

Charged Jet Studies with Bkg

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Files Used:

root://hpceph-xrootd.twgrid.org:1094//cephfs/epic//RECO/26.07.1/epic_craterlake/Bkg_Exact1S_2us/GoldCt/10um/DIS/NC/10x100/minQ2=1/pythia8NCDIS_10x100_minQ2=1_beamEffects_xAngle=-0.025_hiDiv_1.000.eicrecon.edm4eic.root

minQ2=1, minQ2=10, minQ2=100, minQ2=1000

root://epicxrd1.sdcc.bnl.gov:1095//eic/EPIC//RECO/26.07.1/epic_craterlake/DIS/pythia8.316-1.0/NC/noRad/ep/10x100/q2_1to10/pythia8.316-1.0_NC_noRad_ep_10x100_q2_1to10_run000.0000.eicrecon.edm4eic.root

Q2_1to10, q2_10to100, q2_100to1000, q2_1000toINF

- Jet Selection

- Charged Jets:
 - Reconstructed Charged Jets
 - Generated Charged Jets
 - Electron/Positron removed using true PID
 - Track, particle min pt = 0.2
 - Track, particle max pt = 100.0
 - Jet min pt = 1.0
 - Single Track Jet Removed
- anti- k_T with $R = 1.0$

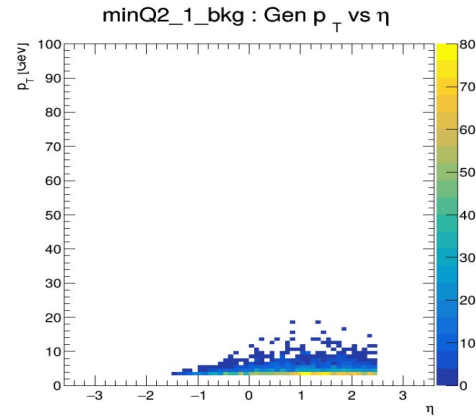
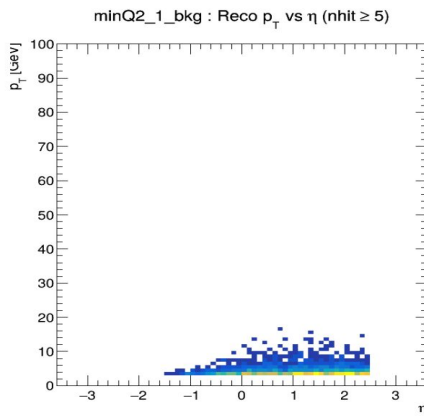
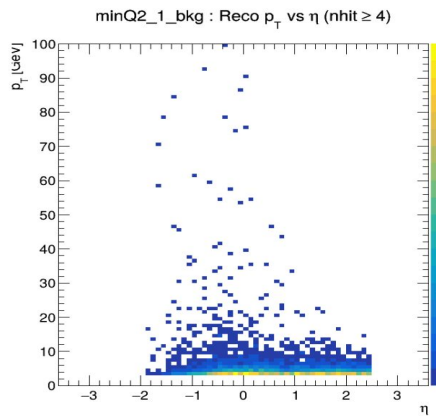
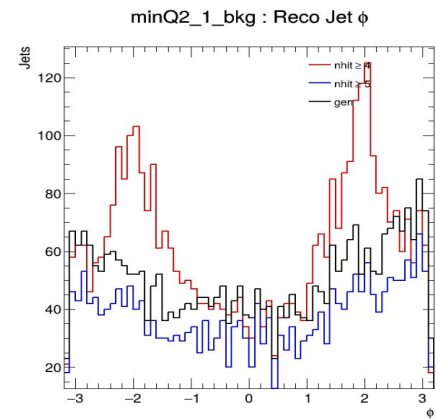
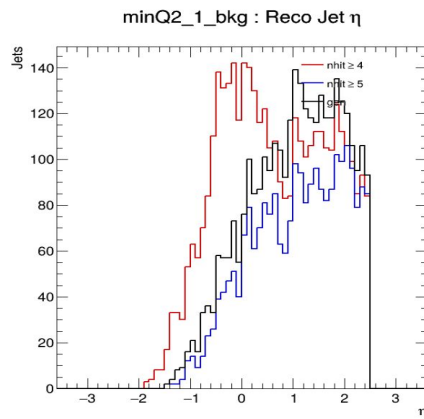
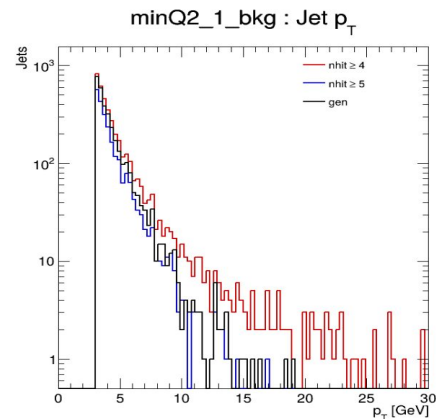
Plots Included:

- Jet p_T , Jet η , Jet ϕ (for Q^2 1 to 1000)
- Track Purity and Track efficiency
(for $\eta < -2$, $-2 < \eta < 2$ and $\eta > 2$)
- Jet Efficiency & Fake Rate
- JES, JER, ϕ and η resolution

Some Technical Details:

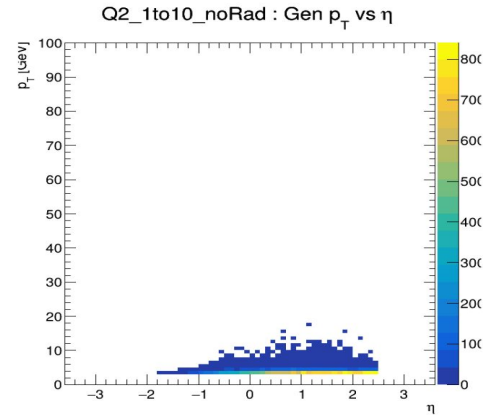
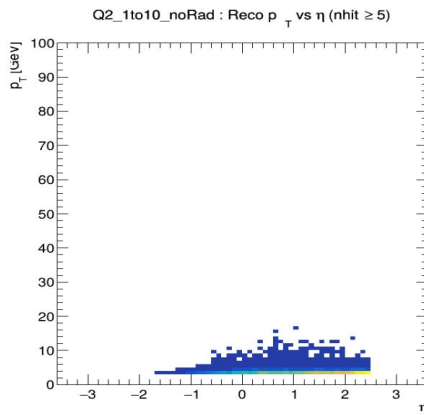
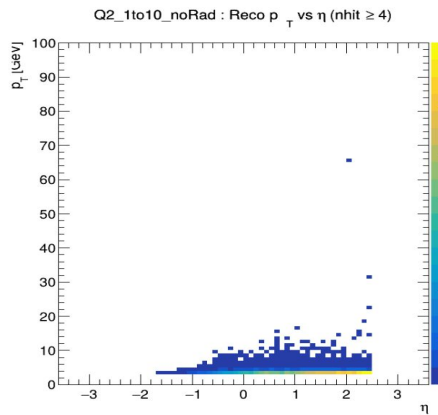
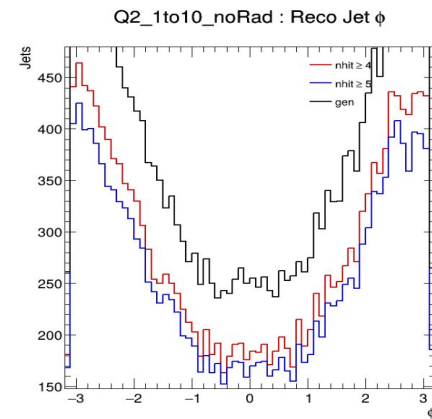
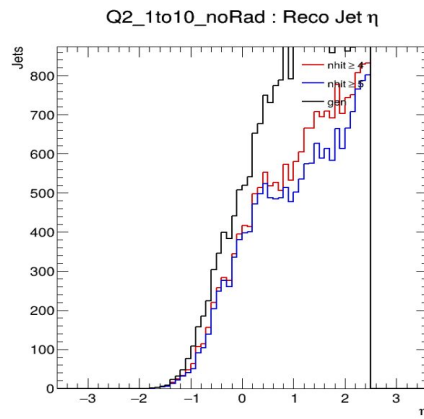
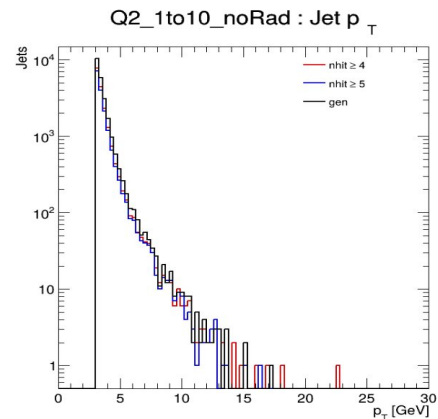
- Jet Matching: $\Delta R < 1$
- Track Matching: TrackPartAssocWeight

Min Q2 1 Bkg Jet $p_T > 3$ GeV, $-2 < \eta < 2.5$



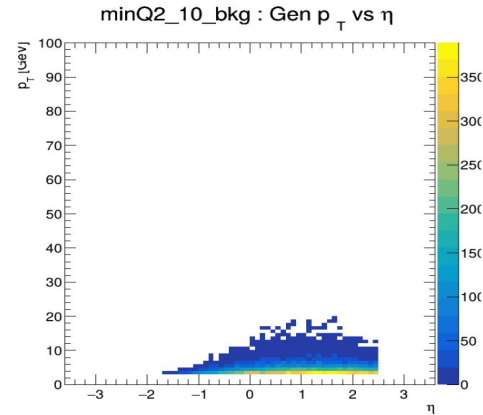
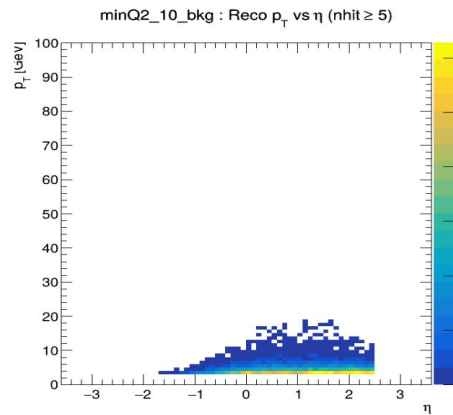
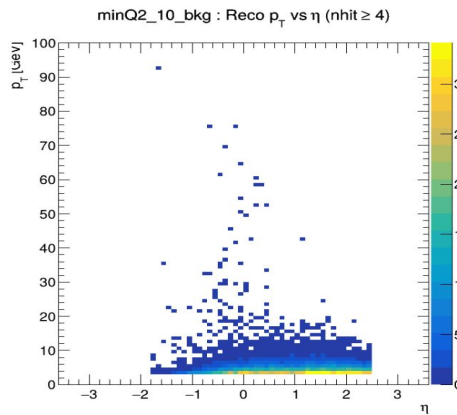
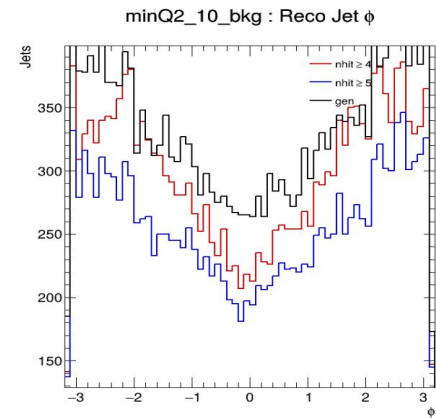
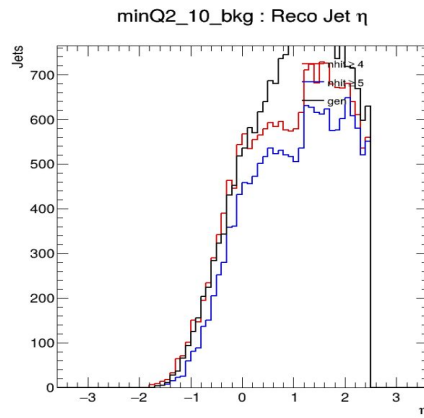
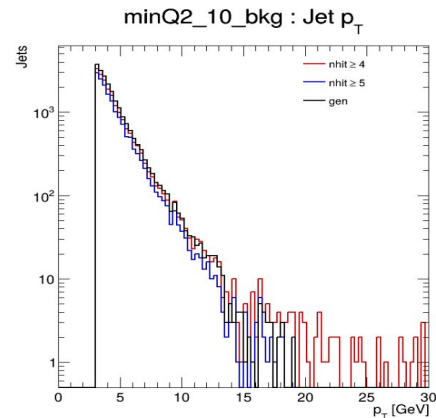
More Reco Jets with 4 hit tracks at $\eta \sim -0.3$, and $\phi \sim \pm 2$

Q2 1 to 10 No Bkg Jet $p_T > 3$ GeV, $-2 < \eta < 2.5$



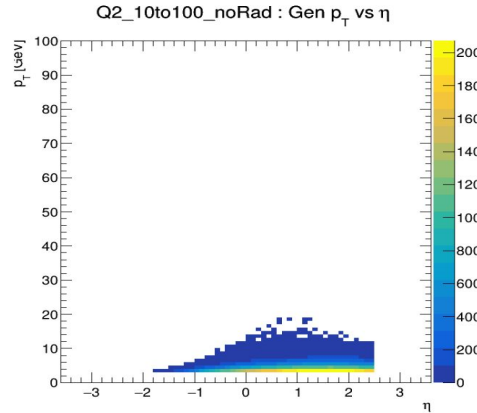
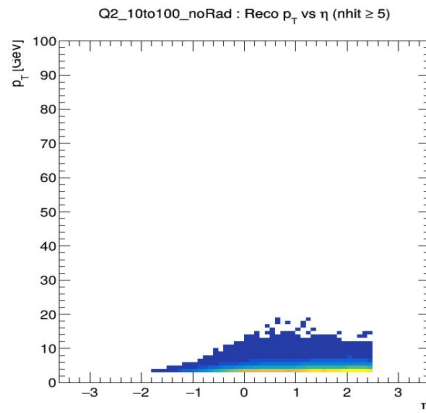
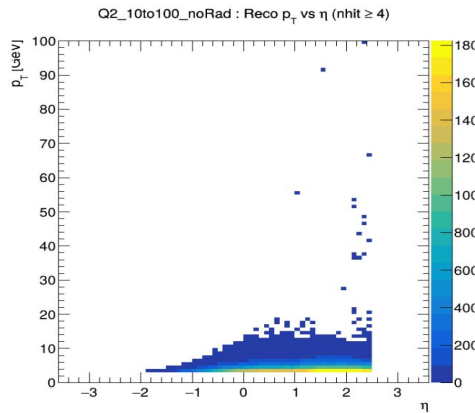
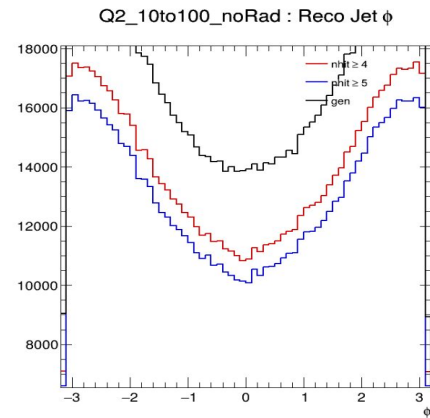
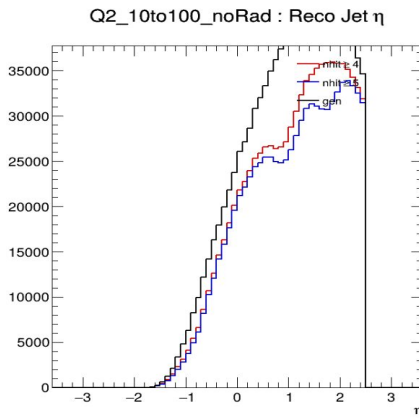
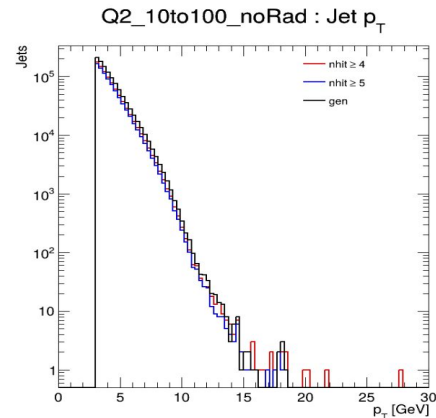
Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

Min Q2 10 Bkg Jet $p_T > 3$ GeV, $-2 < \eta < 2.5$



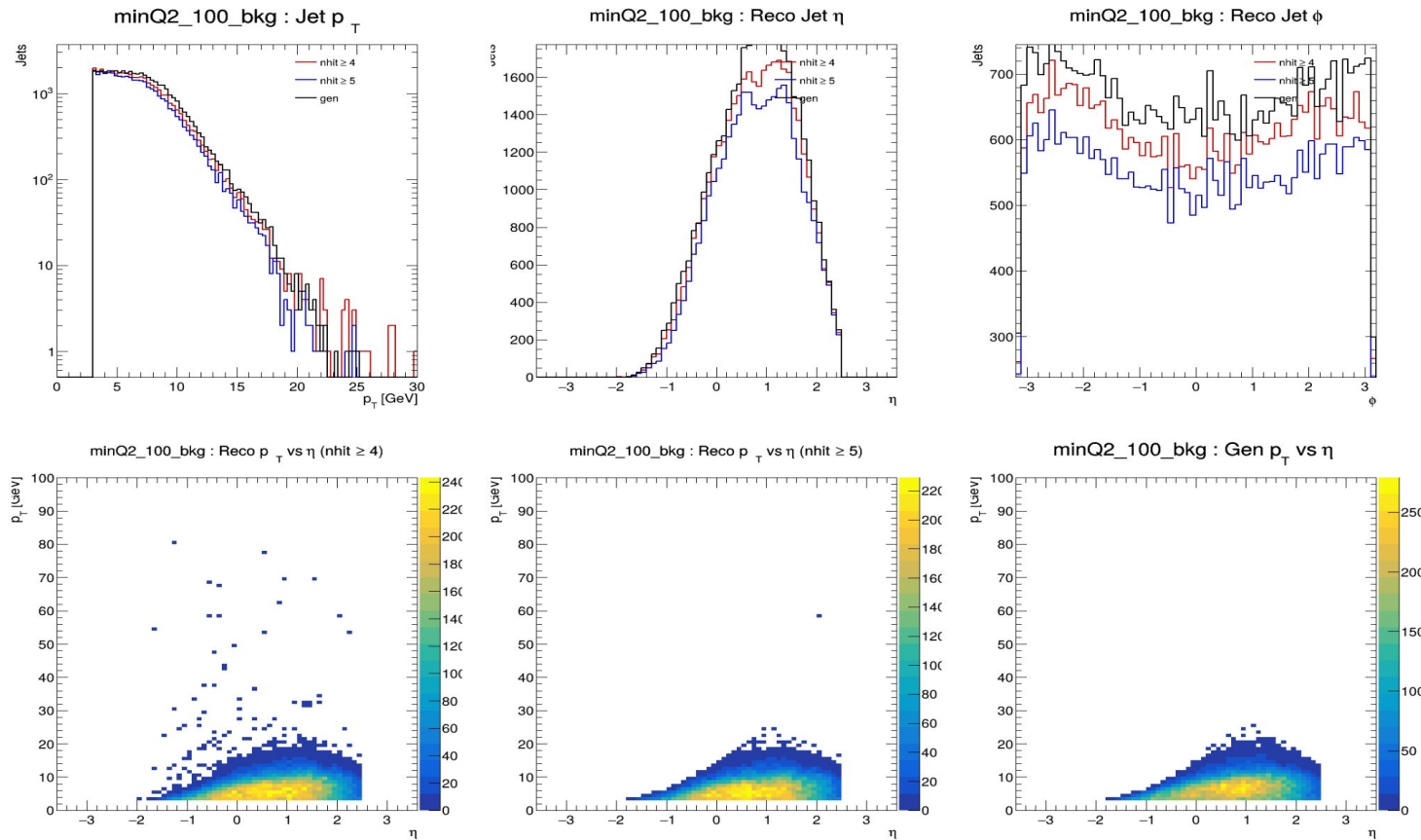
Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

Min Q2 10 to 100 No Bkg Jet pt > 3 GeV, -2 < η < 2.5



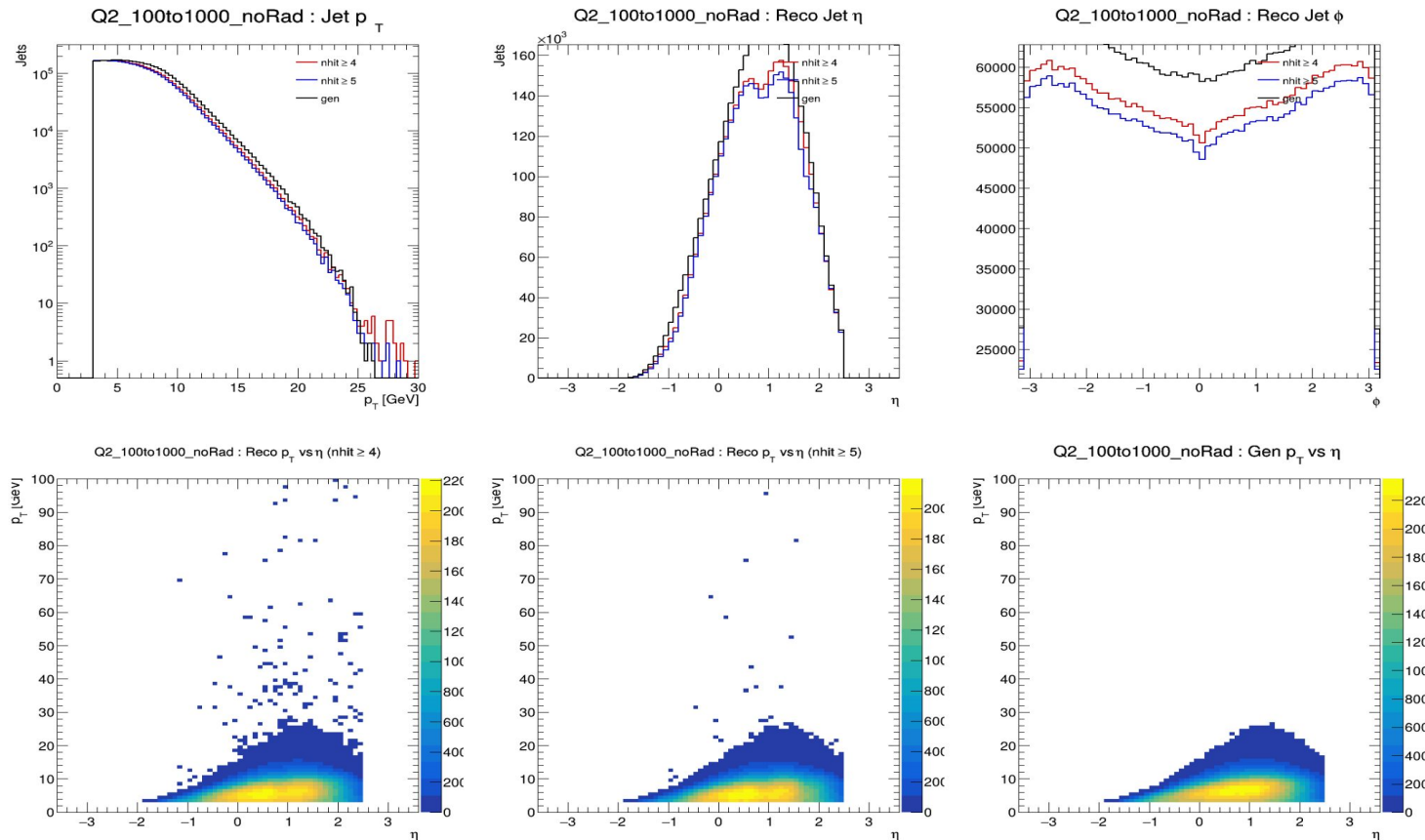
Some shape difference at $\eta \sim 1.8$

Min Q2 100 Bkg Jet pt > 3 GeV, -2 < η < 2.5



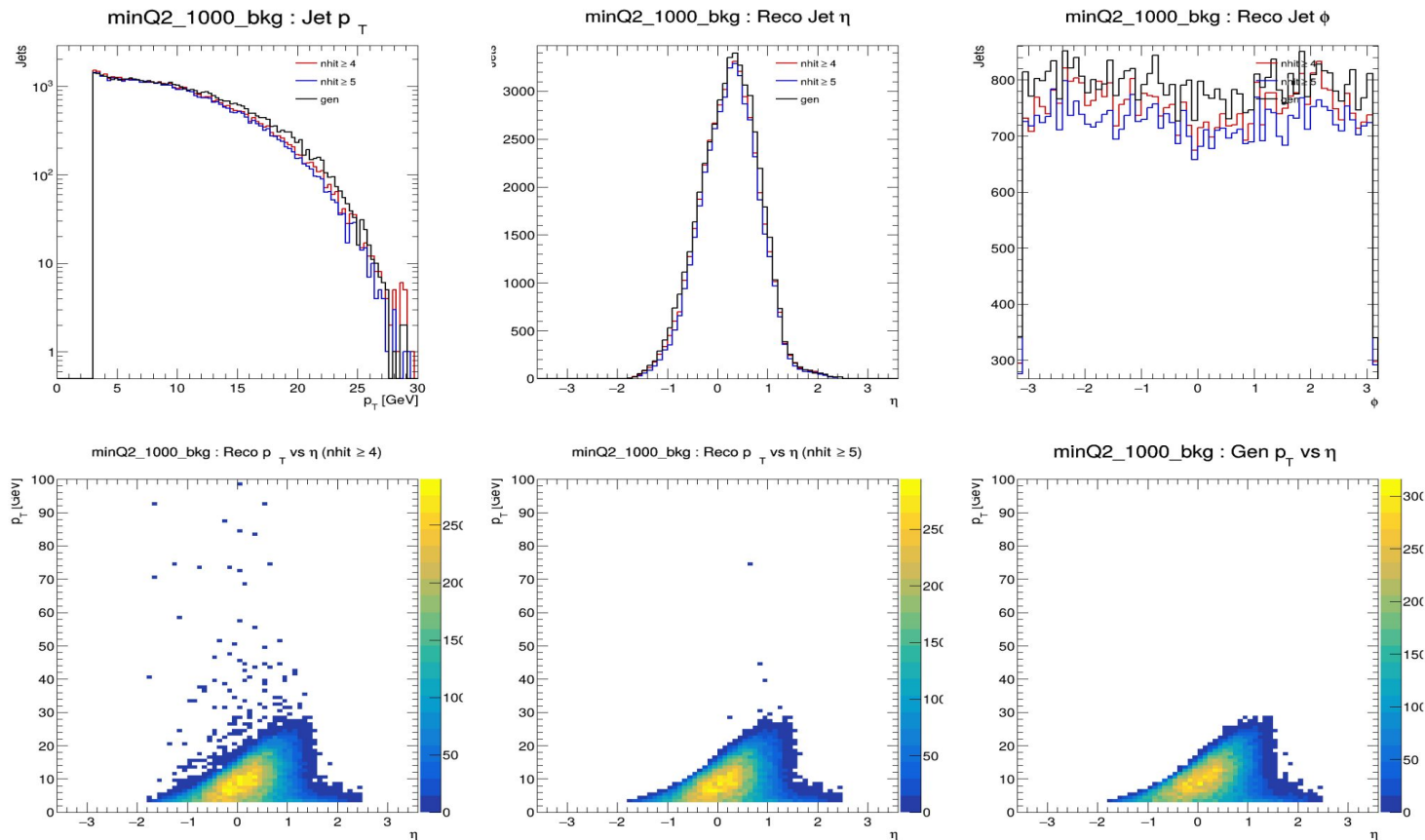
Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

Q2 100 to 1000 NoBkg Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$



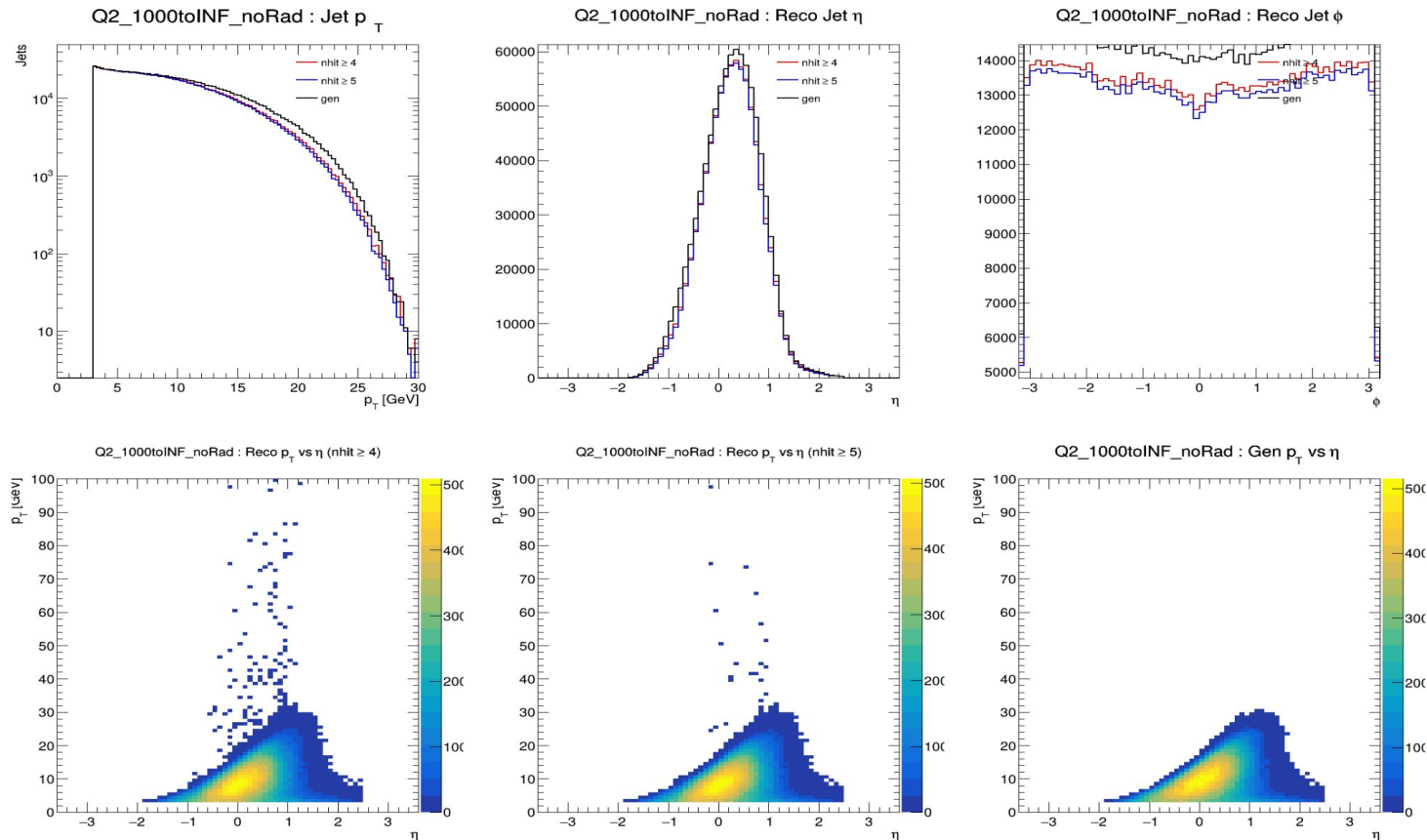
Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

Min Q2 1000 Bkg Jet $p_T > 3$ GeV, $-2 < \eta < 2.5$



Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

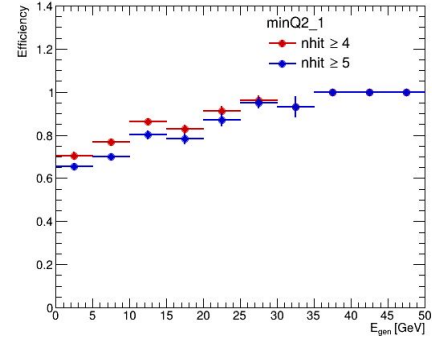
Min Q2 1000 Bkg Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$



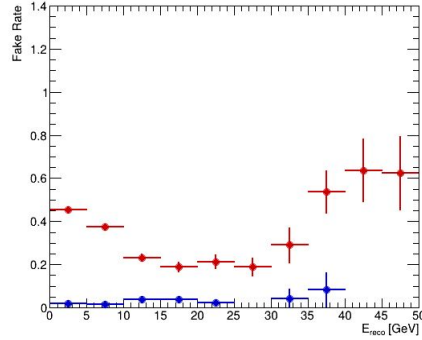
Distribution (shape) looks consistent for both 4 hit and 5 hit track jets

Jet Efficiency & Fake Rate (Bkg): Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$

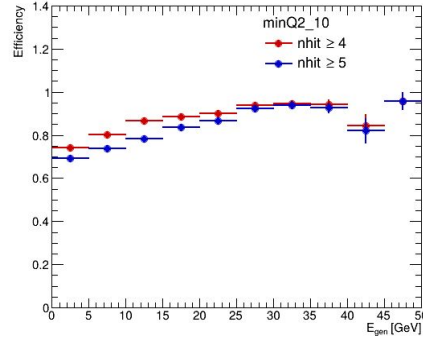
Jet Efficiency vs Energy (minQ2_1)



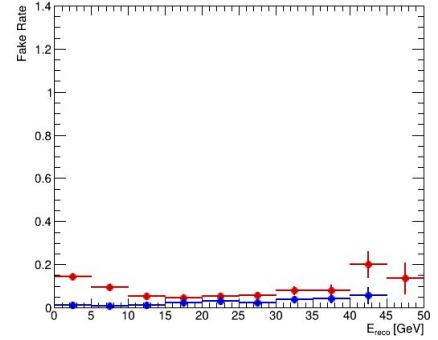
Jet Fake Rate vs Energy (minQ2_1)



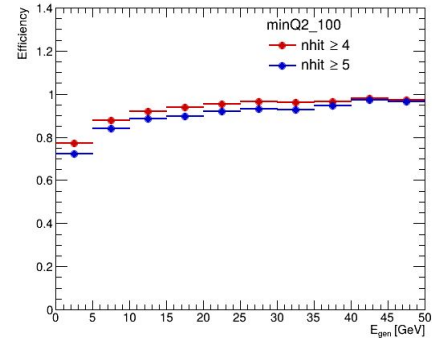
Jet Efficiency vs Energy (minQ2_10)



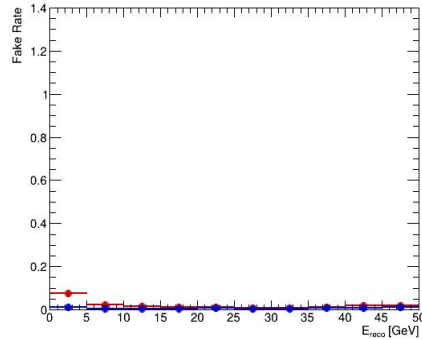
Jet Fake Rate vs Energy (minQ2_10)



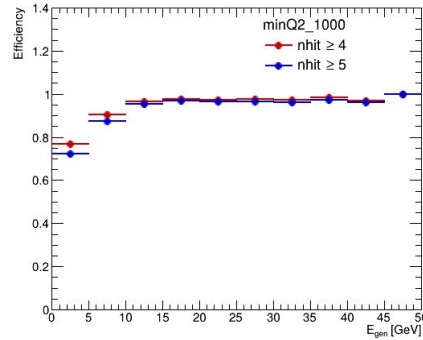
Jet Efficiency vs Energy (minQ2_100)



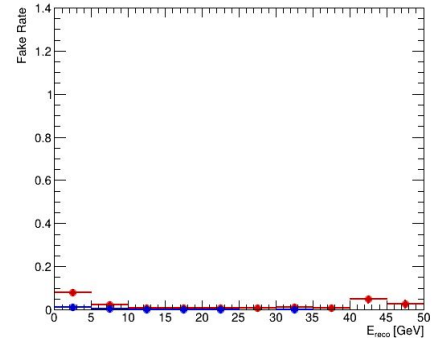
Jet Fake Rate vs Energy (minQ2_100)



Jet Efficiency vs Energy (minQ2_1000)

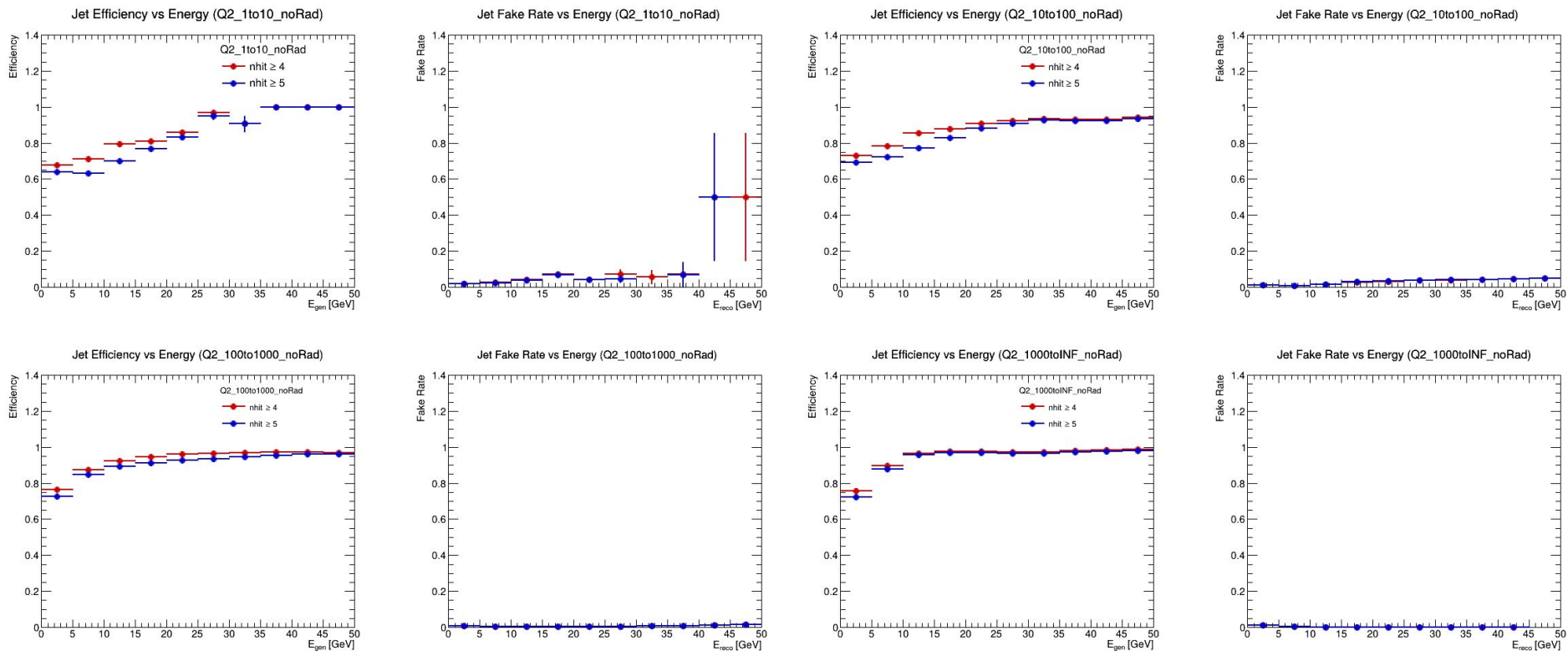


Jet Fake Rate vs Energy (minQ2_1000)



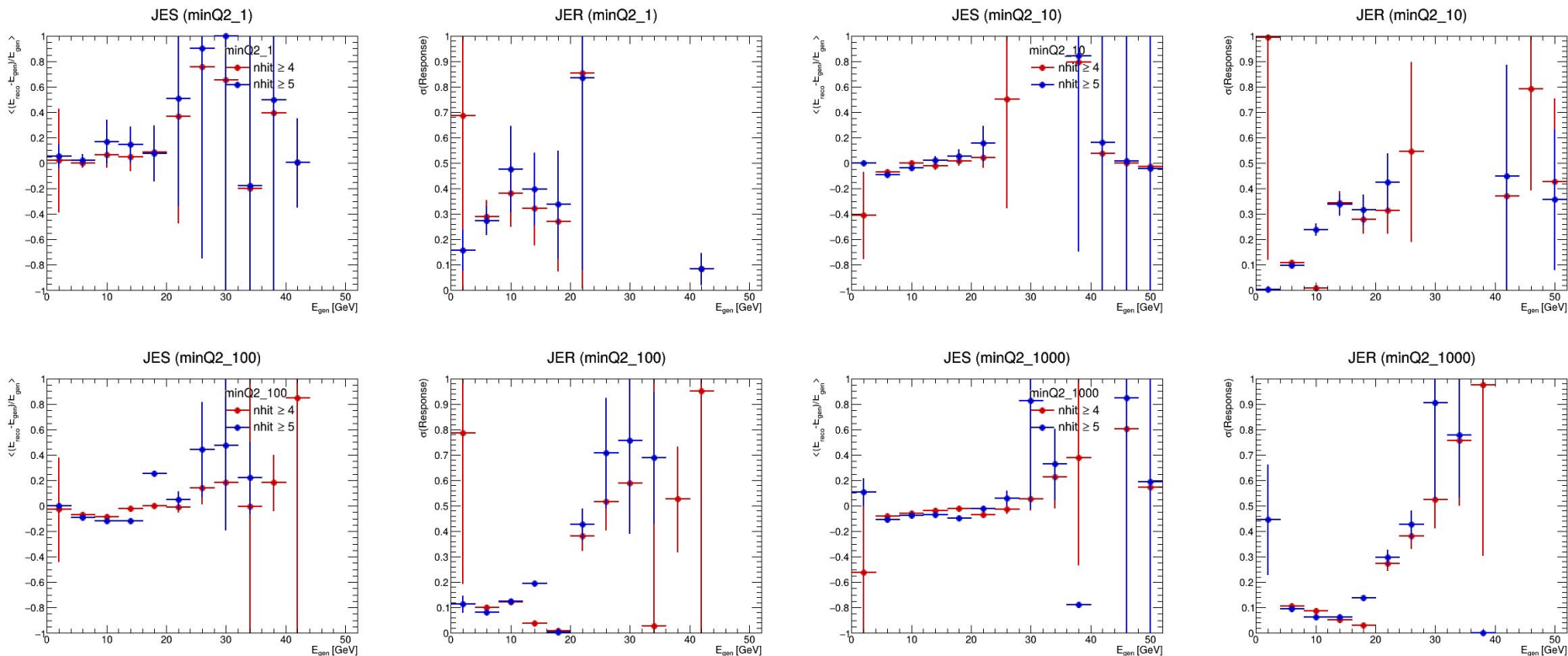
Jets with ≥ 4 hit track have significant fake rate for $Q2 < 10$ GeV
Jet Efficiency is quite low for Jet Energy < 15 GeV for all Q2
Jet Efficiency reaches ~ 1 quicker as we increase Q2

