Contribution ID: **177**   Type: **Parallel session talk**

The CMS Level-1 Trigger Data Scouting system for the HL-LHC upgrade

Friday 19 July 2024 10:45 (15 minutes)

To fully exploit the extended capability of its upgraded L1 trigger at the High-Luminosity LHC, CMS is pioneering a novel L1 Data Scouting (L1DS) system, capable of acquiring and processing the quasi-offline-quality trigger primitives produced by the upgraded L1 at the accelerator bunch-crossing rate of 40 MHz. The goal of the system is to give full access to potential physics signatures otherwise constrained by the L1 latency and accept rate limitations, or whose selection strategy diverges from that of the standard CMS physics program. To validate the concept and provide a development platform for the firmware and software required for the final system, a demonstrator system was assembled to operate with the current L1 trigger in the LHC Run 3. We discuss the L1DS demonstrator system architecture, performance, and some preliminary results, as well as the design of the final L1DS system and a summary of ongoing studies of its potential and competitiveness in selected physics channels.

I read the instructions above

Yes

Alternate track

1. Computing, AI and Data Handling

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Session Classification: Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

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