

On-line (pre-)selection Requisites for:

- **Jets:** number > 5 , jetId > 2 and $|\eta| < 2.4$
- **Muons:** number >0 and has softId

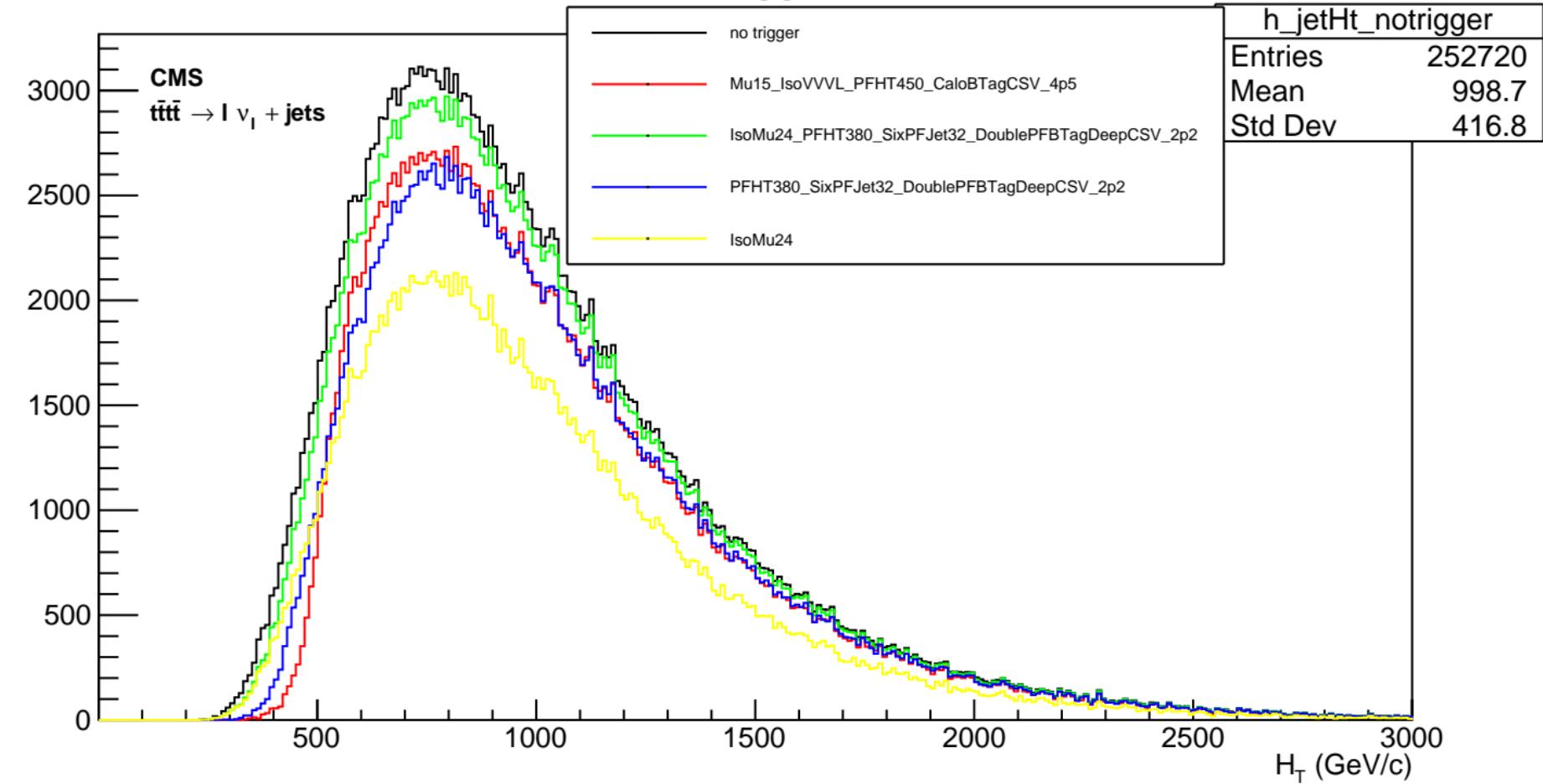
Event Limit: None (see last page)

Off-line (post-)selection Requisites for:

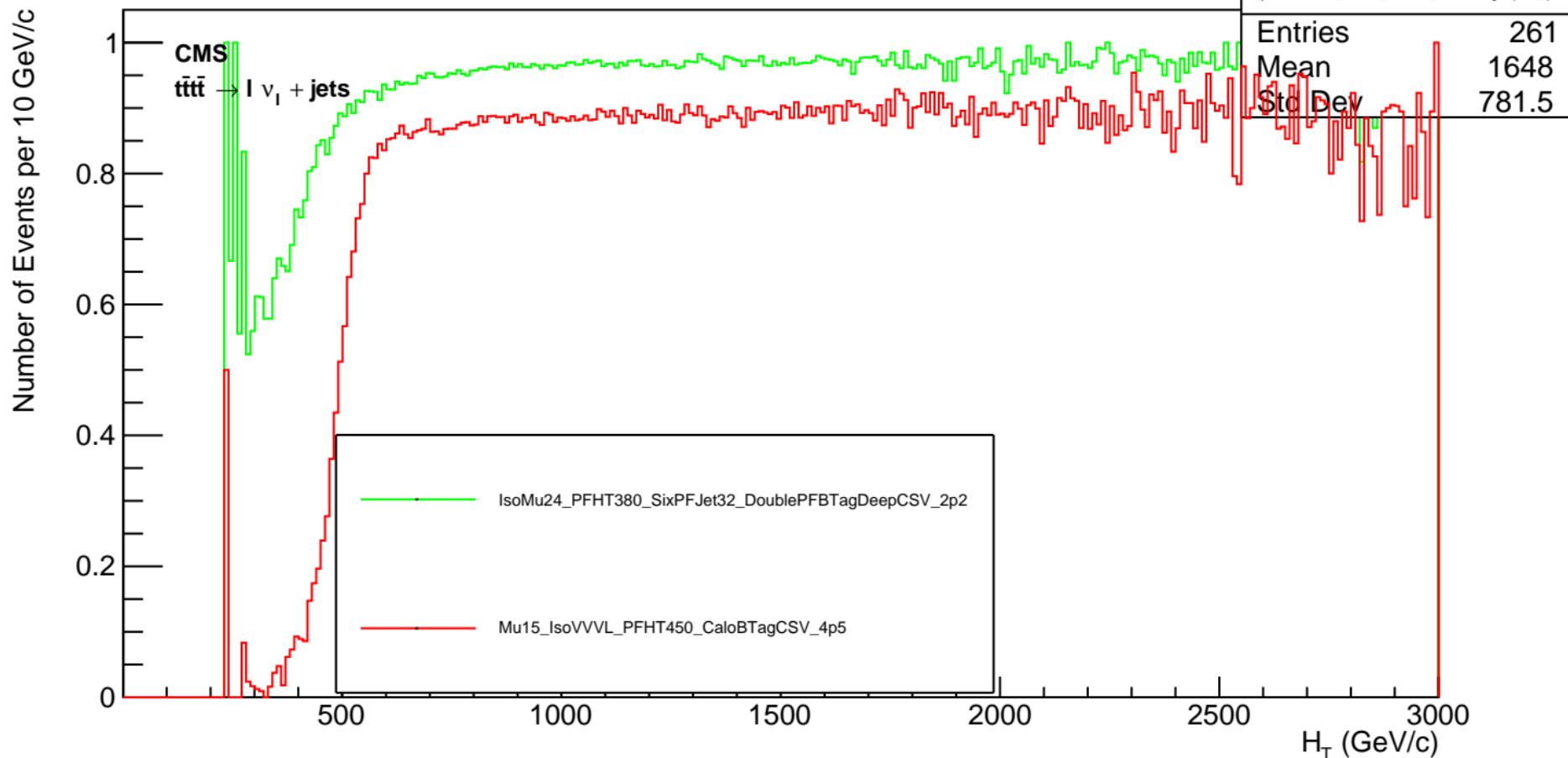
- **Jets:** jetId > 2 , $p_T > 30$ and $|\eta| < 2.4$ (for at least 6)
 $btagDeepFlavB > 0.7489$ (for at least one jet)
- **Muons:** has tightId, $|\eta| < 2.4$ and $\text{miniPFRellso_all} < 0.15$ (for at least 1)

no trigger

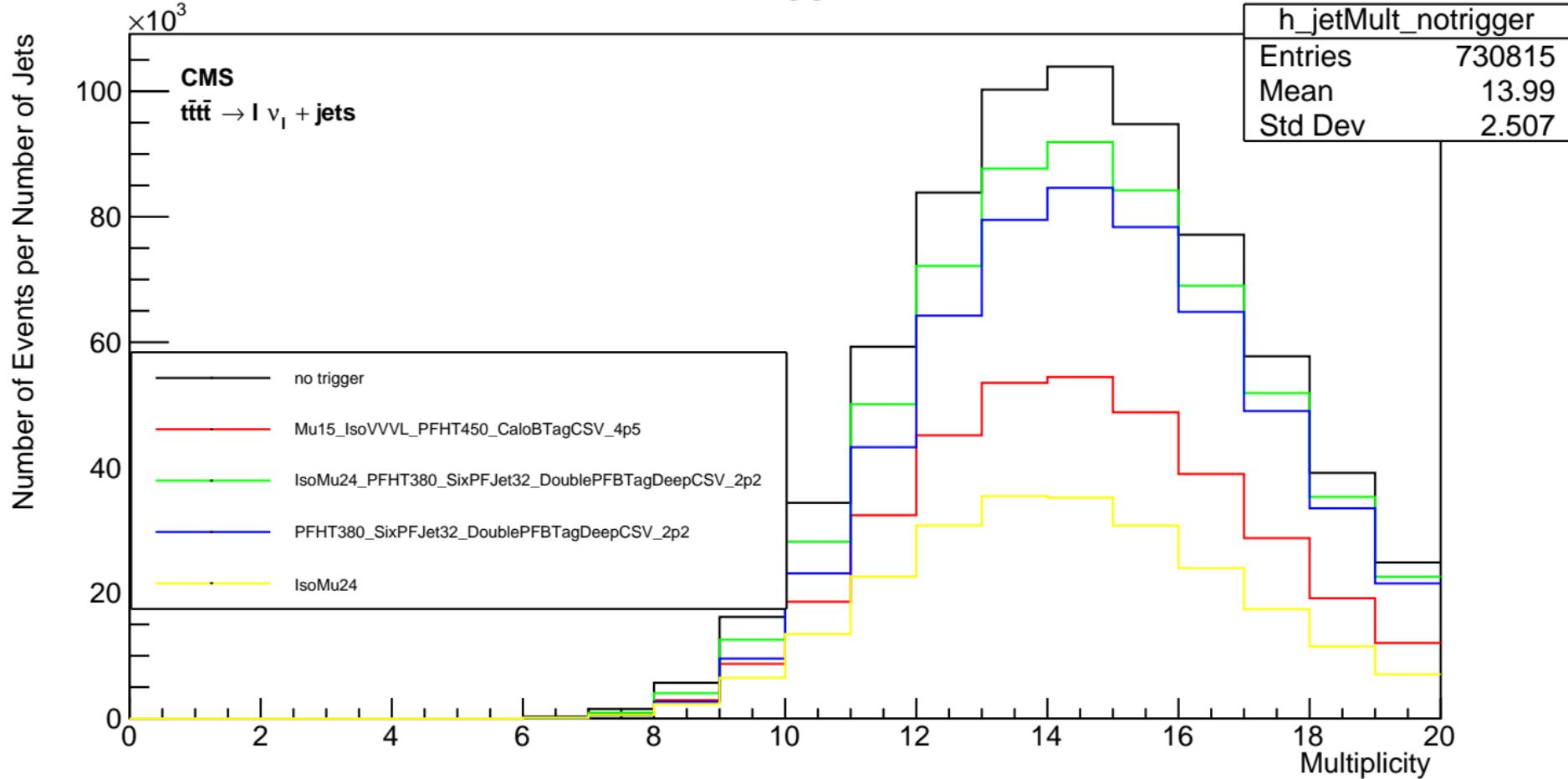
Number of Events per 10 GeV/c



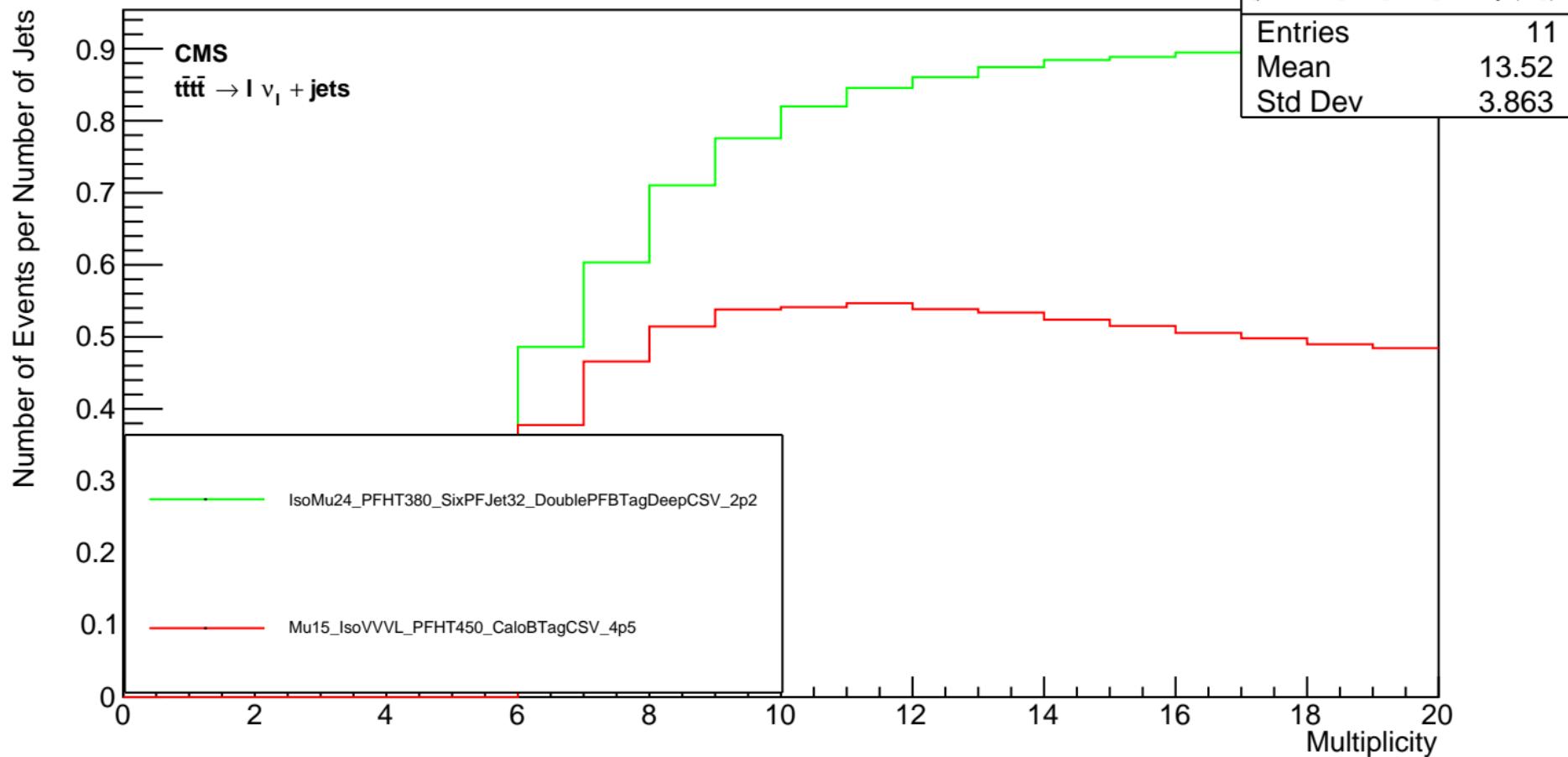
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



