

BDT-II

Giulia Maineri

Università degli studi di Milano

March 2022

Table of Contents

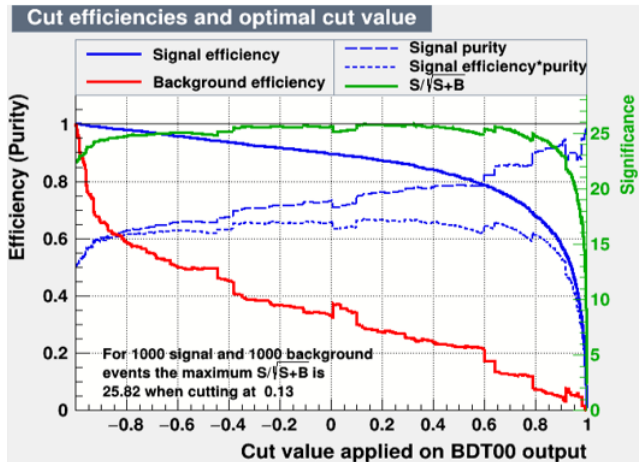
- 1 BookMethod
- 2 Cut efficiencies
- 3 BDT score
- 4 ROC curves

Trees training was done with the following options:

- !H; in order not to print a method-specific help message
- !V; necessary to deactivate "verbose mode", which prints explanations of what's going on
- NTrees=600; number of trees in the forest
- MinNodeSize=5%; minimum percentage of training events required in a leaf node
- MaxDepth=3; maximum depth of the decision tree allowed
- BoostType=Grad; boosting type
- Shrinkage=0.1; learning rate for Grad algorithm

- UseBaggedGrad;
- BaggedSampleFraction=0.5; relative size of bagged event sample to original size of the data sample (used whenever bagging is used (i.e. UseBaggedGrad, Bagging, UseBaggedBoost))
- SeparationType=GiniIndex; separation criterion for node splitting
- nCuts=20; number of grid points in variable range used in finding optimal cut in node splitting

Figure 1: Cut efficiencies



Classifier output distribution-Test and training sample

Figure 2: Output distribution

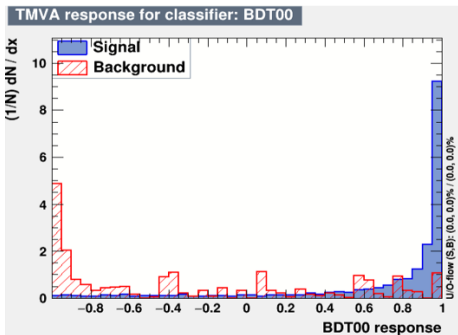
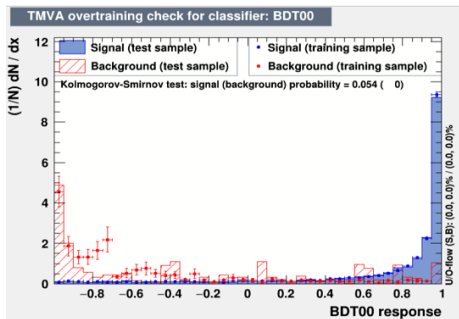


Figure 3: Overtraining control



BDT score comparison - background

Figure 4: Zg strong

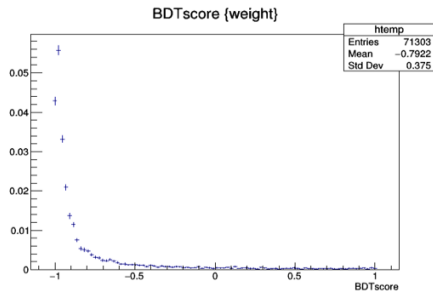
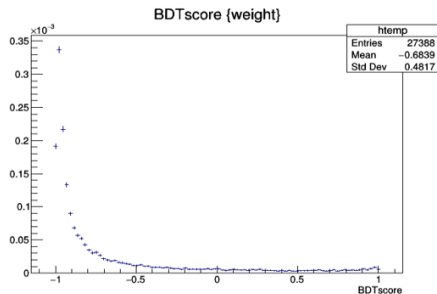


Figure 5: Zg eweak



BDT score comparison - background

Figure 6: Z strong

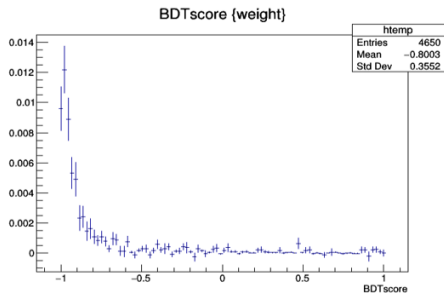
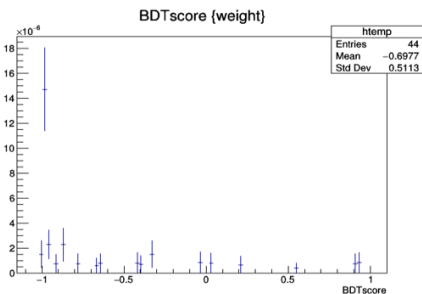


Figure 7: Z eweak



BDT score comparison - signal

Figure 8: qqZH

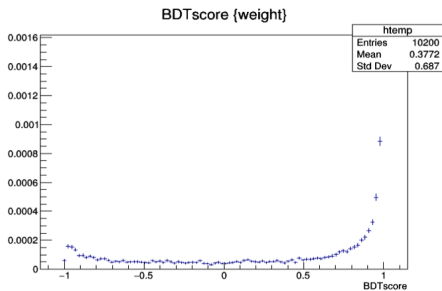


Figure 9: ggZH

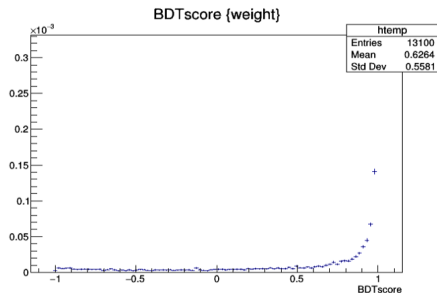


Figure 10

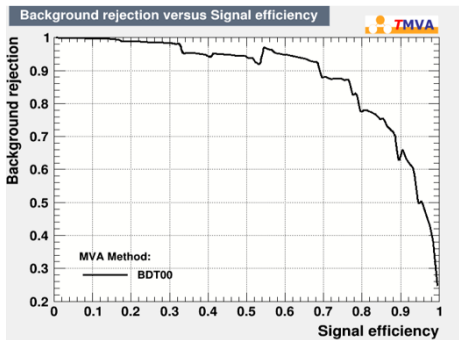


Figure 11

