**Idaho State University
Physics Colloquium**

**Muon g-2 Experiment at Fermilab**

Dr Sudeshna Ganguly
[Fermilab](https://www.fnal.gov/)
[Accelelerator Division](https://ad.fnal.gov/), [Particle Physics Division](https://ppd.fnal.gov/)

The Fermilab Muon g-2 Collaboration has recently measured the muon magnetic anomaly with an unprecedented precision of 460 parts per billion, with the data collected during the first physics run in 2018. In the experiment, the anomalous precession frequency of the muon spin is determined inside a highly uniform and precisely measured magnetic field of a storage ring. The new result is consistent with the previously published measurement by Brookhaven g-2 experiment, and the combined Fermilab and Brookhaven result differs from the Standard Model prediction by 4.2 standard deviations. This discrepancy between the experimental measurement and the prediction hints at the possibility of new physics. The Muon g-2  experiment at Fermilab aims to produce a final measurement with a precision of 140 parts per billion, a four-fold improvement over the previous Brookhaven experiment. This talk will describe the Fermilab experiment and the latest measurement of the muon magnetic anomaly.

**Monday, September 13 2021
Via Zoom(**[**https://isu.zoom.us/j/81805429629**](https://isu.zoom.us/j/81805429629)**)
4:00 – 4:50 pm**