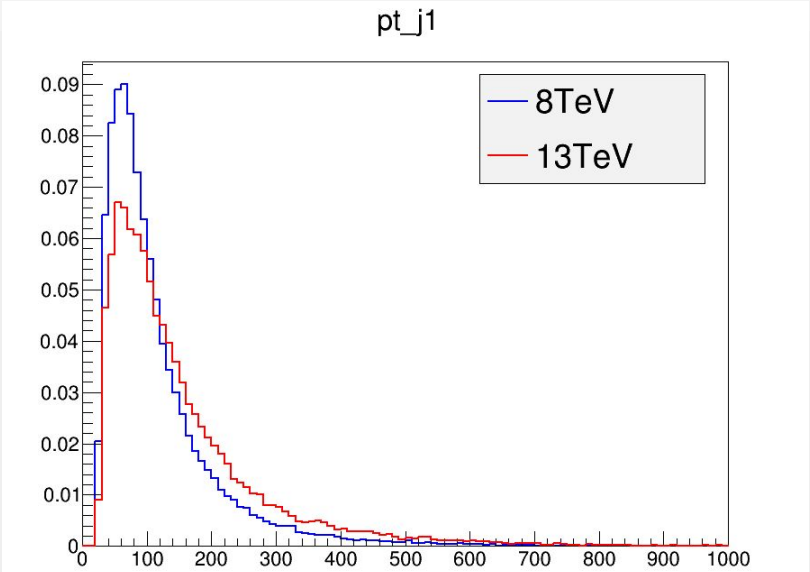
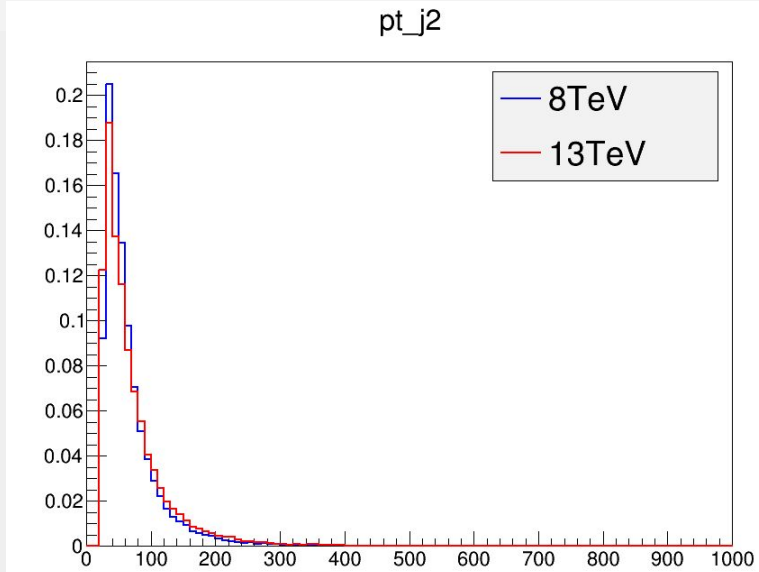
work status

