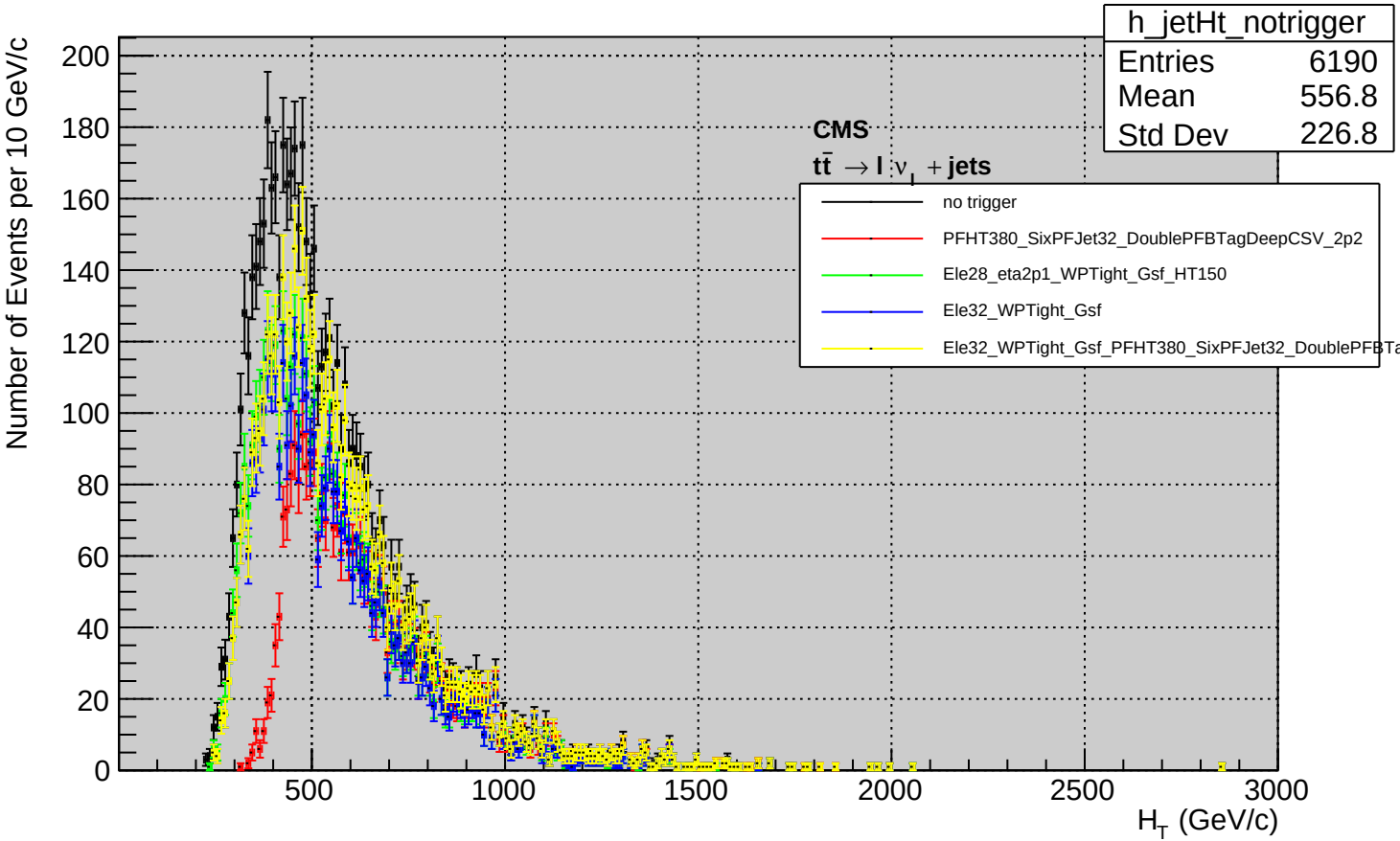
On-line (pre-)selection Requisites for:

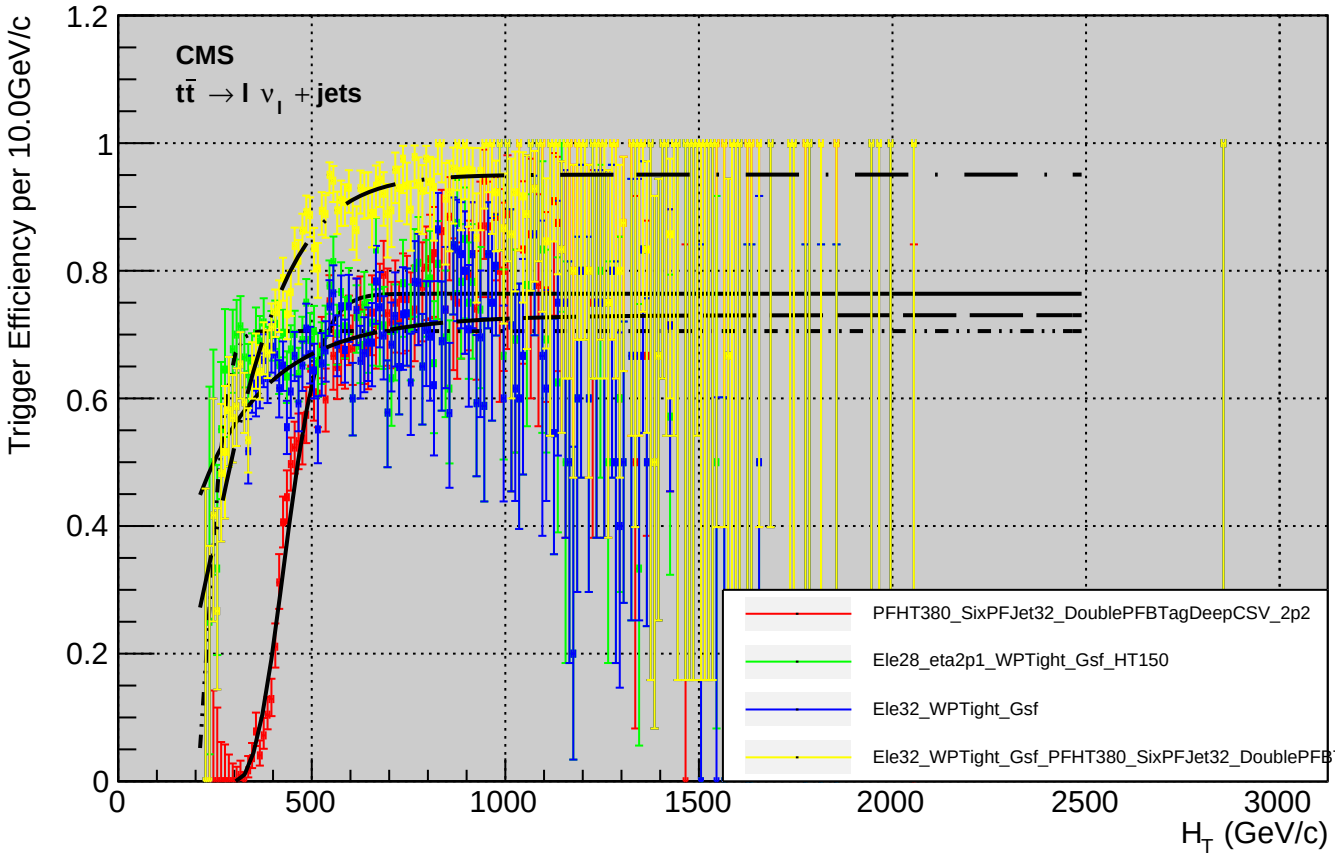
- **Jets:** number > 5
- **Muons plus Electrons:** number > 0

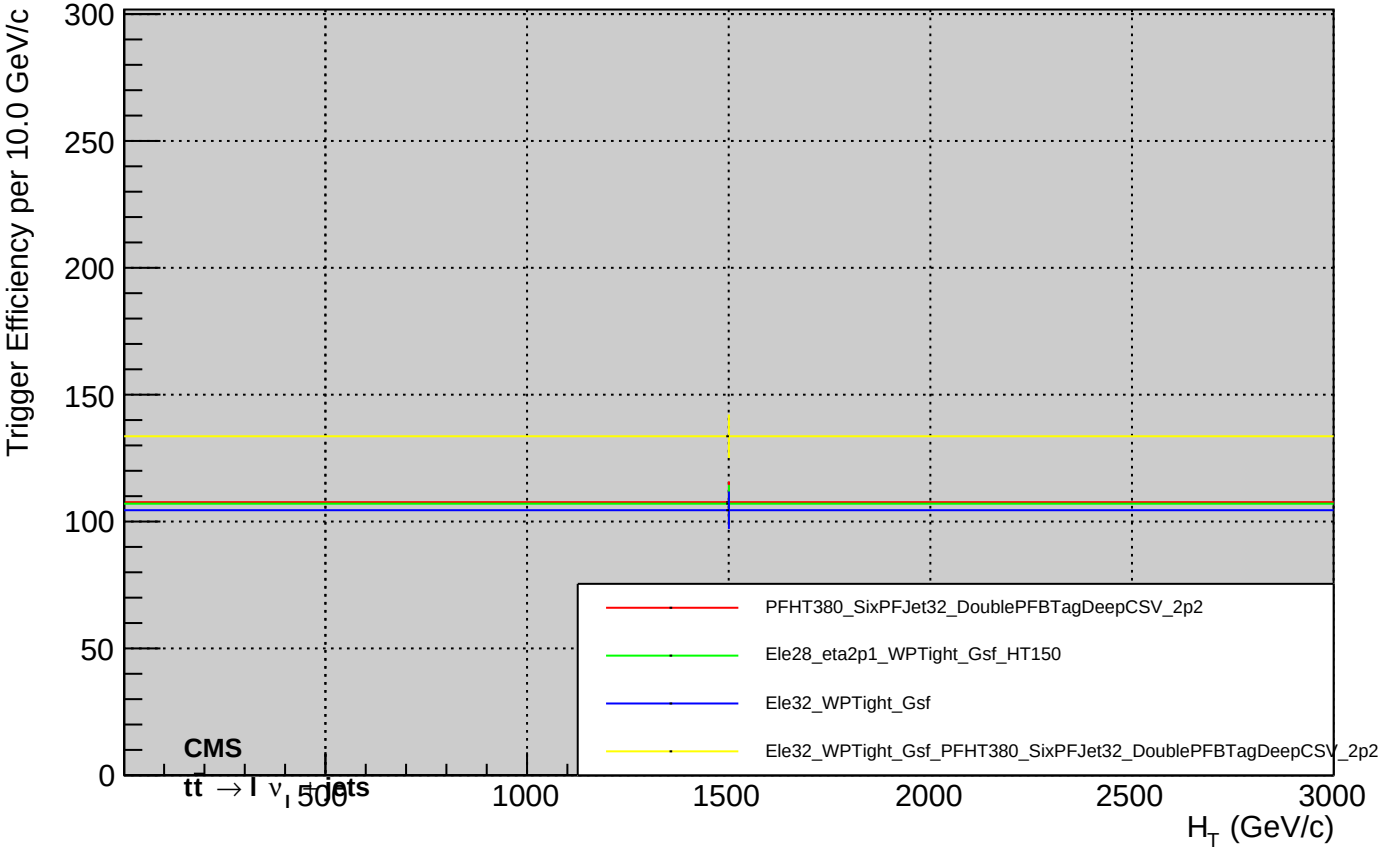
Event Limit: None (see last page)

