Contribution ID: **97**   Type: **Oral presentation (in person)**

Streamlined jet tagging network assisted by jet prong structure

Tuesday, 9 July 2024 14:00 (20 minutes)

Attention-based transformer models have become increasingly prevalent in collider analysis, offering enhanced performance for tasks such as jet tagging. However, they are computationally intensive and require substantial data for training. In this paper, we introduce a new jet classification network using an MLP mixer, where two subsequent MLP operations serve to transform particle and feature tokens over the jet constituents. The transformed particles are combined with subjet information using multi-head cross-attention so that the network is invariant under the permutation of the jet constituents. The network structure is closely related to the multiscale nature of HEP events.

The proposed network demonstrates comparable classification performance to state-of-the-art models while boosting computational efficiency drastically. The network structure can be applied to the various collider processes.

Apply for poster award

Primary author: Prof. NOJIRI, Mihoko (IPNS, KEK)

Co-author: Dr HAMMAD, Ahmed (KEK)

Presenter: Dr HAMMAD, Ahmed (KEK)

Session Classification: Software, Reconstruction, Computing

Track Classification: Physics and Detector: Software, Reconstruction, Computing