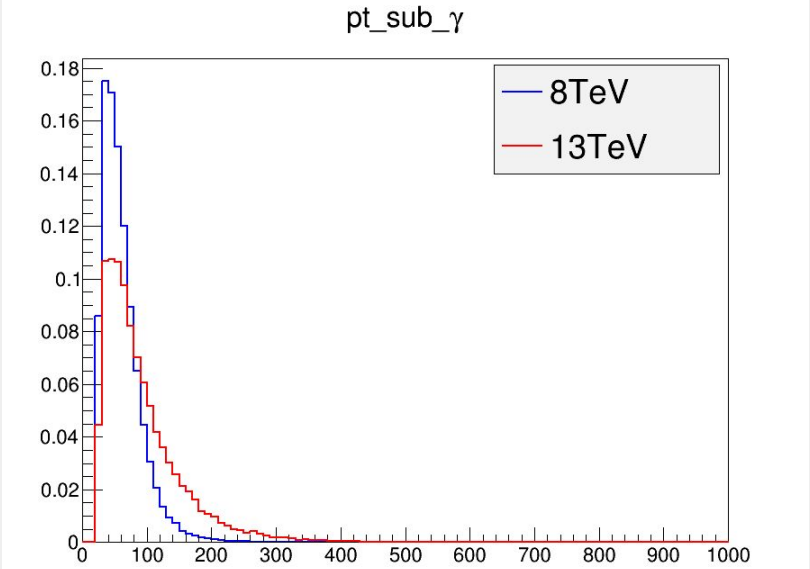
Maosen Zhou

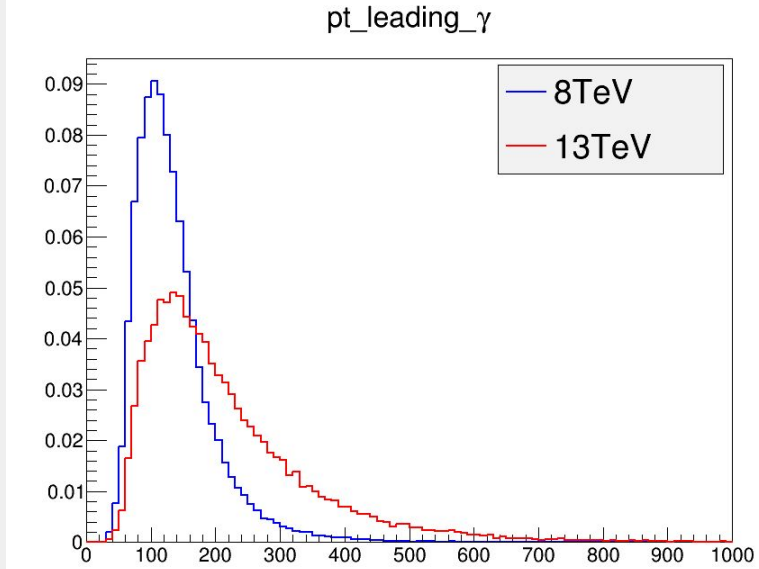
30/11/2015

8 TeV vs 13 TeV for non-res

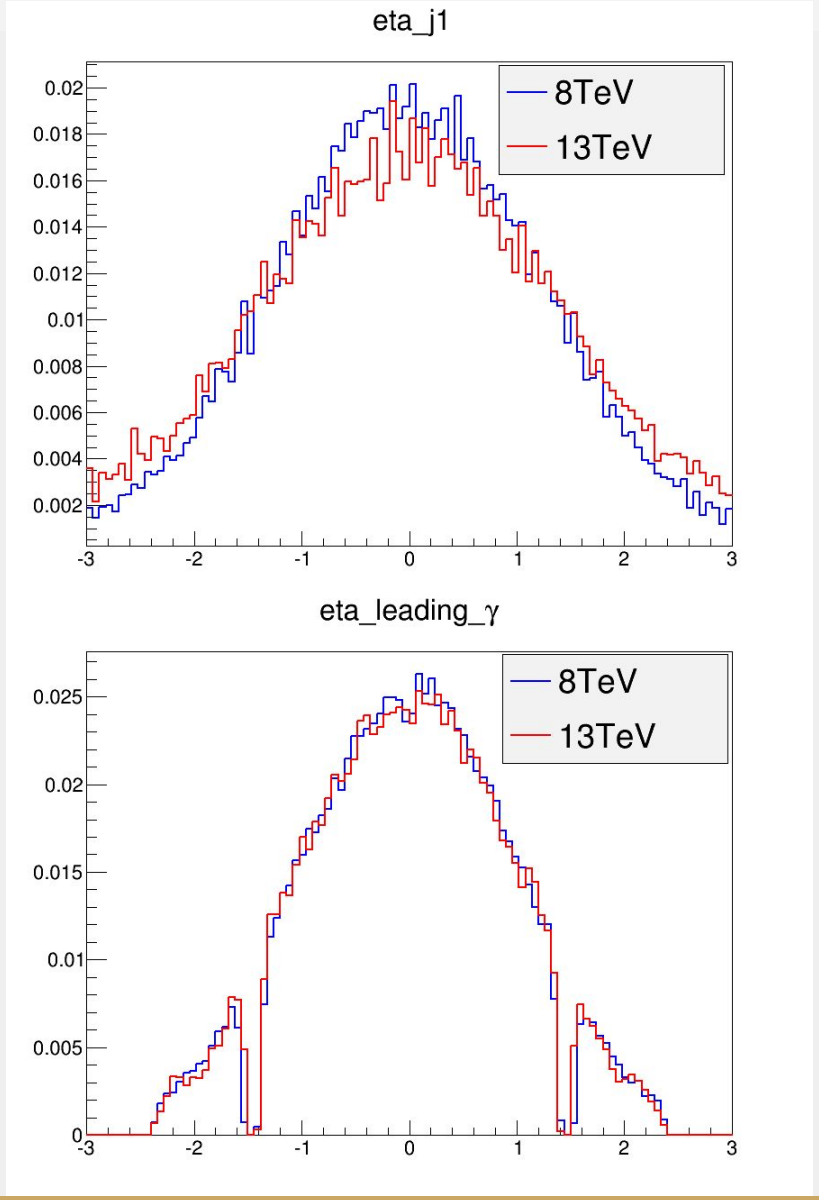








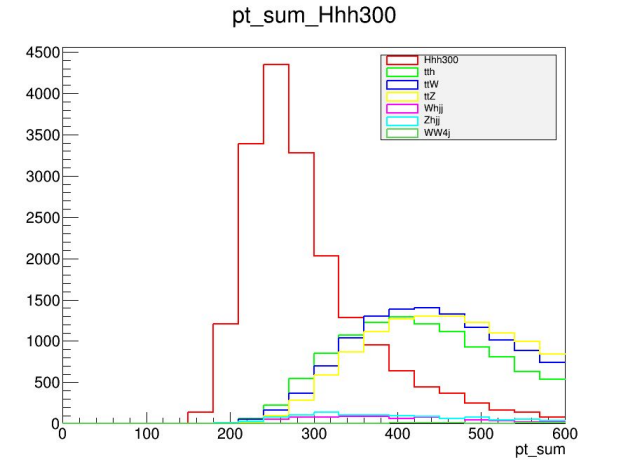
To be continued

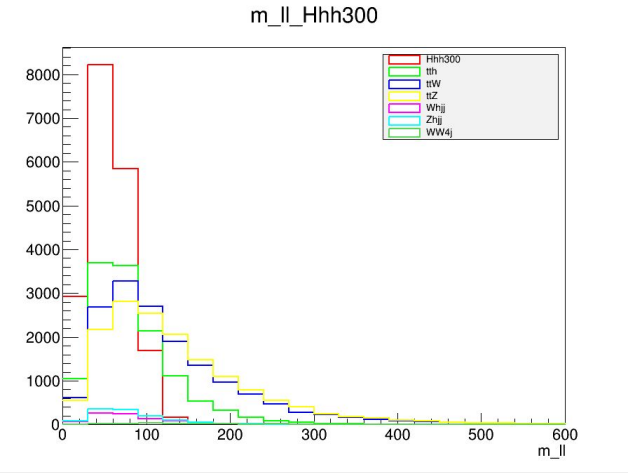


WWWW status

- pre-selection: two same sign leptons, >=4 jets(b veto)
- All xsecs are normalized to NLO Hhh300(gg>H>hh(2500fb), http://arxiv.org/abs/1407.0281v2) including h and w branching rations.
- Lumi=10 fb^{-1} , 100 fb^{-1}

processes	pre-selection	pt_sum < 300GeV	m_ll < 100GeV
Hhh300	1	0.66	0.63
ttW	2.56	0.09	0.08
ttZ	1.96	0.05	0.04
WW4j	1.77	0.008	0.008
tth	0.89	0.06	0.05
Whjj	0.35	0.07	0.06
Zhjj	0.08	0.02	0.01
$S/\sqrt{B}$ 10 fb^{-1}	1.14	3.8	4.0
$S/\sqrt{B}$ 100 fb^{-1}	3.6	12.1	12.7