Jet Efficiency & Fake Rate (No Bkg): Jet pt > 3 GeV, $-2 < \eta < 2.5$



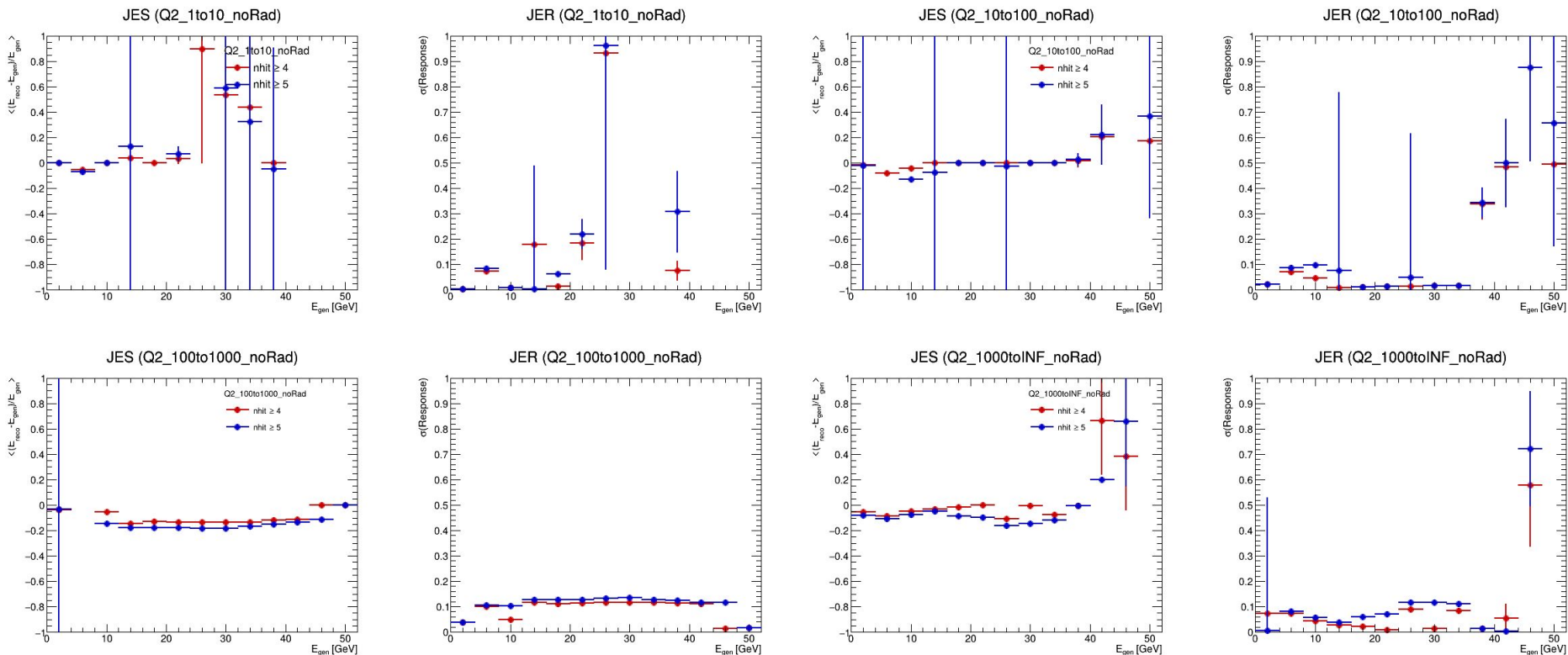
Jet fake rate significantly low (~ 0) for all min Q2 and for both 4 hit and 5 hit tracks
Jet Efficiency similar to that of Jets with background

JES, JER (Bkg): Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$



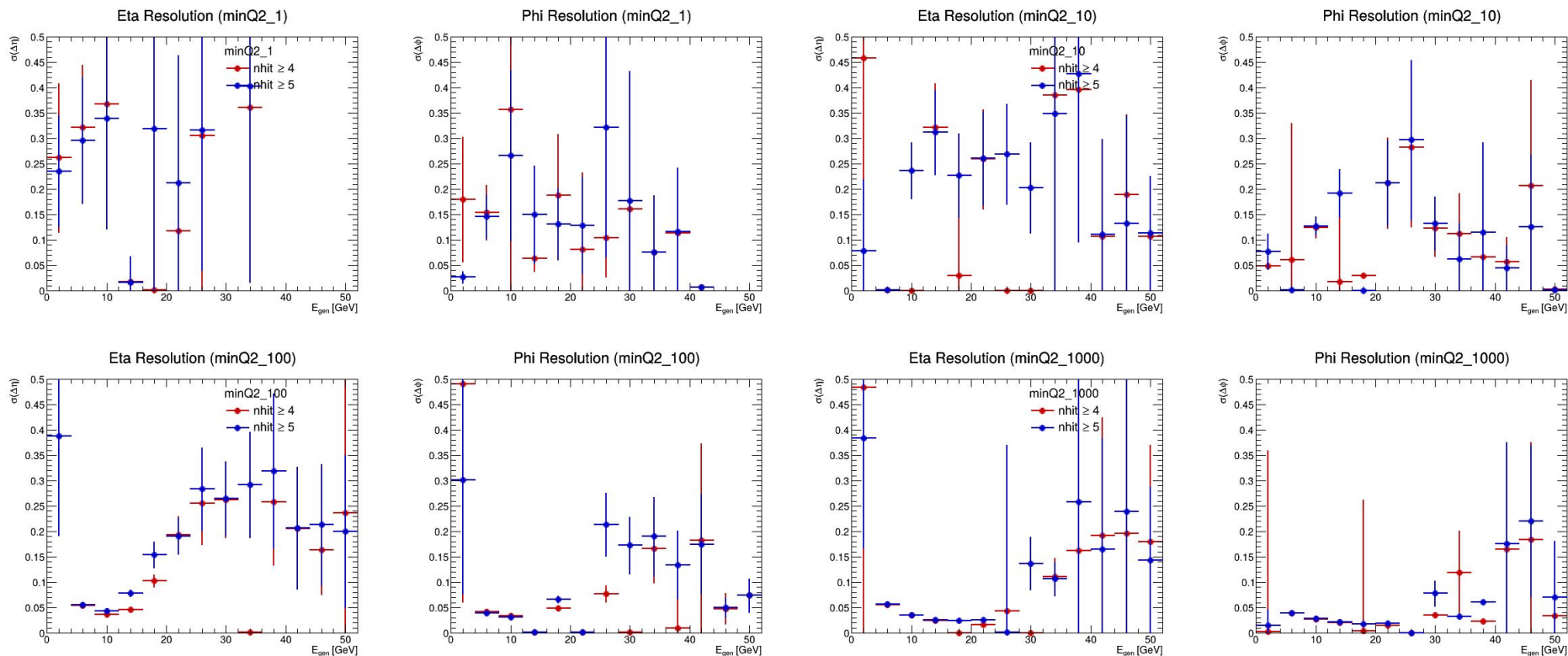
JES and JER increases with Jet Energy for all Q2
 JES and JER are both higher for 5 hit tracks Jets in comparison to 4 hit tracks Jets

JES, JER (No Bkg): Jet pt > 3 GeV, $-2 < \eta < 2.5$



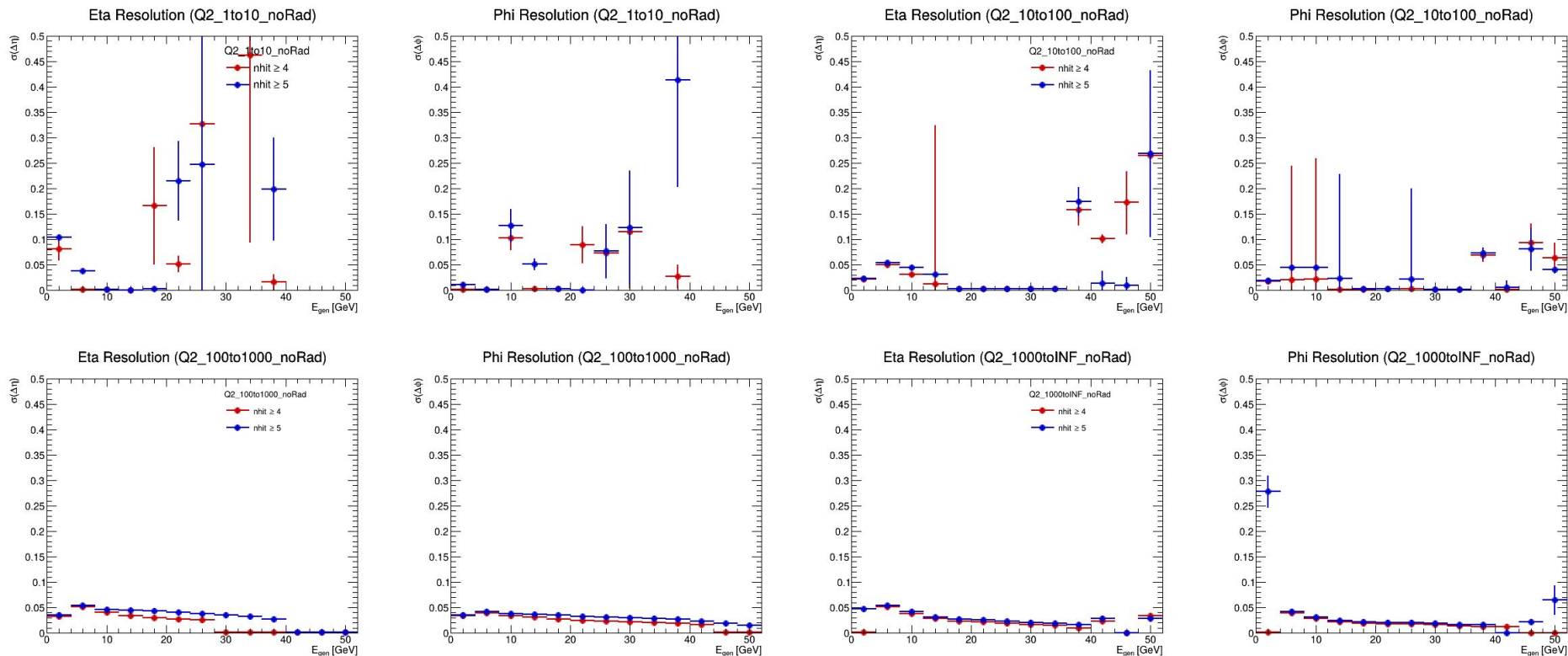
JES is ~0 for all Q2, JER is ~0.1 for all Q2

Jet η, ϕ resolution (Bkg): Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$



$\sigma(\Delta\eta) \sim 0.2$, decreases as Q^2 increases
 $\sigma(\Delta\phi)$ decreases as Q^2 increases, ~ 0.1

Jet η, ϕ resolution (Bkg): Jet $p_t > 3$ GeV, $-2 < \eta < 2.5$



$\sigma(\Delta\eta)$ & $\sigma(\Delta\phi) < 0.05$

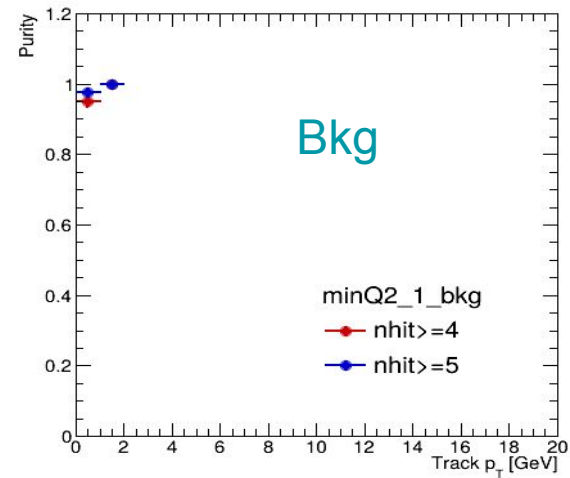
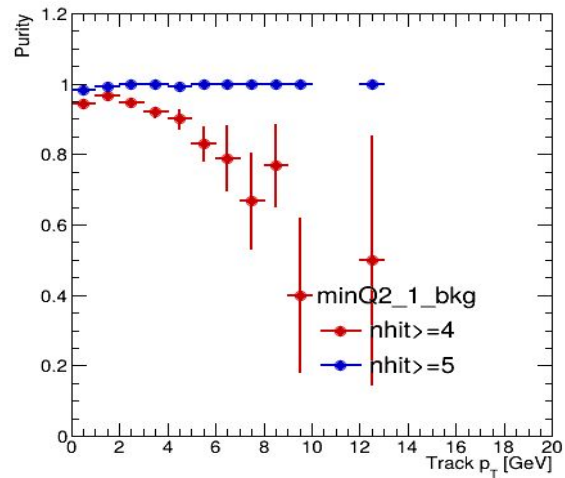
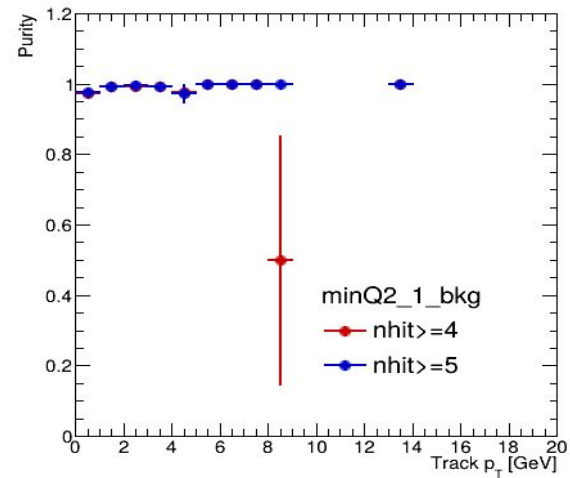
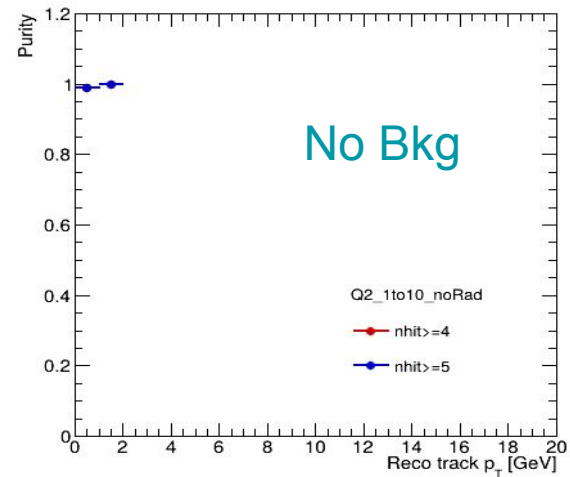
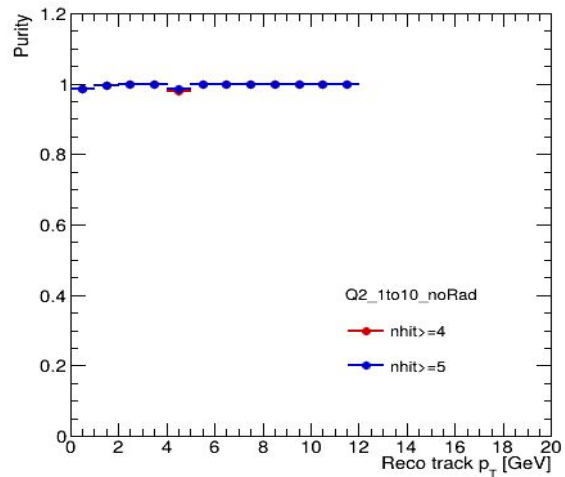
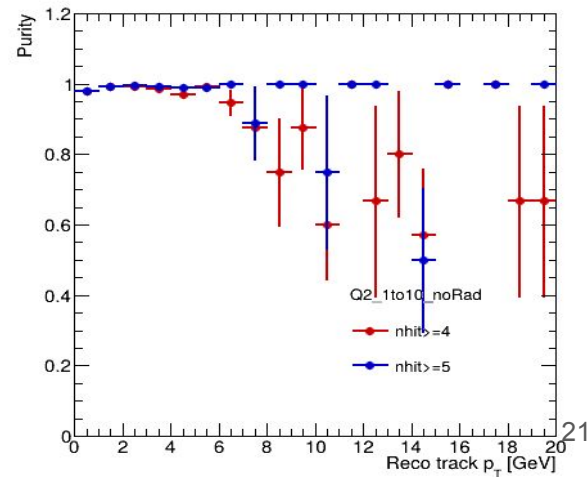
Track Purity & Track Efficiency

Jet pt > 1 GeV

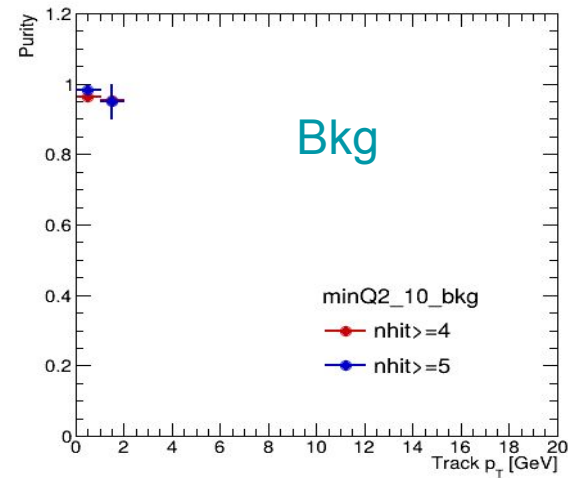
Eta : -3.5 to 3.5

$$\epsilon = \frac{\text{truth tracks in matched gen jet that are found by reco}}{\text{all truth tracks in matched gen jet}}$$

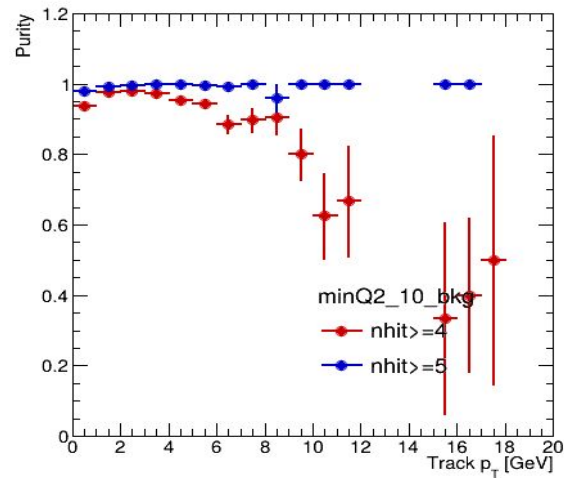
$$P = \frac{\text{reco tracks whose truth particle belongs to matched gen jet}}{\text{all reco tracks in matched reco jet}}$$

Track Purity, minQ2_1_bkg, $\eta < -2$ Track Purity, minQ2_1_bkg, $-2 < \eta < 2$ Track Purity, minQ2_1_bkg, $\eta > 2$ Track Purity, Q2_1to10_noRad, $\eta < -2$ Track Purity, Q2_1to10_noRad, $-2 < \eta < 2$ Track Purity, Q2_1to10_noRad, $\eta > 2$ 

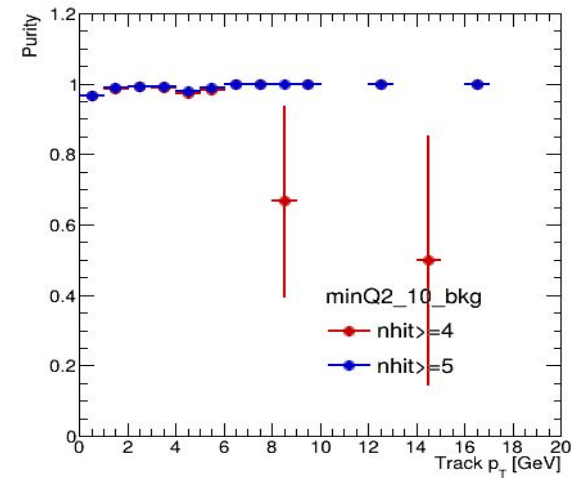
Track Purity, minQ2_10_bkg, eta<-2



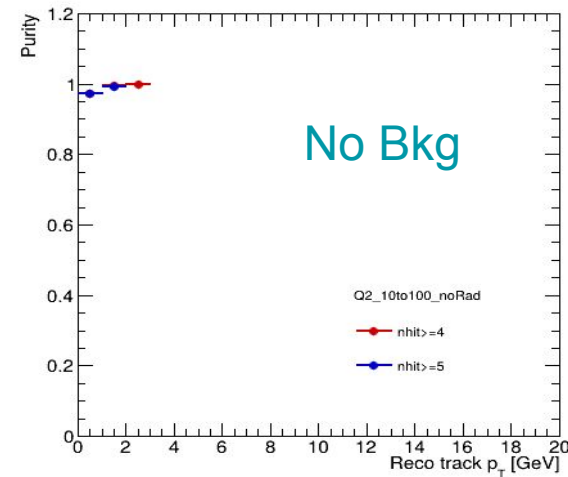
Track Purity, minQ2_10_bkg, -2<eta<2



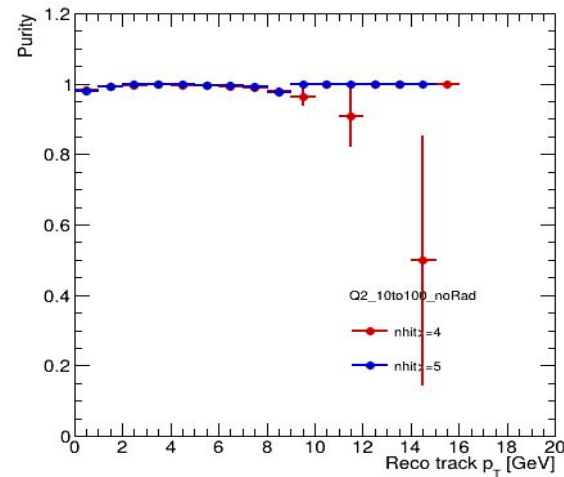
Track Purity, minQ2_10_bkg, eta>2



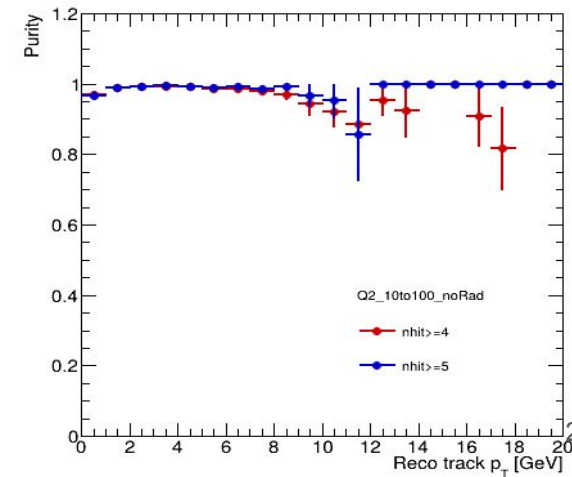
Track Purity, Q2_10to100_noRad, eta<-2

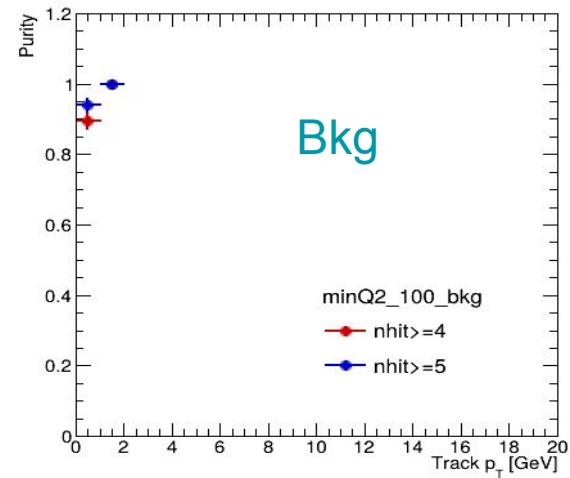
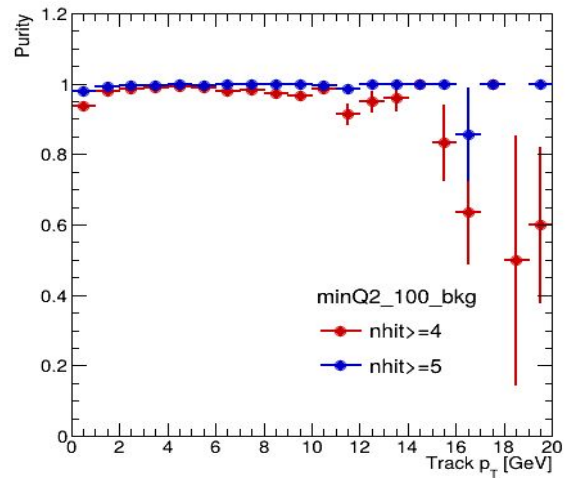
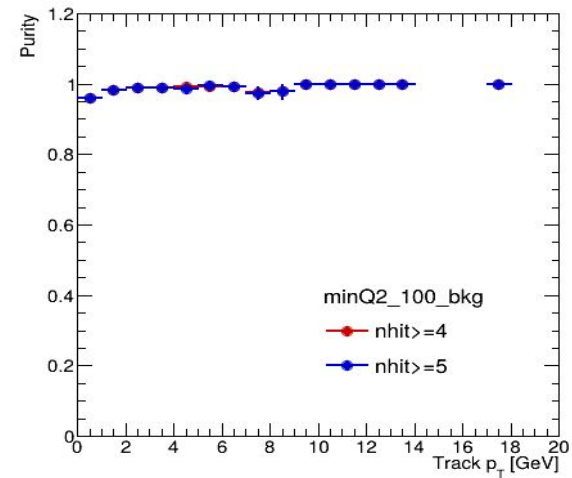
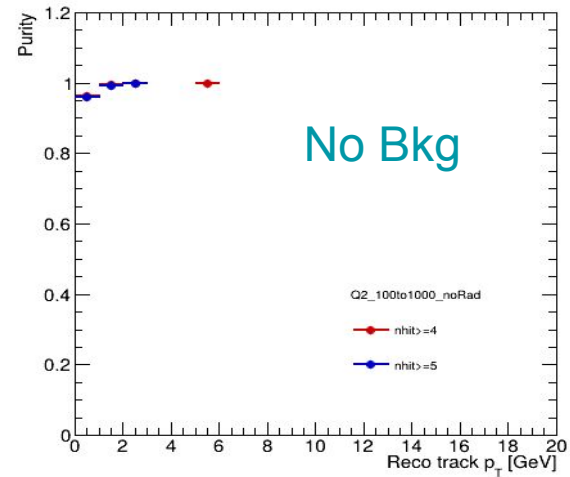
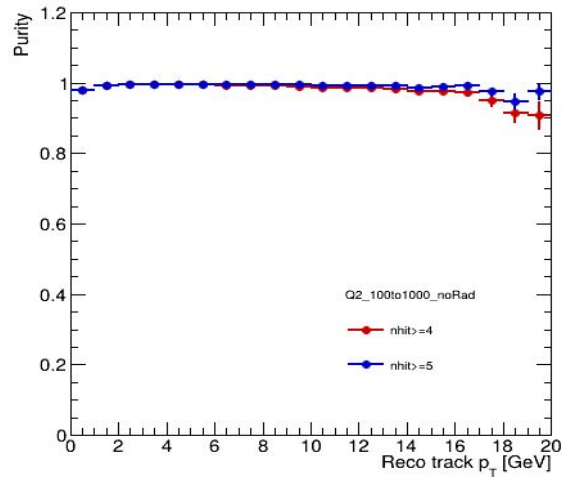
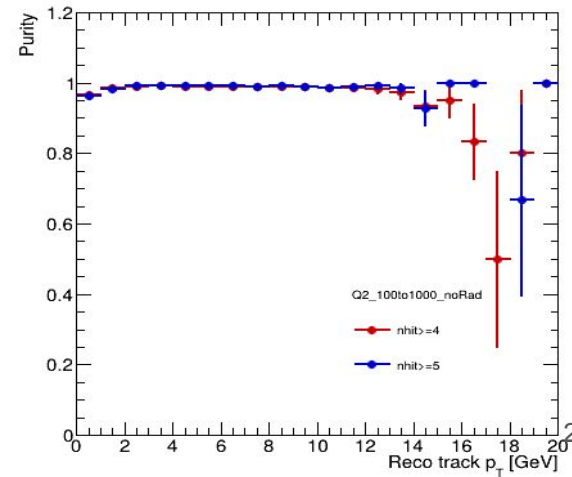


Track Purity, Q2_10to100_noRad, -2<eta<2

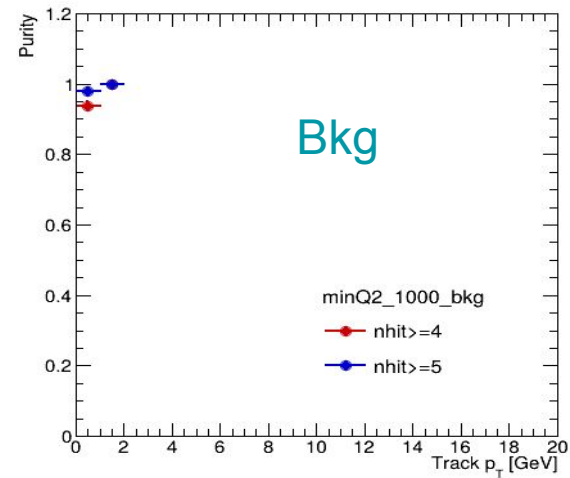


Track Purity, Q2_10to100_noRad, eta>2

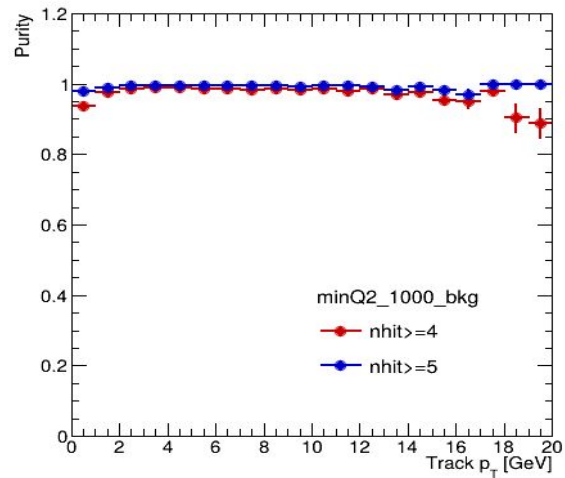


Track Purity, minQ2_100_bkg, $\eta < -2$ Track Purity, minQ2_100_bkg, $-2 < \eta < 2$ Track Purity, minQ2_100_bkg, $\eta > 2$ Track Purity, Q2_100to1000_noRad, $\eta < -2$ Track Purity, Q2_100to1000_noRad, $-2 < \eta < 2$ Track Purity, Q2_100to1000_noRad, $\eta > 2$ 

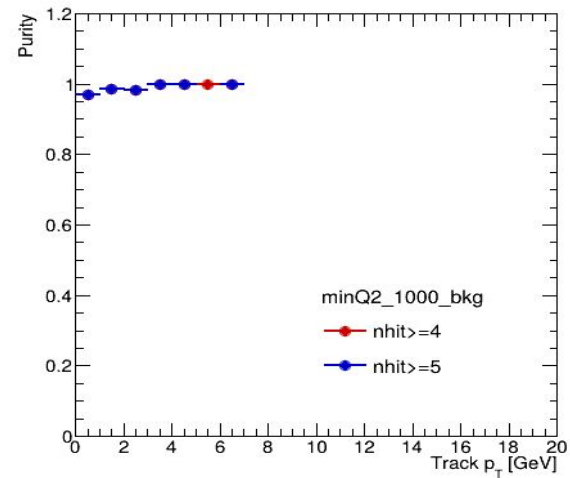
Track Purity, minQ2_1000_bkg, eta<-2



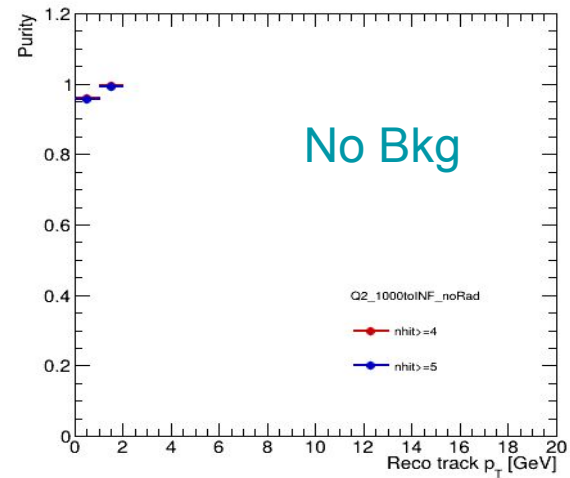
Track Purity, minQ2_1000_bkg, -2<eta<2



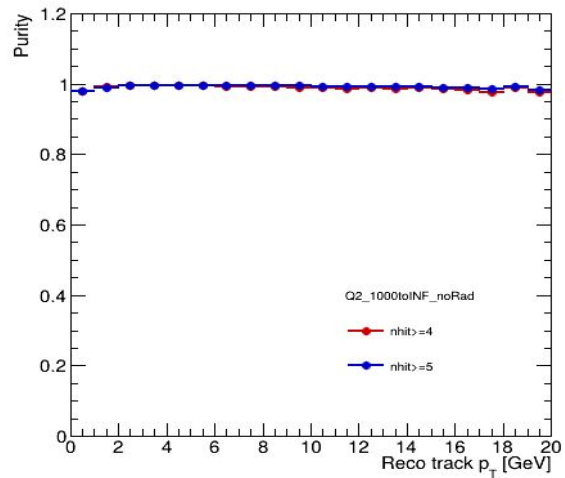
Track Purity, minQ2_1000_bkg, eta>2



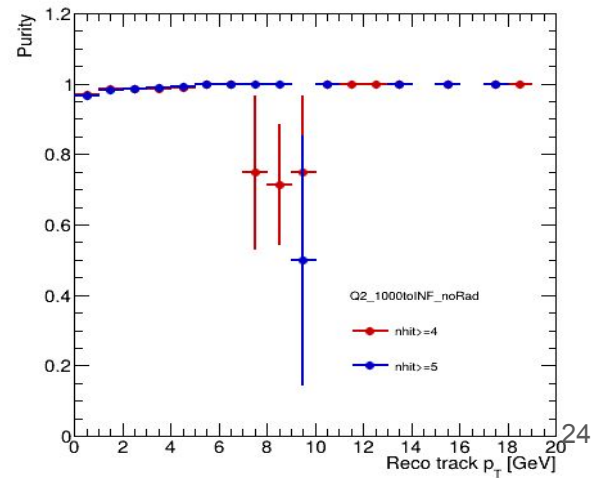
Track Purity, Q2_1000toINF_noRad, eta<-2

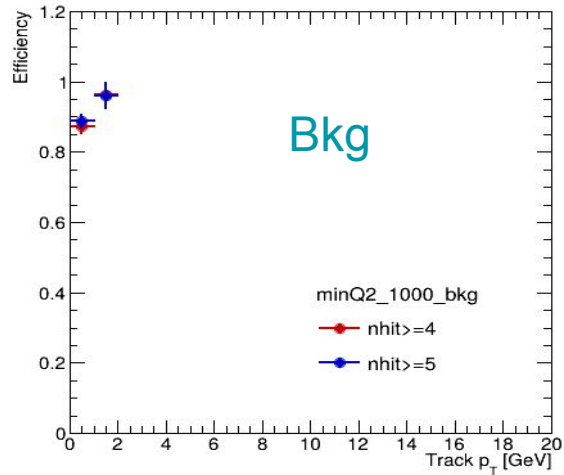
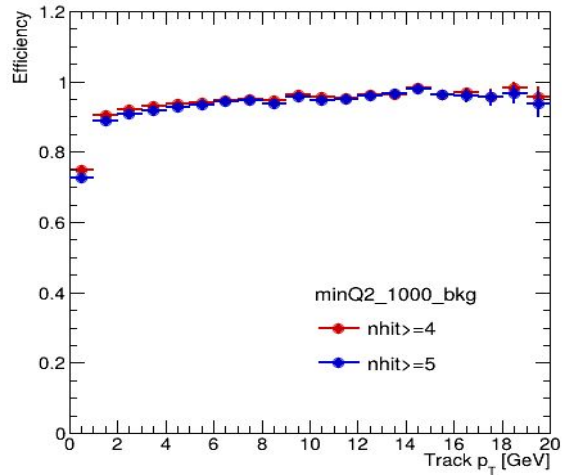
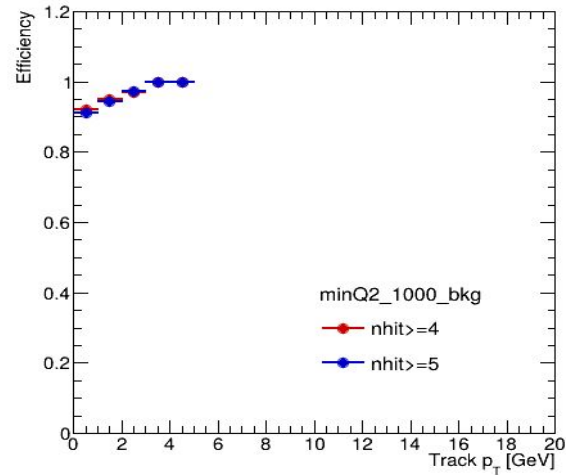
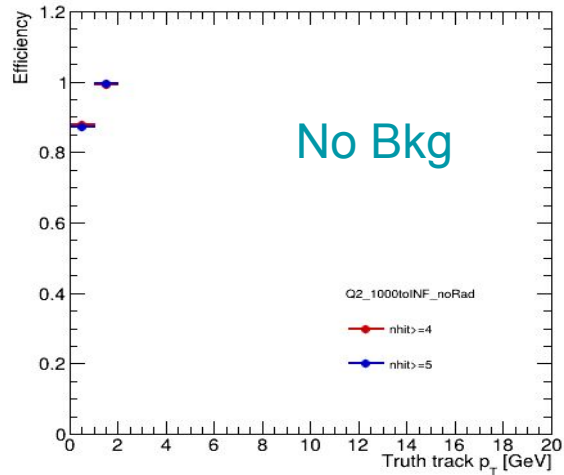
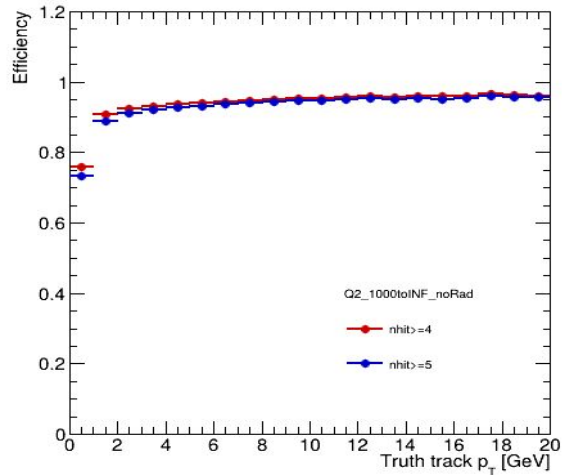
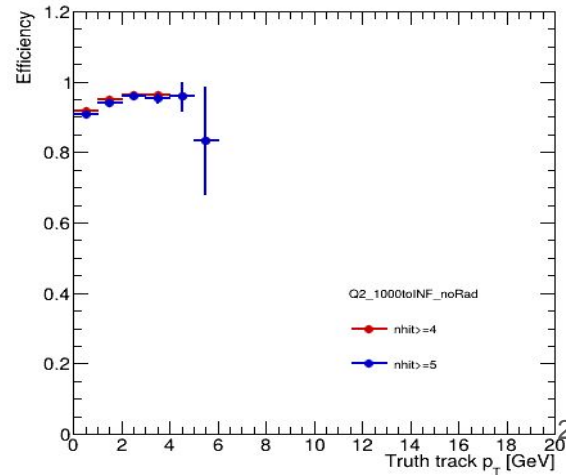


