

**On-line (pre-)selection Requisites for:**

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

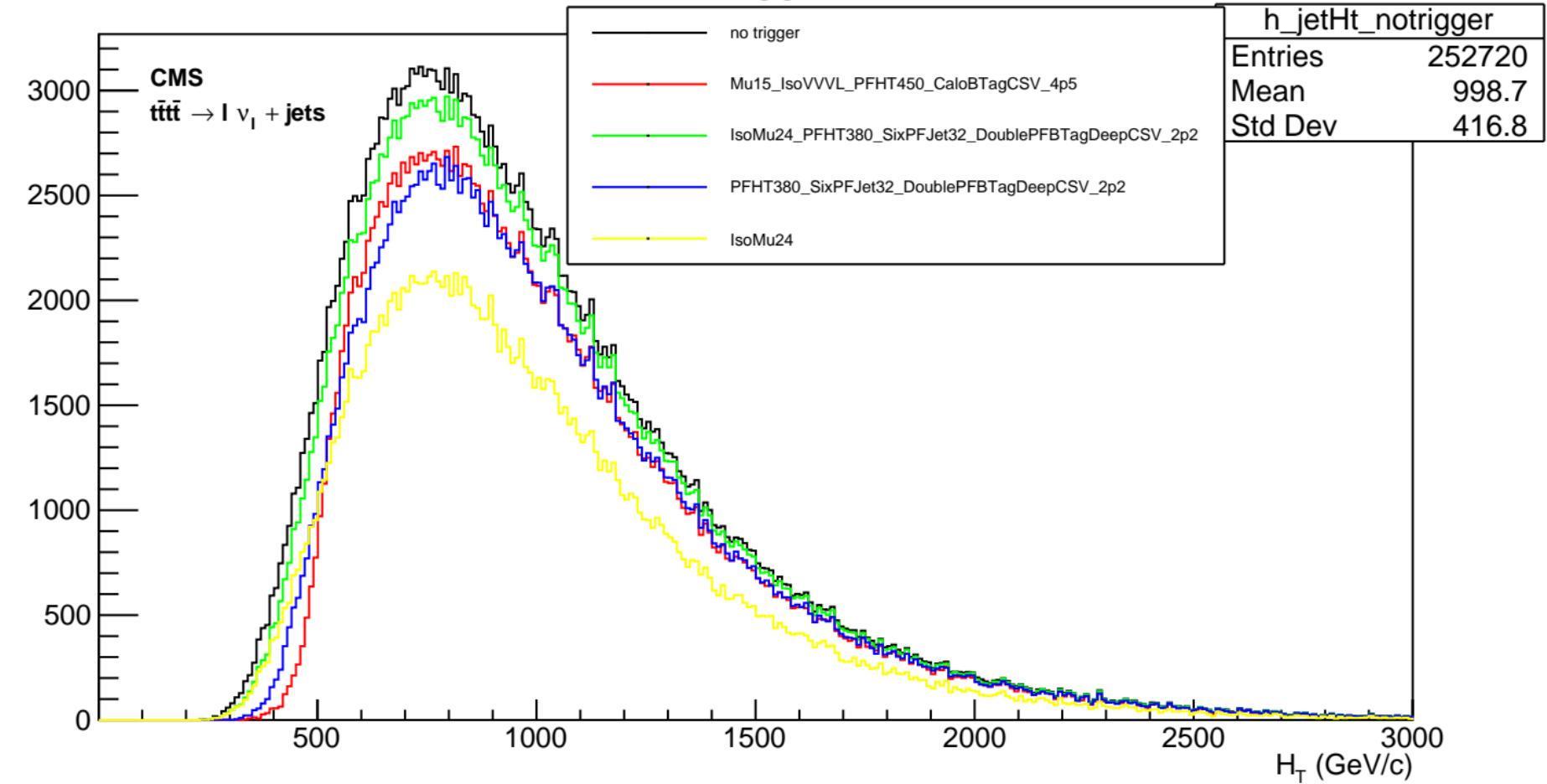
**Event Limit:** None (see last page)

**Off-line (post-)selection Requisites for:**

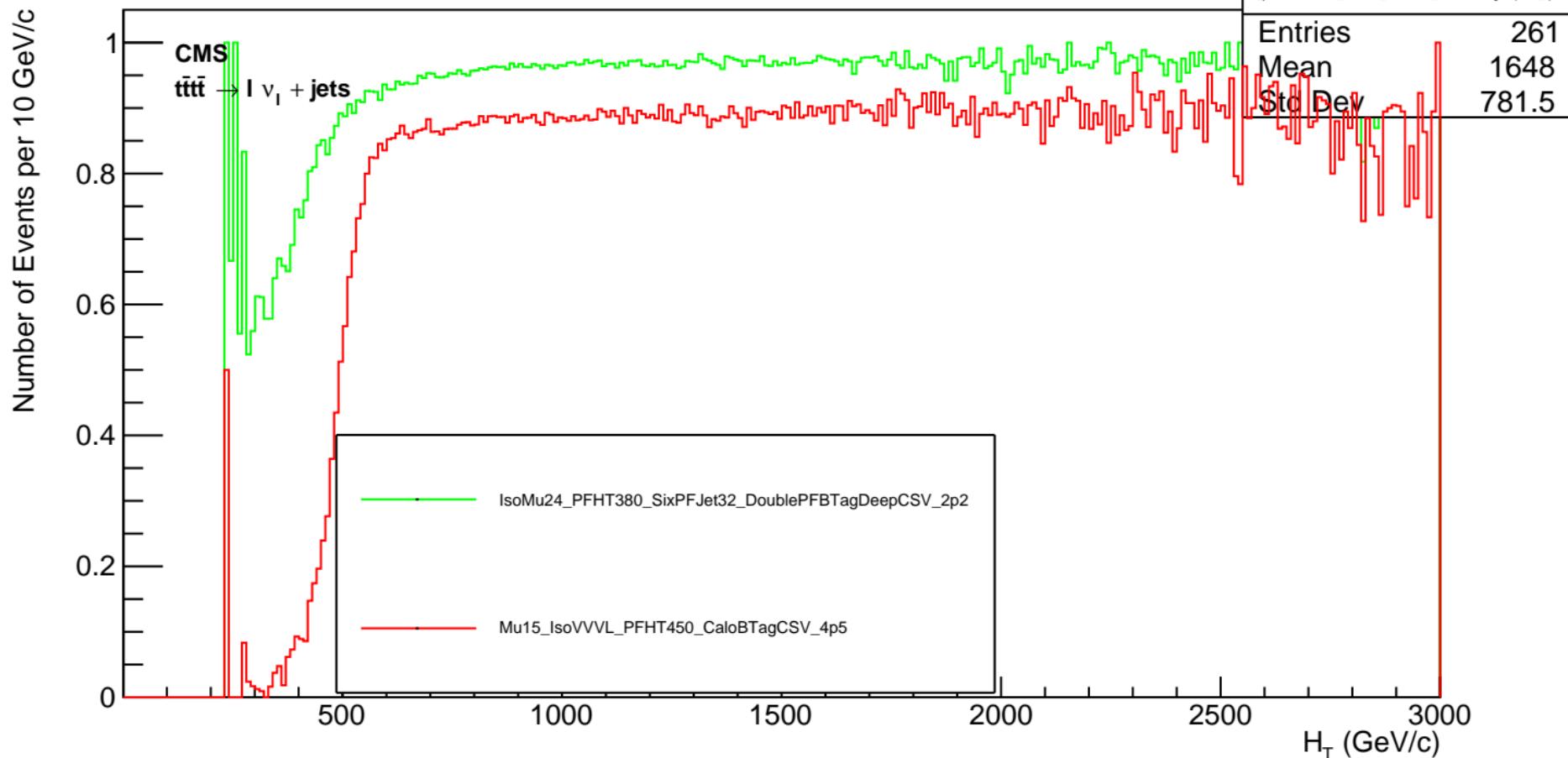
- **Jets:** jetId > 2 ,  $p_T > 30$  and  $|\eta| < 2.4$  (for at least 6)  
 $btagDeepFlavB > 0.7489$  (for at least one jet)
- **Muons:** has tightId,  $|\eta| < 2.4$  and  $\text{miniPFRellso\_all} < 0.15$  (for at least 1)

