Weekly report

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2017.7.16

Overlap removal

- To prevent potential double-counting of objects in the detector, the reconstructed objects are required to have a minimal spatial separation.

The overlap removal is performed in the following order:

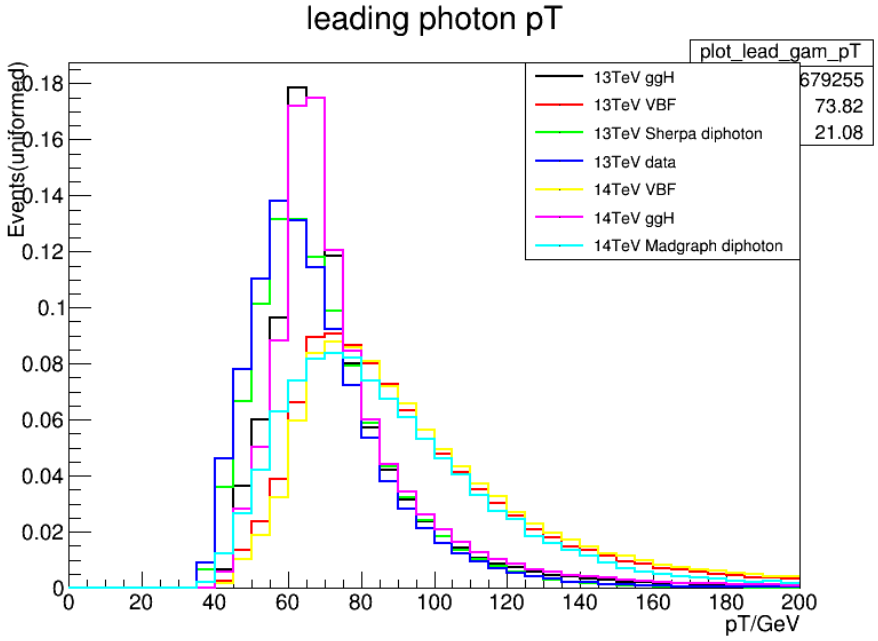
1. Remove electrons within $\Delta R = 0.4$ of any photon
2. Remove muons within $\Delta R = 0.4$ of any photon
3. Remove jets within $\Delta R = 0.4$ of any photon
4. Remove jets within $\Delta R = 0.2$ of any electron
5. Remove electrons within $0.4\ \Delta R$ of any jet
6. Remove muons within $\Delta R = 0.4$ of any jet