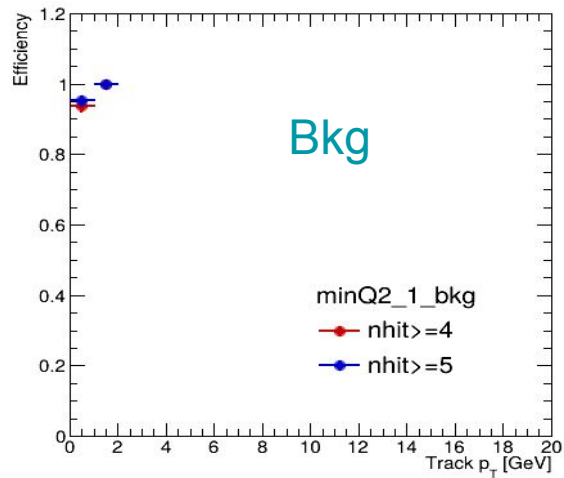
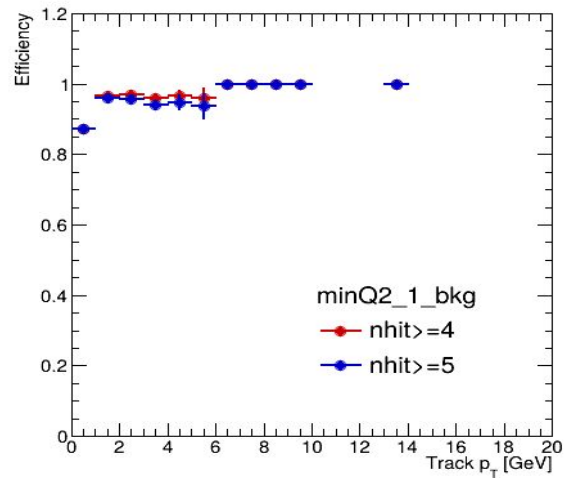
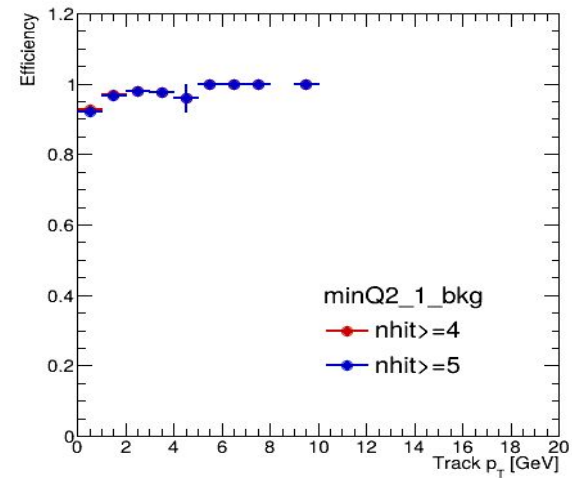
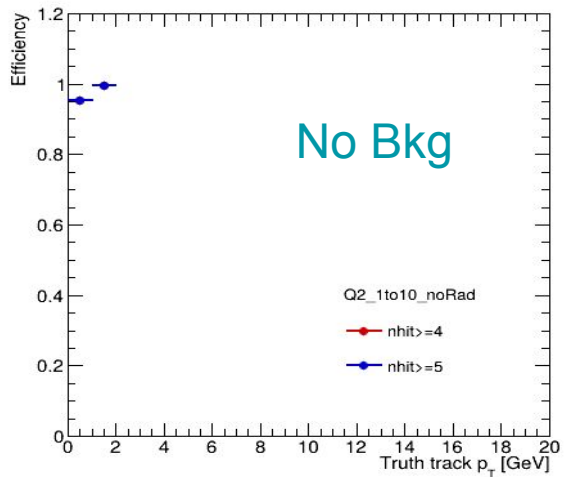
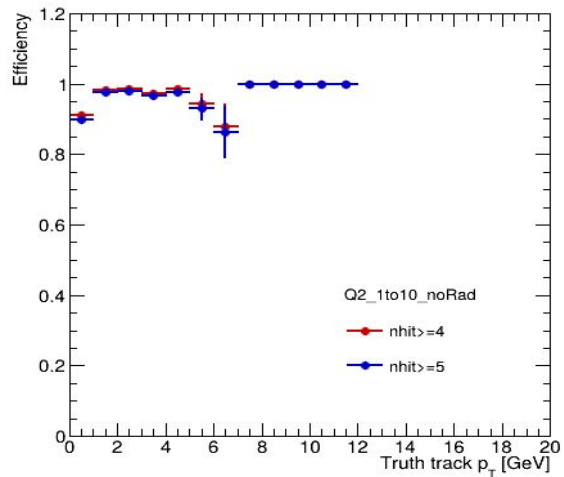
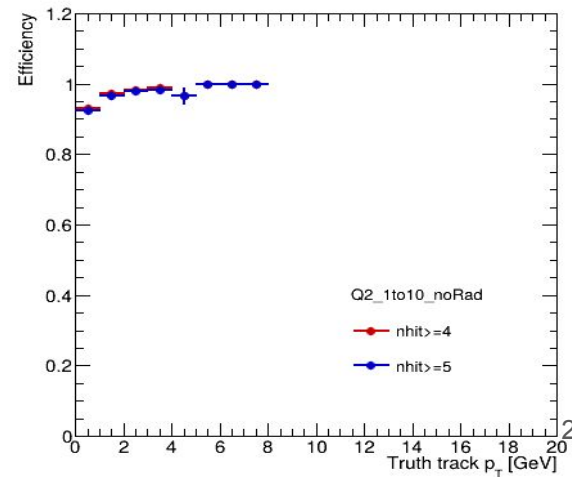
Track Purity, Q2_1000toINF_noRad, -2<eta<2

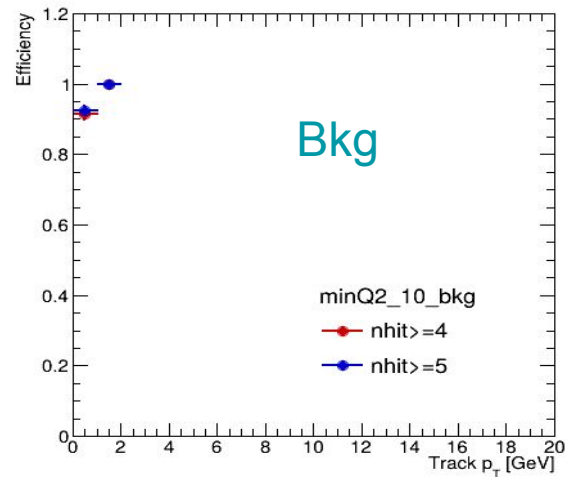
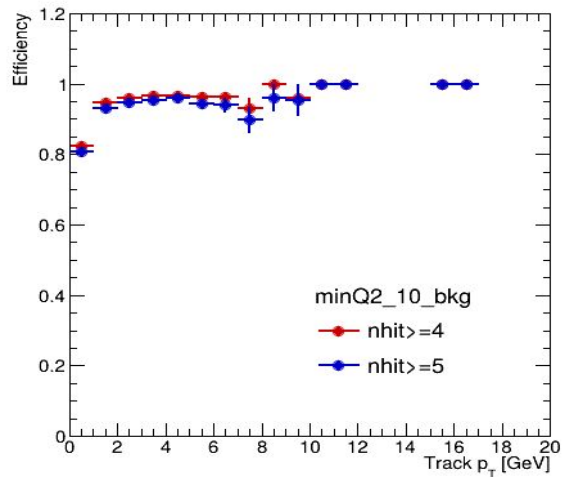
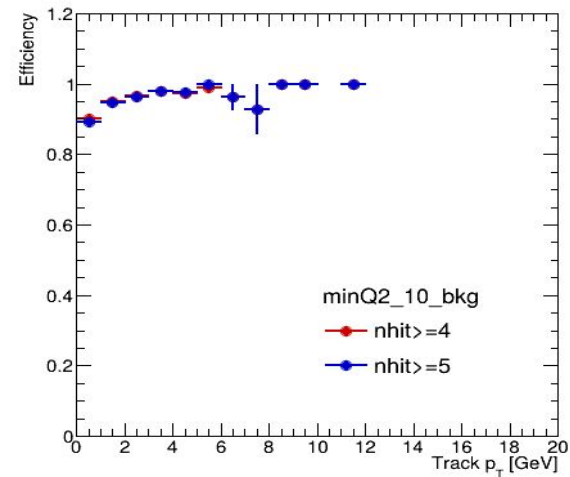
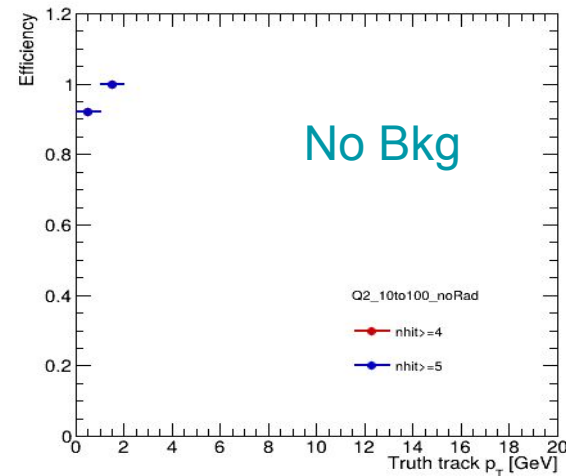
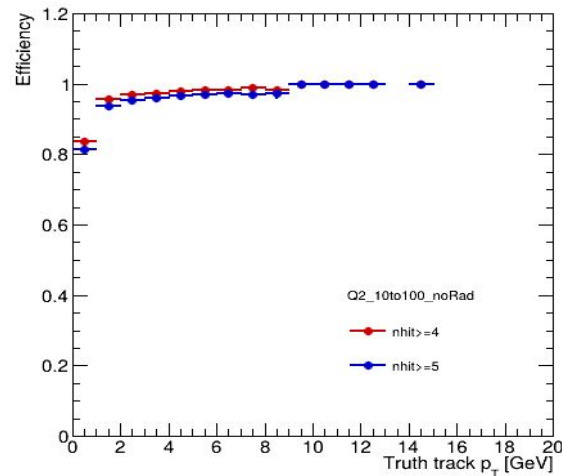
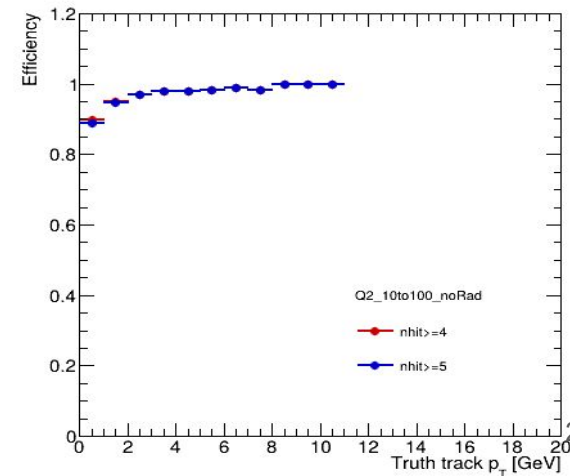


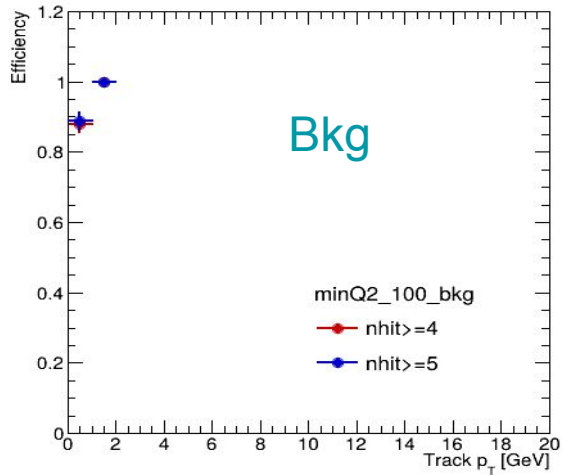
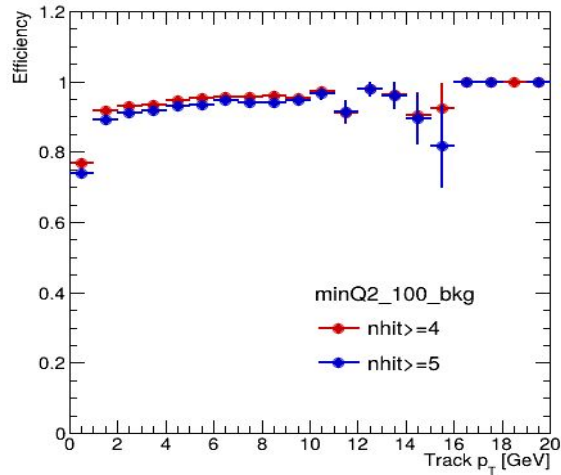
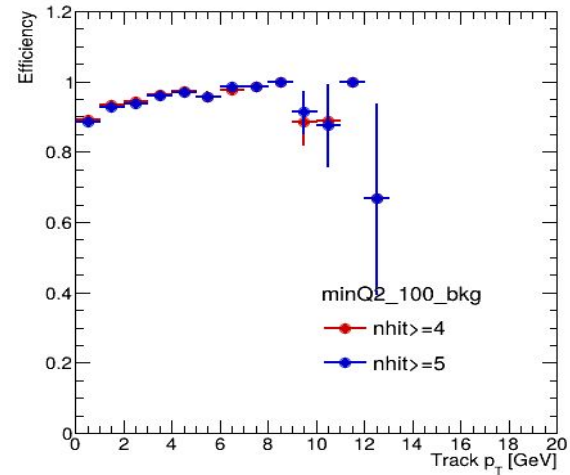
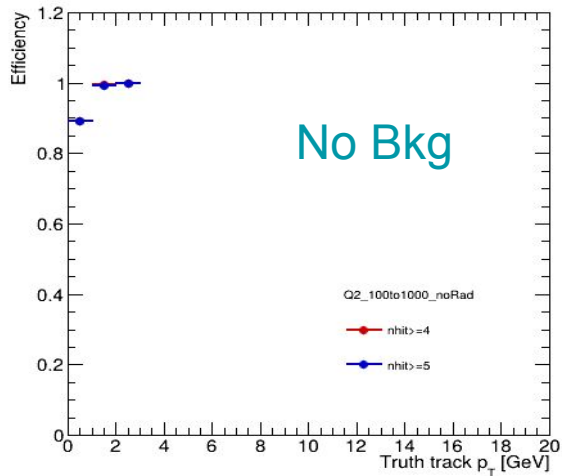
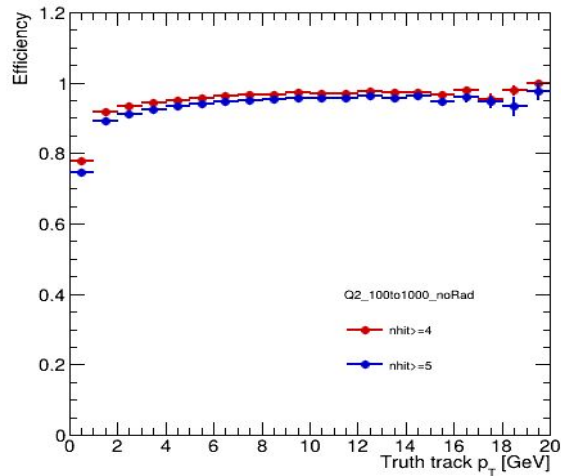
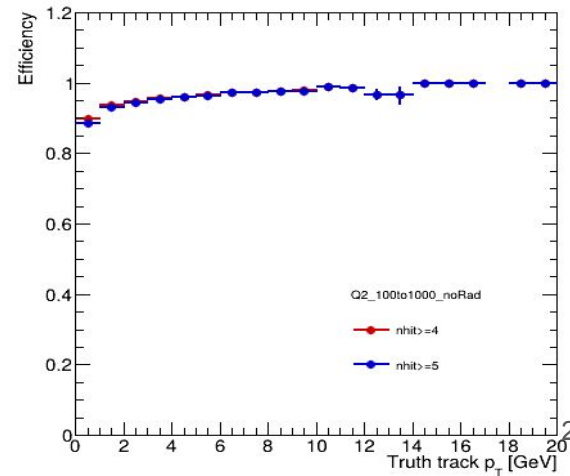
Track Purity, Q2_1000toINF_noRad, eta>2



Track Efficiency, minQ2_1000_bkg, $\eta < -2$ Track Efficiency, minQ2_1000_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1000_bkg, $\eta > 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta < -2$ Track Efficiency, Q2_1000toINF_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta > 2$ 

Track Efficiency, minQ2_1_bkg, $\eta < -2$ Track Efficiency, minQ2_1_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1_bkg, $\eta > 2$ Track Efficiency, Q2_1to10_noRad, $\eta < -2$ Track Efficiency, Q2_1to10_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1to10_noRad, $\eta > 2$ 

Track Efficiency, minQ2_10_bkg, $\eta < -2$ Track Efficiency, minQ2_10_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_10_bkg, $\eta > 2$ Track Efficiency, Q2_10to100_noRad, $\eta < -2$ Track Efficiency, Q2_10to100_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_10to100_noRad, $\eta > 2$ 

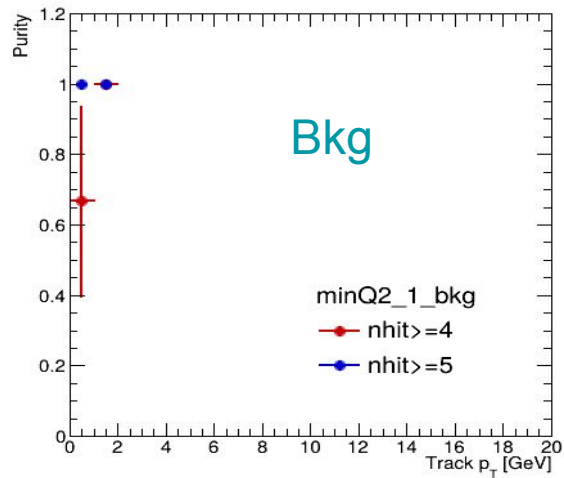
Track Efficiency, minQ2_100_bkg, $\eta < -2$ Track Efficiency, minQ2_100_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_100_bkg, $\eta > 2$ Track Efficiency, Q2_100to1000_noRad, $\eta < -2$ Track Efficiency, Q2_100to1000_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_100to1000_noRad, $\eta > 2$ 

Track Purity & Track Efficiency

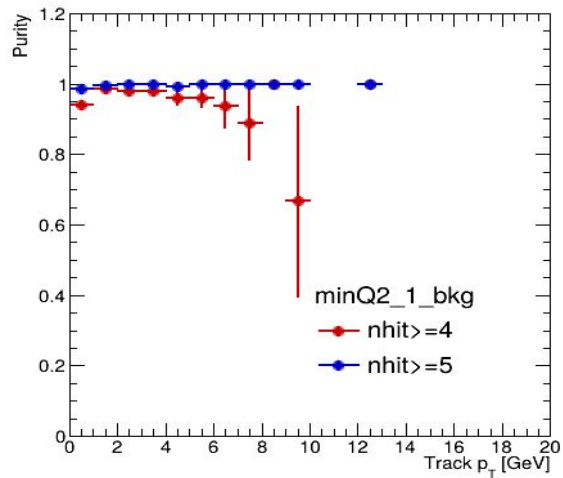
Jet $p_t > 2 \text{ GeV}$

Eta : -3.5 to 3.5

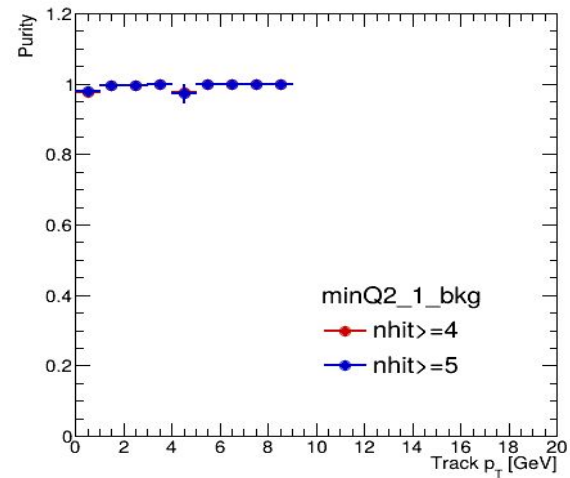
Track Purity, minQ2_1_bkg, eta<-2



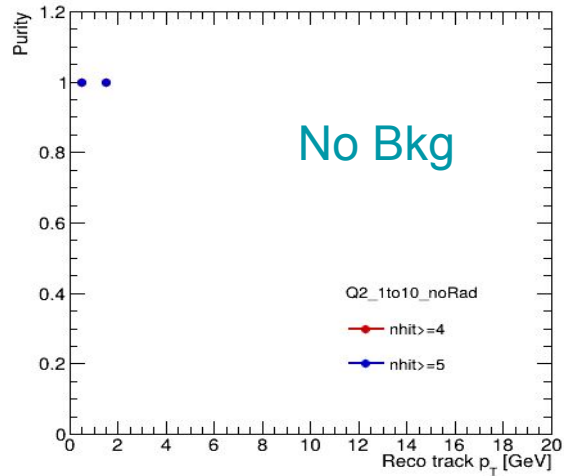
Track Purity, minQ2_1_bkg, -2<eta<2



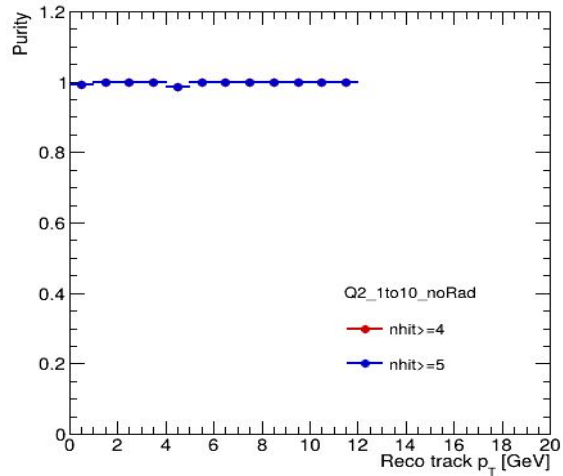
Track Purity, minQ2_1_bkg, eta>2



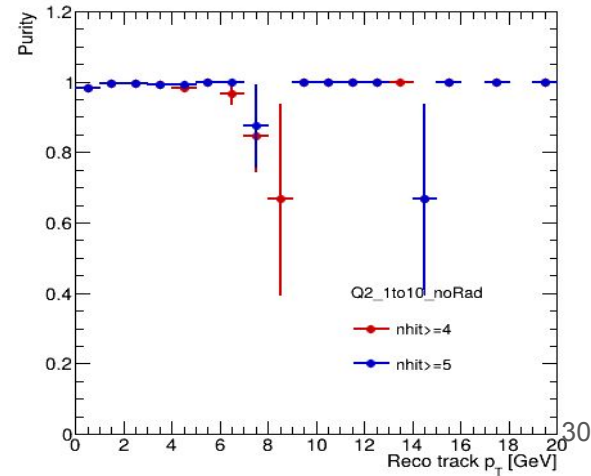
Track Purity, Q2_1to10_noRad, eta<-2



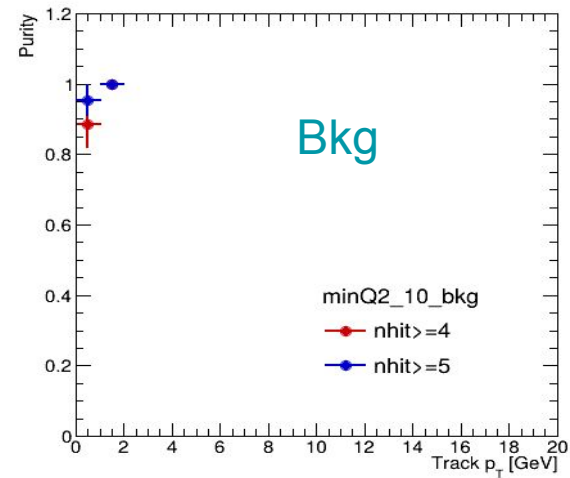
Track Purity, Q2_1to10_noRad, -2<eta<2



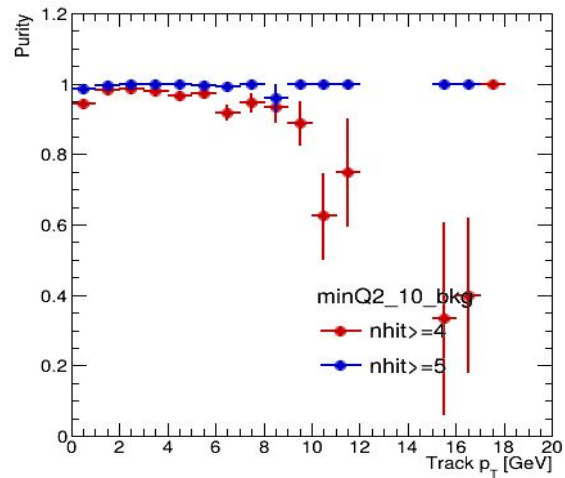
Track Purity, Q2_1to10_noRad, eta>2



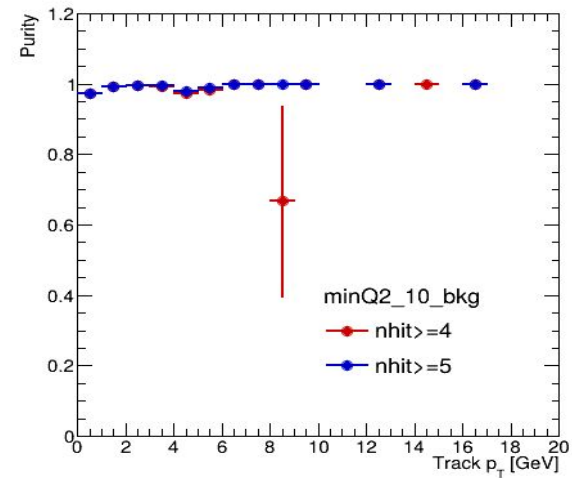
Track Purity, minQ2_10_bkg, eta<-2



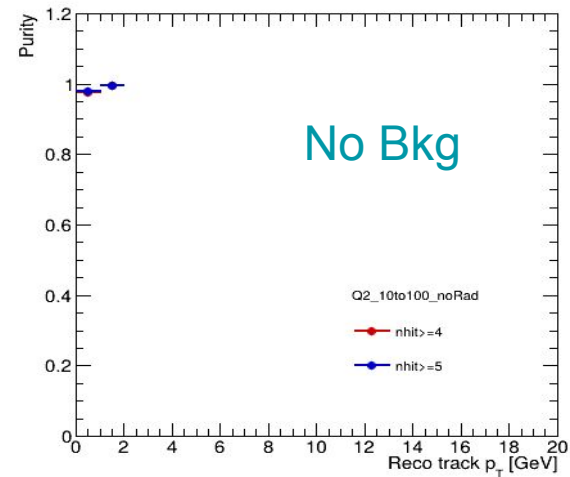
Track Purity, minQ2_10_bkg, -2<eta<2



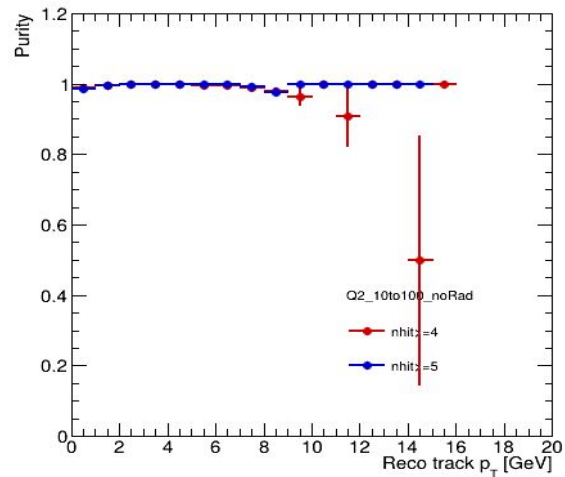
Track Purity, minQ2_10_bkg, eta>2



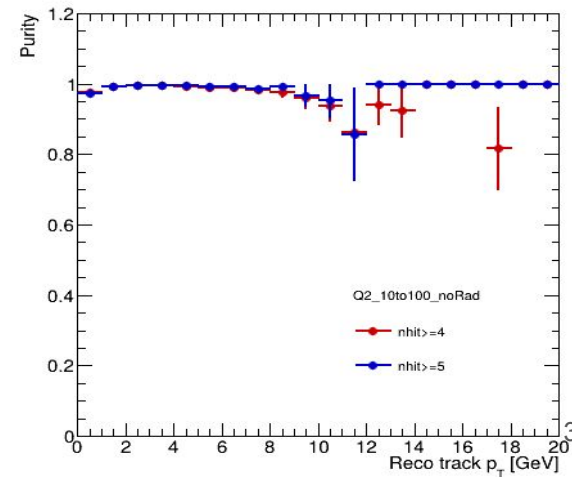
Track Purity, Q2_10to100_noRad, eta<-2



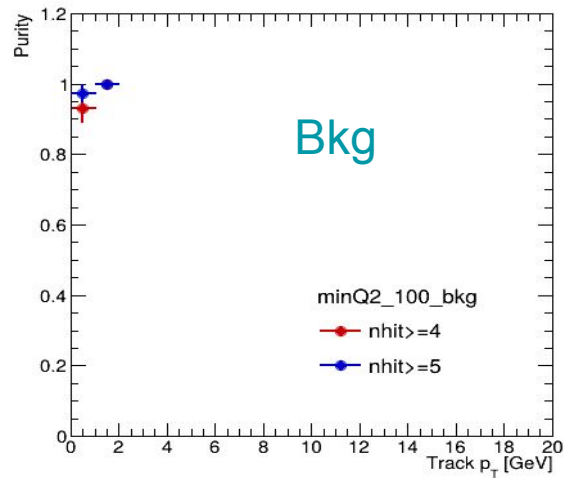
Track Purity, Q2_10to100_noRad, -2<eta<2



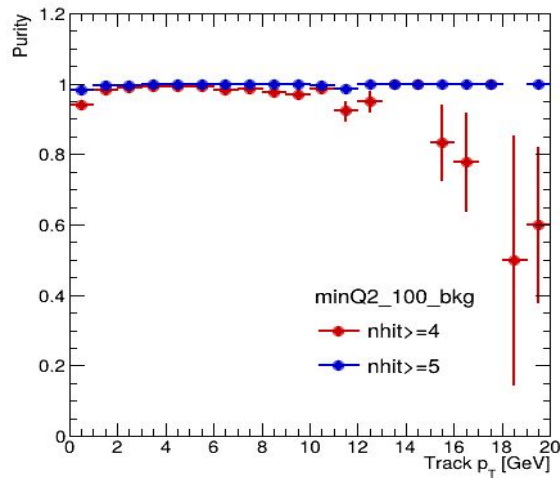
Track Purity, Q2_10to100_noRad, eta>2



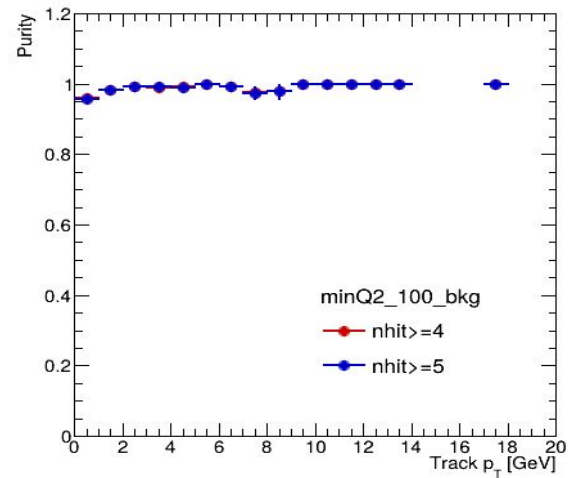
Track Purity, minQ2_100_bkg, eta<-2



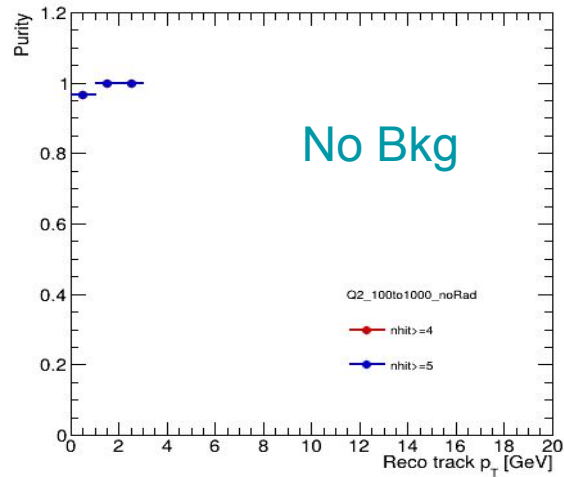
Track Purity, minQ2_100_bkg, -2<eta<2



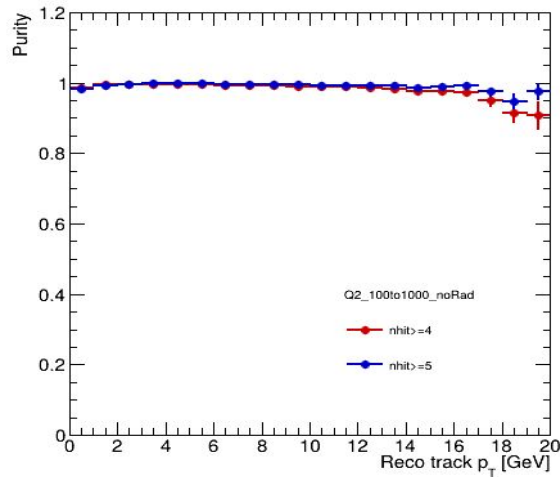
Track Purity, minQ2_100_bkg, eta>2



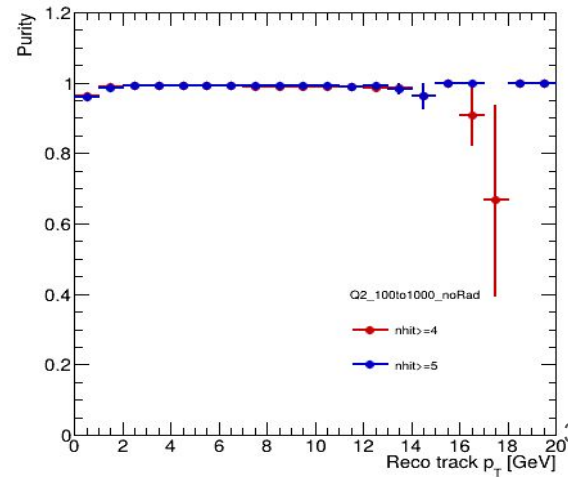
Track Purity, Q2_100to1000_noRad, eta<-2



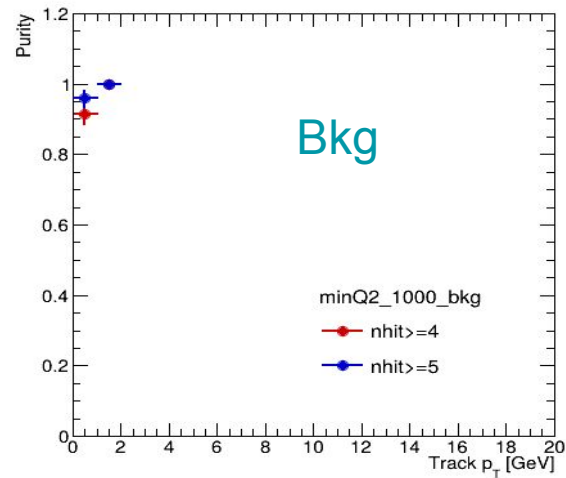
Track Purity, Q2_100to1000_noRad, -2<eta<2



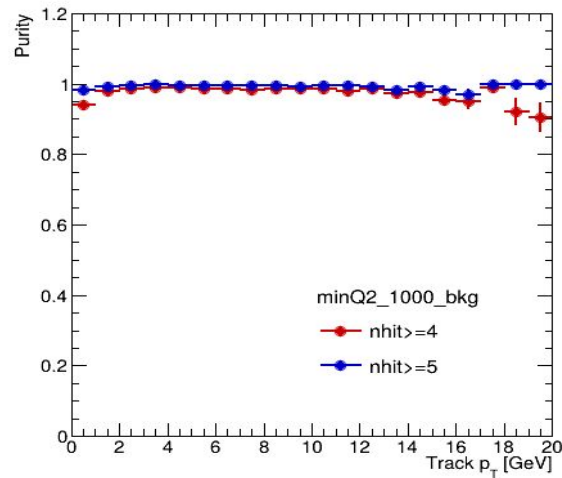
Track Purity, Q2_100to1000_noRad, eta>2



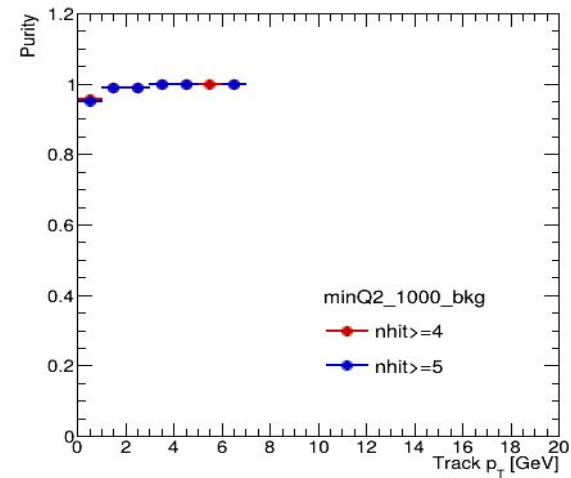
Track Purity, minQ2_1000_bkg, eta<-2



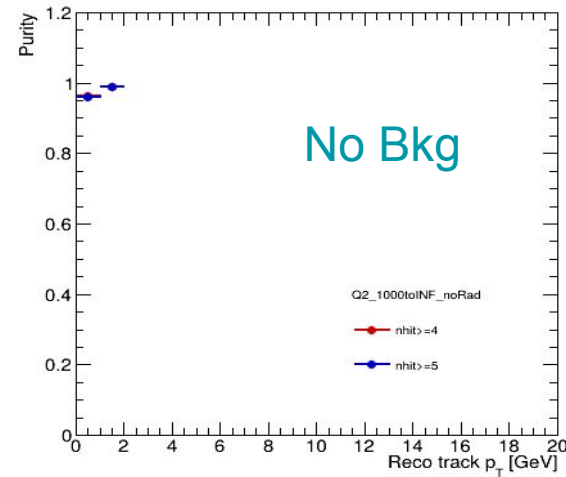
Track Purity, minQ2_1000_bkg, -2<eta<2



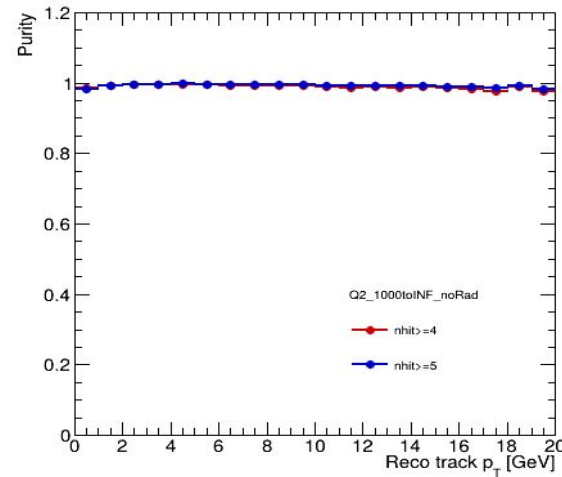
Track Purity, minQ2_1000_bkg, eta>2



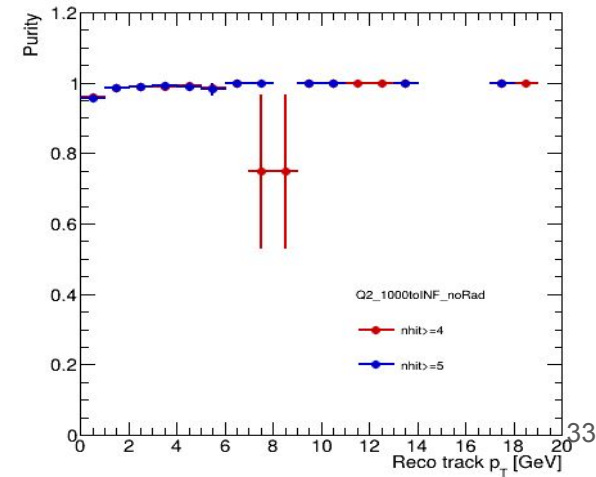
Track Purity, Q2_1000toINF_noRad, eta<-2

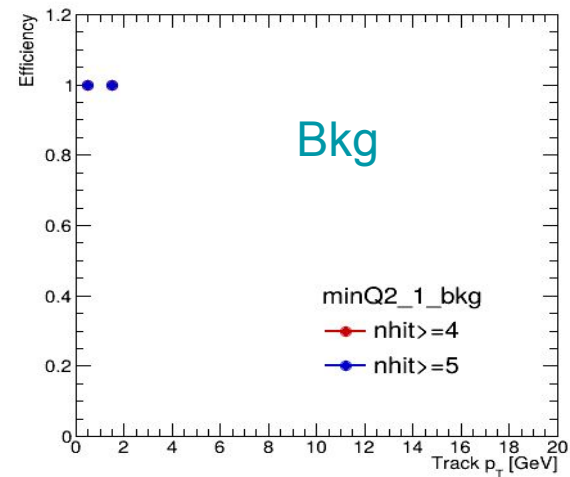
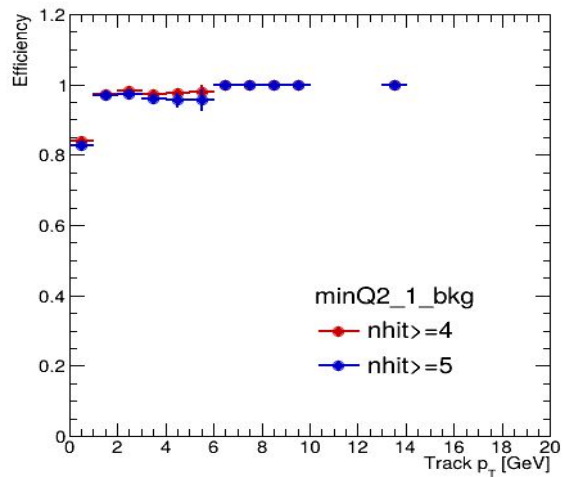
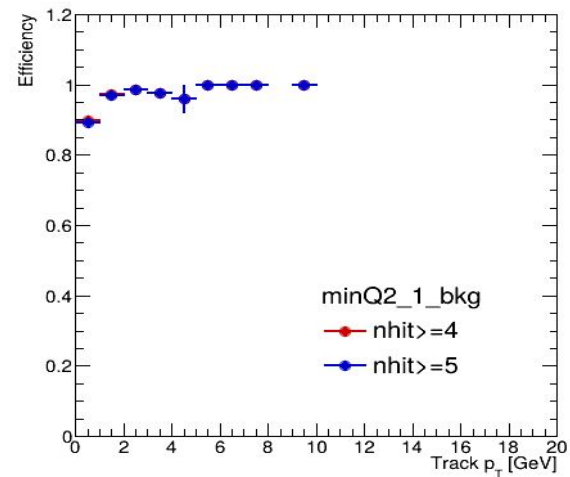
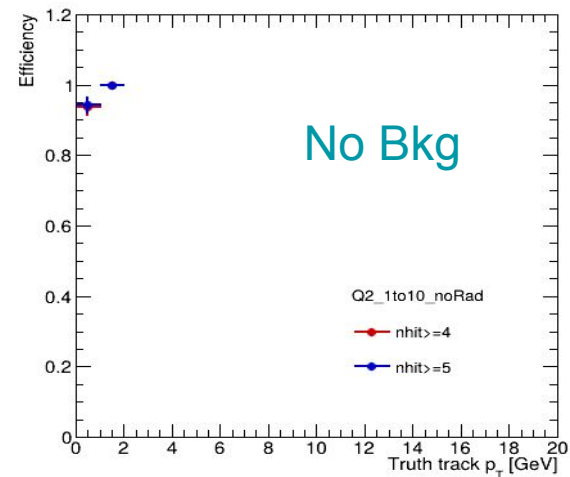
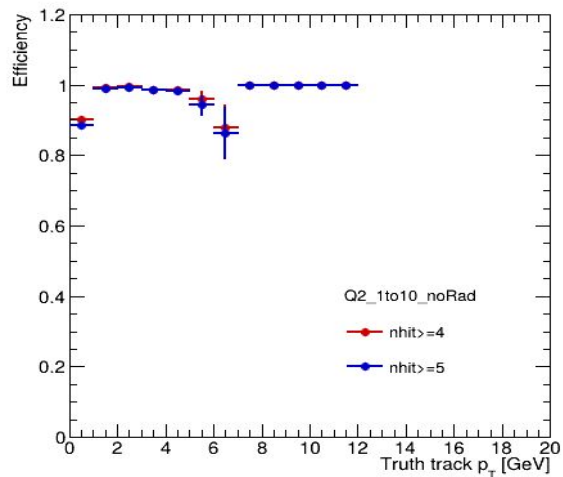
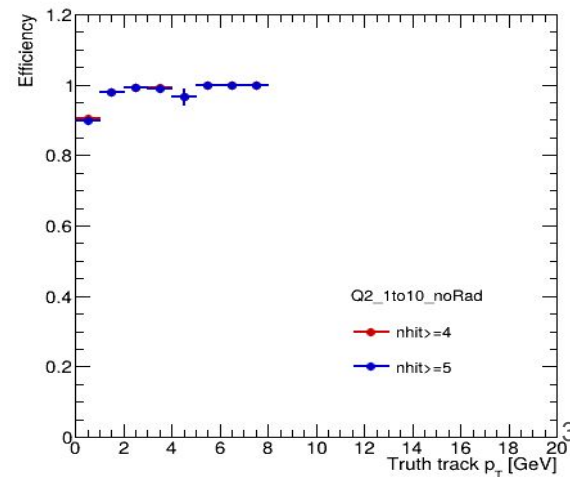


