Physics Seminar

Tammy Walton

Fermi National Accelerator Laboratory

Beam Dynamics Measurements for the Muon g-2 Experiment at Fermilab

Abstract:

There exists a > 3s discrepancy between the experimental measurement and Standard Model prediction of the anomalous magnetic moment for the muon. The goal of the Muon g - 2 experiment at Fermilab is to reduce the experimental uncertainty of 540 ppb to 140 ppb, which includes improving the total systematic uncertainty by a factor of 3. A significant reduction in the systematic uncertainty for sources associated with the dynamics of the muon beam are needed in order to reach the achievement. For the 2018 year, Fermilab has accumulated > 2 times the Brookhaven Muong g -2 data. The experiment is operating highly advanced tracking detectors to measure the spatial distribution and dynamics of the muon beam. This presentation focuses on measuring and quantifying the various systematic sources that are associated with the dynamics of the muon beam for a portion of the Run 1 (2018) data period. As well as, using the tracking detectors to measure an essential observable that is needed to extract the anomalous magnetic moment for the muon.

Monday, January 6, 2020

9:00 am

CEBAF Center F113