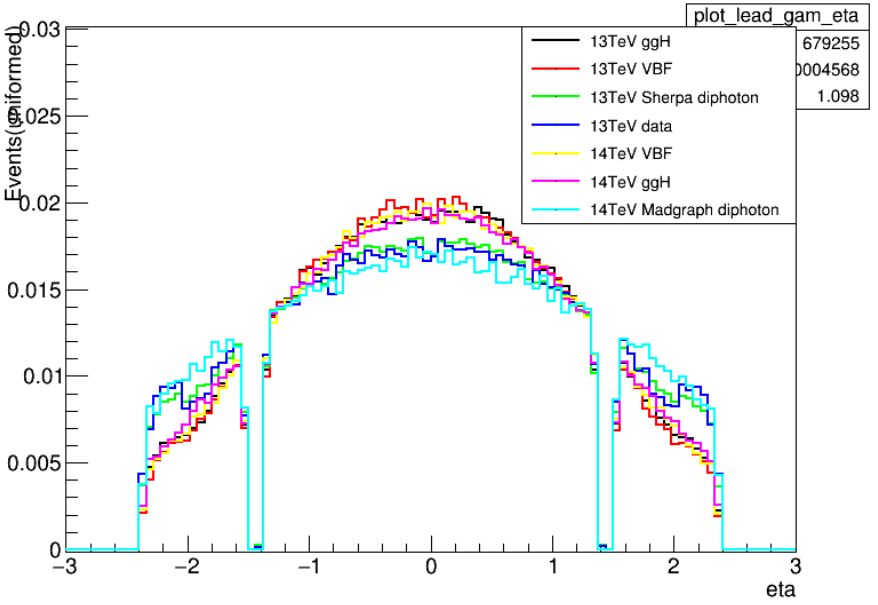
Standards from ATLAS note

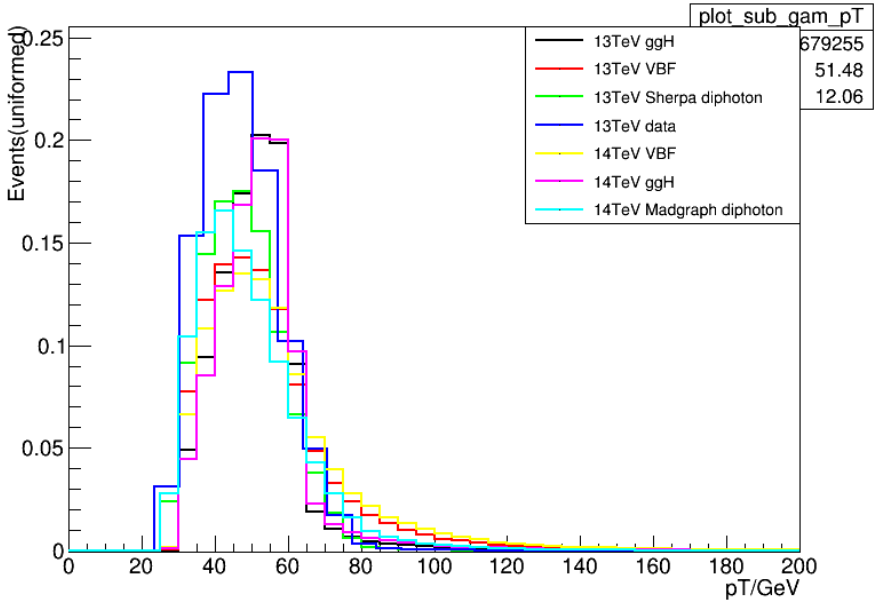
Overlap removal

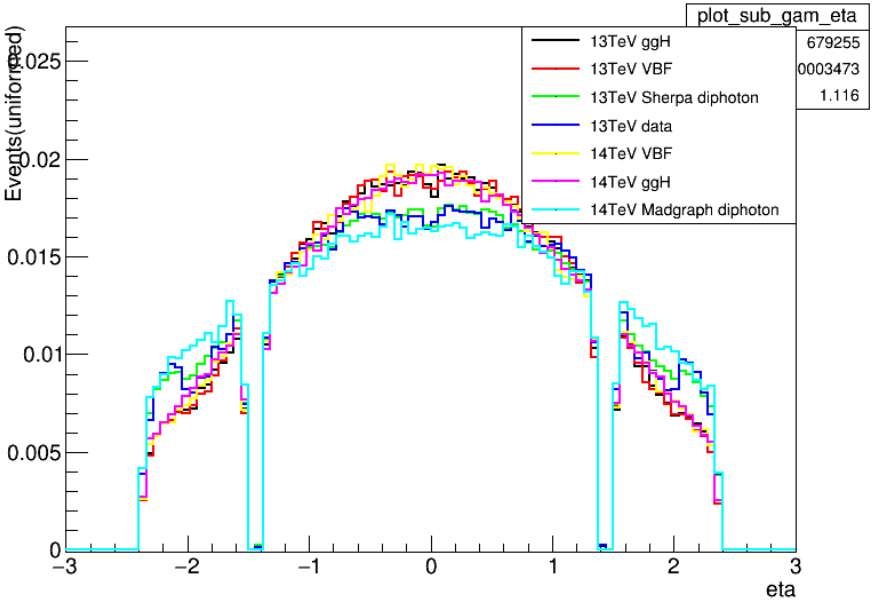
- Results:

