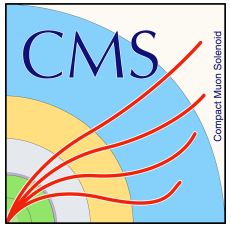
HEP Weekly Report
NTUA
8/7/2020

George Bakas



Status Report

- Top Tagger Scale Factors
  - Tag and Probe: Data and MC don’t show inconsistency
  - Data is subtracted QCD and Subdominant bkgs (MC) so that the data sample is pure

$$efficiency = \frac{\#\,(1\ jet\ pass\ baseline + Tight\ TopTagger\ Cut\ AND\ 1\ jet\ pass\ SR)}{\#\,(1\ jet\ pass\ baseline + Tight\ TopTagger\ Cut\ AND\ 1\ jet\ pass\ only\ baseline)}$$

- Fit diagnostics:
  - Toy MC’s

- b-tagging scale factors

- Stack of BDT inputs
  - QCD scaled to data (k-factor)

Signal Selection

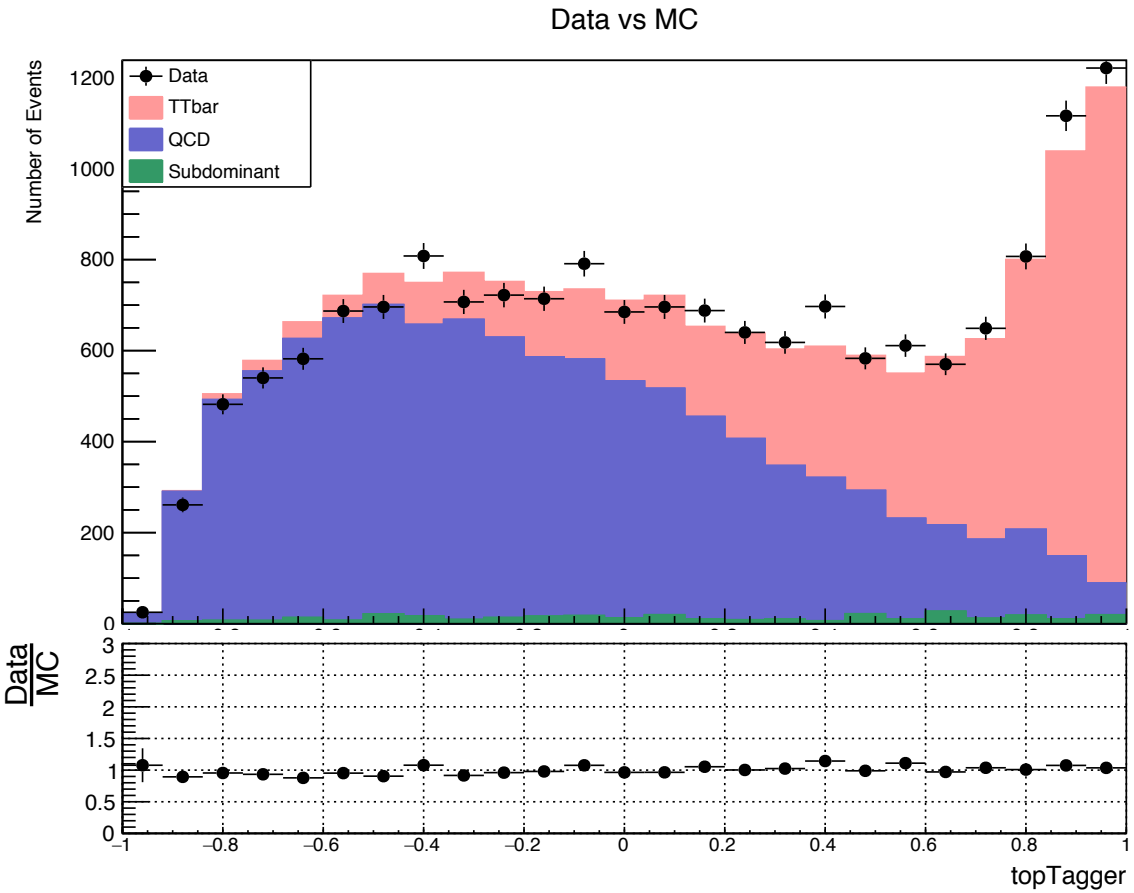
Variables	Selected Cut
pT (both leading jets)	> 400 GeV
Njets	> 1
N leptons	= 0
|eta| (both leading jets)	< 2.4
mJJ	> 1000 GeV
jetMassSoftDrop (only for fit)	(50,300) GeV
Top Tagger	> 0.2
B tagging (2 btagged jets)	> Medium WP
Signal Trigger	