# no trigger

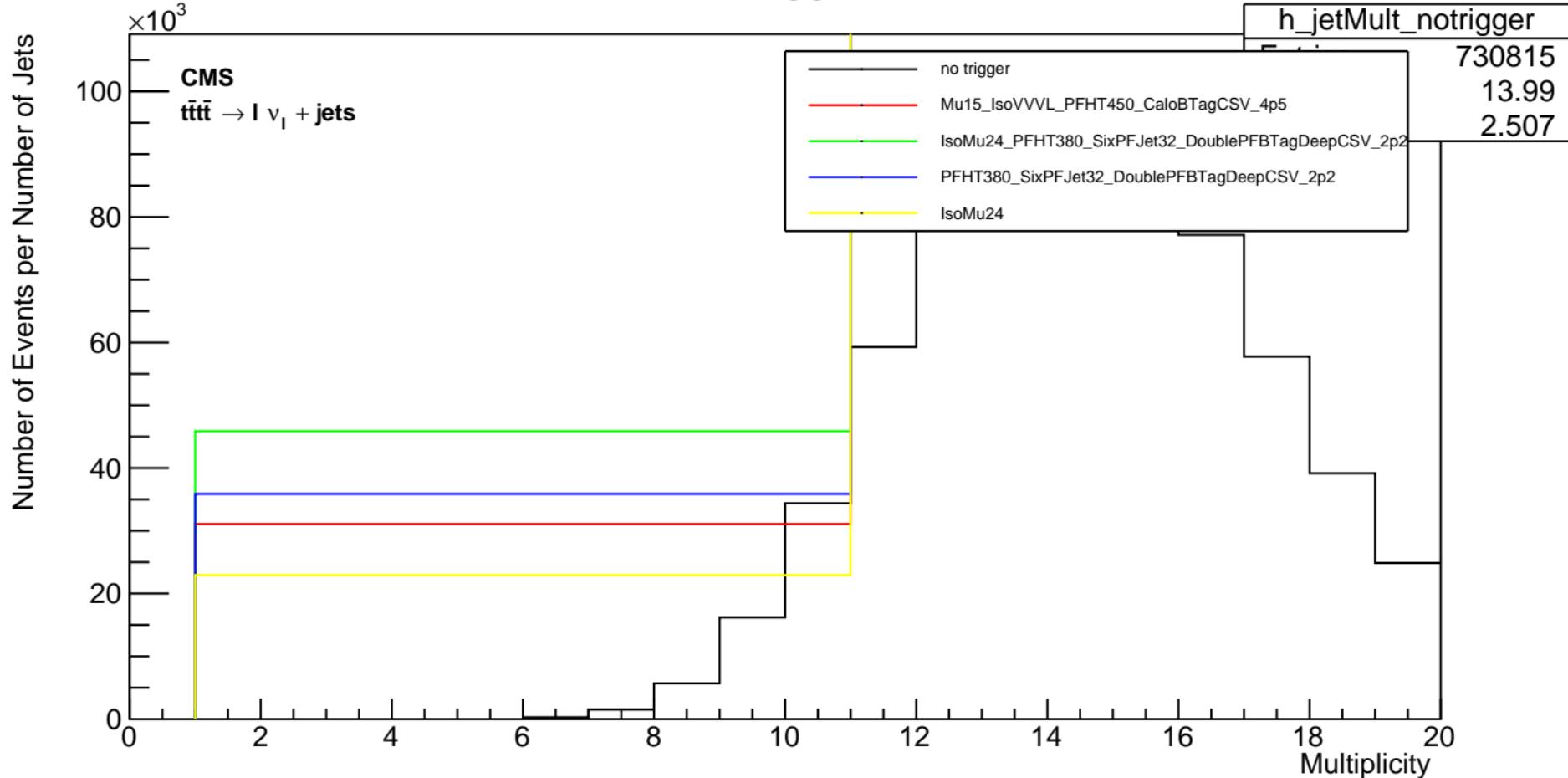
Number of Events per 10 GeV/c



# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

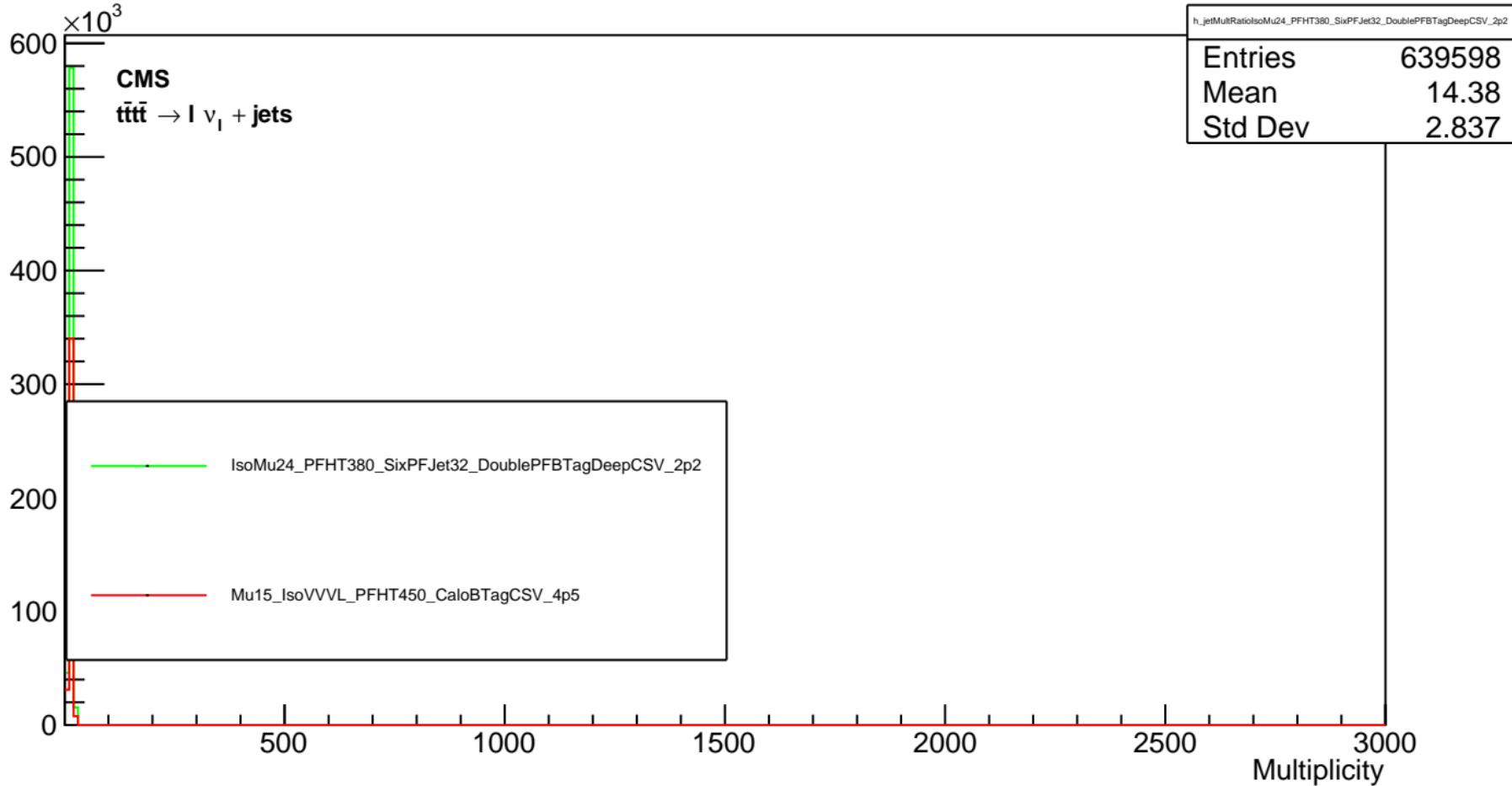


# no trigger

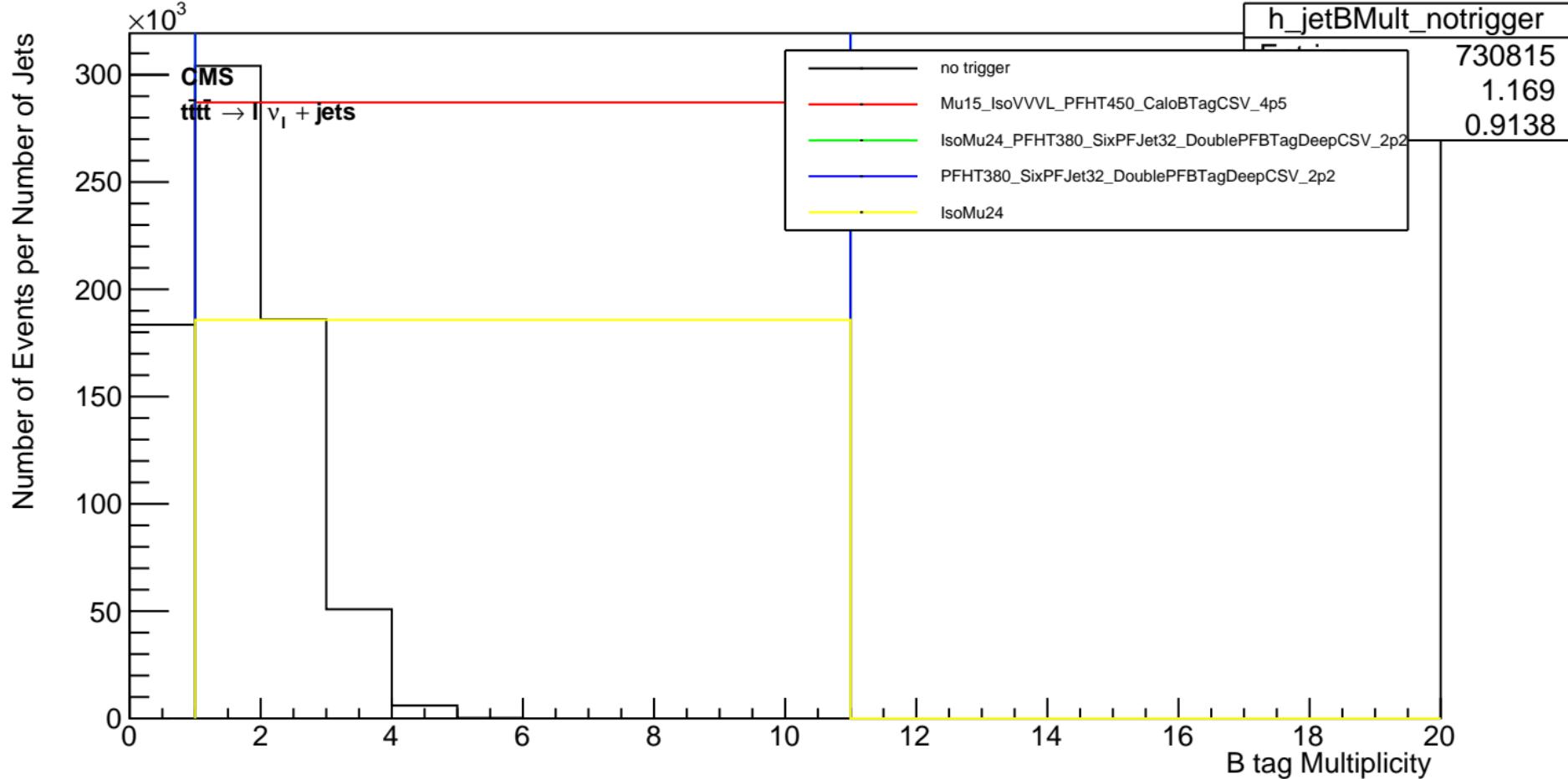


# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

Number of Events per Number of Jets

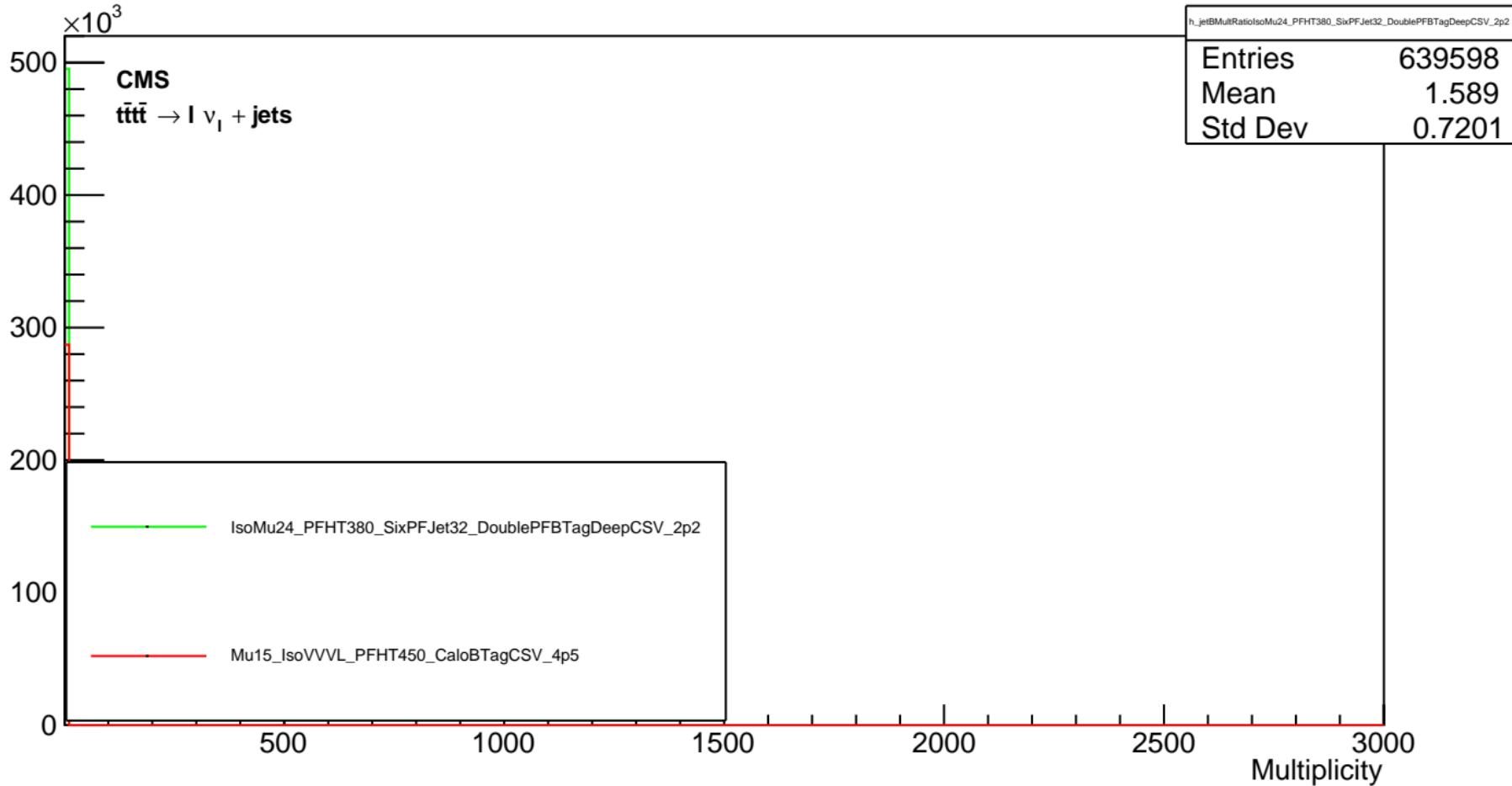


# no trigger



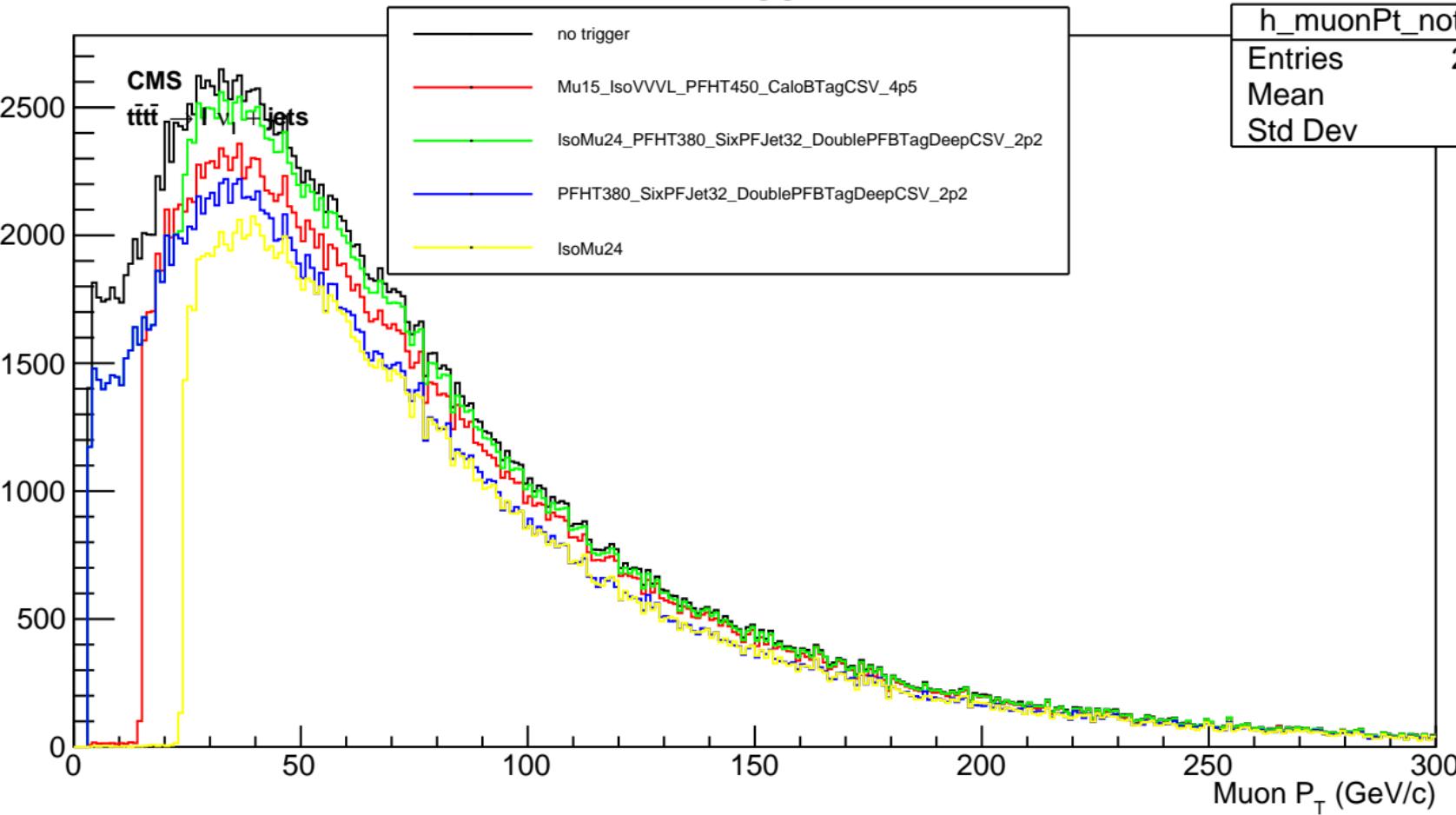
# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

Number of Events per Number of Jets



# no trigger

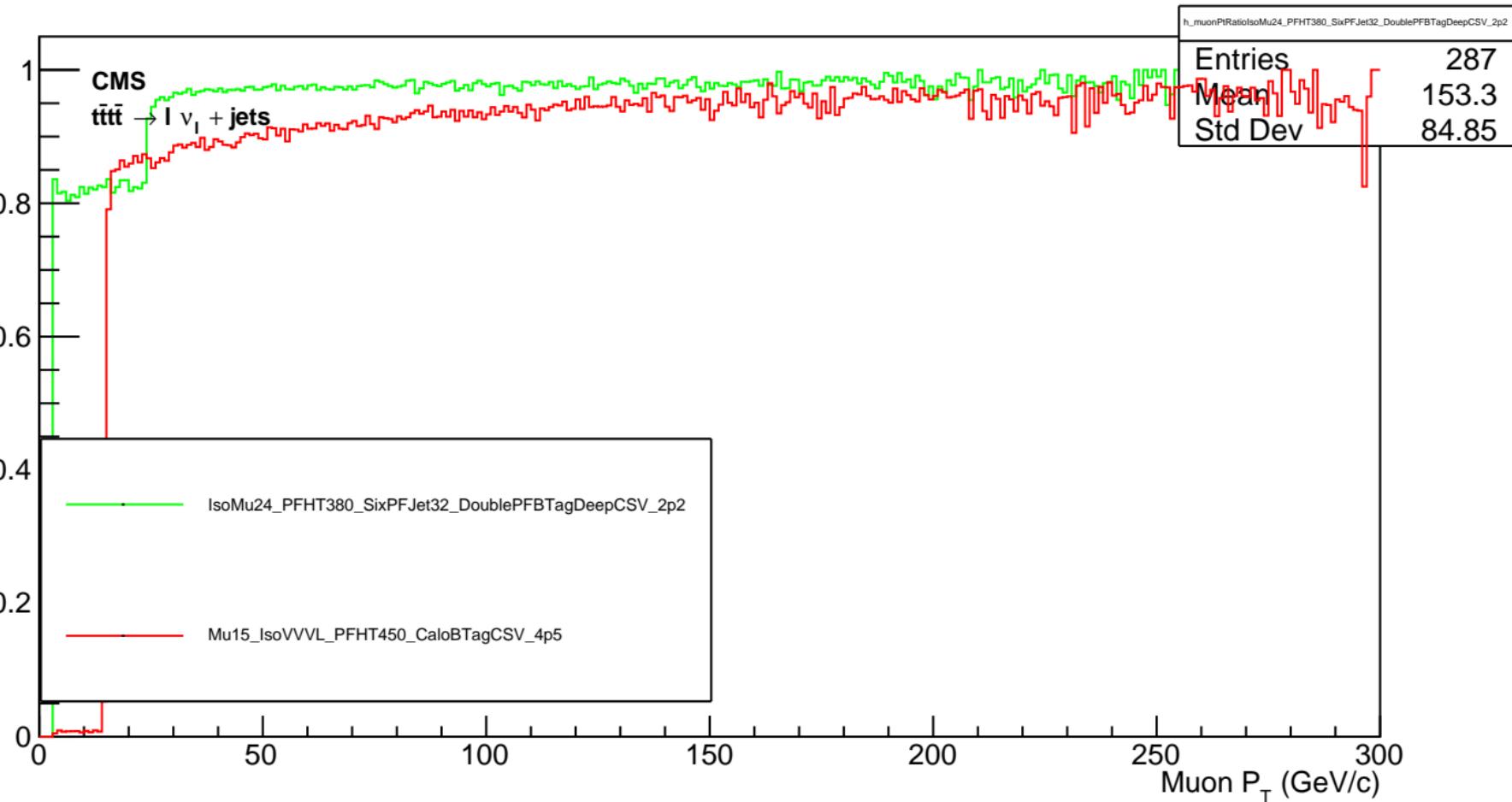
Number of Events per 1 GeV/c



h_muonPt_notrigger	
Entries	252720
Mean	72.96
Std Dev	55.72

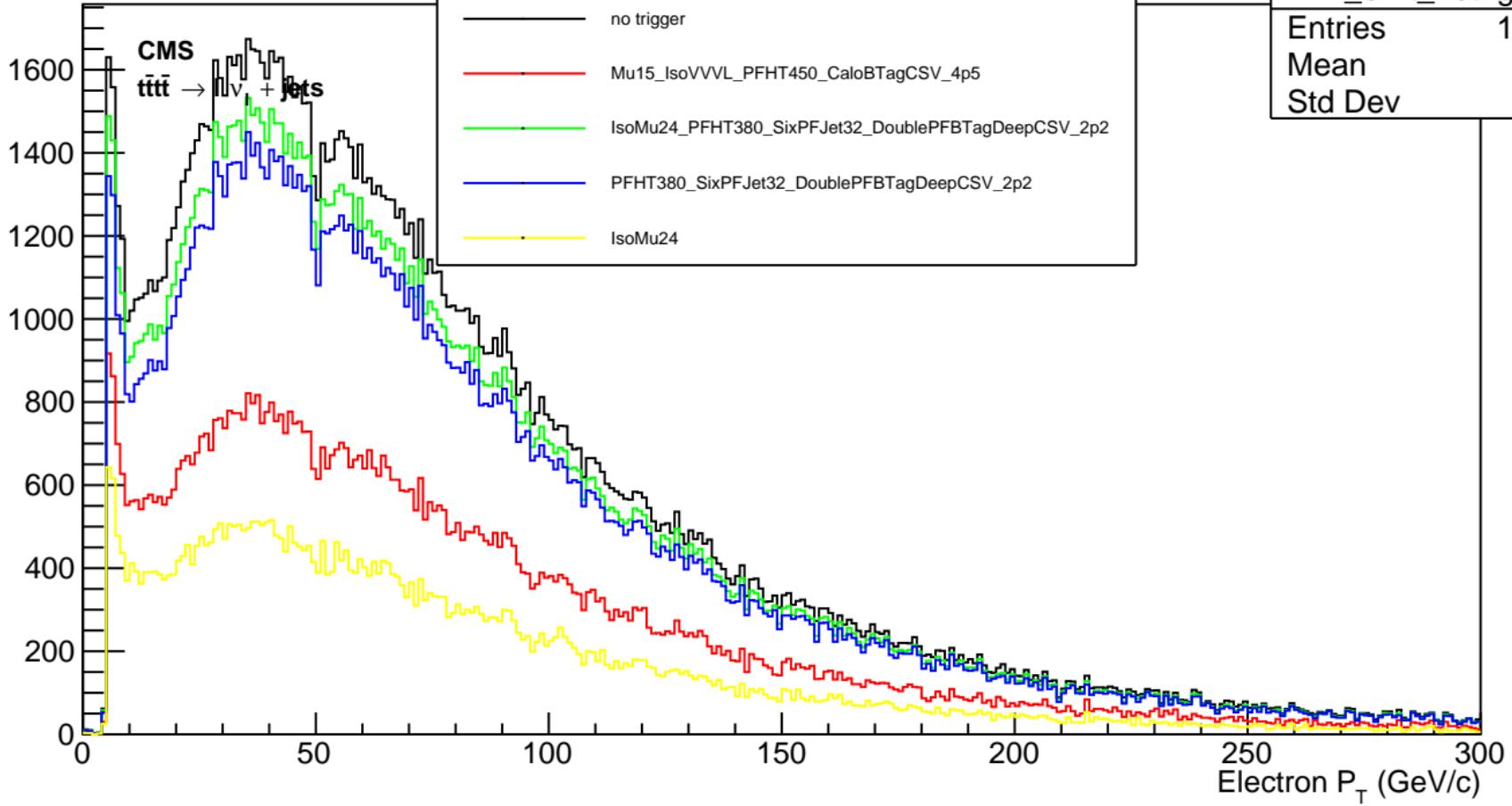
# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

