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Deep-learning Top Taggers and No End to QCD

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Machine learning based on convolutional neural networks can be used to study jet images from the LHC. Top tagging in fat jets offers a well-defined framework to establish our DeepTop approach and compare its performance to QCD-based top taggers. We optimize a network architecture to identify top quarks in Monte Carlo simulations of the Standard Model production channel. Using standard fat jets we then compare its performance to a multivariate QCD-based top tagger. We show that both approaches lead to comparable performance, establishing convolutional networks as a promising new approach for multivariate hypothesis-based top tagging. Finally, we will comment on new results using machine-learning-based subjet methods.

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