Control Region Selection

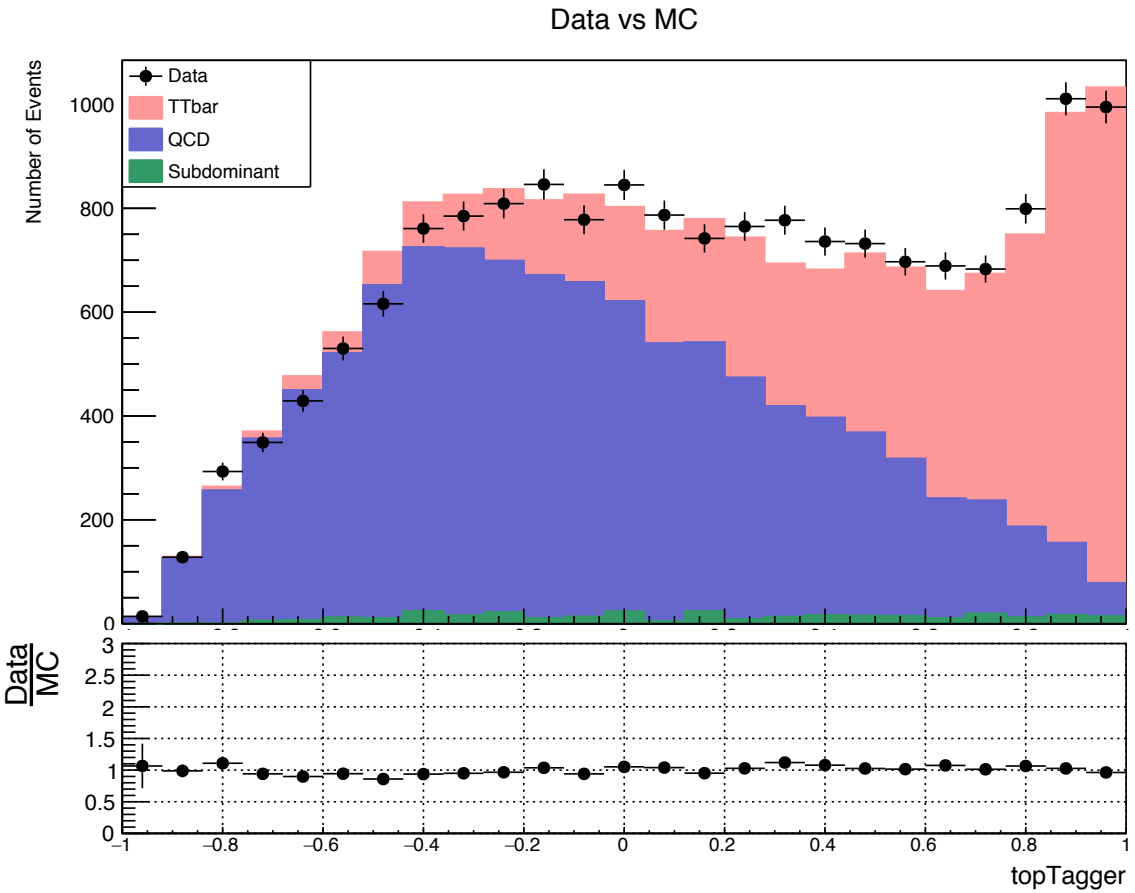
Variables	Selected Cut
pT (both leading jets)	> 400 GeV
Njets	> 1
N leptons	= 0
|eta| (both leading jets)	< 2.4
mJJ	> 1000 GeV
jetMassSoftDrop (only for fit)	(50,300) GeV
Top Tagger	> 0.2
B tagging (0 btagged jets)	< Medium WP
Control Trigger	

Stack of BDT input variables for leading and subleading jet (2016)

