Contribution ID: **402**   Type: **Parallel session talk**

Results and experiences with LHCb's 30MHz software trigger

Friday 19 July 2024 09:24 (15 minutes)

Since 2022, the LHCb experiment is using a triggerless readout system collecting data at an event rate of 30 MHz and a data rate of 4 TB/s. The trigger system, implemented as a high-level trigger (HLT), is split in two stages. During the first stage (HLT1), implemented on GPGPUs, track reconstruction and vertex fitting for charged particles is performed to reduce the event rate to 1 MHz, where the events are buffered to a disk. In the second stage (HLT2), deployed on a CPU server farm, a full offline-quality reconstruction of charged and neutral particles and their selection is performed, aided by the detector alignment and calibration run in quasi-real time on buffered events. This allows to use the output of the trigger directly for offline analysis. In this talk we will give a detailed review of the implementation and challenges of the heterogenous LHCb trigger system, discuss the operational experience of the last two years and show first results of the 2024 data taking period

Alternate track

1. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

I read the instructions above

Yes

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

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