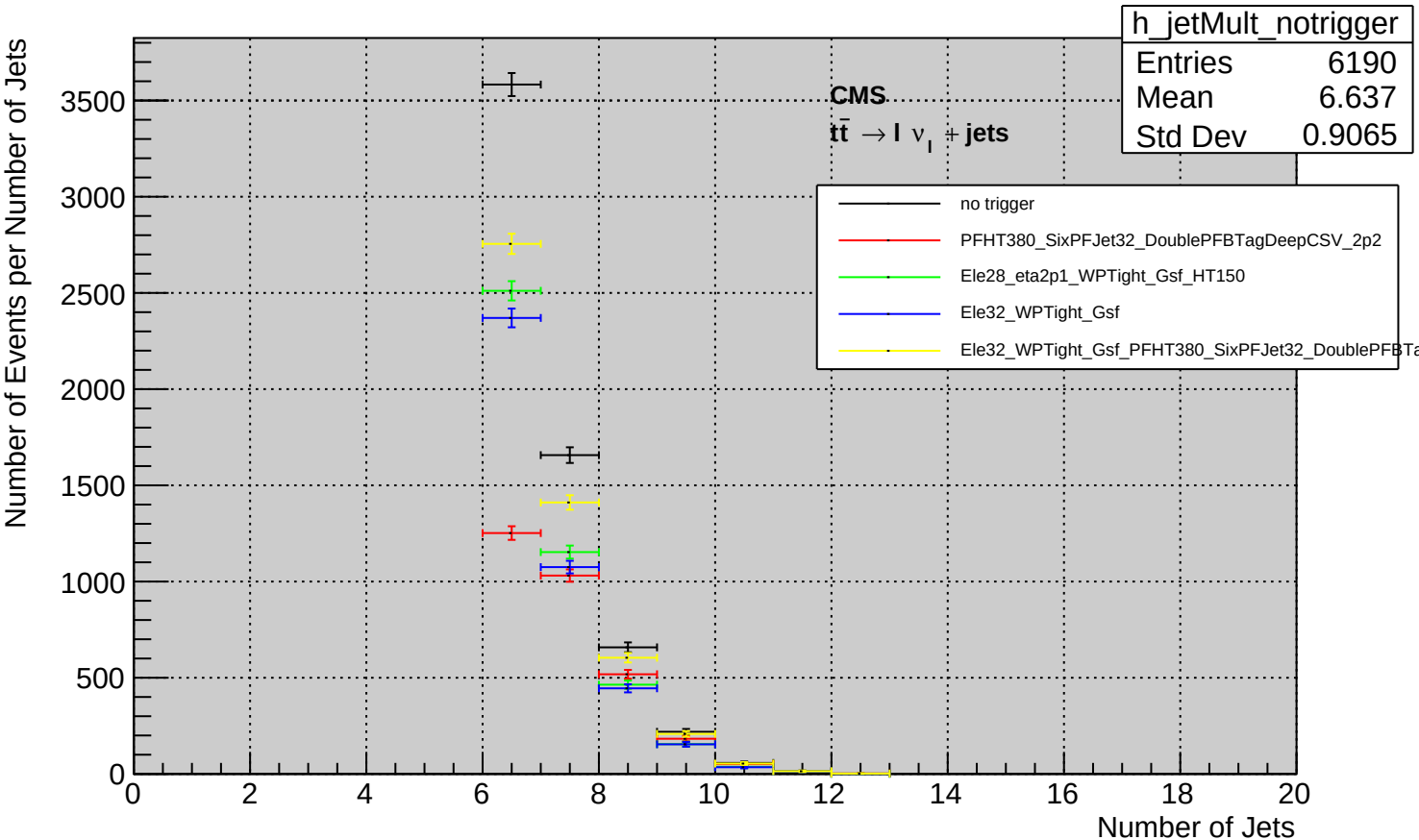
Off-line (post-)selection Requisites for:

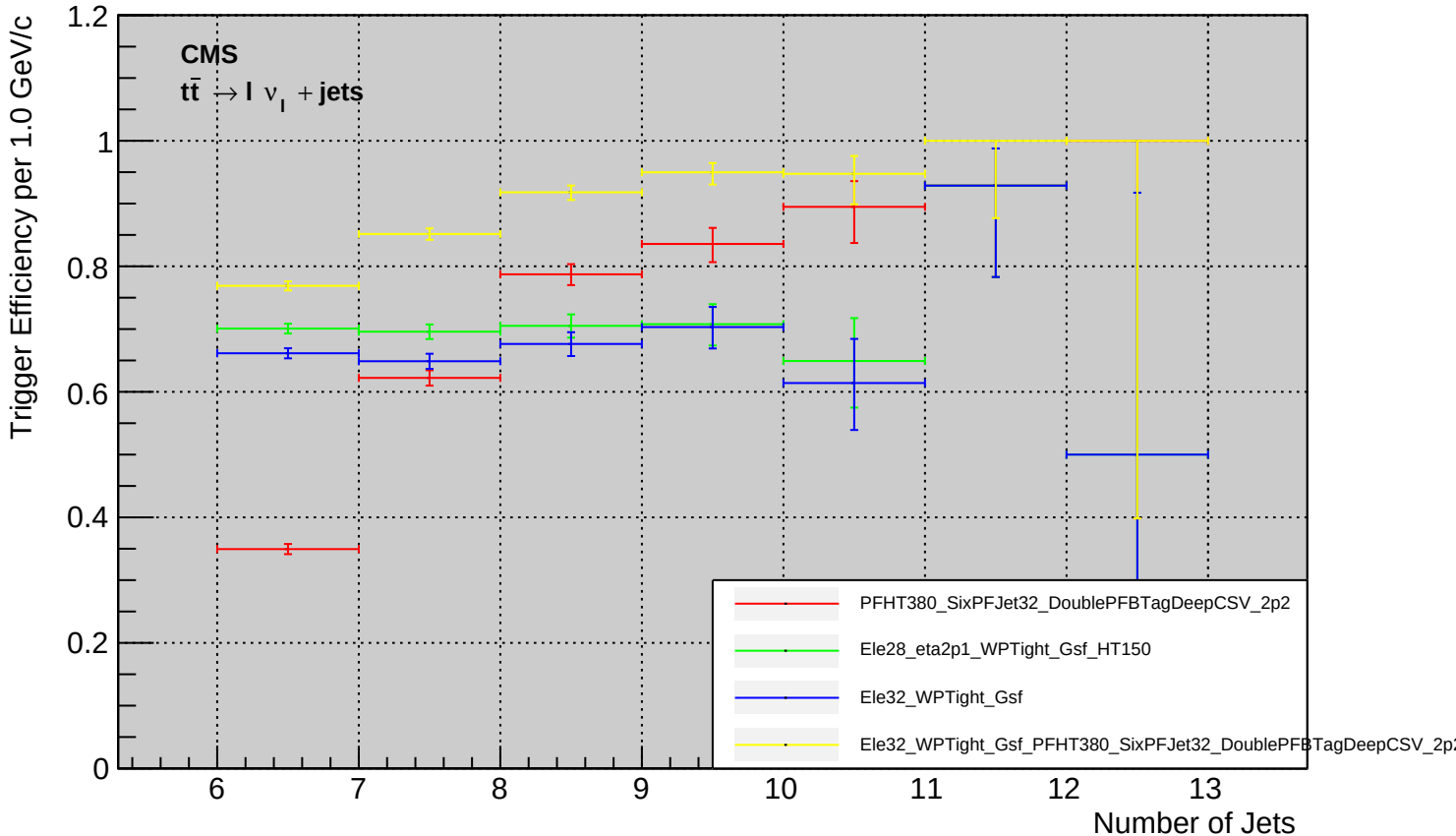
- **Jets:** jetId > 2 , p_T > 30 and |η|<2.4 (for at least 6 jets)
  btagDeepFlavB > 0.7489 (for at least one jet)
- **Electrons:** has tightId, |η|<2.4 and miniPFRelIso_all<0.10 (for

