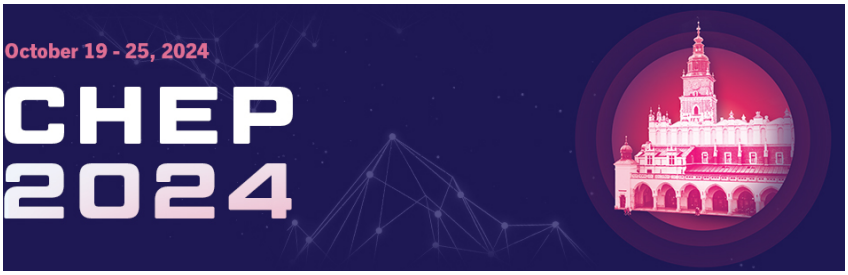

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End-to-end ML-based reconstruction

Tuesday 22 October 2024 13:48 (18 minutes)

We present an ML-based end-to-end algorithm for adaptive reconstruction in different FCC detectors. The algorithm takes detector hits from different subdetectors as input and reconstructs higher-level objects. For this, it exploits a geometric graph neural network, trained with object condensation, a graph segmentation technique. We apply this approach to study the performance of pattern recognition in the IDEA detector using hits from the pixel vertex detector and the drift chamber. We also build particle candidates from detector hits and tracks in the CLD detector. Our algorithm outperforms current baselines in efficiency and energy reconstruction and allows pattern recognition in the IDEA detector. This approach is easily adaptable to new geometries and therefore opens the door to reconstruction performance-aware detector optimization.

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