Track Purity, Q2_1000toINF_noRad, -2<eta<2

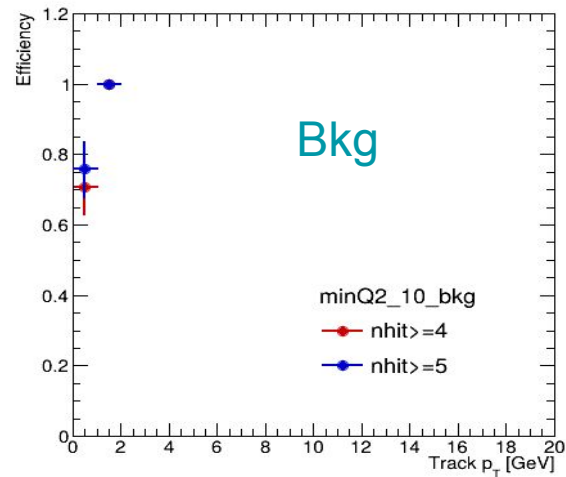


Track Purity, Q2_1000toINF_noRad, eta>2

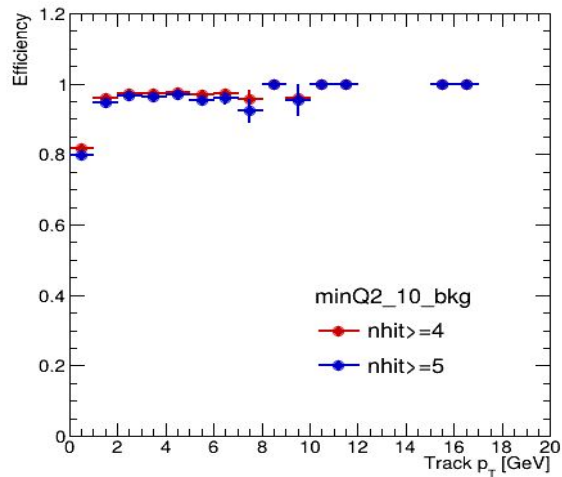


Track Efficiency, minQ2_1_bkg, $\eta < -2$ Track Efficiency, minQ2_1_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1_bkg, $\eta > 2$ Track Efficiency, Q2_1to10_noRad, $\eta < -2$ Track Efficiency, Q2_1to10_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1to10_noRad, $\eta > 2$ 

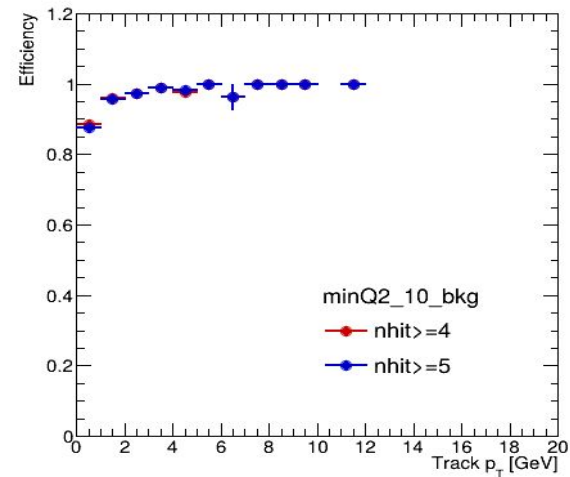
Track Efficiency, minQ2_10_bkg, eta<-2



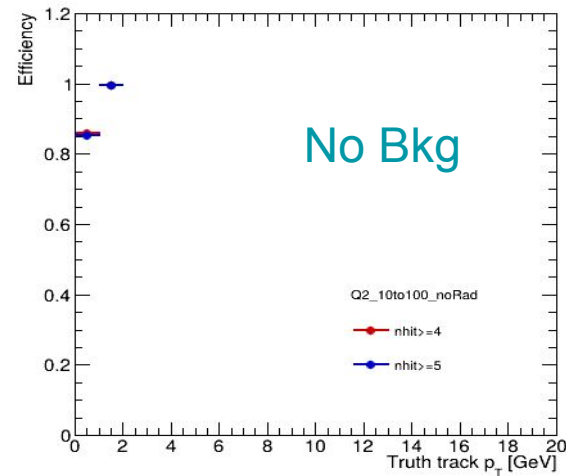
Track Efficiency, minQ2_10_bkg, -2<eta<2



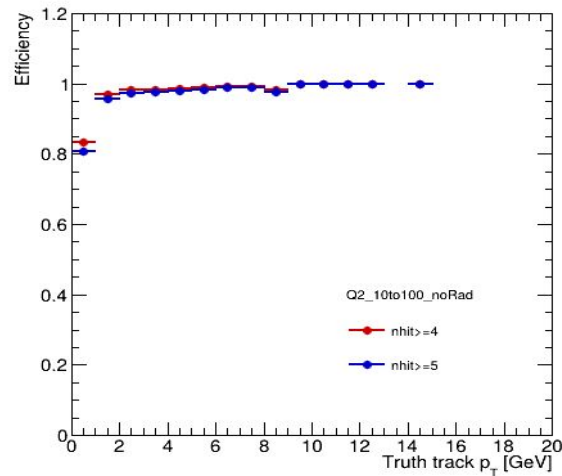
Track Efficiency, minQ2_10_bkg, eta>2



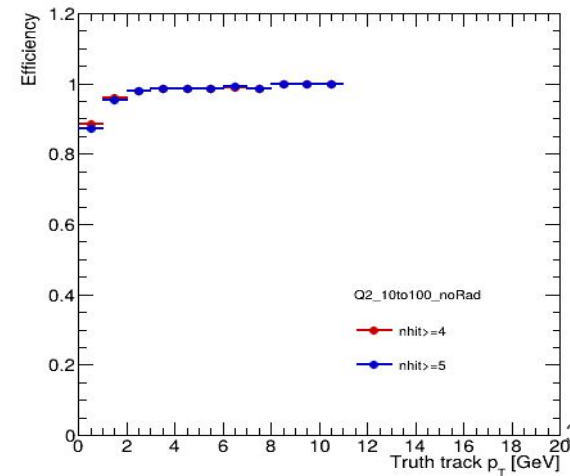
Track Efficiency, Q2_10to100_noRad, eta<-2



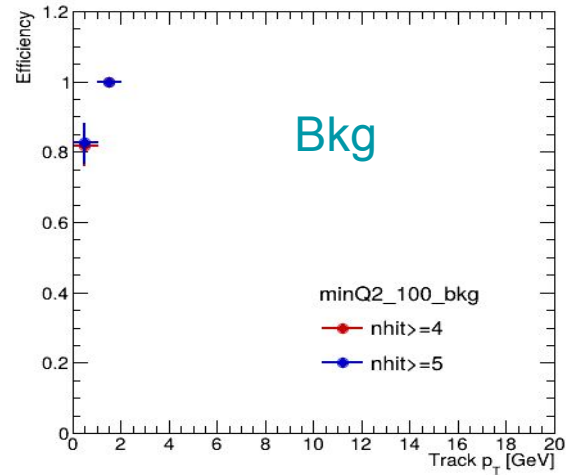
Track Efficiency, Q2_10to100_noRad, -2<eta<2



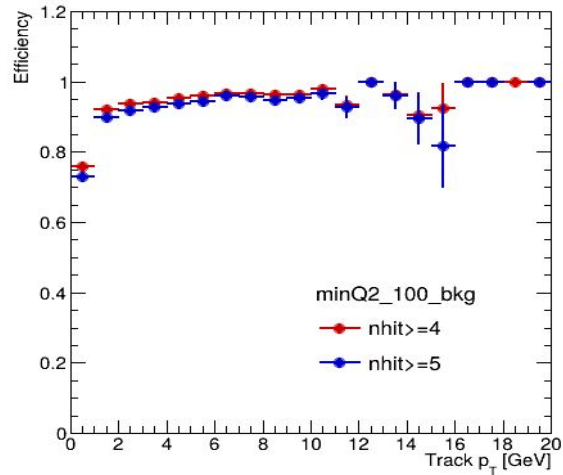
Track Efficiency, Q2_10to100_noRad, eta>2



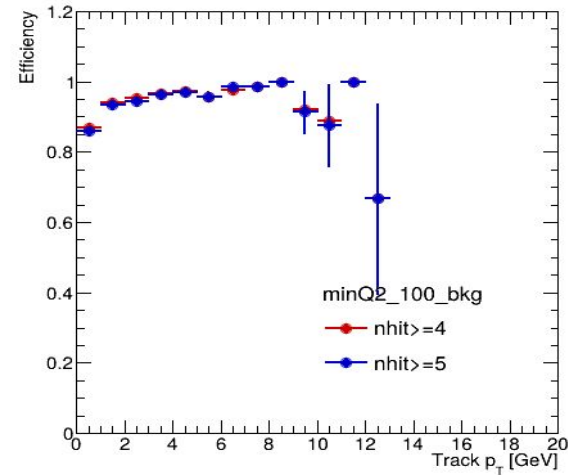
Track Efficiency, minQ2_100_bkg, eta<-2



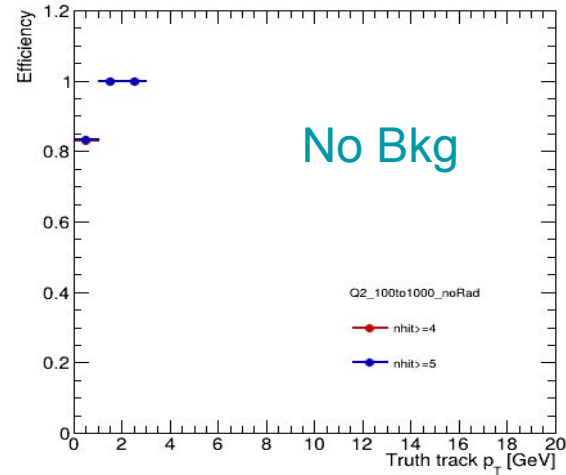
Track Efficiency, minQ2_100_bkg, -2<eta<2



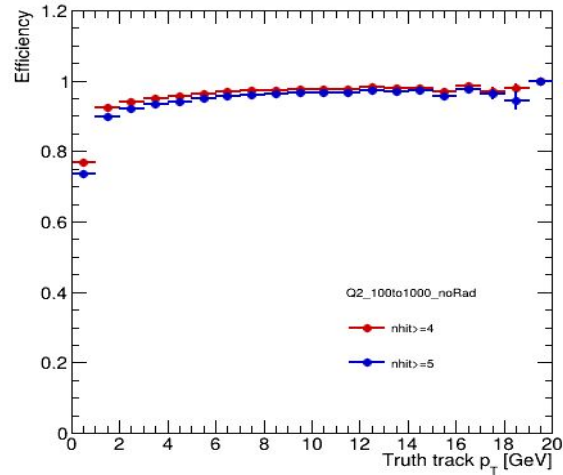
Track Efficiency, minQ2_100_bkg, eta>2



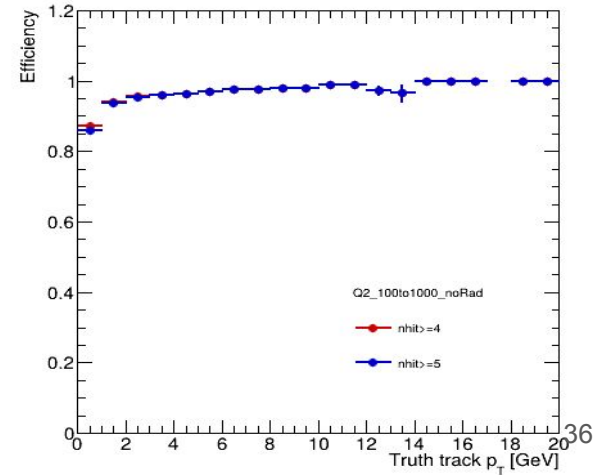
Track Efficiency, Q2_100to1000_noRad, eta<-2

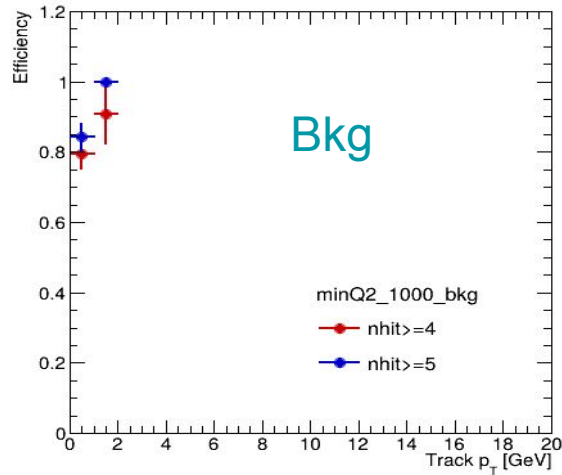
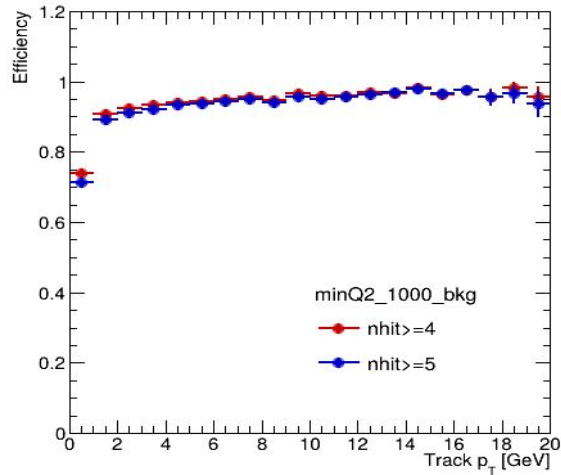
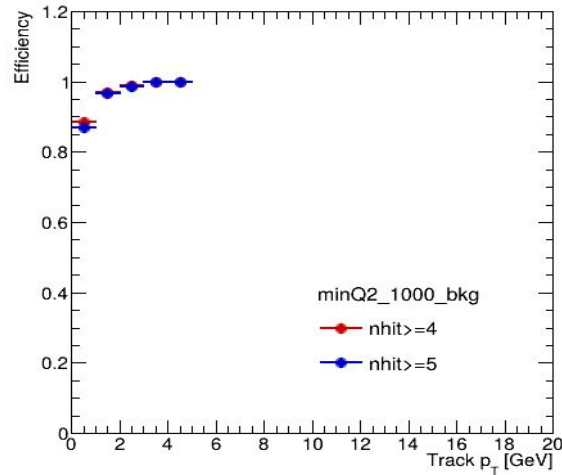
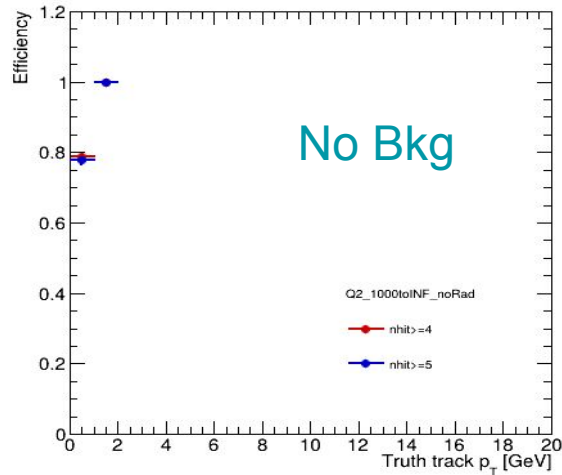
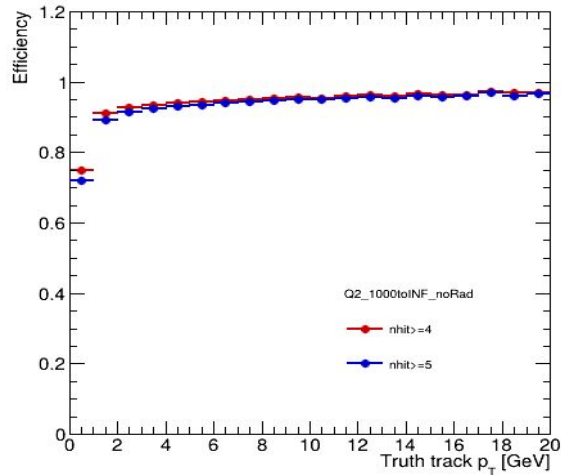
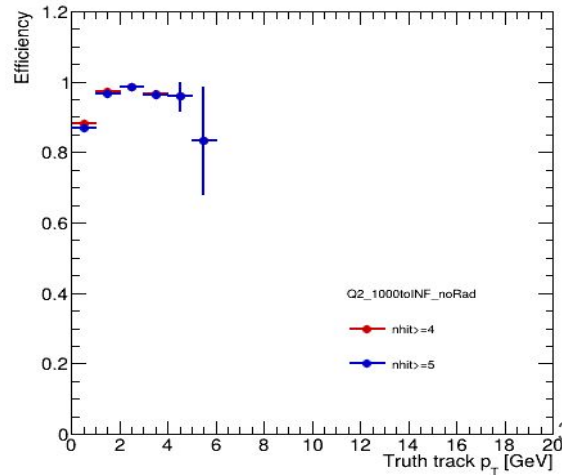


Track Efficiency, Q2_100to1000_noRad, -2<eta<2



Track Efficiency, Q2_100to1000_noRad, eta>2



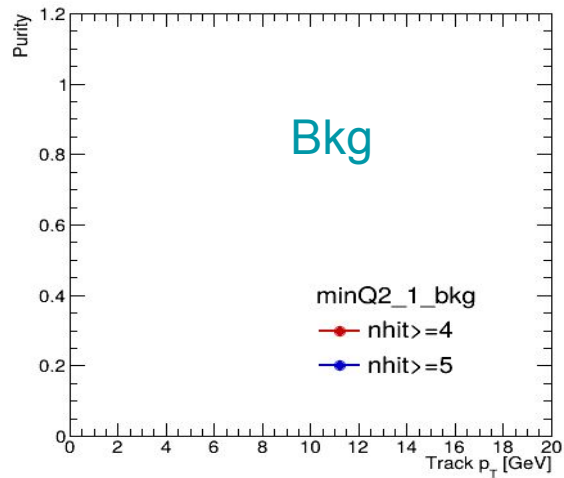
Track Efficiency, minQ2_1000_bkg, $\eta < -2$ Track Efficiency, minQ2_1000_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1000_bkg, $\eta > 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta < -2$ Track Efficiency, Q2_1000toINF_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta > 2$ 

Track Purity & Track Efficiency

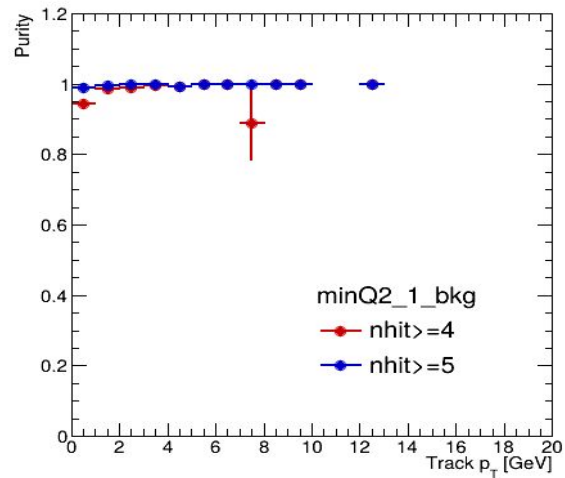
Jet $p_t > 3 \text{ GeV}$

Eta : -3.5 to 3.5

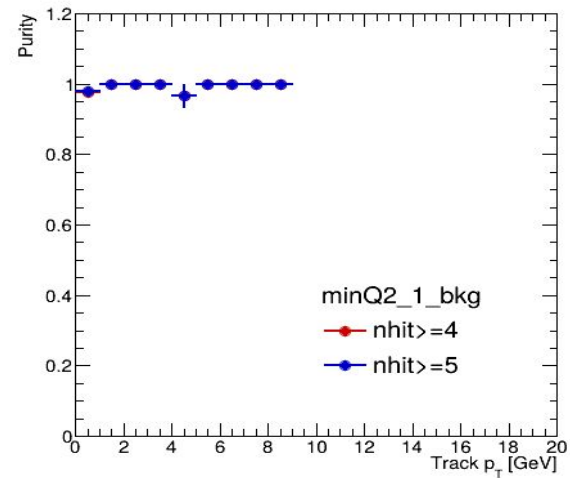
Track Purity, minQ2_1_bkg, eta<-2



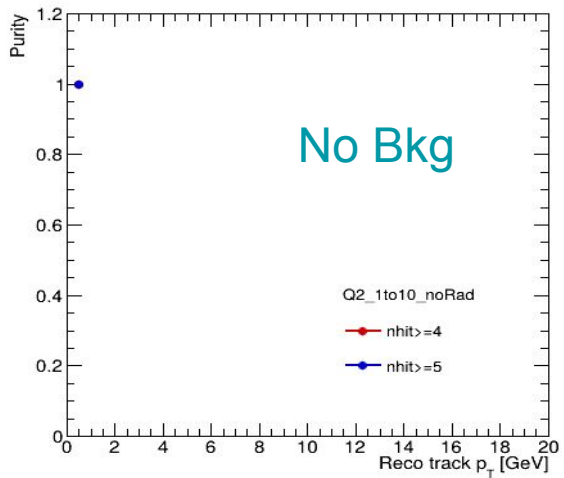
Track Purity, minQ2_1_bkg, -2<eta<2



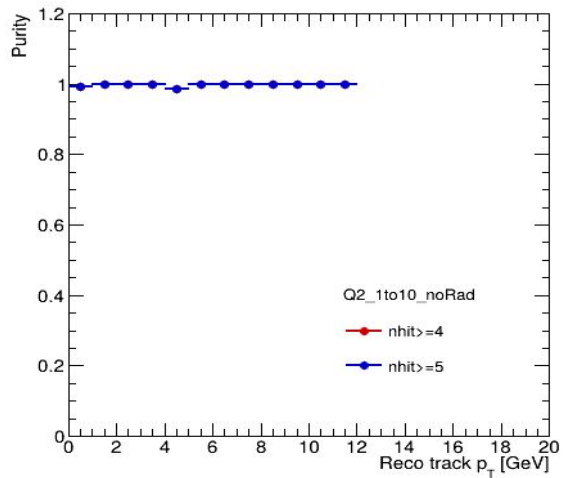
Track Purity, minQ2_1_bkg, eta>2



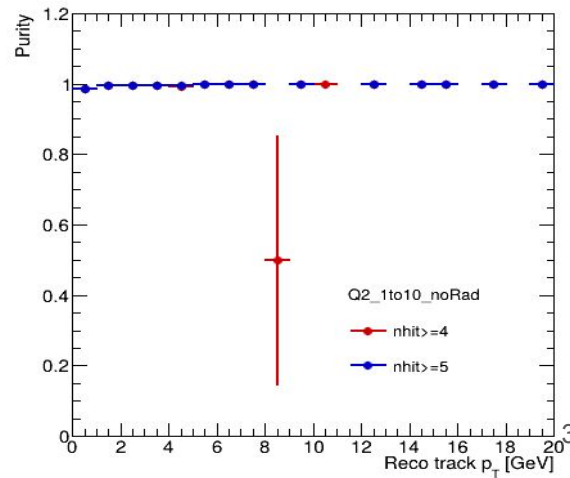
Track Purity, Q2_1to10_noRad, eta<-2

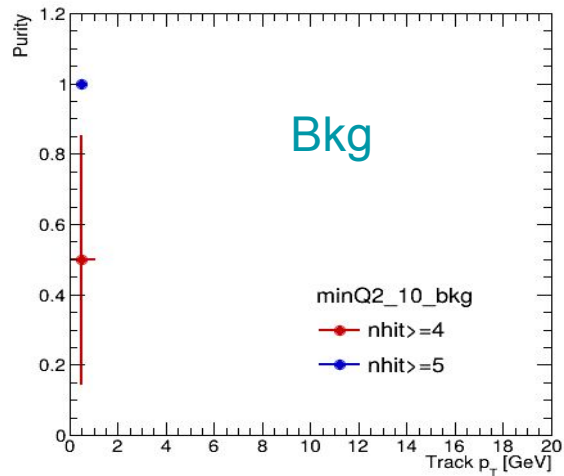
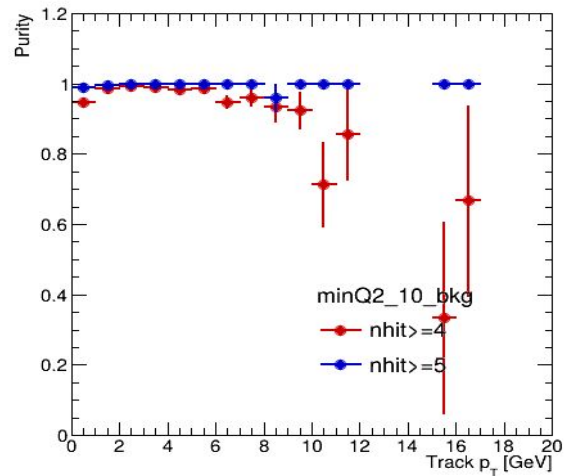
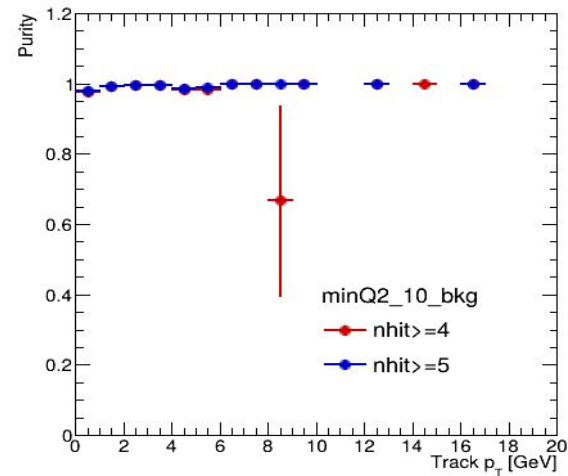
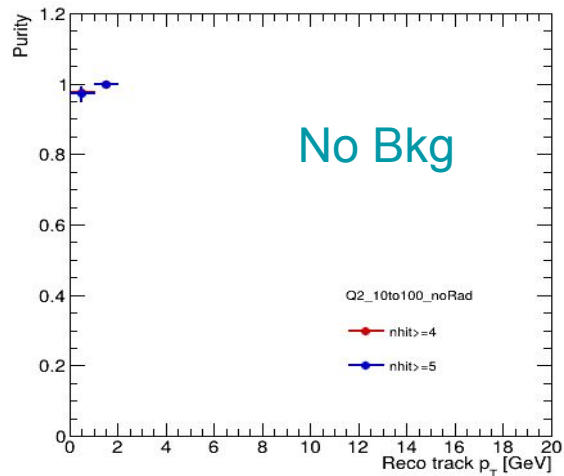
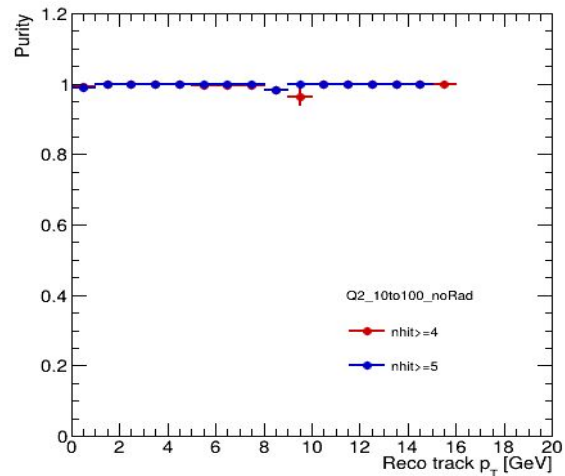
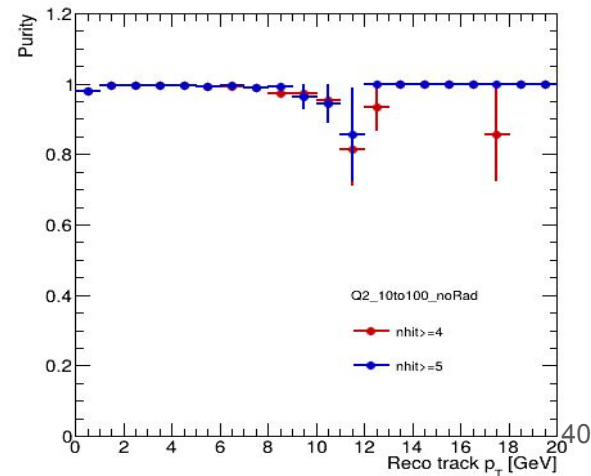


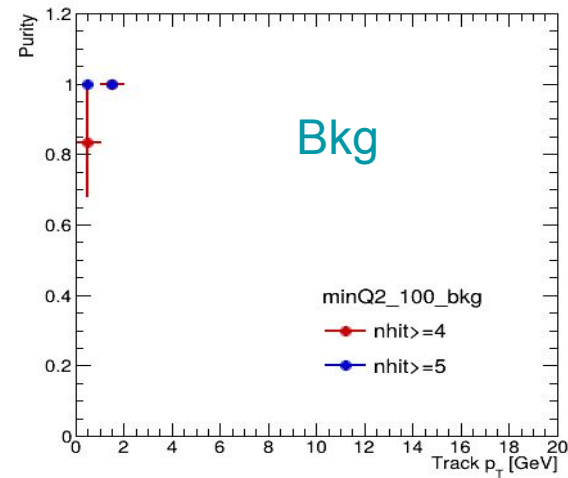
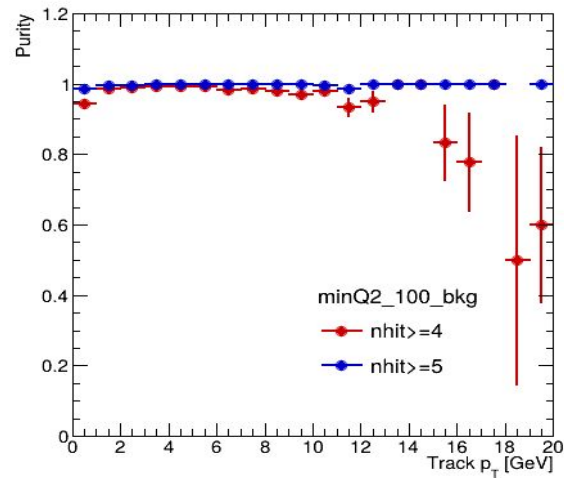
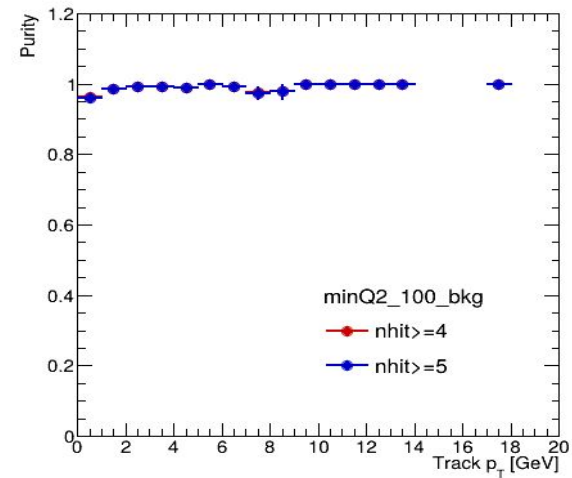
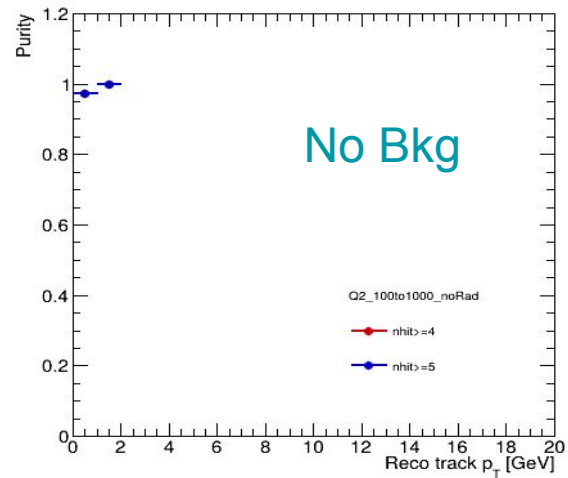
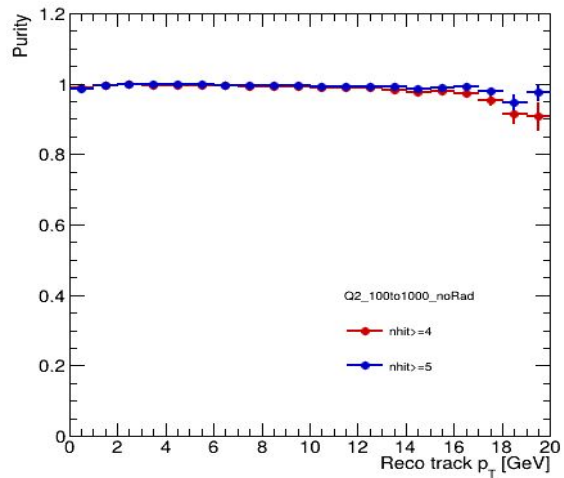
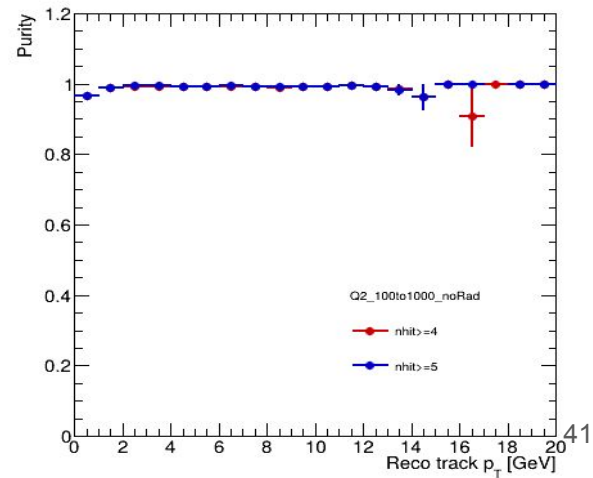
Track Purity, Q2_1to10_noRad, -2<eta<2



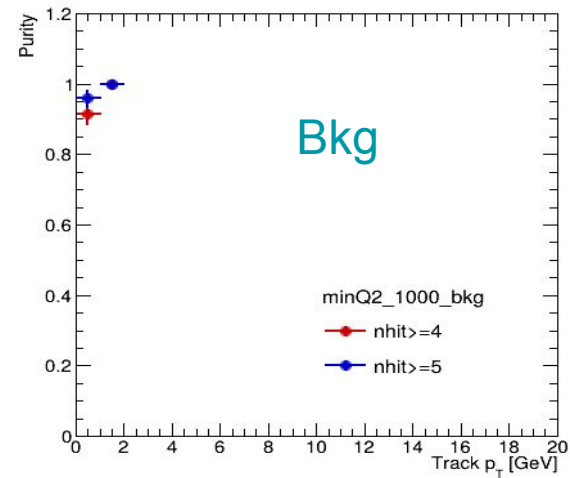
Track Purity, Q2_1to10_noRad, eta>2



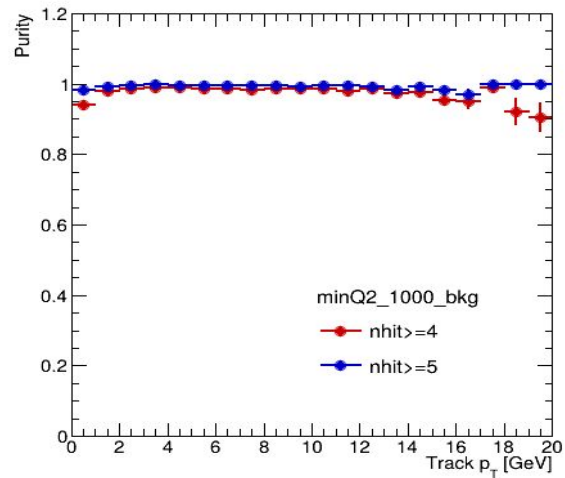
Track Purity, minQ2_10_bkg, $\eta < -2$ Track Purity, minQ2_10_bkg, $-2 < \eta < 2$ Track Purity, minQ2_10_bkg, $\eta > 2$ Track Purity, Q2_10to100_noRad, $\eta < -2$ Track Purity, Q2_10to100_noRad, $-2 < \eta < 2$ Track Purity, Q2_10to100_noRad, $\eta > 2$ 

Track Purity, minQ2_100_bkg, $\eta < -2$ Track Purity, minQ2_100_bkg, $-2 < \eta < 2$ Track Purity, minQ2_100_bkg, $\eta > 2$ Track Purity, Q2_100to1000_noRad, $\eta < -2$ Track Purity, Q2_100to1000_noRad, $-2 < \eta < 2$ Track Purity, Q2_100to1000_noRad, $\eta > 2$ 

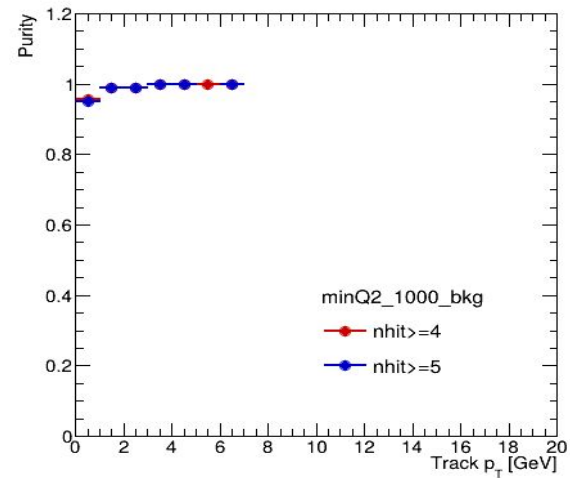
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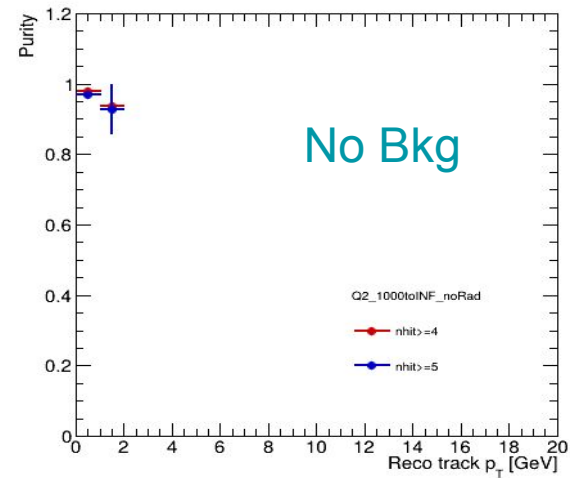
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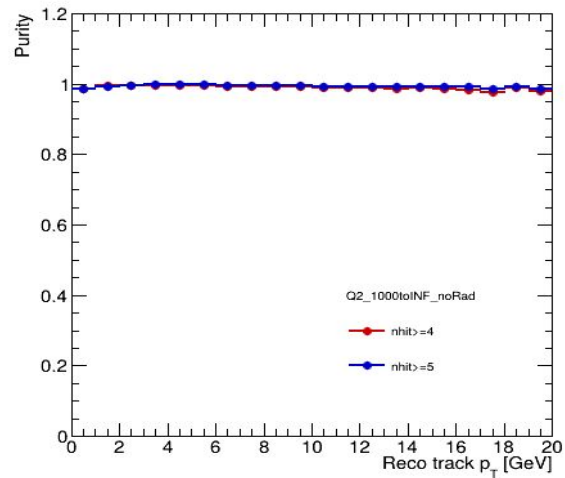
Track Purity, minQ2_1000_bkg, eta>2



