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## **Monitoring the data quality of the real-time event reconstruction in the ALICE High Level Trigger.**

*Thursday 24 May 2012 13:30 (4h 45m)*

ALICE (A Large Ion Collider Experiment) is a dedicated heavy ion experiment at the Large Hadron Collider (LHC). The High Level Trigger (HLT) for ALICE is a powerful, sophisticated tool aimed at compressing the data volume and filtering events with desirable physics content. Several of the major detectors in ALICE are incorporated into HLT to compute real-time event reconstruction, for instance the Inner Tracking System (ITS), the Time Projection Chamber (TPC), the electromagnetic calorimeters (EMCAL), the Transition Radiation Detector (TRD) and the muon spectrometer.

The HLT is used for real-time event reconstruction which provides the input for trigger algorithms. It is necessary to monitor the quality of the reconstruction where one focuses on track and event properties. Also, HLT implements data compression for the TPC in the heavy ion data taking in 2011 to reduce the data rate from the ALICE detector. The key for the data compression is to store clusters calculated by HLT rather than storing raw data. It is thus very important to monitor the cluster finder performance as a way to monitor the data compression.

The data monitoring is divided into two stages. The first stage is performed during data taking. A part of the HLT production chain is dedicated to perform online monitoring and facilities are available in the HLT production cluster to have real-time access to the reconstructed events in the ALICE control room. This includes track and event properties, and in addition this facility gives a way to display a small fraction of the reconstructed events in an online display. The second part of the monitoring is performed after the data has been transferred to permanent storage. After a post-process of the real-time reconstructed data, one can look in more detail at the cluster finder performance, the quality of the reconstruction of tracks, vertices and vertex position. The monitoring solution will be presented in detail, with special attention to the heavy ion data taking of 2010 and 2011.

**Student? Enter 'yes'. See <http://goo.gl/MVv53>**

yes

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