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Jet flavor tagging with Particle Transformer for Higgs factories

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Jet flavor tagging for linear Higgs factories (ILC, CLIC) has long been done with BDT-based algorithm. Stimulated from recent improvements in LHC experiments, the update has been done with DNN-based algorithm, namely Particle Transformer (ParT). It already shows great improvement of around factor 10 in background rejection for b and c tagging. It also enables to do strange tagging as well as particle-antiparticle separation. In this talk we will show performance study of flavor tagging with ILD full detector simulation by ParT-based algorithm with improvements made for e+e- collider studies. It includes comparison with fast simulation (for FCC and ILC) which we see significant difference especially on dependence of statistics as well as dependence on detector characteristics. We also discuss ongoing work on the physics application, such as Higgs self coupling and Higgs strange decay which the improvements of flavor tagging gives significant impact.

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