Number of Events per 1 GeV/c



# no trigger

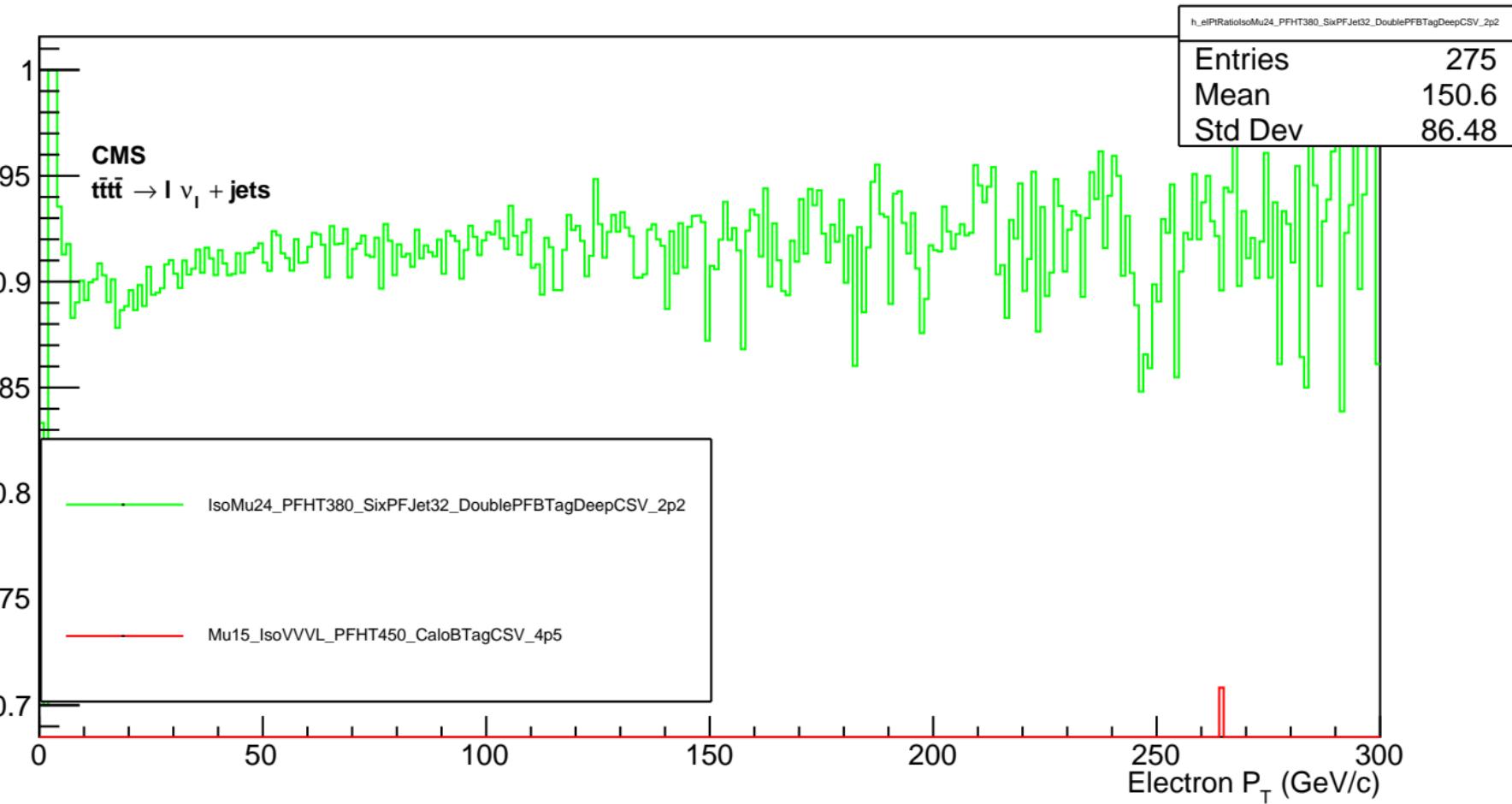
Number of Events per 1 GeV/c



h_elPt_notrigger	
Entries	167918
Mean	78.02
Std Dev	57.24

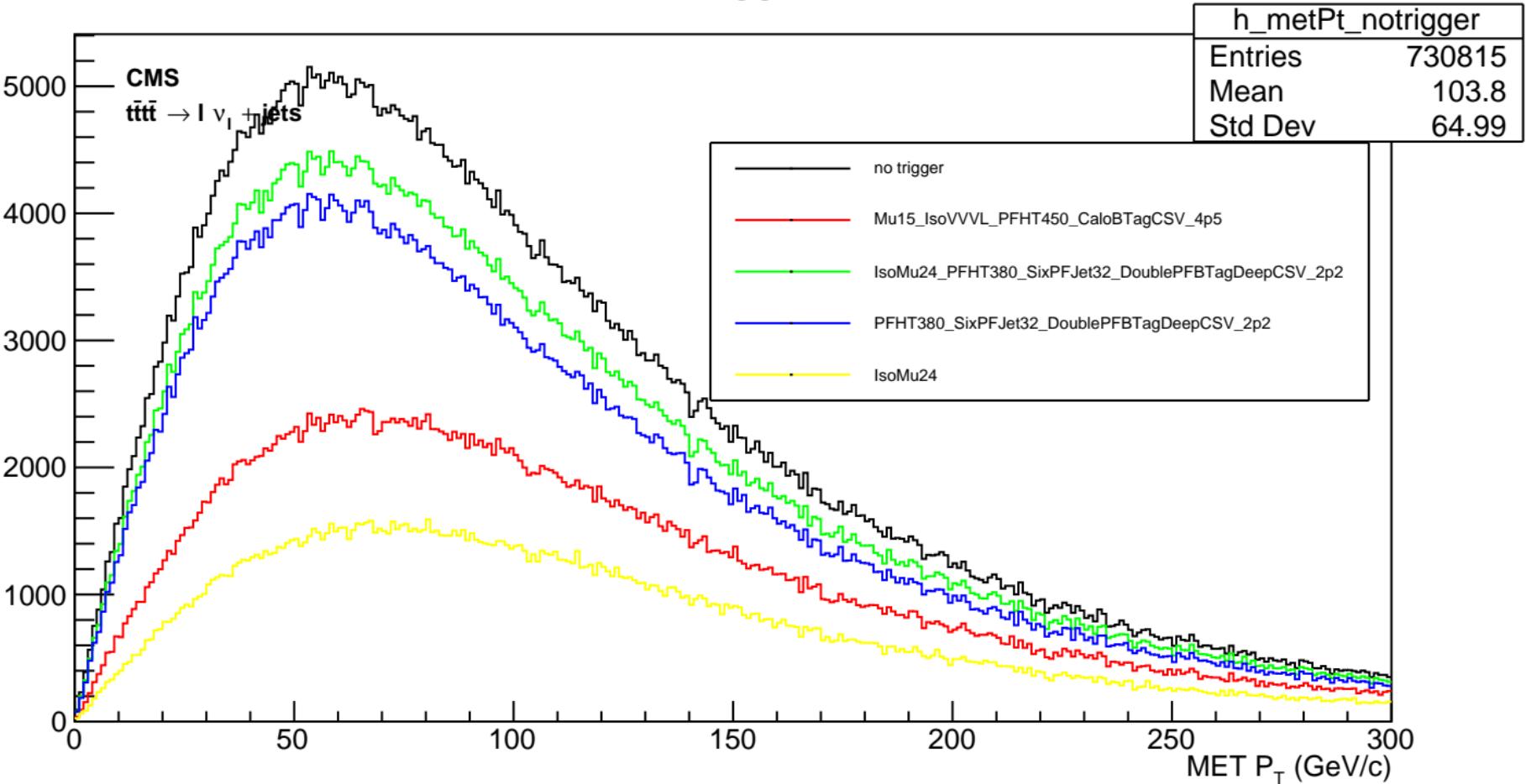
# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

Number of Events per 1 GeV/c



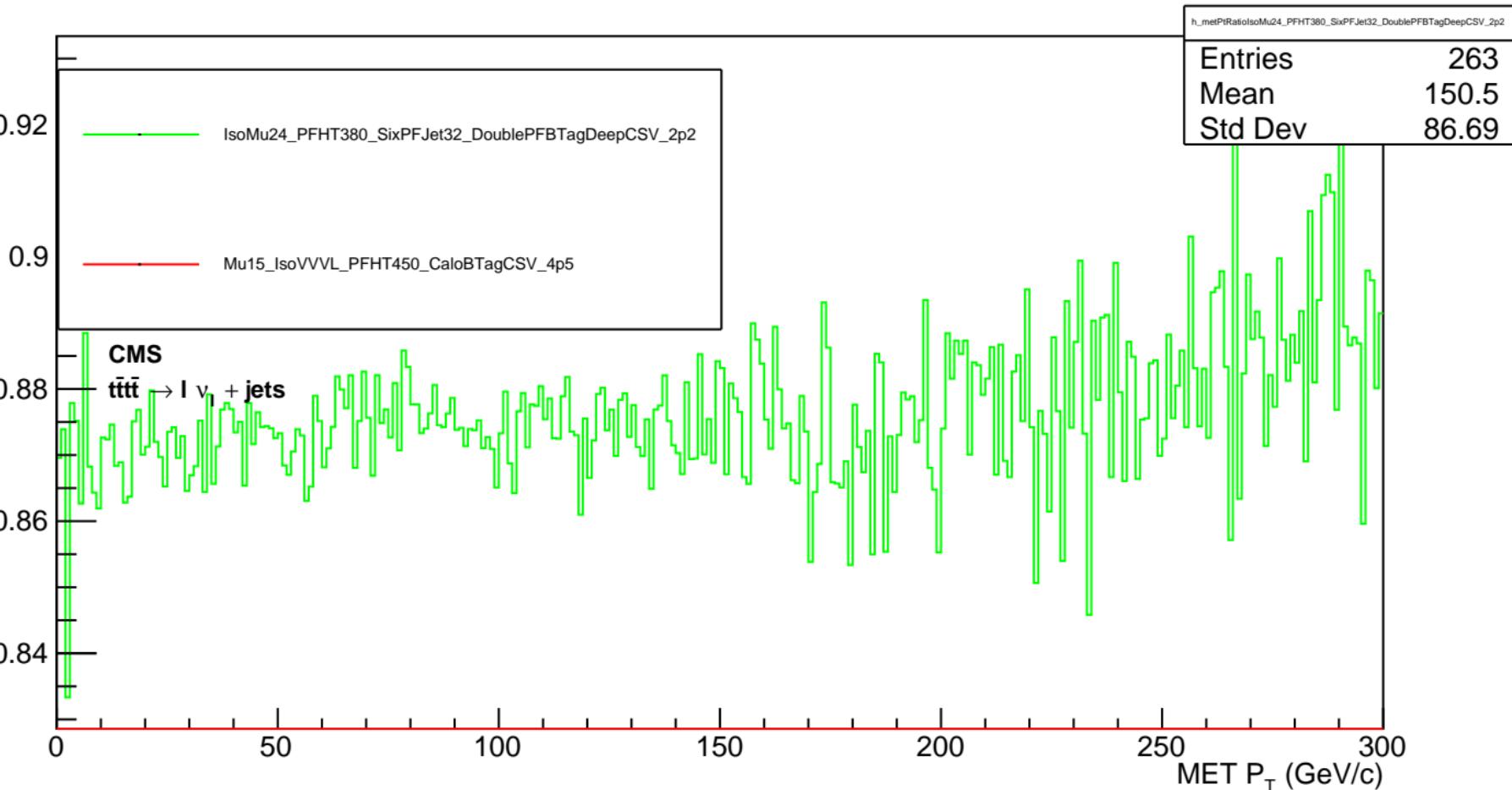
# no trigger

Number of Events per 1 GeV/c



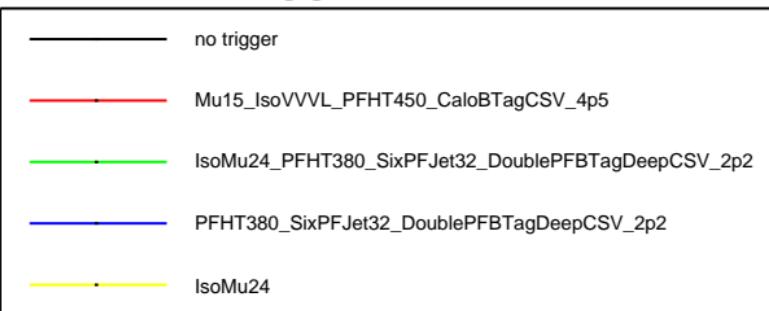
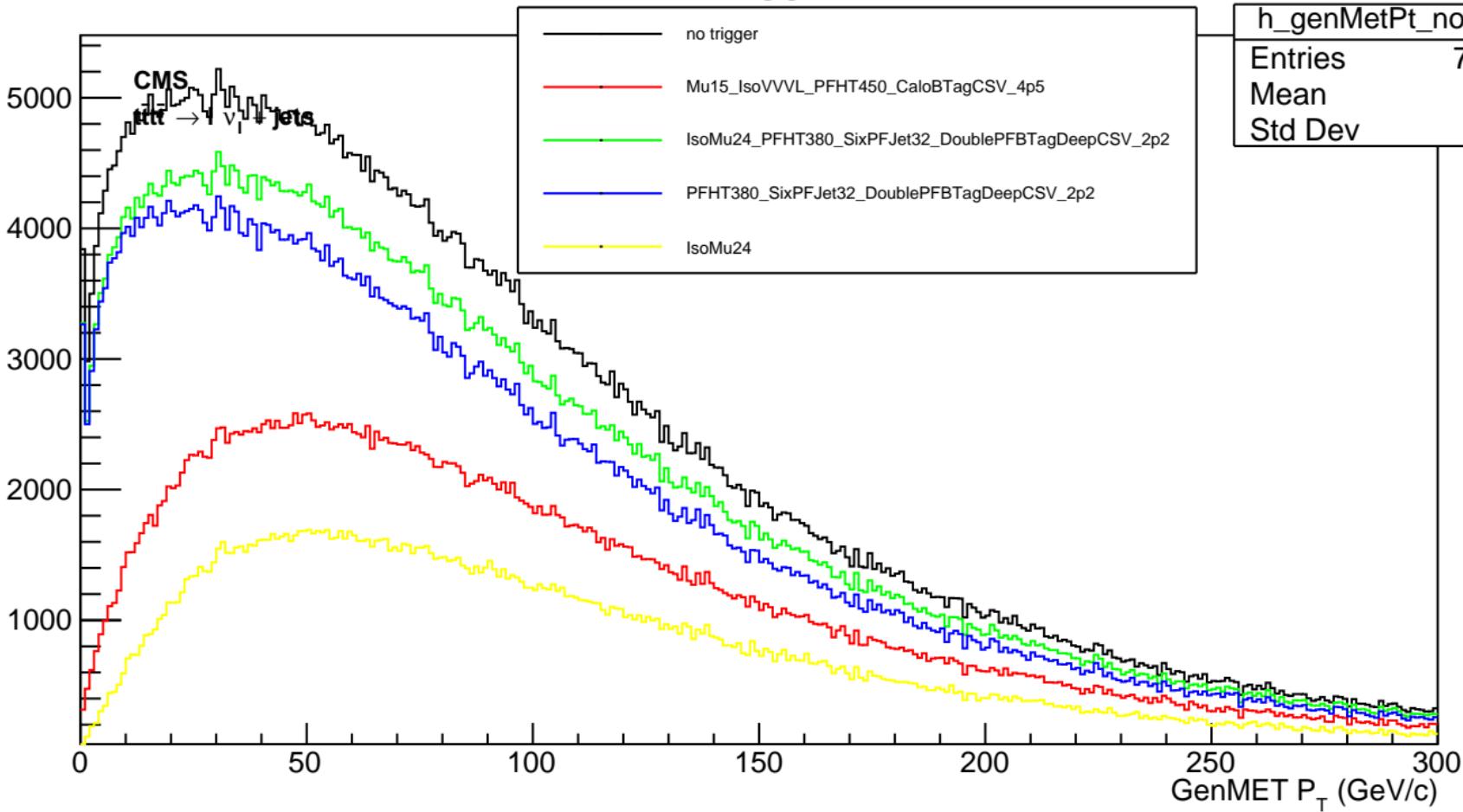
# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2

