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Data Quality Monitoring and Visualization for the CMS Silicon Strip Tracker

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The CMS Silicon Strip Tracker (SST), consisting of more than 10 millions of channels, is organized in about 16,000 detector modules and it is the largest silicon strip tracker ever built for high energy physics experiments.

In the first half of 2007 the CMS SST project is facing the important milestone of commissioning and testing a quarter of the entire SST with cosmic muons.

The full standard CMS software is deployed for the data acquisition, reconstruction, monitoring and event display.

For the first time the detector performance is monitored using an advanced Data Quality Monitoring (DQM) system capable of running on a variety of online and offline environments, in the control room as well as in remote sites.

More than 100.000 monitorable quantities are managed by the DQM system that organizes them in a hierarchical structure reflecting the detector arrangement in subcomponents and the various levels of data processing.

Monitorable quantities computed at the level of individual detectors are processed to extract automatic quality checks and summary results that can be visualized with specialized graphical user interfaces.

In view of the great complexity of the CMS Tracker detector the standard visualization tools based on histograms have been complemented with 2 and 3 dimensional graphical images of the subdetector that can show the whole detector down to single channel resolution.

The functionalities of the CMS Silicon Strip Tracker DQM system and the experience acquired during the SST commissioning are discussed here.

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

CMS

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