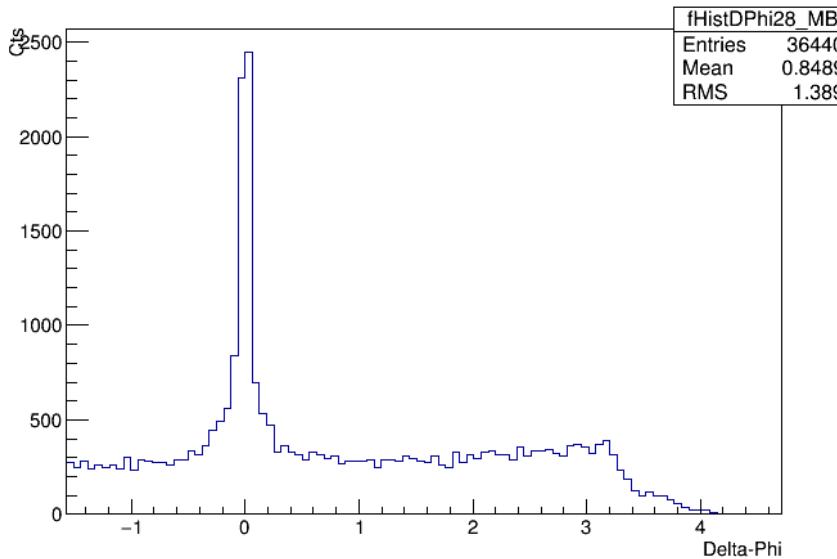


Updates

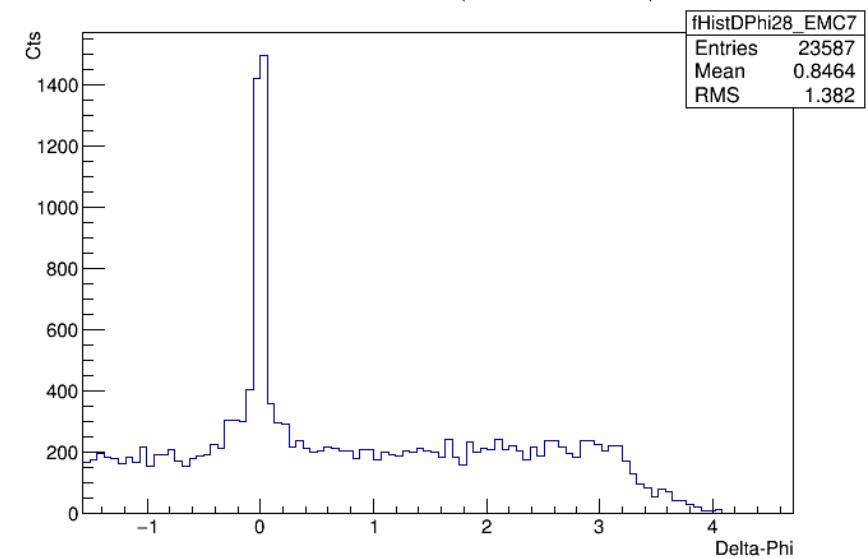
Pat

Delta Phi w/trig 2Gev<pt<8Gev and assoc. pt>2Gev

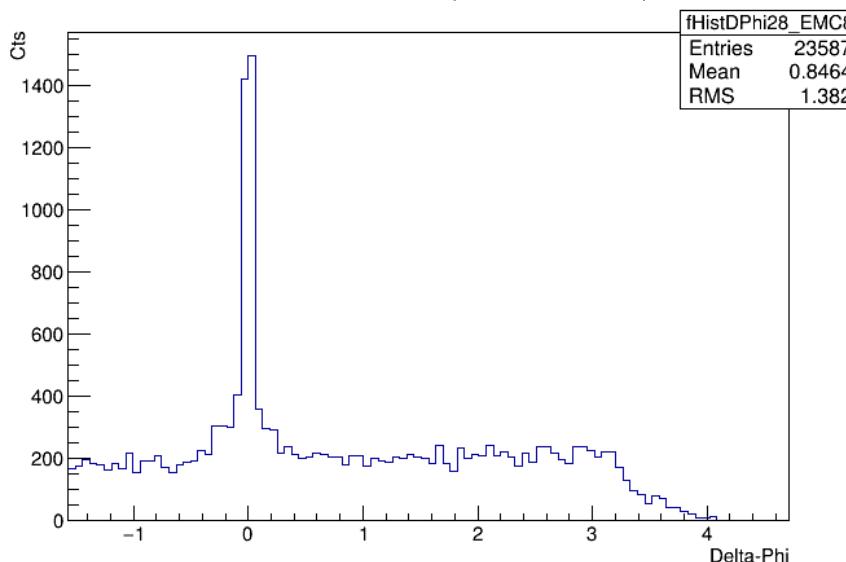
Delta-Phi for candidate electrons with 2<pt<8Gev and assoc. with pt>2Gev



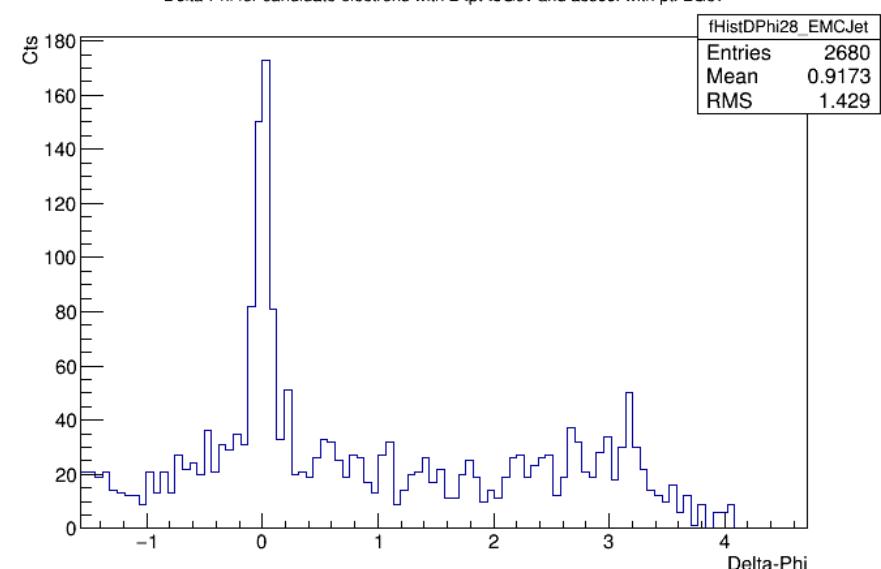
Delta-Phi for candidate electrons with 2<pt<8Gev and assoc. with pt>2Gev



