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Transient Magnetic Field Analysis for Muon g-2 Experiment ALEXANDER TEWSLEY-BOOTH, Univ of Michigan - Ann Arbor, MUON G-2 COLLABORATION COLLABORATION — There is currently a 3.5σ discrepancy in the Standard Model prediction and experimental values of the anomalous magnetic moment of the muon. The Muon g-2 collaboration at FermiLab (E989 experiment) seeks to investigate this discrepancy with a new precision measurement as a test of the Standard Model, which is also uniquely sensitive to possible new physics. This experiment builds on the previous work done at Brookhaven E821 by improving statistical errors and systematic errors, both in positron counting and magnetic field measurements, with an expected overall uncertainty of 140 ppb (a factor of four improvement over the previous experiment). One of the improvements to the magnetic field measurement is a suite of fluxgate magnetometers that are sensitive to transient magnetic fields as small as 10 nT with a bandwidth of 1 kHz, which are important to understand and quantify to very high precision. Methods for identifying, measuring, and analyzing transient fields in the experimental hall with the fluxgate magnetometers will be presented.

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