Leading

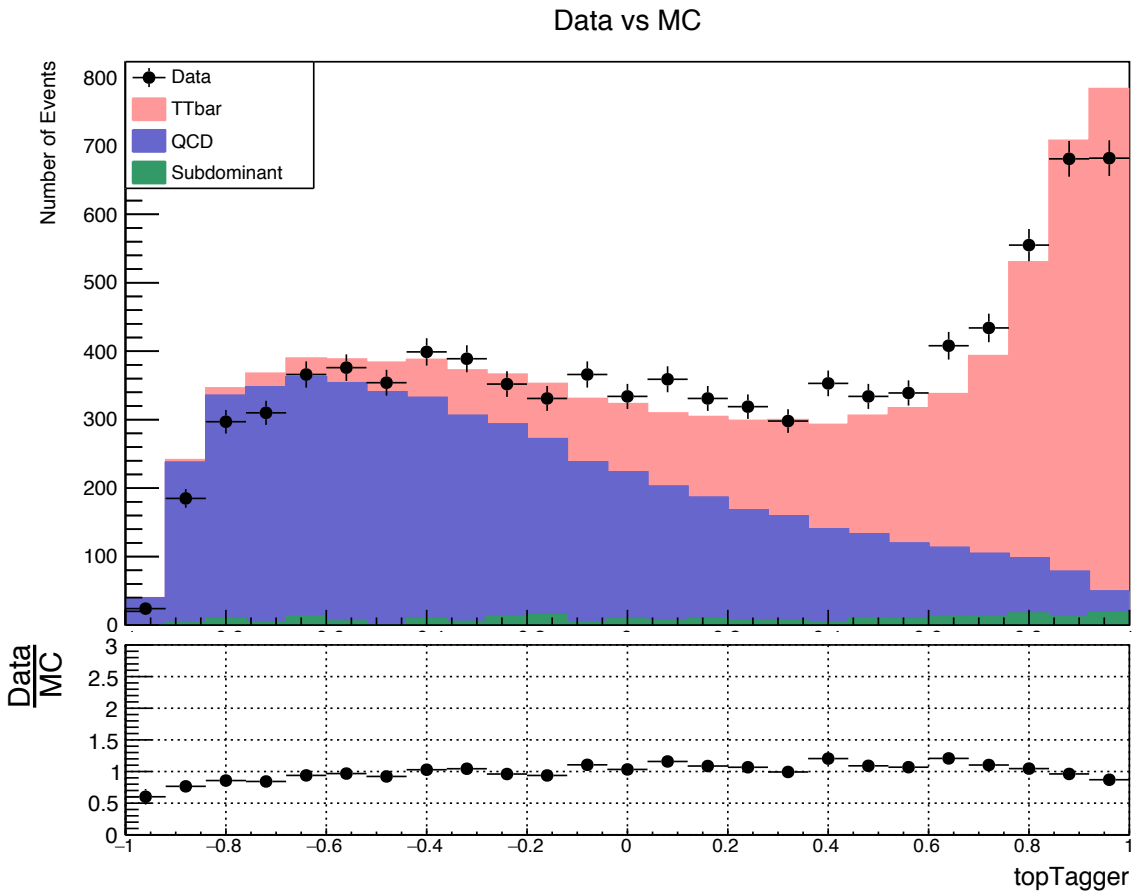


Sub-Leading

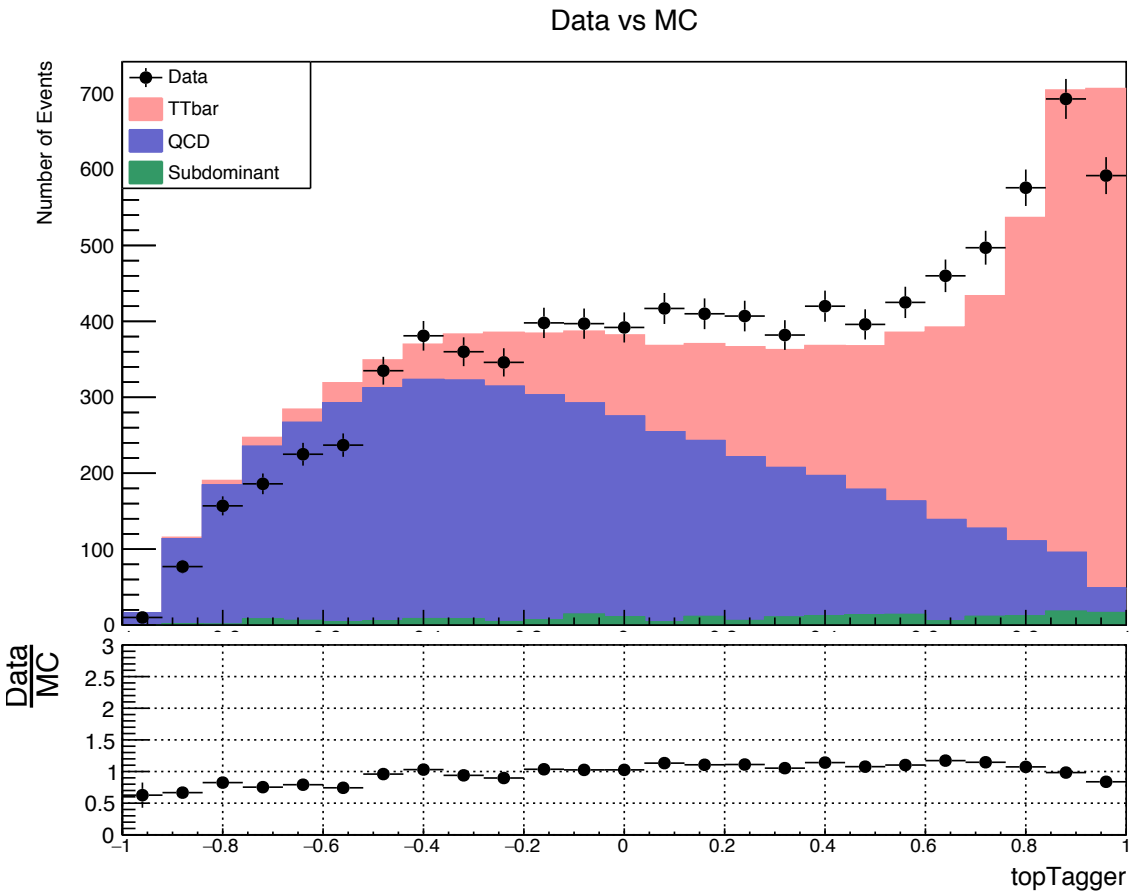


Stack of BDT input variables for leading and subleading jet (2017)