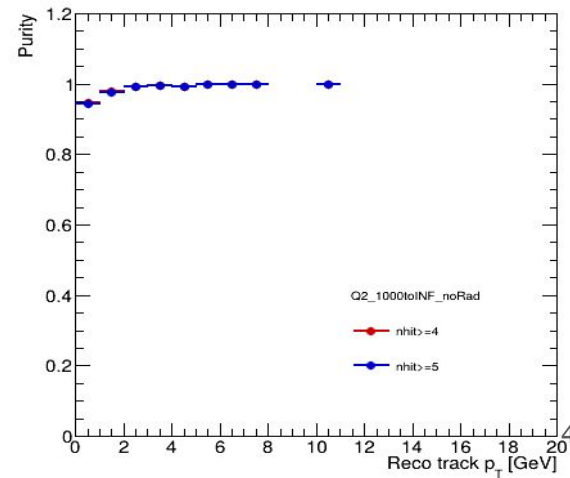
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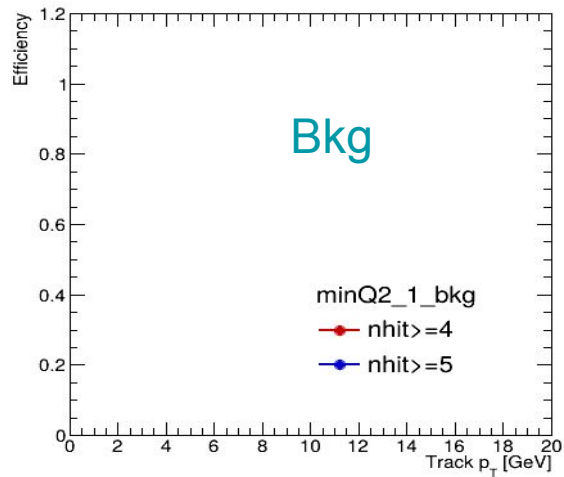
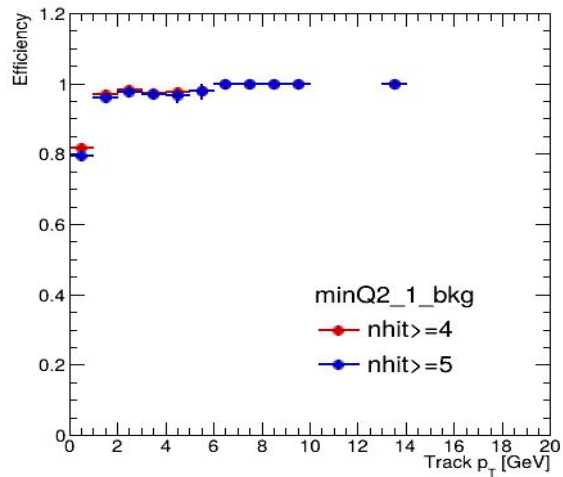
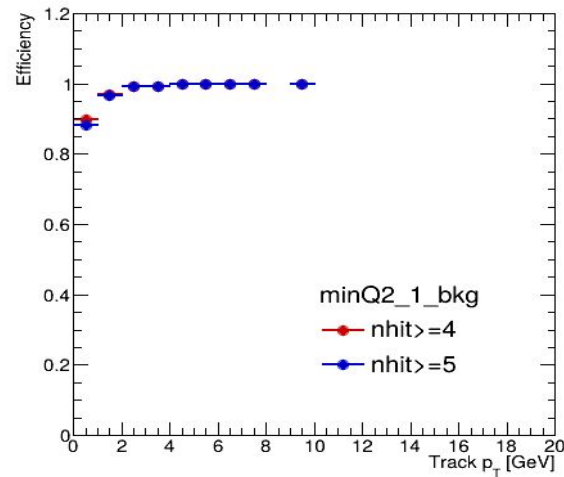
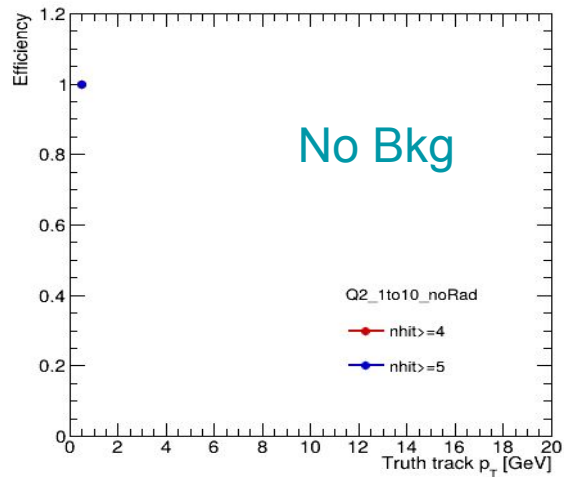
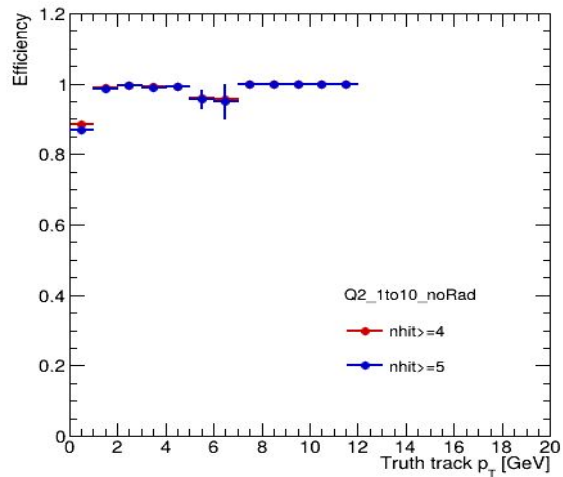
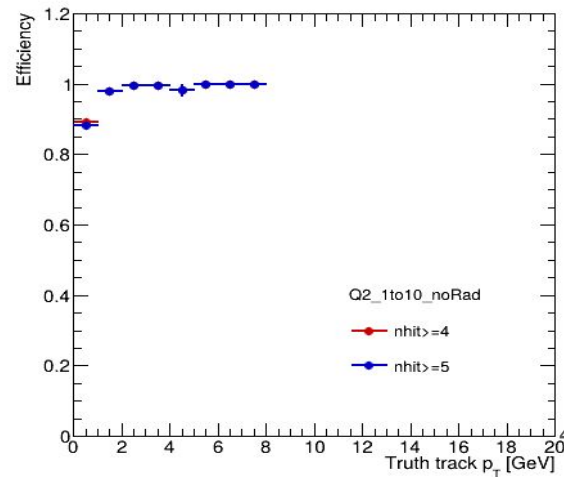


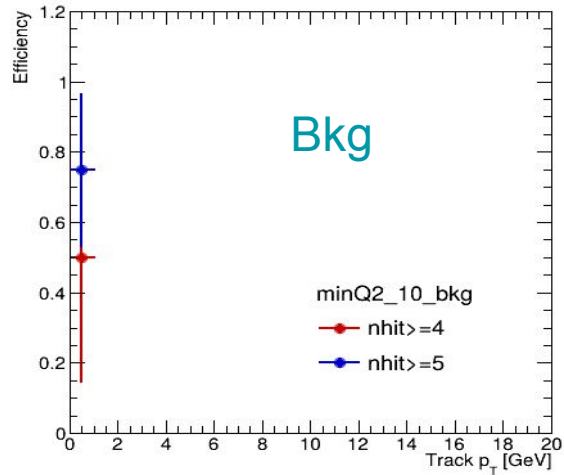
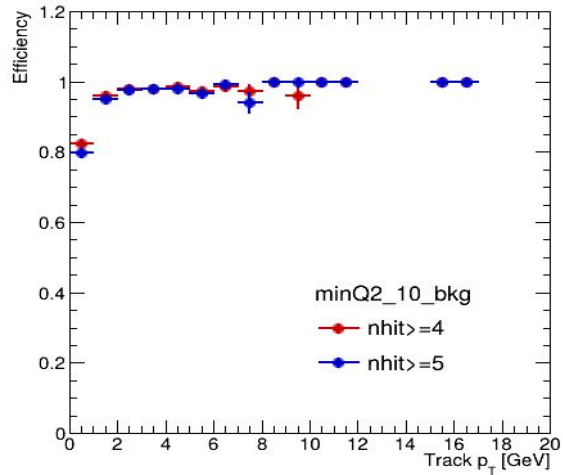
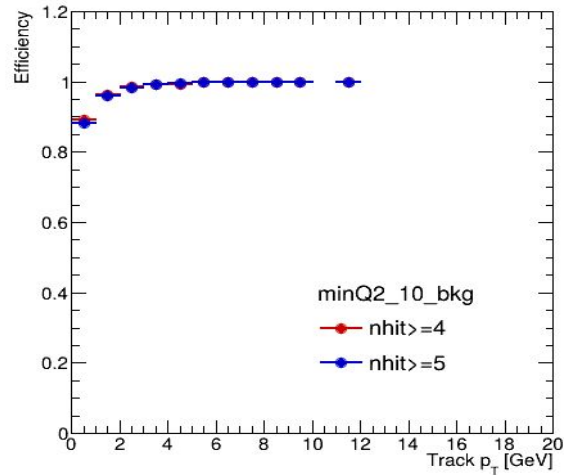
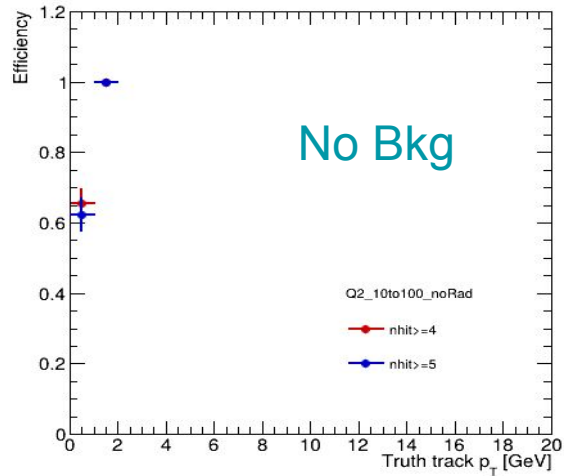
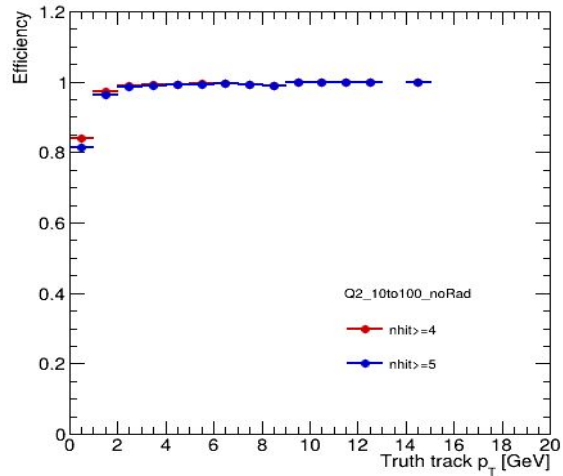
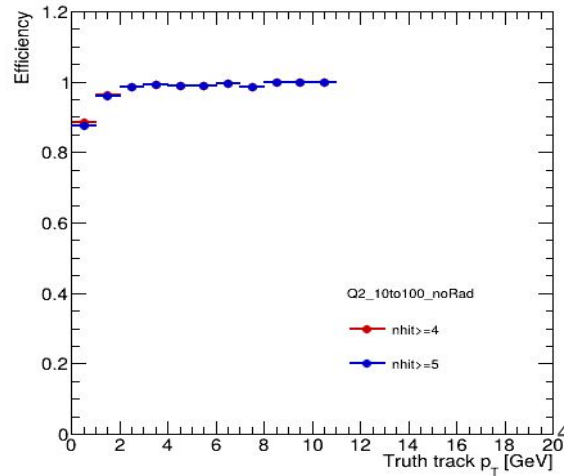
Track Purity, Q2_1000toINF_noRad, -2<eta<2

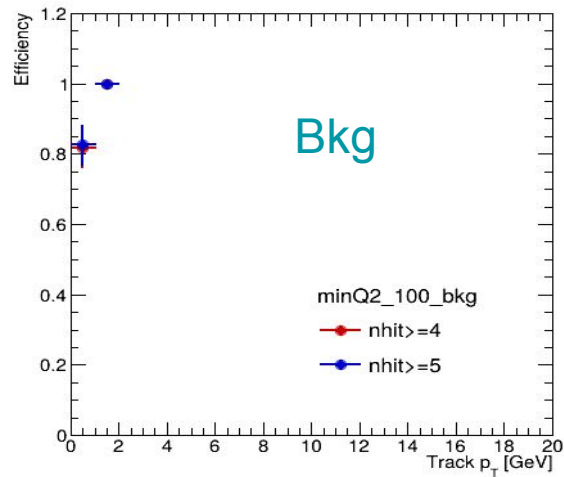
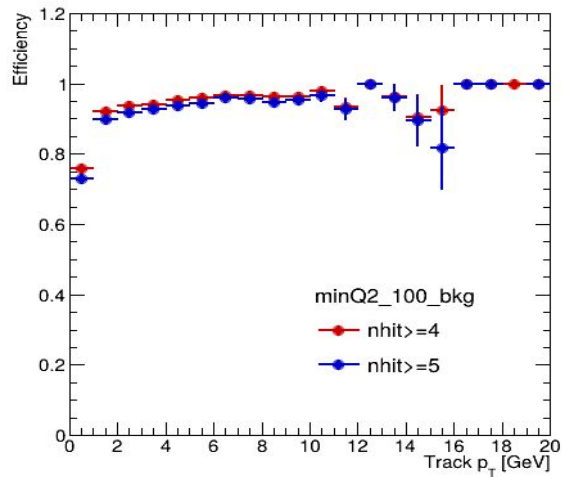
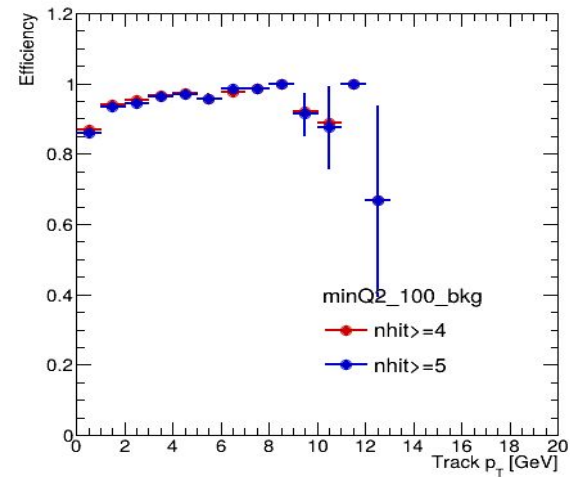
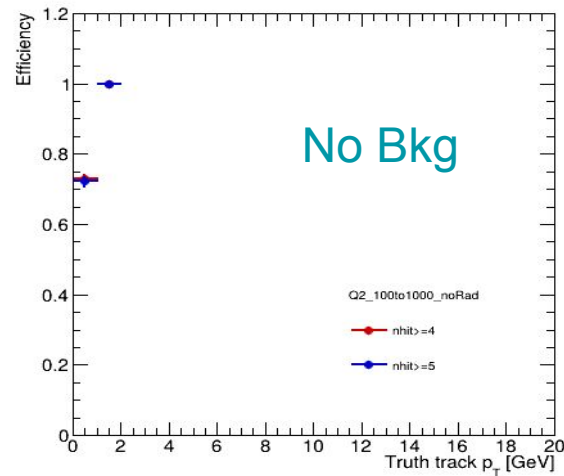
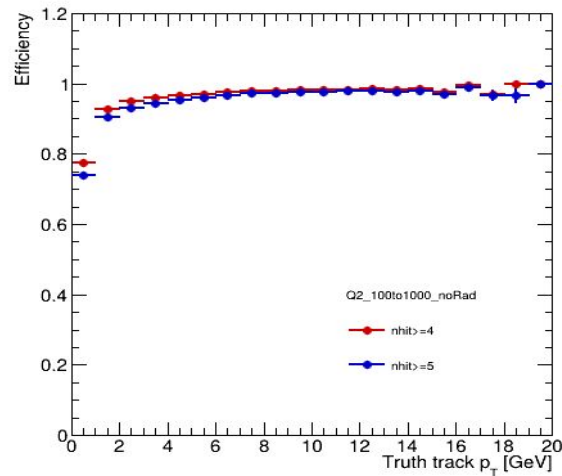
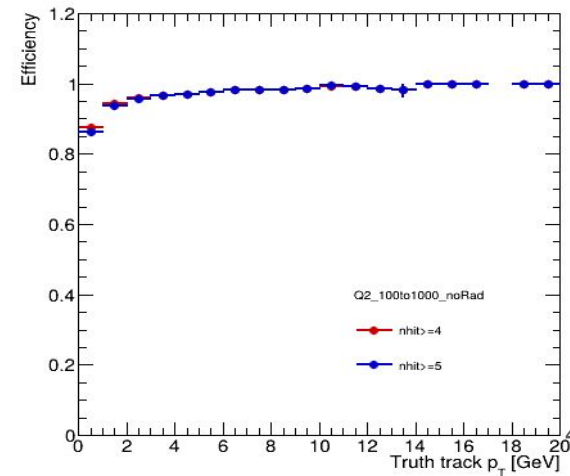


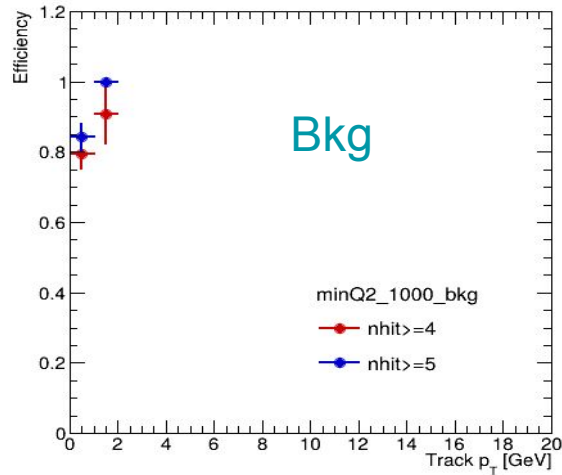
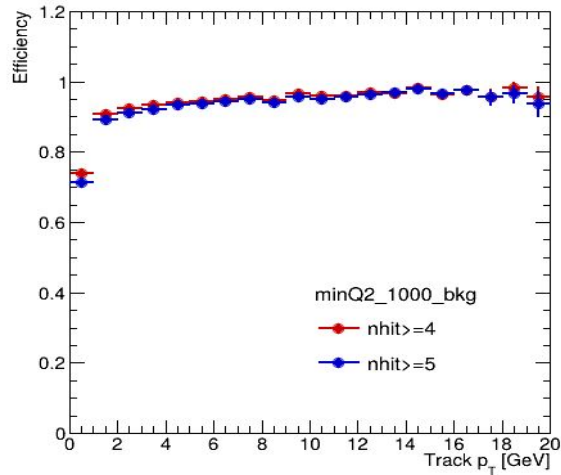
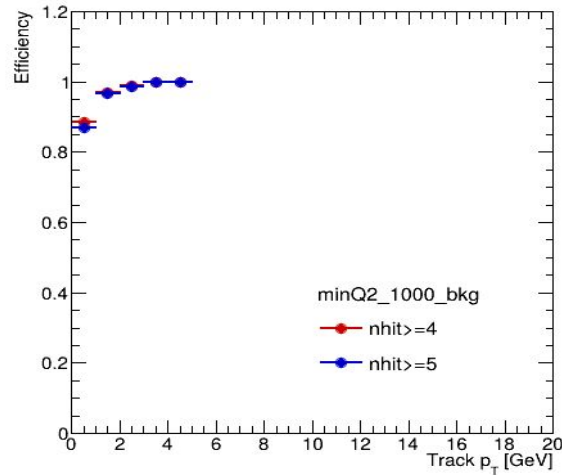
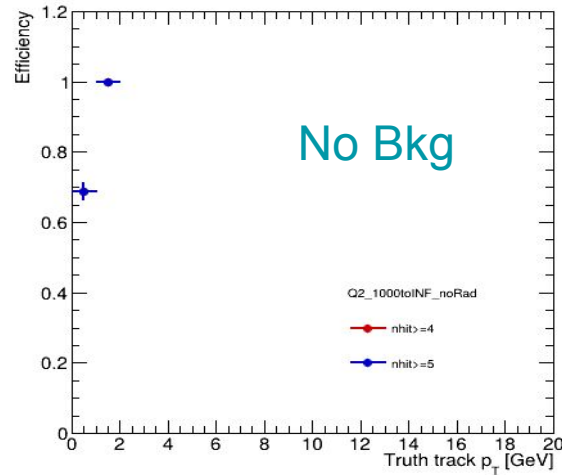
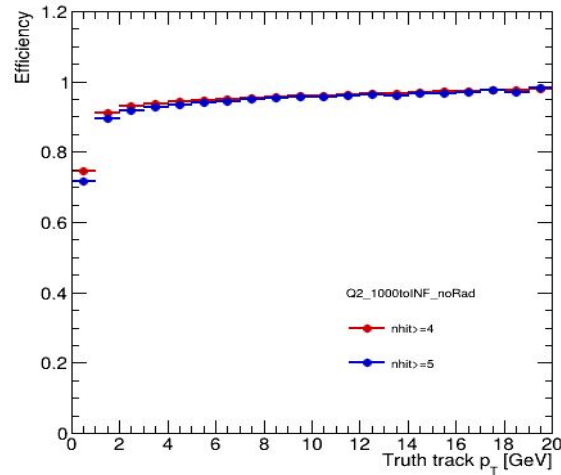
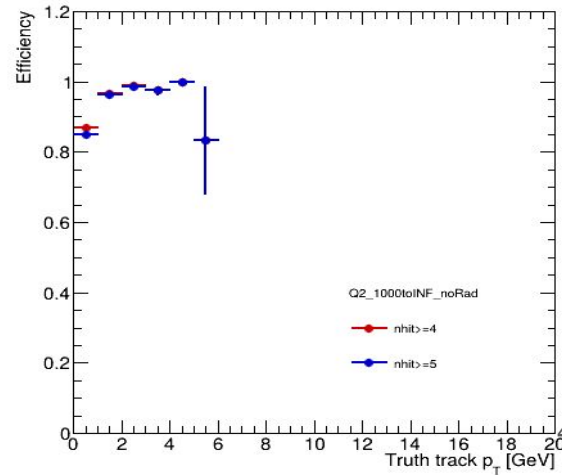
Track Purity, Q2_1000toINF_noRad, eta>2



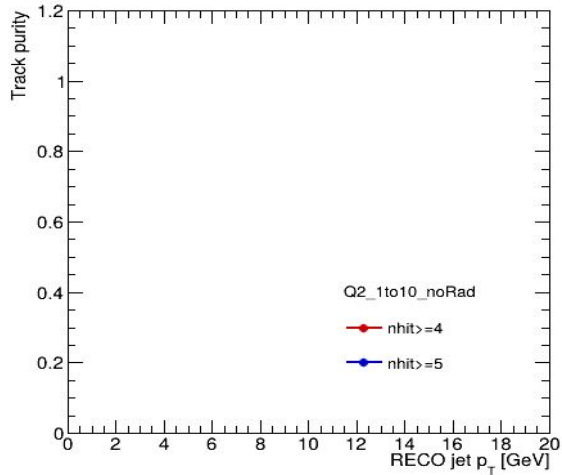
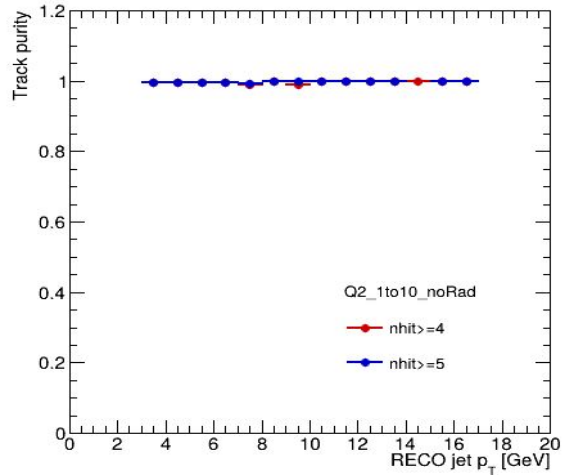
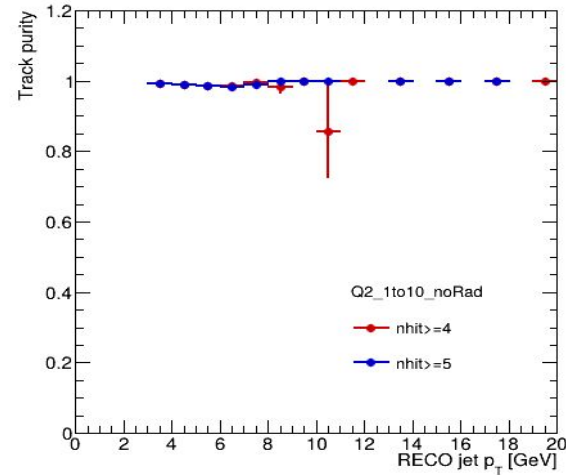
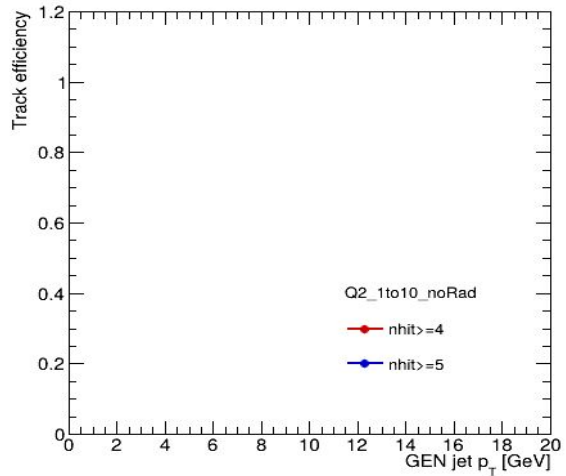
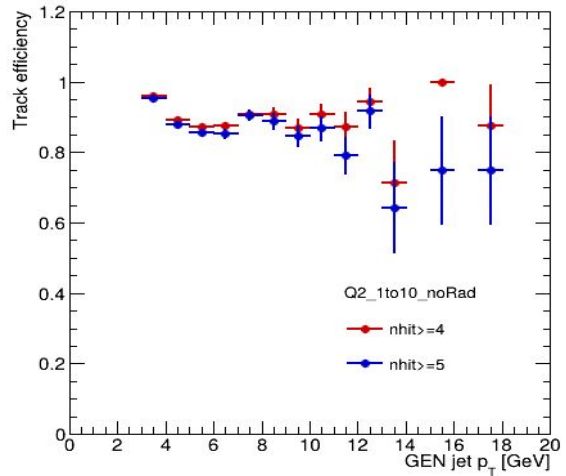
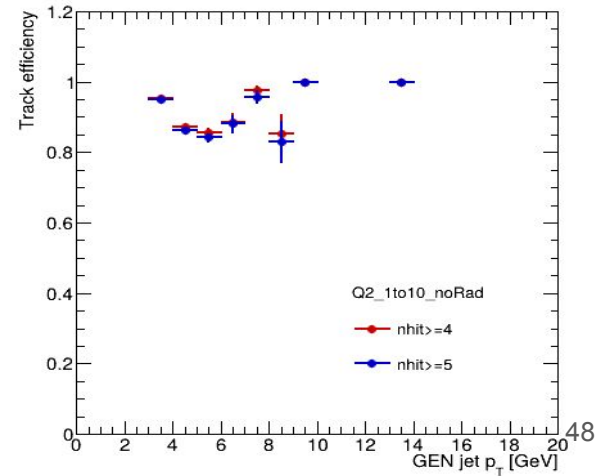
Track Efficiency, minQ2_1_bkg, $\eta < -2$ Track Efficiency, minQ2_1_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1_bkg, $\eta > 2$ Track Efficiency, Q2_1to10_noRad, $\eta < -2$ Track Efficiency, Q2_1to10_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1to10_noRad, $\eta > 2$ 

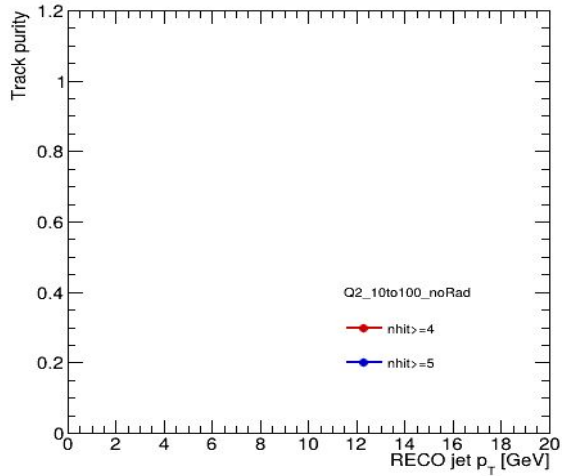
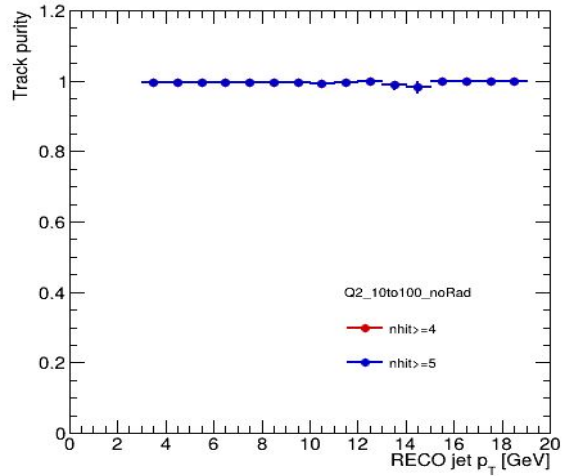
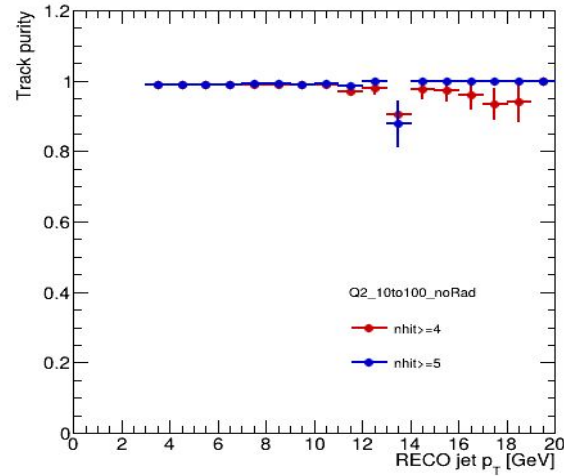
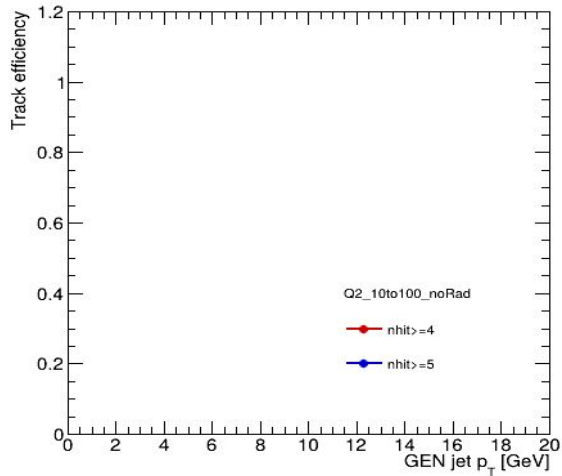
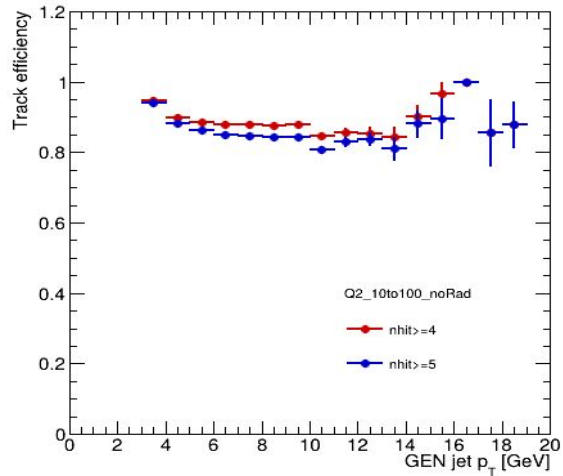
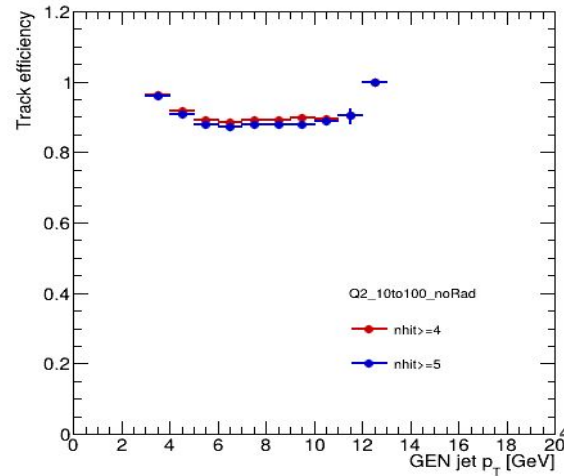
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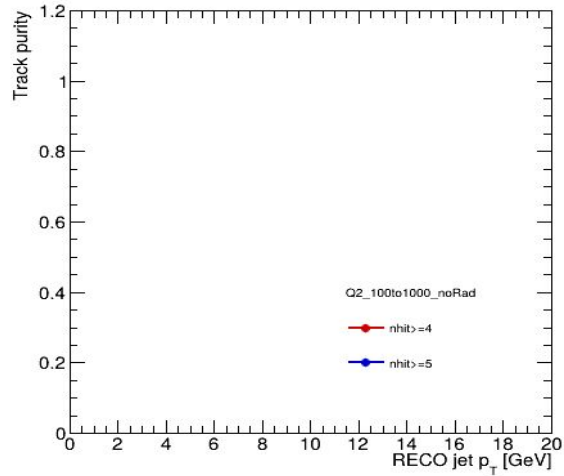
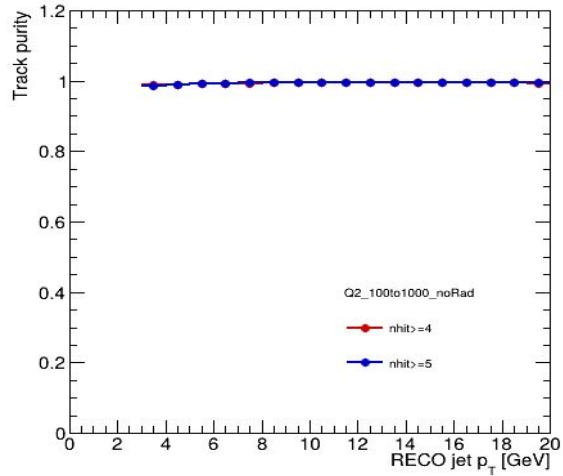
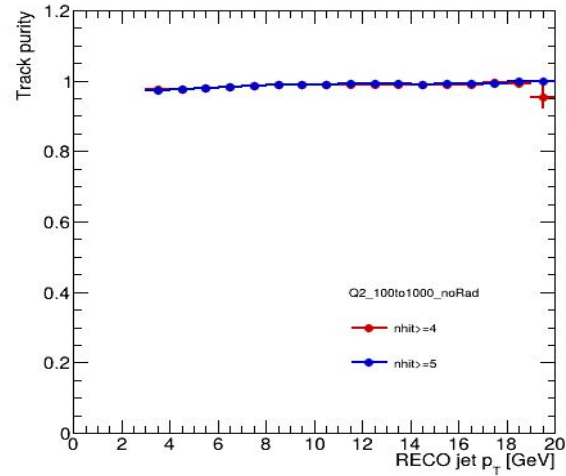
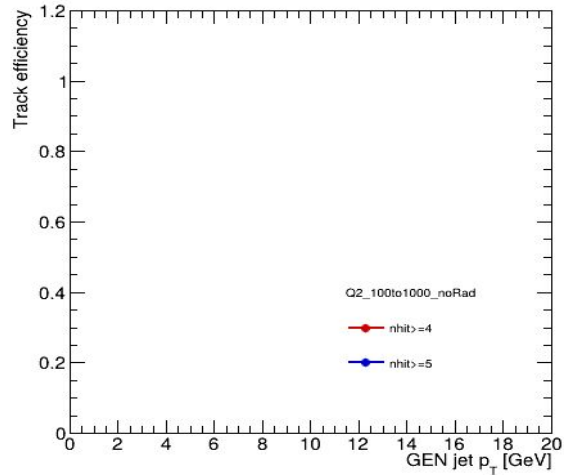
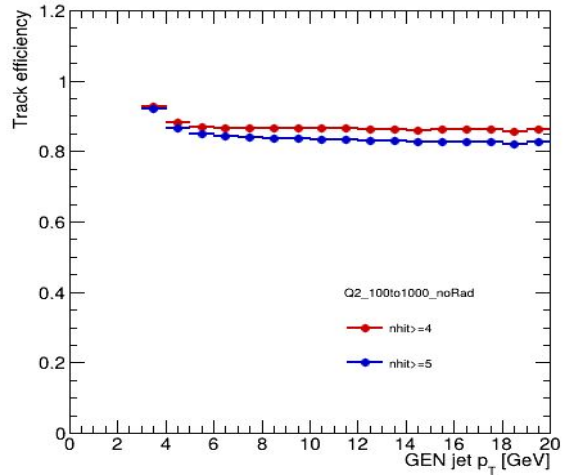
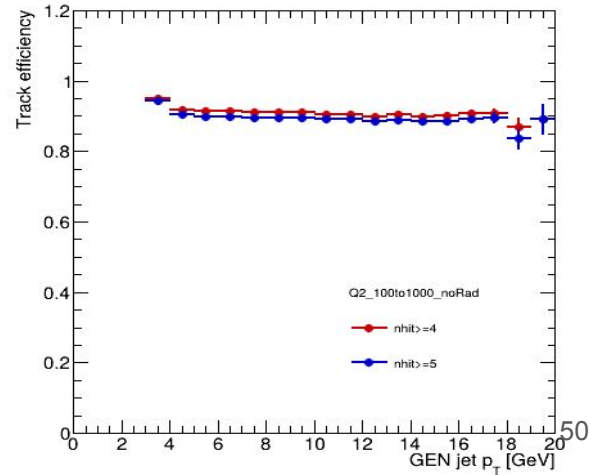
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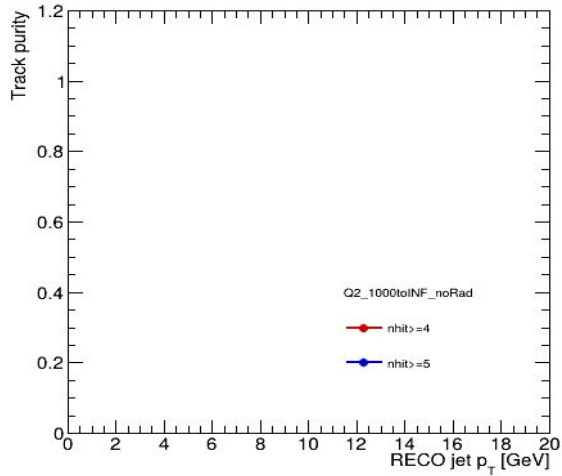
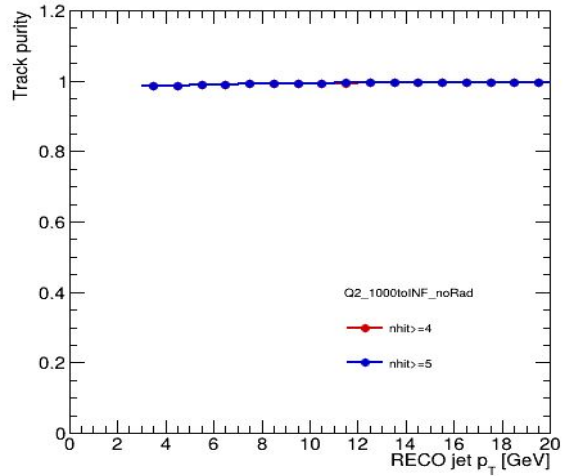
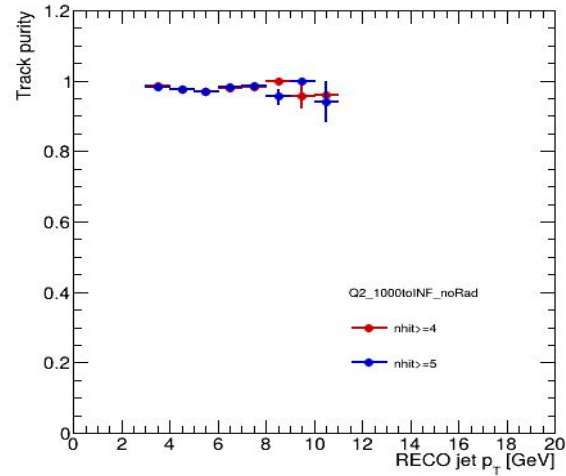
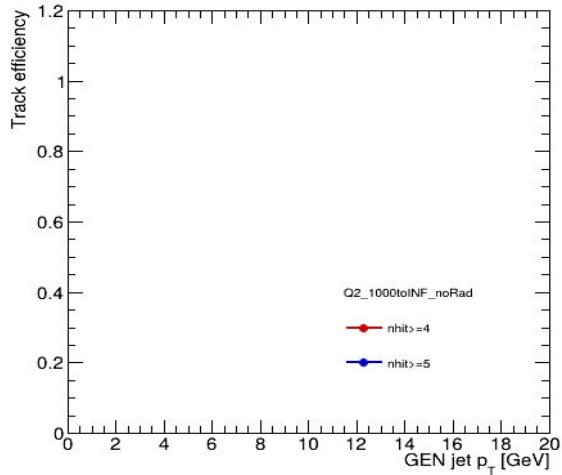
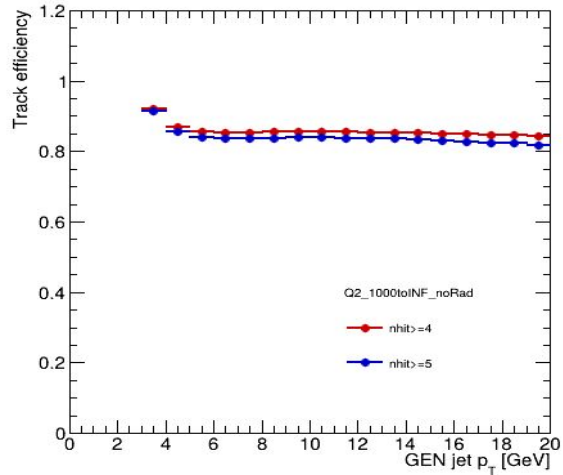
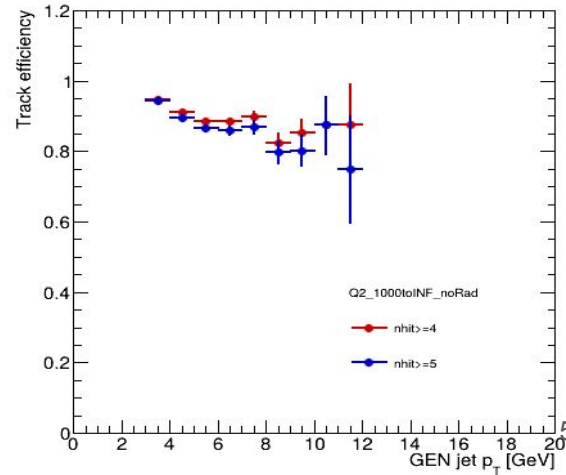
Track Efficiency, minQ2_1000_bkg, $\eta < -2$ Track Efficiency, minQ2_1000_bkg, $-2 < \eta < 2$ Track Efficiency, minQ2_1000_bkg, $\eta > 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta < -2$ Track Efficiency, Q2_1000toINF_noRad, $-2 < \eta < 2$ Track Efficiency, Q2_1000toINF_noRad, $\eta > 2$ 

