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DeepCore: Convolutional Neural Network for high pT jet tracking

Wednesday 3 April 2019 09:00 (25 minutes)

Tracking in high-density environments, such as the core of TeV jets, is particularly challenging both because combinatorics quickly diverge and because tracks may not leave anymore individual "hits" but rather large clusters of merged signals in the innermost tracking detectors. In the CMS collaboration, this problem has been addressed in the past with cluster splitting algorithms, working layer by layer, followed by a pattern recognition step where a high number of candidate tracks are tested. Modern Deep Learning techniques can be used to better handle the problem by correlating information on multiple layers and directly providing proto-tracks without the need of an explicit cluster splitting algorithm. Preliminary results will be presented with ideas on how to further improve the algorithms.

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Track Classification: 1: Machine learning, algorithms and theoretical analysis