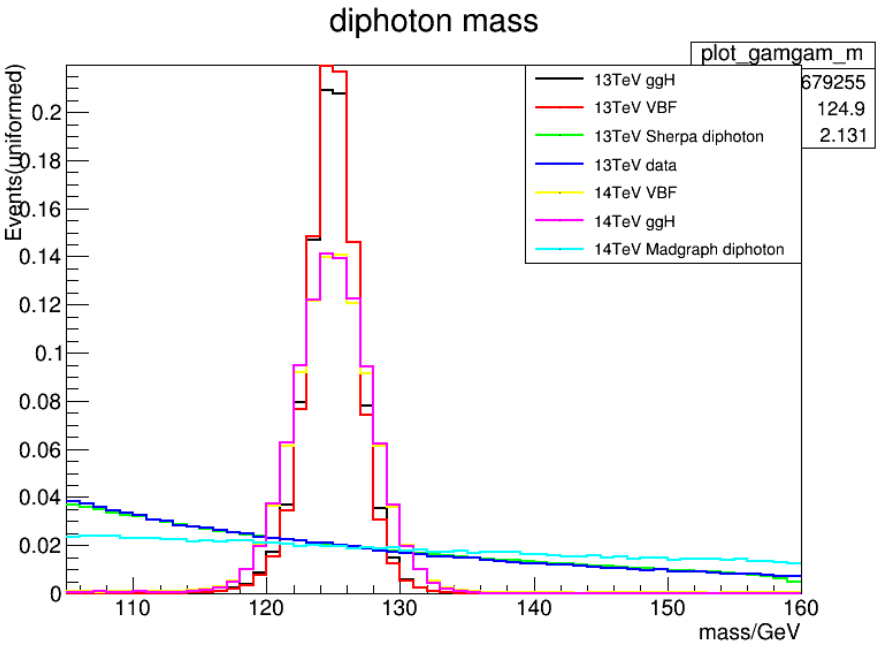
  all variable distributions become normal

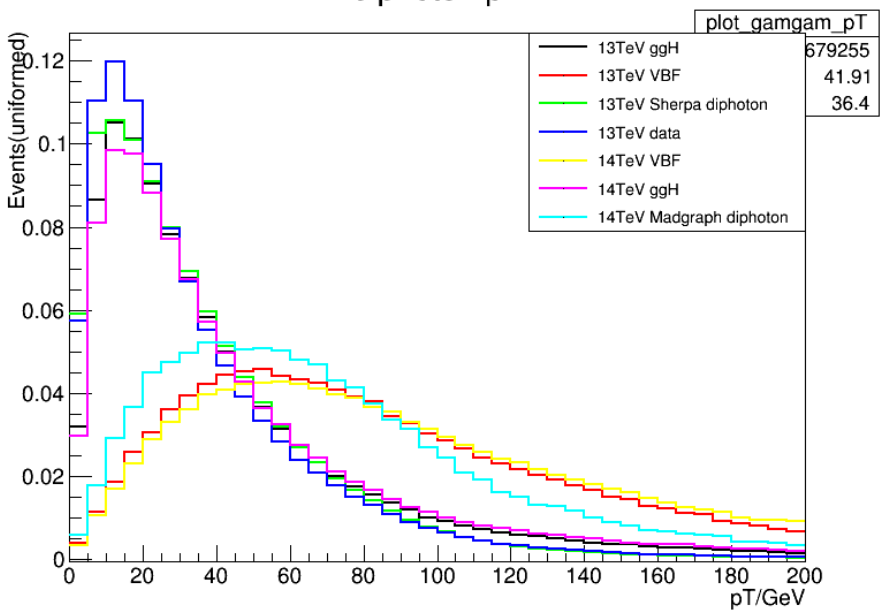

leading photon pT
plot_lead_gam_pT
679255
73.82
21.08
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
pT/GeV

