



ID de Contribution: 49

Type: Non spécifié

Overview of Machine Learning for Calorimeter and Particle Flow

mardi 19 avril 2022 14:00 (1 heure)

The reconstruction of particle signals relies on local reconstruction, which involves clustering of granular hits within detector subsystems, followed by global reconstruction, combining signals across detector subsystems for a high-level particle representation of the event. Calorimeter clustering is a local reconstruction method that aims to segment calorimeter hits according to their particle origin. Recently, in light of the future high-granularity detector configurations, considerable progress has been made in disentangling overlapping showers in highly granular detectors using machine learning. Once clusters and tracks are reconstructed, particle-flow algorithms combine the information globally across the detector for an optimized particle-level reconstruction. Machine learning approaches have recently been demonstrated to offer comparable performance to heuristic particle flow algorithms, while potentially allowing for native deployment on heterogeneous platforms. I will give a summary of the progress towards ML-based calorimeter reconstruction and particle flow.

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Classification de Session: Representation Learning workshop