Delta-Phi for candidate electrons with 2<pt<8Gev and assoc. with pt>2Gev

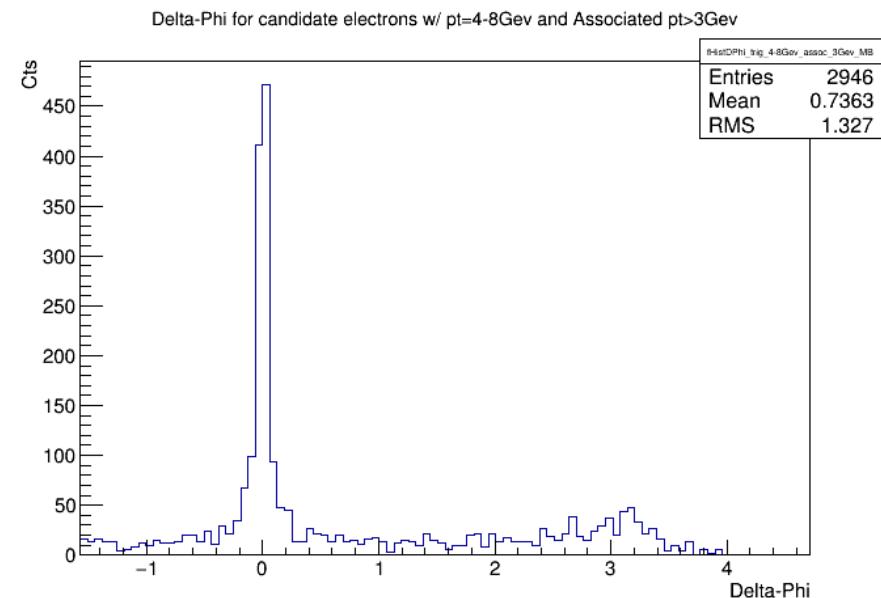
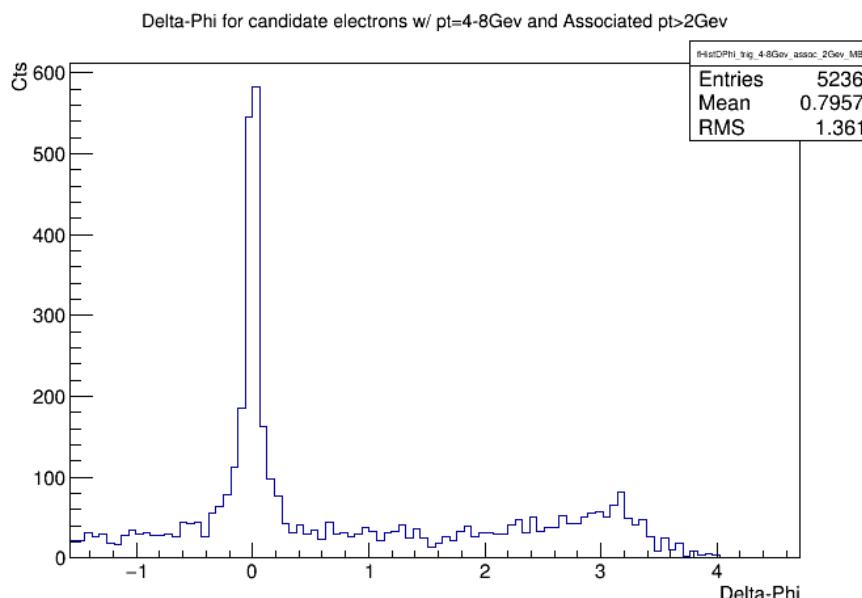
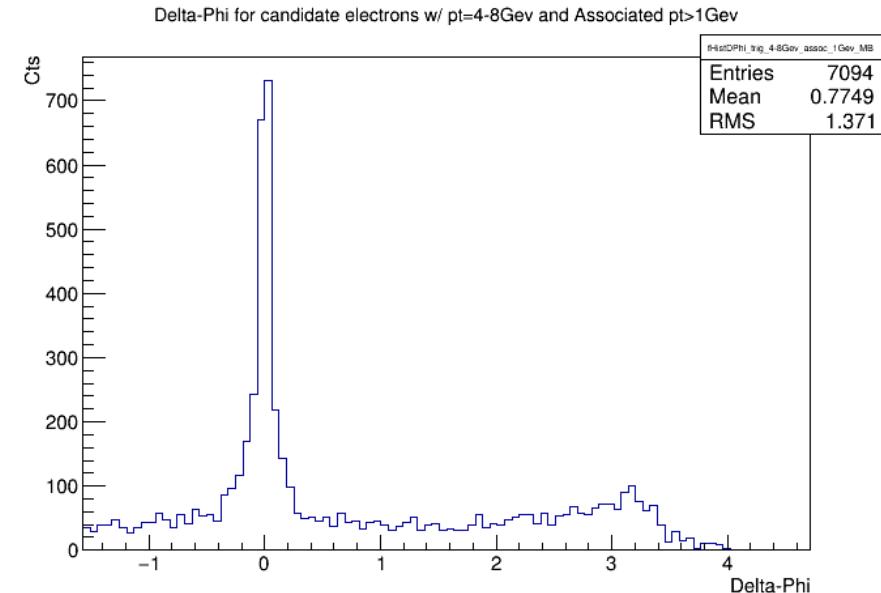
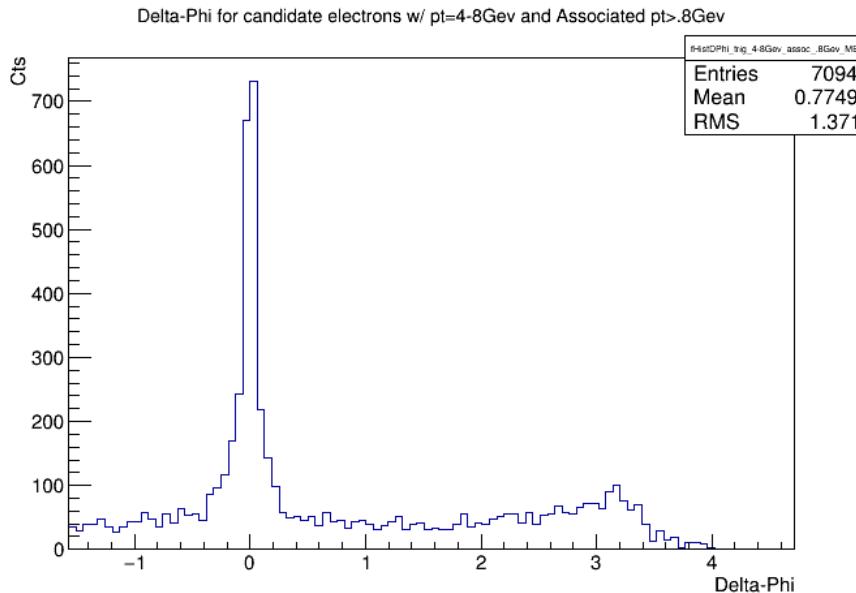