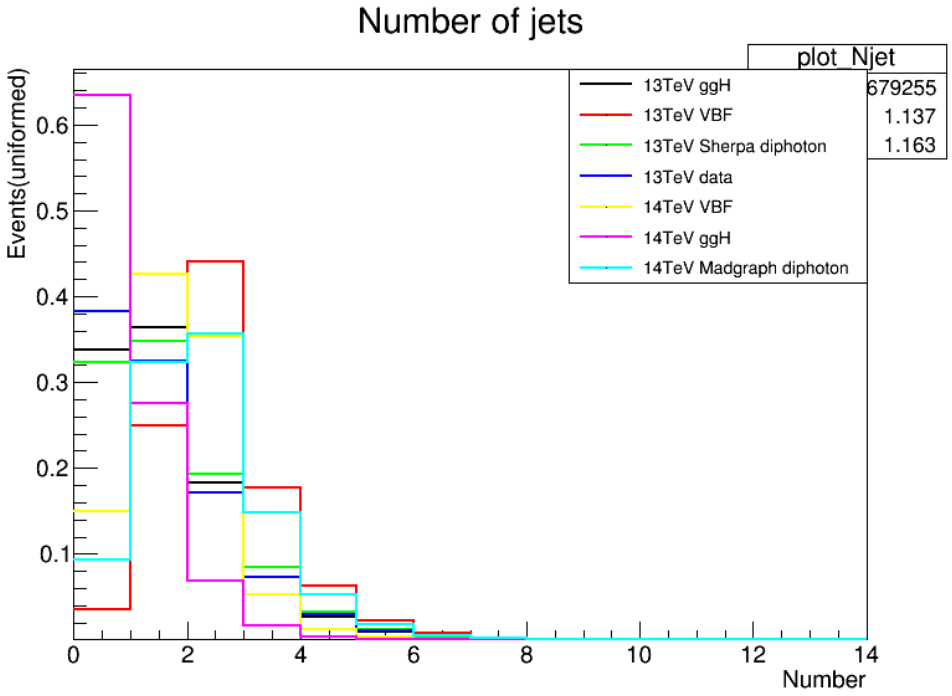

leading photon eta
plot_lead_gam_eta
679255
0004568
1.098
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
eta

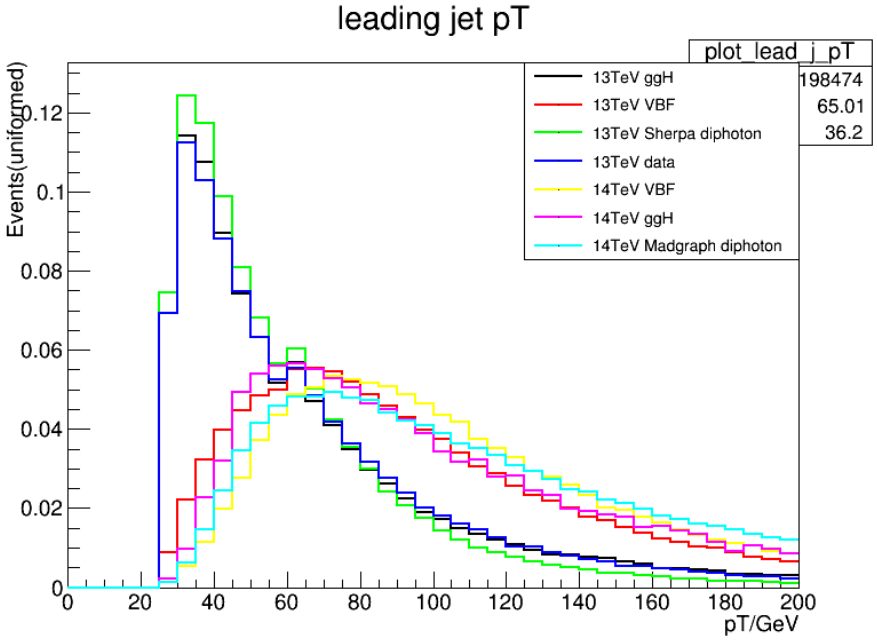

subleading photon pT
plot_sub_gam_pT
679255
51.48
12.06
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
pT/GeV

