



Contribution ID: 1189

Type: Poster

The readout system for the Fermilab Muon g-2 straw tracking detectors

Monday, 8 August 2016 18:30 (2 hours)

The Fermilab Muon g-2 experiment will measure the anomalous magnetic moment of the muon to a precision of 140 parts per billion, which is a factor of four improvement over the previous E821 measurement at Brookhaven. The experiment will also extend the search for the muon's electric dipole moment (EDM) by approximately two orders of magnitude with a sensitivity down to 10^{-21} e.cm. Both of these measurements are made by an analysis of the modulation of the decay rate of the higher-energy positrons from the (anti-)muon decays recorded by 24 calorimeters and 3 straw tracking detectors. The straw tracking detectors will be used to cross-calibrate the calorimeter, identify pileup and muons lost from the storage region, and to measure the beam-profile. A tracker measurement of the up-down modulation of positrons will be used in the EDM analysis.

In this poster, the readout electronics of the straw tracker will be described. The analogue signals from the straws are amplified, shaped and compared to a configurable threshold by bespoke ASDQ chips and the resulting signal is then passed to an FPGA-based TDC which records the straw hit time with a resolution of 0.6ns. The hits are then buffered and event records are created by FC7 and AMC-13 modules in a microTCA crate, which are then passed into the MIDAS event-builder and data acquisition system.

Primary author: MOTT, James (Boston University)**Presenter:** MOTT, James (Boston University)**Session Classification:** Poster Session**Track Classification:** Detector: R&D and Performance