

Integration and testing of the DAQ system for the CMS phase 1 pixel upgrade

The CMS pixel detector phase 1 upgrade in 2017 requires an upgraded DAQ to accept higher data rates. A new DAQ system has been developed based on a combination of custom and standard microTCA parts. Custom mezzanines on FC7 AMCs provide a front-end driver for readout, and front-end controller for configuration, clock and trigger. The DAQ system is undergoing a series of integration tests including readout of the pilot pixel detector already installed in CMS, checkout of the phase 1 detector during its assembly, and testing with the CMS central DAQ. This paper describes the DAQ system with a focus on the hardware components, the firmware architecture, and the online and calibration software.

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