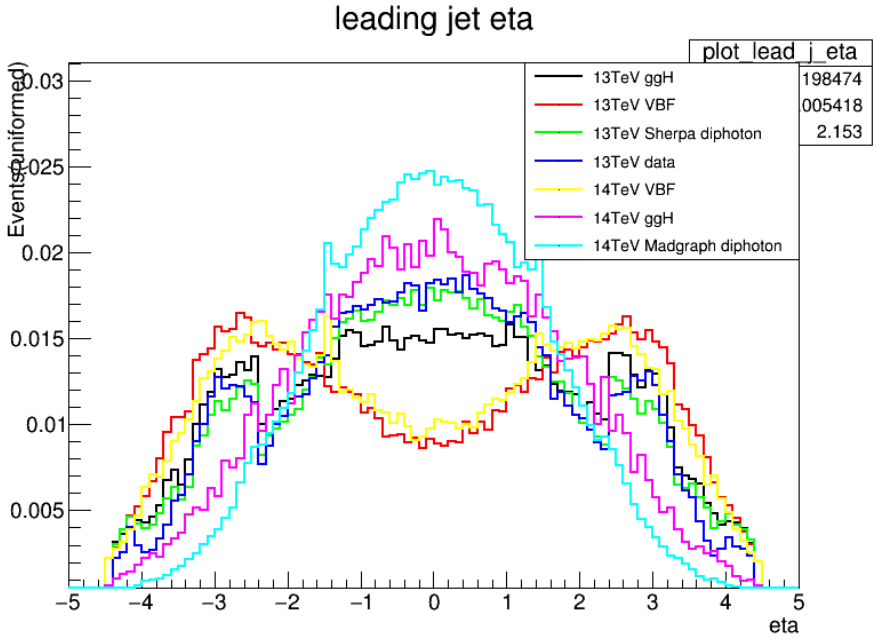

subleading photon eta
plot_sub_gam_eta
679255
0003473
1.116
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
eta

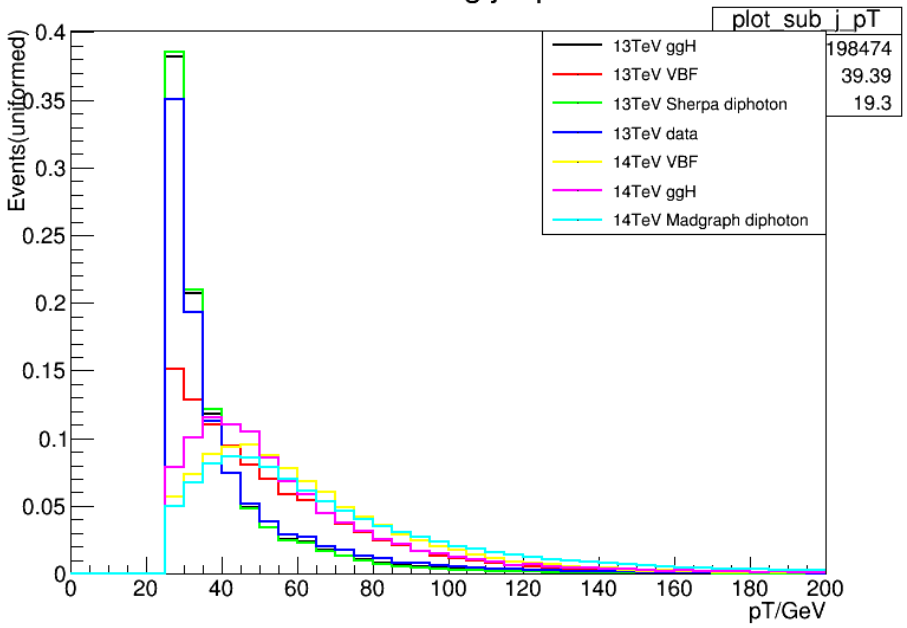

diphoton mass
plot_gamgam_m
679255
124.9
2.131
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
mass/GeV

