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An improved pulse-fitting procedure for calorimeter event reconstruction in the Muon g-2 experiment at Fermilab

In the anomalous precession frequency analysis of the Fermilab Muon g-2, pulse-fitting plays a vital role in the calorimeter data reconstruction. The energy and time of a muon or positron event are reconstructed by performing a template fit to the recorded digitizer islands of each calorimeter channel. Several fitting thresholds are defined in the pulse-fitter to distinguish the signal from the noise. We optimized these thresholds by implementing the same thresholds for both primary and secondary pulses for pulse-pileup events. The thresholds are re-defined in MeV units by considering the absolute-scale energy calibration and time-dependent gain corrections at the fitter level. In this poster, we report on the status of the new fitter and its implication for the anomalous precession frequency analysis.

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