Number of Events per 1 GeV/c



# no trigger

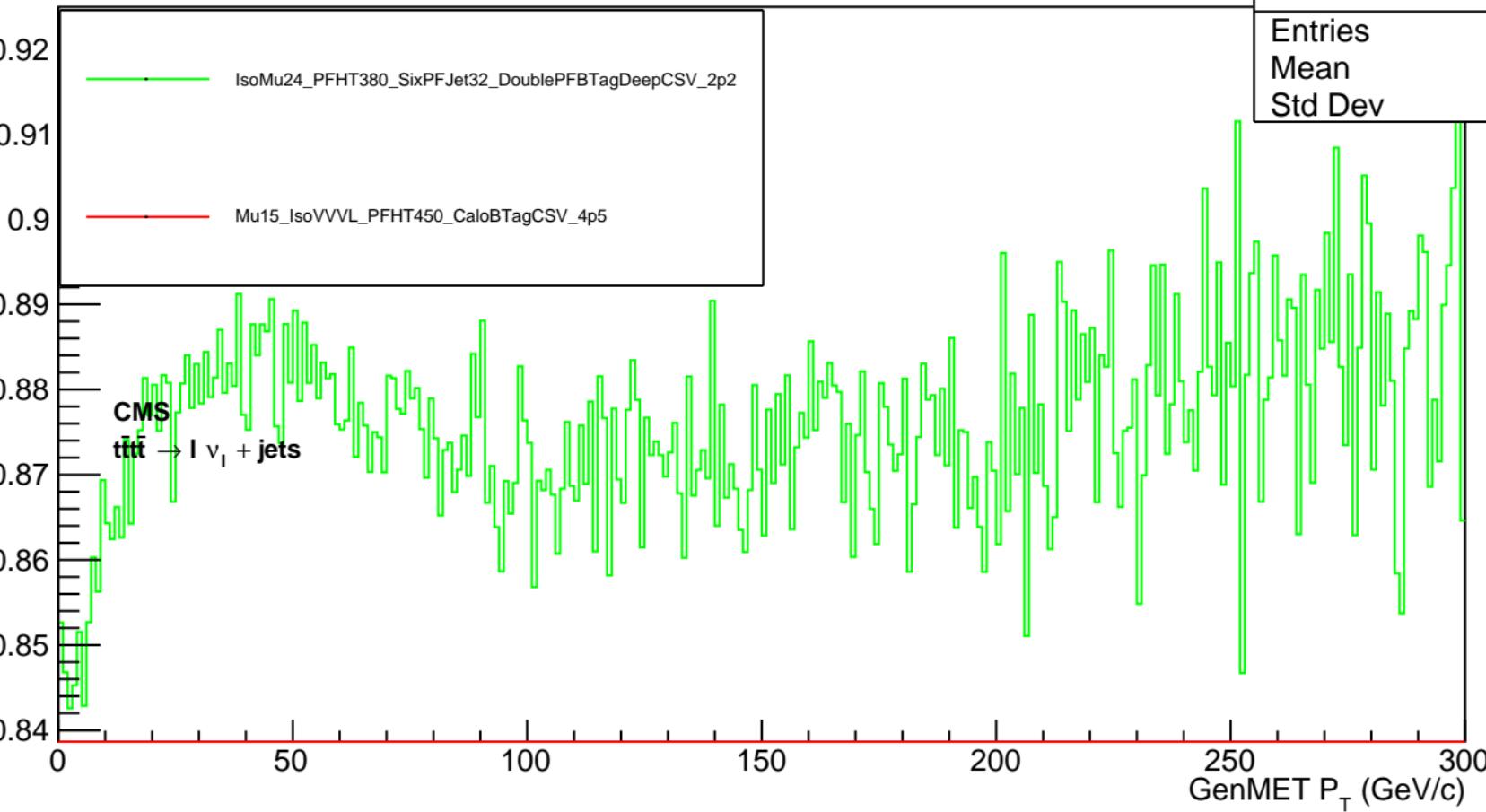
Number of Events per 1GeV/c



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

0.84

0.85

0.86

0.87

0.88

0.89

0.90

0.91

0.84

0.85

0.86

0.87

0.88

0.89

0.90

0.91

0.84

0.85

0.86

0.87

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0.88

0.89

0.90

0.91

0.84

0.85

0.86

0.87

0.88

0.89

0.90

0.91

0.84

0.85

0.86

0.87

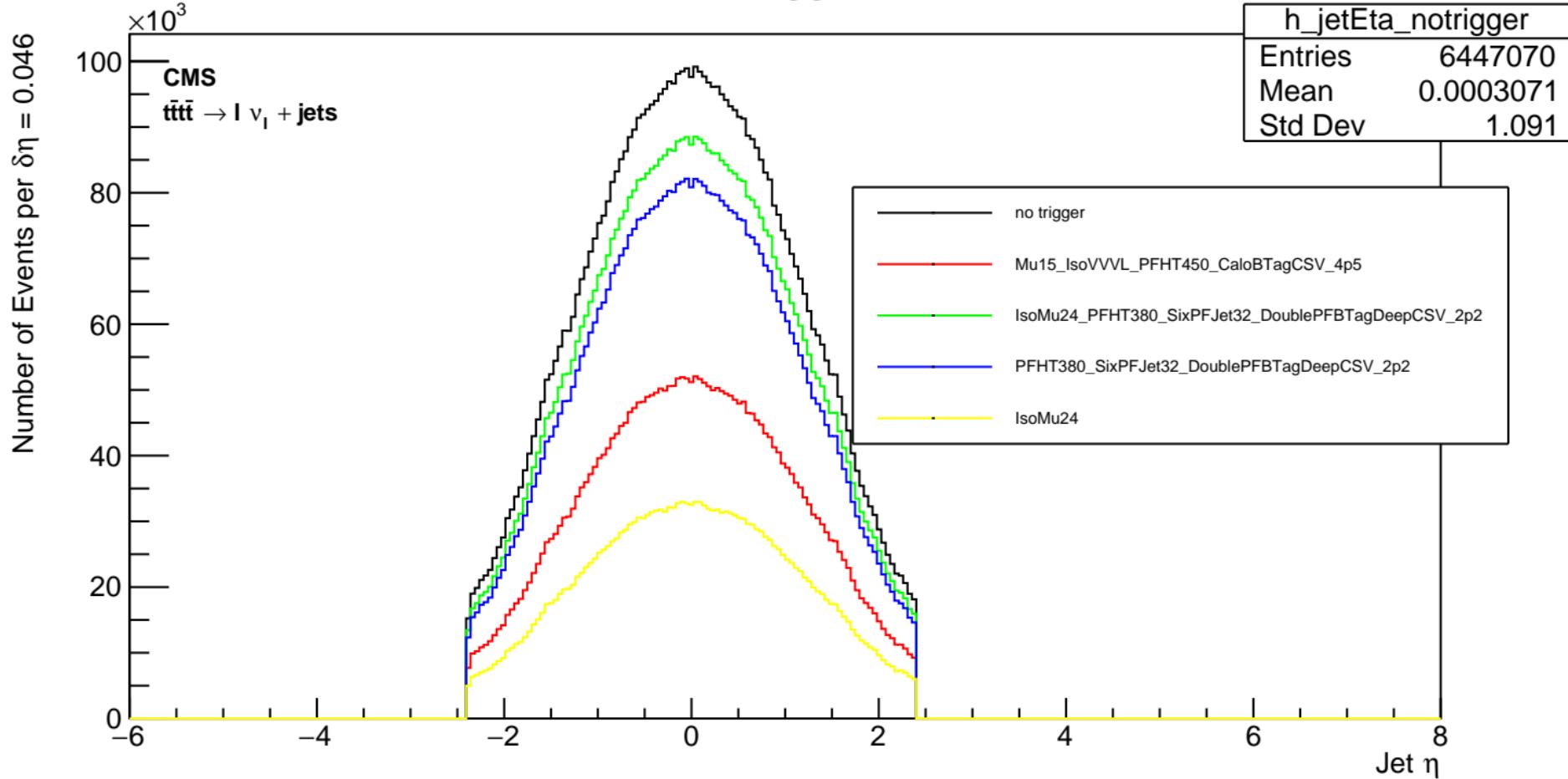
0.88

0.89

0.90

