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Higgs tagging with the Lund jet plane

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This talk will be based on our recent work (arXiv:2105.03989 [hep-ph]) where we present a procedure to separate boosted Higgs bosons decaying into hadrons, from the background due to strong interactions. We employ the Lund jet plane to obtain a theoretically well-motivated representation of the jets of interest and we use the resulting images as the input to a convolutional neural network. In particular, we consider two different decay modes of the Higgs boson, namely into a pair of bottom quarks or into light jets, against the respective backgrounds. The performance of the tagger is compared to what is achieved using a traditional single-variable analysis which exploits a QCD inspired color-singlet tagger, namely the jet color ring observable. Furthermore, we study the dependence of the tagger's performance on the requirement that the invariant mass of the selected jets should be close to the Higgs mass.

Preferred track

Jets & QCD at High Scales

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