



LIP Seminar

Thursday, 15 of July, 14h30

First results from the Muon $g-2$ Experiment at Fermilab

Alessandra Luca
(Fermilab)

Over the last decades high-precision measurements of the muon magnetic anomaly, $a_\mu = (g_\mu - 2)/2$, have been carried out motivated by the fact that a direct comparison with the Standard Model (SM) prediction serves as an excellent test of its completeness. The E821 experiment at the Brookhaven National Laboratory (BNL) measured a_μ with a precision of 0.54 parts per million (ppm) and resulted in a 3.7 standard deviations discrepancy with the SM expectation. This intriguing finding motivated the construction of the E989 Muon $g-2$ experiment at Fermilab, which was designed to test the validity of the BNL result, and to further improve the experimental precision. This talk presents the first results of the experiment at Fermilab, which recently measured the positive muon magnetic anomaly with a precision of 0.46 ppm, using data collected during its first physics run in 2018. The result is in excellent agreement with the BNL measurement, and the combined experimental average increases the significance of the discrepancy between the measured and SM predicted a_μ to 4.2 standard deviations, strengthening possible hints of new physics.

Location: Videoconference - Zoom

<https://indico.lip.pt/event/940/>

Connection details

URL: <https://videoconf-colibri.zoom.us/j/82345449841>

PIN: LIPSeminar

Or by phone:

*Dial: +351 308 810 988 (Portugal Toll) or +351 211 202 618
(Portugal Toll)*

Meeting ID: 823 4544 9841

*Or iPhone one-tap: 308810988,82345449841# or
211202618,82345449841#*

PIN for phones: 5506206082