Jet pt, jet eta

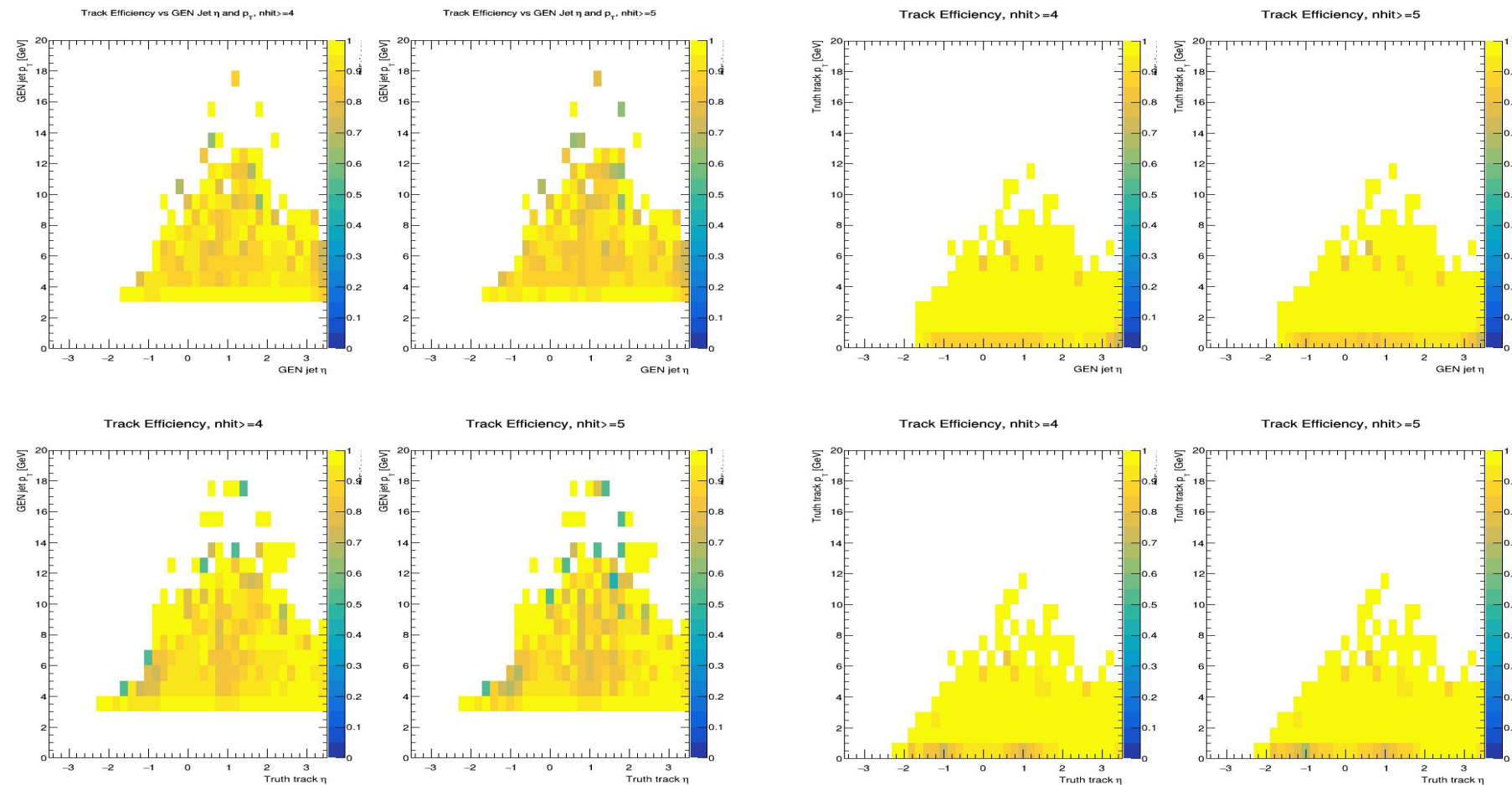
Track Purity vs RECO Jet p_T , Q2_1to10_noRad, $\eta < -2$ Track Purity vs RECO Jet p_T , Q2_1to10_noRad, $-2 < \eta < 2$ Track Purity vs RECO Jet p_T , Q2_1to10_noRad, $\eta > 2$ Track Efficiency vs GEN Jet p_T , Q2_1to10_noRad, $\eta < -2$ Track Efficiency vs GEN Jet p_T , Q2_1to10_noRad, $-2 < \eta < 2$ Track Efficiency vs GEN Jet p_T , Q2_1to10_noRad, $\eta > 2$ 

Track Purity vs RECO Jet p_T , Q2_10to100_noRad, $\eta < -2$ Track Purity vs RECO Jet p_T , Q2_10to100_noRad, $-2 < \eta < 2$ Track Purity vs RECO Jet p_T , Q2_10to100_noRad, $\eta > 2$ Track Efficiency vs GEN Jet p_T , Q2_10to100_noRad, $\eta < -2$ Track Efficiency vs GEN Jet p_T , Q2_10to100_noRad, $-2 < \eta < 2$ Track Efficiency vs GEN Jet p_T , Q2_10to100_noRad, $\eta > 2$ 

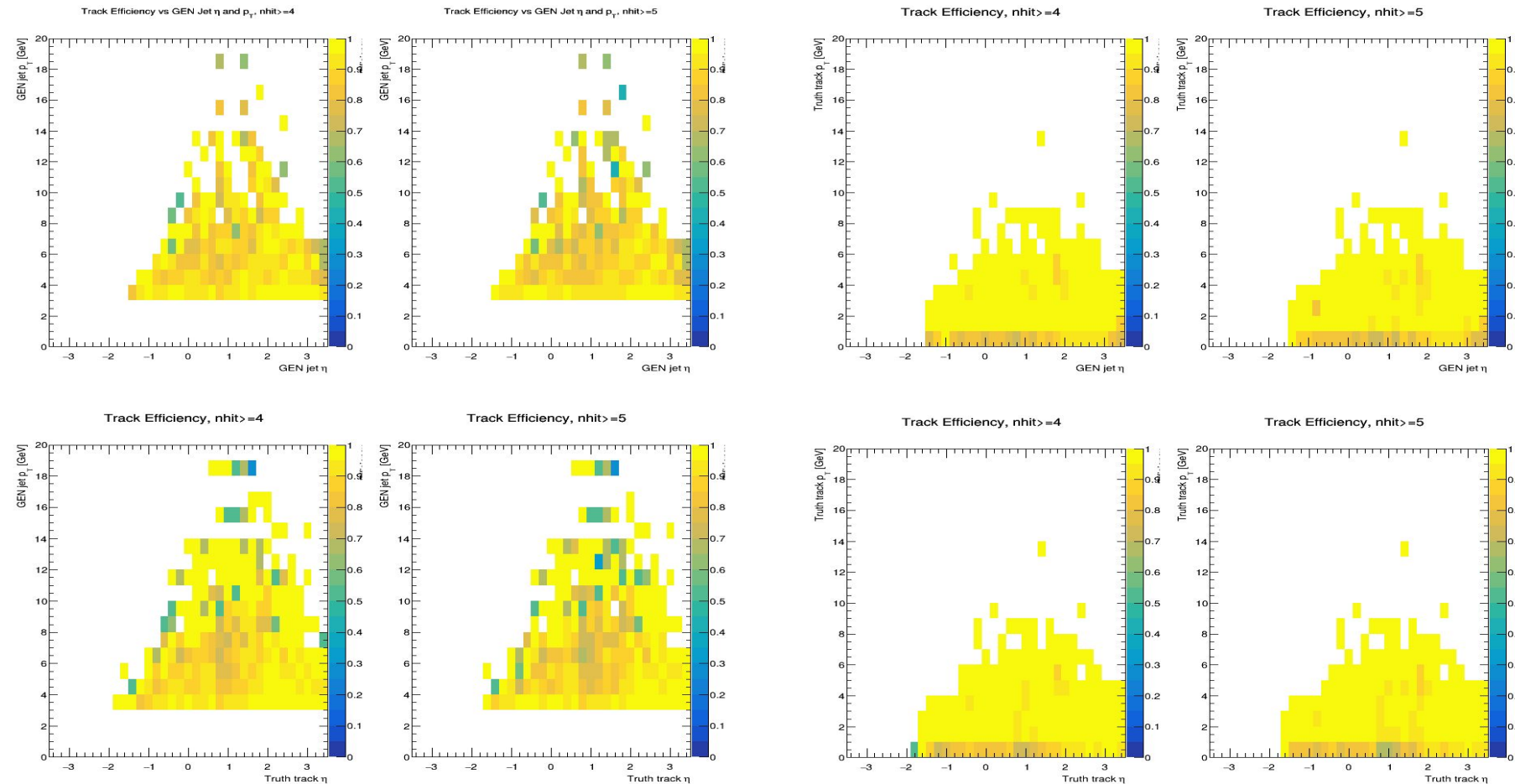
Track Purity vs RECO Jet p_T , Q2_100to1000_noRad, $\eta < 2$ Track Purity vs RECO Jet p_T , Q2_100to1000_noRad, $-2 < \eta < 2$ Track Purity vs RECO Jet p_T , Q2_100to1000_noRad, $\eta > 2$ Track Efficiency vs GEN Jet p_T , Q2_100to1000_noRad, $\eta < 2$ Track Efficiency vs GEN Jet p_T , Q2_100to1000_noRad, $-2 < \eta < 2$ Track Efficiency vs GEN Jet p_T , Q2_100to1000_noRad, $\eta > 2$ 

Track Purity vs RECO Jet p_T , Q2_1000toINF_noRad, $\eta < -2$ Track Purity vs RECO Jet p_T , Q2_1000toINF_noRad, $-2 < \eta < 2$ Track Purity vs RECO Jet p_T , Q2_1000toINF_noRad, $\eta > 2$ Track Efficiency vs GEN Jet p_T , Q2_1000toINF_noRad, $\eta < -2$ Track Efficiency vs GEN Jet p_T , Q2_1000toINF_noRad, $-2 < \eta < 2$ Track Efficiency vs GEN Jet p_T , Q2_1000toINF_noRad, $\eta > 2$ 

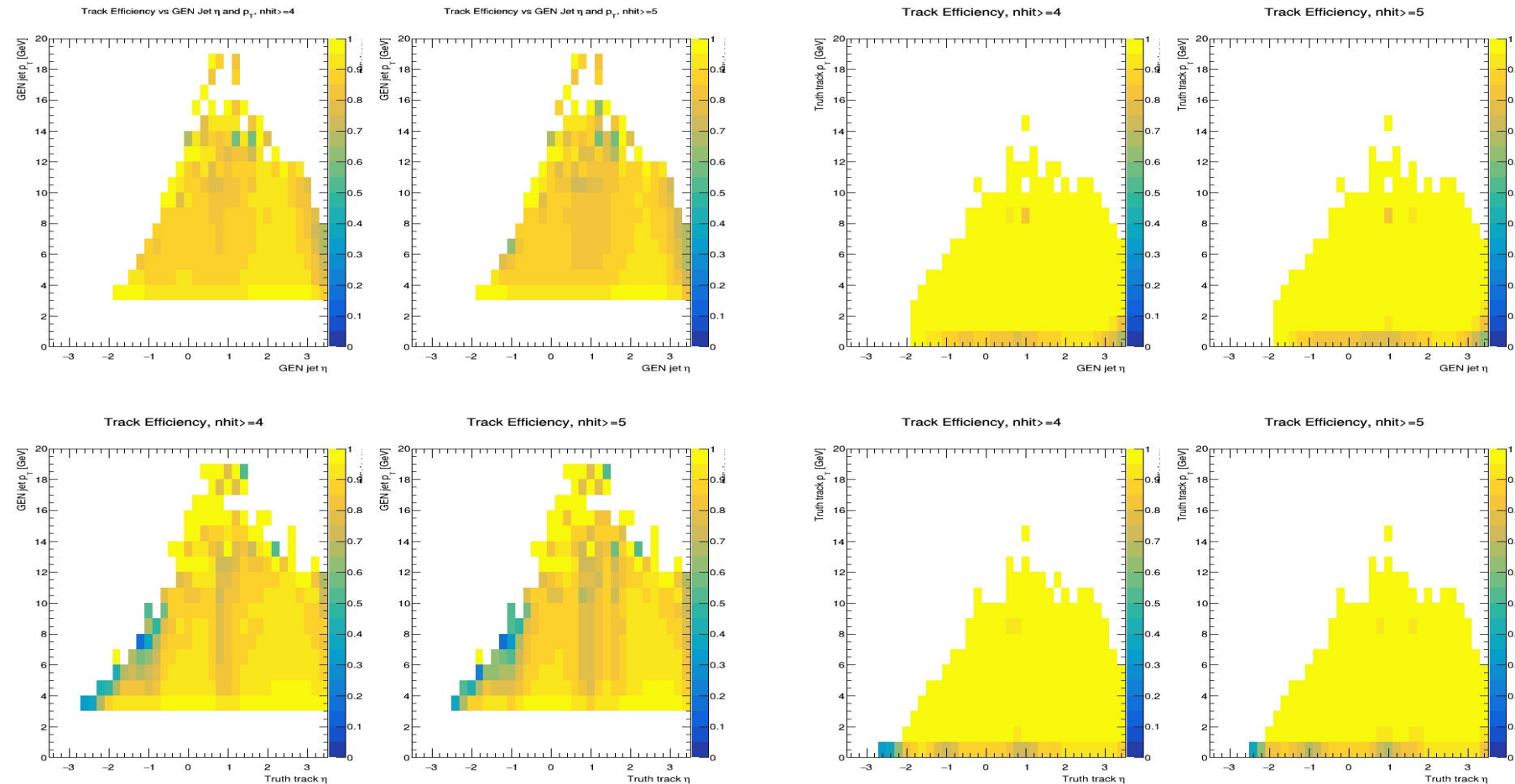
Efficiency: Q2 1 to 10 no Rad



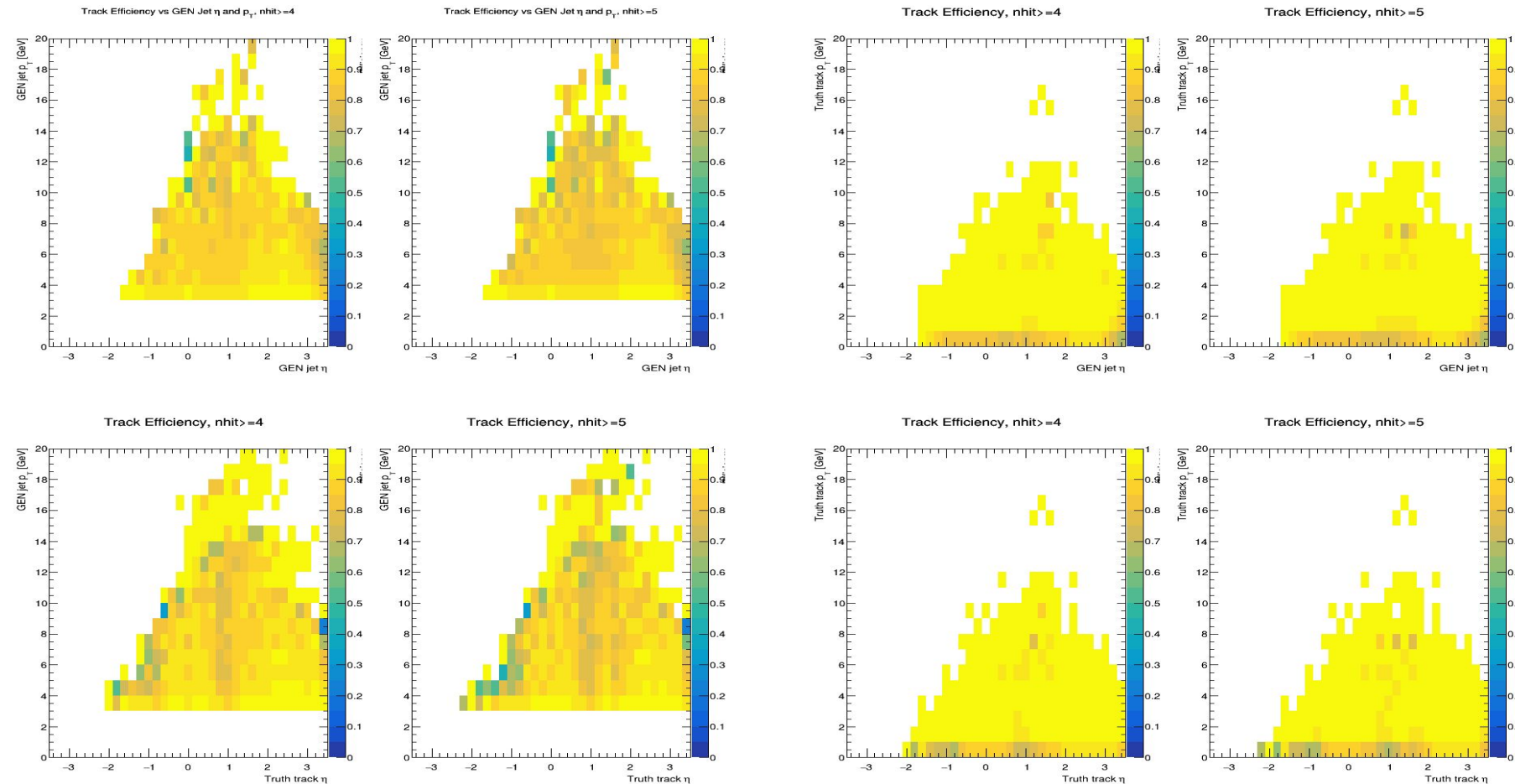
Efficiency: Q2 1 to 10 Bkg



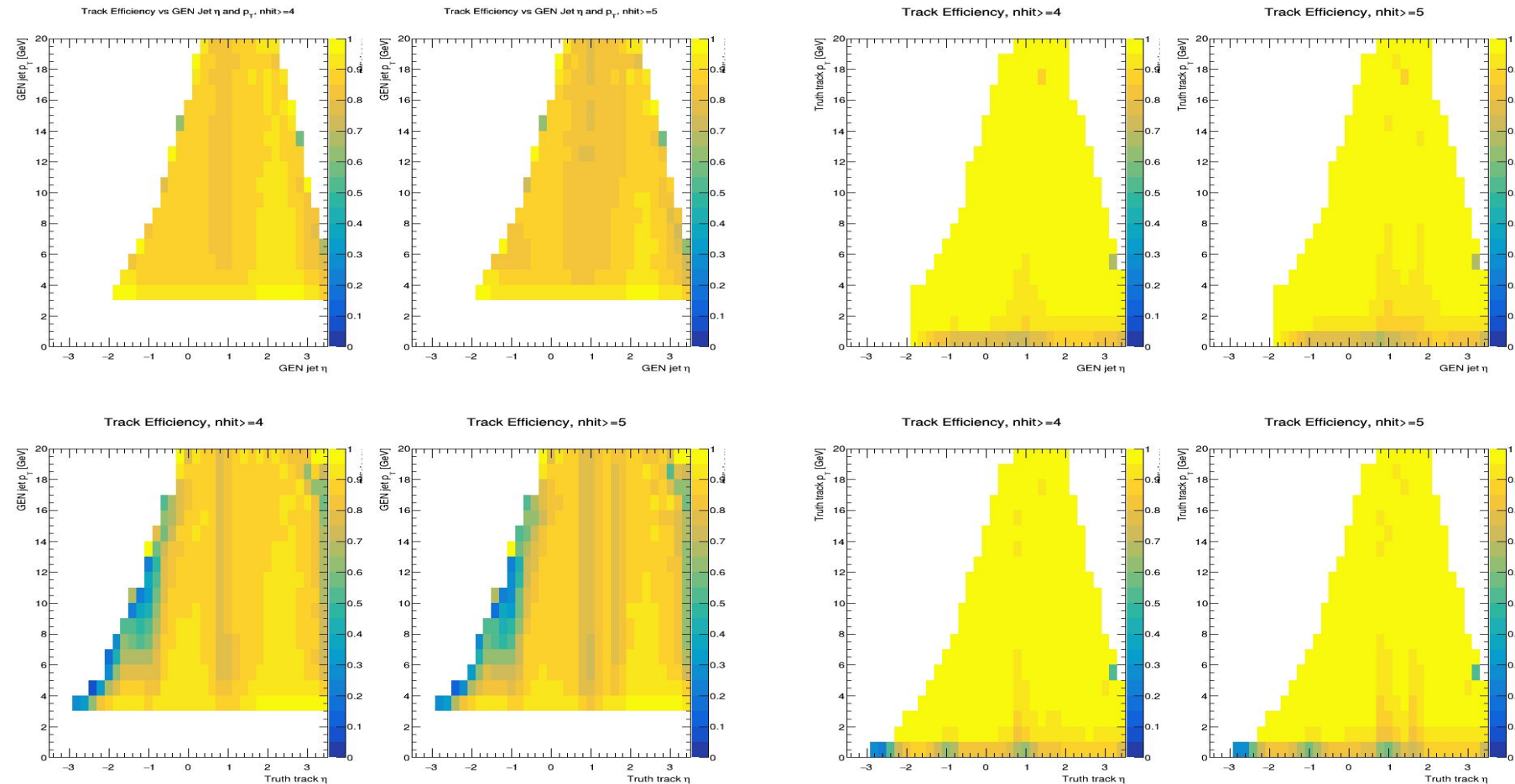
Efficiency: Q2 10 to 100 no Rad



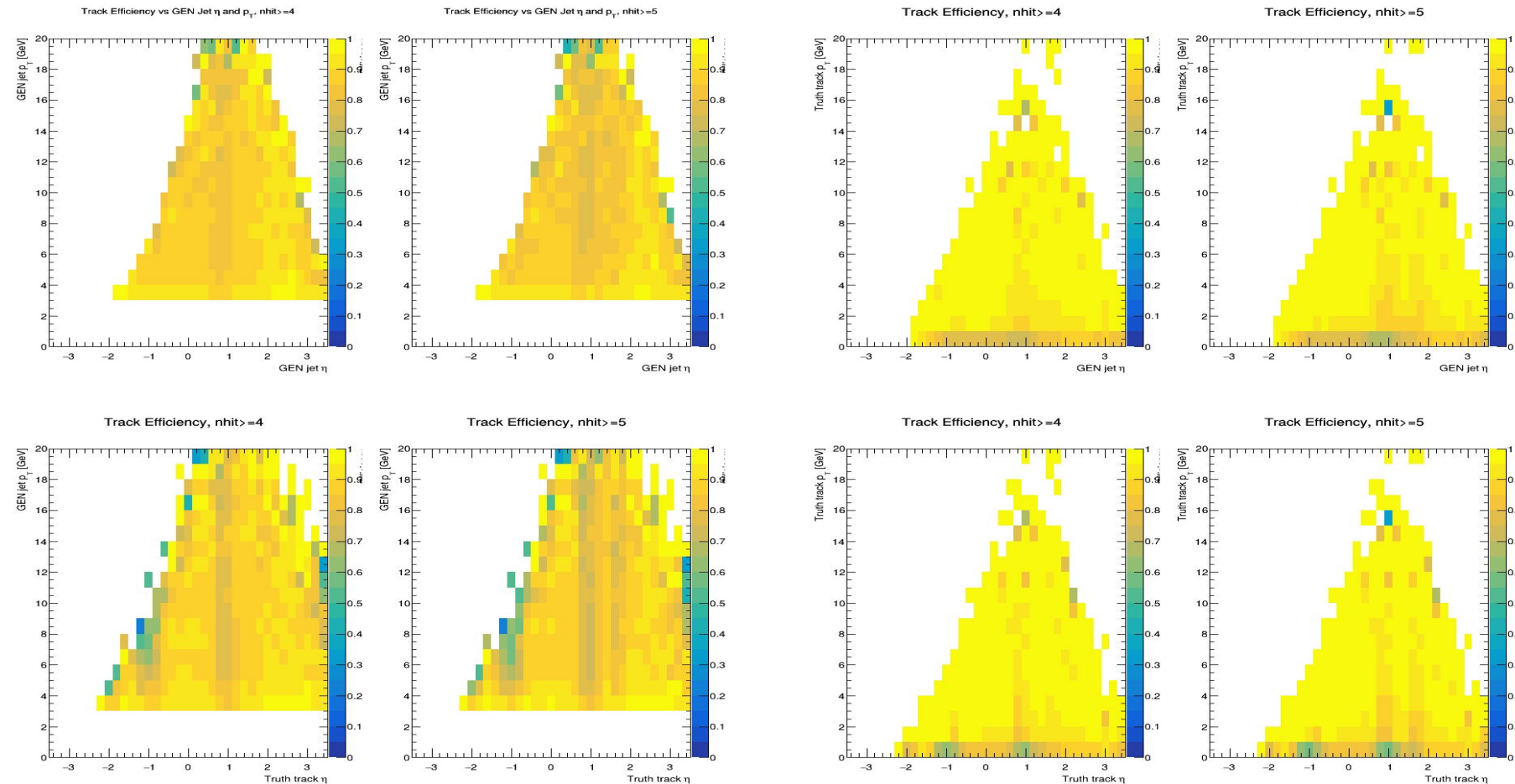
Efficiency: Q2 10 to 100 Bkg



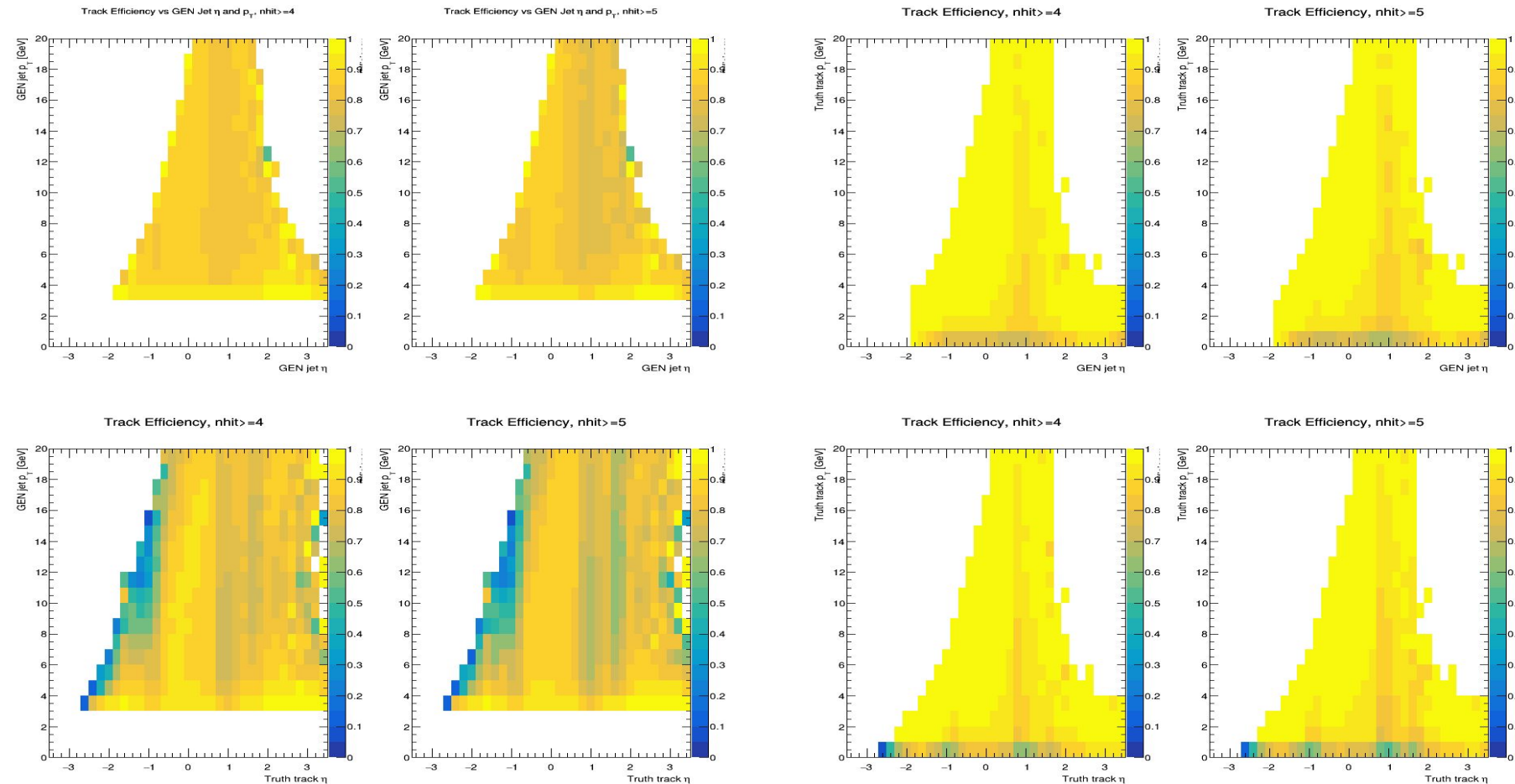
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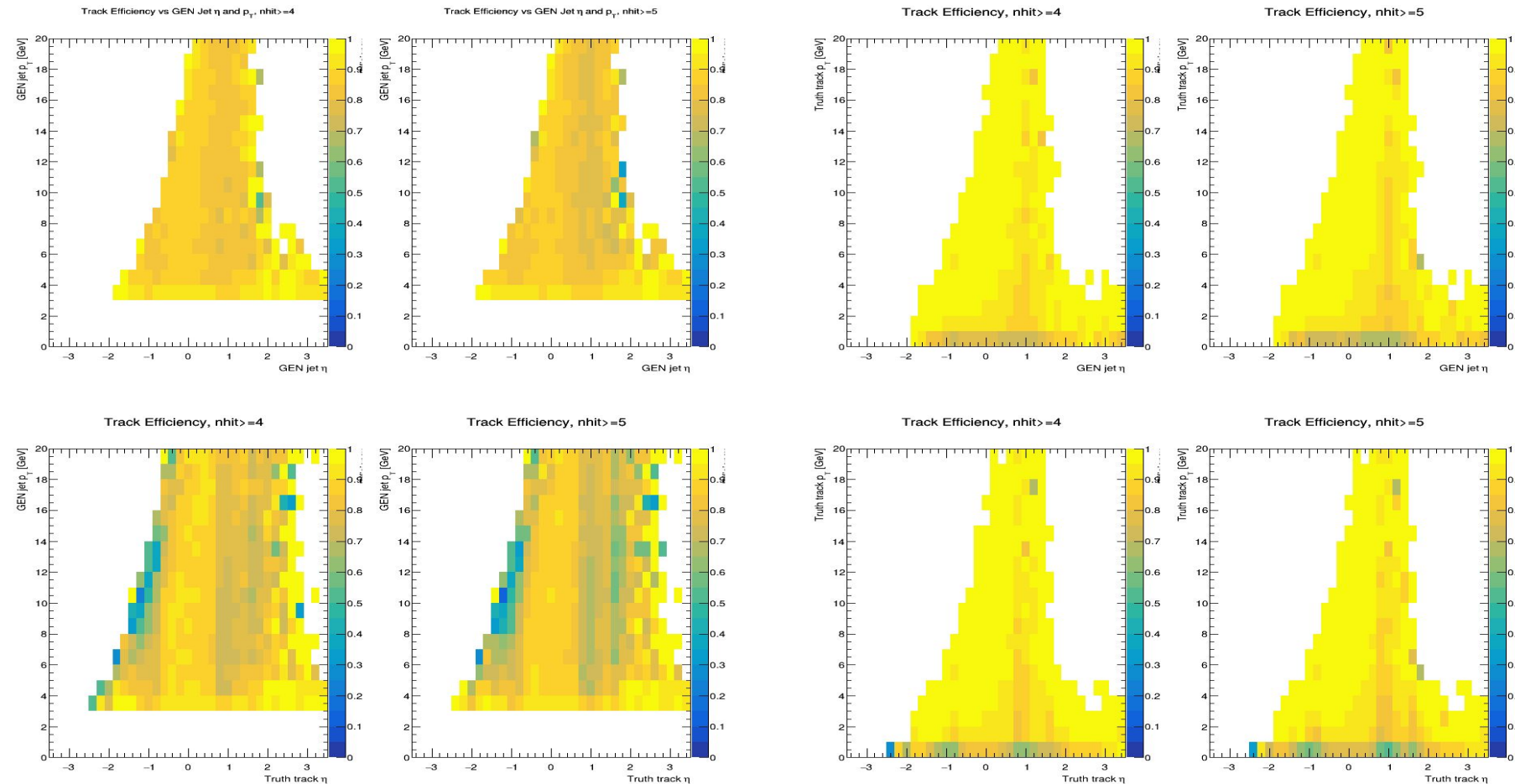
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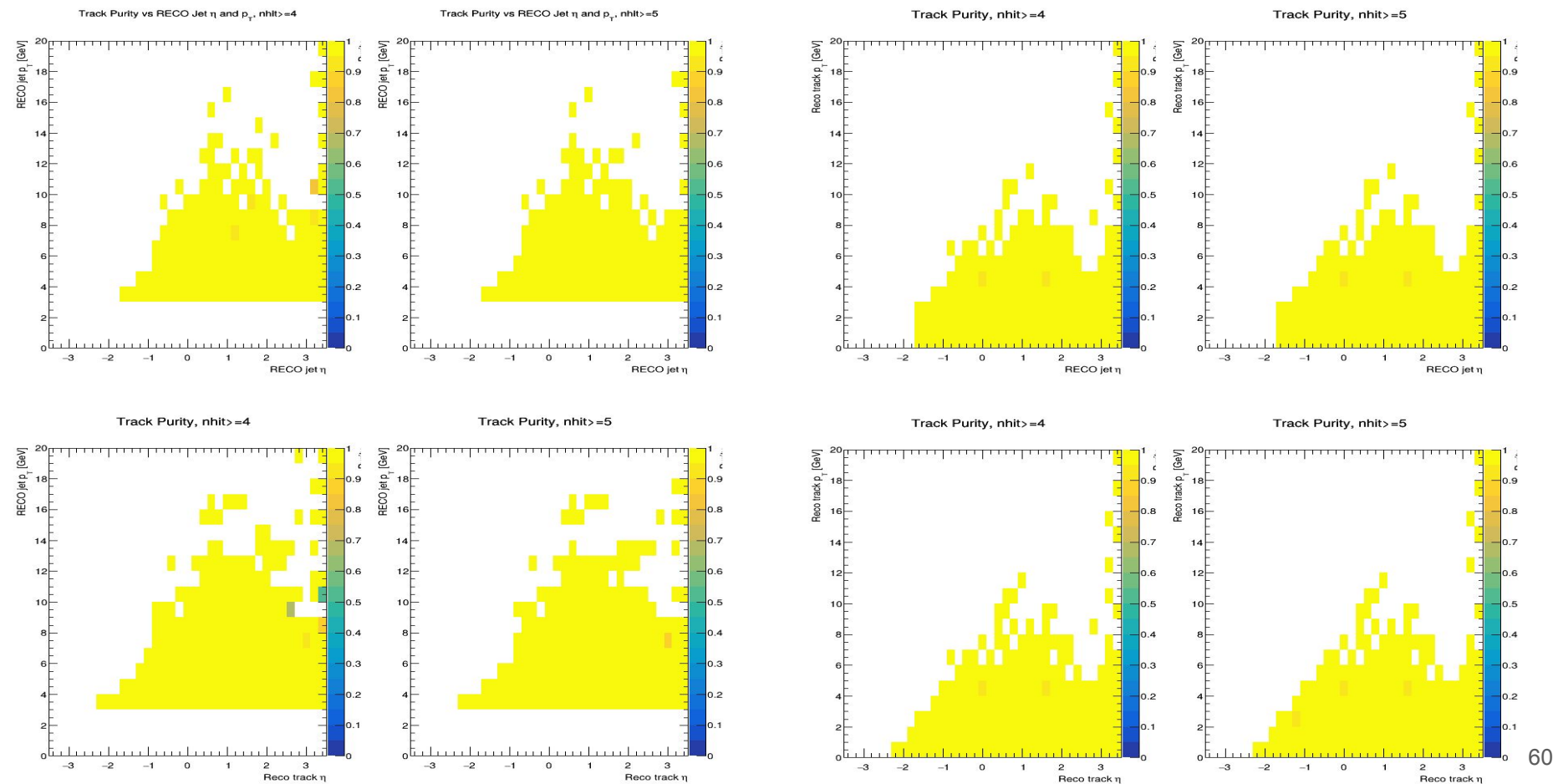
Efficiency: Q2 1000 to INF no Rad