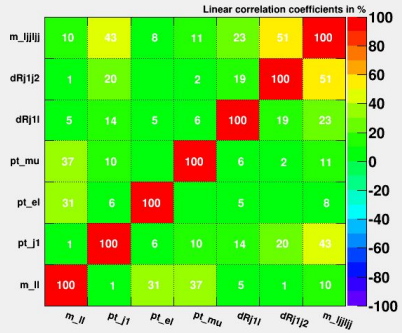


BDT

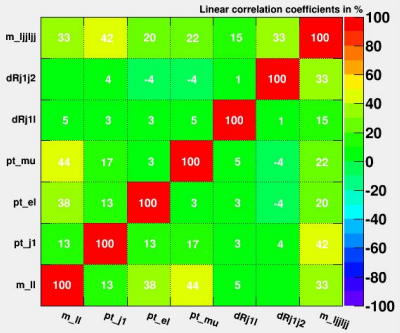
- trained samples after pre-selection
- all bkg are included according to their xsecs.
- tried 6 variables:
  - › m_ll, pt_j1, pt_el
  - › m_ljjljj, pt_mu, dRj1l, dRj1j2
- correlations seem OK
- Results:
  - › Lumi 10 fb^{-1} : 5.5+-9.2;
  - › Lumi 100 fb^{-1} : 17+-9.2

```
--------------------------------------------
Rank : Variable   : Variable Importance
--------------------------------------------
   1 : n_m_ll     : 1.902e-01
   2 : n_pt_j1    : 1.616e-01
   3 : n_pt_el    : 1.534e-01
   4 : n_m_ljjljj : 1.393e-01
   5 : n_pt_mu    : 1.371e-01
   6 : n_dRj1l    : 1.165e-01
   7 : n_dRj1j2   : 1.019e-01
--------------------------------------------
```

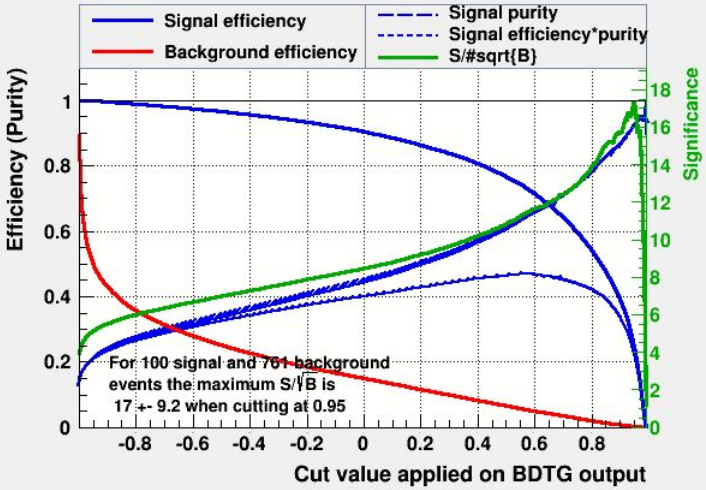
Correlation Matrix (signal)



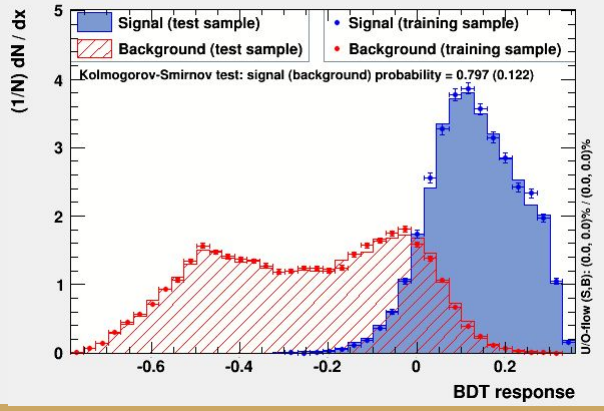
Correlation Matrix (background)



Cut efficiencies and optimal cut value



TMVA overtraining check for classifier: BDT



summary & to do

- tth and Whjj have lower xsecs, but they are much more irreducible th an others
- pt_sum has the highest cut efficiency for cut-based.
- BDT seems increasing sensitivity, but need further check depending on more statistics.

- took two shifts last week.