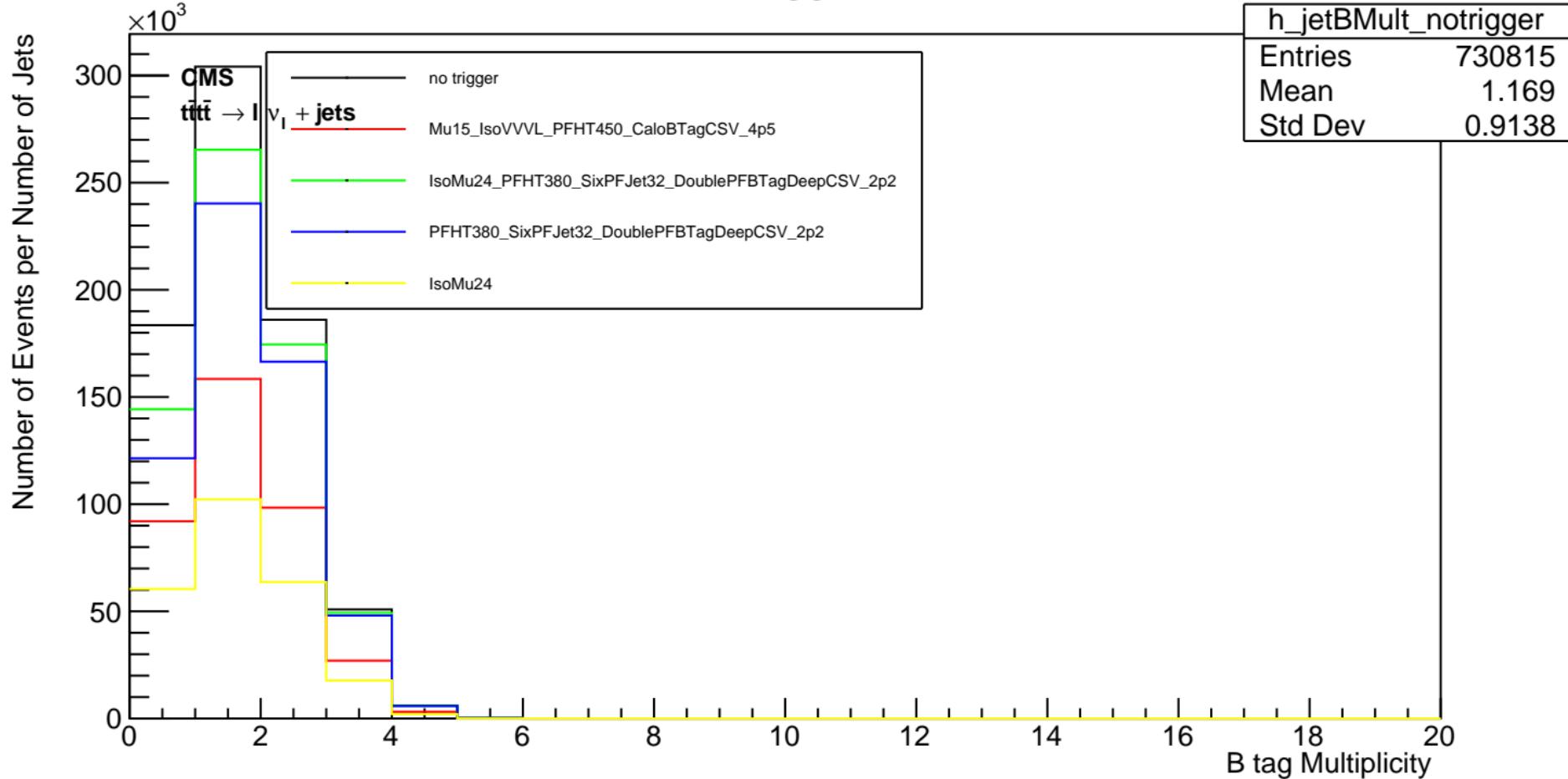
no trigger



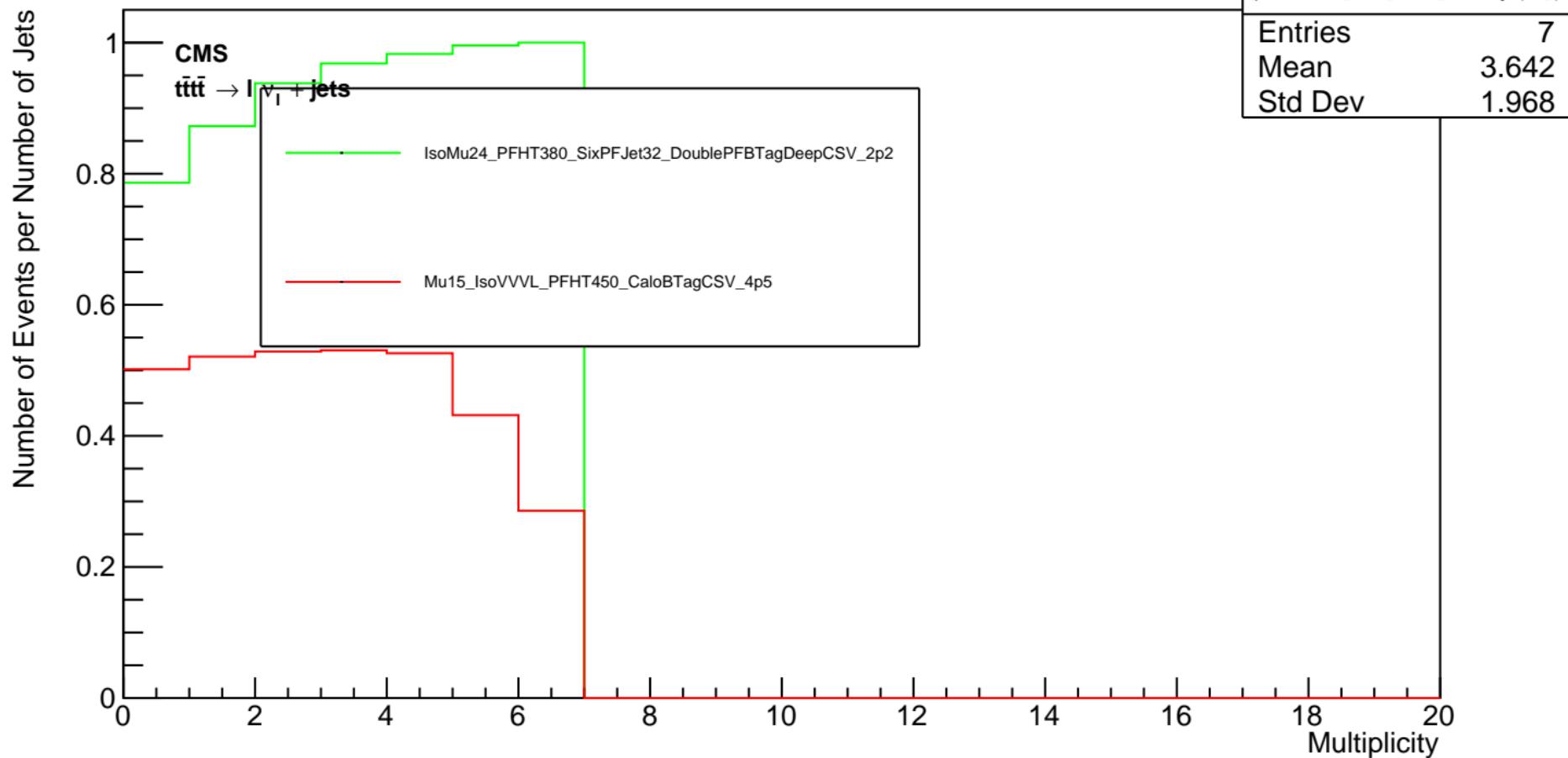
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



no trigger

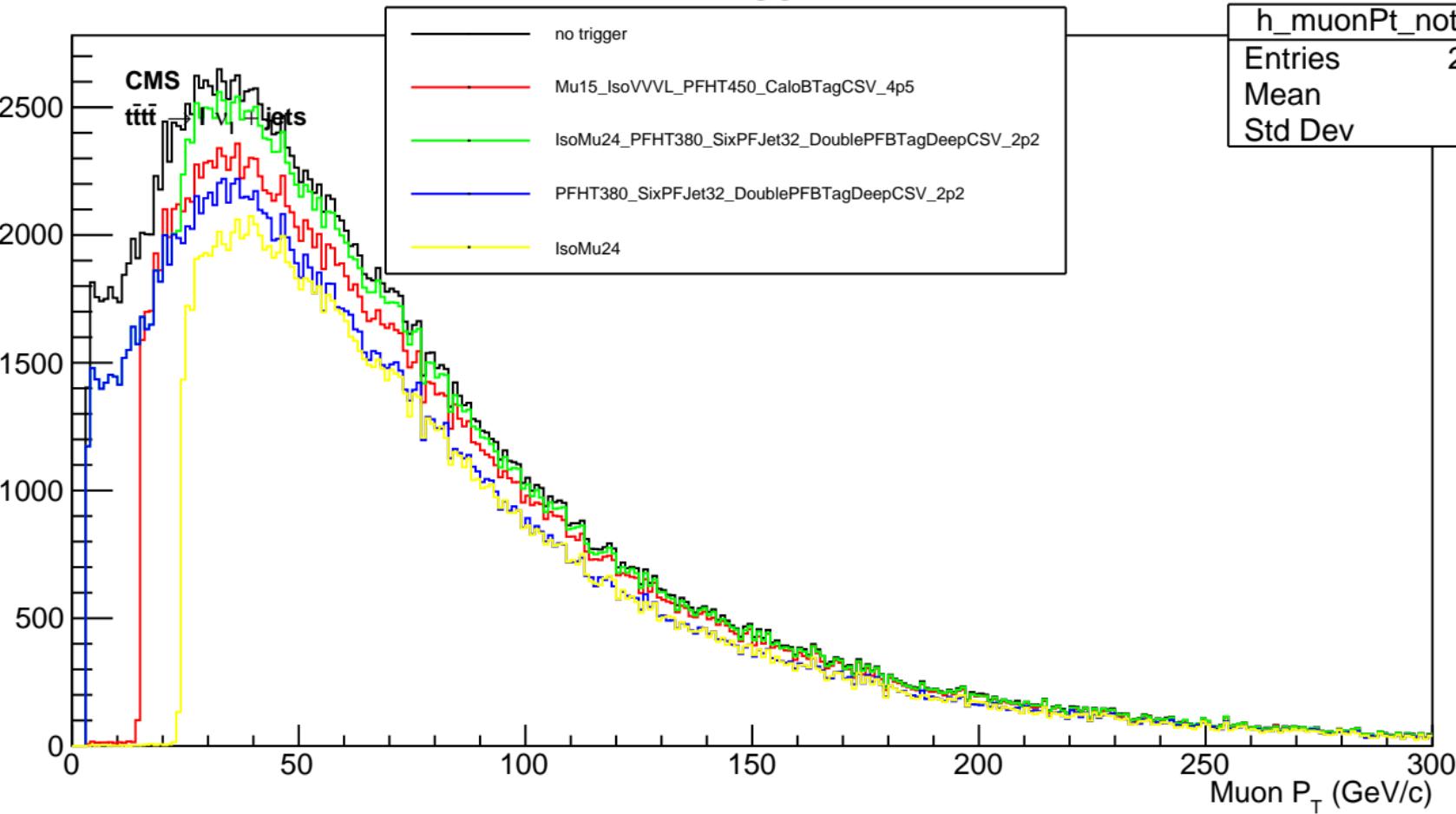


IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



no trigger

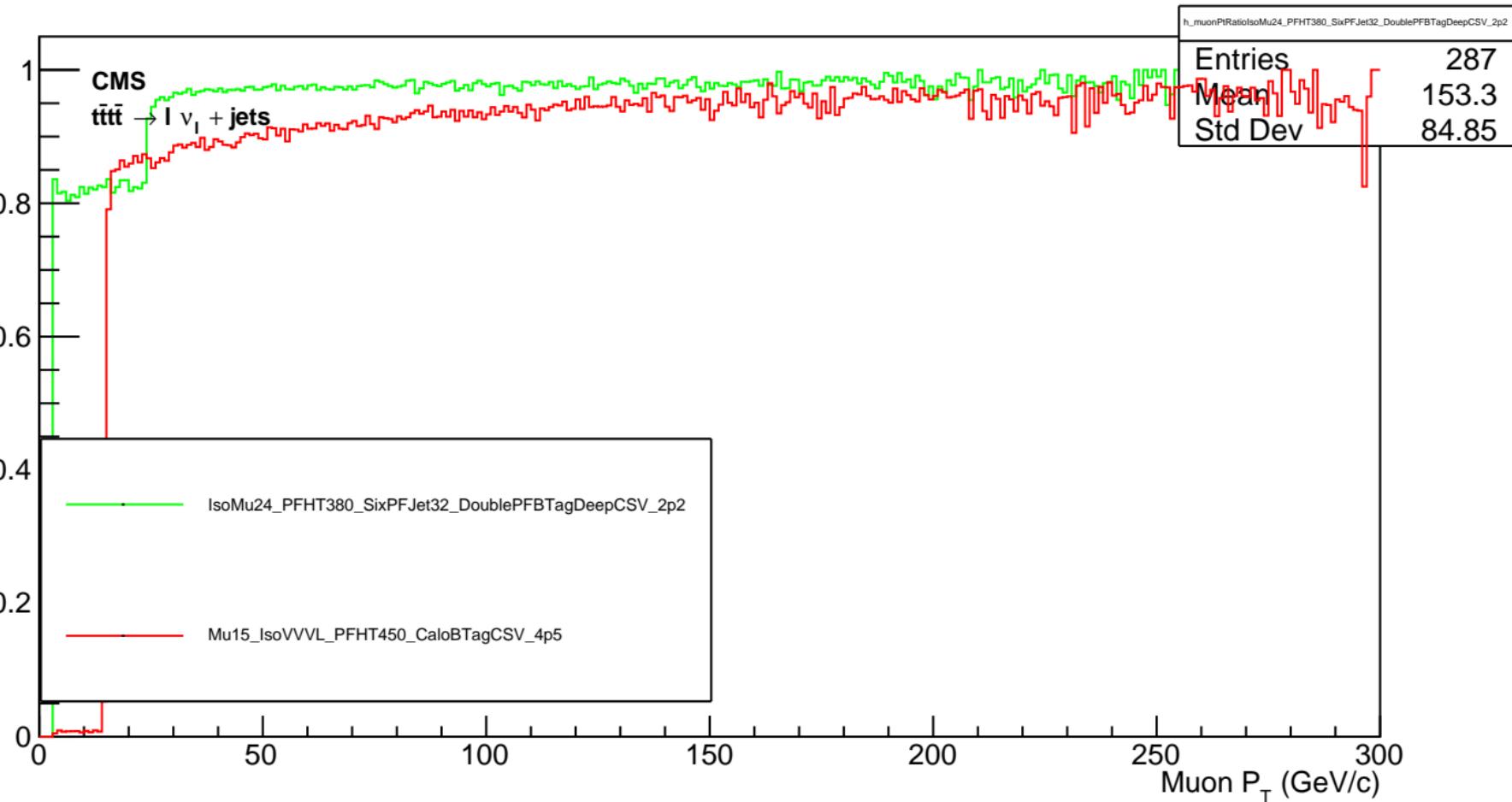
Number of Events per 1 GeV/c



h_muonPt_notrigger	
Entries	252720
Mean	72.96
Std Dev	55.72

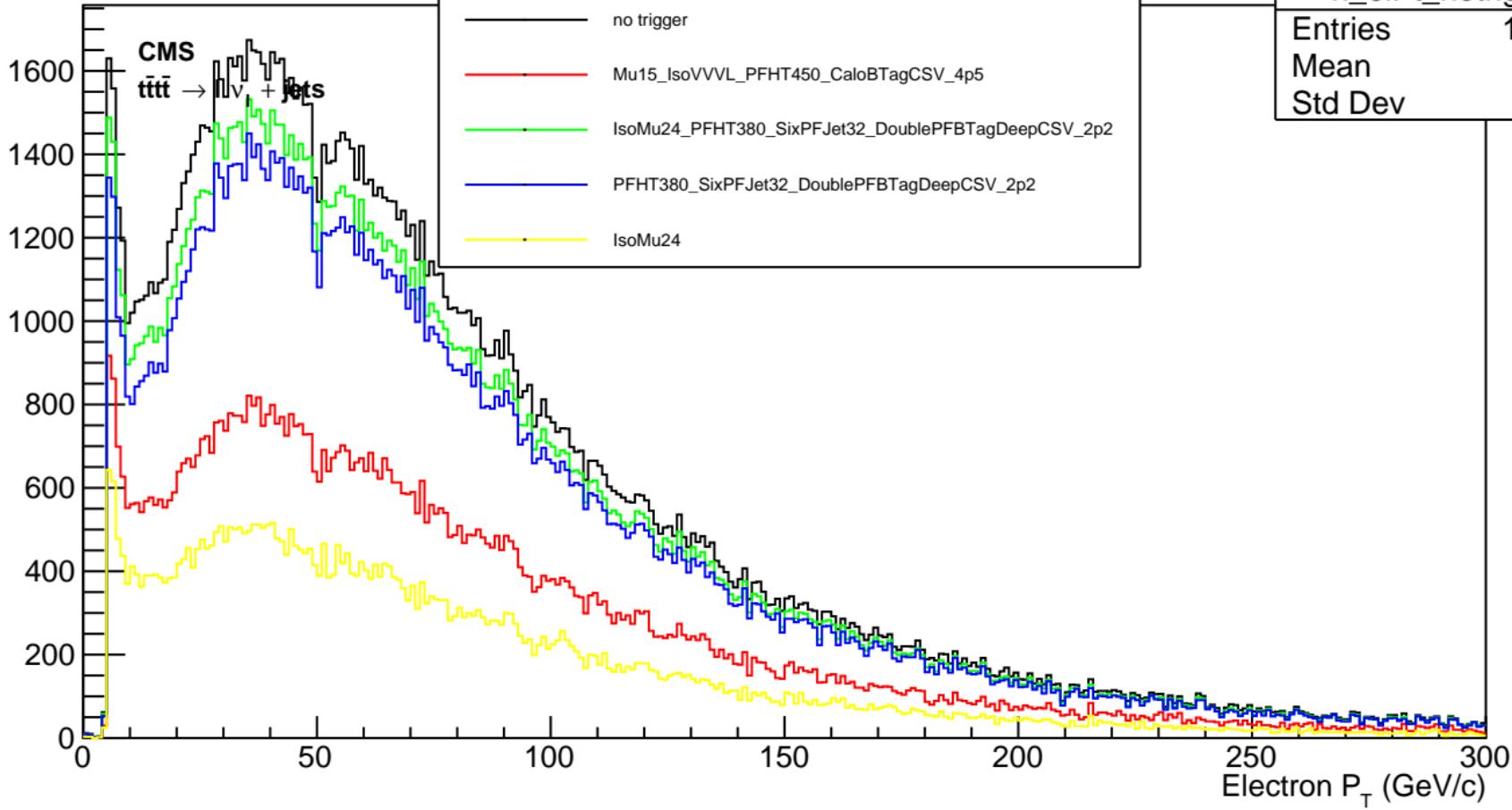
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