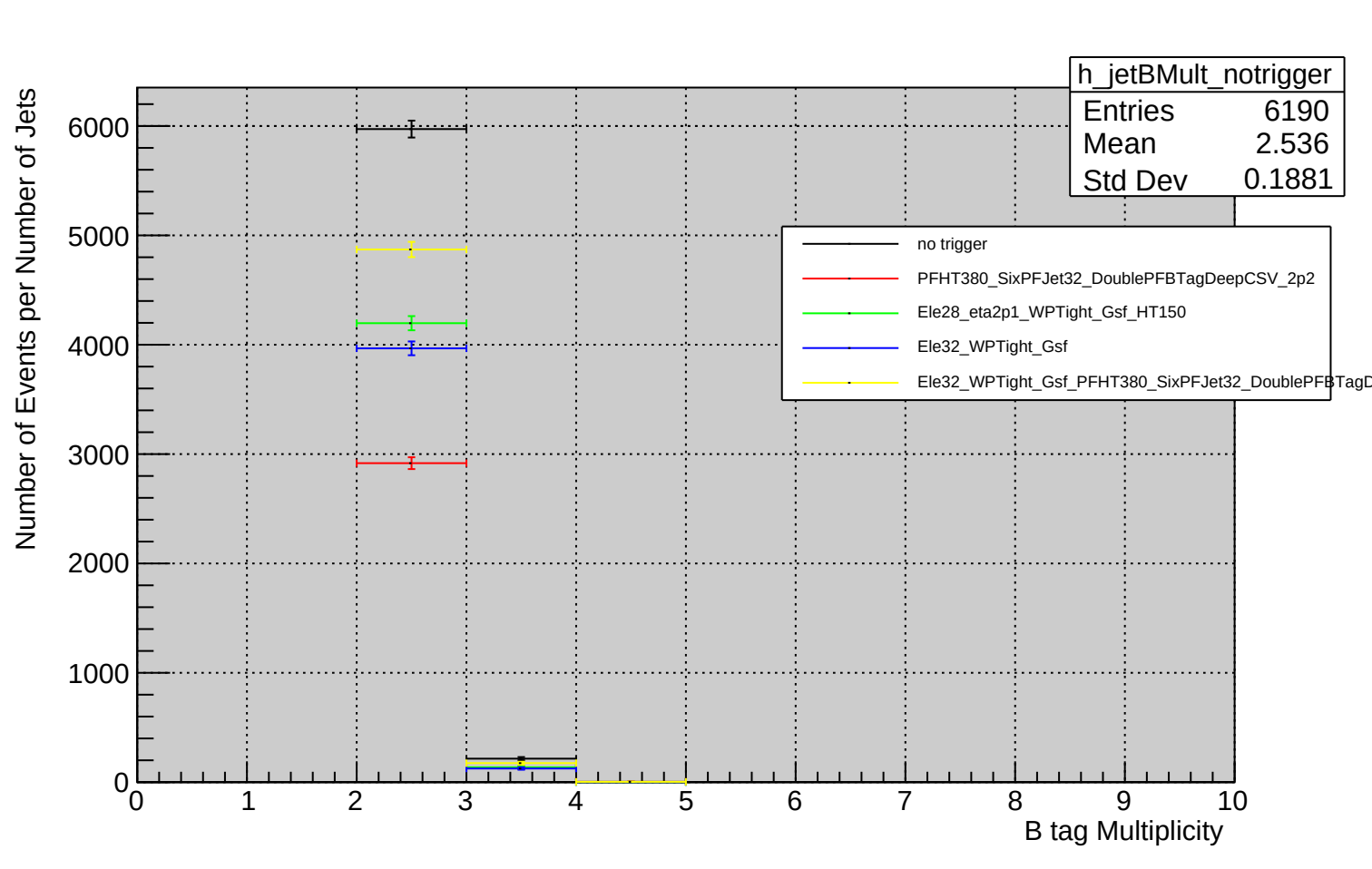

h_jetHt_notrigger
Entries 6190
Mean 556.8
Std Dev 226.8
CMS
$t\bar{t} \rightarrow l\,\nu_l + jets$
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per 10 GeV/c
H_T (GeV/c)
0
20
40
60
80
100
120
140
160
180
200
500
1000
1500
2000
2500
3000

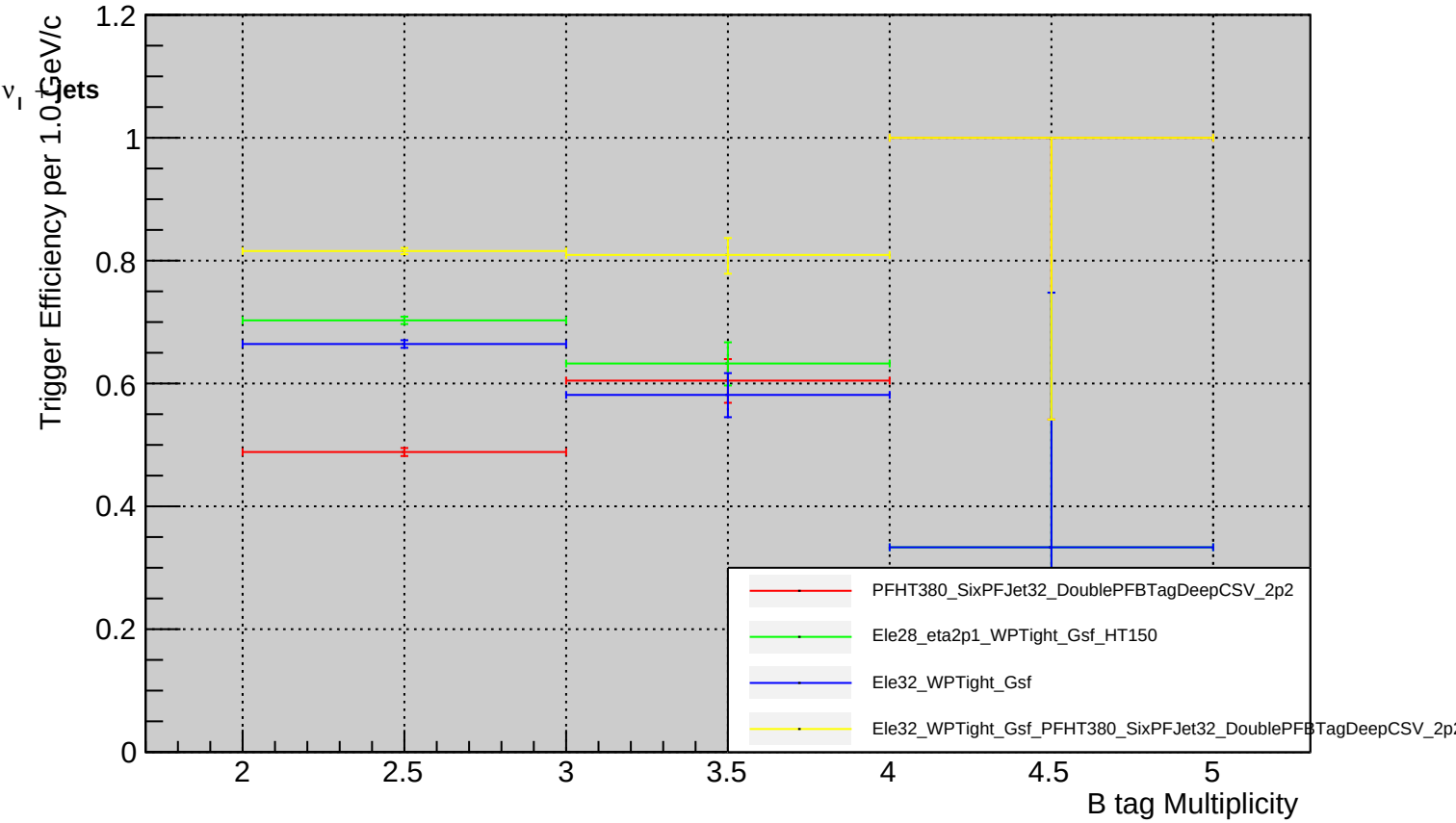

CMS
$t\bar{t} \rightarrow l\ \nu_l + jets$
Trigger Efficiency per 10.0GeV/c
H_T (GeV/c)
0
0.2
0.4
0.6
0.8
1
1.2
0
500
1000
1500
2000
2500
3000
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

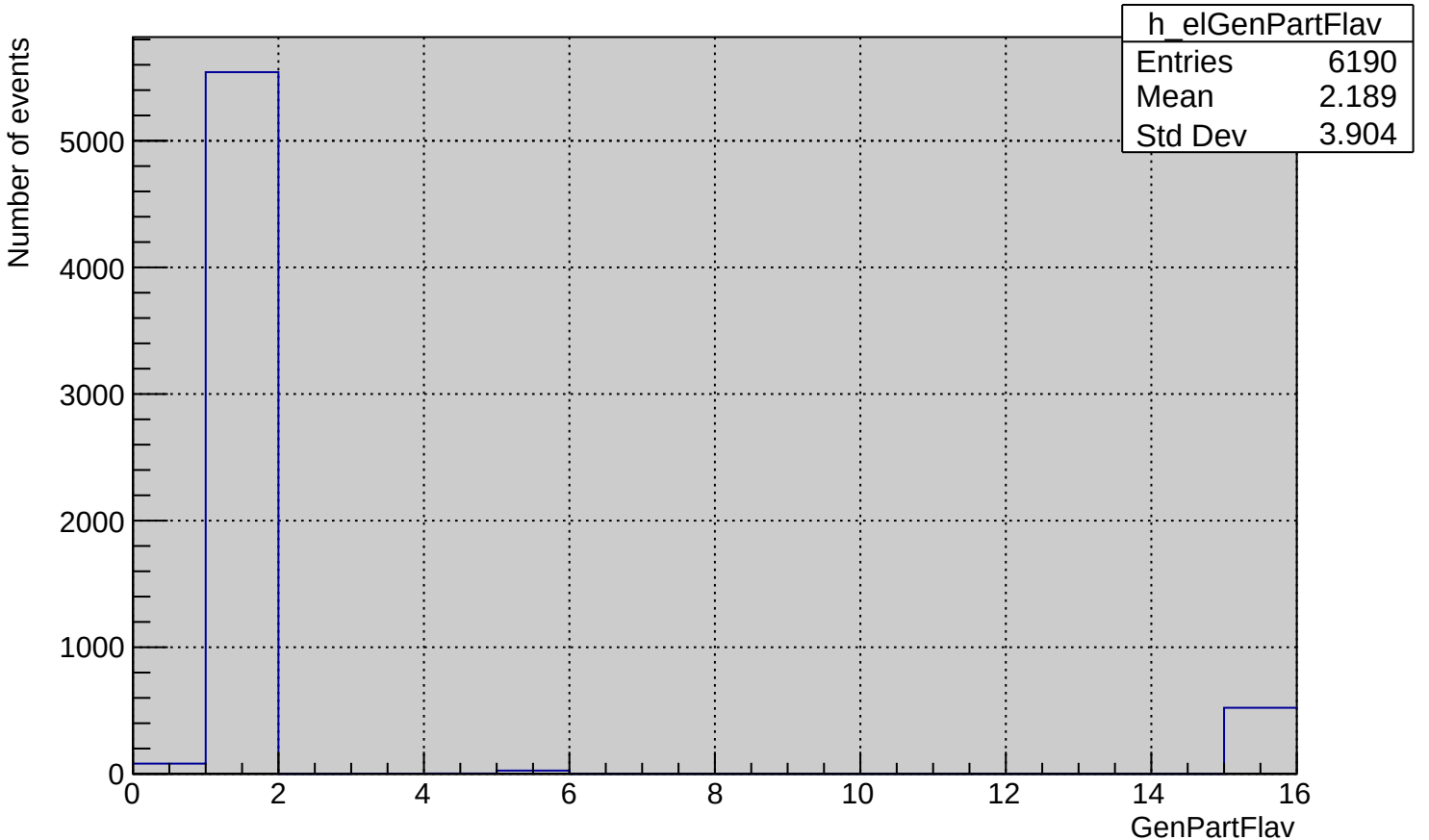

Trigger Efficiency per 10.0 GeV/c
300
250
200
150
100
50
0
CMS
tt → l ν l + jets
500
1000
1500
2000
2500
3000
H_T (GeV/c)
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

