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The CMS Central Hadron Calorimeter DAQ System Upgrade

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The VME-based data acquisition electronics of the CMS hadron calorimeters will be replaced with a μ TCA-based system starting in 2014 and continuing through 2018. The primary new components are the μ HTR and AMC13 modules. The μ HTR buffers data from the detector and creates trigger primitives. The AMC13 accepts the clock and trigger from the global DAQ system, distributes the clock to the μ HTR and the on-detector electronics, and concentrates data for shipping back to the DAQ system. We report on the design, development status, and schedule for the new DAQ system.

Summary

The CMS central hadron calorimeters will undergo a complete replacement of their data acquisition system electronics. The replacement is phased, with portions of the replacement starting in 2014 and continuing through LHC Long Shutdown 2 in 2018. The existing VME electronics will be replaced with a μ TCA based system. New on-detector QIE electronics cards will be transmit data at 4.8 GHz to the new μ HTR cards residing in μ TCA crates in the CMS electronics cavern. The μ TCA crates are controlled by the AMC13, which accepts system clock and trigger throttling control from the CMS global DAQ system. The AMC13 distributes the clock to the μ HTR and reads out data buffers from the μ HTR into the CMS data acquisition system. The AMC 13 also provides the clock for in-crate GLIBs which in turn distribute the clock to the on-detector front end electronics. We report on the design, development status, and schedule of the DAQ system.

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