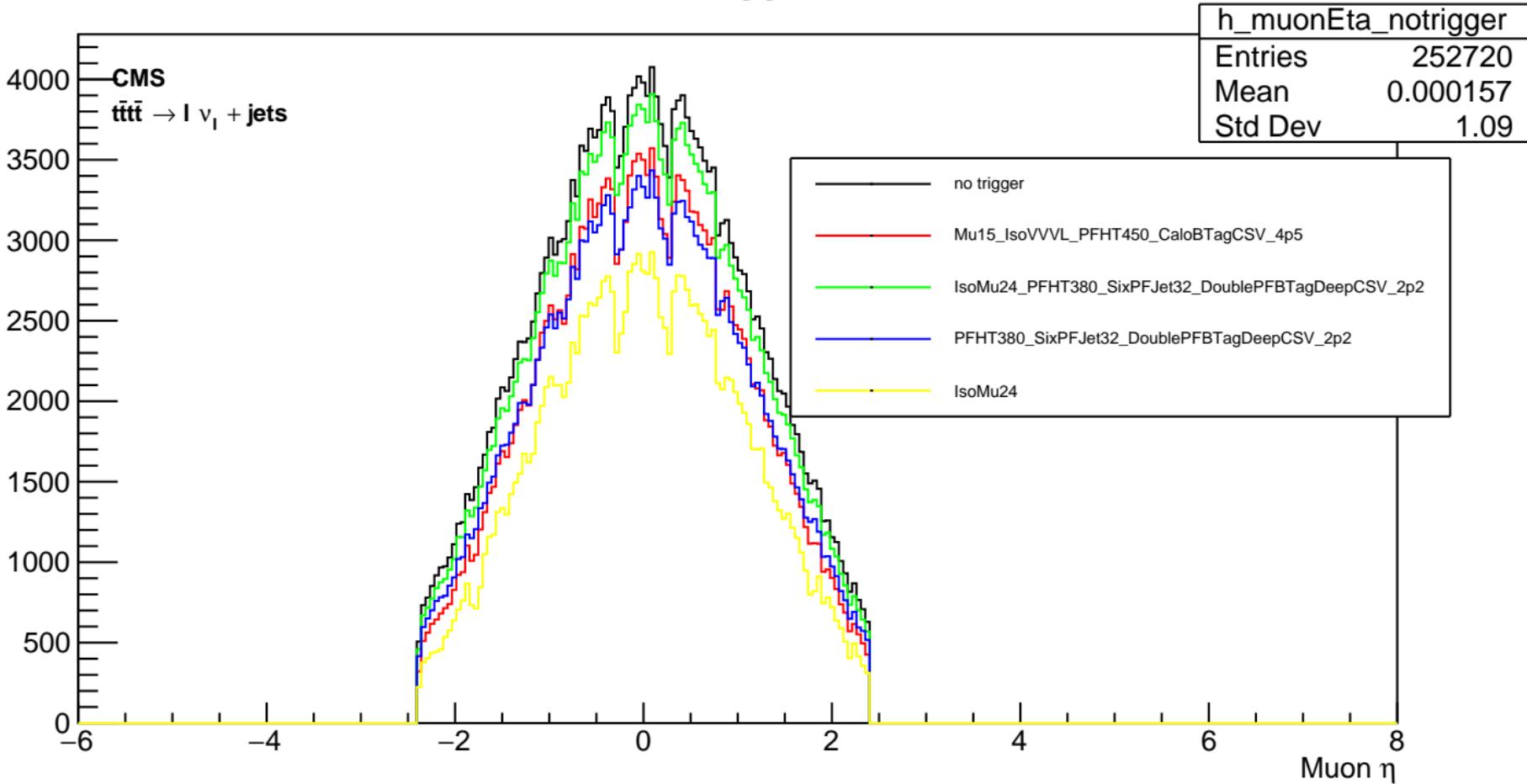
0.91

# no trigger



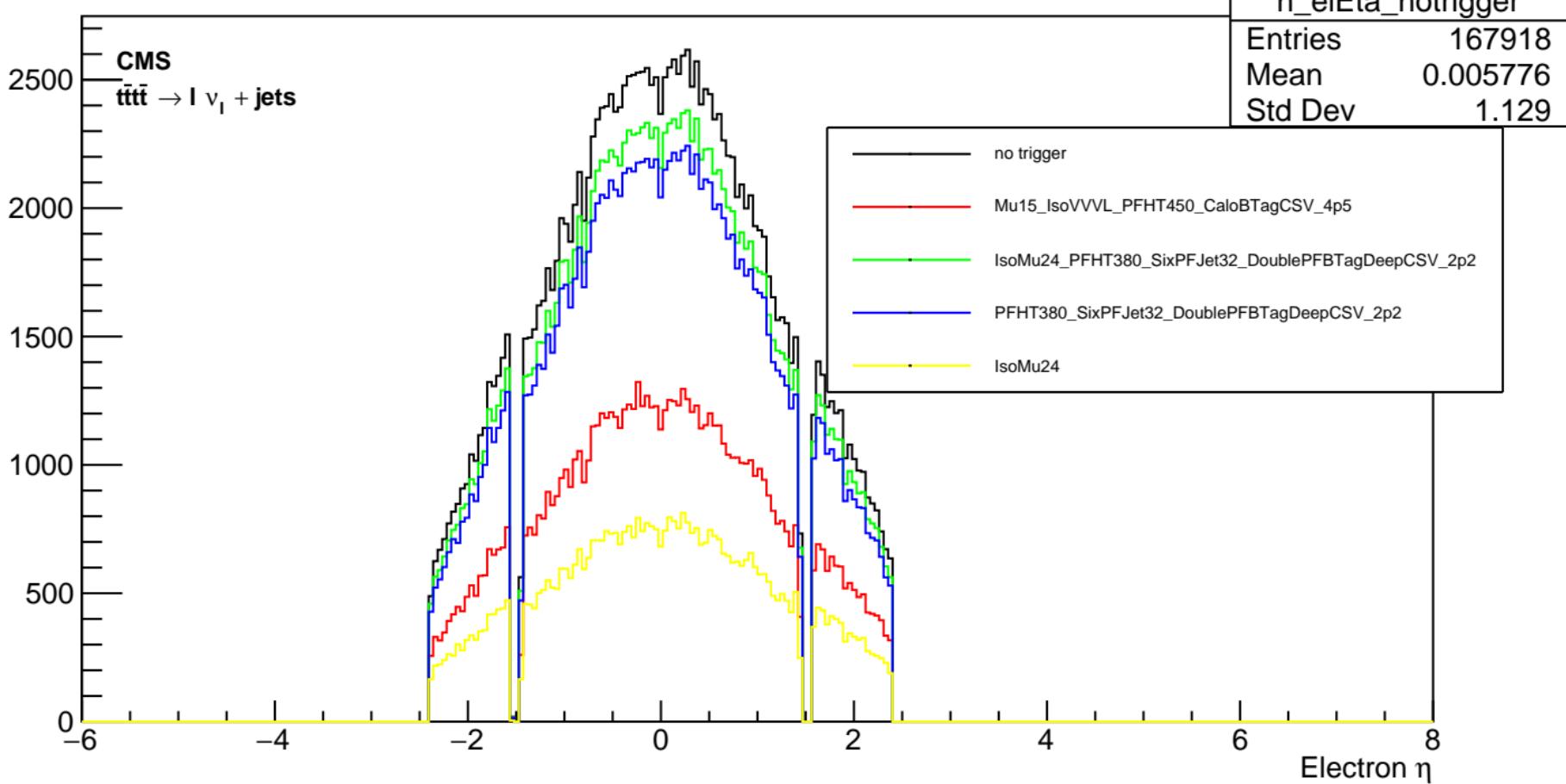
# no trigger

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

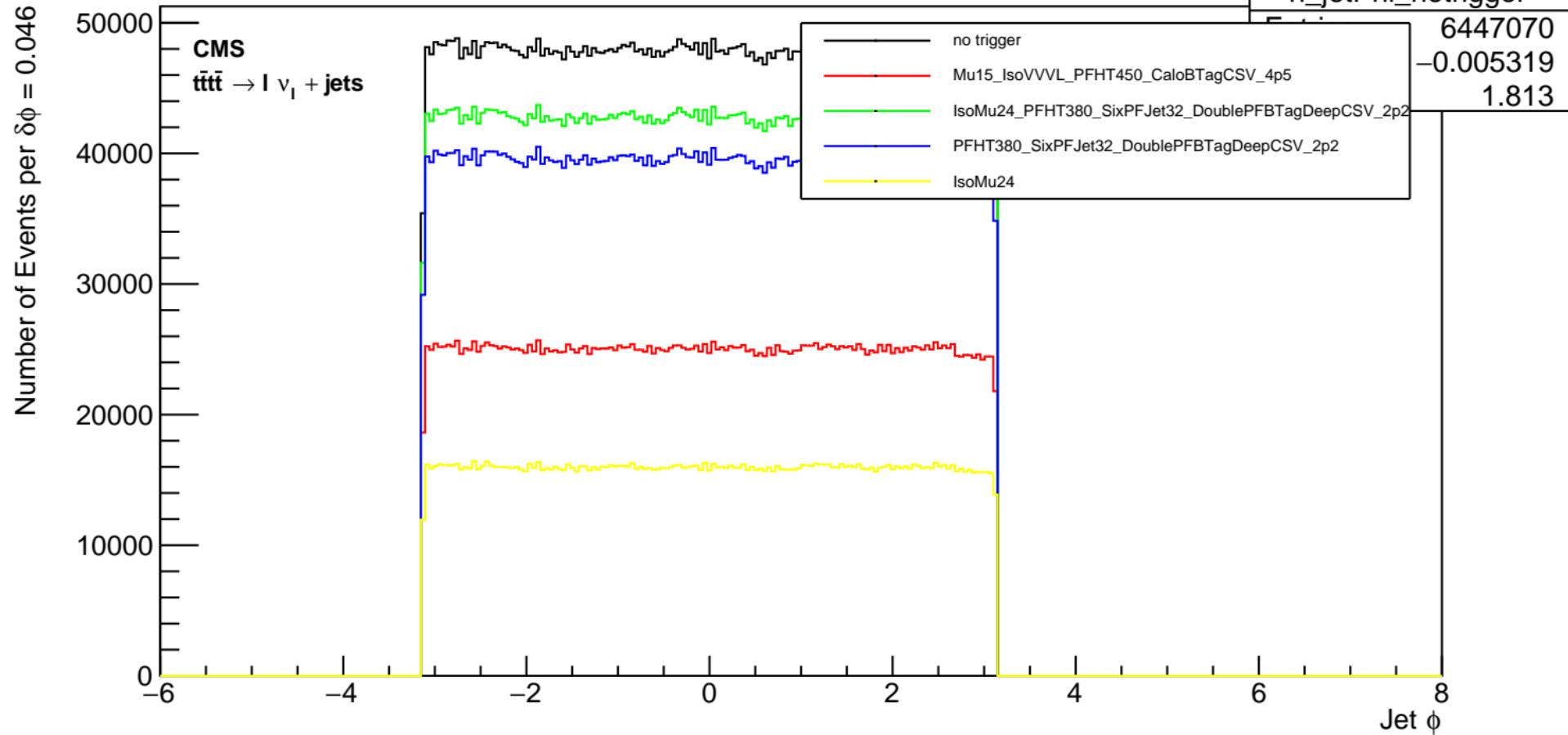


# no trigger

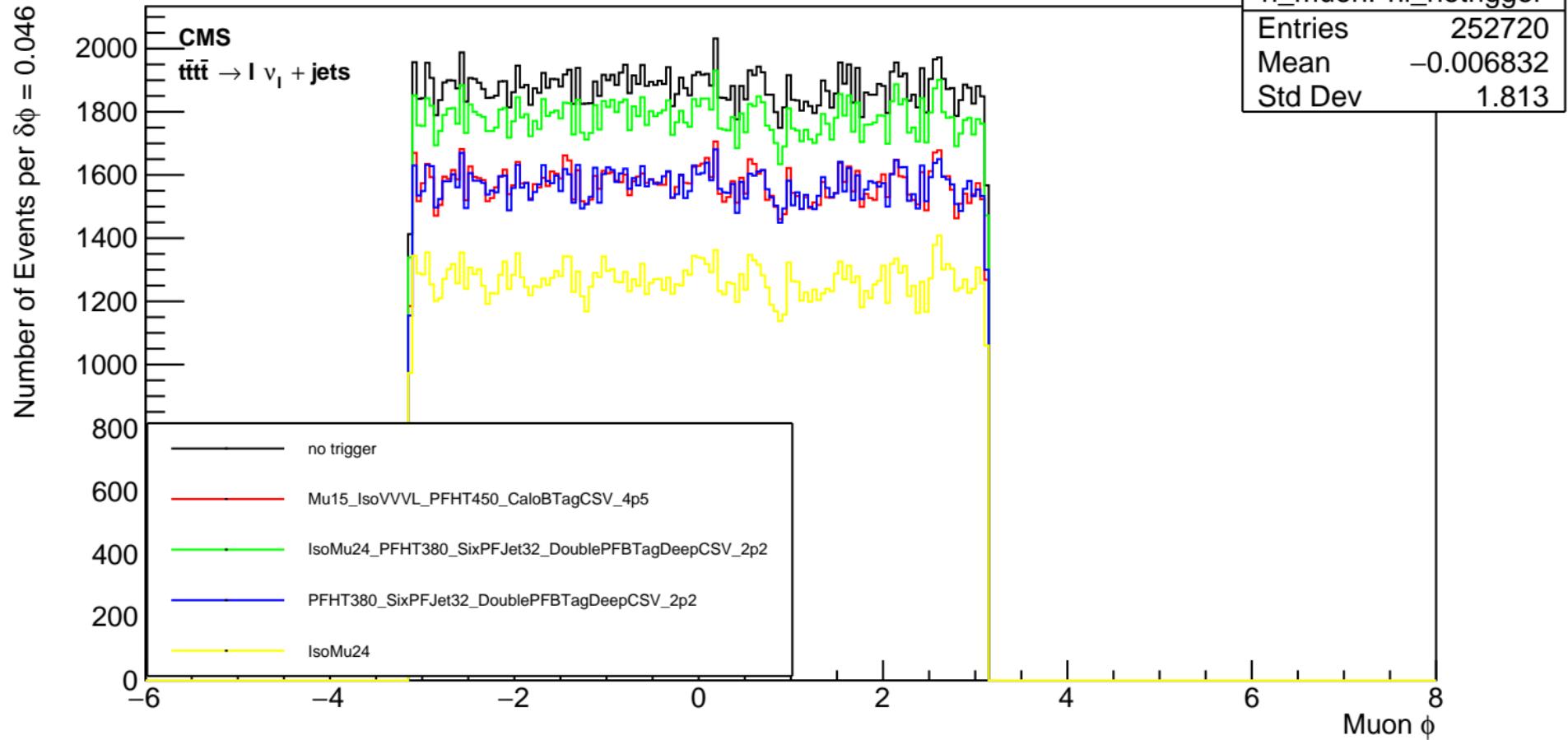
Number of Events per  $\delta\eta = 0.046$



# no trigger

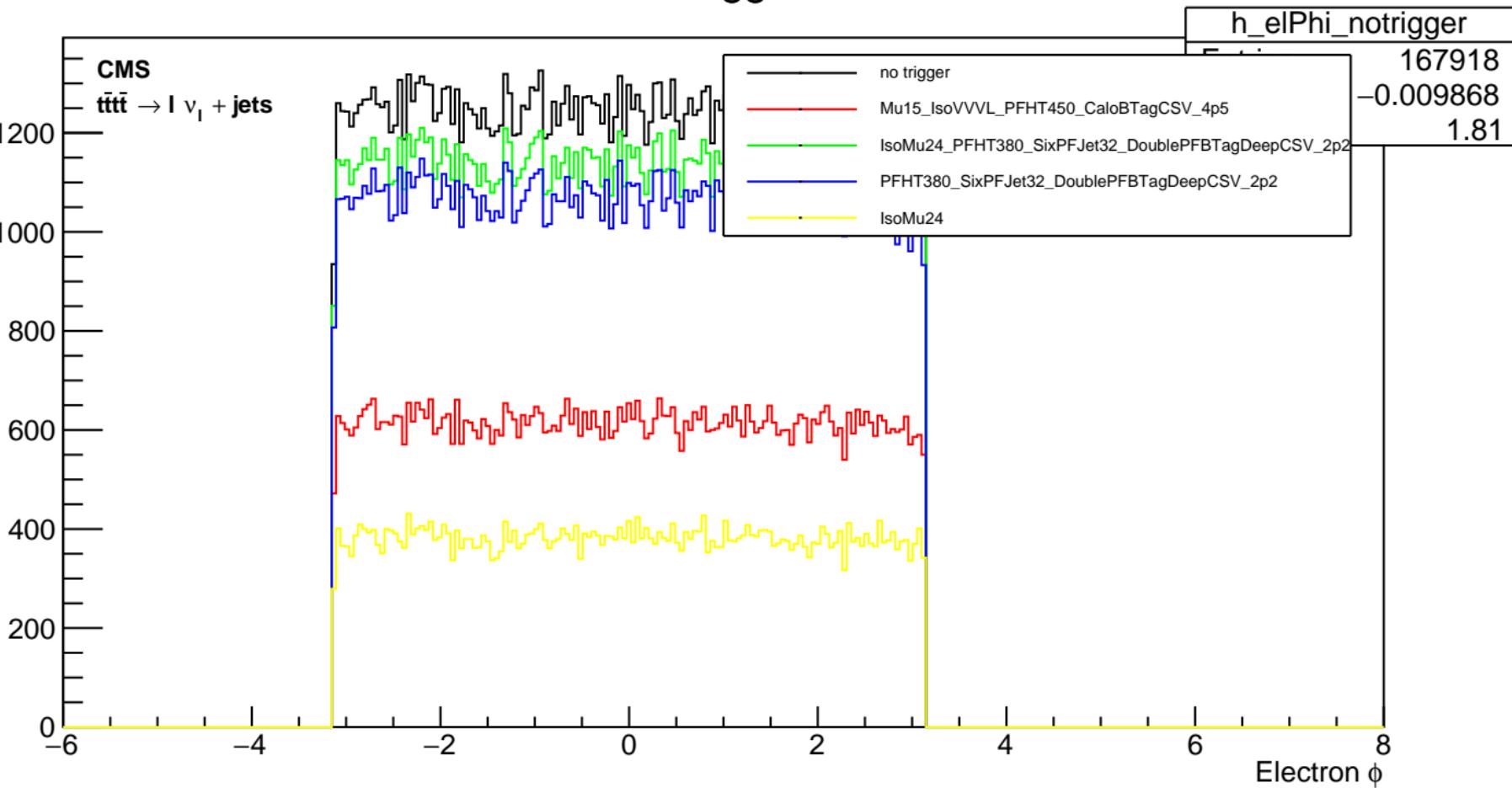


# no trigger

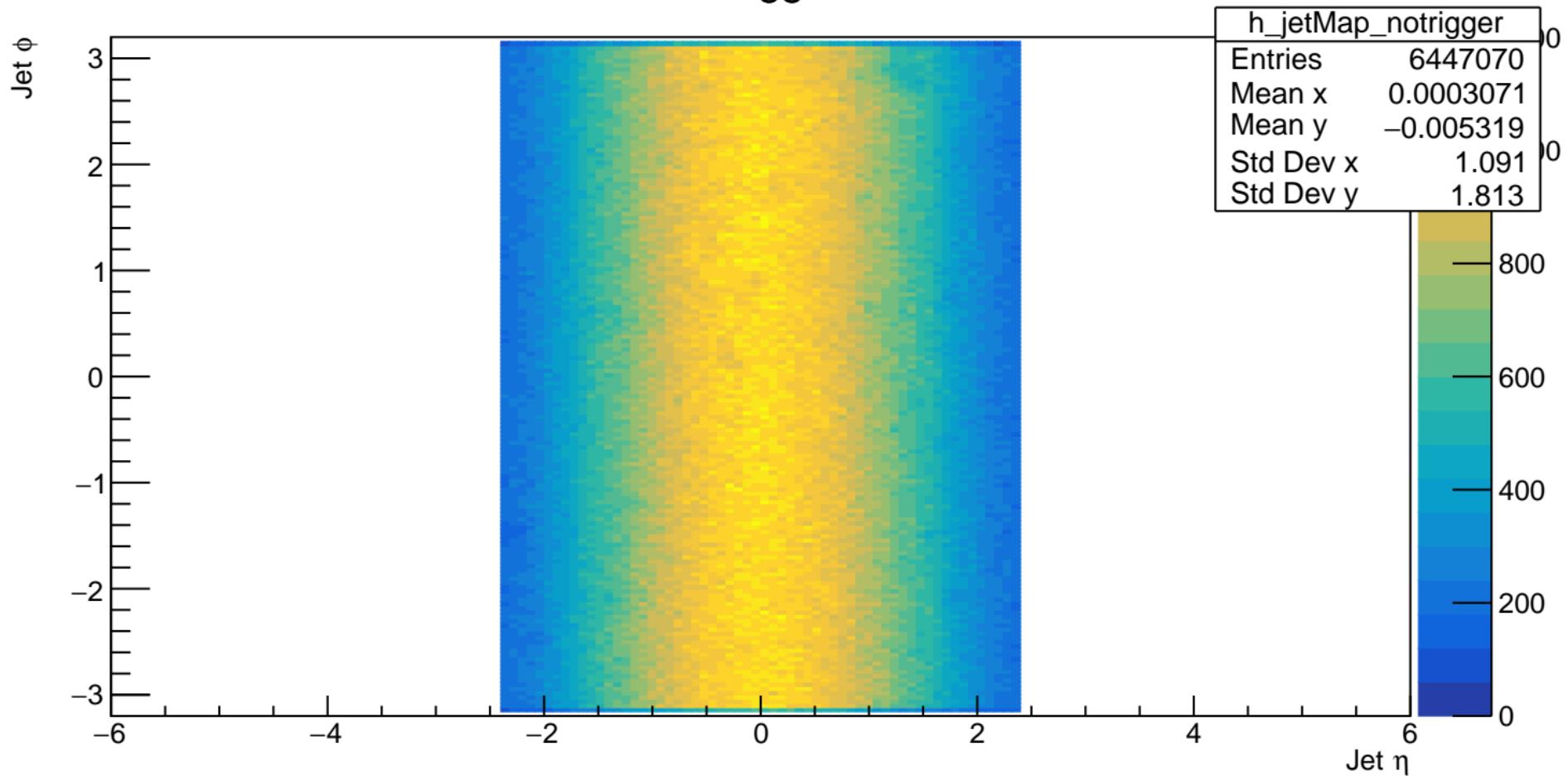


# no trigger

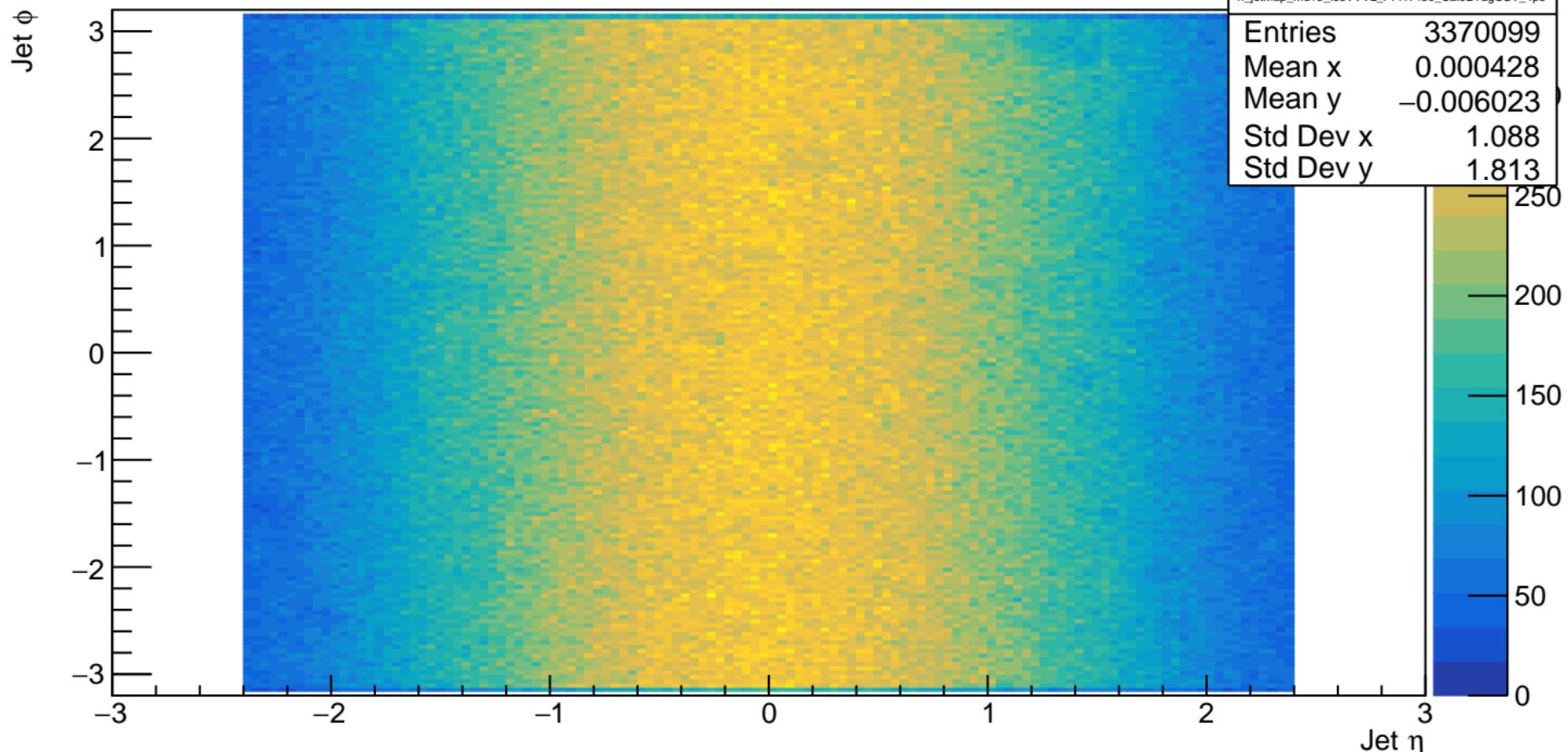
Number of Events per  $\delta\phi = 0.046$