Delta-Phi for candidate electrons with 2<pt<8Gev and assoc. with pt>2Gev



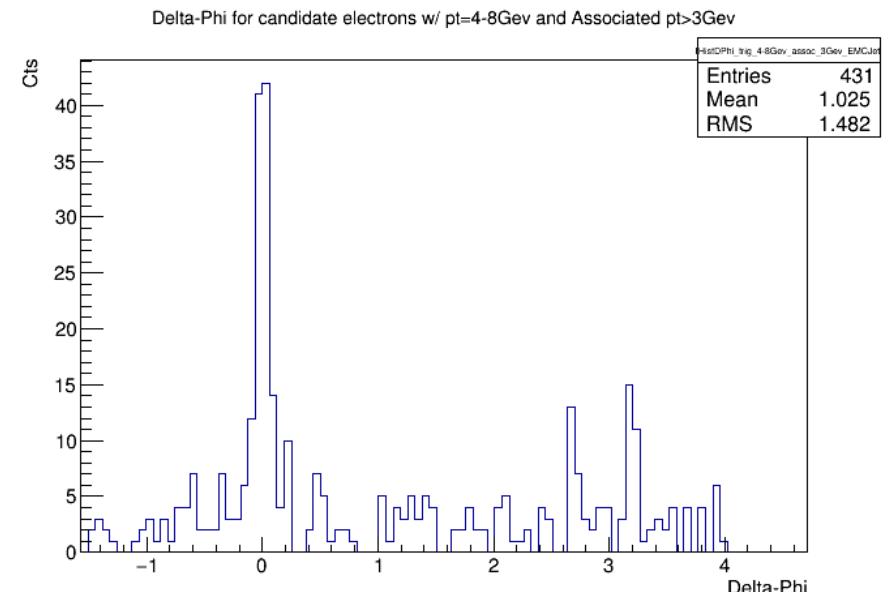
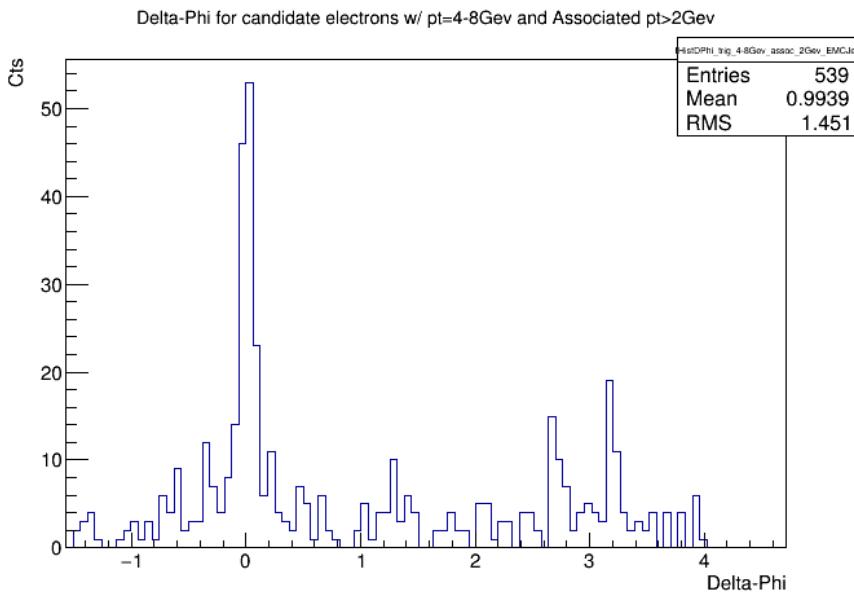
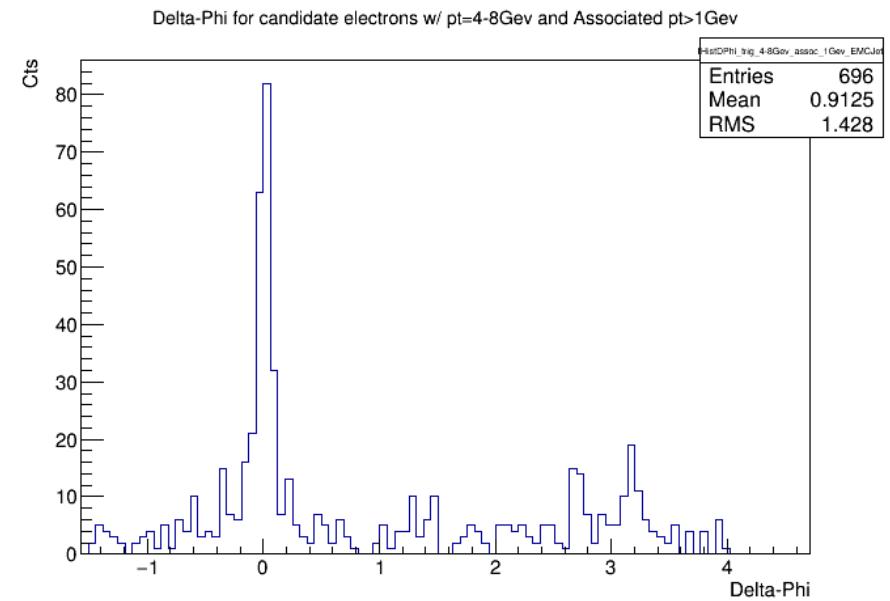
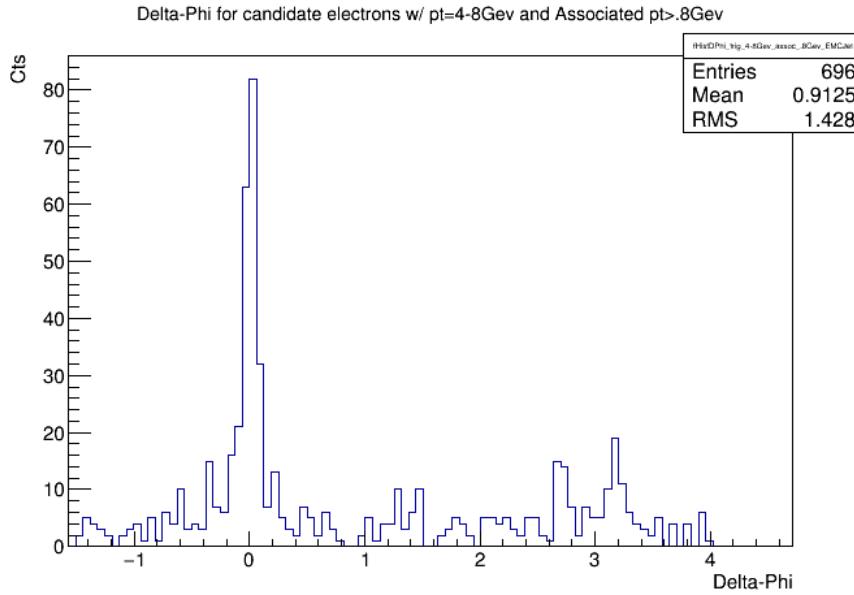
Other Delta Phi plots of note

Min. Bias Delta phi plots for candidate $4\text{Gev} < \text{pt} < 8\text{Gev}$ and various assoc. pt



