



High Energy Physics Special Seminar

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“Beam dynamics characterization and uncertainties in the Muon g-2 Experiment at Fermilab”

Host: Peter Winter

Monday, February 15, 2021 – 2:00pm-3:00pm

To join meeting on computer or mobile phone:

<https://bluejeans.com/792204365>

Abstract:

The most recent measurement of the muon magnetic anomaly at the Brookhaven National Laboratory Muon g-2 Experiment (E821) yielded an experimental relative uncertainty of 0.54 ppm, which differs from current Standard Model (SM) predictions by about 3.7 sigma. In contrast to E821, the goal of the Muon g-2 Experiment at Fermilab (E989) is to deliver a measurement of the anomaly to a precision of 0.14 ppm or less in order to reach more than 5 sigma discrepancy with the SM and, therefore, strongly establish evidence for new physics. In view of this stringent determination, a thorough description of the delivery, storage, and dynamics of the detected muon beam sets the stage for constraining beam-dynamics driven effects to the muon magnetic anomaly at the ppb level. To that extent, this talk elaborates data-driven numerical models of the Beam Delivery System and Muon g-2 Storage Ring at Fermilab and describes the contributions to the largest beam-dynamics systematic corrections and their uncertainties in the experiment derived from this work.

The HEP Special Seminar Schedule can be viewed at:

<https://indico.fnal.gov/event/47762/>