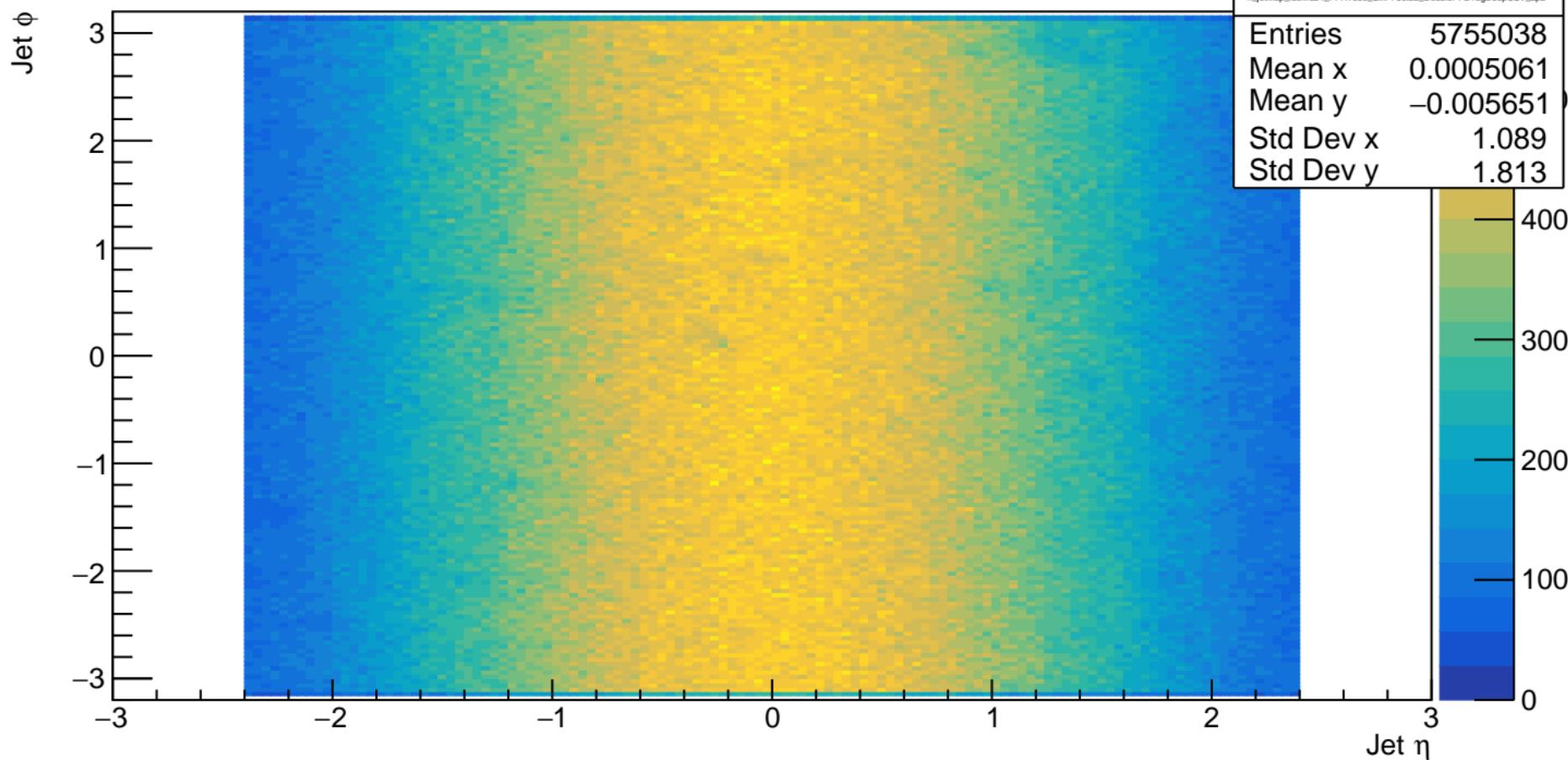
# no trigger



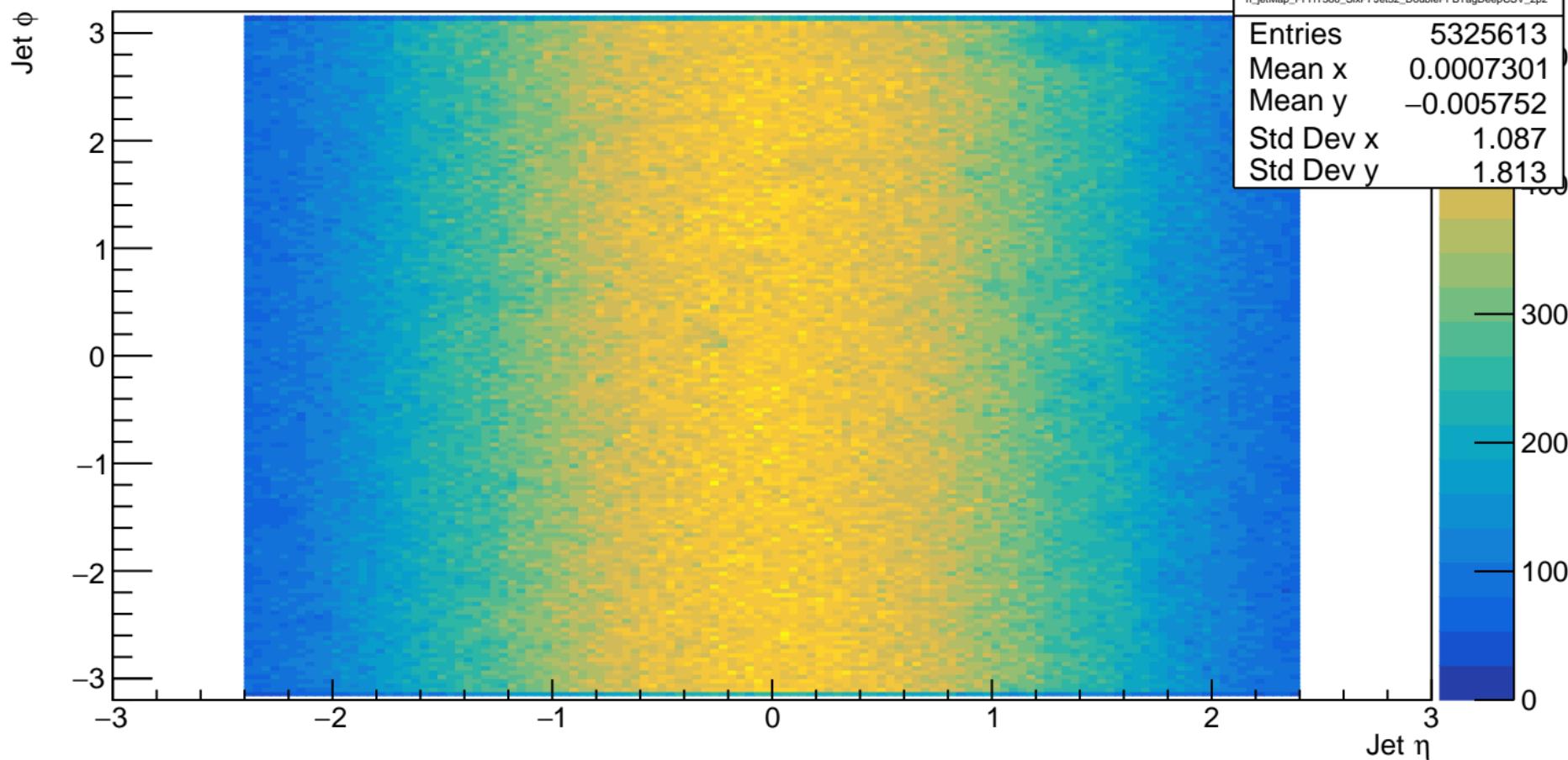
# Mu15\_IsoVVVL\_PFHT450\_CaloBTagCSV\_4p5



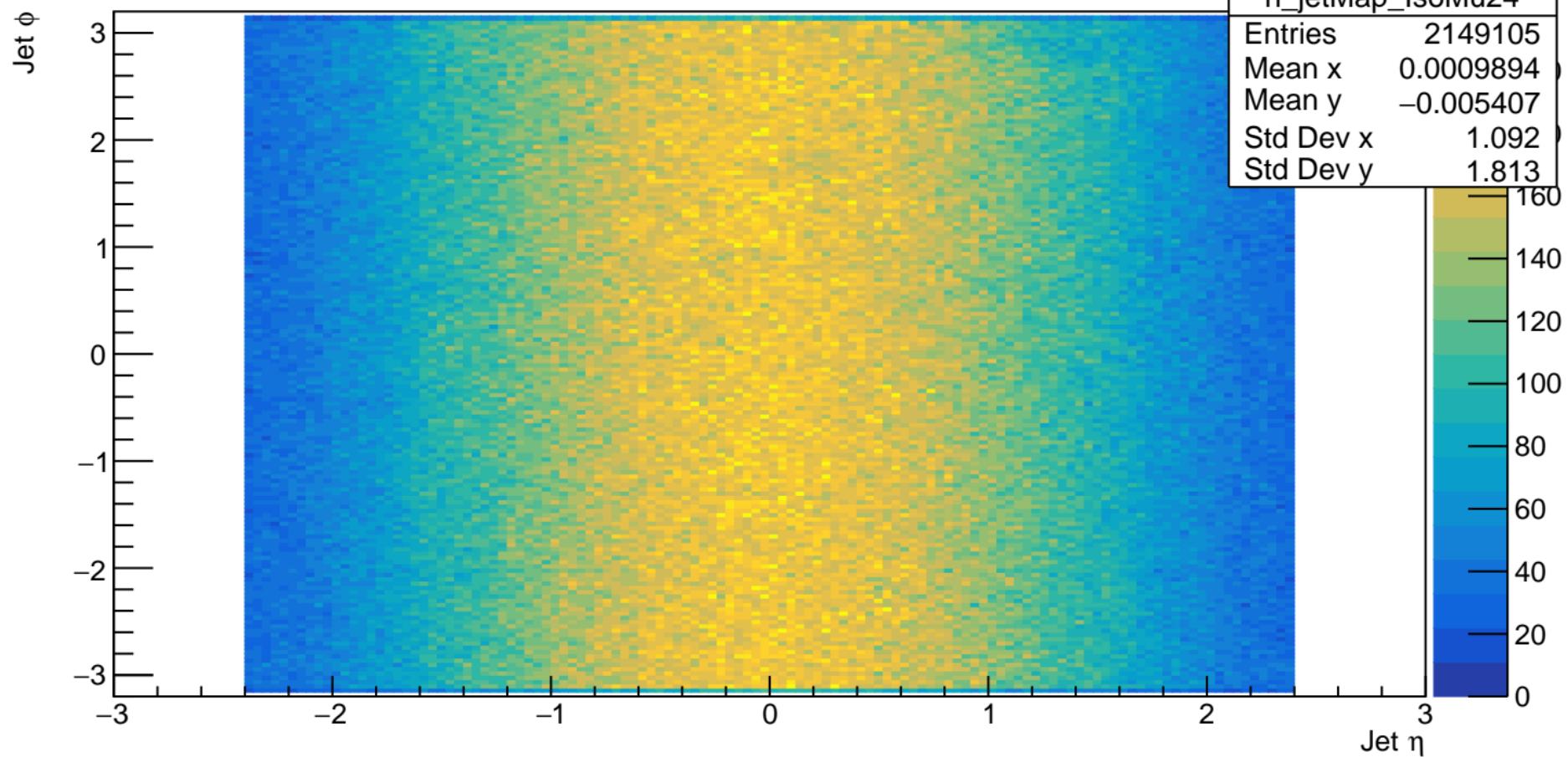
# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



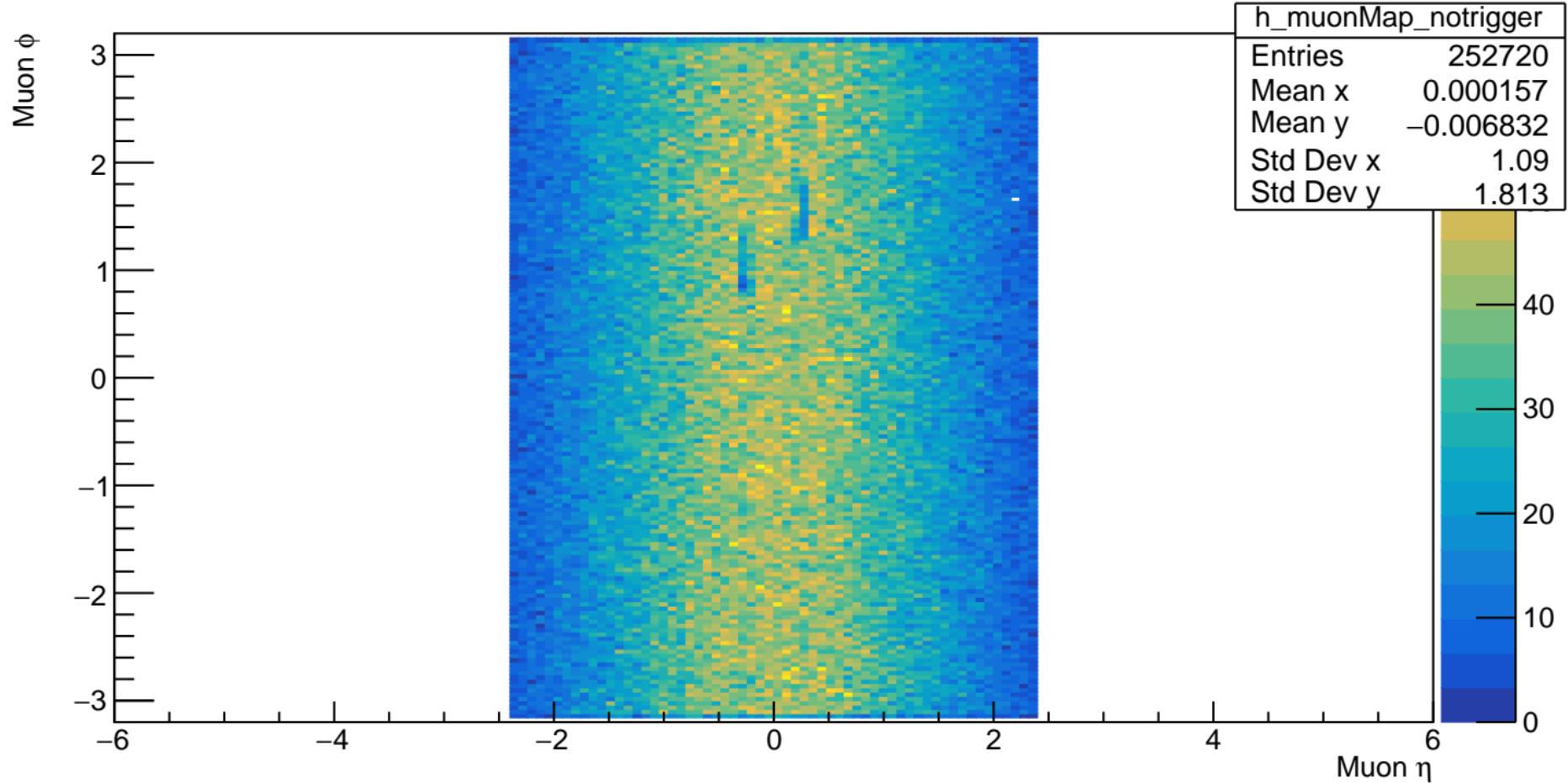
# PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



