



Contribution ID: 77

Type: ORAL

Jet flavor tagging and particle flow by DNN with ILD full simulation

Wednesday 9 October 2024 14:55 (20 minutes)

We are working on updating jet flavor tagging using Particle Transformer (ParT) from last year. We implemented b and c tagging feature and obtained a significant performance improvement from the previous software (also developed by the authors), LCFIPlus which was already reported at the previous workshop. We optimized parameters of the network and input structure to further improve the performance and investigating limitation with current network. Implementation of inference process to the ILD framework is also being done (to be finished by the workshop) to enable it to be used for physics analysis. We are also investigating strange tagging with ParT to enhance classification of jets as 5 kinds (b, c, g, s, ud) to be utilized to Higgs to ss analysis.

In addition, we are working on particle flow with GNN and Transformer. Initial study with GNN gives compelling performance with the current PandoraPFA algorithm, which will also be reported.

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Session Classification: Parallel - WG2

Track Classification: WG2: WG2 - Physics Analysis Methods