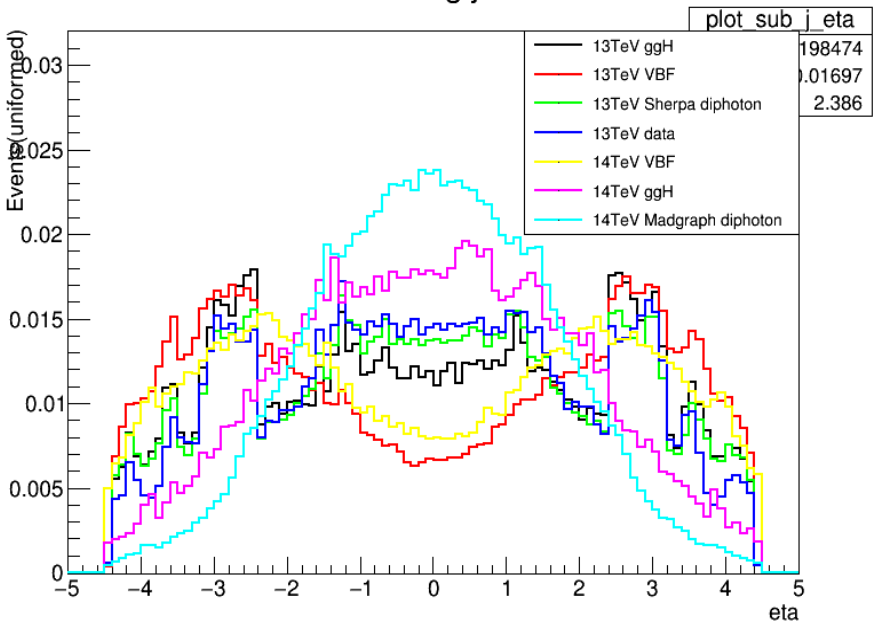

diphoton pT
plot_gamgam_pT
679255
41.91
36.4
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
pT/GeV


Number of jets
plot_Njet
679255
1.137
1.163
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
Number

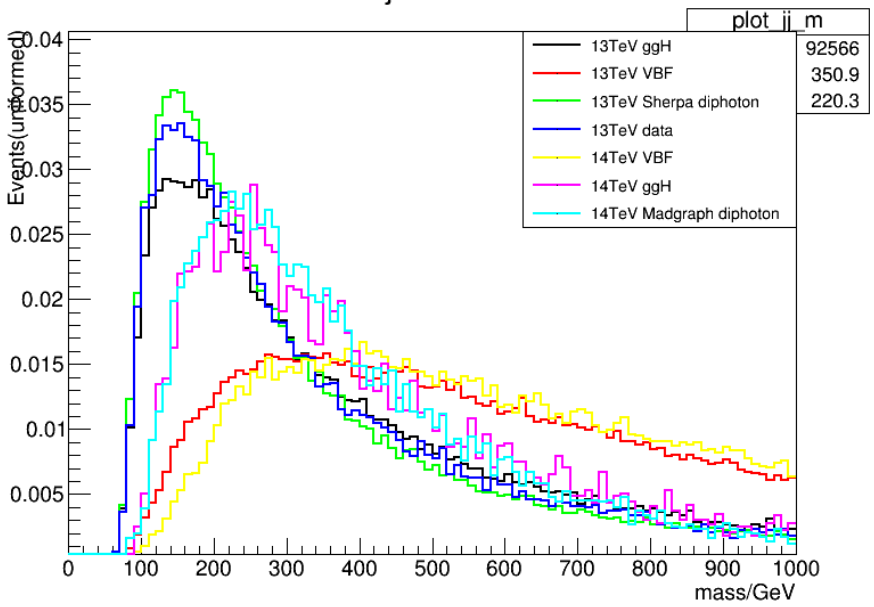

leading jet pT
plot_lead_j_pT
198474
65.01
36.2
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
pT/GeV


leading jet eta
plot_lead_j_eta
198474
005418
2.153
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
eta

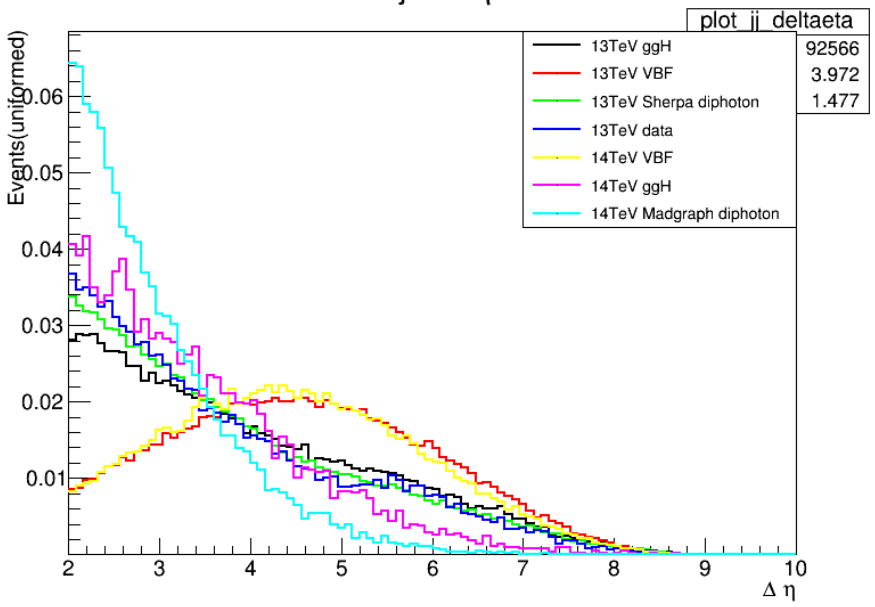

subleading jet pT
plot_sub_j_pT
198474
39.39
19.3
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
pT/GeV