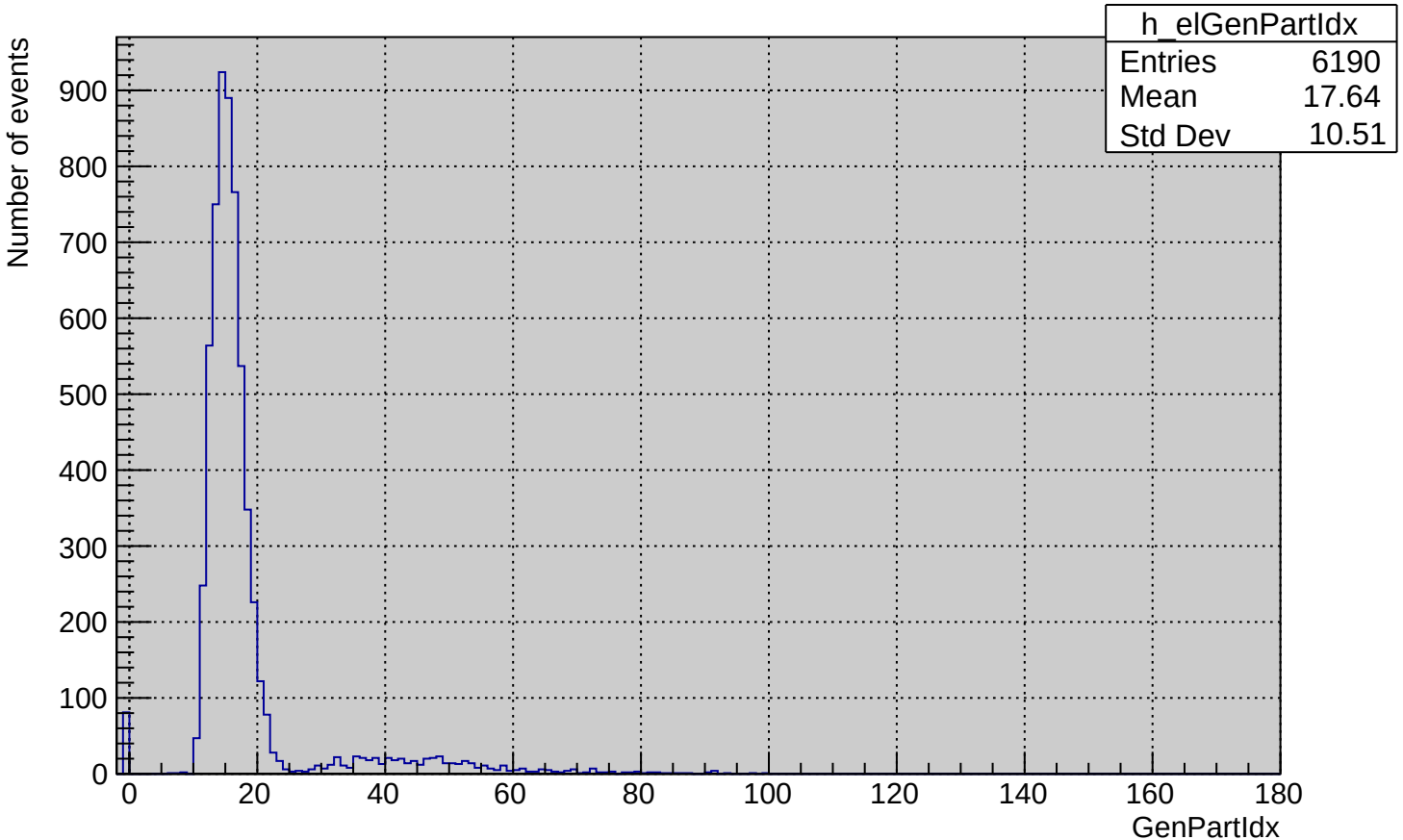

h_jetMult_notrigger
Entries 6190
Mean 6.637
Std Dev 0.9065
CMS
$t\bar{t} \rightarrow l\ \nu_l$ + jets
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per Number of Jets
Number of Jets
0
500
1000
1500
2000
2500
3000
3500
0
2
4
6
8
10
12
14
16
18
20

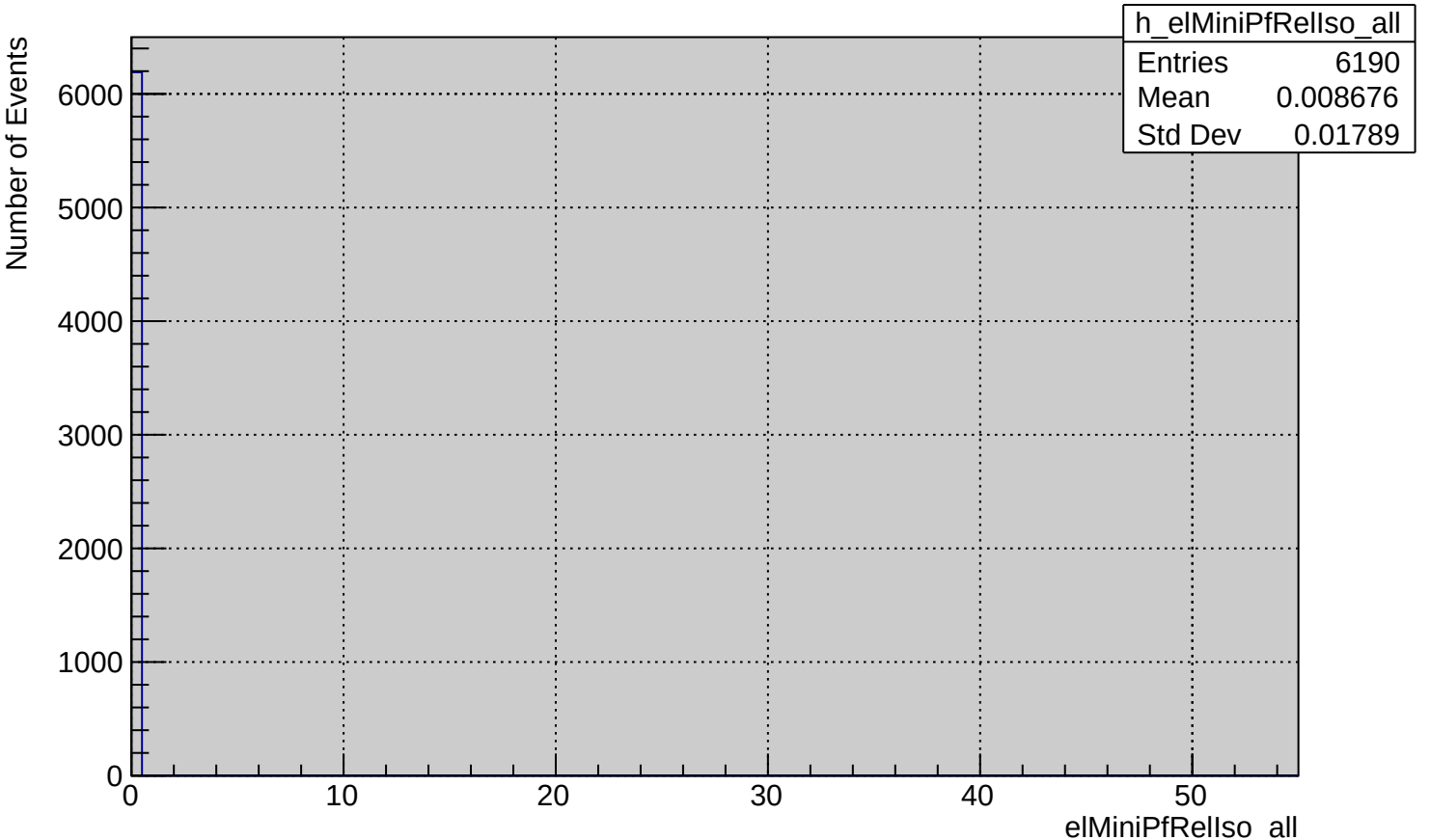

CMS
$t\bar{t} \rightarrow l\ \nu_l$ + jets
Trigger Efficiency per 1.0 GeV/c
Number of Jets
0
0.2
0.4
0.6
0.8
1
1.2
6
7
8
9
10
11
12
13
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

