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Overview and status of the muon g-2 experiment

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Conventional wisdom suggests that new particles should exist as part of highly anticipated Standard Model extensions. Further, the discovery tool is expected to be an energy-frontier collider, where new particles are produced directly among the debris of the highest-energy pp collisions. The Higgs discovery affirmed this technique; although it has not signaled new physics (yet), it demonstrated the power of such experiments. Nonetheless, with significant data taking now completed at the LHC, the long-anticipated "TeV-scale" discoveries have not yet emerged. What else can one do? In this talk, I will describe the highly sensitive "low-energy" approach, as illustrated in particular by our measurement of the muon's anomalous magnetic moment, a_mu. Fermilab E989 recently completed its first data-taking campaign, acquiring a data set that exceeds that from the Brookhaven E821 experiment whose result, when compared to modern Standard Model theory, differs by more than 3 standard deviations. Is this a sign of new physics? Most importantly, we need to know if the deviation is real. Accordingly, we have designed and commissioned a new experiment whose goal is to improve by fourfold the precision on a_mu. I will present the status of the run and show blinded (sorry) plots that convey the excellent data quality already realized.

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