Other Delta Phi plots of note

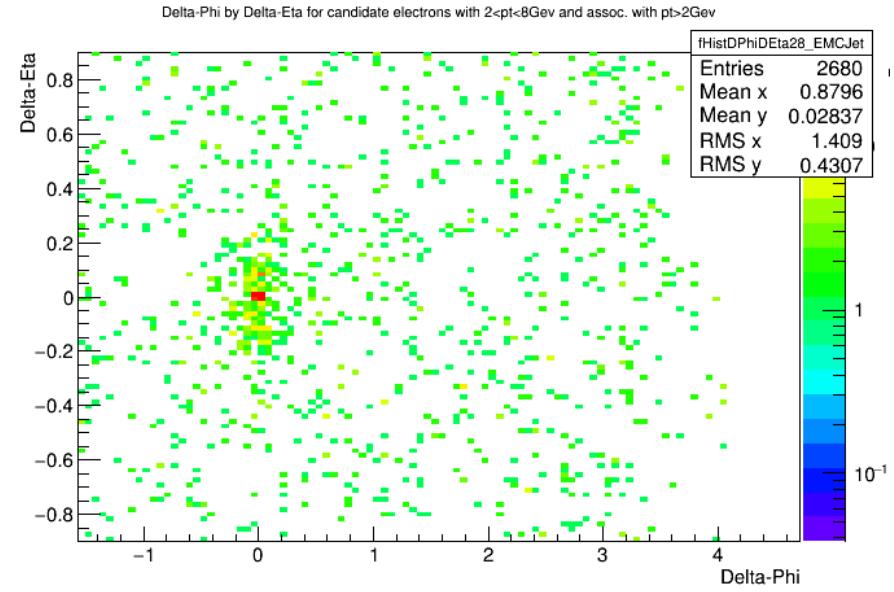
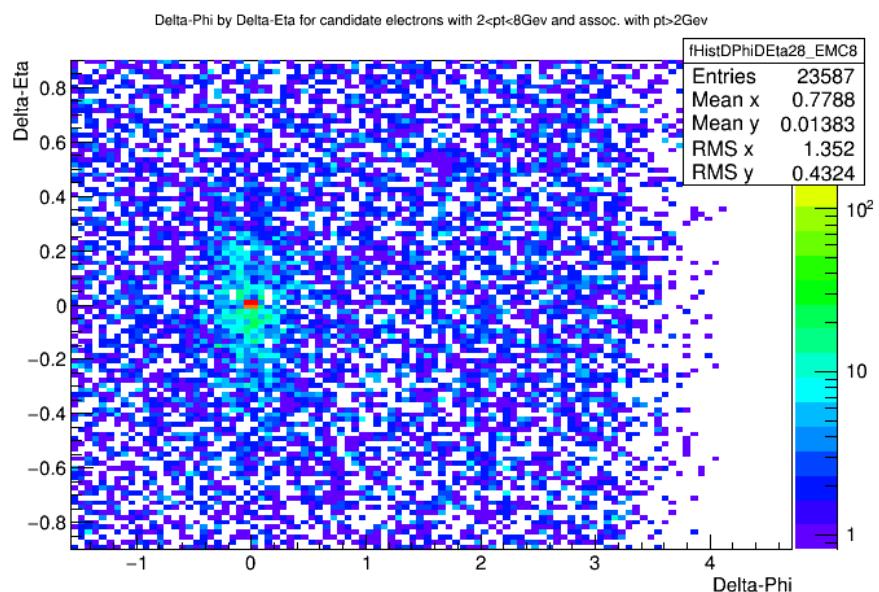
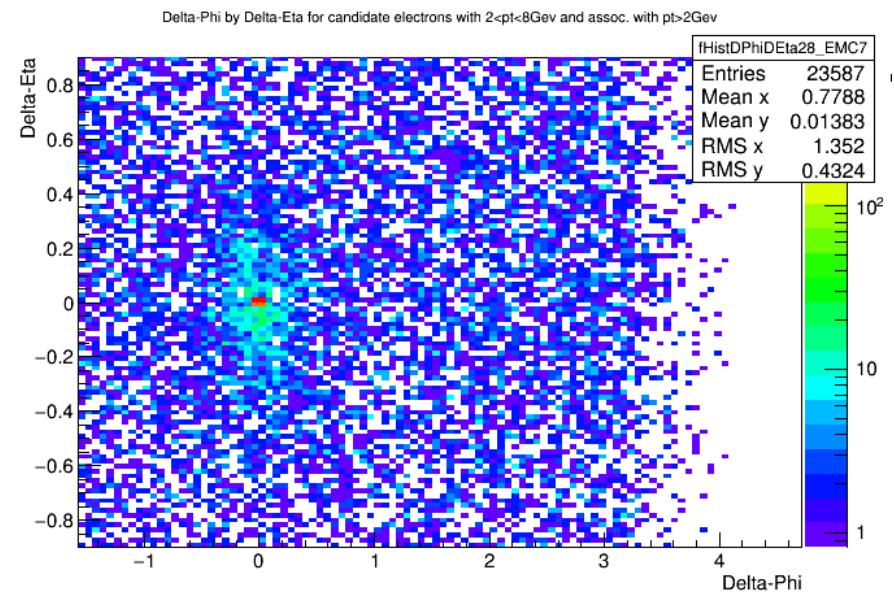
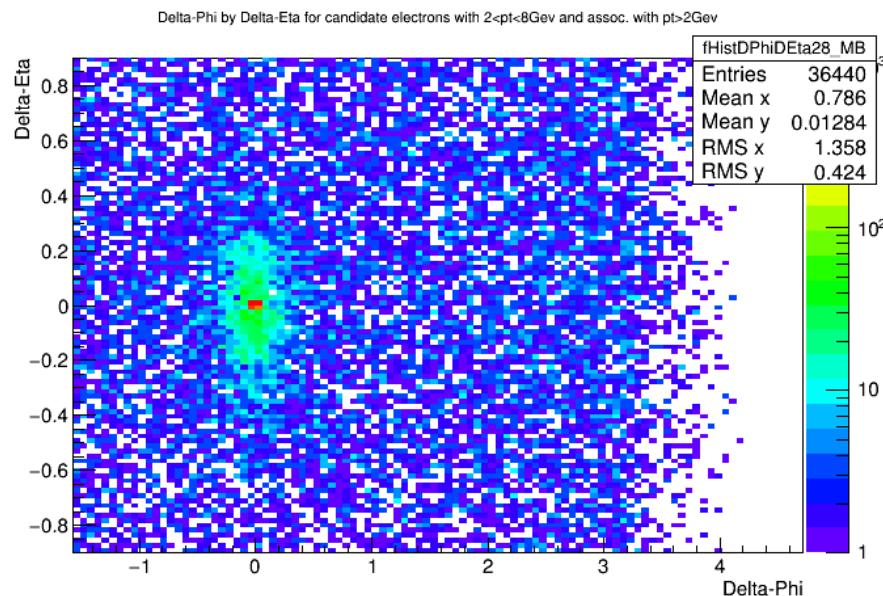
Jet trigger delta phi plots for same pt ranges as the last slide



Delta Phi notes

We see some good ridges for the 4-8Gev pt electrons in all the assoc. pt bins and especially for Jet triggered events. This is to be expected.

Dphi Delta plots



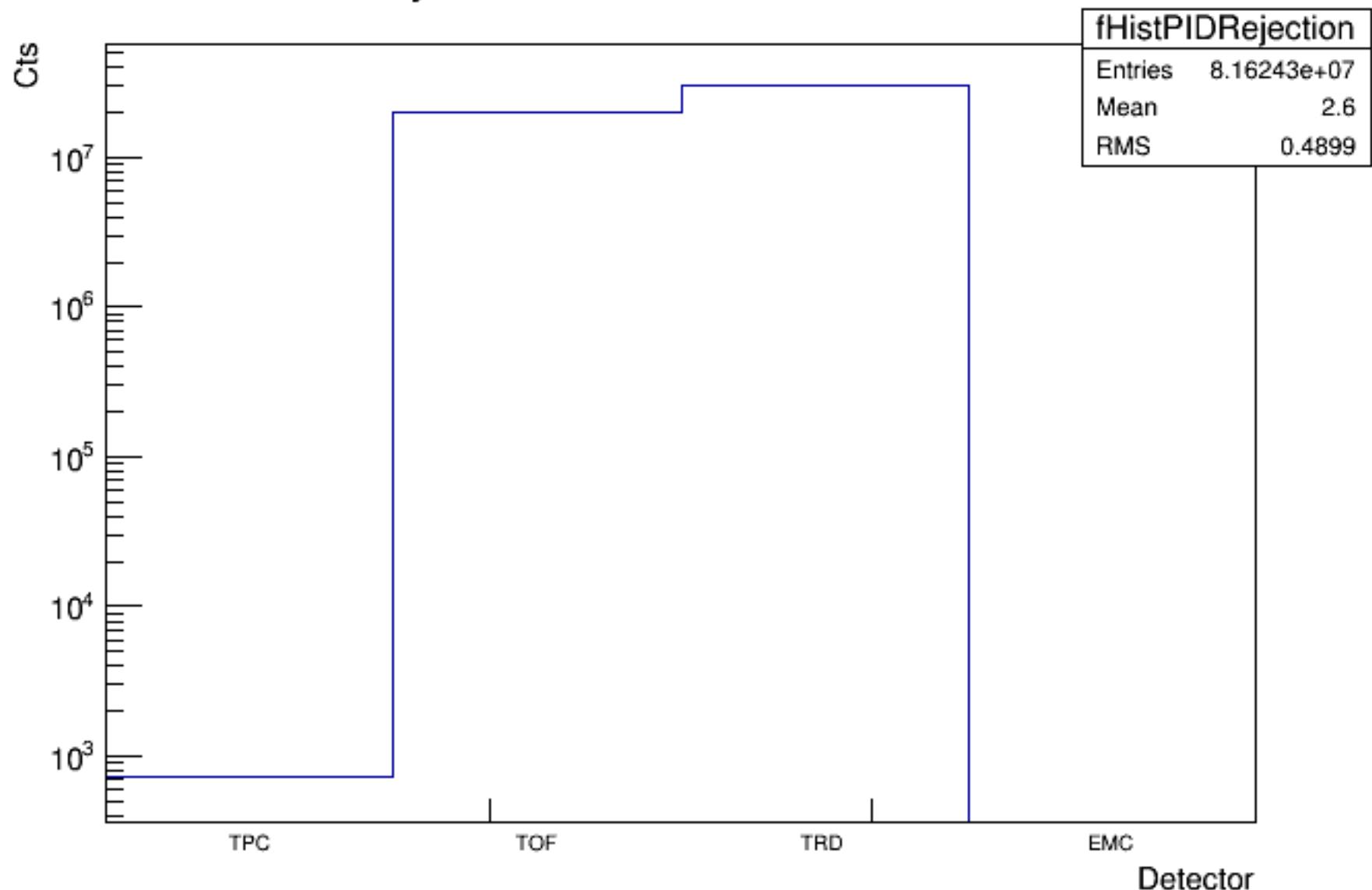
Dphi Delta notes

- The near side peak is very visible in these plots but the away side peak has dissapeared. I'm not sure why this is. The changes that may have caused this are the added cut on number of clusters used in the dE/dx calculation and the different PID cuts.