Number of Events per 1 GeV/c



no trigger

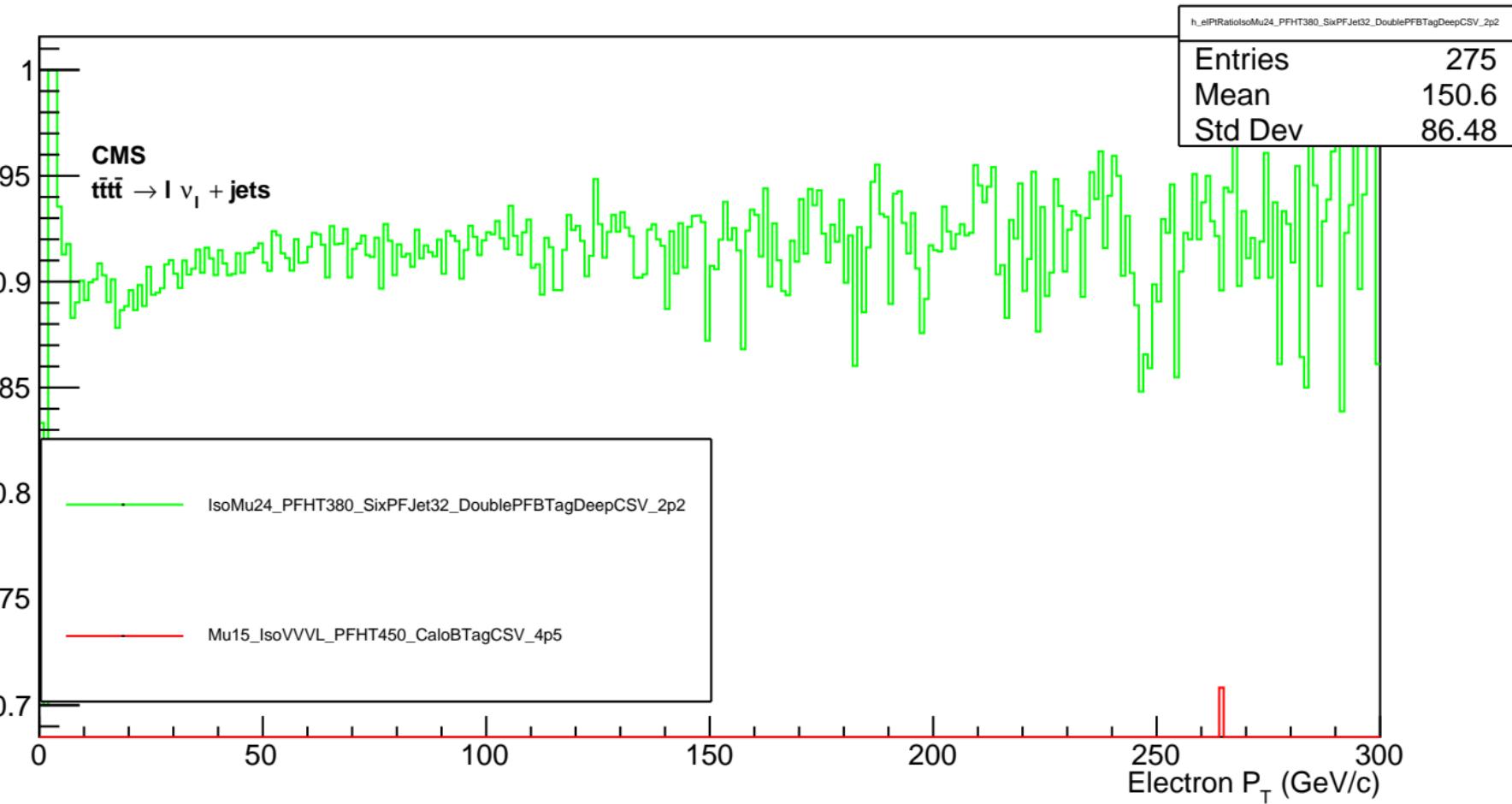
Number of Events per 1 GeV/c



h_elPt_notrigger	
Entries	167918
Mean	78.02
Std Dev	57.24

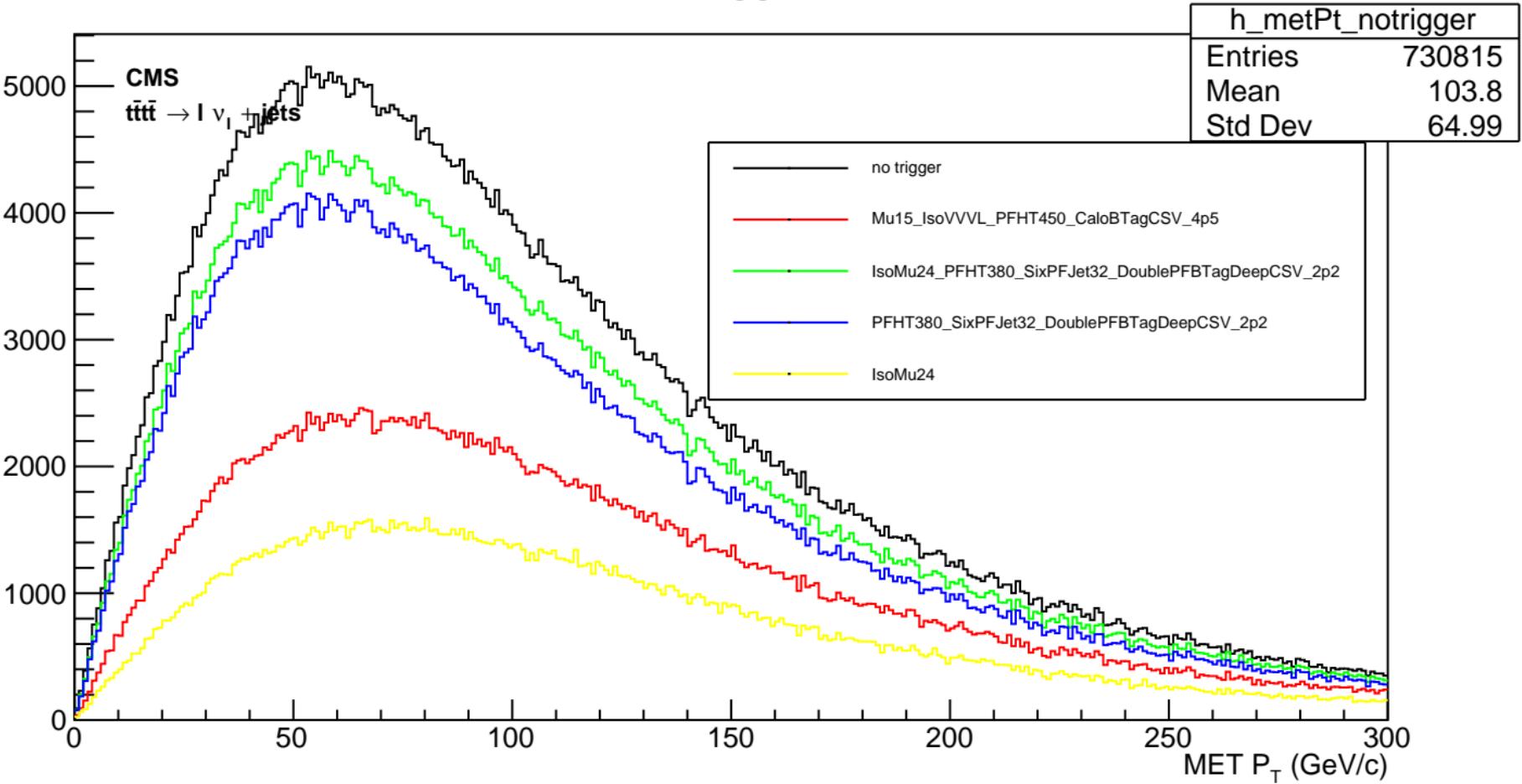
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

Number of Events per 1 GeV/c



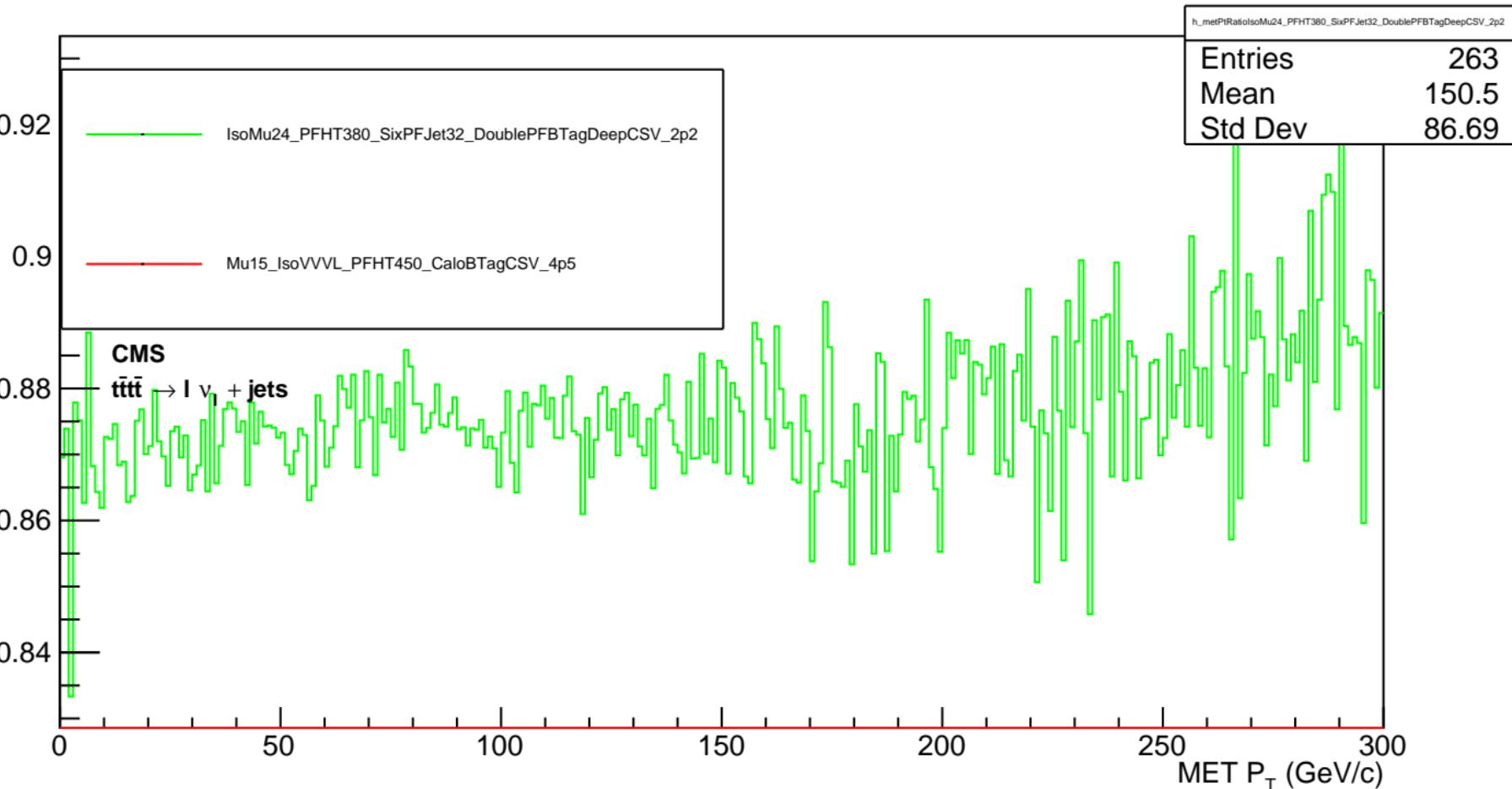
no trigger

Number of Events per 1 GeV/c



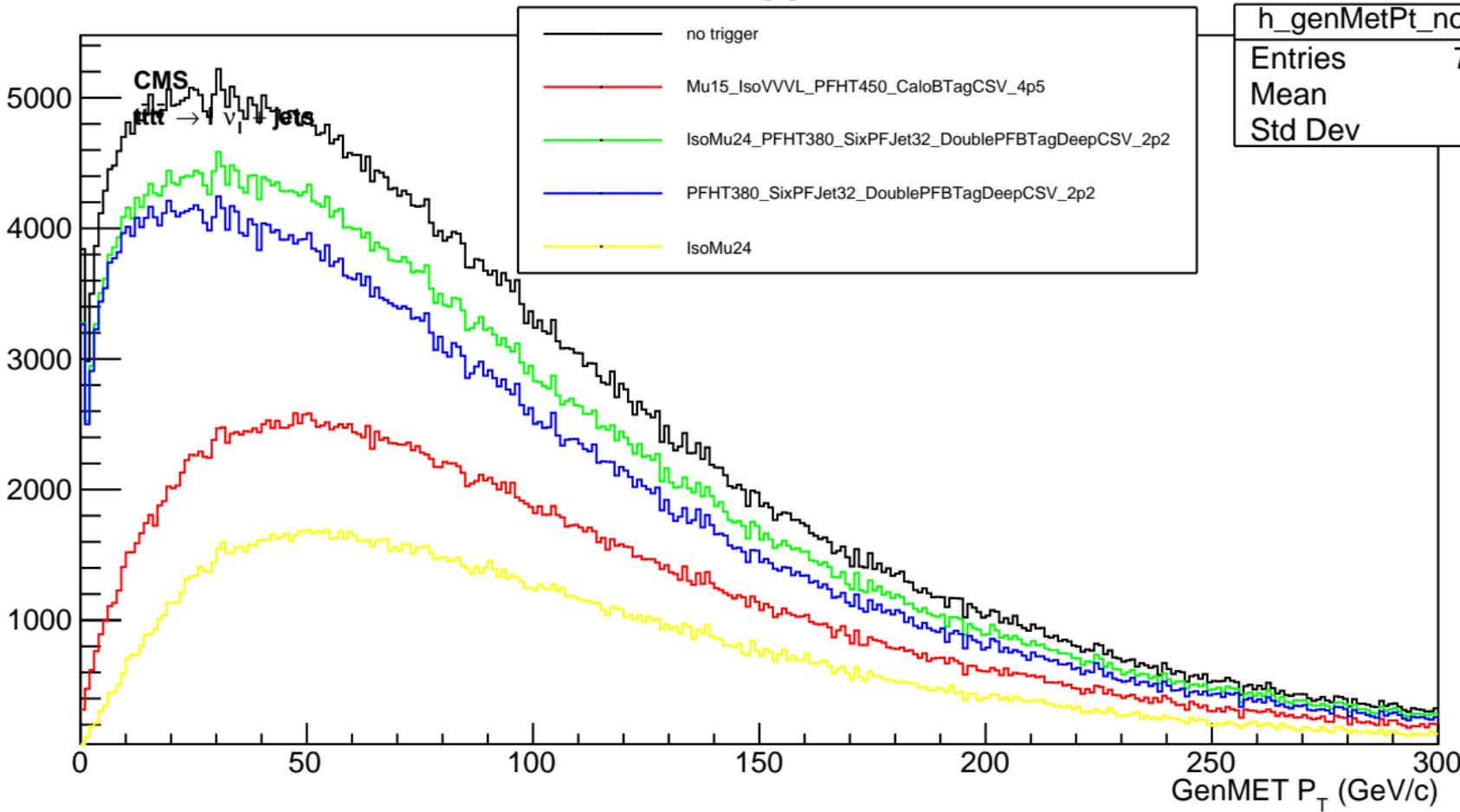
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

