Title: An Overview of the Muon g-2 Experiment at Fermilab

Abstract:

The Muon g-2 experiment at Fermilab will measure the anomalous magnetic dipole moment (a_μ) of the muon with an improved factor of four accuracy (140 parts per billion), and where a_μ characterizes the muon sensitivity to the fundamental forces governing nature that are described by the Standard Model (SM) of particle physics. The new measurement is inspired by the results of the Brookhaven (BNL) experiment, which achieved 540 parts per billion on the determination of the a_μ . Currently, there exists a $> 3\sigma$ discrepancy between the BNL experimental measurement and SM theoretical prediction, where the discrepancy gives hints of new physics beyond the SM. By improving the precision of the measurement, the Fermilab results can confirmed the discovery of new physics. The Muon g – 2 experiment at Fermilab recently took commissioning data during the summer of May 31, 2017 to July 7, 2017. In this presentation, I will discuss the motivation, history and physics of the muon g – 2 experiments, and conclude with a first look at the commissioning the new experiment.