Pid plots

PID Rejection

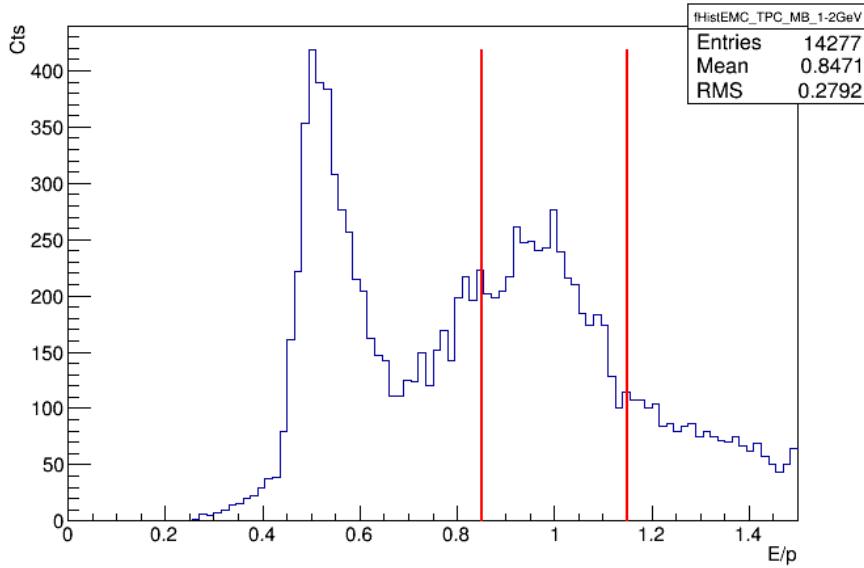
PID rejection counts for each detector.



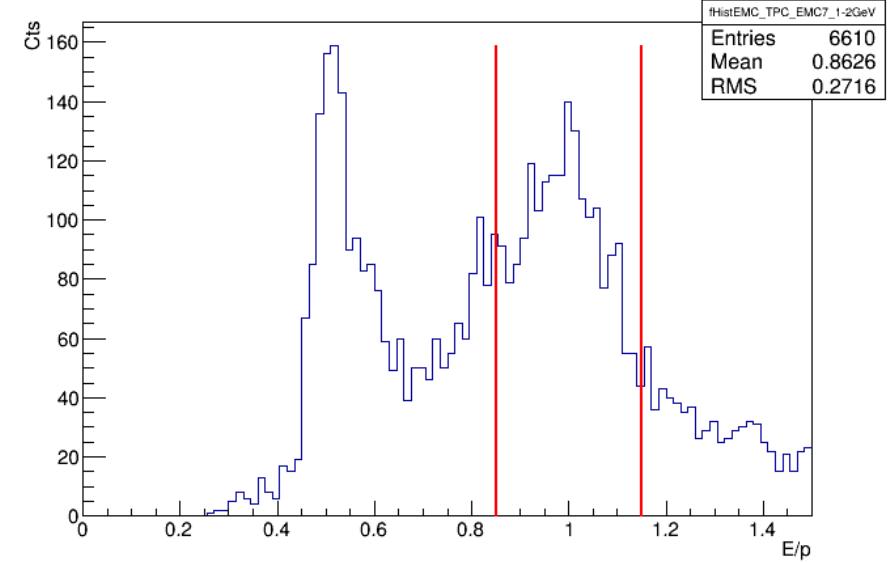
E/p w/o TOF cuts in 1-2Gev

TPC cuts

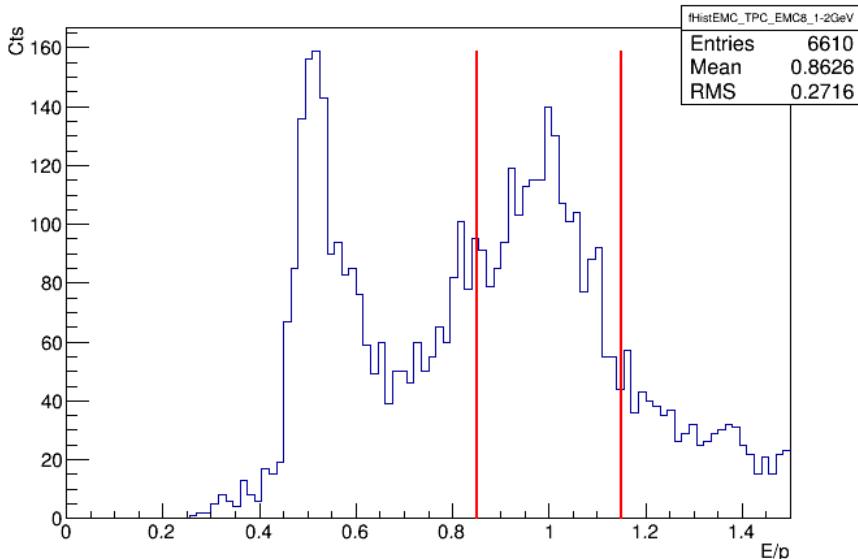
E/p for tracks with Pt between 1-2GeV after TPC cuts



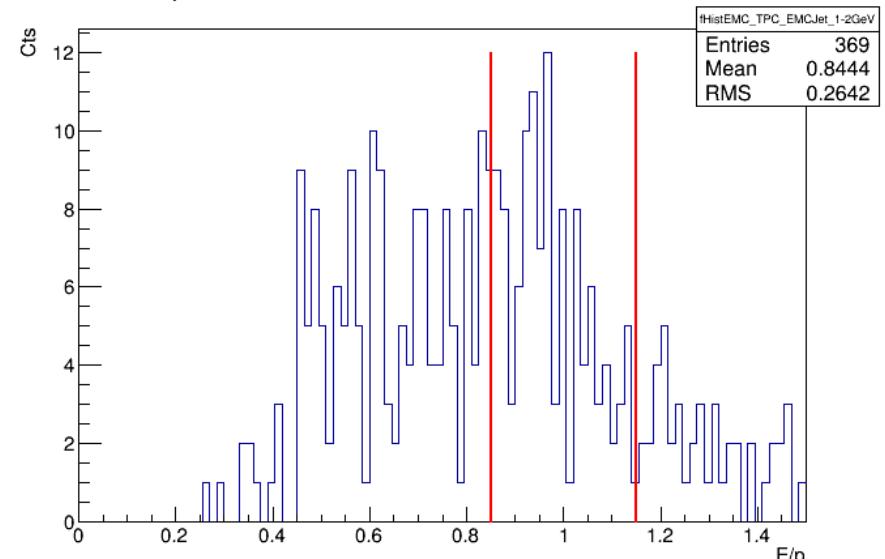
E/p for tracks with Pt between 1-2GeV after TPC cuts