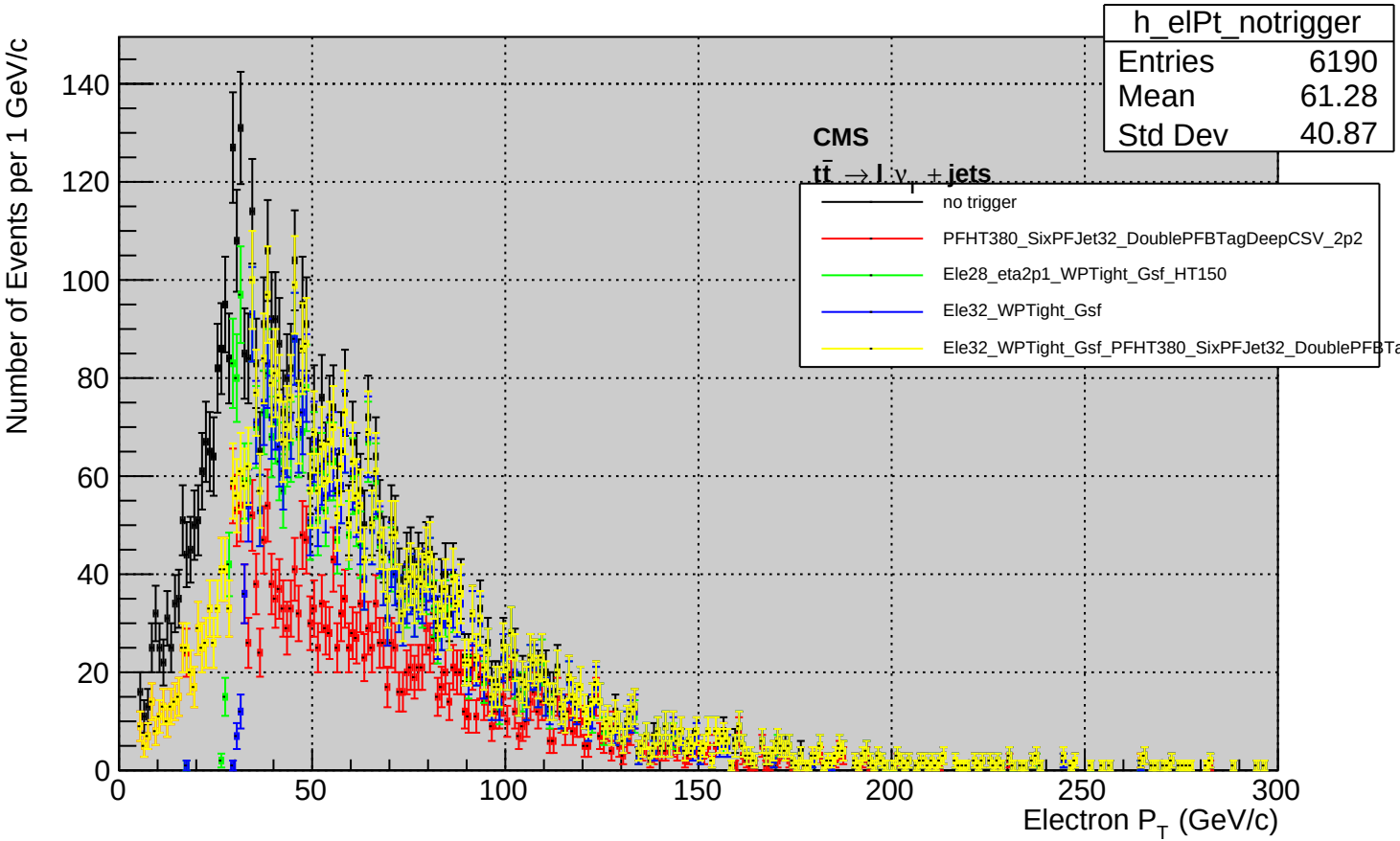

h_jetBMult_notrigger
Entries 6190
Mean 2.536
Std Dev 0.1881
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per Number of Jets
B tag Multiplicity
0
1000
2000
3000
4000
5000
6000
0
1
2
3
4
5
6
7
8
9
10

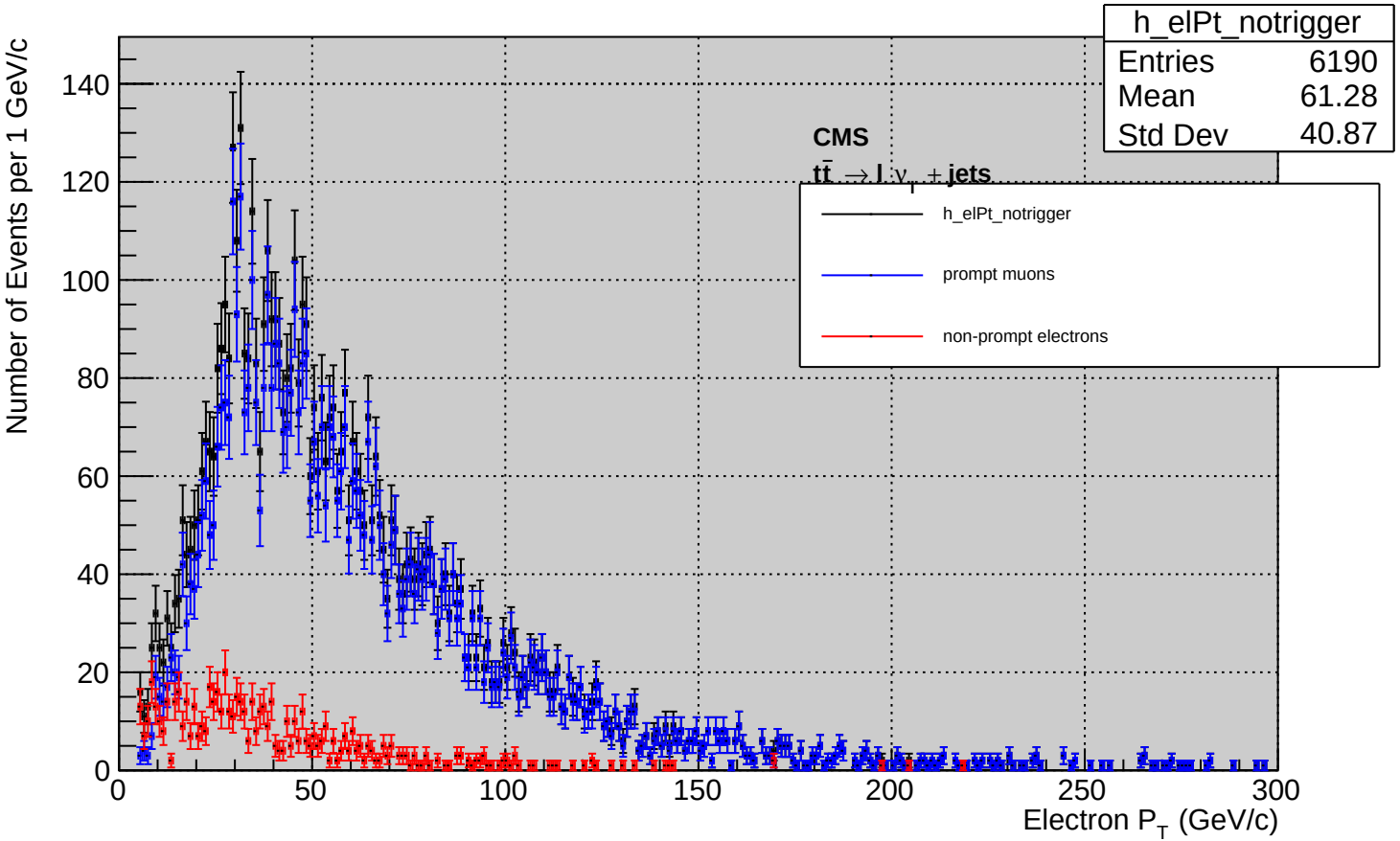

Trigger Efficiency per 1.0 GeV/c
B tag Multiplicity
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

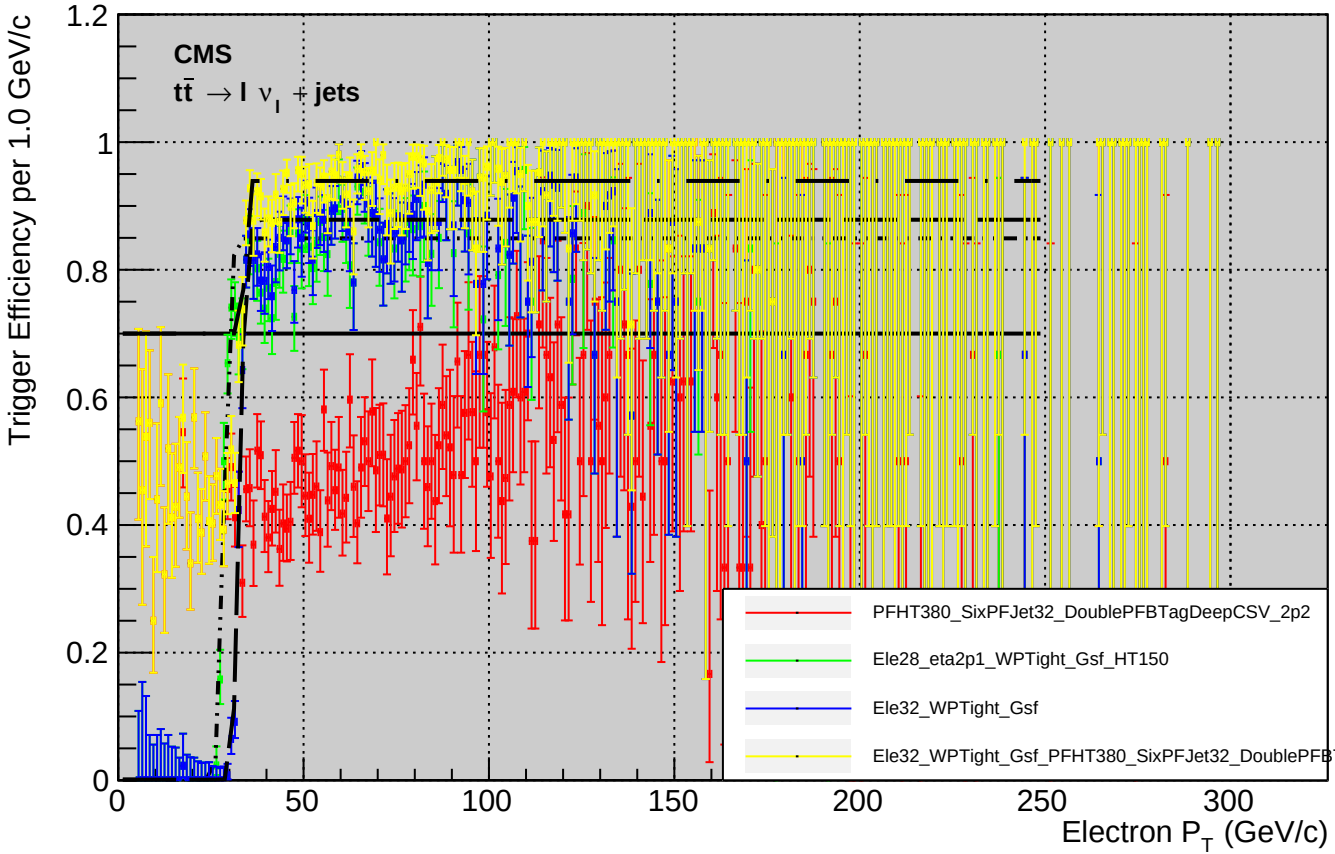

h_elGenPartFlav
Entries 6190
Mean 2.189
Std Dev 3.904
Number of events
5000
4000
3000
2000
1000
0
0
2
4
6
8
10
12
14
16
GenPartFlav