Number of Events per 1 GeV/c



no trigger

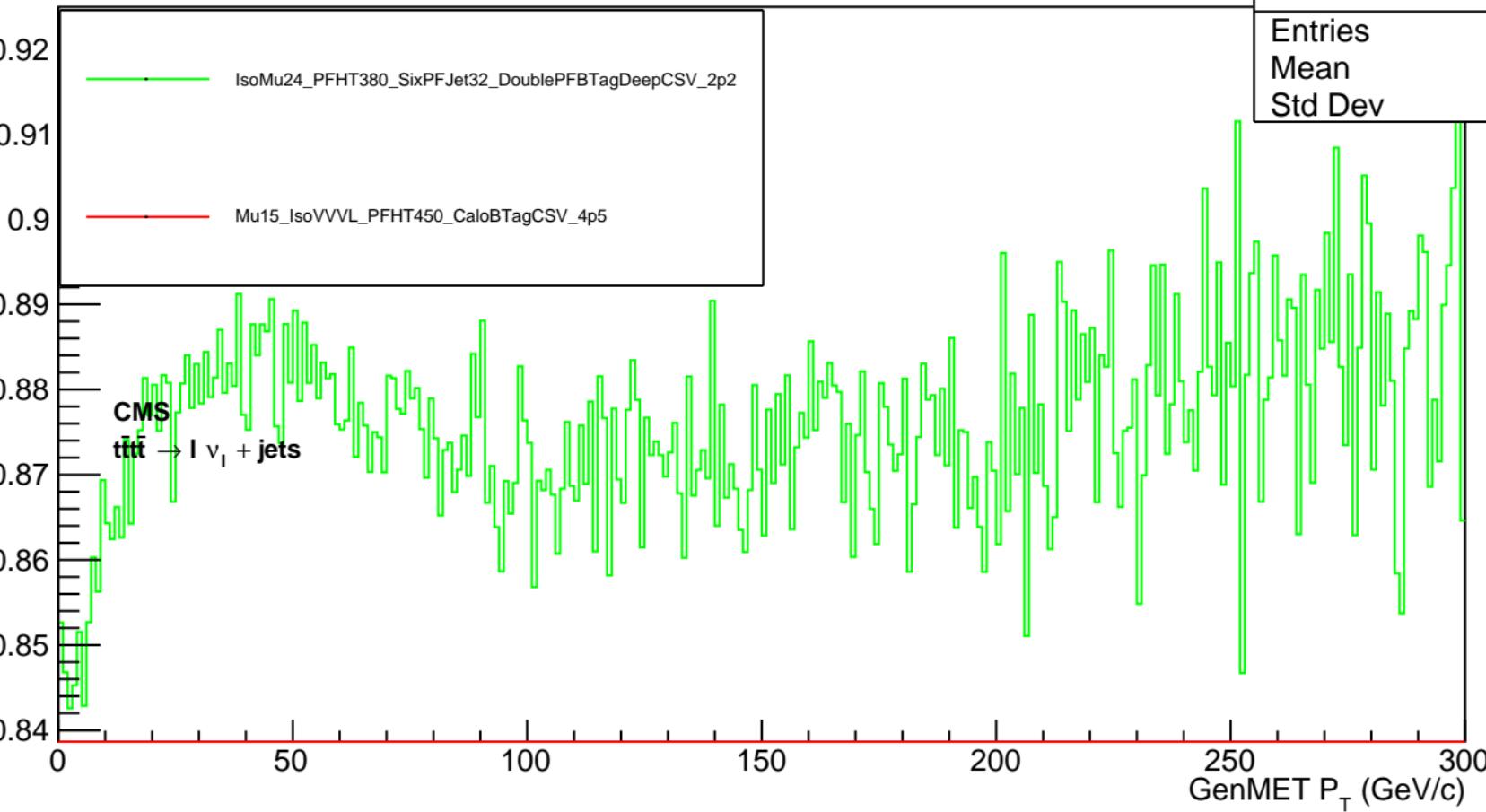
Number of Events per 1GeV/c



h_genMetPt_notrigger	
Entries	730815
Mean	90.46
Std Dev	67

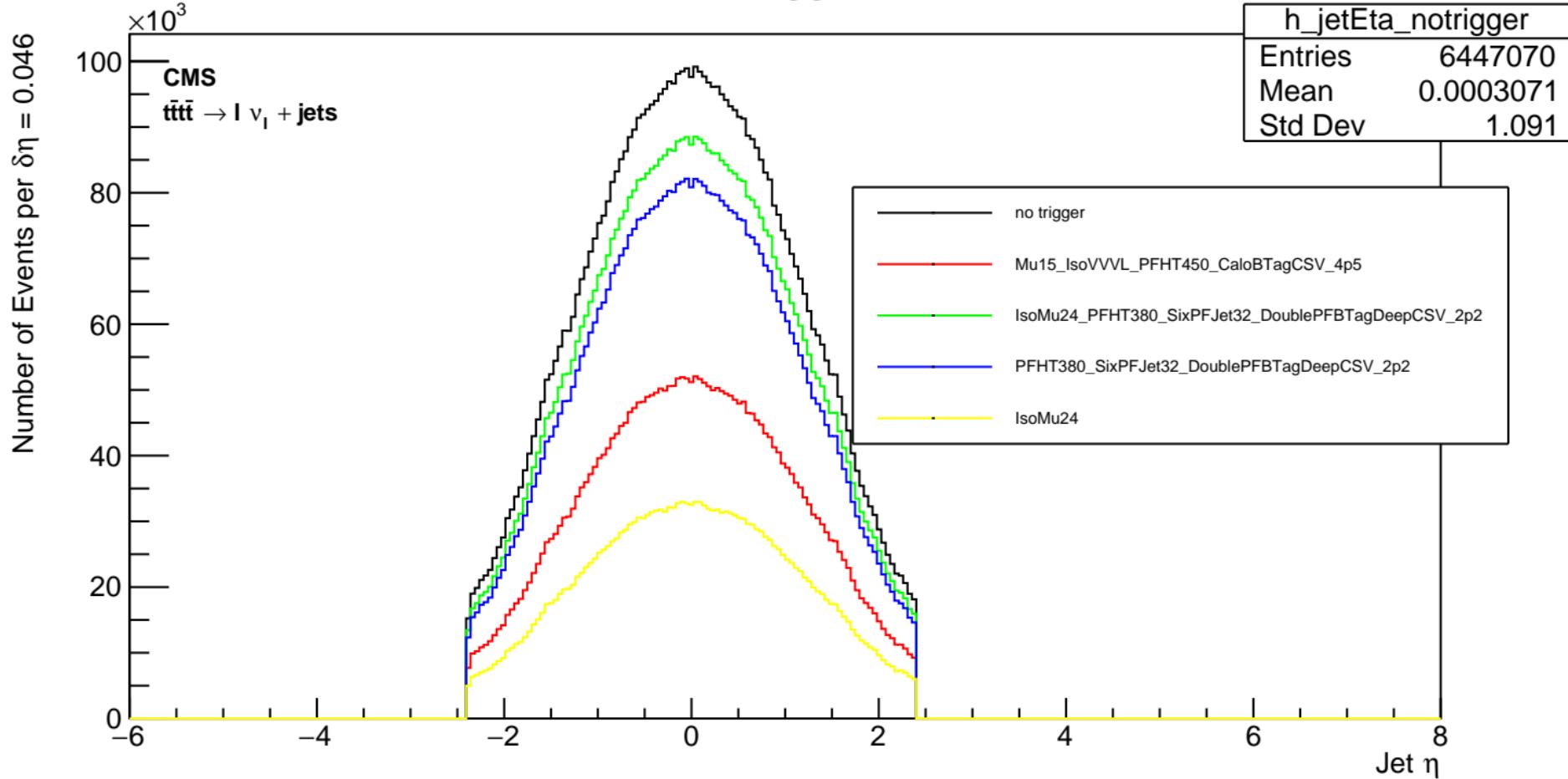
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

Number of Events per 1 GeV/c



n_genMetPtRatioIsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2	Entries	263
	Mean	150.4
	Std Dev	86.68