E/p for tracks with Pt between 1-2GeV after TPC cuts

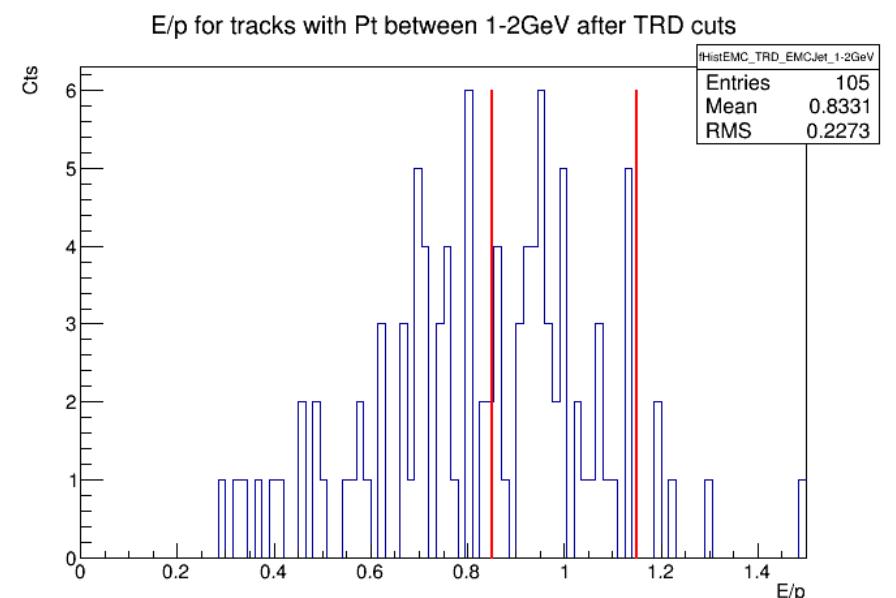
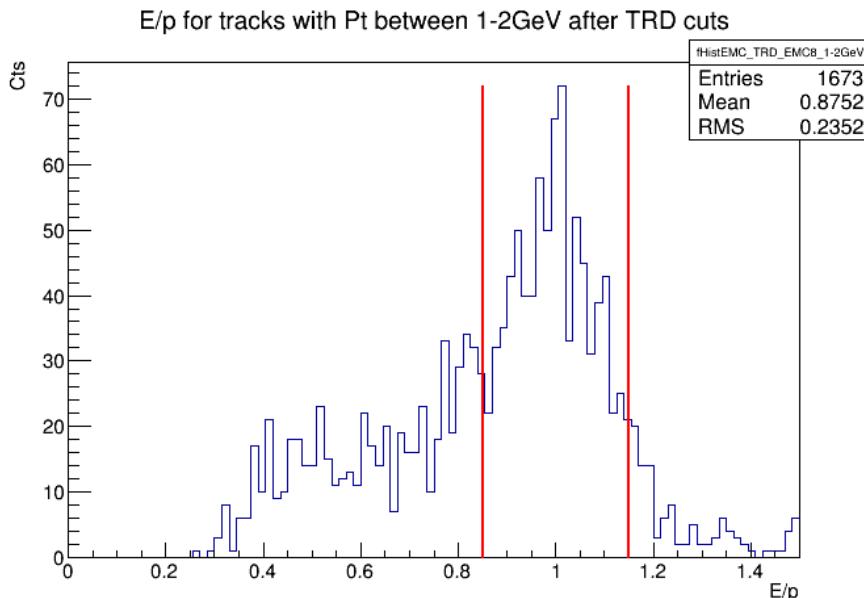
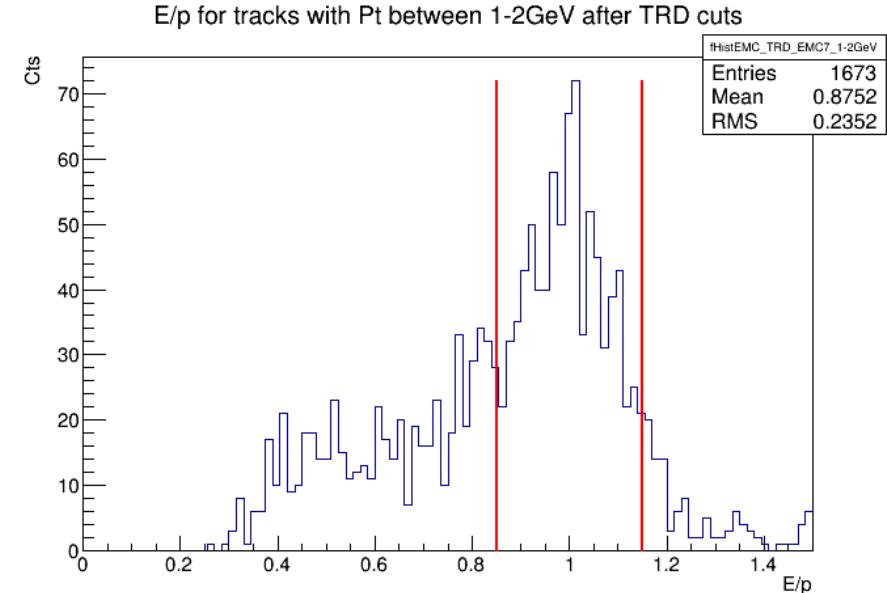
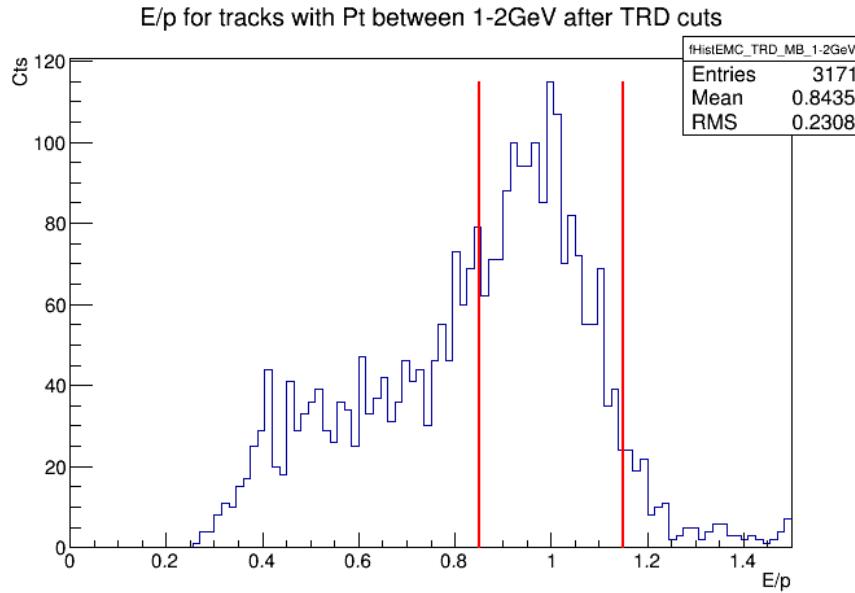