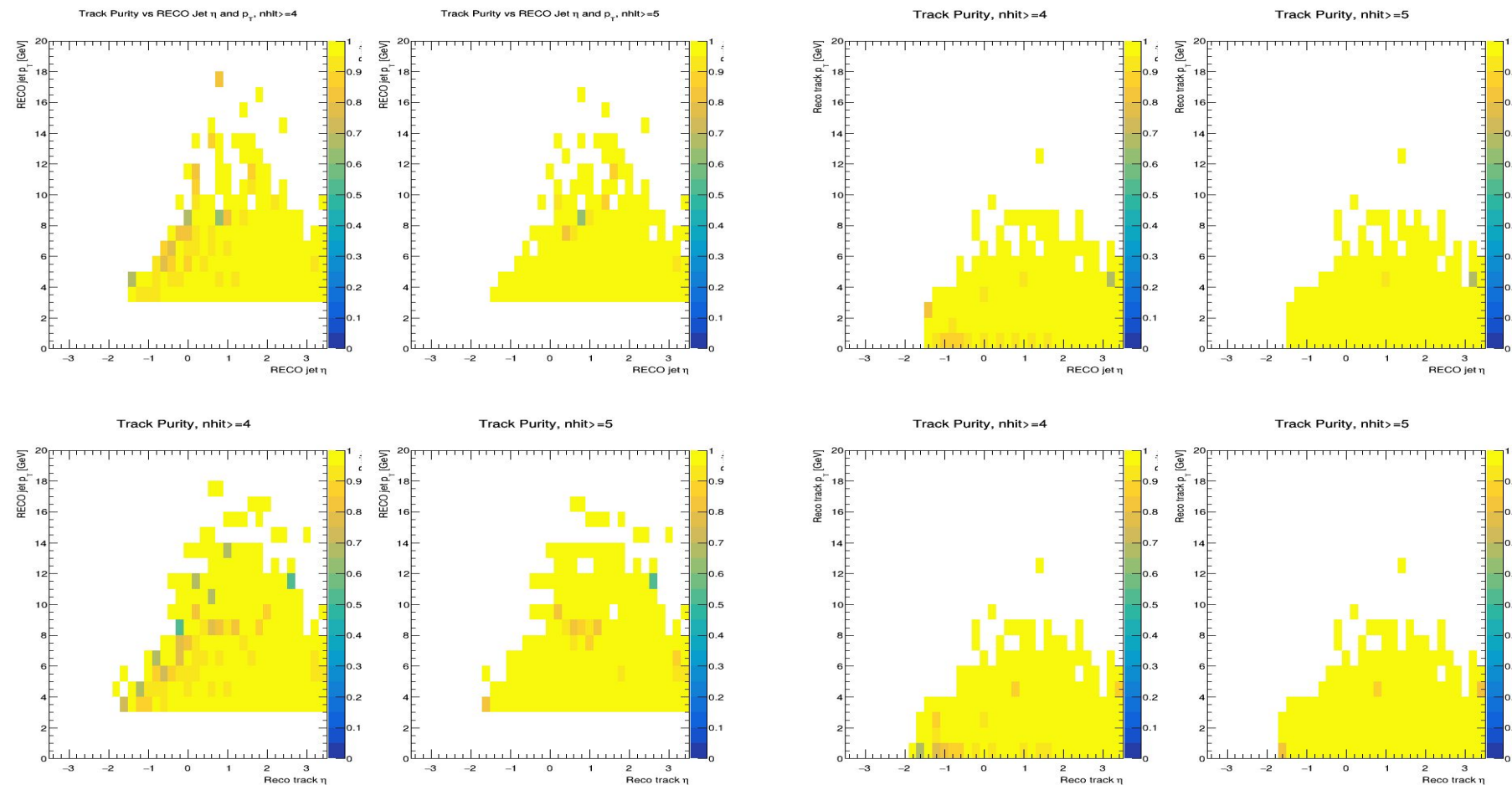
Efficiency: Q2 1000 to INF bkg



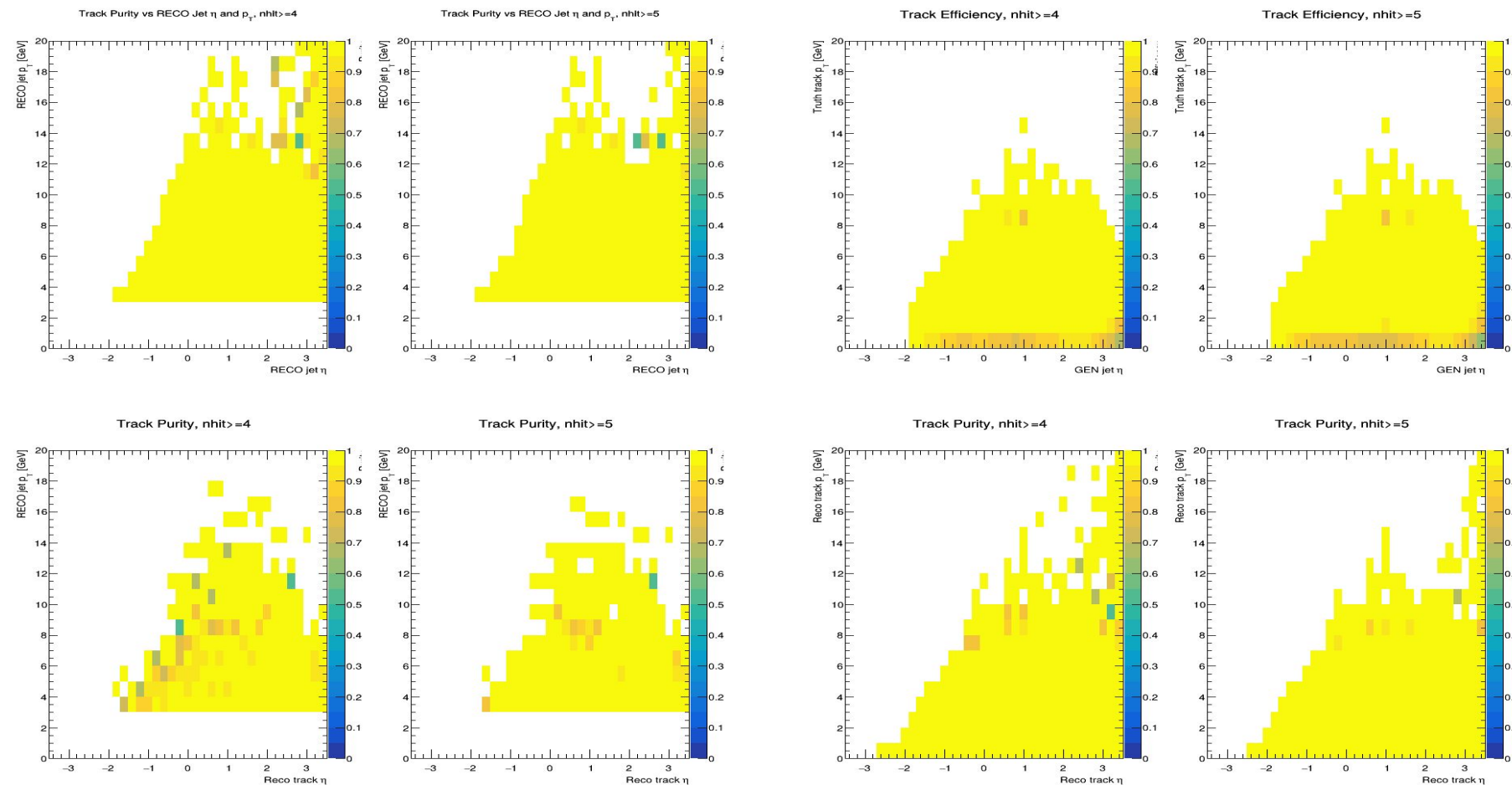
Purity: Q2 1 to 10 no Rad



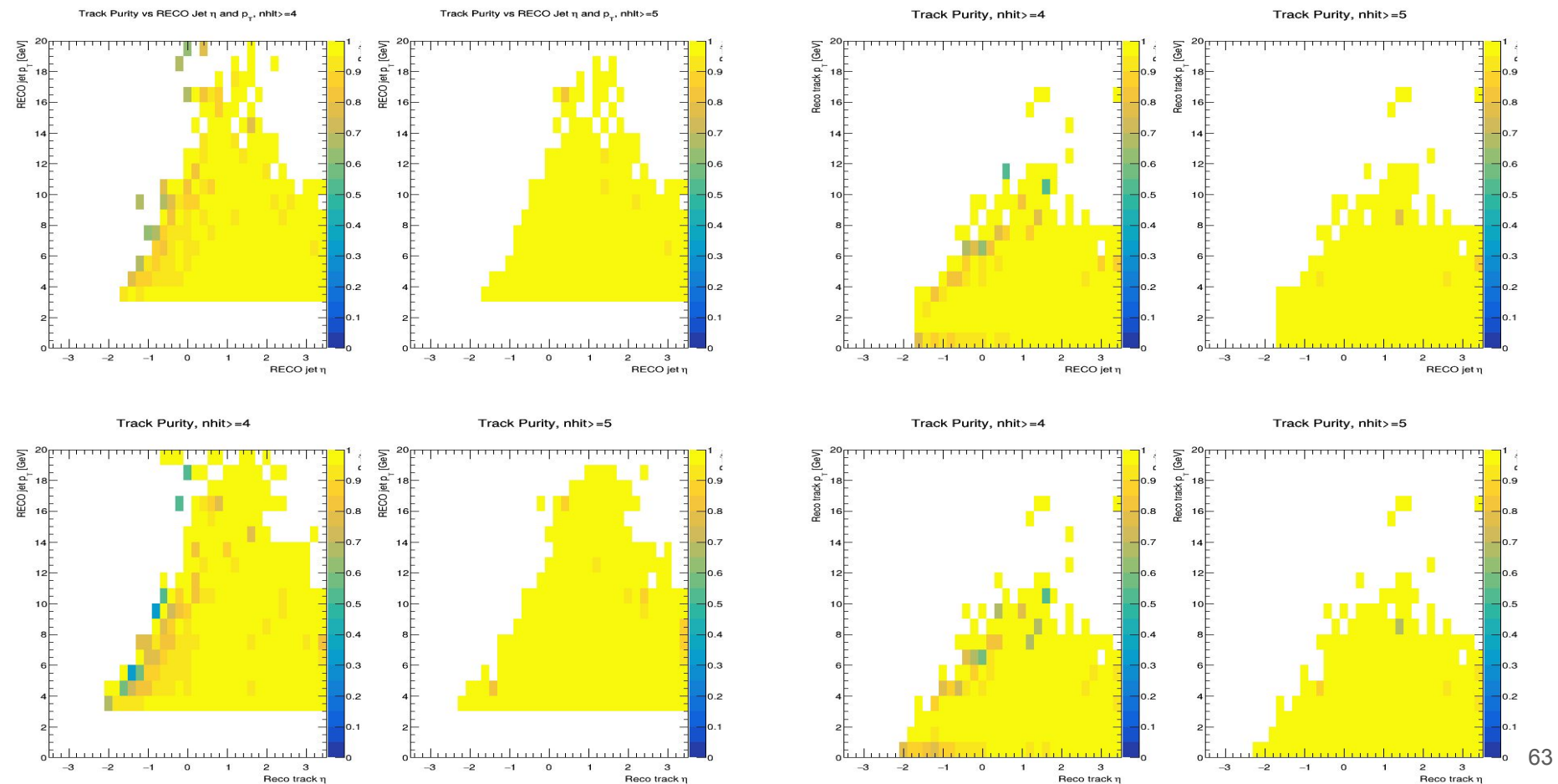
Purity: Q2 1 to 10 bkg



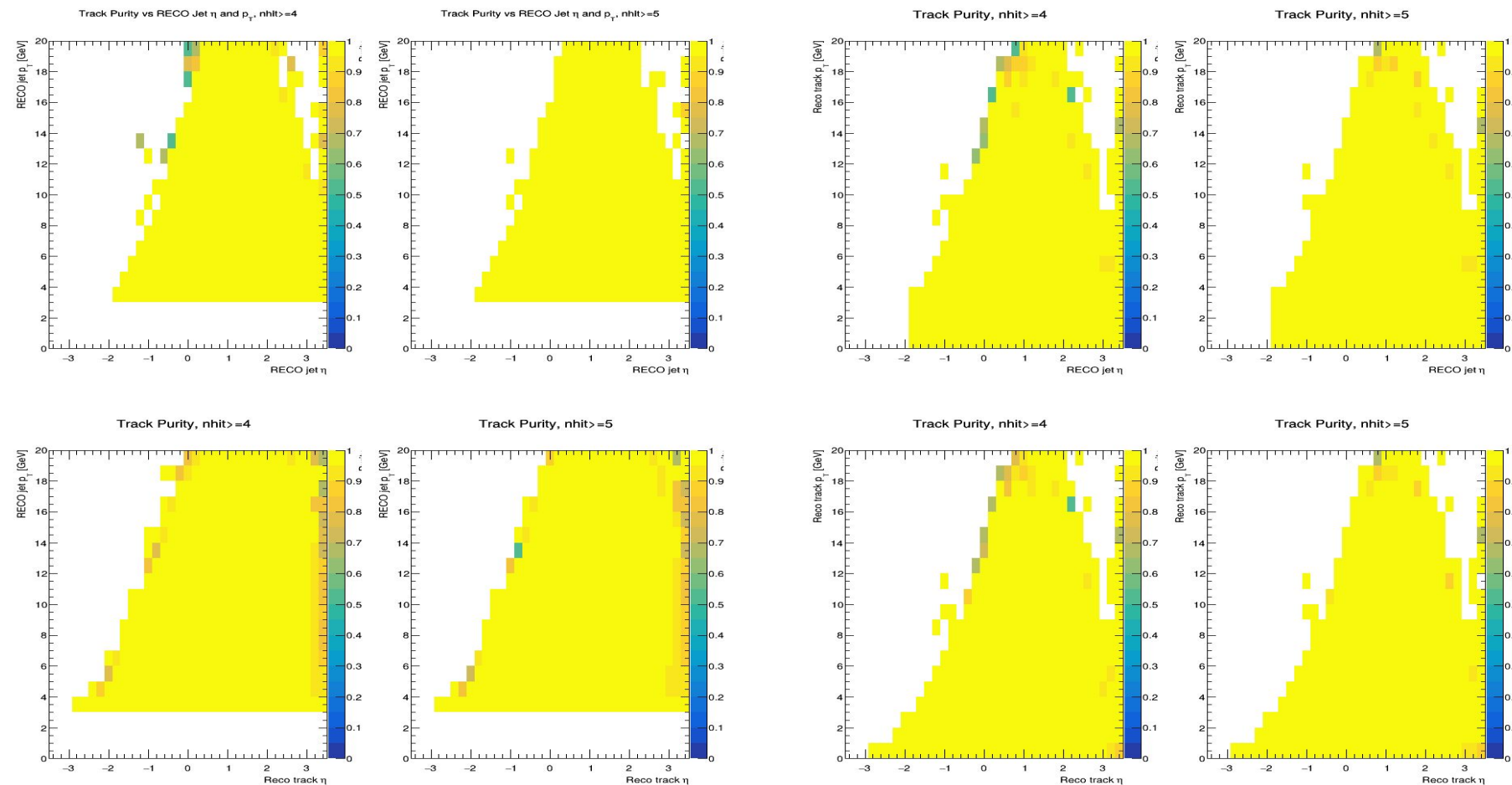
Purity: Q2 10 to 100 no Rad



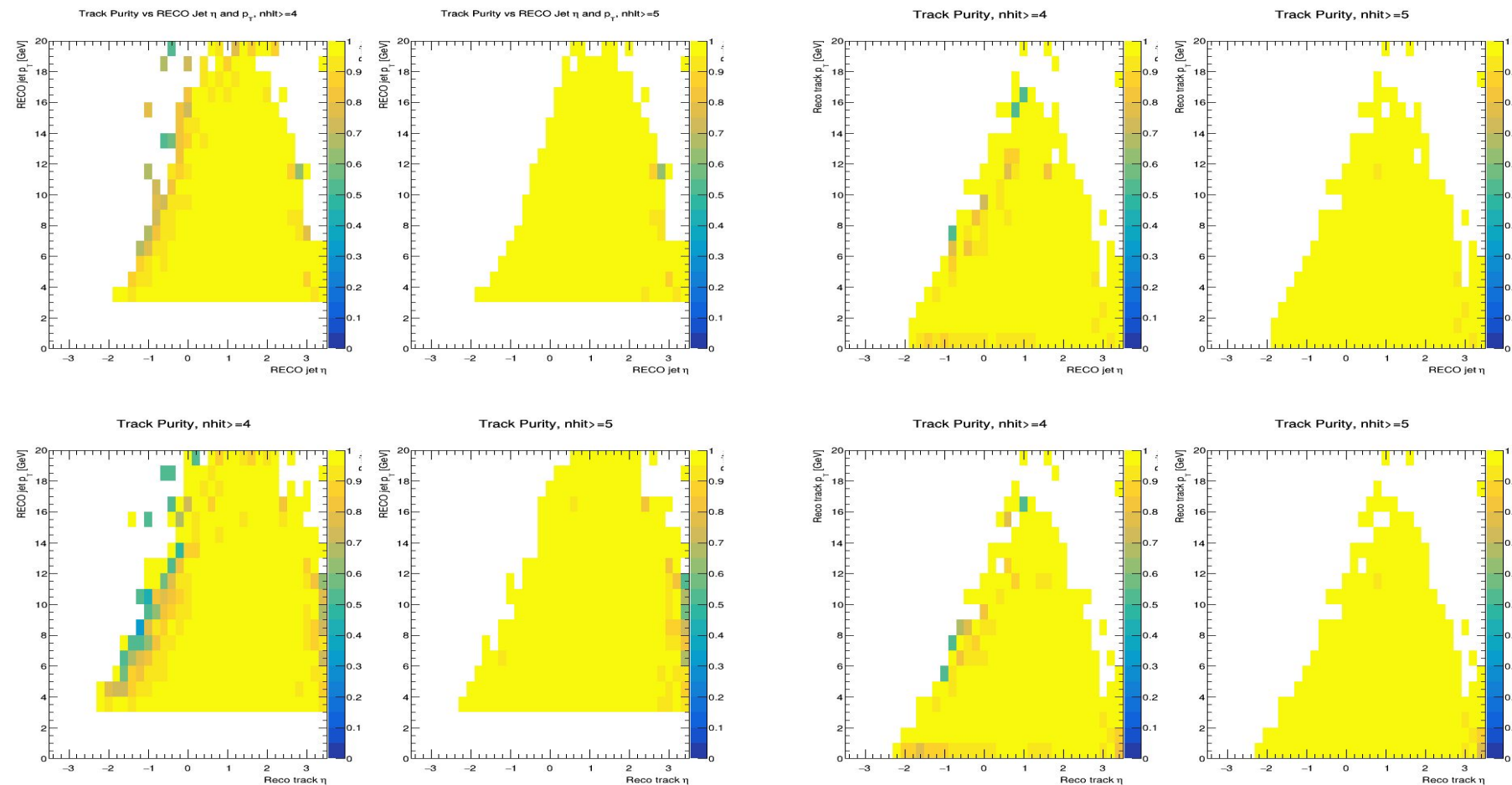
Purity: Q2 10 to 100 bkg



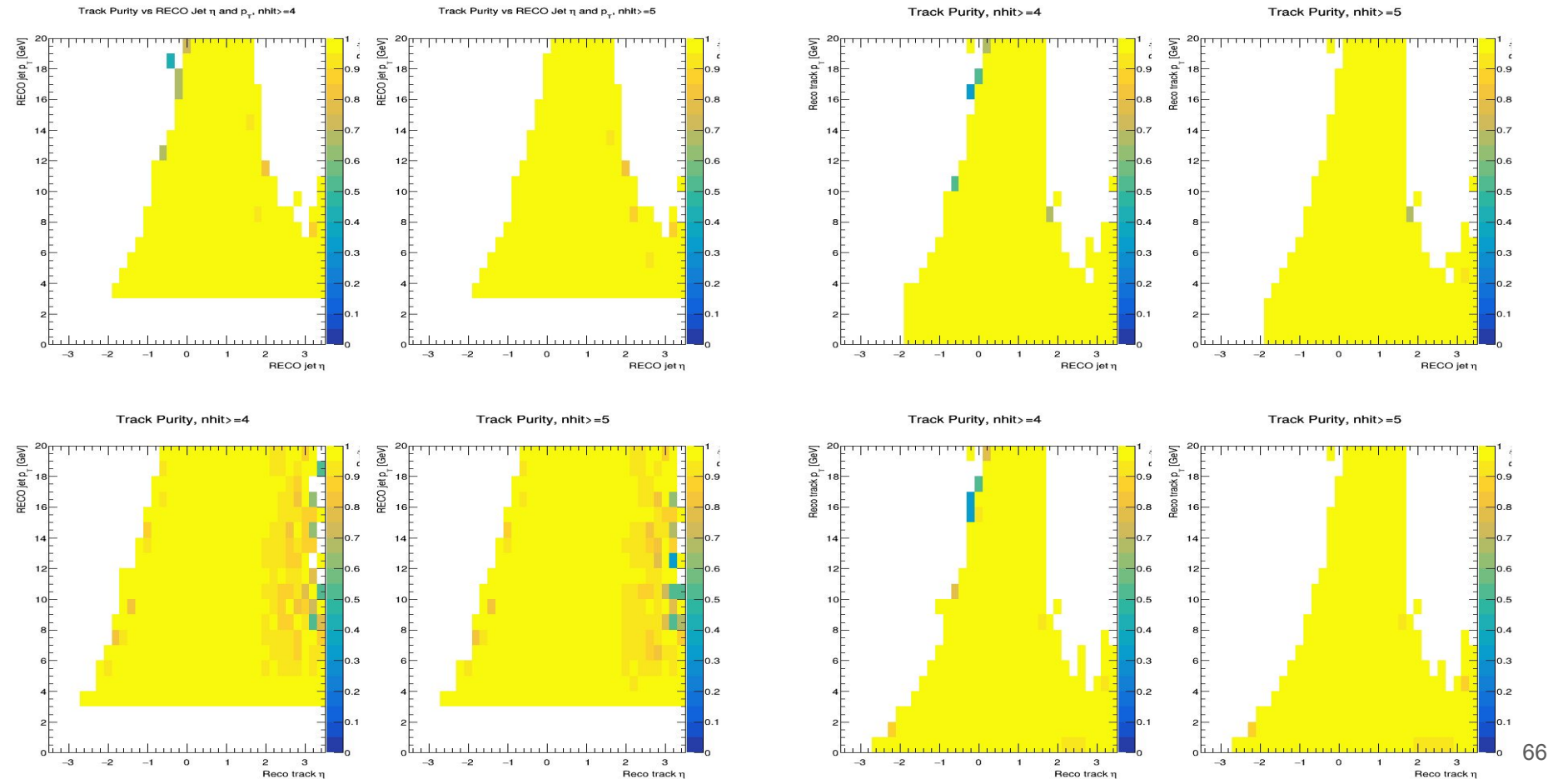
Purity: Q2 100 to 1000 no Rad



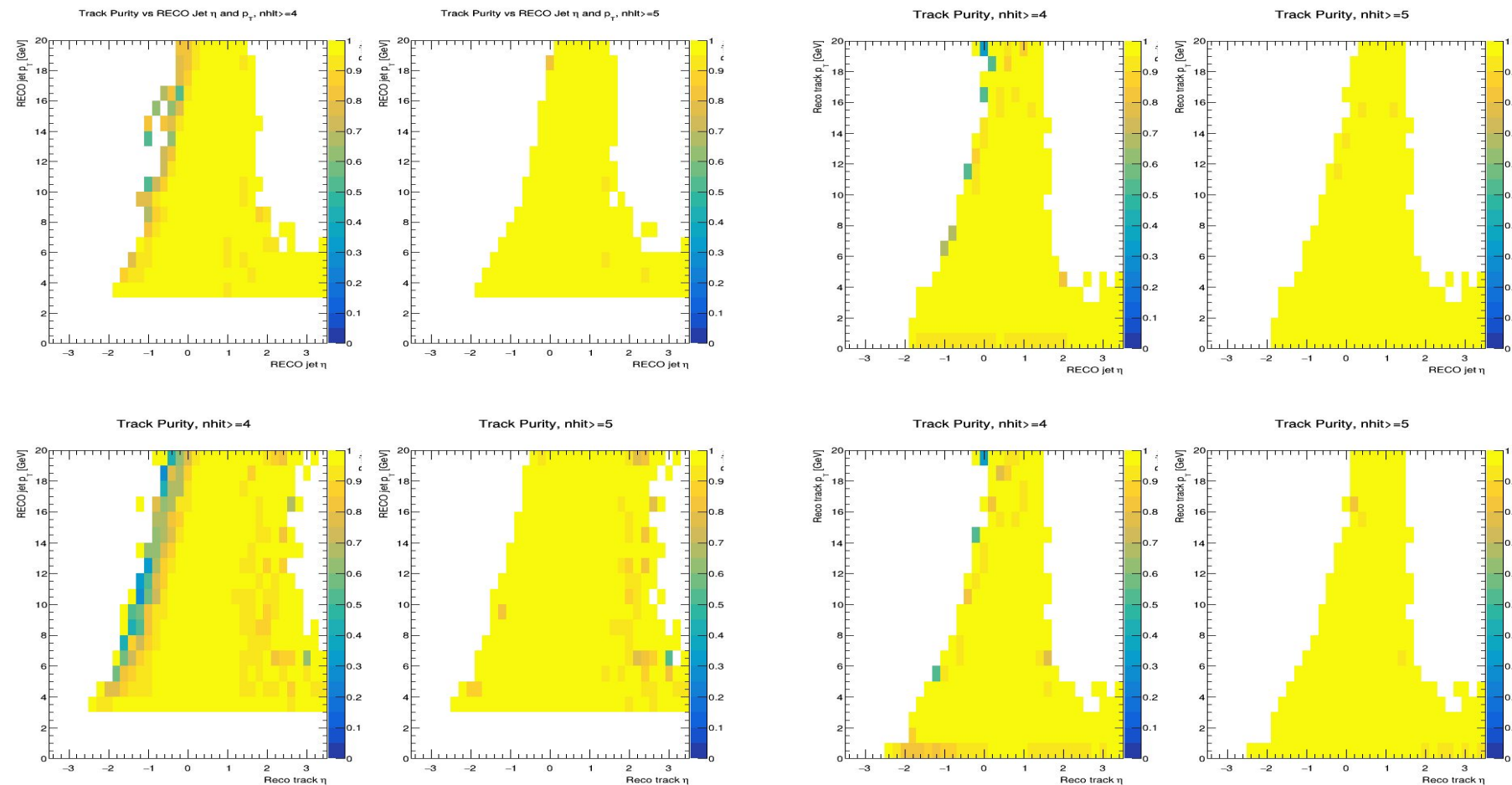
Purity: Q2 100 to 1000 bkg



Purity: Q2 1000 to INF no Rad

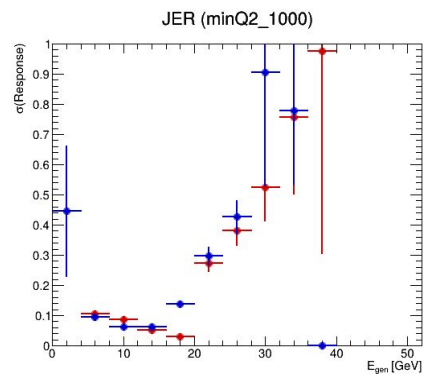
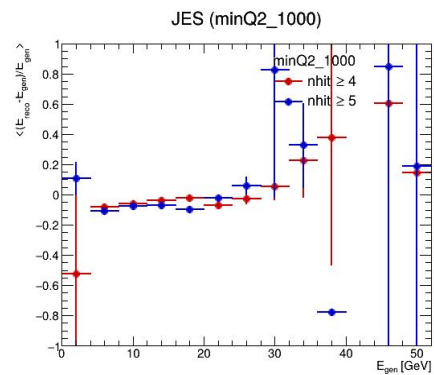
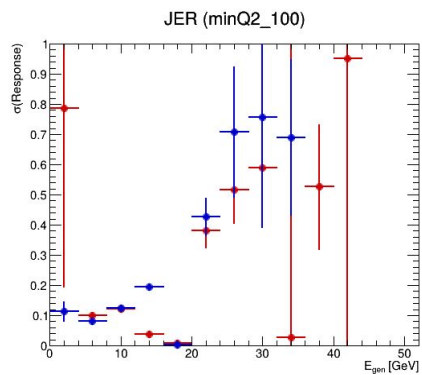
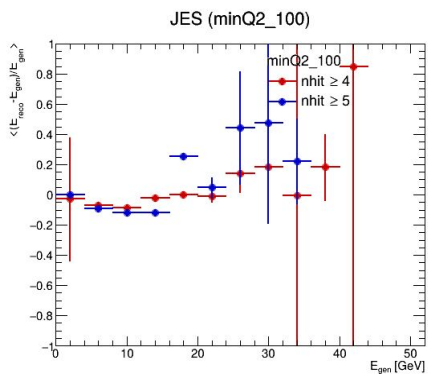
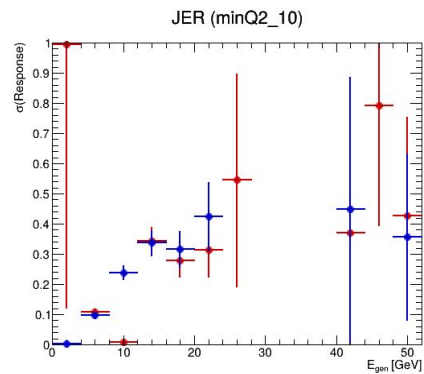
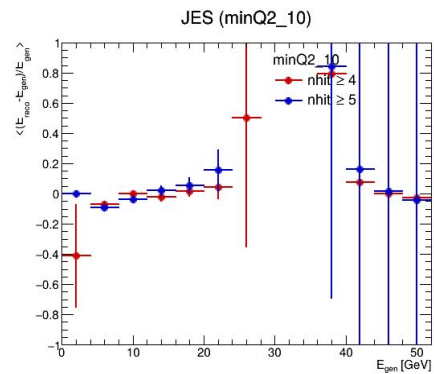
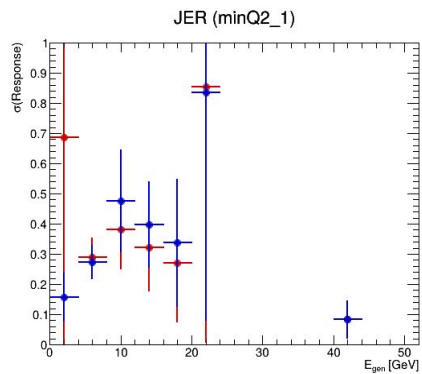
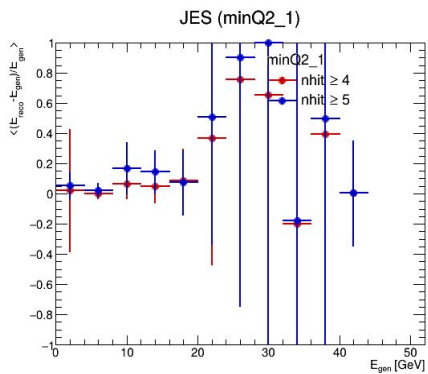


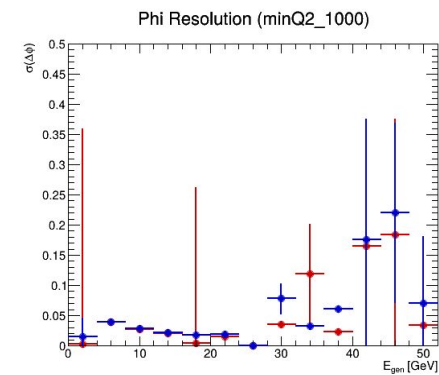
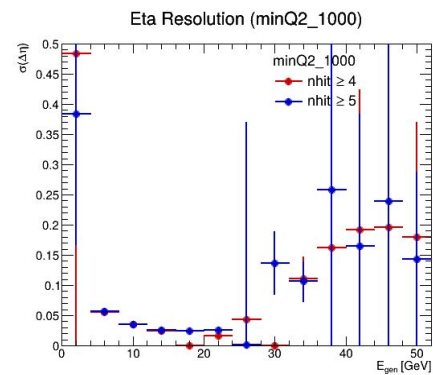
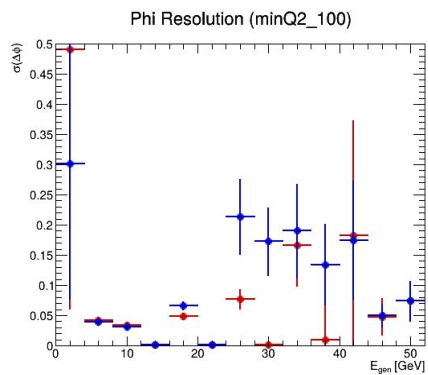
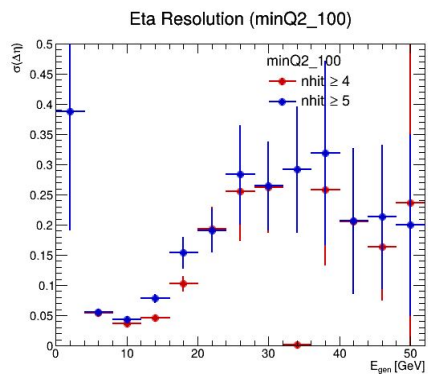
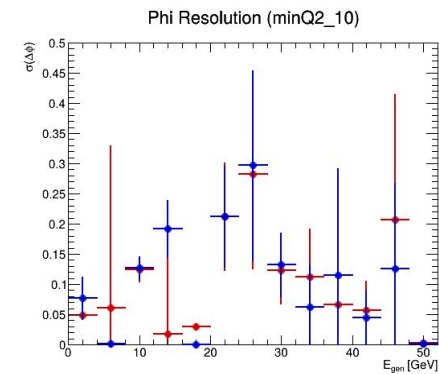
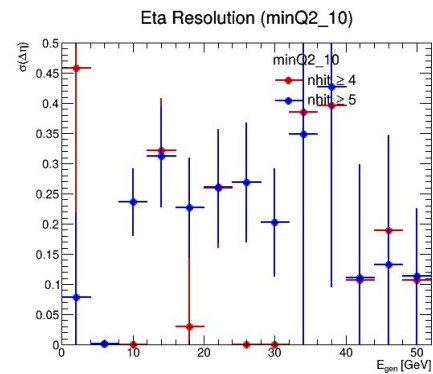
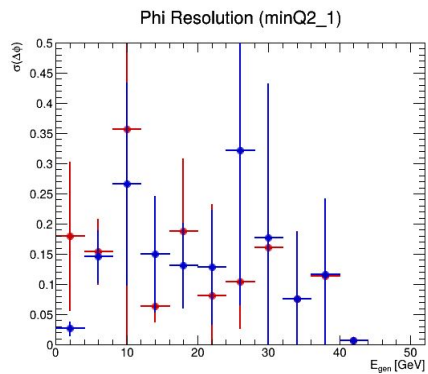
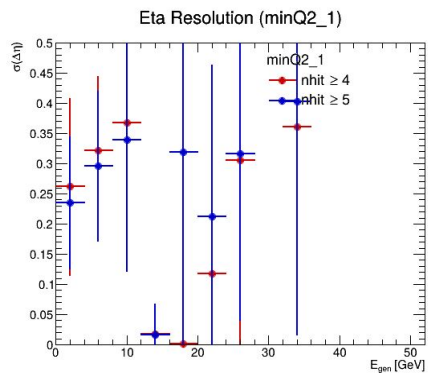
Purity: Q2 1000 to INF bkg



Jet Efficiency & Fake Rate
JES & JER
Phi & Eta Resolution

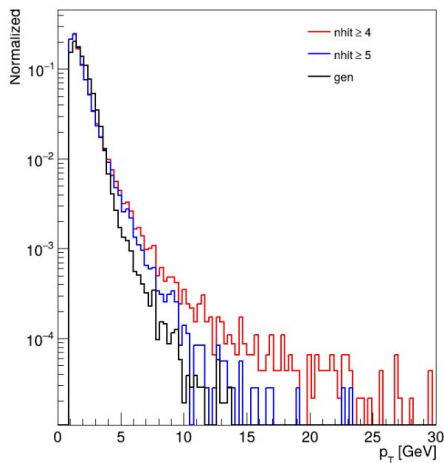
Jet $p_t > 3 \text{ GeV}$
Eta : -2 to 2.5



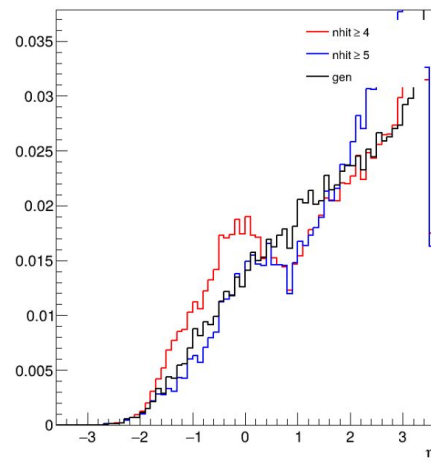


Min Q2_1 Normalized

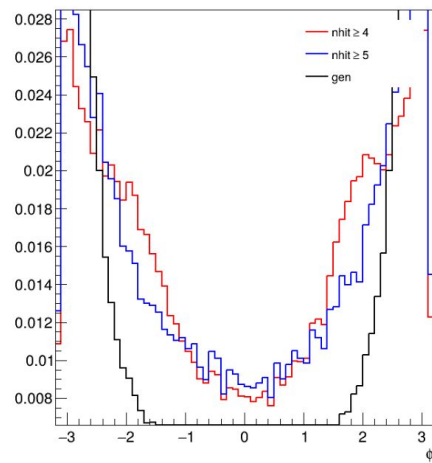
minQ2_1_bkg : Reco Jet p_T



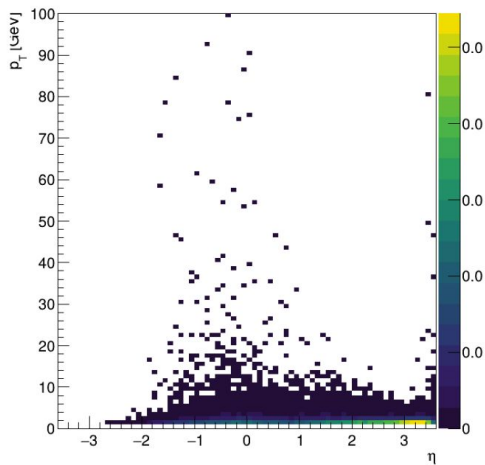
minQ2_1_bkg : Reco Jet η



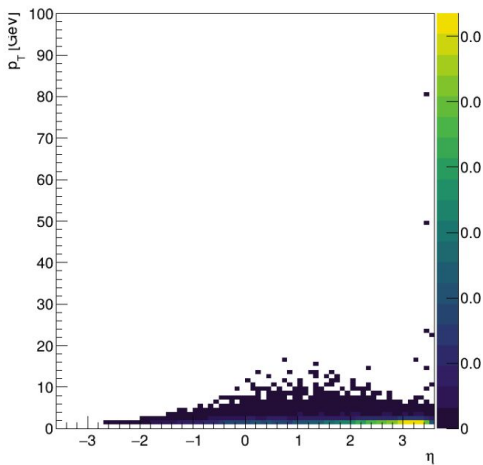
minQ2_1_bkg : Reco Jet ϕ



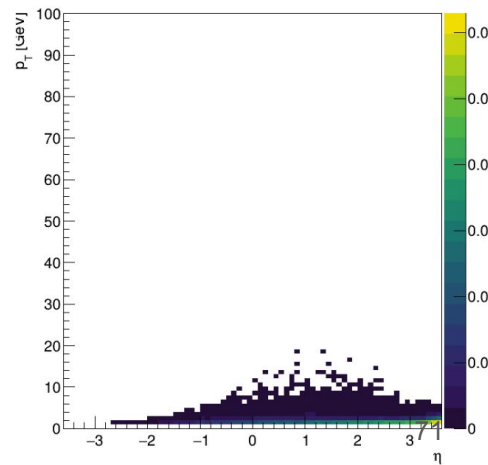
minQ2_1_bkg : Reco p_T vs η (nhit ≥ 4)



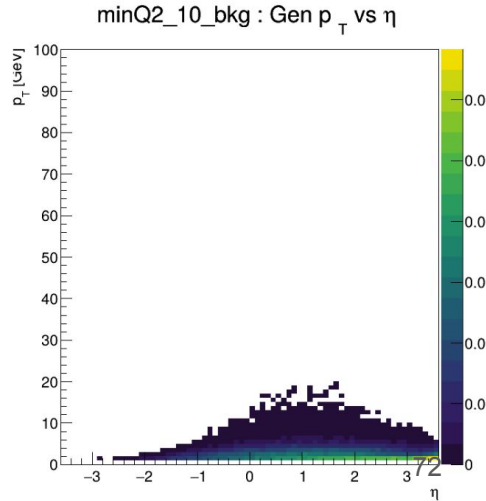
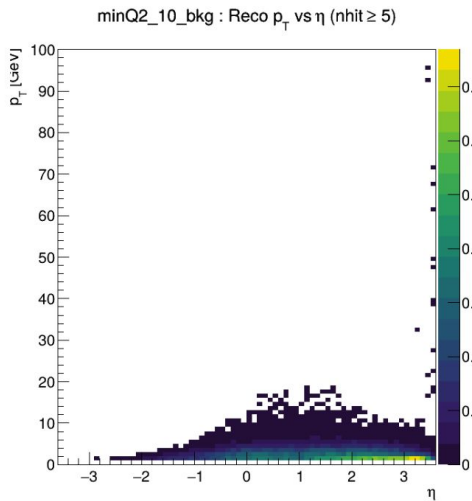
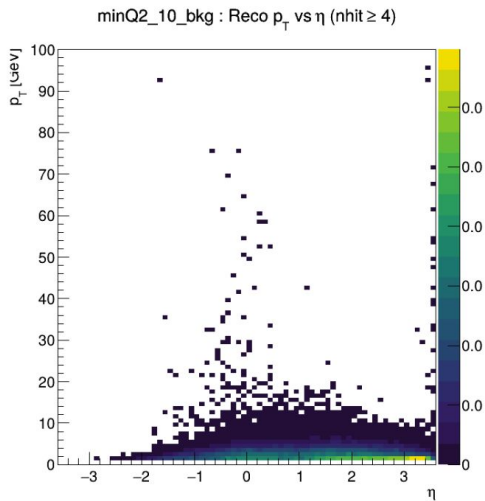
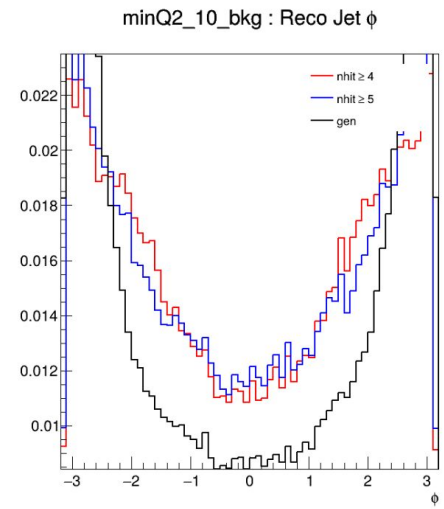
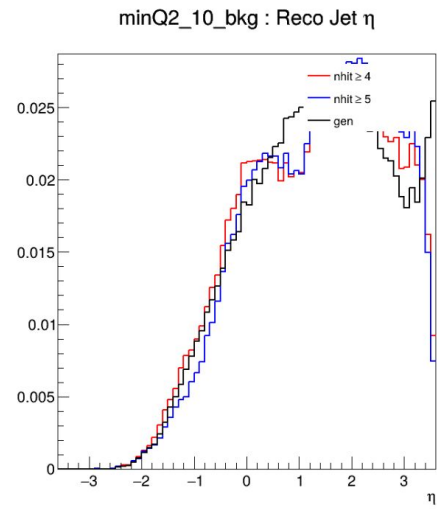
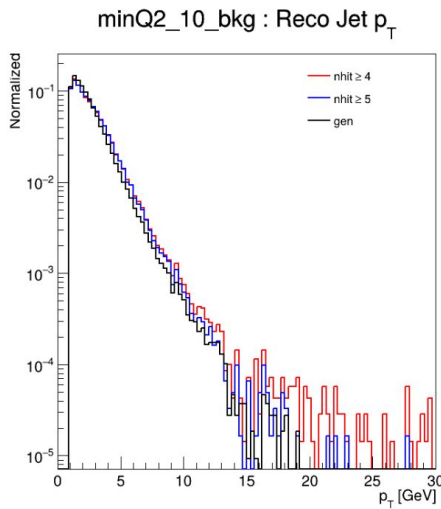
minQ2_1_bkg : Reco p_T vs η (nhit ≥ 5)



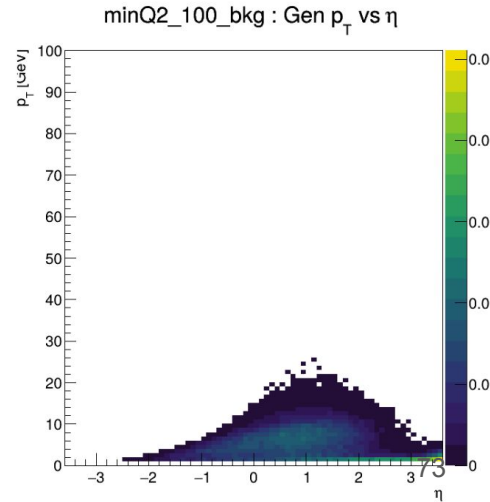
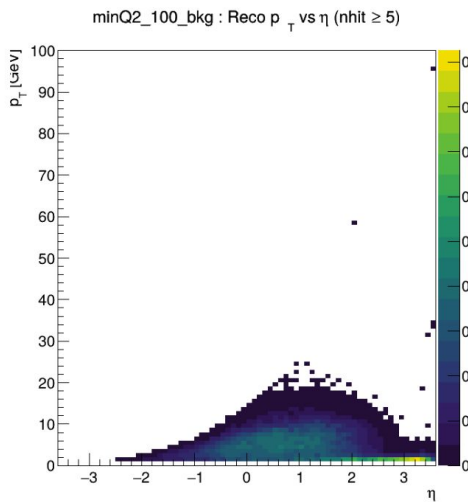
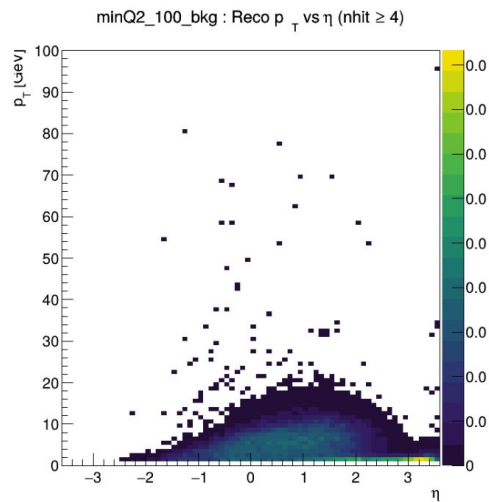
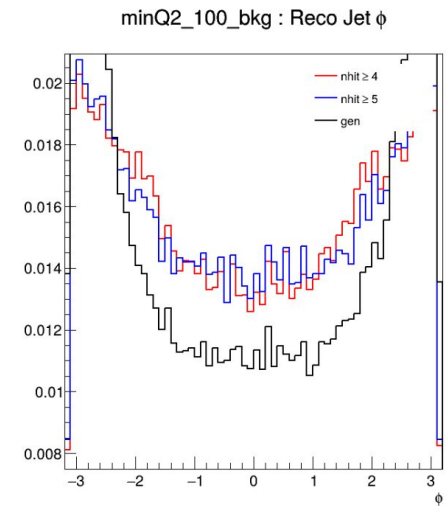
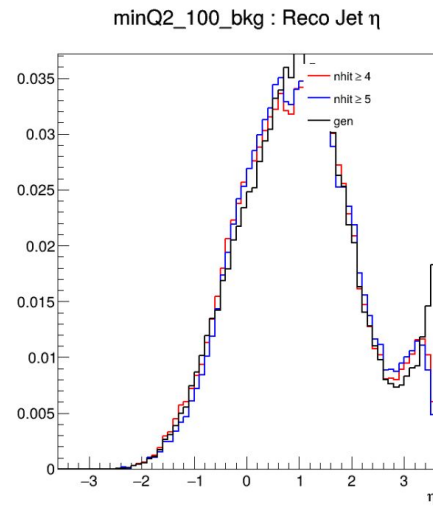
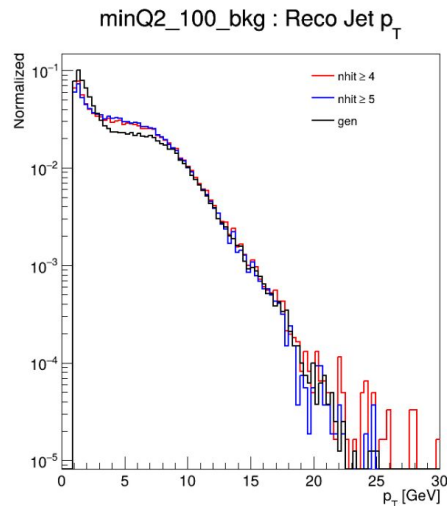
minQ2_1_bkg : Gen p_T vs η



