



Contribution ID: 29

Type: **Plenary**

Fast and flexible data structures for the LHCb run 3 software trigger

Wednesday 1 June 2022 16:50 (25 minutes)

Starting this year, the upgraded LHCb detector will collection data with a pure software trigger. In its first stage, reducing the rate from 30MHz to about 1MHz, GPUs are used to reconstruct and trigger on B and D meson topologies and high- p_T objects in the event. In its second stage, a CPU farm is used to reconstruct the full event and perform candidate selections, which are persisted for offline use with an output rate of about 10GB/s. Fast data processing, flexible and custom-designed data structures tailored for SIMD architectures and efficient storage of the intermediate data at various steps of the processing pipeline onto persistent media, e.g. tapes is essential to guarantee the full physics program of LHCb. In this talk, we will present the event model and data persistency developments for the trigger of LHCb in run 3. Particular emphasize will be given to the novel software-design aspects with respect to the Run 1+2 data taking, the performance improvements which can be achieved and the experience of restructuring a major part of the reconstruction software in a large HEP experiment.

Consider for young scientist forum (Student or postdoc speaker)

No

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Session Classification: Plenary