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Jet origin identification for the high energy frontier

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Successful reconstruction of hadronic events is critical for the physics measurements at high energy frontier, where the precise measurement of Higgs boson properties is essential, as it provides excellent opportunities to discover New Physics.

We propose a new methodology called jet origin identification, which could identify the jet seemed from 11 different colored SM particles (udsbc, their anti-particles, and the gluon). We showed that these 11 different jets could be efficiently separated using state-of-art simulation and Deep learning tools. Using Jet Origin identification, the Higgs measurement precisions could be significantly improved (i.e., Higgs to cc couplings be improved by 2 times and Higgs to s and b quark exotic decays be improved by 2 orders of magnitudes). It could also be applied to other critical measurements like time-dependent CP measurements and EW measurements.

Alternate track

I read the instructions above

Yes

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