

Low-latency Calorimetry Clustering at the LHC with SPVCNN

Tuesday, 4 October 2022 16:30 (15 minutes)

The search for dark matter and other new physics at the Large Hadron Collider (LHC) involves enormous data collection. Due to this, a high-level trigger system (HLT) must decide which data to keep for long-term storage while maintaining high throughput and on the order of millisecond latency. A central part of the HLT is 3D clustering of low-level detector measurements in the calorimeter. In this work, we show low-latency, high-throughput 3D calorimetry clustering using Sparse Point-Voxel Convolutional Neural Networks (SPVCNN) that can be deployed at-scale to heterogeneous computing systems while maintaining or exceeding the performance of conventional algorithms.

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Session Classification: Contributed Talks