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Boosted Higgs boson Tagging with Graph Neural Network with the ATLAS Detector

The pursuit of detecting high-energy Higgs boson decays into a pair of heavy quarks is a prominent focus within the ATLAS experiment's physics program. In this study, we introduce an innovative tagger that leverages graph networks and employs tracks as input constituents. Our approach demonstrates a substantial improvement when compared to the previous boosted Higgs boson tagger employed by the ATLAS experiment, as observed through extensive Monte Carlo sample analyses. We will present the significant improvements achieved and delve into the details of the training procedure, emphasizing techniques employed to mitigate the tagger's dependency on the reconstructed jet mass.

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