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Muon g-2 at Fermilab: Magnetic Field Preparations for a New Physics Search BRENDAN KIBURG, Fermilab, MUON G-2 COLLABORATION — The Muon $g-2$ experiment at Fermilab will measure the muons anomalous magnetic moment, a_μ, to 140 parts-per-billion. Modern calculations for a_μ differ from the current experimental value by 3.6σ. Our effort will test this discrepancy by collecting 20 times more muons and implementing several upgrades to the well-established storage ring technique. The experiment utilizes a superconducting electromagnet with a 7-meter radius and a uniform 1.45-Tesla magnetic field to store $\approx 10^4$ muons at a time. The times, energies, and locations of the subsequent decay positrons are determined and combined with magnetic field measurements to extract a_μ. This talk will provide a brief snapshot of the current discrepancy. The role and requirements of the precision magnetic field will be described. Recent progress to establish the required magnetic field uniformity will be highlighted.

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