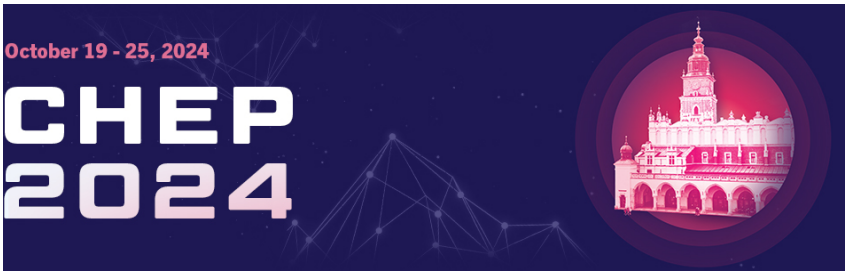

Contribution ID: **167** Type: **Poster**

Performance of the ATLAS GNN4ITk Particle Track Reconstruction GPU pipeline

Monday 21 October 2024 16:00 (15 minutes)

With the upcoming upgrade of High Luminosity LHC, the need for computation power will increase in the ATLAS trigger system by more than an order of magnitude. Therefore, new particle track reconstruction techniques are explored by the ATLAS collaboration, including the usage of Graph Neural Networks (GNN). The project focusing on that research, GNN4ITk, considers several heterogeneous computing options, including the usage of Graphics Processing Units (GPU). The framework can reconstruct tracks with high efficiency, however, the computing requirements of the pipeline are high. We will report on the efforts to reduce the memory consumption and inference time enough to enable the usage of commercially available and affordable GPUs for the future ATLAS trigger system while maintaining high tracking performance.

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Session Classification: Poster session

Track Classification: Track 2 - Online and real-time computing