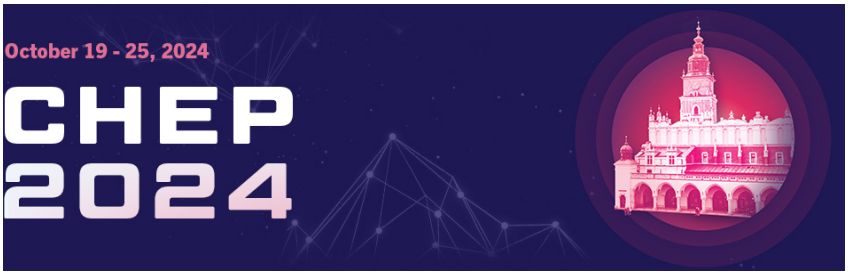

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Extending ALICE's GPU tracking capabilities: Towards a comprehensive accelerated barrel reconstruction

Wednesday 23 October 2024 17:09 (18 minutes)

During Run 3, ALICE has enhanced its data processing and reconstruction chain by integrating GPUs, a leap forward in utilising high-performance computing at the LHC.

The initial 'synchronous' phase engages GPUs to reconstruct and compress data from the TPC detector. Subsequently, the 'asynchronous' phase partially frees GPU resources, allowing further offloading of additional reconstruction tasks to enhance efficiency. Notably, ITS tracking has been ported as an independent module for two major GPU platforms.

This presentation will detail the integration of ITS GPU tracking within the existing framework, aiming to develop a unified GPU-based reconstruction pipeline.

This pipeline minimises memory transfer latency by coordinating various simultaneous processing stages.

Performance metrics of the integrated system will be discussed, highlighting the technical strategies and outcomes of this implementation.

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