no trigger



no trigger

Number of Events per $\delta\eta = 0.046$

4000
3500
3000
2500
2000
1500
1000
500
0

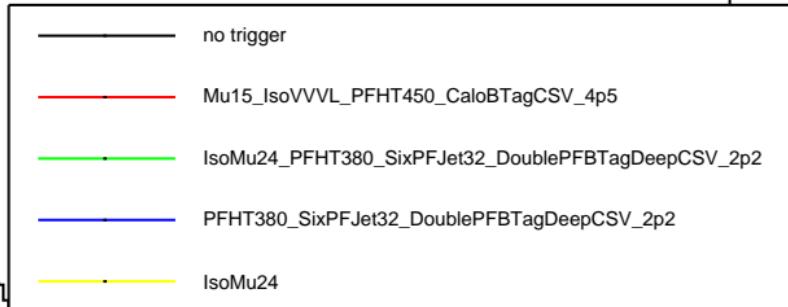
CMS

$t\bar{t}t \rightarrow l\nu_l + jets$

-6 -4 -2 0 2 4 6 8

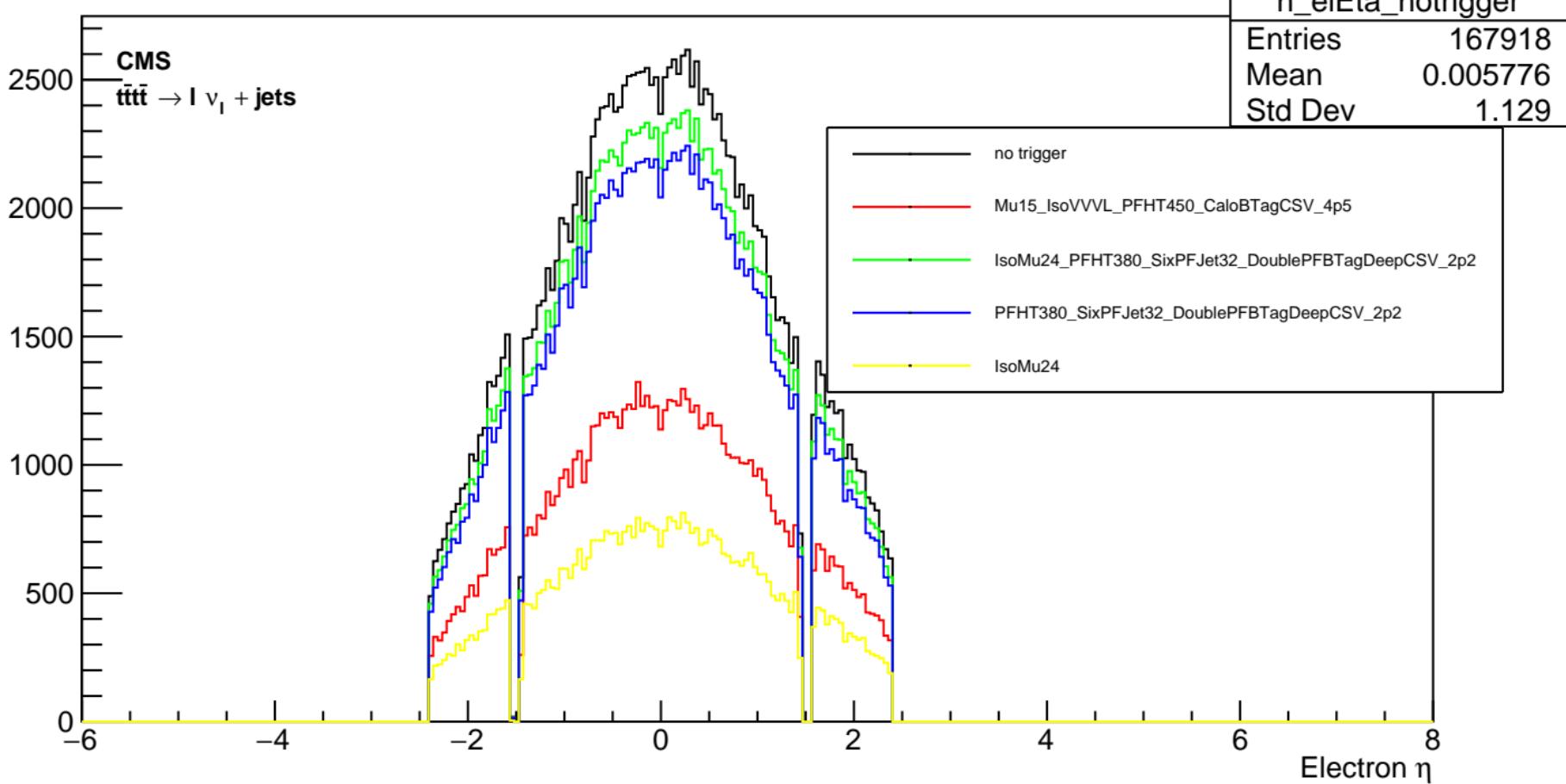
Muon η

h_muonEta_notrigger	
Entries	252720
Mean	0.000157
Std Dev	1.09

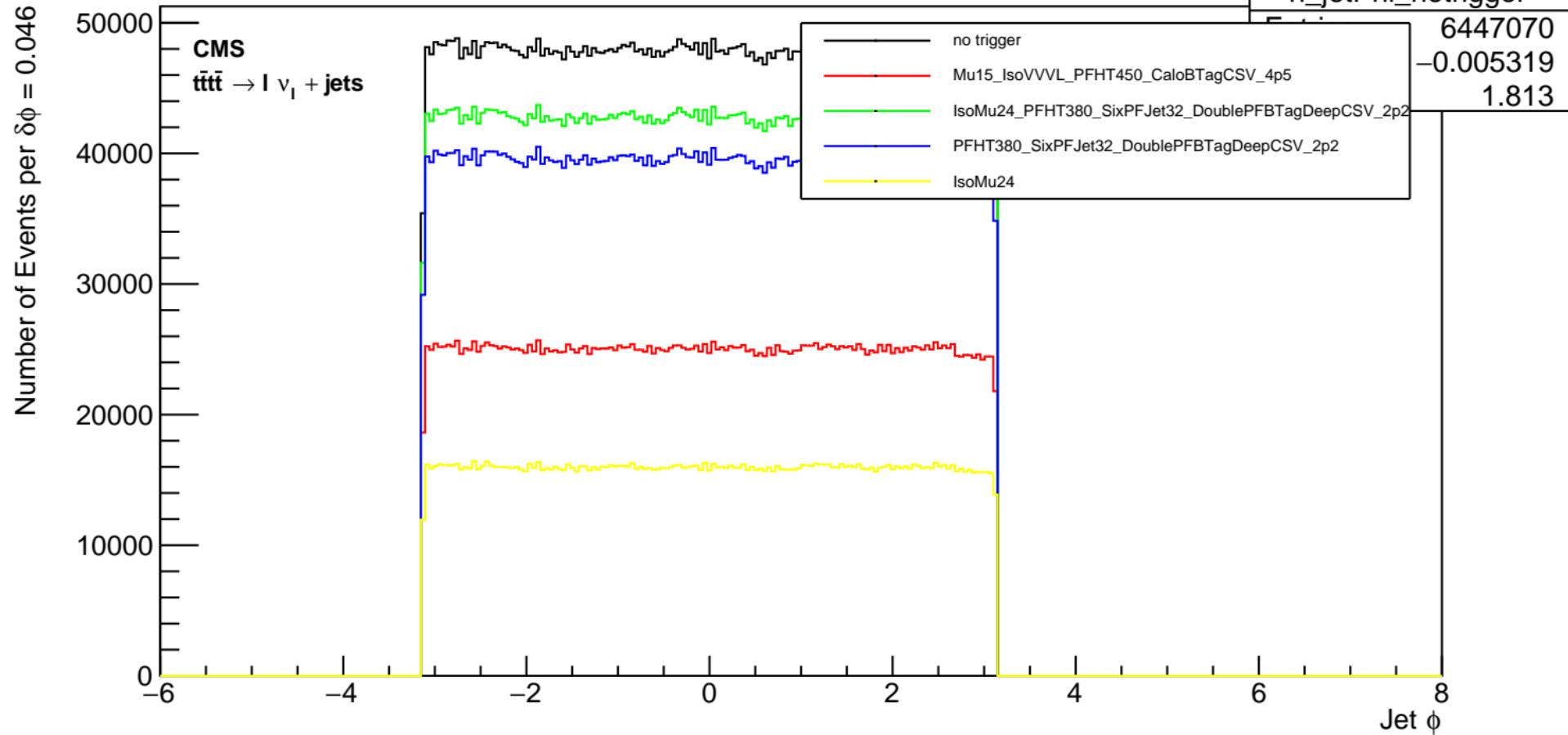


no trigger

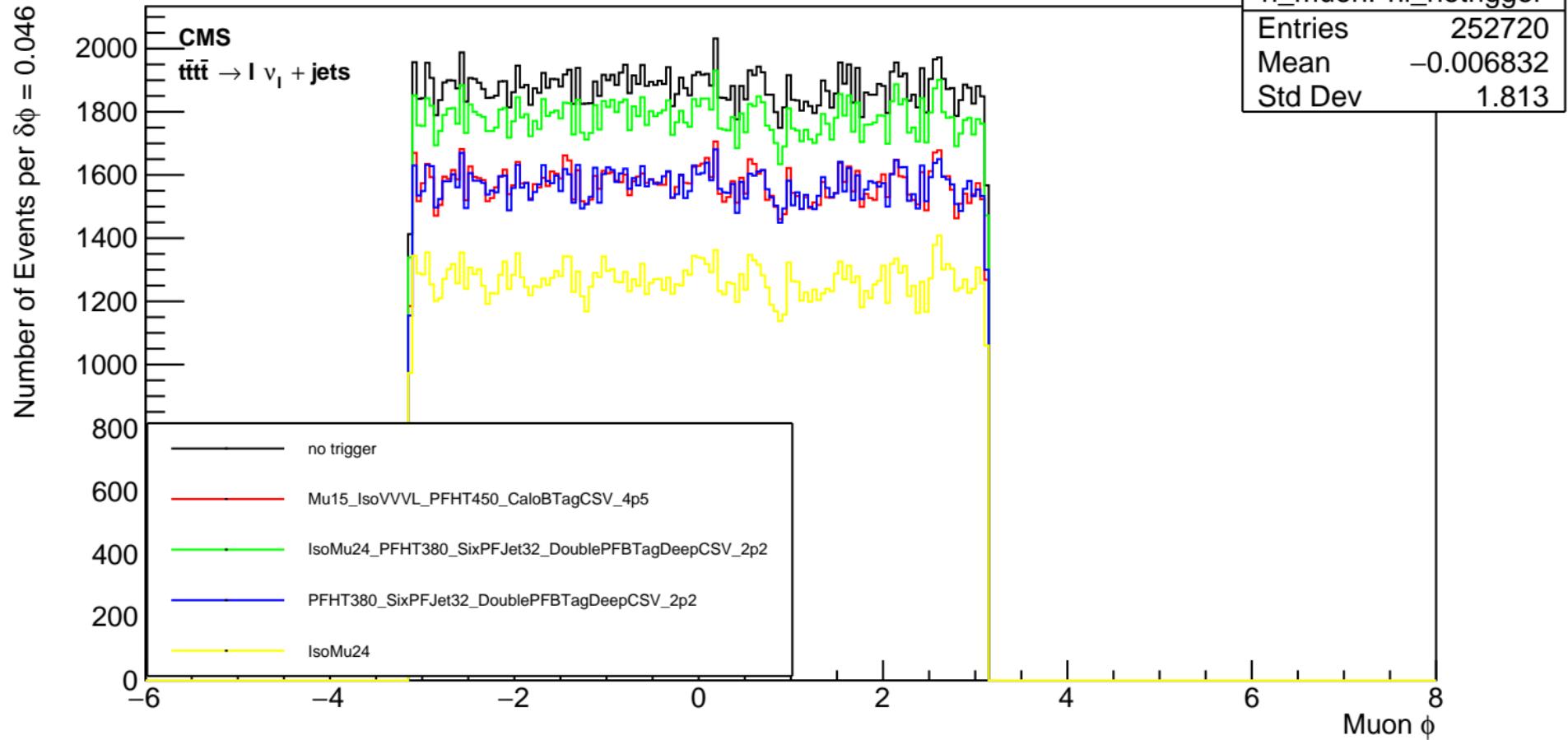
Number of Events per $\delta\eta = 0.046$



no trigger

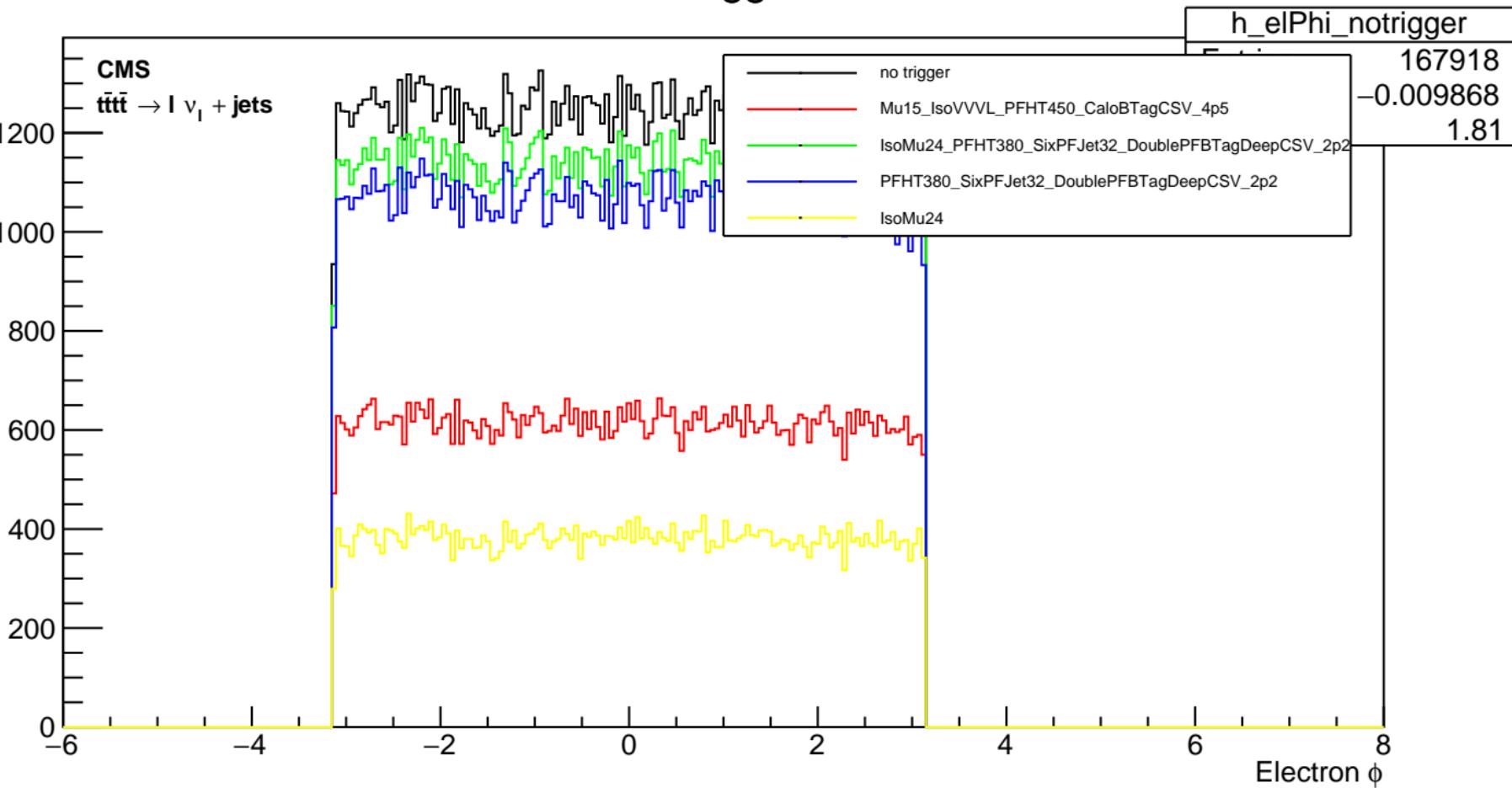


no trigger

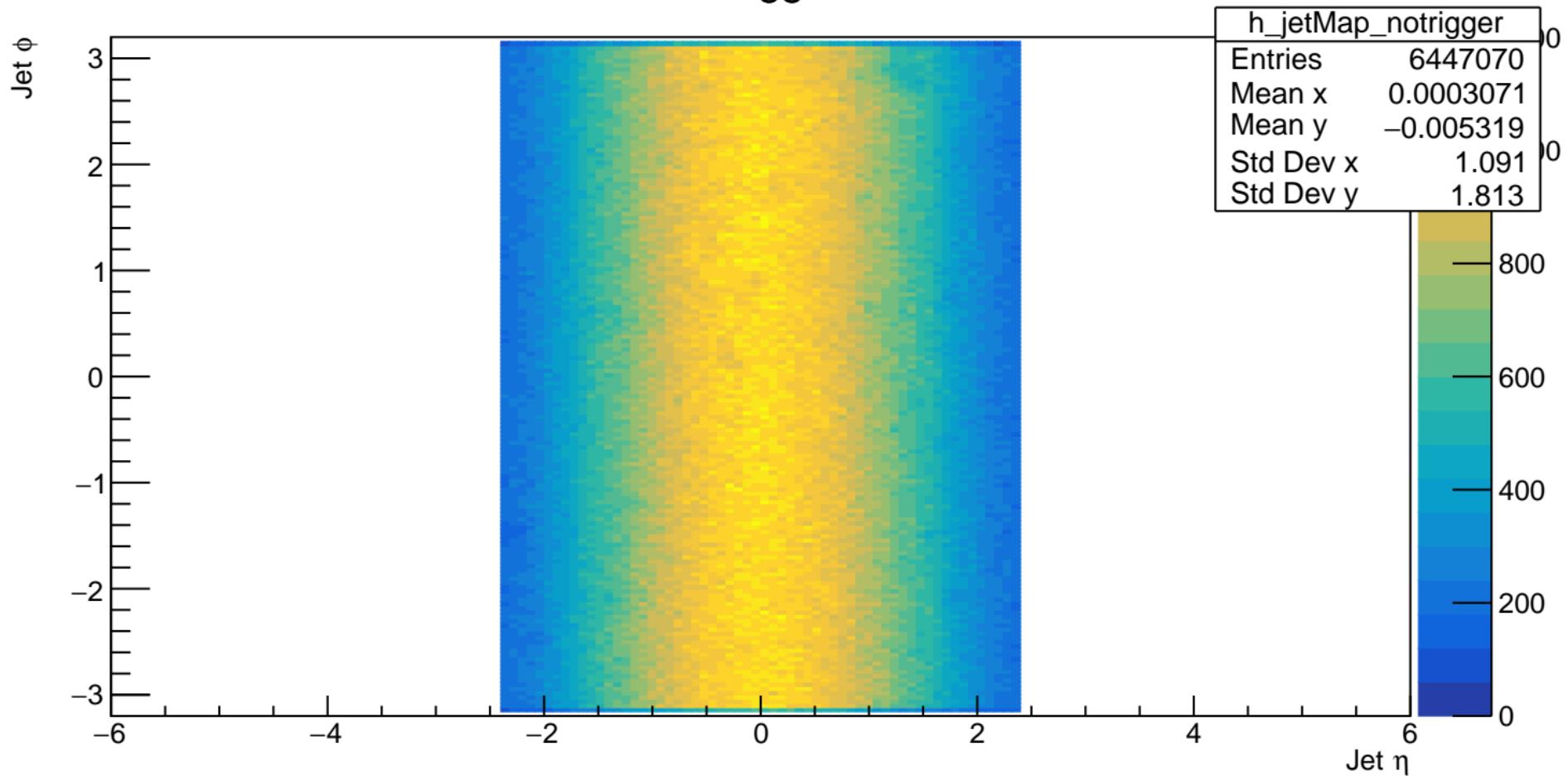


no trigger

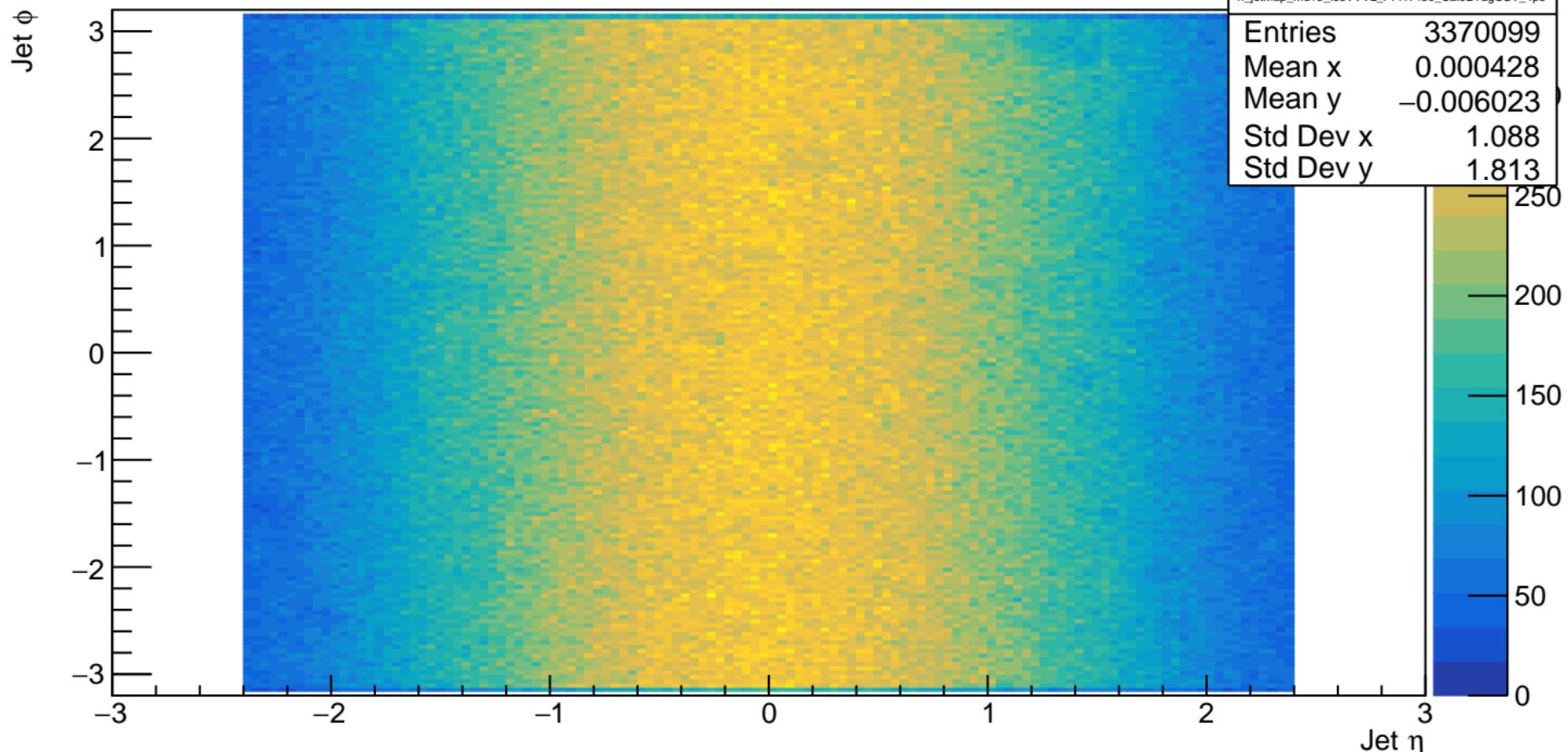
Number of Events per $\delta\phi = 0.046$