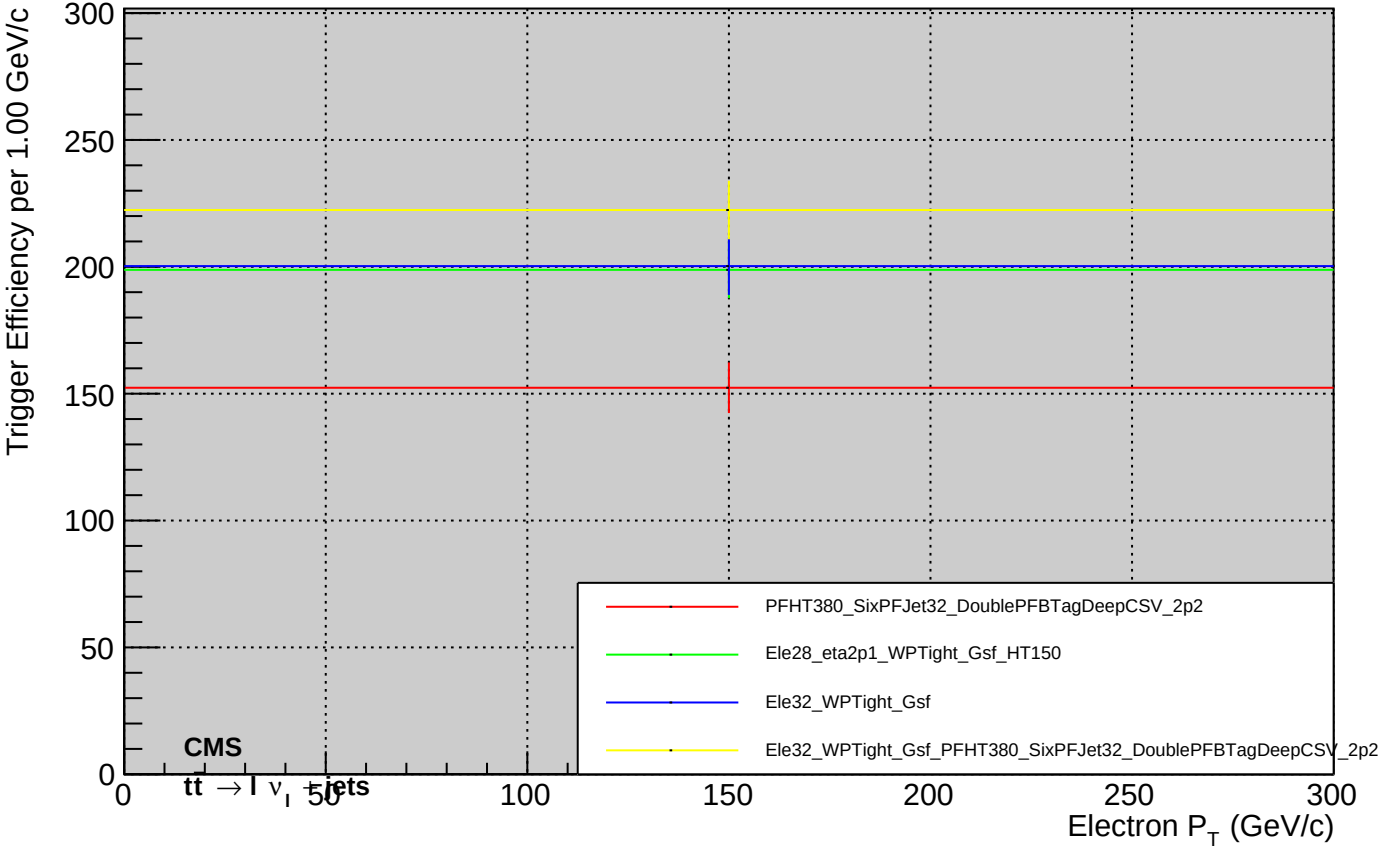

h_elGenPartIdx
Entries 6190
Mean 17.64
Std Dev 10.51
Number of events
0
100
200
300
400
500
600
700
800
900
0
20
40
60
80
100
120
140
160
180
GenPartIdx

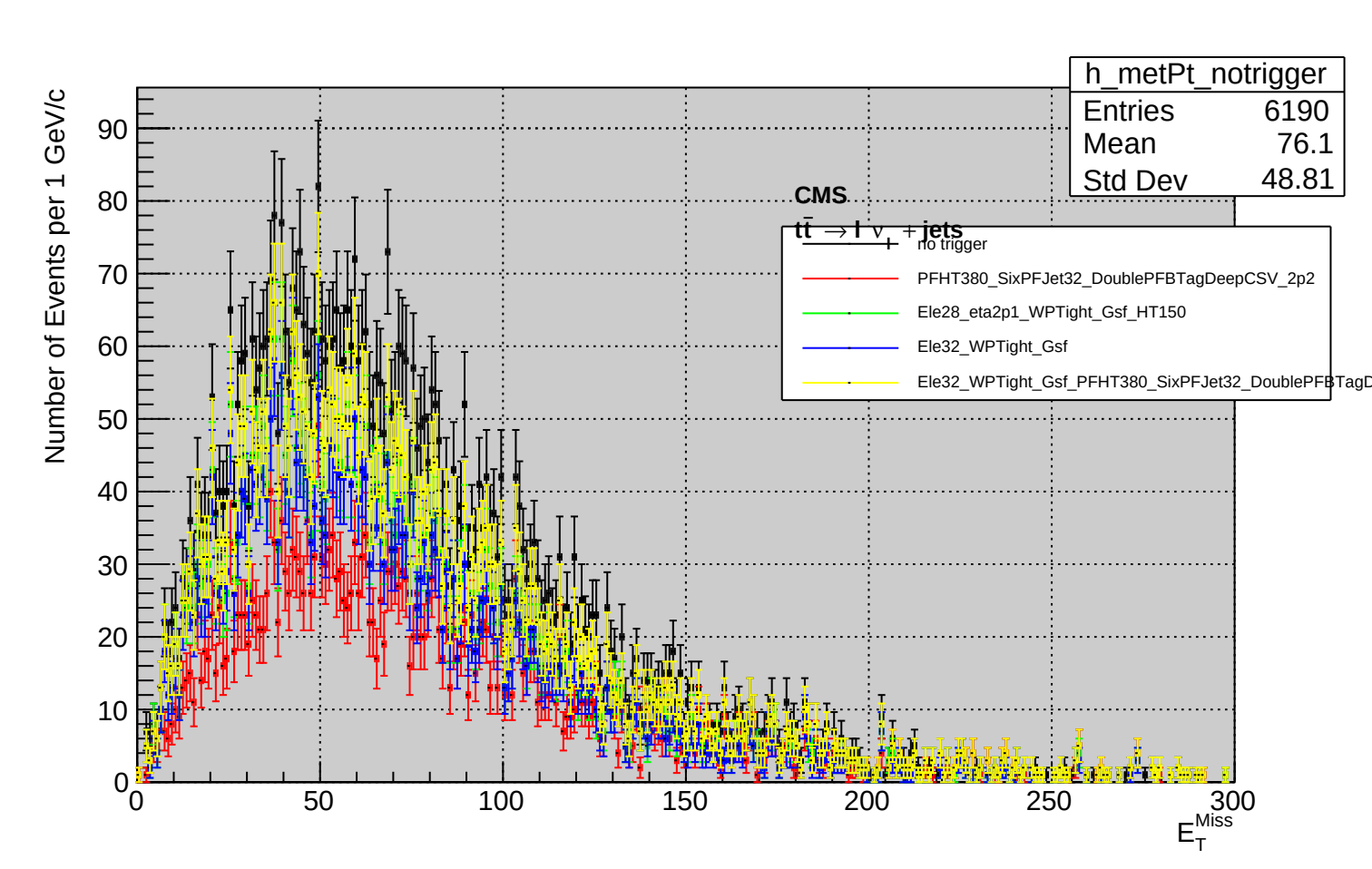

h_elMiniPfRelIso_all
Entries 6190
Mean 0.008676
Std Dev 0.01789
Number of Events
0
1000
2000
3000
4000
5000
6000
0
10
20
30
40
50
elMiniPfRelIso_all

