

Contribution ID: 219

Type: Parallel

Trigger Algorithms for Alignment and Calibration at CMS during LHC Run 3

During LHC Run 3, the CMS experiment faced challenging pileup and high event rate conditions. To efficiently select events of interest for physics analysis or alignment and calibrations, the CMS collaboration utilises a two-tiered triggering system. This system consists of a firmware-based Level-1 Trigger (L1) and a software-based High Level Trigger (HLT) that runs in a computing farm. The L1 trigger utilizes coarse calorimeter and muon detector information while at the HLT level a streamlined event reconstruction using the complete detector information is performed. A critical asset of the experiment is the rapid derivation of alignment and calibration conditions for both the HLT and offline reconstruction. To achieve this, a dedicated set of triggers is integrated into the data-taking process. This contribution outlines the CMS alignment and calibration workflows and the interplay between these dedicated triggers and the derivation of conditions.

Secondary track

T11 - Detectors

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Track Classification: T12 - Data Handling and Computing