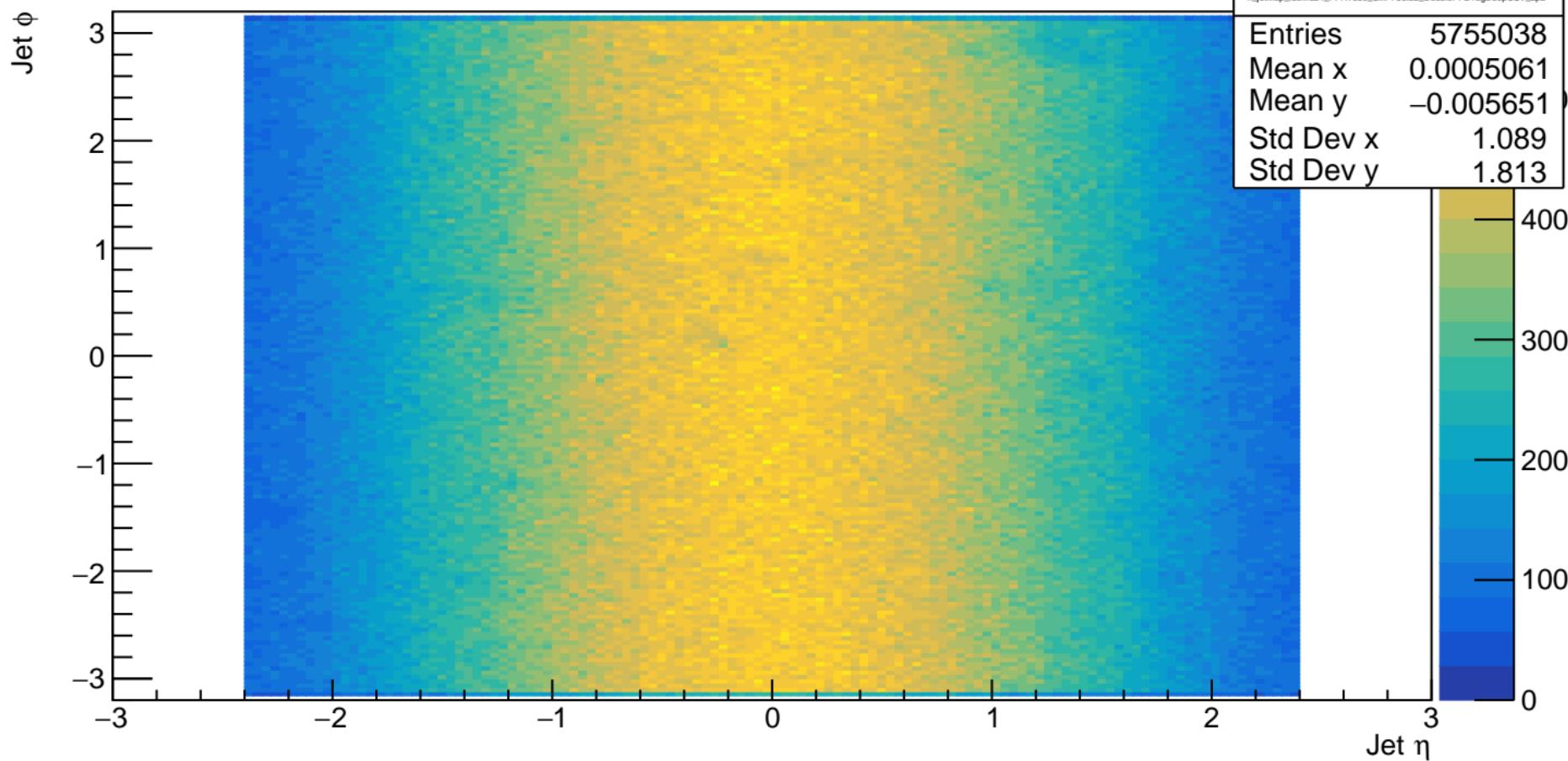
no trigger



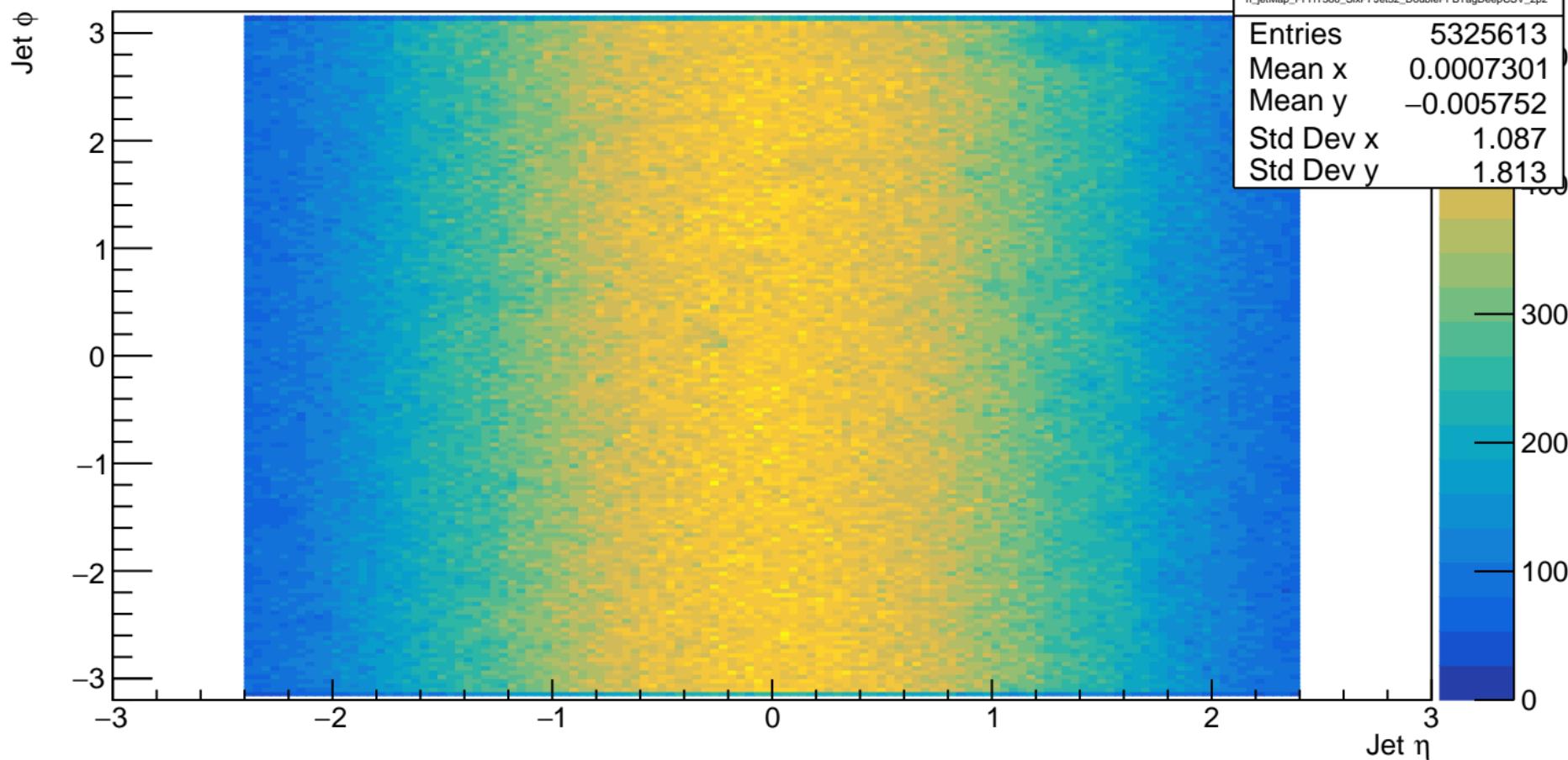
Mu15_IsoVVVL_PFHT450_CaloBTagCSV_4p5



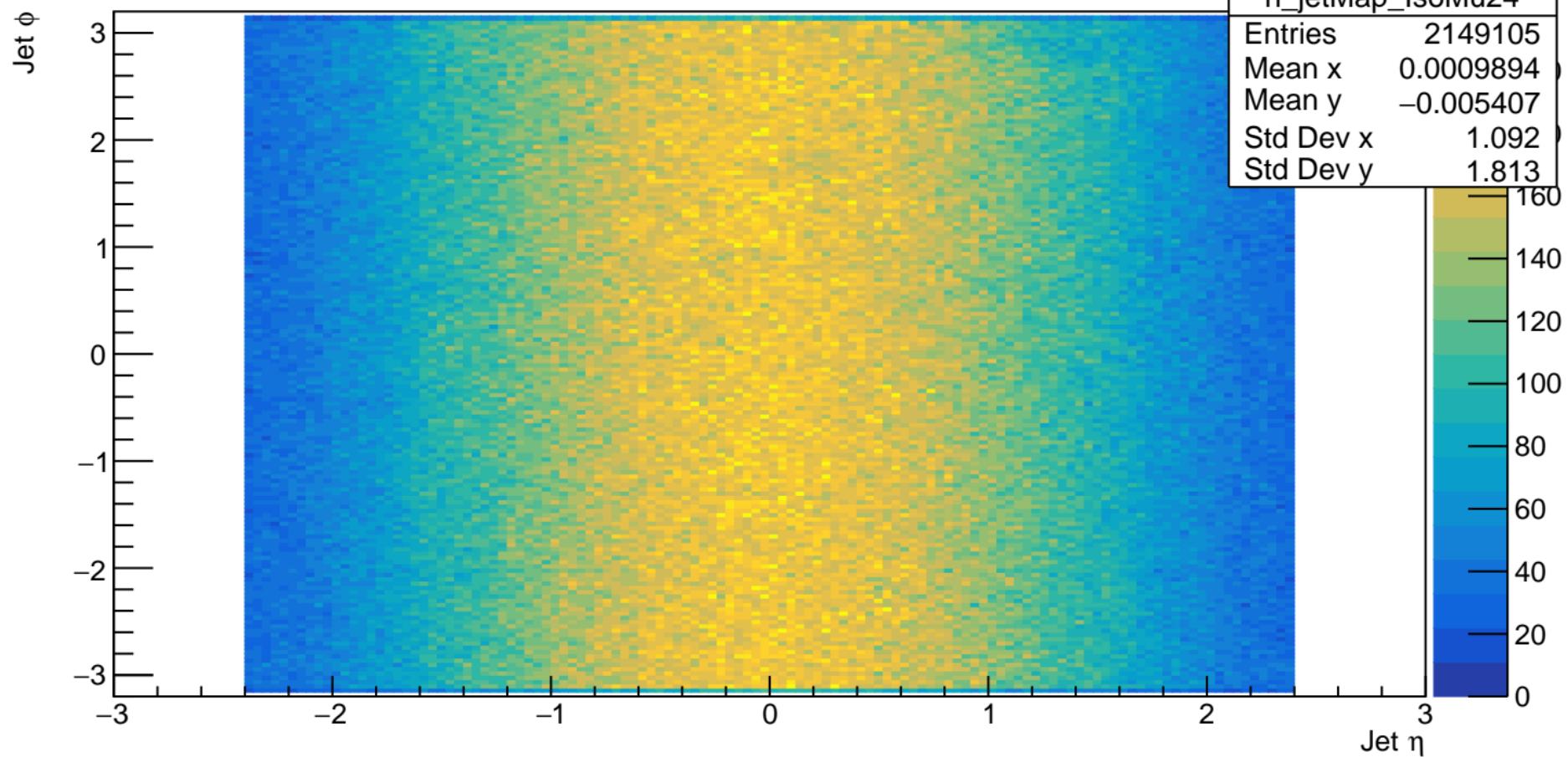
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



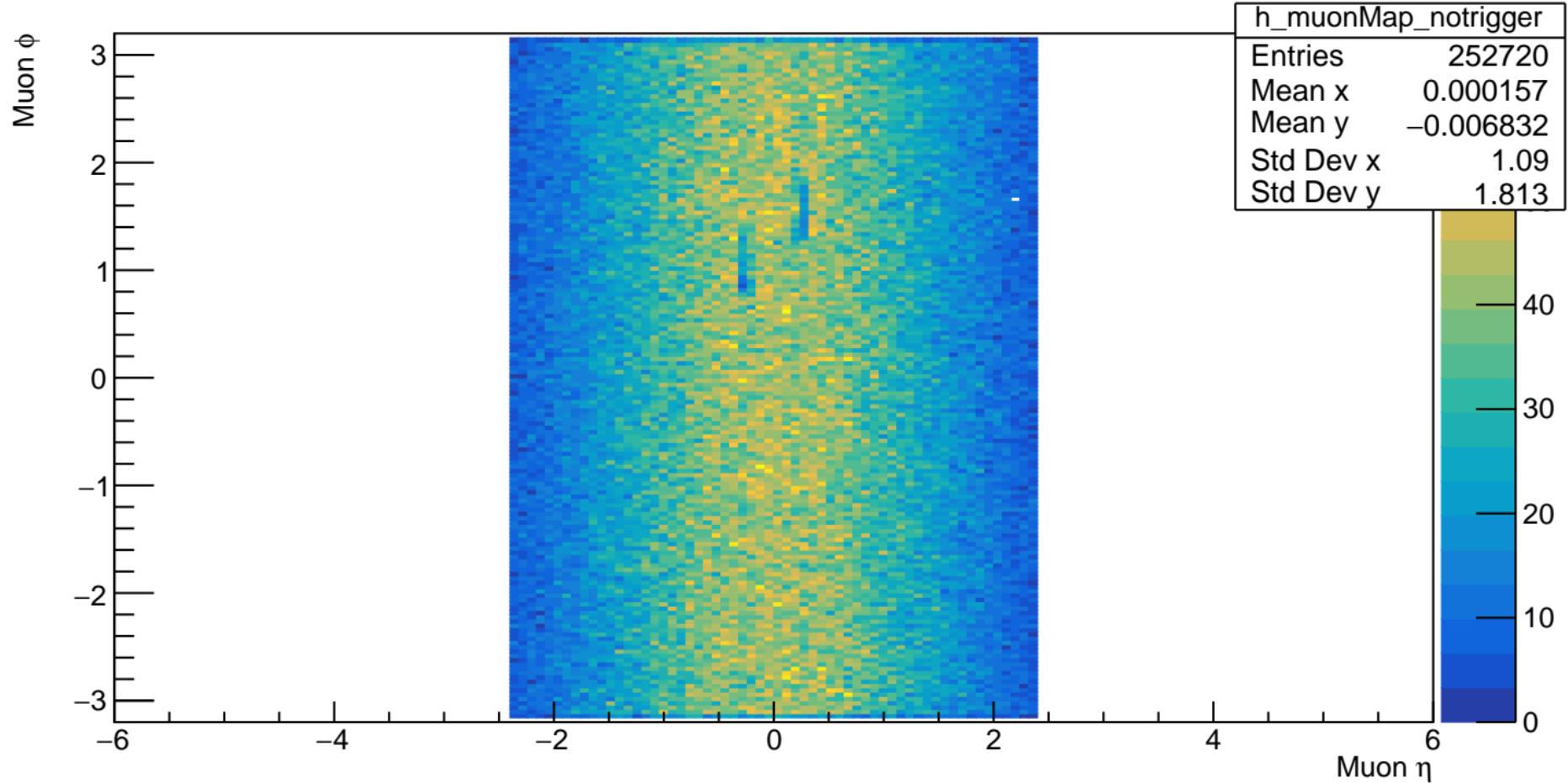
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



