

The Trigger-DAQ System in the Mu2e Experiment

Authors : Antonio Gioiosa, Simone Doanti, Eric Flumerfelt, Luca Morescalchi, Elena Pedreschi, Gianantonio Pezzullo, Ryan A. Rivera, Franco Spinella

Abstract : The Mu2e experiment at Fermilab aims to measure the charged-lepton flavour violating neutrino-less conversion of a negative muon into an electron in the field of an aluminum nucleus. With the expected experimental sensitivity, Mu2e will improve the previous limit of four orders of magnitude. The Mu2e data acquisition (DAQ) system provides hardware and software to collect digitized data from the tracker, calorimeter, cosmic ray veto, and beam monitoring systems. Mu2e's trigger and data acquisition system (TDAQ) uses otsdaq as its solution. developed at Fermilab, otsdaq uses the artdaq DAQ framework and art analysis framework, under-the-hood, for event transfer, filtering, and processing. Otsdaq is an online DAQ software suite with a focus on flexibility and scalability while providing a multi-user, web-based interface accessible through the Chrome or Firefox web browser. The detector read out controller (ROC) from the tracker and calorimeter stream out zero-suppressed data continuously to the data transfer controller (DTC). Data is then read over the PCIe bus to a software filter algorithm that selects events which are finally combined with the data flux that comes from a cosmic ray veto system (CRV).

Keywords : trigger, daq, mu2e, Fermilab

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