Enhancements and Deployment of the TDAQ System for the Mu2e Experiment

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Mu2e Experiment: Muon-to-electron conversion

- Mu2e will search for the coherent neutrino-less conversion of a muon into an electron
  Sensitivity improvement 10,000 times over previous experiments!
- Such a charged lepton flavor-violating reaction probes new physics
  Will direct searches of present or future high-energy colliders

Not depicted in the diagram are the cosmic ray veto system, encircling the Detector Solenoid, and the muon stopping target.
Pre-production Deployment

• Trigger and Data Acquisition system integrates artdaq and art frameworks for event transfer, filtering and processing
• Data is read from the Data Transfer Controller (DTC) over PCIe
  DTCs collect and process data, and perform event building
• Loopback tests measure marker round-trip time for event window synchronization
• All subsystems have been tested for event handling levels, responses to loopback markers, & signal injection timestamping
• RJ45 Timing Fanout (RTF) mitigates jitter accumulation with a 200MHz clock signal
Questions?

References