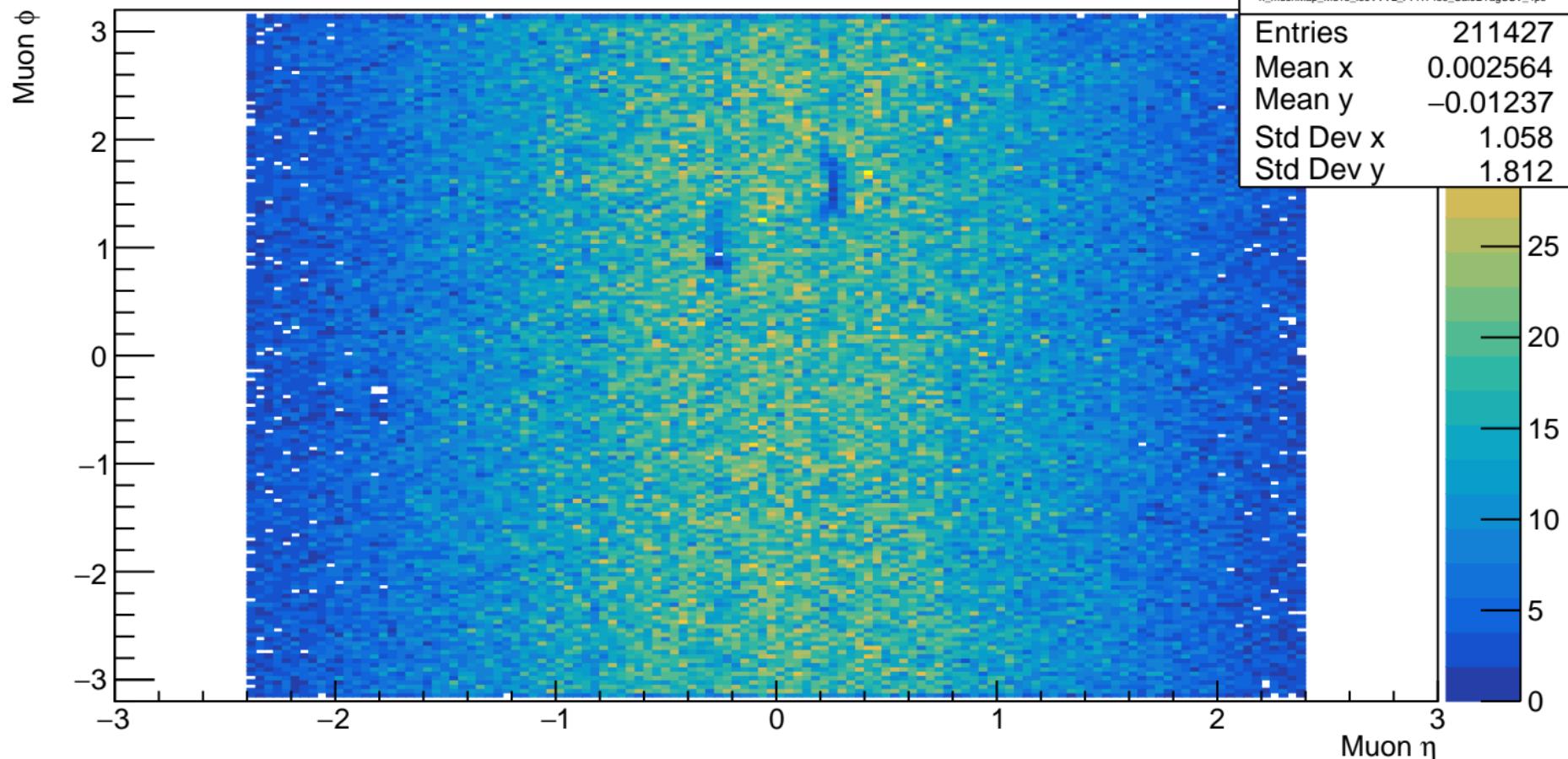
IsoMu24



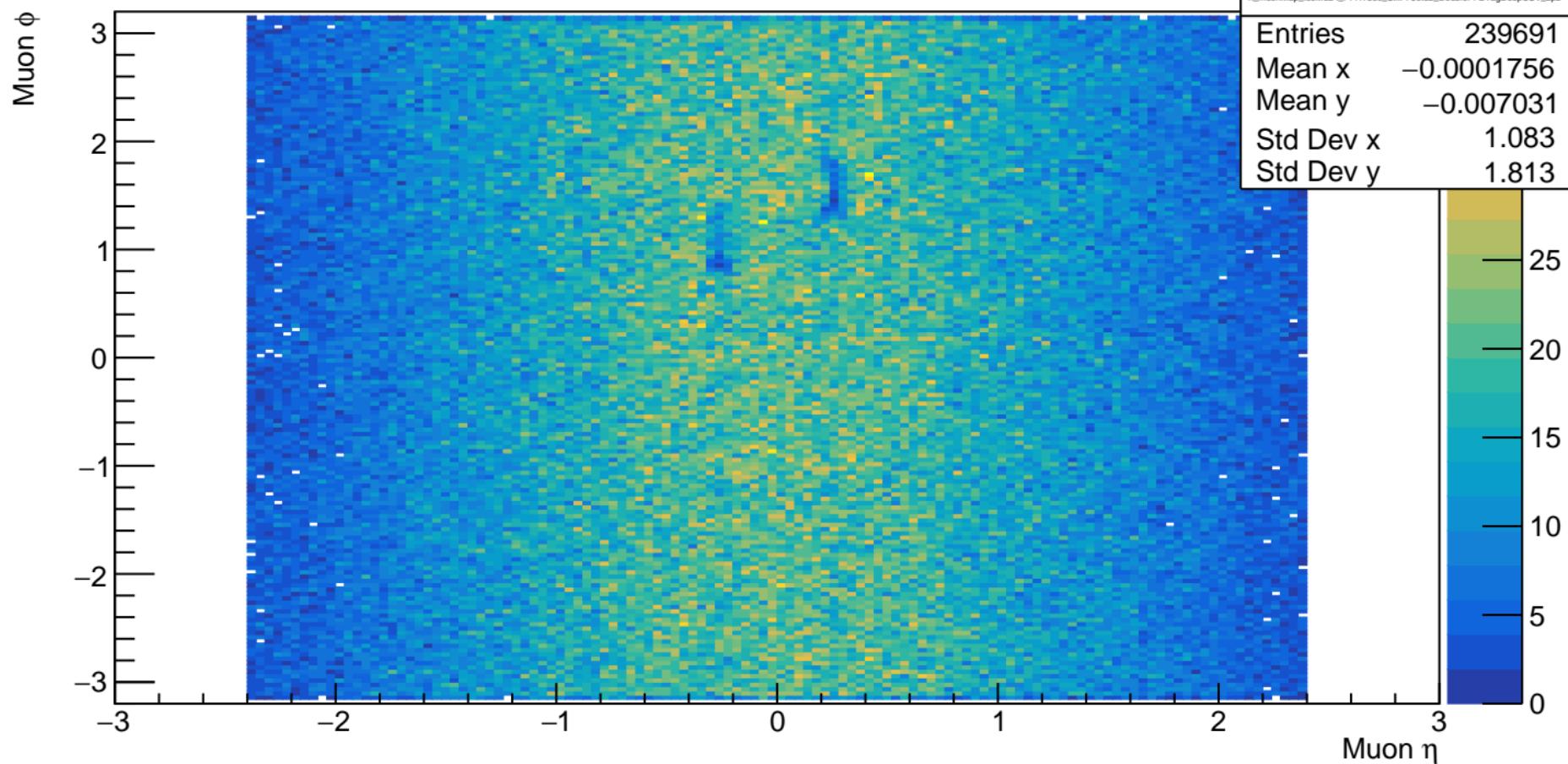
no trigger



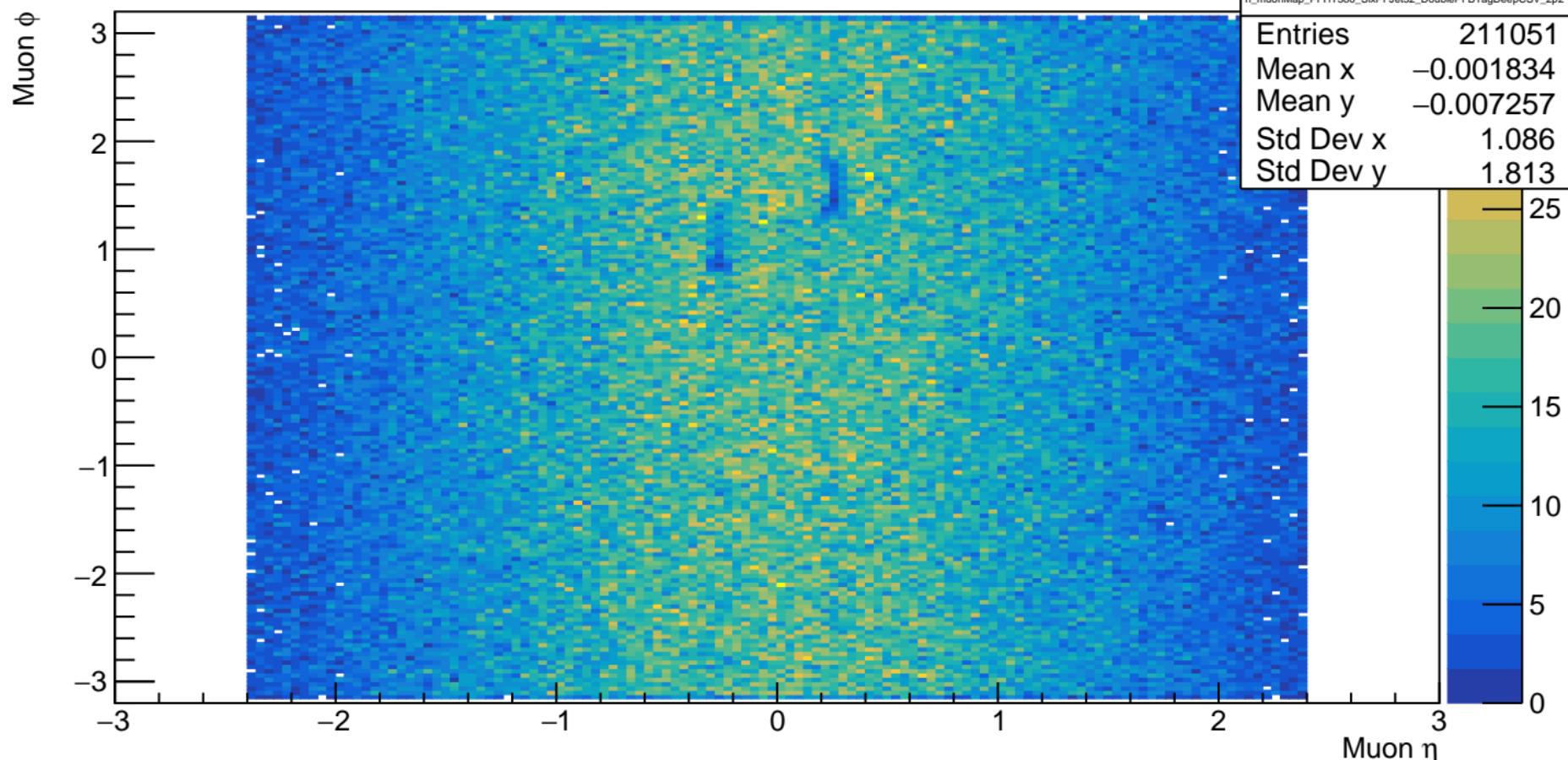
Mu15_IsoVVVL_PFHT450_CaloBTagCSV_4p5



IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



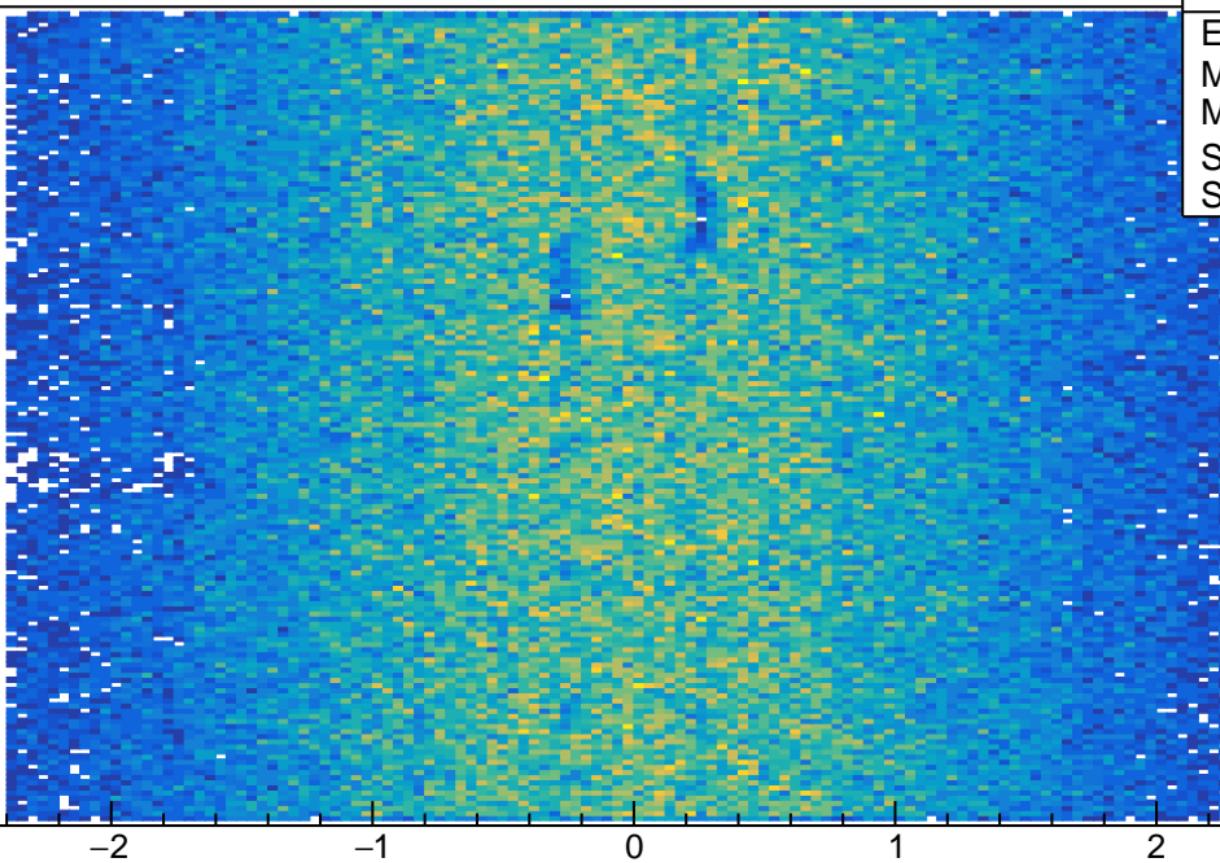
PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



IsoMu24

Muon ϕ

3
2
1
0
-1
-2
-3

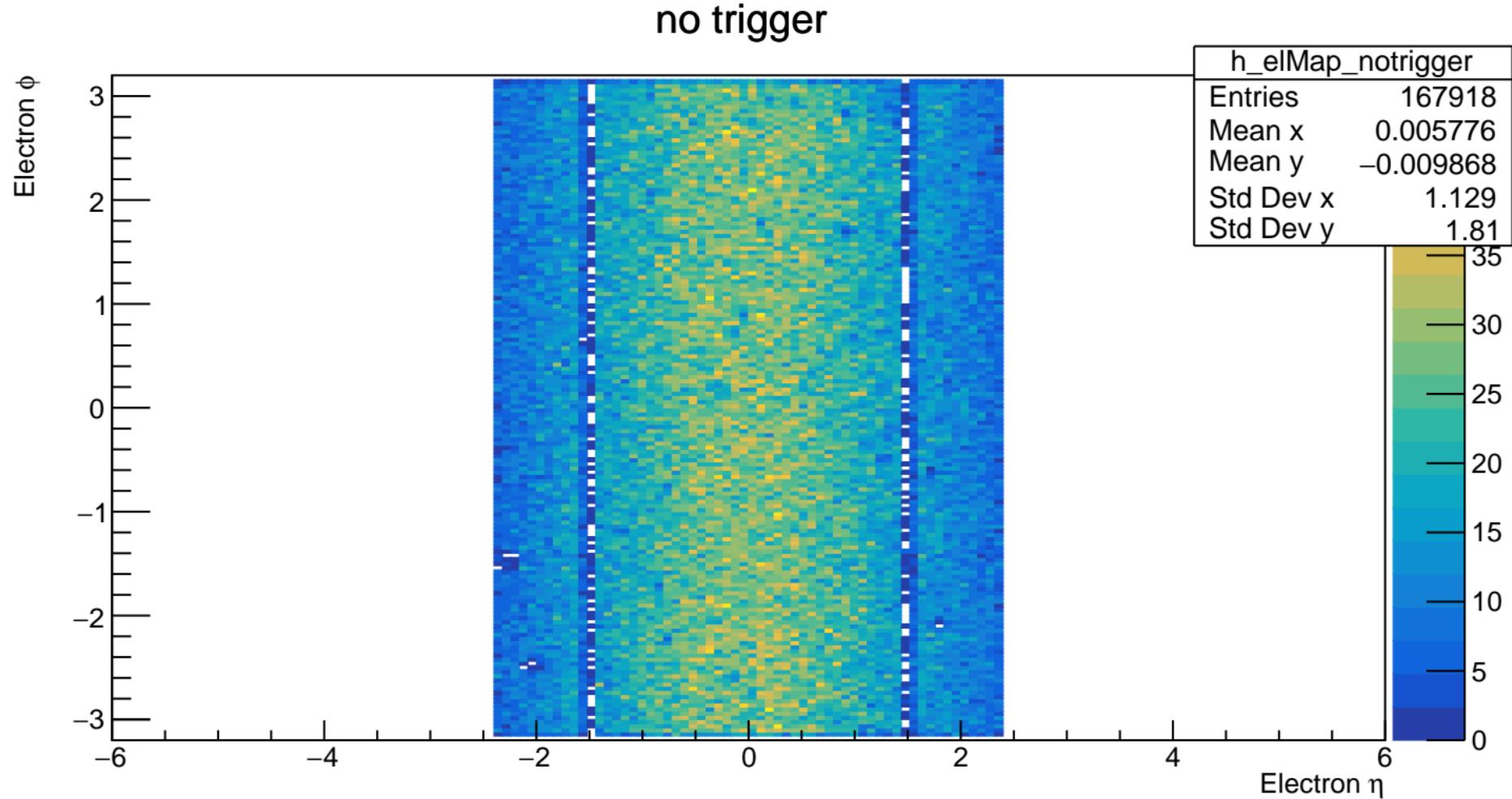


h_muonMap_IsoMu24	
Entries	170595
Mean x	0.005168
Mean y	-0.008568
Std Dev x	1.044
Std Dev y	1.816

