



Contribution ID: 12

Type: **Plenary**

Overview of online and offline reconstruction in ALICE for LHC Run 3

Wednesday, April 22, 2020 1:00 PM (25 minutes)

In LHC Run 3, ALICE will increase the data taking rate significantly to 50 kHz continuous readout of minimum bias Pb-Pb collisions.

The reconstruction strategy of the online offline computing upgrade foresees a first synchronous online reconstruction stage during data taking enabling detector calibration, and a posterior calibrated asynchronous reconstruction stage.

The main challenges include processing and compression of 100 times more events per second than in Run 2, identification of removable TPC tracks and clusters not used for physics, tracking of TPC data in continuous readout, the TPC space charge distortion calibrations, and in general running more reconstruction steps online compared to Run 2.

ALICE will leverage GPUs to facilitate the synchronous processing with the available resources.

For the best GPU resource utilization, we plan to offload also several steps of the asynchronous reconstruction to the GPU.

In order to be vendor independent, we support CUDA, OpenCL, and HIP, and we maintain a common C++ source code that also runs on the CPU.

We will give an overview of the global reconstruction and tracking strategy, a comparison of the performance on CPU and different GPU models, the scaling of the reconstruction with the input data size, as well as estimates of the required resources in terms of memory and processing power.

Consider for young scientist forum (Student or postdoc speaker)

No

Second most appropriate track (if necessary)

Enhanced performance of tracking algorithms

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Session Classification: Recording sessions