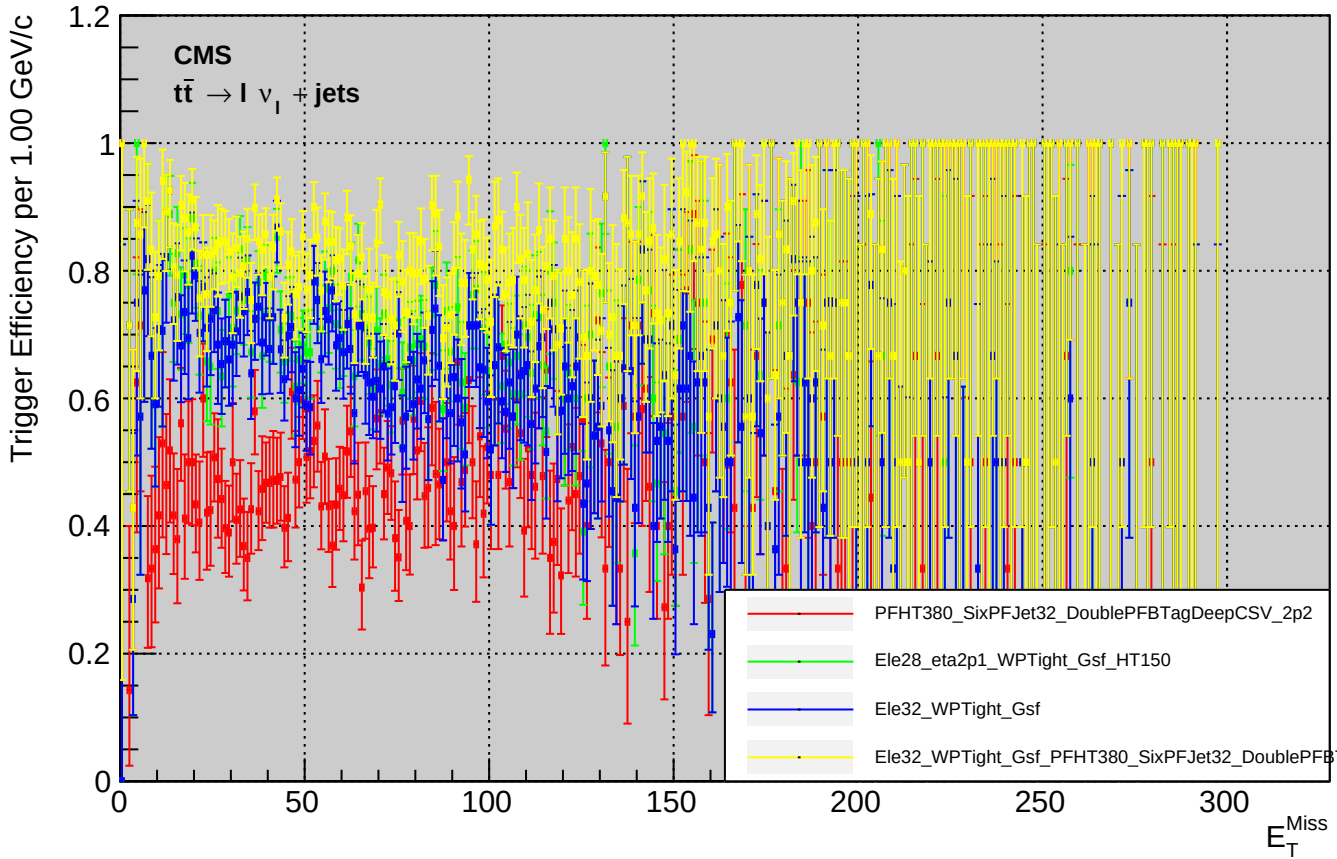

h_elPt_notrigger
Entries 6190
Mean 61.28
Std Dev 40.87
CMS
$t\bar{t} \rightarrow l\,\nu_l + jets$
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per 1 GeV/c
Electron P_T (GeV/c)
0
20
40
60
80
100
120
140
0
50
100
150
200
250
300

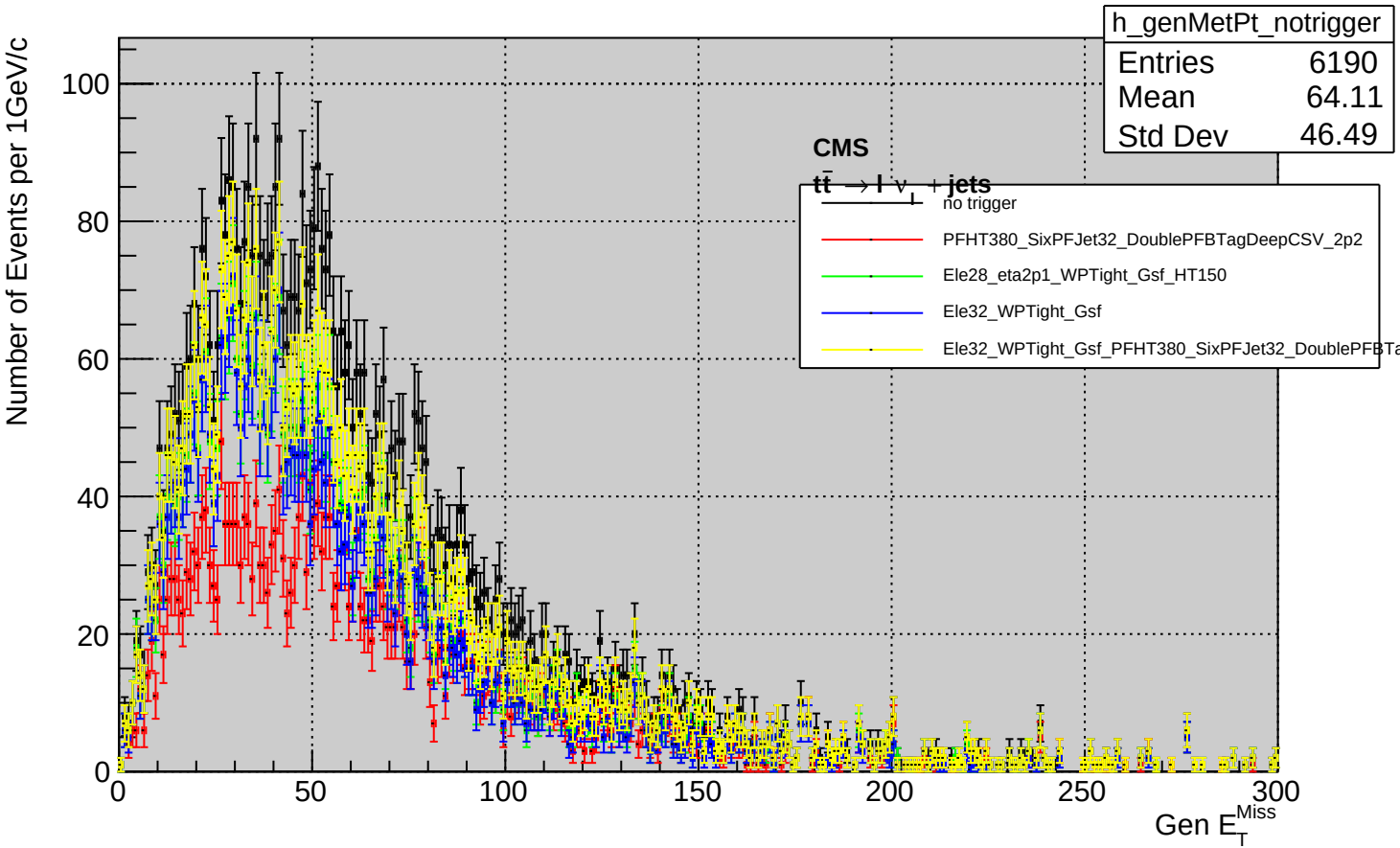

h_elPt_notrigger
Entries 6190
Mean 61.28
Std Dev 40.87
CMS
$t\bar{t} \rightarrow l\,\nu_l + jets$
h_elPt_notrigger
prompt muons
non-prompt electrons
Number of Events per 1 GeV/c
Electron P_T (GeV/c)
0
20
40
60
80
100
120
140
0
50
100
150
200
250
300

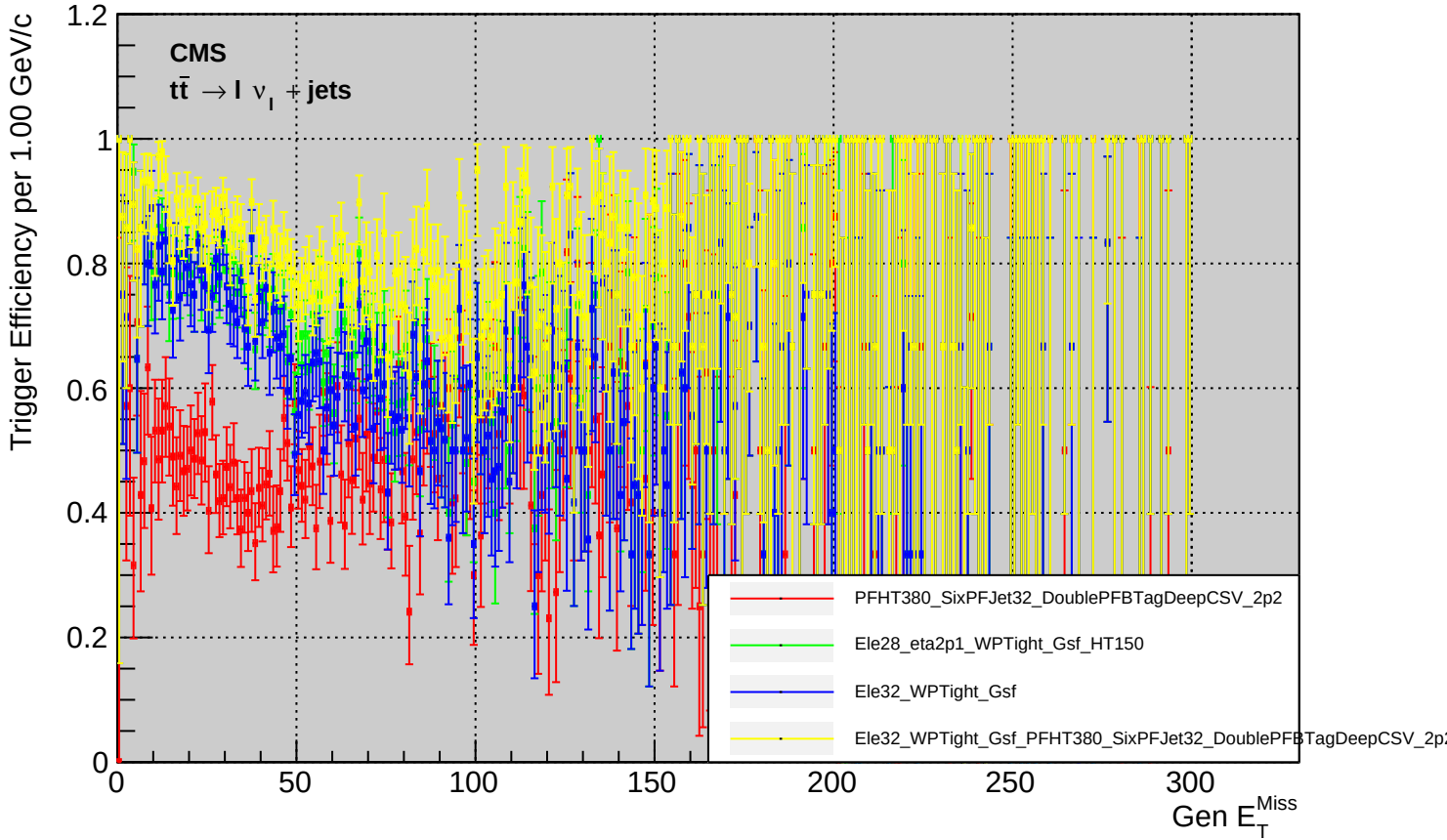

CMS
$t\bar{t} \rightarrow l\ \nu_l + jets$
Trigger Efficiency per 1.0 GeV/c
Electron P_T (GeV/c)
0
0.2
0.4
0.6
0.8
1
1.2
0
50
100
150
200
250
300
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