E/p for tracks with Pt between 1-2GeV after TPC cuts



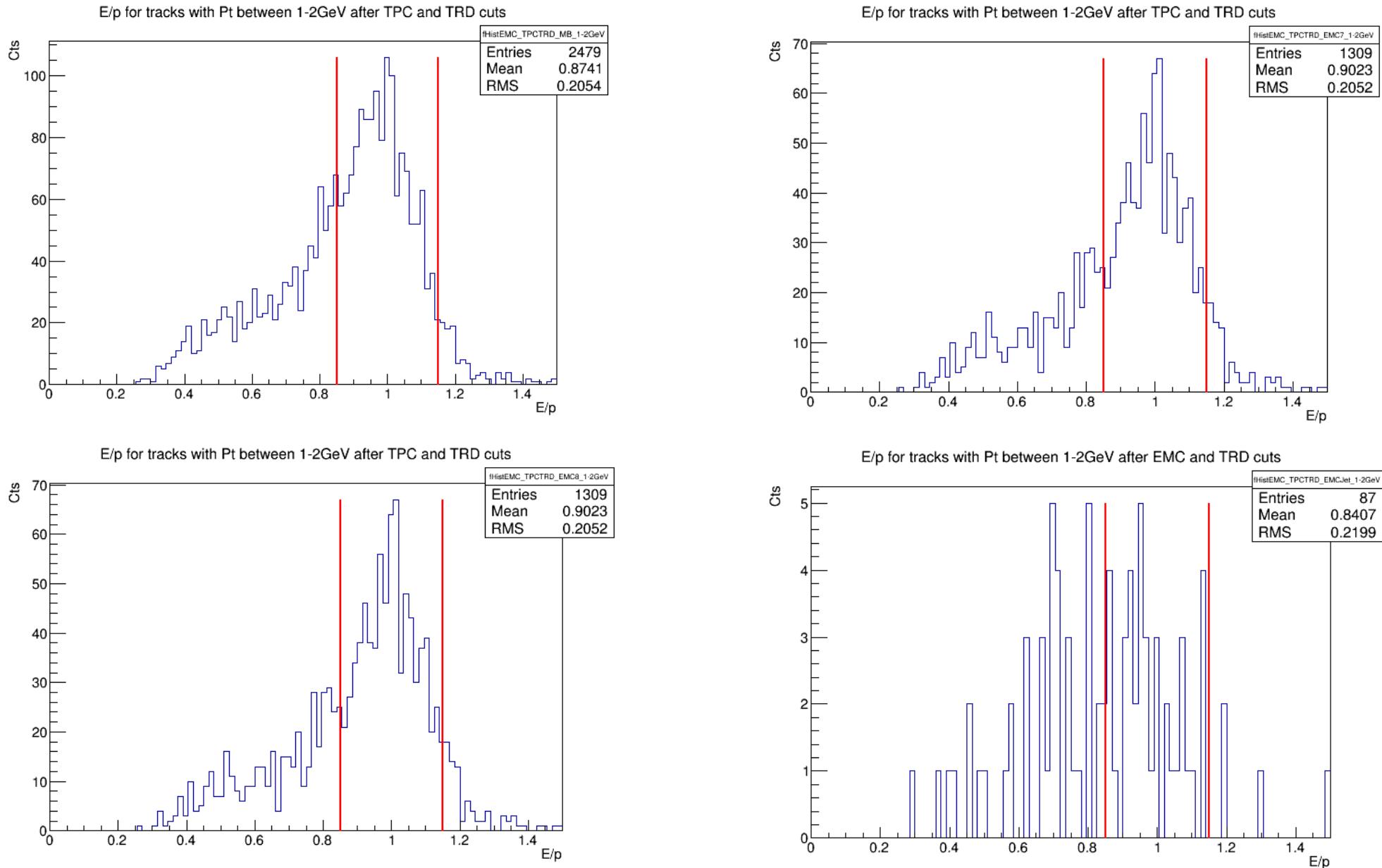
E/p w/o TOF cuts in 1-2Gev

TOF cuts



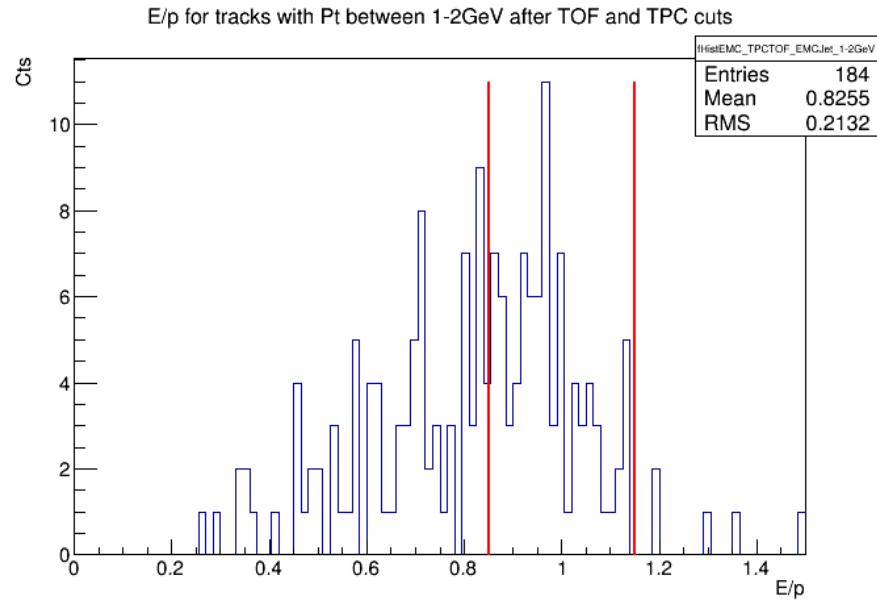
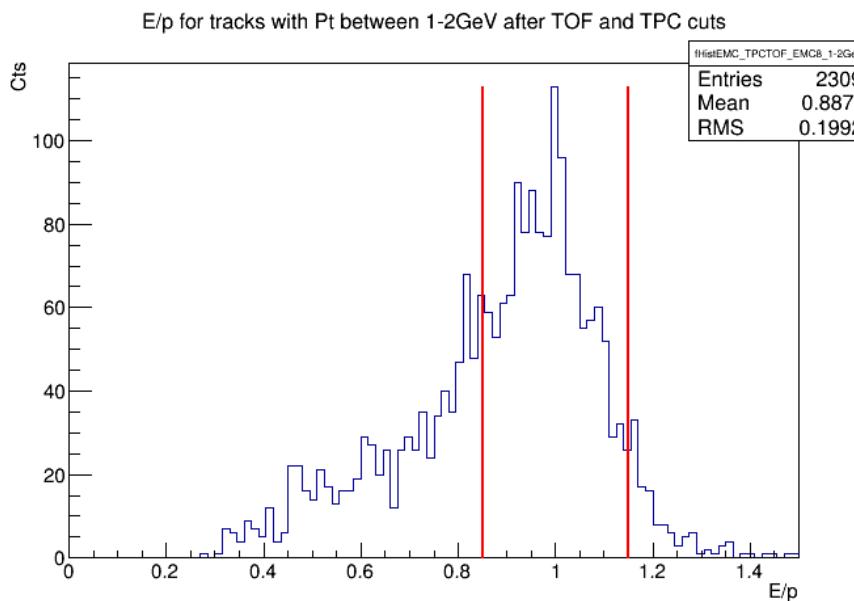
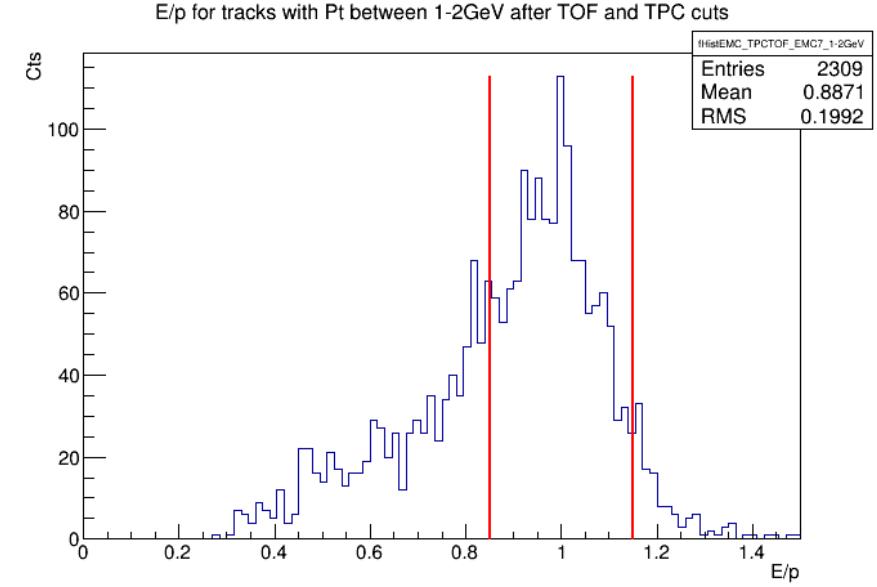
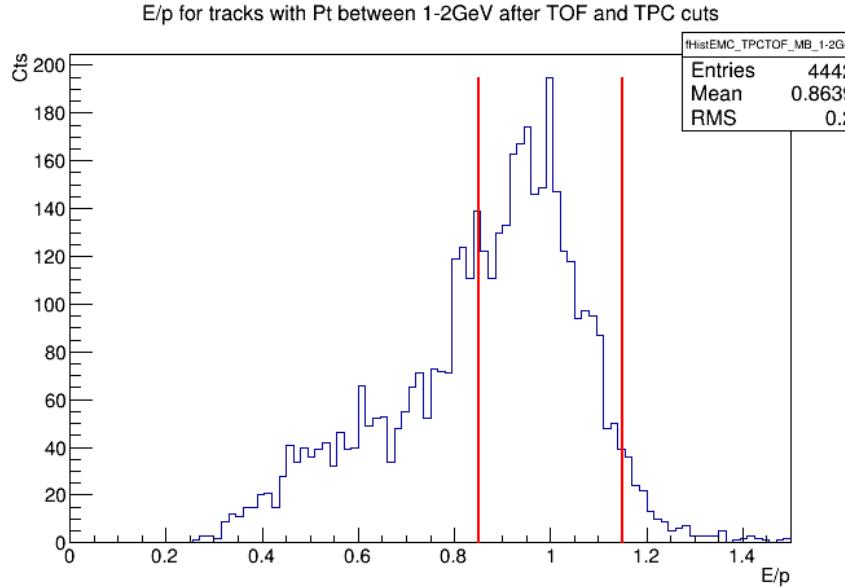
E/p w/o TOF cuts in 1-2Gev