Leading

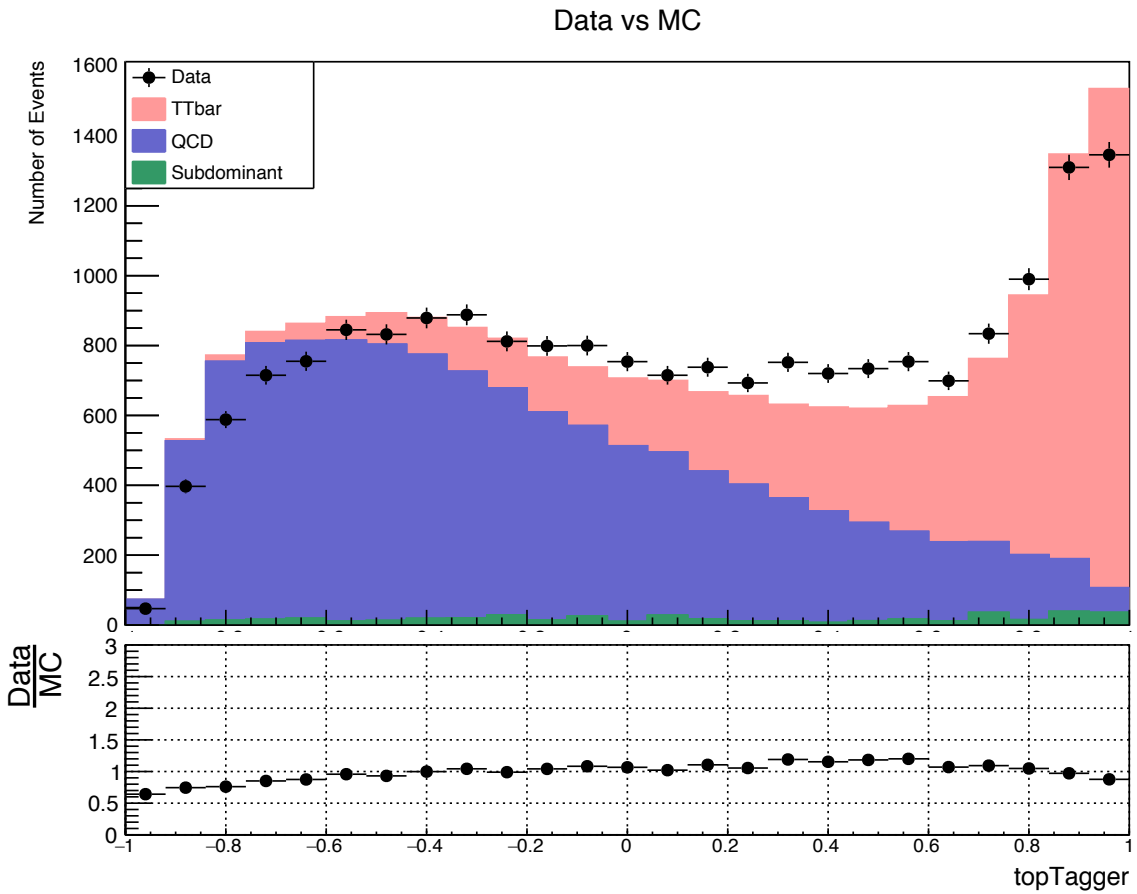


Sub-Leading



Stack of BDT input variables for leading and subleading jet (2018)

Leading



Sub-Leading