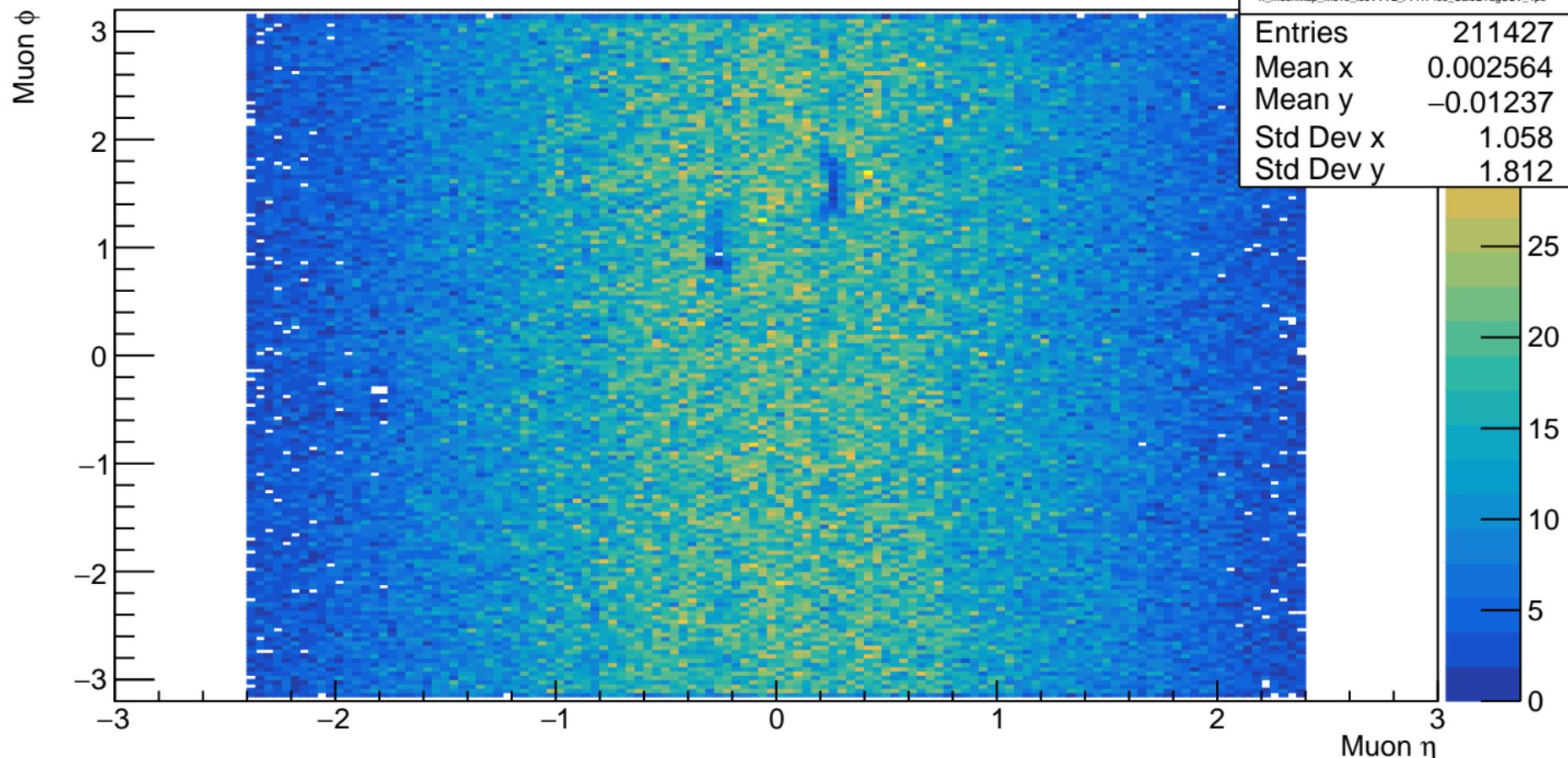
# IsoMu24



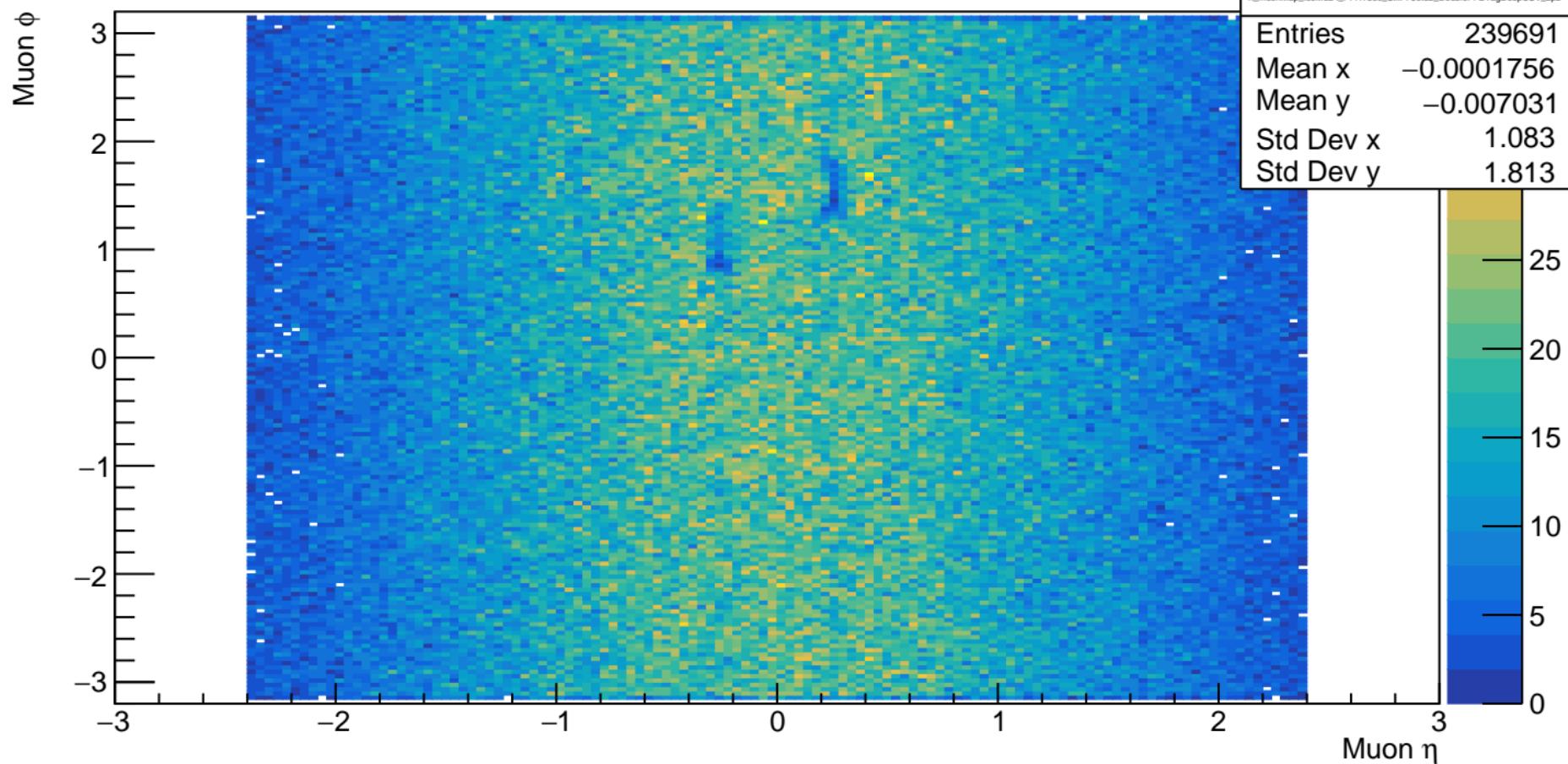
no trigger



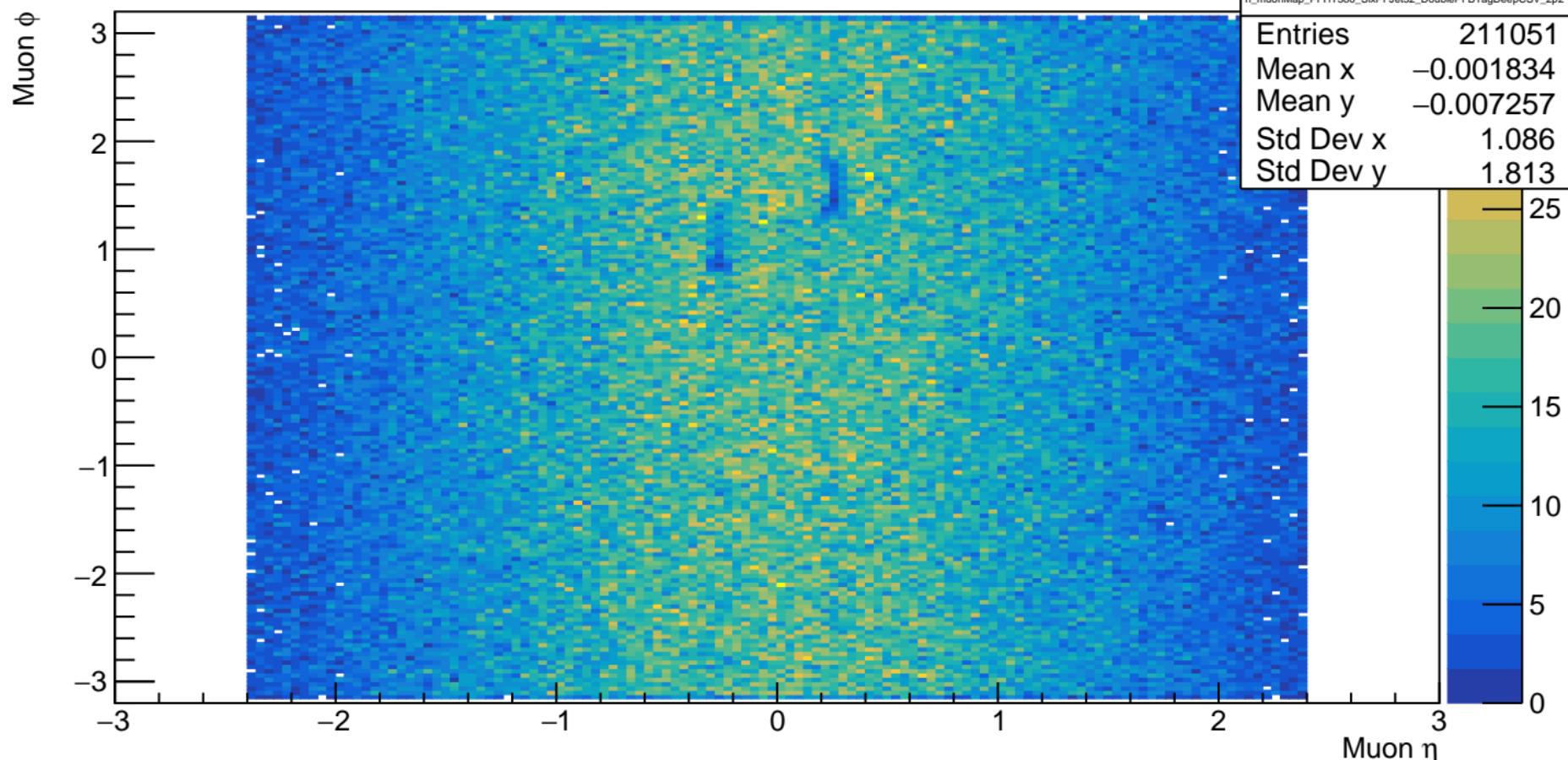
# Mu15\_IsoVVVL\_PFHT450\_CaloBTagCSV\_4p5



# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



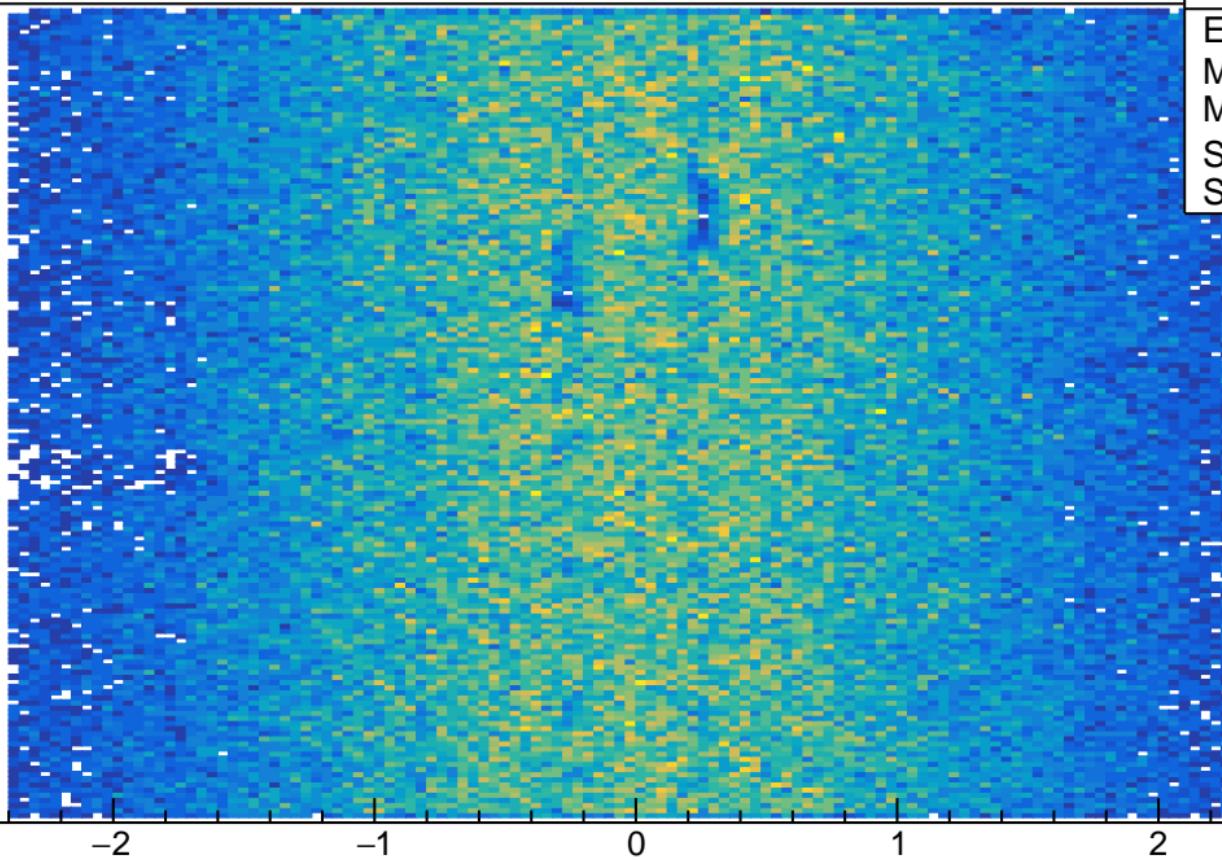
# PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



# IsoMu24

Muon  $\phi$

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

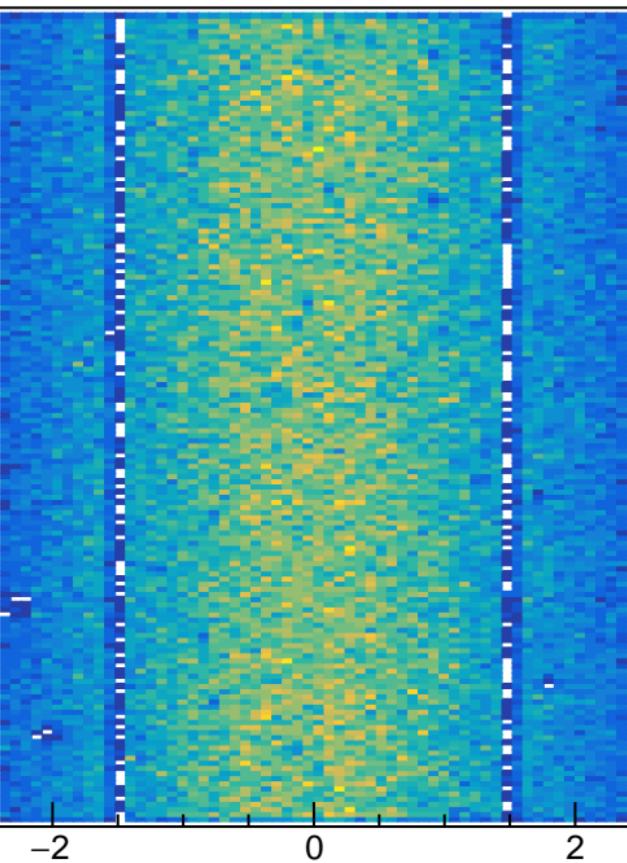
20  
15  
10  
5  
0

Muon  $\eta$

no trigger

Electron  $\phi$

3  
2  
1  
0  
-1  
-2  
-3



Electron  $\eta$

h_elMap_notrigger	
Entries	167918
Mean x	0.005776
Mean y	-0.009868
Std Dev x	1.129
Std Dev y	1.81

