitivity down to 10^{-21} e.cm. Both of these measurements are made by a precise measurement of the storage-ring's 1.45T magnetic field combined with an analysis of the modulation of the decay rate of the higher-energy positrons from the (anti-)muon decays recorded by 24 calorimeters and 3 straw tracking detectors. In this talk the recent progress in establishing the uniform storage-ring magnetic field, the accelerator infrastructure, detectors and the storage-ring kicker and quadrupoles will be described and how the improvements in these over the E821 measurement will lead to a reduction of a factor of 3 in the systematic uncertainty of the measurement.

Summary

Primary author: HOLZBAUER, Jenny Lyn (Mississippi University (US))

Presenter: HOLZBAUER, Jenny Lyn (Mississippi University (US))