subleading jet eta
plot_sub_j_eta
198474
.01697
2.386
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
eta

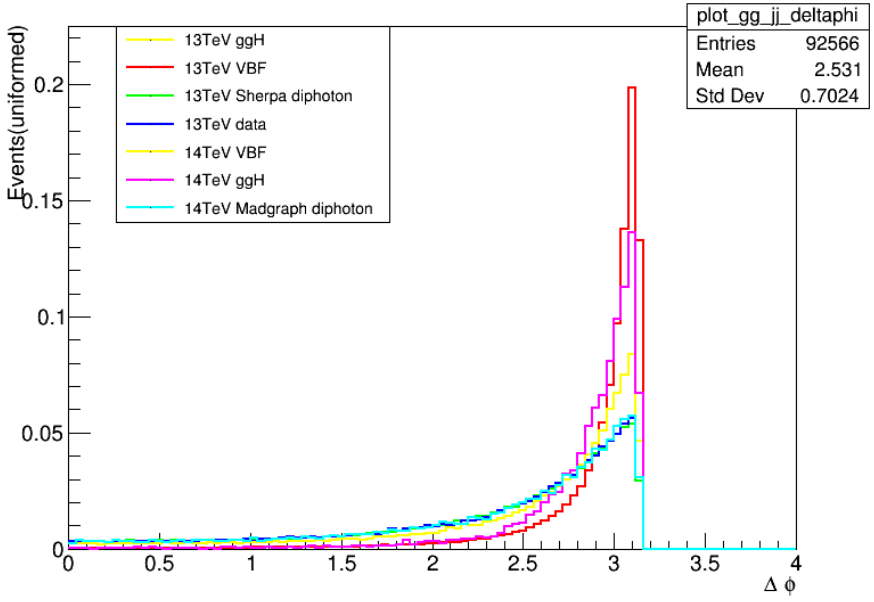
dijet mass



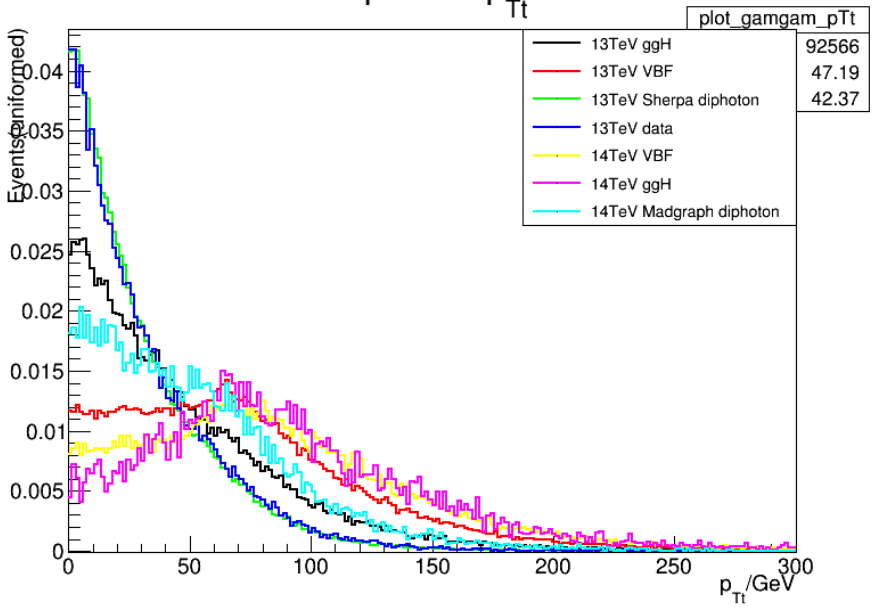
dijet Δ η

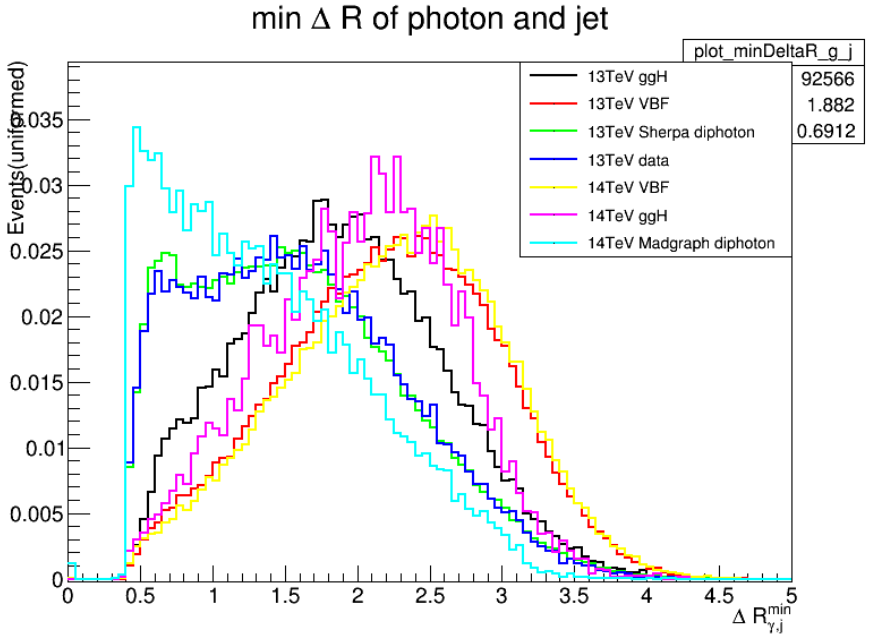


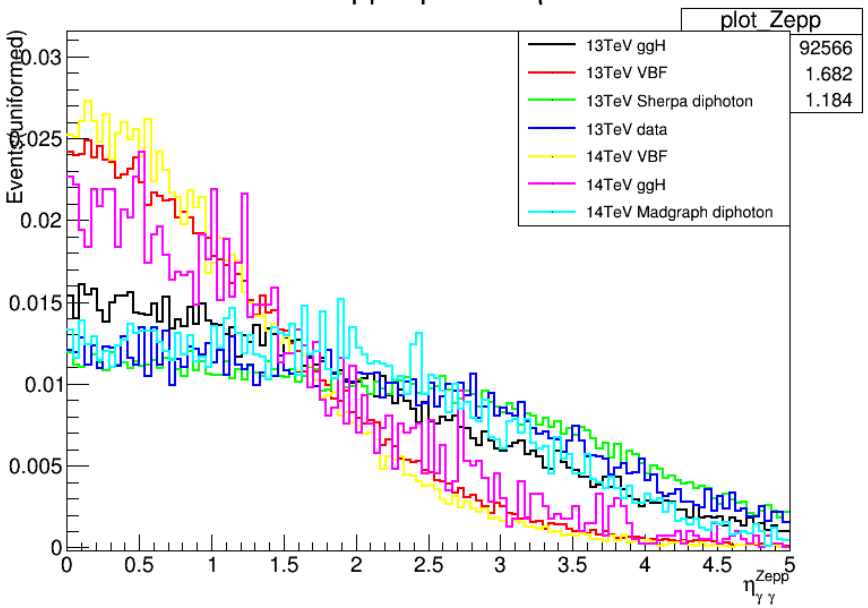
diphoton-dijet Δ ϕ



diphoton p_{Tt}




min Δ R of photon and jet
plot_minDeltaR_g_j
92566
1.882
0.6912
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
Δ R^min_γ,j


Zepp diphoton η
plot_Zepp
92566
1.682
1.184
13TeV ggH
13TeV VBF
13TeV Sherpa diphoton
13TeV data
14TeV VBF
14TeV ggH
14TeV Madgraph diphoton
Events(uniformed)
η^Zepp_γ γ

Summary & further work

- The progress is slower than expected because of my several mistake

- Begin to test BDT next week