Contribution ID: **10**   Type: **not specified**

WV analysis improvements with DeepAK8

Monday, 11 June 2018 10:15 (20 minutes)

Reconstruction and identification of boosted heavy particles (top/W/Z/Higgs) can provide powerful handles for new physics searches at the LHC. DNN-based DeepAK8 tagger was investigated in the WV search. The report includes DNN distribution, DNN control plots, W-tagging, and the uplimit results using alpha method. We also designed a mass-decorrelated DeepAK8 tagger. The results were greatly improved compared with the results of tau21 cut.

Summary

We investigated DNN-based DeepAK8 tagger in the WV search. Tau21 was repaced by DNNW for optimization. Alpha method was used to get the limits, DNNW cut performs better than before. The thin disturbutions of jet mass cause large uncertainty using alpha method. It effects the uplimit results much. The results still need to be improved. We are trying to get the uplimit only depending on MC sample without using alpha method.

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