Development of an energy-weighted muon precession analysis for the Muon g-2 Experiment[1] LAURA KELTON, Univ of Kentucky, MUON G-2 COLLABORATION COLLABORATION — The Muon g-2 Experiment (E989) at Fermilab measures the anomalous magnetic moment of the muon, a_μ, with improved precision compared to the Brookhaven (E821) experiments whose results were found to be inconsistent with the Standard Model. The precision of this discrepancy can be improved both by collecting more data to reduce statistical uncertainty and by developing additional analysis techniques to reduce systematic errors. The determination of a_μ requires the measurement of the muon spin precession frequency, ω_a, and the magnetic field, B, that confines muons in a storage ring. Traditional measurements of ω_a require reconstruction of the decay positrons from the muon decay, $\mu^+ \rightarrow e^+ \nu_e \bar{\nu}_\mu$. The Q-method is a novel, energy-weighted approach which employs a new technique for data collection and reduces sensitivities to gain fluctuations and pile-up. This talk will introduce the Q-method procedure and give a status update on the analysis of Run-2, obtained in the spring of 2019.

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