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Commissioning of the ALICE Data-Acquisition System

Thursday, 6 September 2007 14:00 (20 minutes)

ALICE (A Large Ion Collider Experiment) is the heavy-ion detector designed to study the physics of strongly interacting matter and the quark-gluon plasma at the CERN Large Hadron Collider (LHC). A large bandwidth and flexible Data Acquisition System (DAQ) has been designed and deployed to collect sufficient statistics in the short running time available per year for heavy ion and to accommodate very different requirements originated from the 18 sub-detectors. The Data Acquisition and Test Environment (DATE) is the software framework of the DAQ, handling the data from the detector electronics up to the mass storage.

This paper reviews the DAQ software and hardware architecture, including the latest features of the final design, such as the handling of the numerous calibration procedures in a common framework. We also discuss the large scale tests conducted on the real hardware to assess the standalone DAQ performances, its interfaces with the other online systems and the extensive commissioning performed in order to be fully prepared for physics data taking scheduled to start in November 2007. The test protocols followed to integrate and validate each sub-detector with DAQ and Trigger hardware synchronized by the Experiment Control System are described. Finally, we give an overview of the experiment logbook, and some operational aspects of the deployment of our computing facilities.

The implementation of a Transient Data Storage able to cope with the 1.25 GB/s recorded by the event-building machines is covered in a separate paper.

Submitted on behalf of Collaboration (ex, BaBar, ATLAS)

ALICE

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