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Level-1 Trigger monitoring system in the CMS experiment

Friday 19 July 2024 20:40 (20 minutes)

The performance of the Level-1 Trigger (L1T) is pivotal for the data-taking endeavor of the Compact Muon Solenoid (CMS) experiment at the Large Hadron Collider (LHC). The custom hardware-based L1T system reduces the event rate from the collision frequency of 40 MHz to around 115 kHz as input to the High Level Trigger (HLT). The effective operation and monitoring of the L1T are critical for selecting important physics events.

The L1T monitoring uses an end-to-end approach, from in-situ monitoring during data-taking to cumulative analysis of the offline-reconstructed data, with quality control tests for performance metrics such as efficiencies and rates. This poster provides an overview of the tools and workflows used for trigger monitoring, enabling fast identification and diagnosis of potential problems. It highlights new data tiers and modern software frameworks recently introduced for monitoring, paving the way for efficient trigger monitoring in the High-Luminosity LHC era.

Alternate track

I read the instructions above

Yes

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