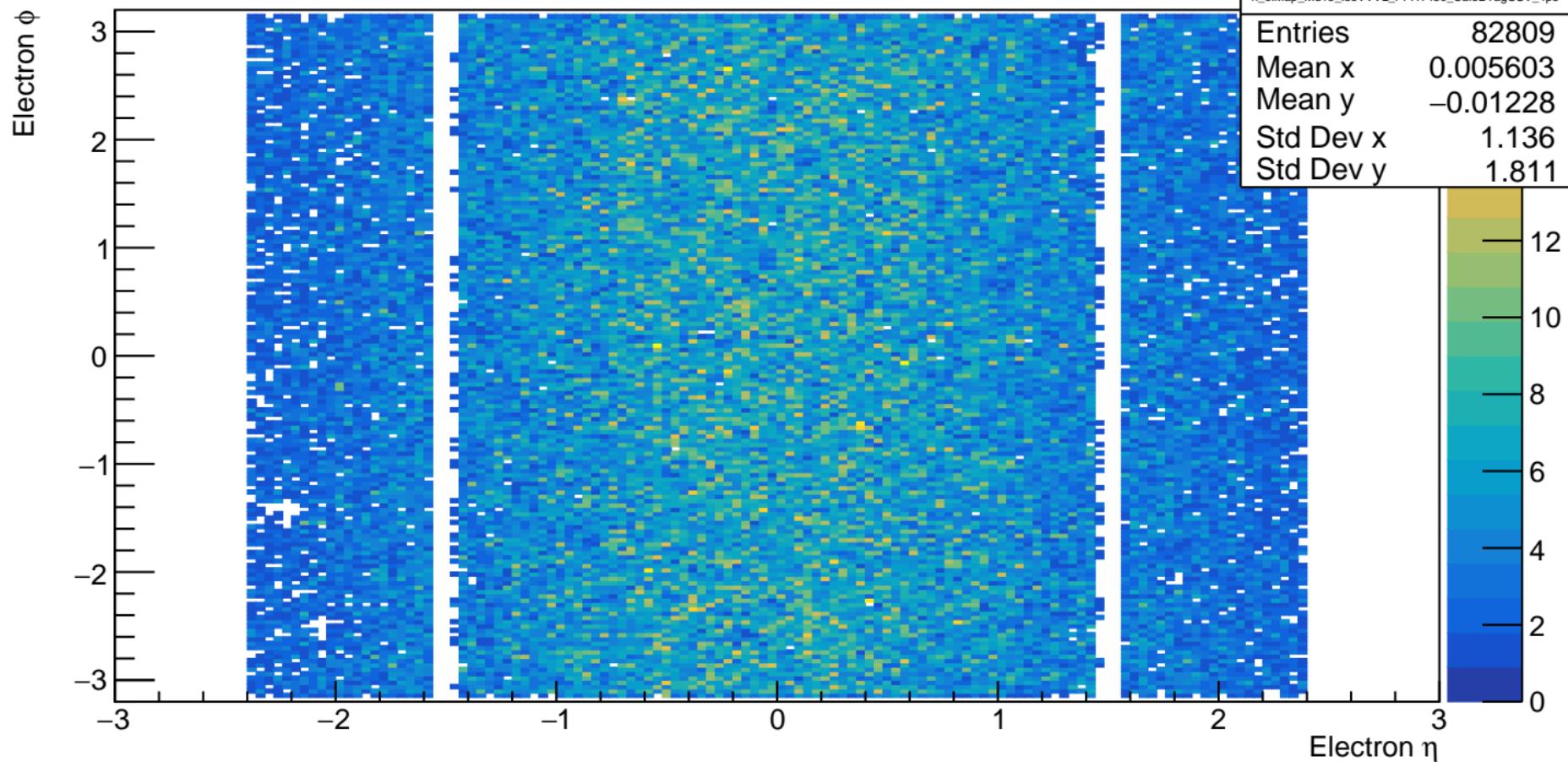
20
15
10
5
0

Muon η

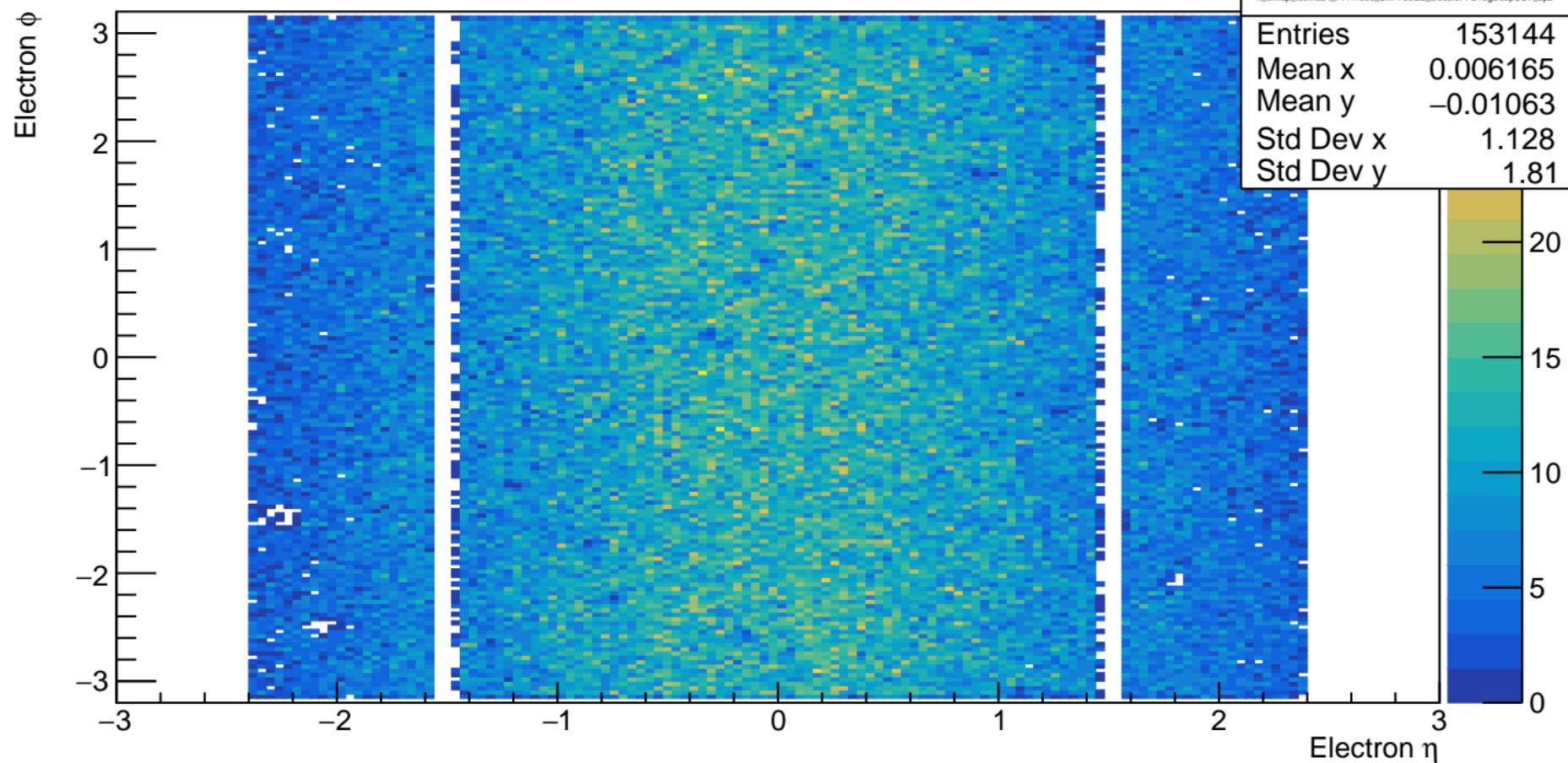
no trigger



Mu15_IsoVVVL_PFHT450_CaloBTagCSV_4p5



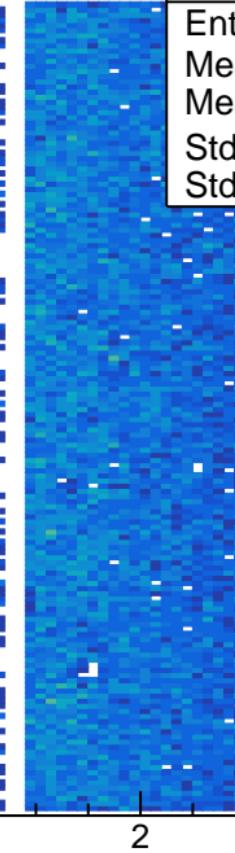
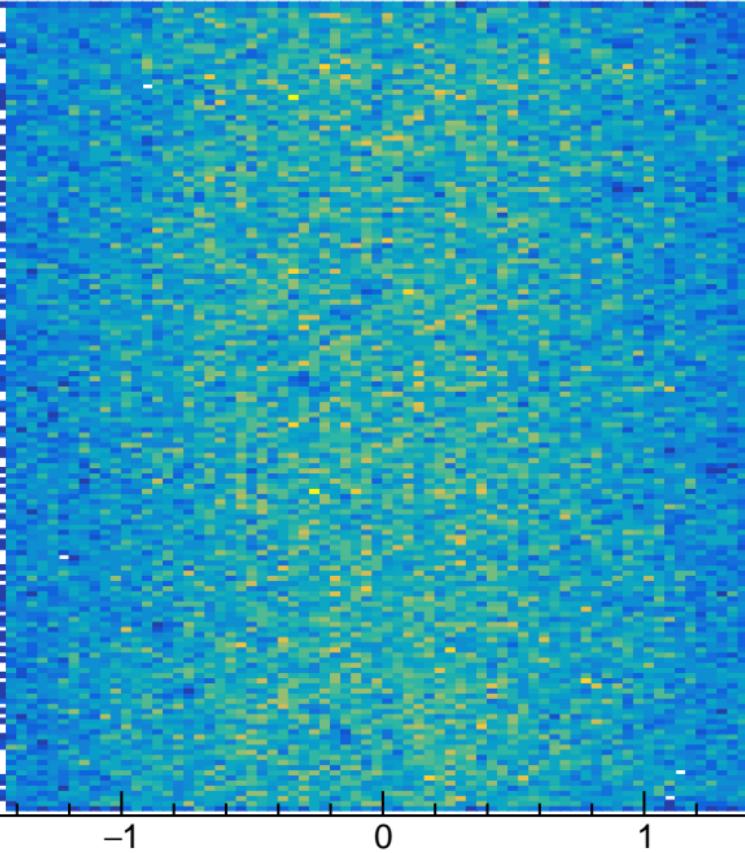
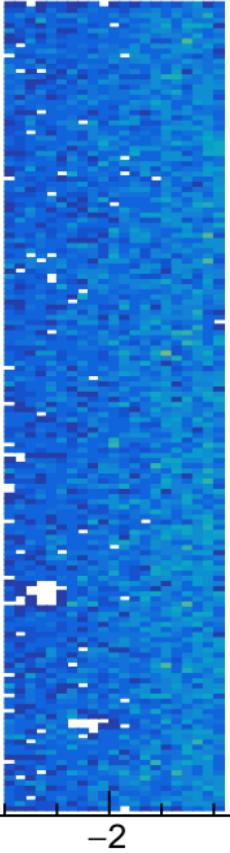
IsoMu24_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2



PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

Electron ϕ

3
2
1
0
-1
-2
-3



Electron η

h_elMap_PFHT380_SixPFJet32_DoublePFBTagDeepCSV_2p2

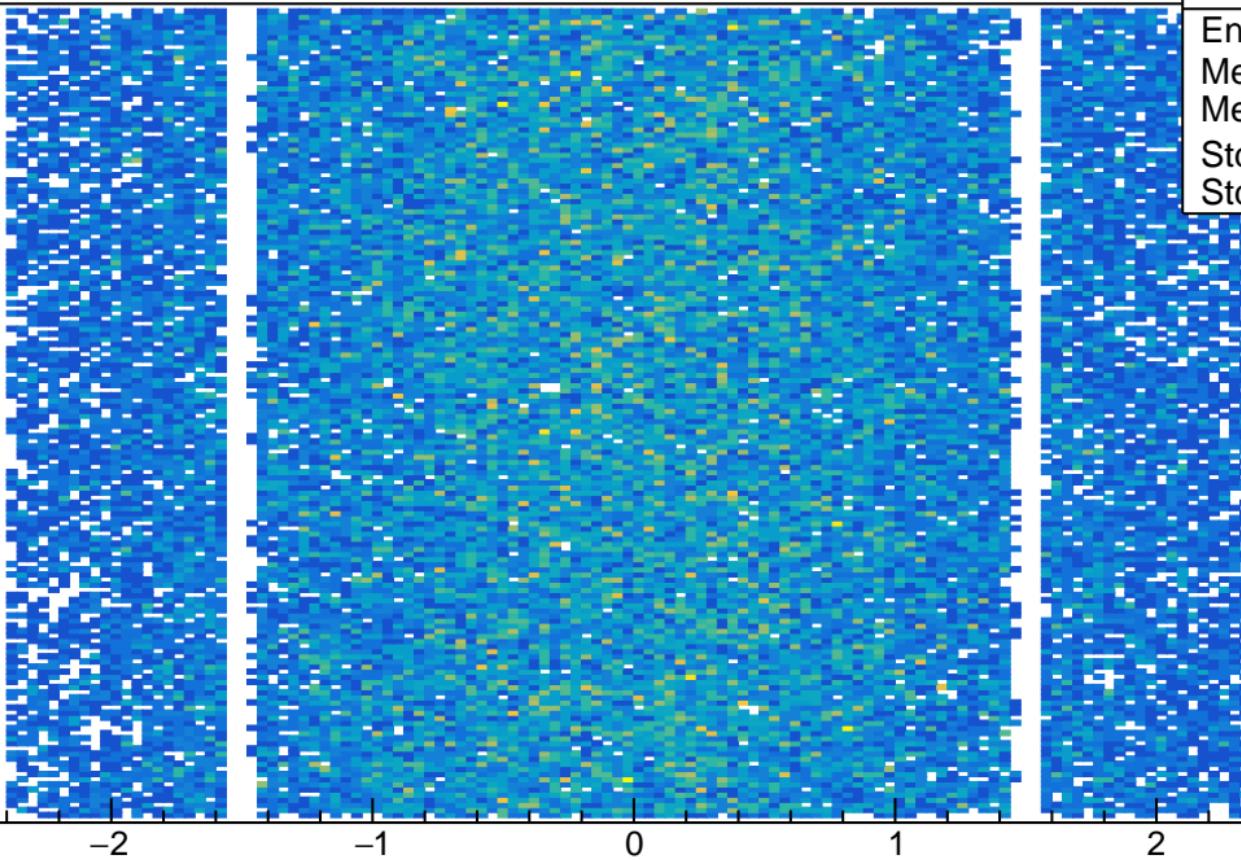
Entries	144086
Mean x	0.005943
Mean y	-0.01169
Std Dev x	1.126
Std Dev y	1.811

20
15
10
5
0

IsoMu24

Electron ϕ

3
2
1
0
-1
-2
-3



h_elMap_IsoMu24	
Entries	51416
Mean x	0.004233
Mean y	-0.009808
Std Dev x	1.148
Std Dev y	1.81

8
6
4
2
0

Electron η

Total Number of Accepted Events