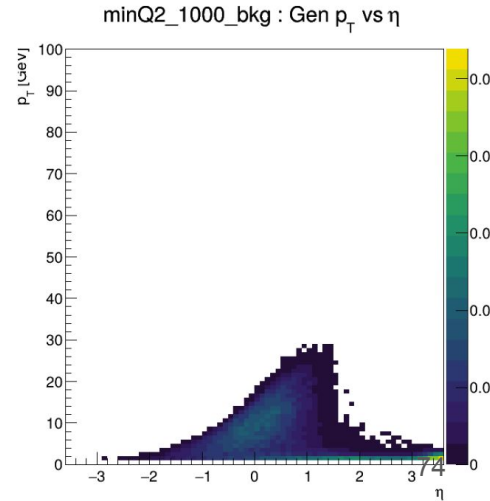
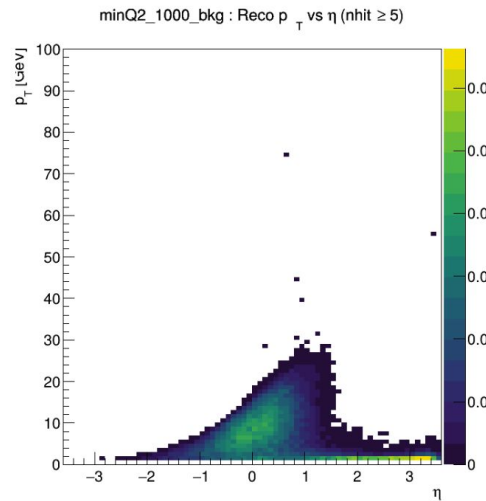
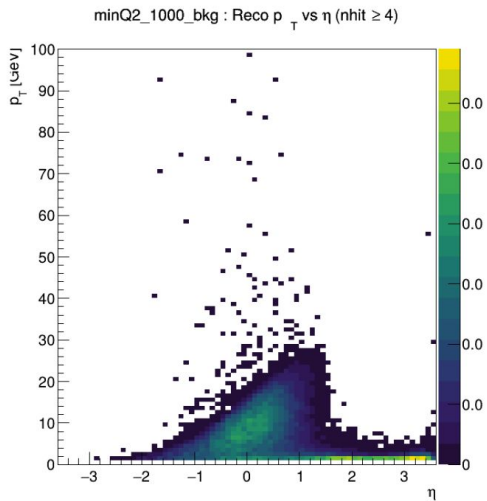
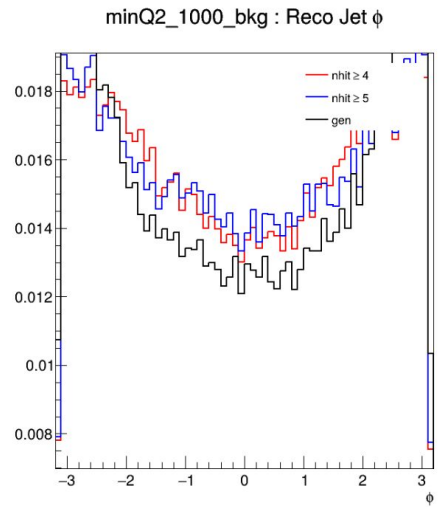
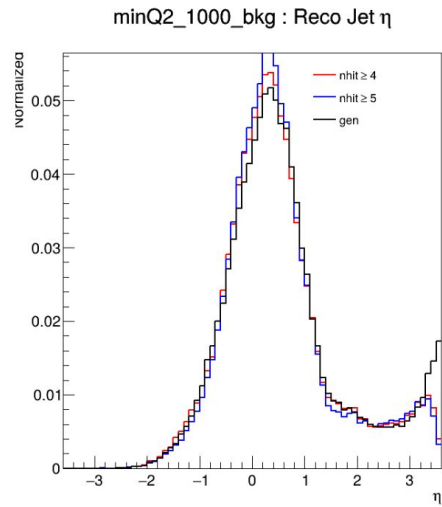
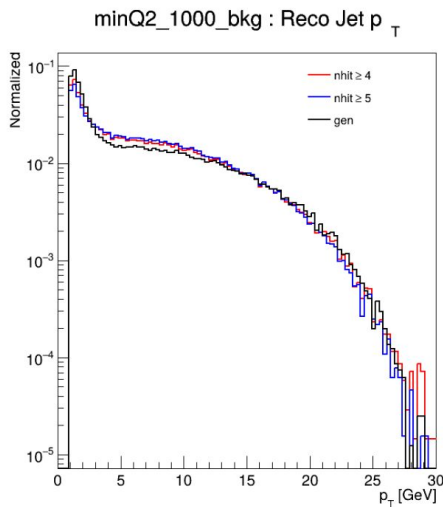
Min Q2_10 Normalized



Min Q2_100 Normalized



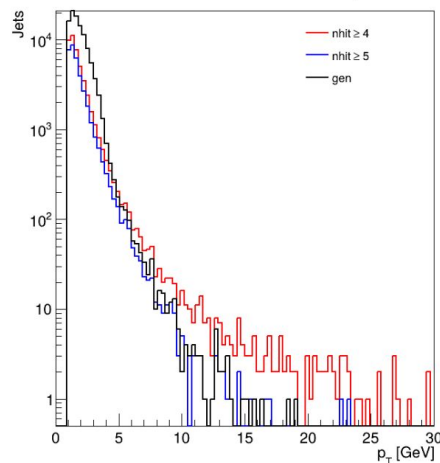
Min Q2_1000 Normalized



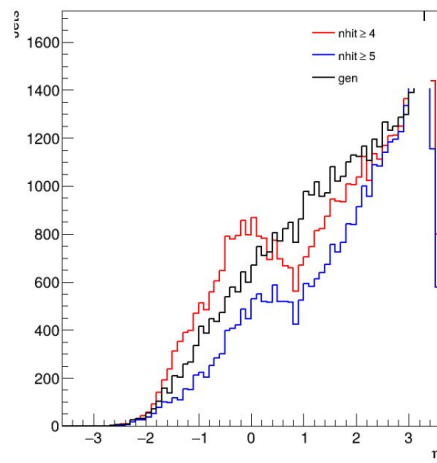
Min Q2_1

Jet $p_T > 1$ GeV
 $-3.5 < \eta < 3.5$

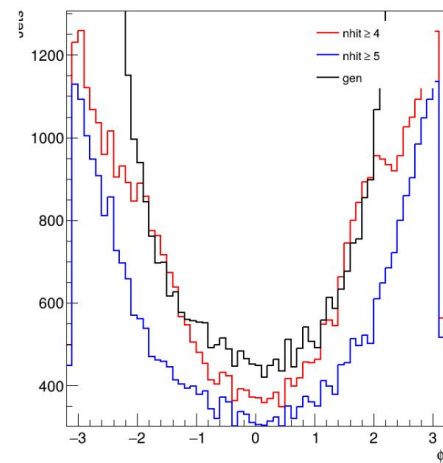
minQ2_1_bkg : Jet p_T



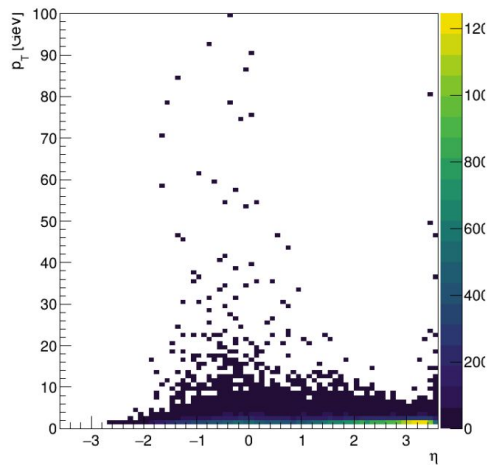
minQ2_1_bkg : Jet η



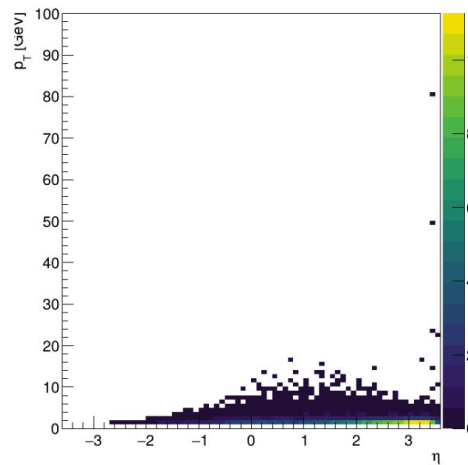
minQ2_1_bkg : Jet ϕ



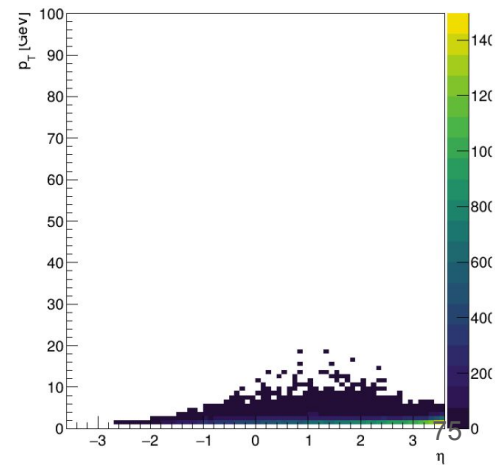
minQ2_1_bkg : Reco p_T vs η (nhit ≥ 4)



minQ2_1_bkg : Reco p_T vs η (nhit ≥ 5)

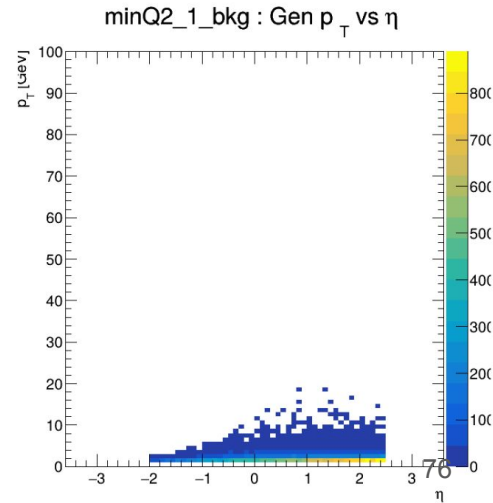
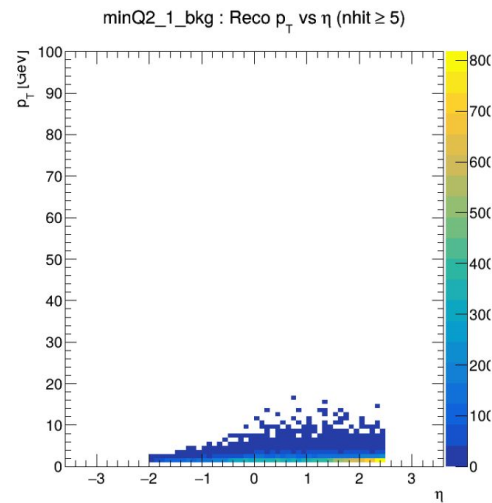
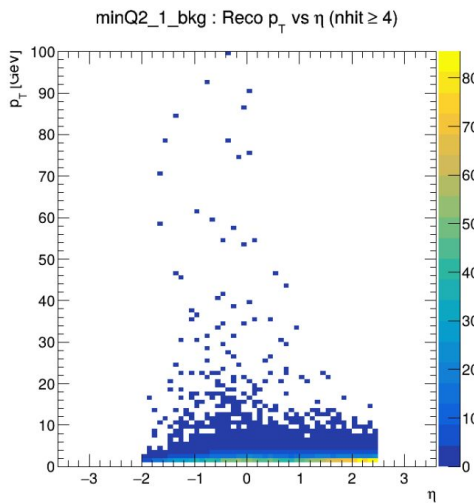
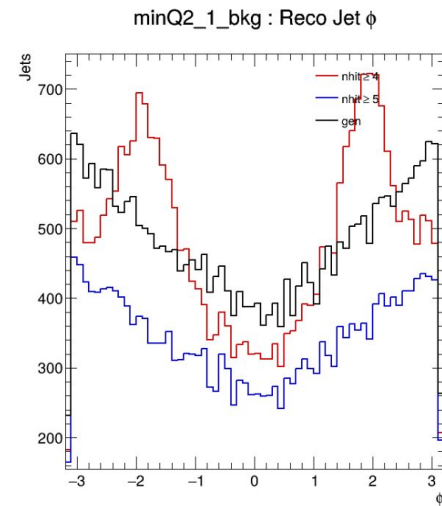
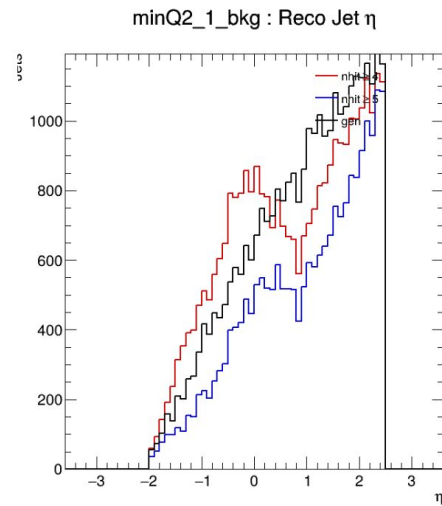
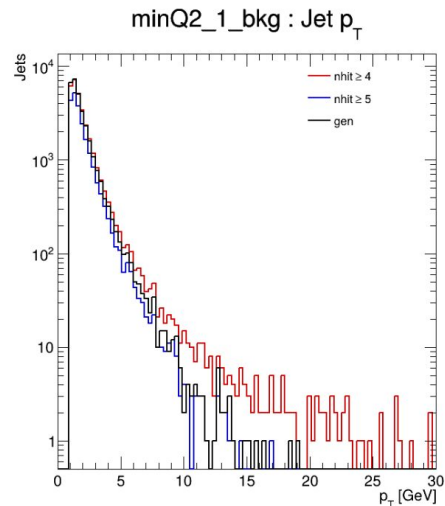


minQ2_1_bkg : Gen p_T vs η



Min Q2_1

Jet $p_T > 1$ GeV
 $-2 < \eta < 2.5$

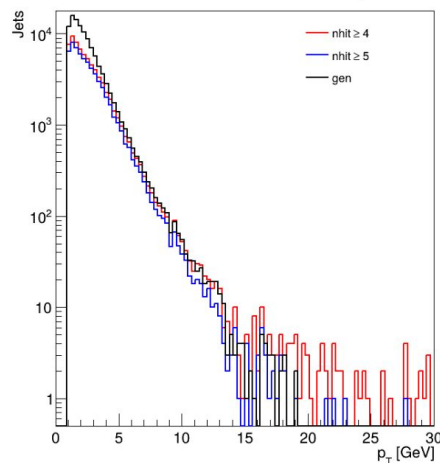


Min Q2_10

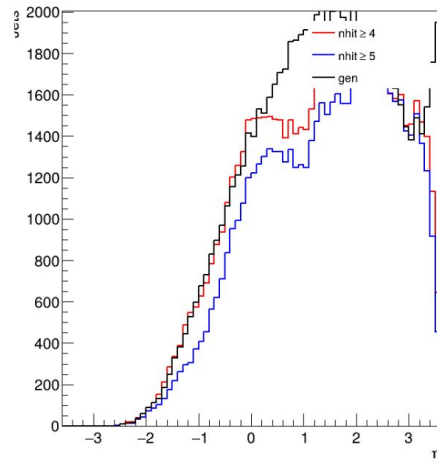
Jet pt > 1 GeV

$-3.5 < \eta < 3.5$

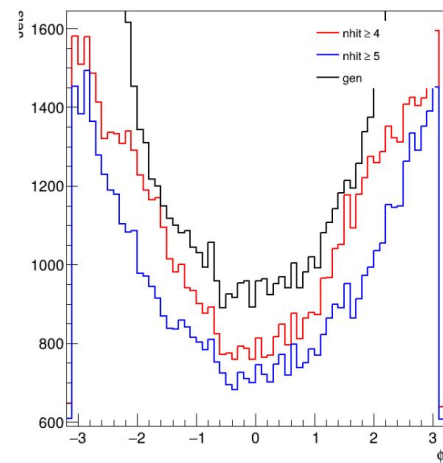
minQ2_10_bkg : Jet p_T



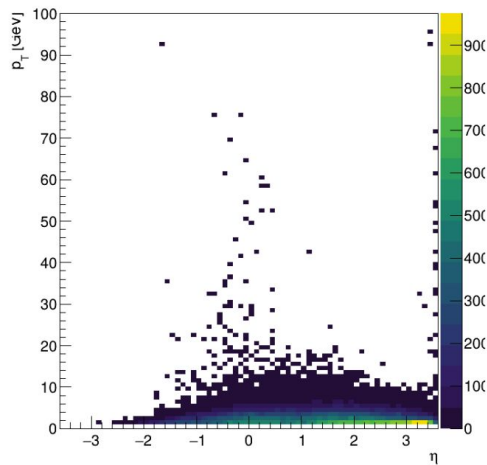
minQ2_10_bkg : Jet η



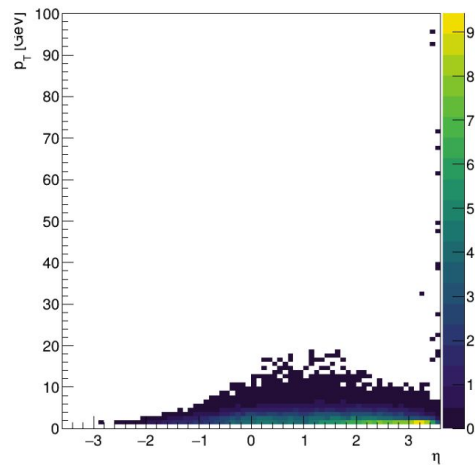
minQ2_10_bkg : Jet ϕ



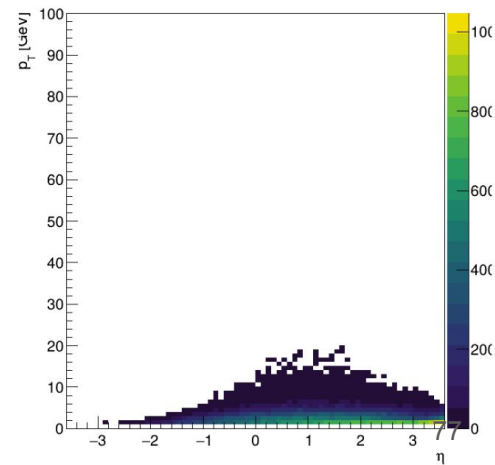
minQ2_10_bkg : Reco p_T vs η (nhit ≥ 4)



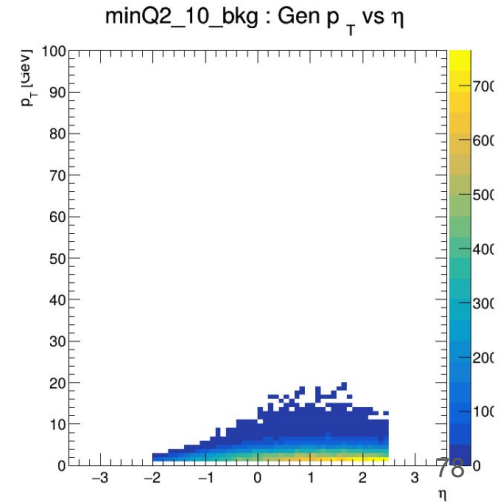
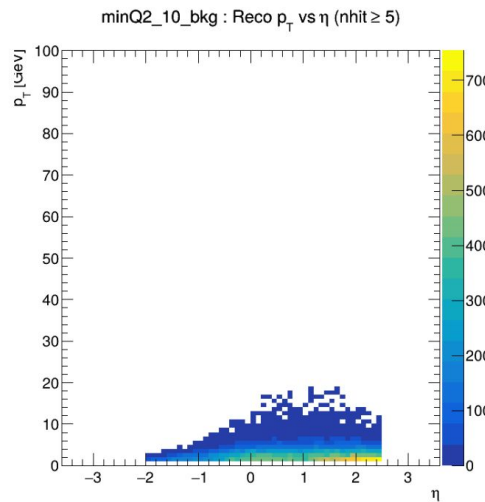
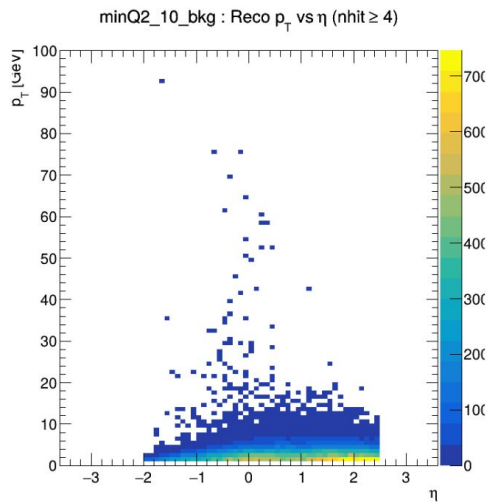
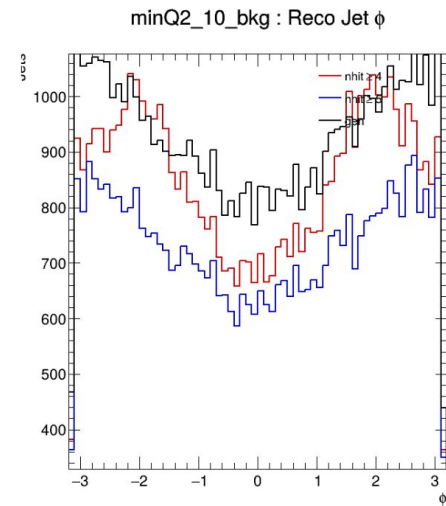
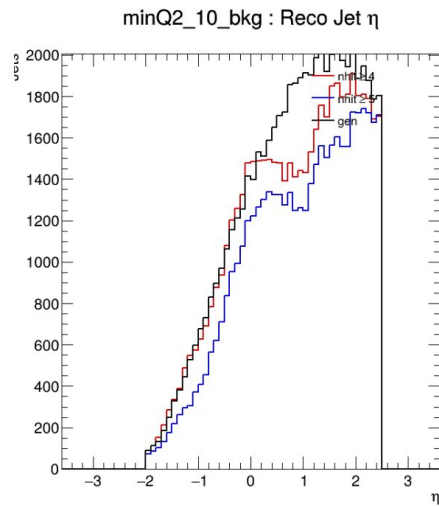
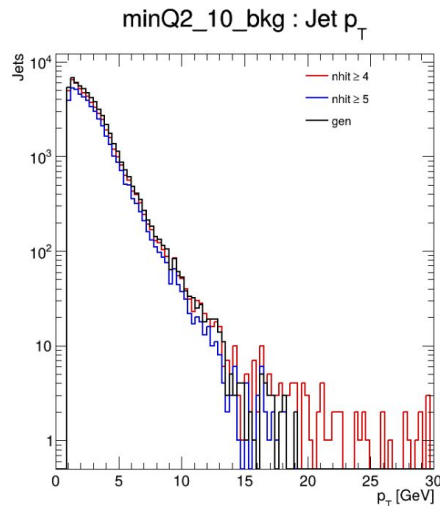
minQ2_10_bkg : Reco p_T vs η (nhit ≥ 5)



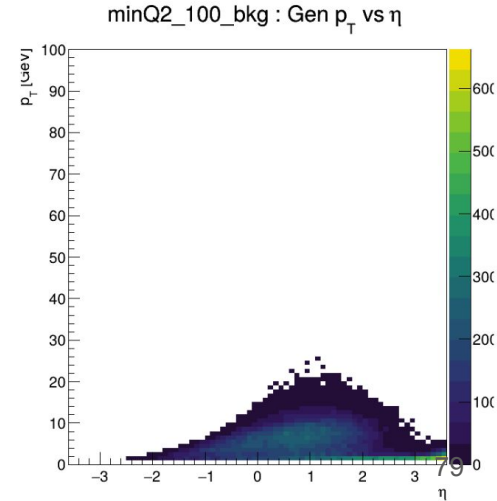
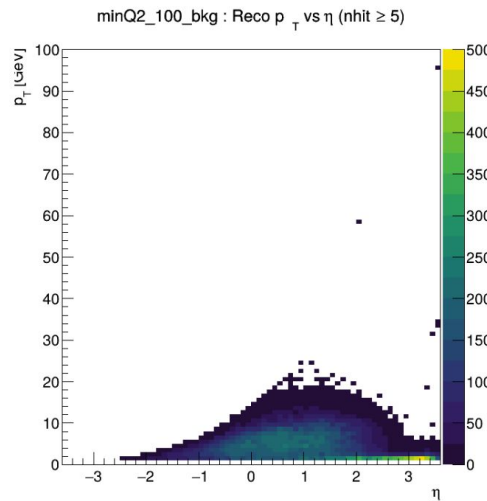
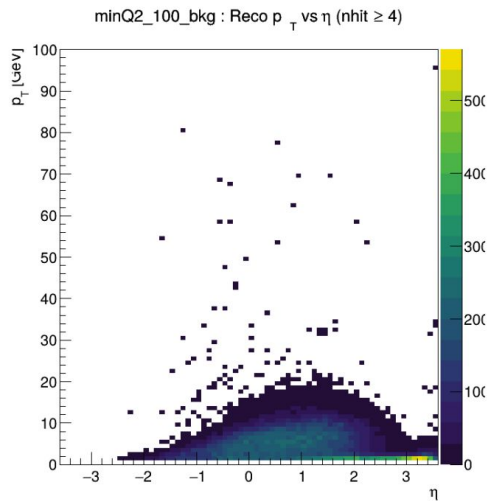
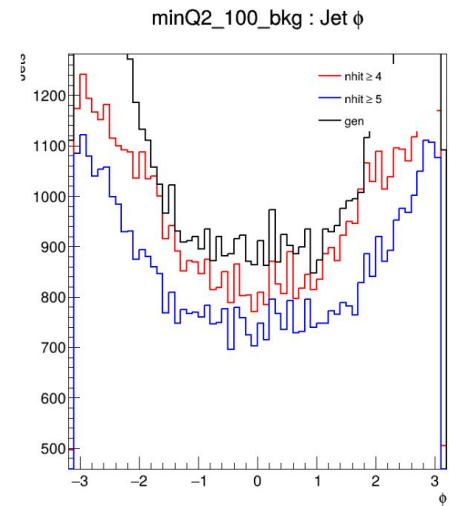
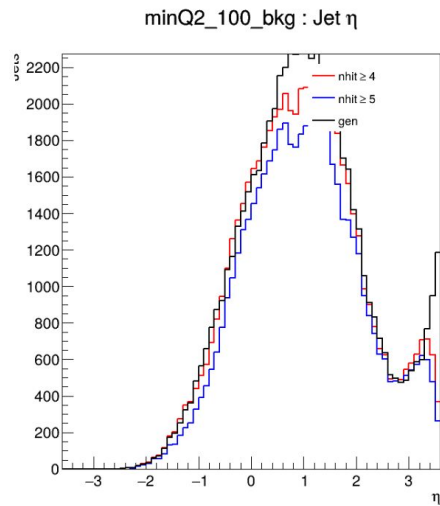
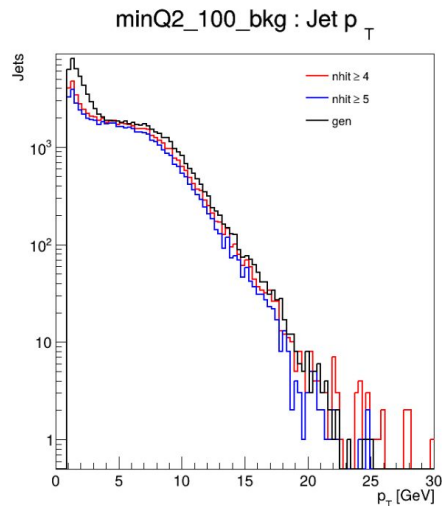
minQ2_10_bkg : Gen p_T vs η



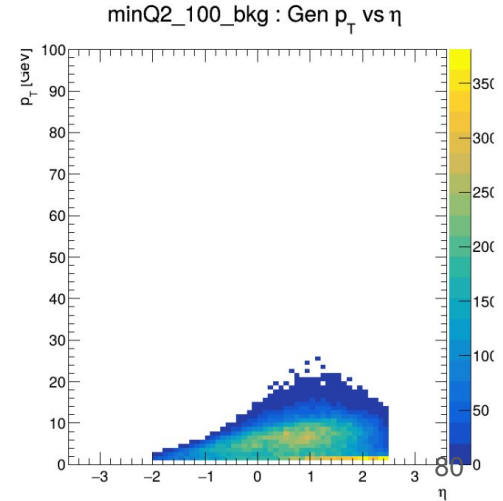
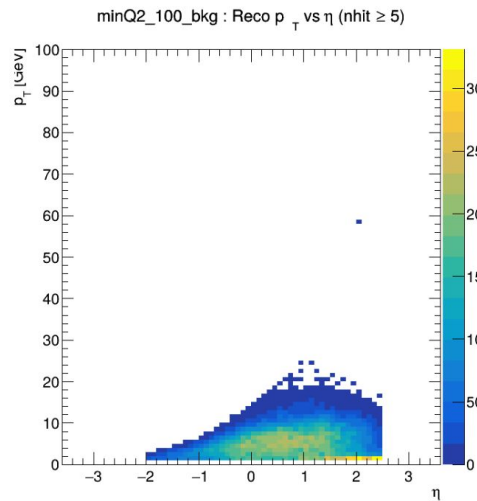
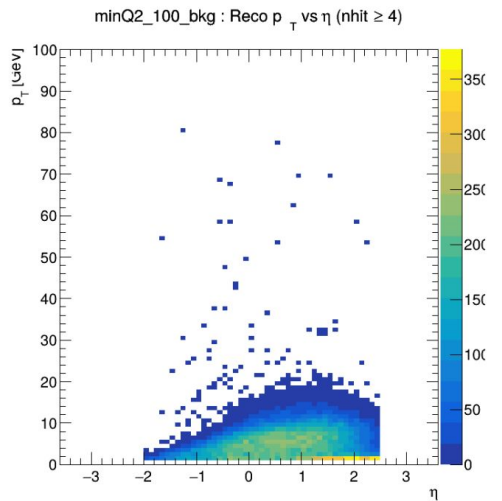
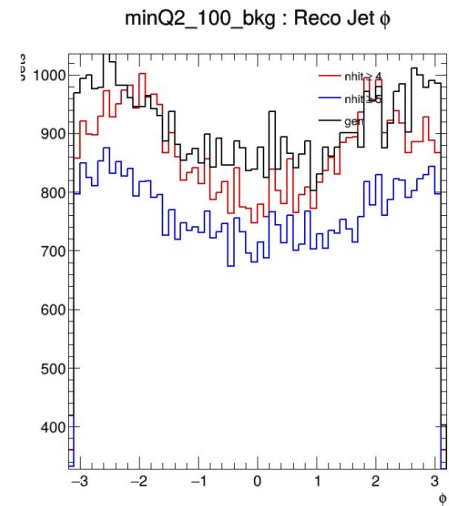
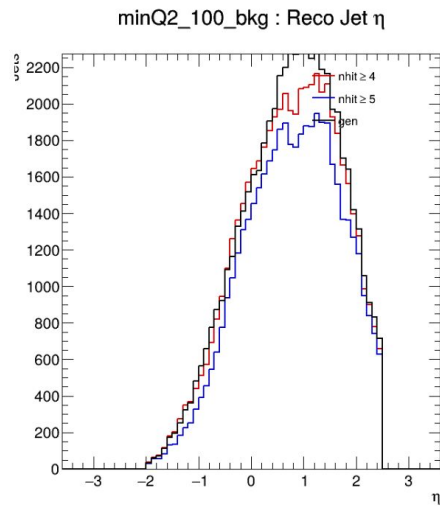
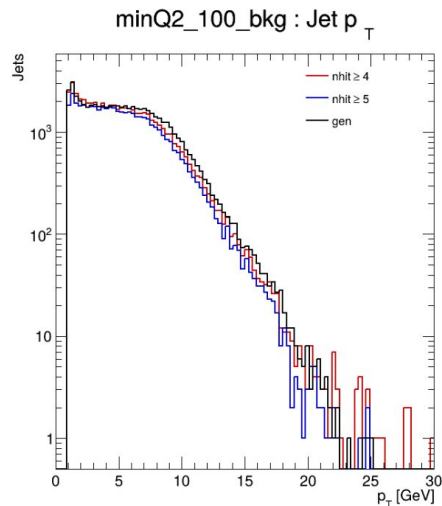
Min Q2 10
 Jet $p_T > 1$ GeV
 $-3.5 < \eta < 3.5$



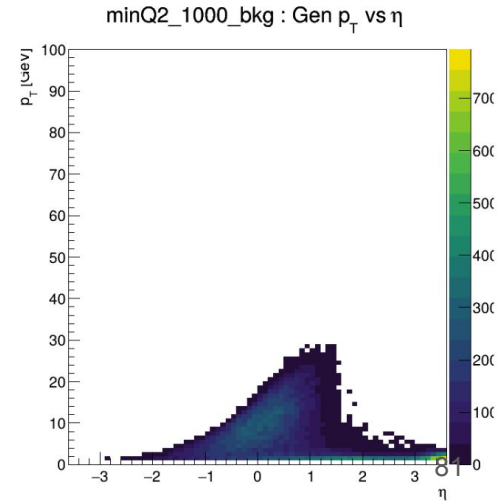
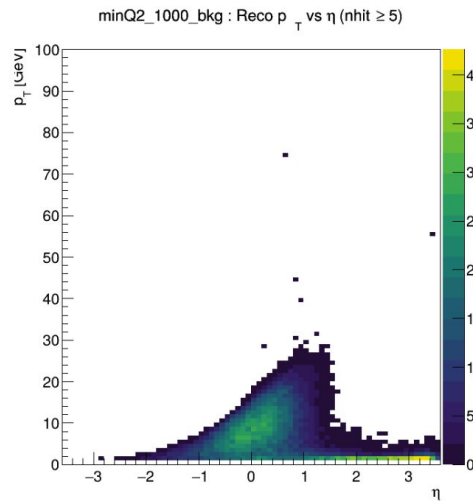
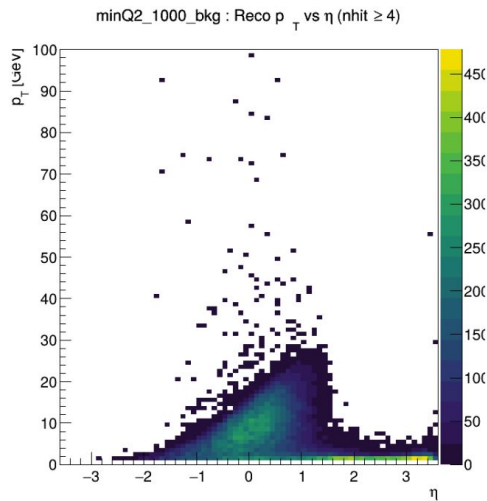
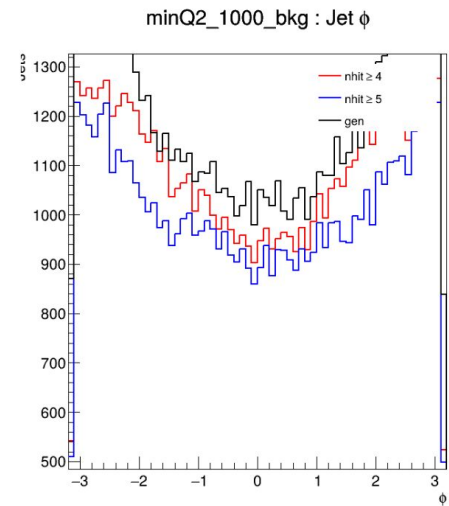
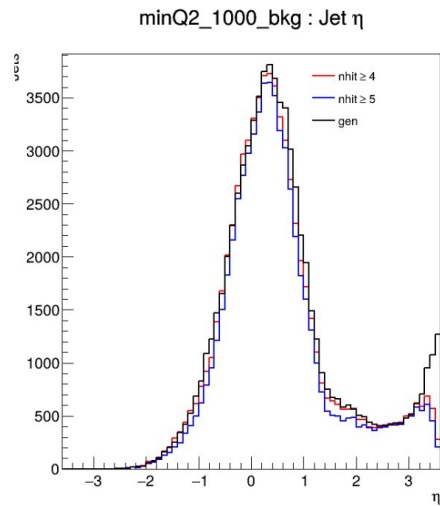
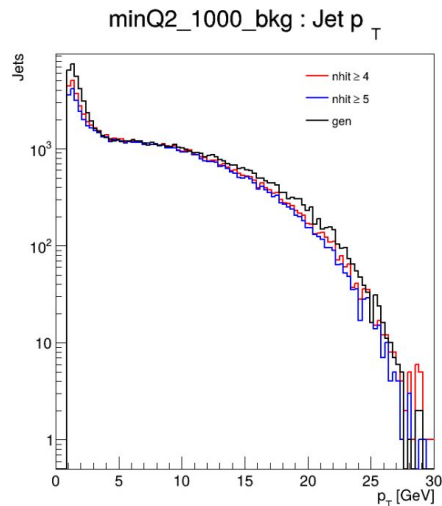
Min Q2 100
 Jet pt > 1 GeV
 $-3.5 < \eta < 3.5$



Min Q2 100
 Jet pt > 1 GeV
 $-2 < \eta < 2.5$

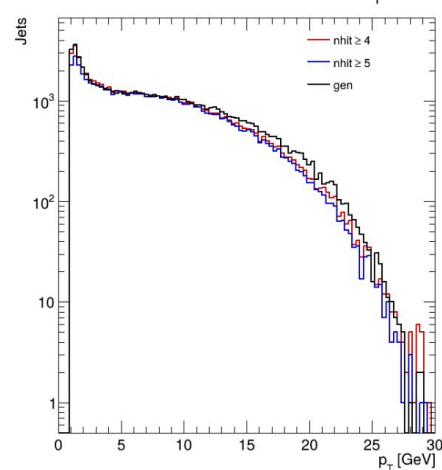


Min Q2 1000
 Jet pt > 1 GeV
 $-3.5 < \eta < 3.5$

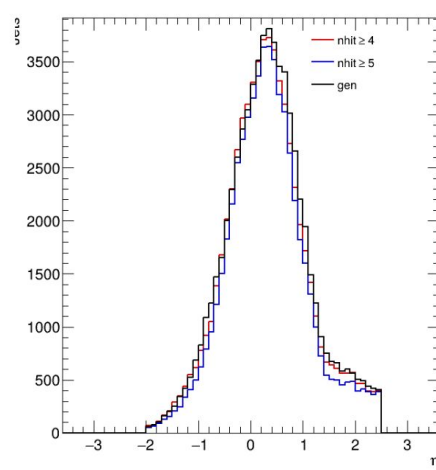


Min Q2 1000
 Jet pt > 1 GeV
 $-2 < \eta < 2.5$

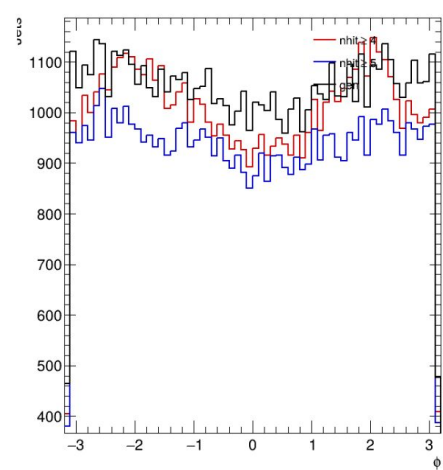
minQ2_1000_bkg : Jet p_T



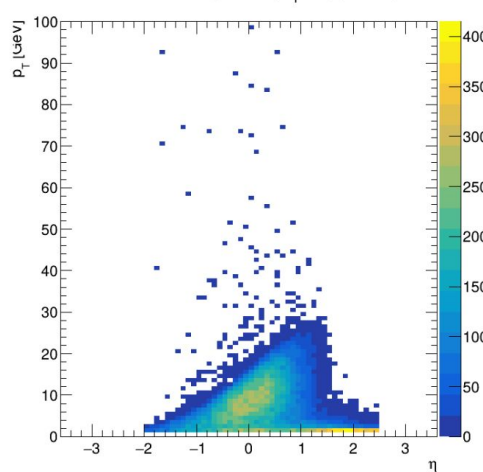
minQ2_1000_bkg : Reco Jet η



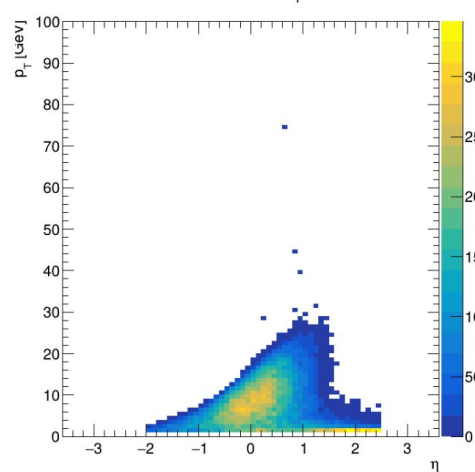
minQ2_1000_bkg : Reco Jet ϕ



minQ2_1000_bkg : Reco p_T vs η (nhit ≥ 4)



minQ2_1000_bkg : Reco p_T vs η (nhit ≥ 5)



minQ2_1000_bkg : Gen p_T vs η

