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Producing a Precision Magnetic Field in the Muon $g-2$ Experiment at Fermilab BRENDAN KIBURG, Fermilab — A new effort to measure the muon's anomalous magnetic moment is currently underway at Fermilab. The 3.6 σ discrepancy between theoretical calculations of the muon's anomalous magnetic moment and the Brookhaven E821 measurement motivates this experiment. The main systematic uncertainties are related to the detection of the decay positron produced in muon decay, and the production and measurement of the precision magnetic field in the muon storage ring. To reach the precision goal of 140 ppb, the muon $g-2$ experiment will implement several upgrades to the E821 approach and collect 20 times as many muons. This talk will give a brief overview of the experimental status. The upgrades associated with the production and measurement of the highly uniform magnetic field will be described.

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