35

30

25

20

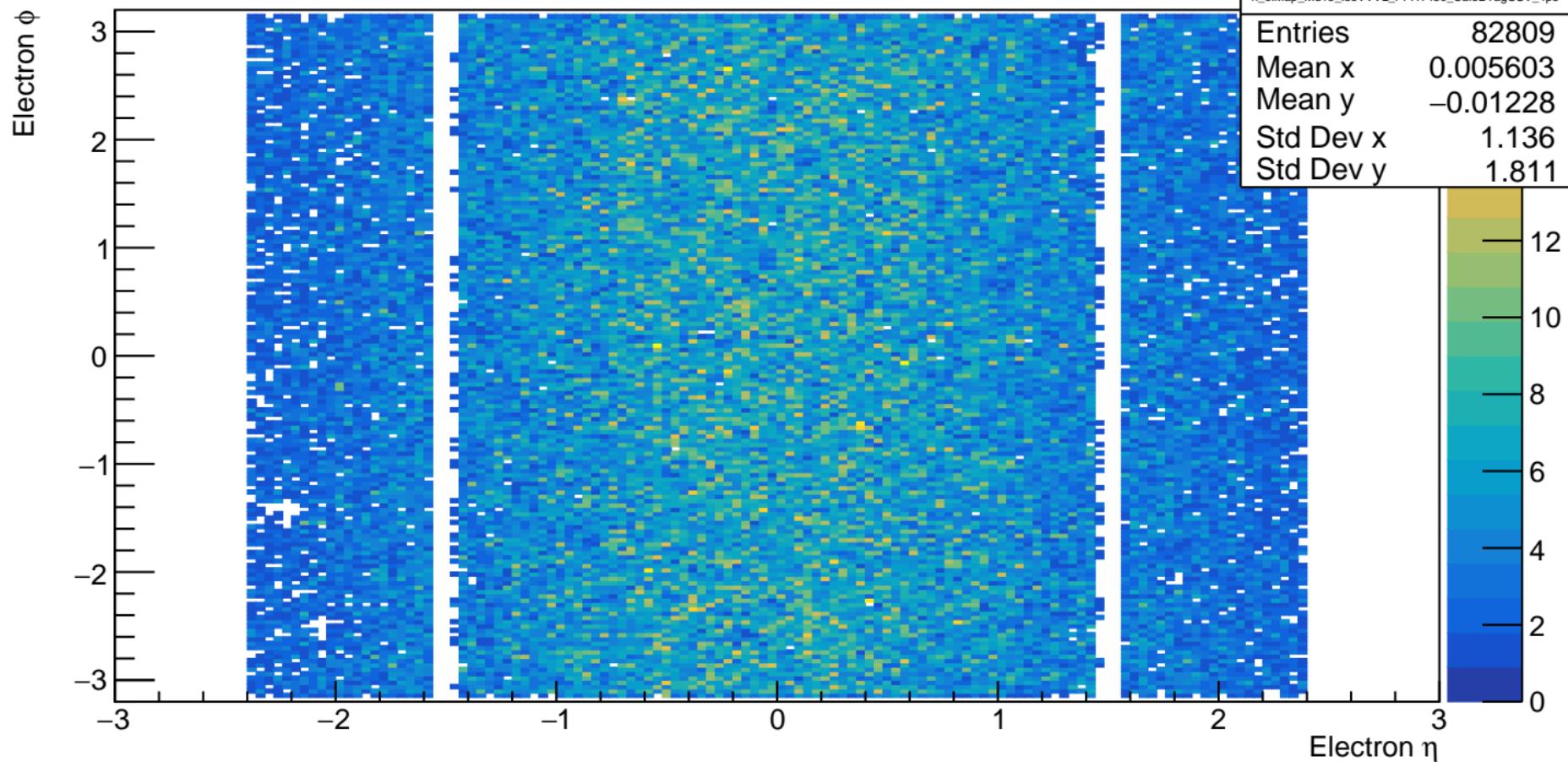
15

10

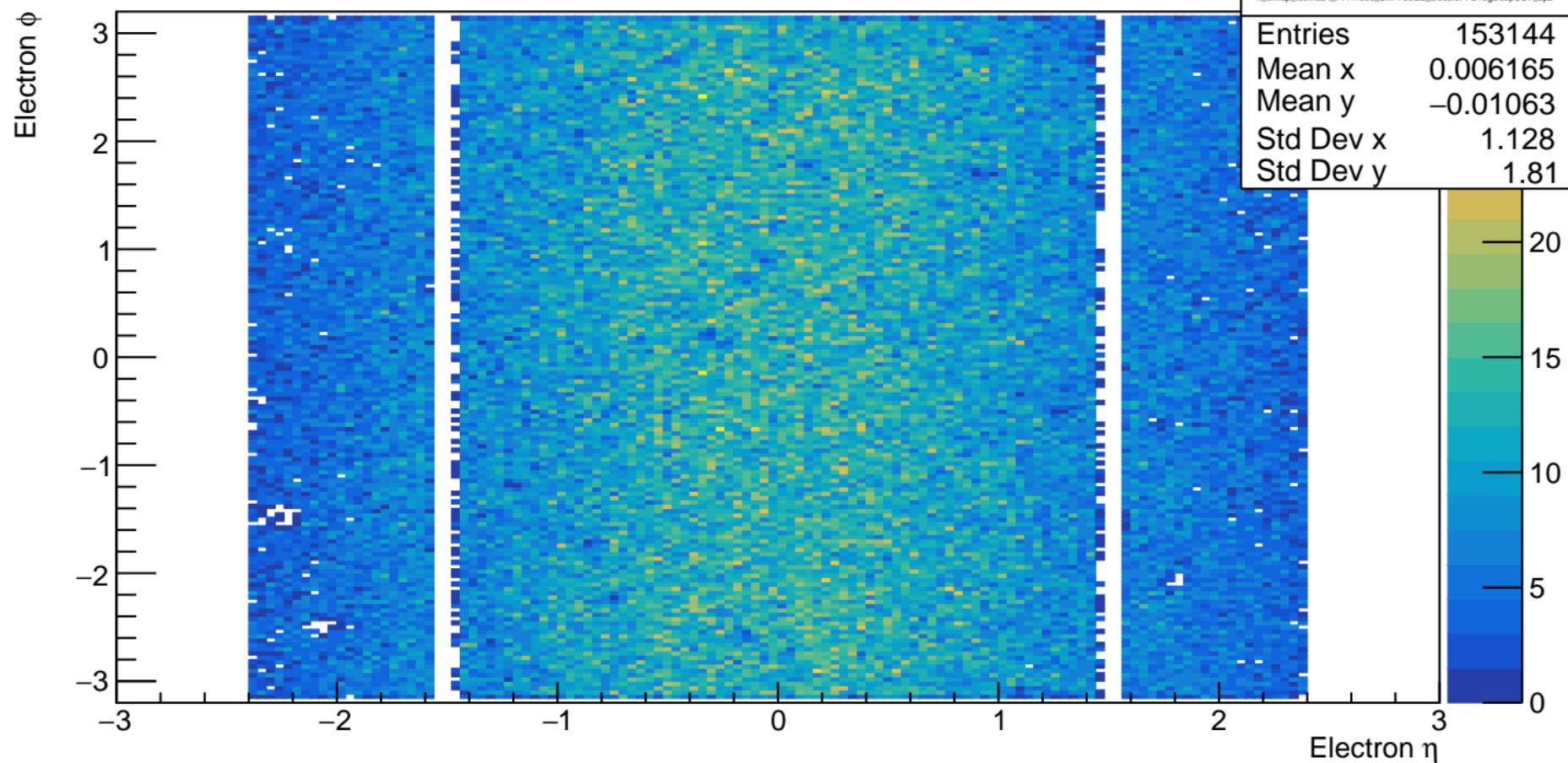
5

0

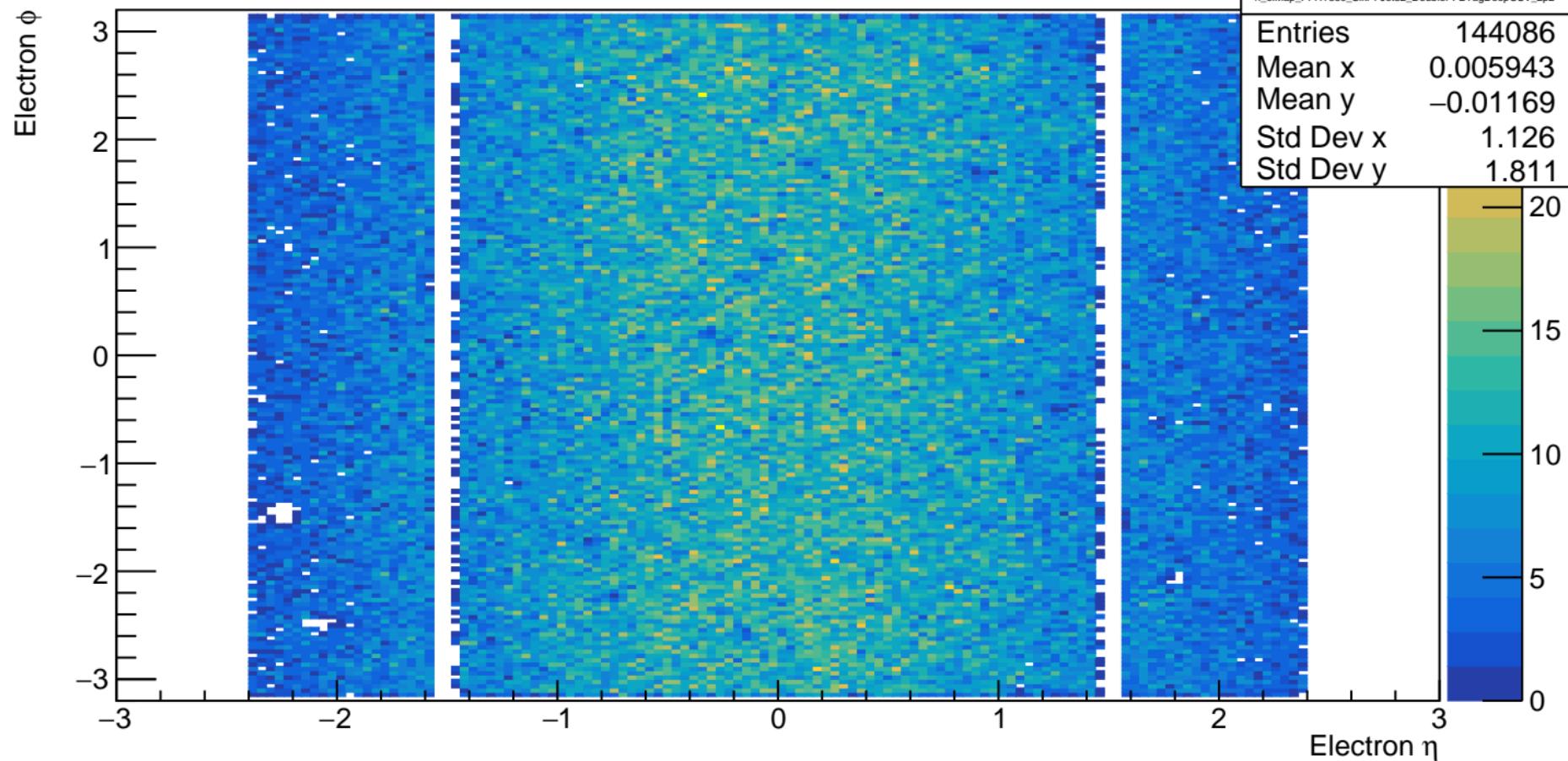
# Mu15\_IsoVVVL\_PFHT450\_CaloBTagCSV\_4p5



# IsoMu24\_PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



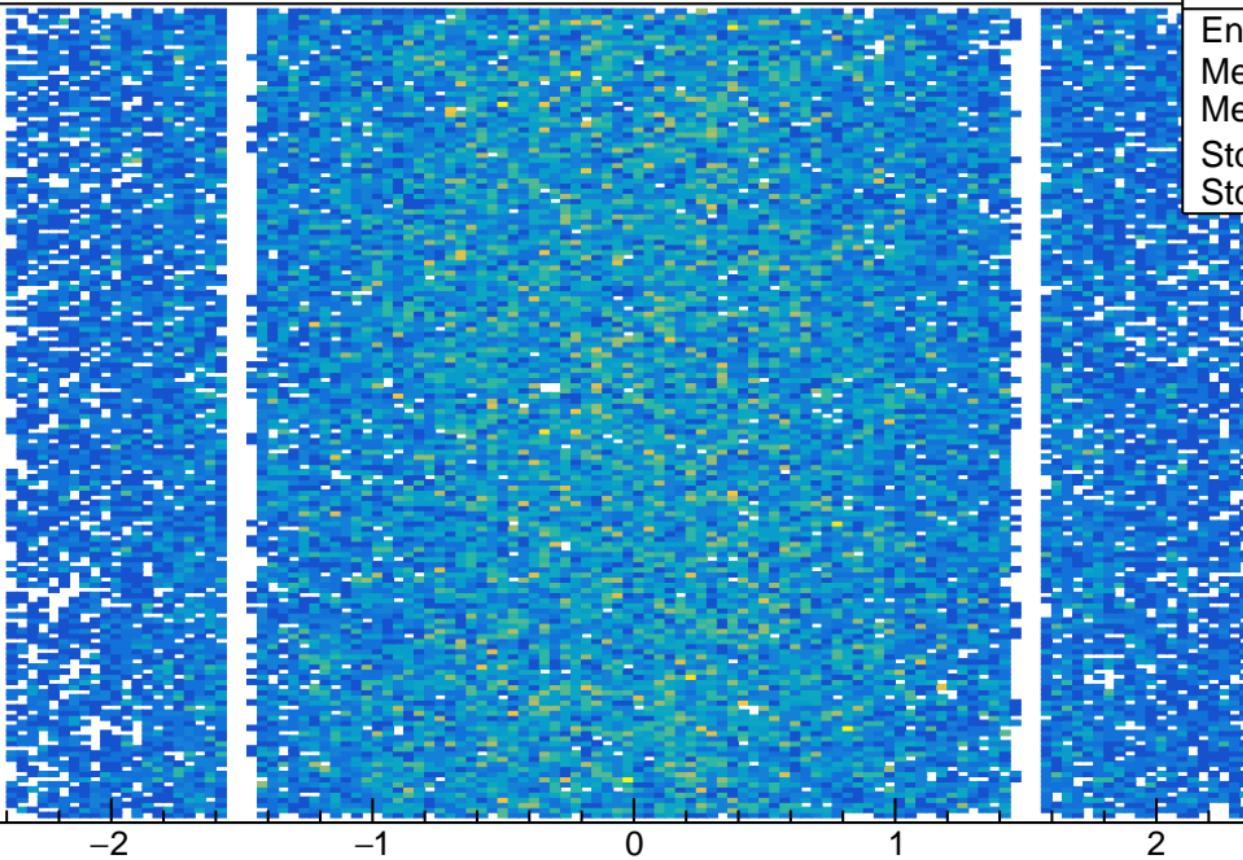
# PFHT380\_SixPFJet32\_DoublePFBTagDeepCSV\_2p2



# IsoMu24

Electron  $\phi$

3  
2  
1  
0  
-1  
-2  
-3

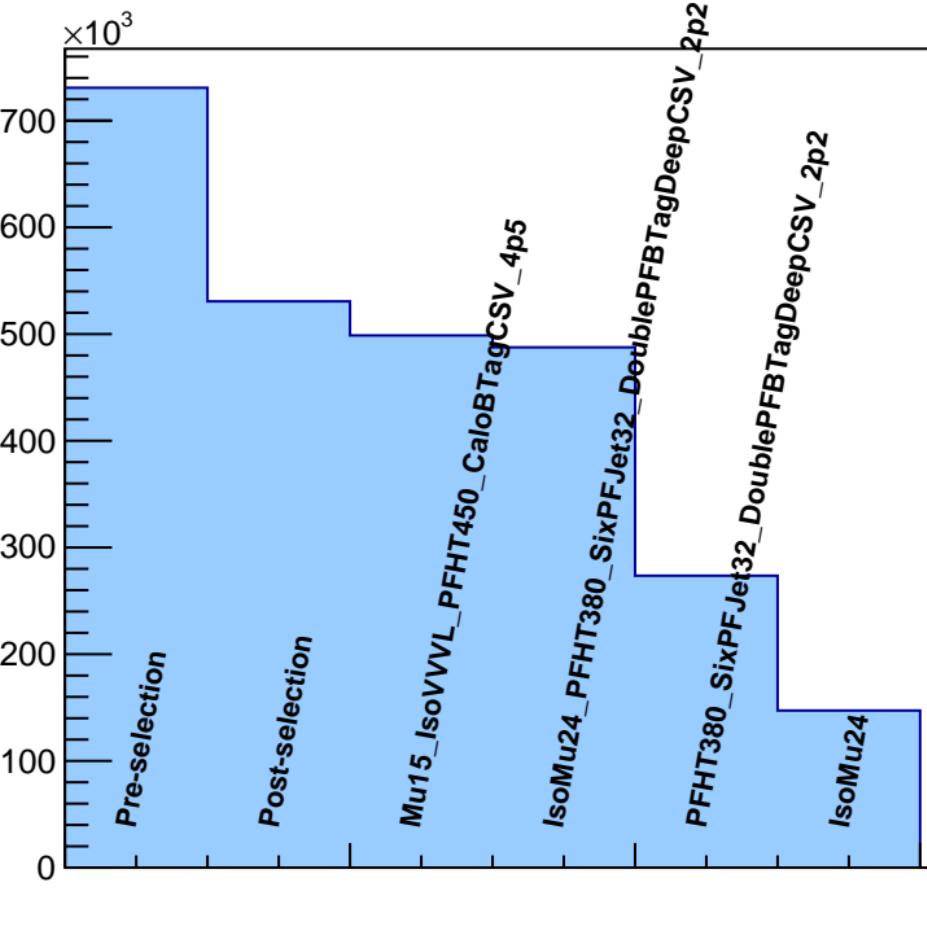


h_elMap_IsoMu24	
Entries	51416
Mean x	0.004233
Mean y	-0.009808
Std Dev x	1.148
Std Dev y	1.81

8  
6  
4  
2  
0

Electron  $\eta$

Total Number of Accepted Events



h_eventsPrg	
Entries	2668567
Mean	1.807
Std Dev	1.532

Cuts and Triggers