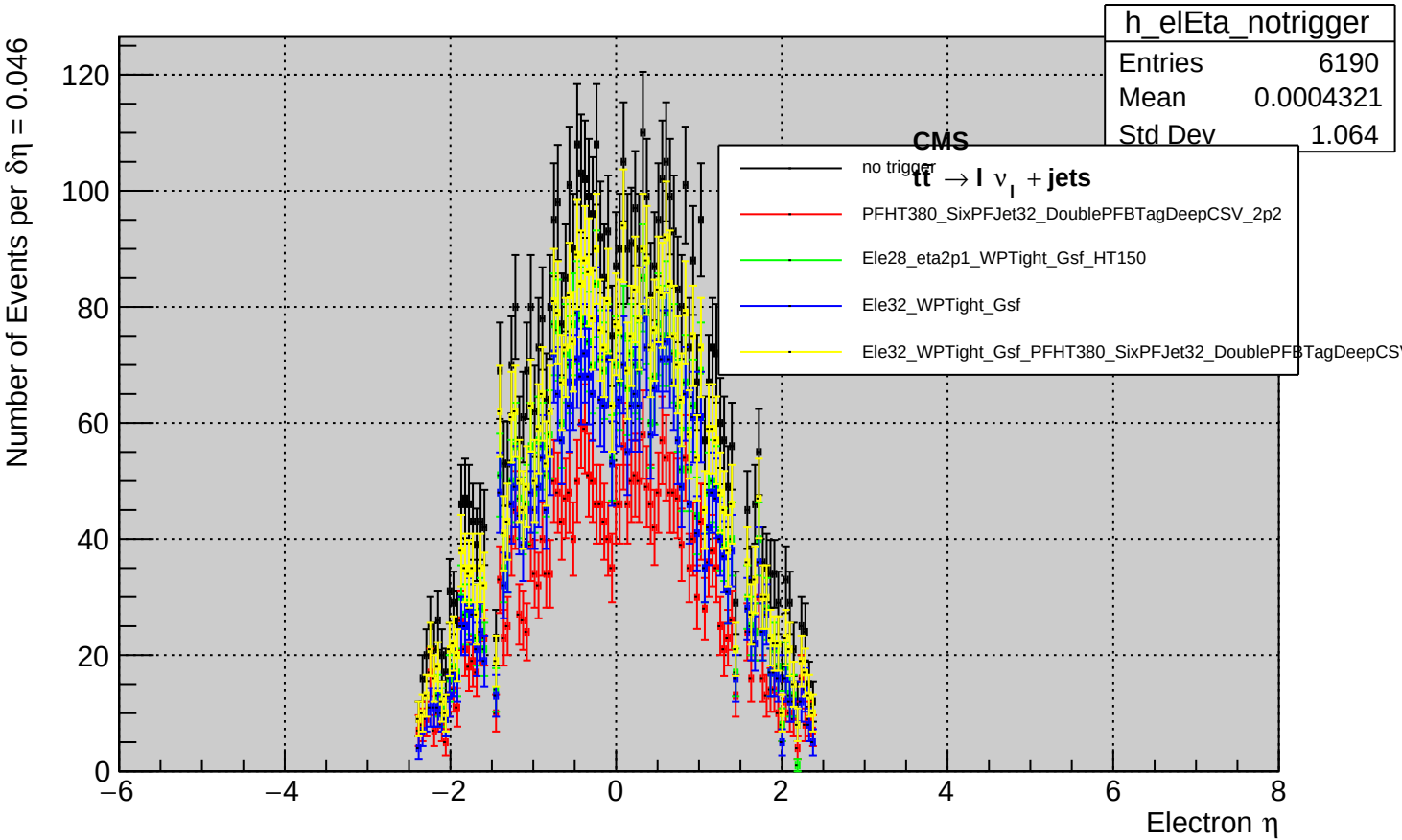

Trigger Efficiency per 1.00 GeV/c
300
250
200
150
100
50
0
0
50
100
150
200
250
300
Electron P_T (GeV/c)
CMS
$t\bar{t} \rightarrow l\,\nu_l + jets$
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

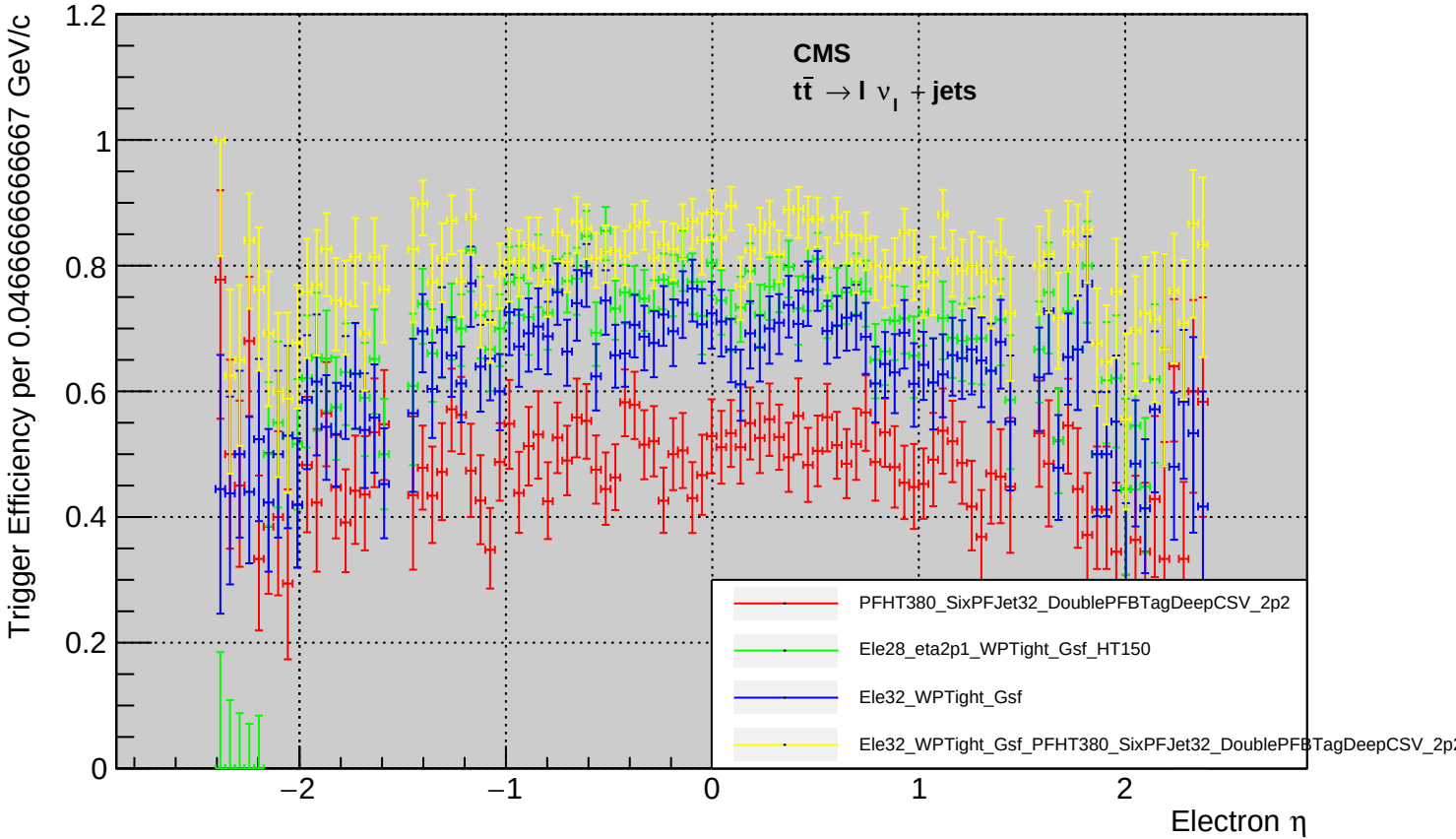

h_metPt_notrigger
Entries 6190
Mean 76.1
Std Dev 48.81
CMS
$t\bar{t} \rightarrow l\nu_l + jets$
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per 1 GeV/c
E_T^{Miss}
0
10
20
30
40
50
60
70
80
90
0
50
100
150
200
250
300


CMS
tt̄ → l ν_l + jets
Trigger Efficiency per 1.00 GeV/c
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
E_T^Miss
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2


h_genMetPt_notrigger
Entries 6190
Mean 64.11
Std Dev 46.49
CMS
$t\bar{t} \rightarrow l\,\nu_l$ + jets
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagD
Number of Events per 1GeV/c
Gen E_T^{Miss}
0
20
40
60
80
100
0
50
100
150
200
250
300


CMS
$t\bar{t} \rightarrow l\ \nu_l$ + jets
Trigger Efficiency per 1.00 GeV/c
Gen E_T^{Miss}
0
0.2
0.4
0.6
0.8
1
1.2
0
50
100
150
200
250
300
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2


h_elEta_notrigger
Entries 6190
Mean 0.0004321
Std Dev 1.064
CMS
$t\bar{t} \rightarrow l\ \nu_l + jets$
no trigger
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_
Number of Events per δη = 0.046
Electron η
0
20
40
60
80
100
120
−6
−4
−2
0
2
4
6
8


CMS
$t\bar{t} \rightarrow l\ \nu_l + jets$
Trigger Efficiency per 0.04666666666667 GeV/c
Electron η
1.2
1
0.8
0.6
0.4
0.2
0
−2
−1
0
1
2
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Ele28_eta2p1_WPTight_Gsf_HT150
Ele32_WPTight_Gsf
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

h_eventsPrg
Entries 2030016
Mean 0.02897
Std Dev 0.3052
×10^3
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Total Number of Accepted Events
Pre-selection
Post-selection
Ele32_WPTight_Gsf_PFHT380_SixPFJet32_DoublePFBTagDeepCS
Ele32_WPTight_Gsf
Ele28_eta2p1_WPTight_Gsf_HT150
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2
Cuts and Triggers