

Tagging of Boosted Leptonically Decaying Top Quarks Using Convolutional Neural Networks

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Abstract

The study of boosted top quarks is very important for probing a wide variety of new physics models. The use of machine learning techniques for tagging leptonically decaying boosted top quarks has not yet been explored as extensive as the hadronic decay channel. In this study, we utilize an image based machine learning technique for tagging highly boosted leptonically decaying top quarks. Jet images – representing the energies of jet constituents displayed in the form of a grid of pixels – are used as inputs to our convolutional neural network (CNN) based tagger. This talk will discuss the details of the jet formation, jet preprocessing and the CNNs, and a few promising preliminary results will be shown.