TPC and TOF cuts



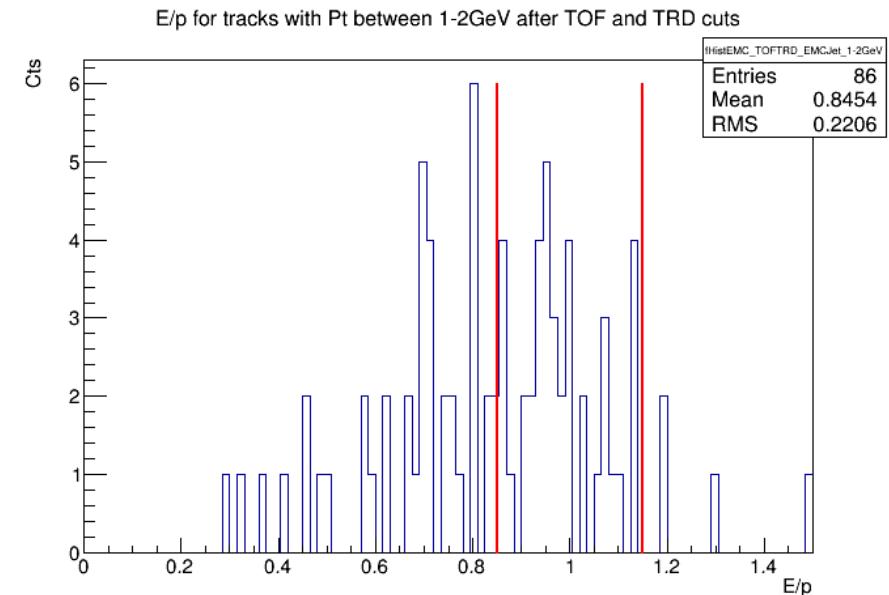
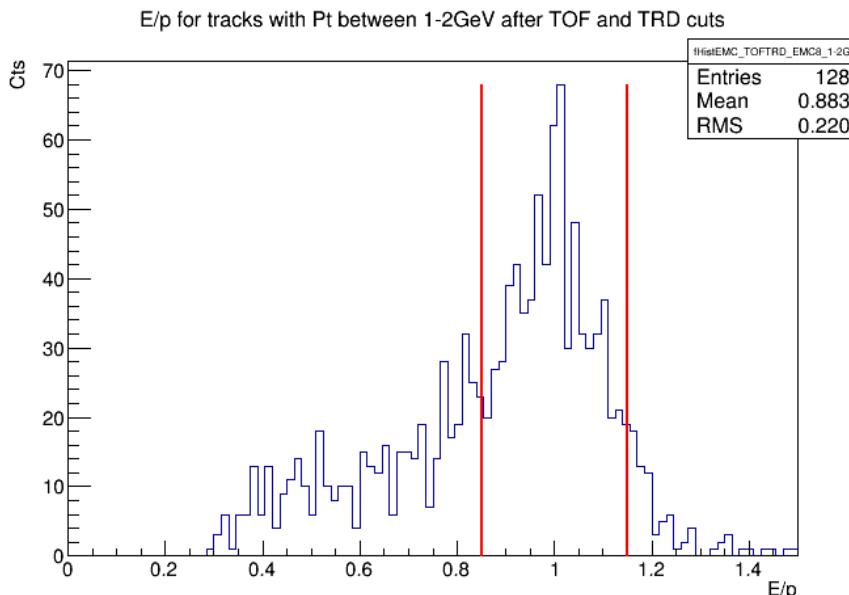
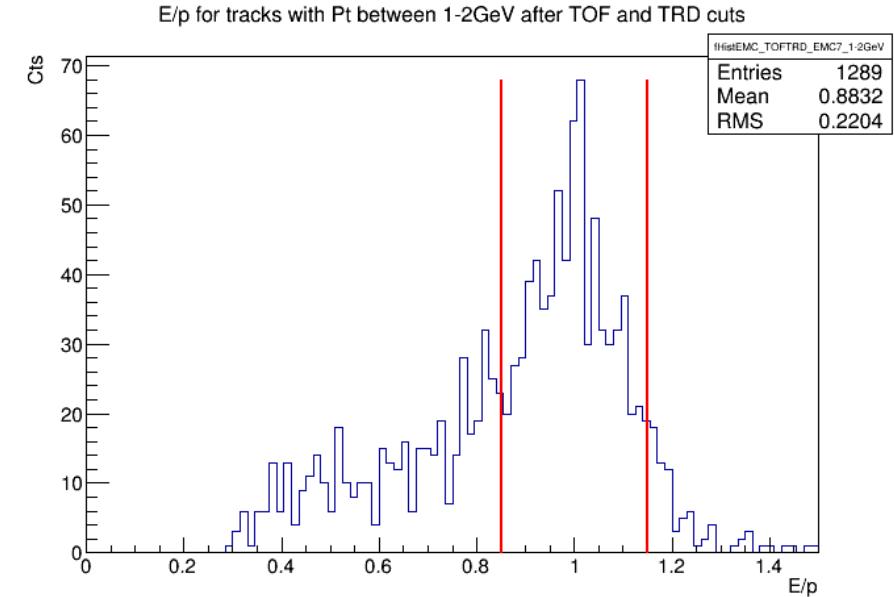
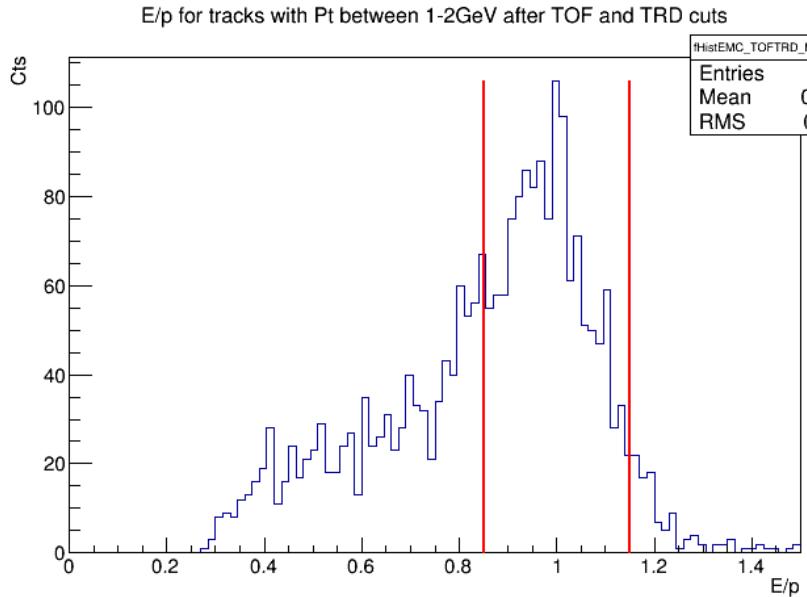
E/p w/TOF cuts in 1-2Gev

TPC and TOF cuts



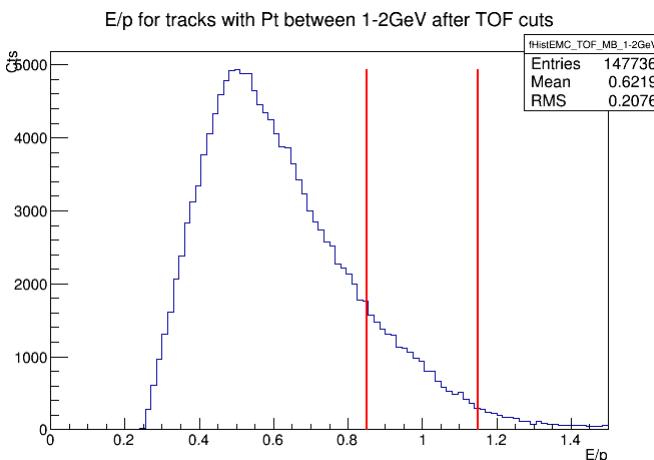
E/p w/TOF cuts in 1-2Gev

TRD and TOF cuts



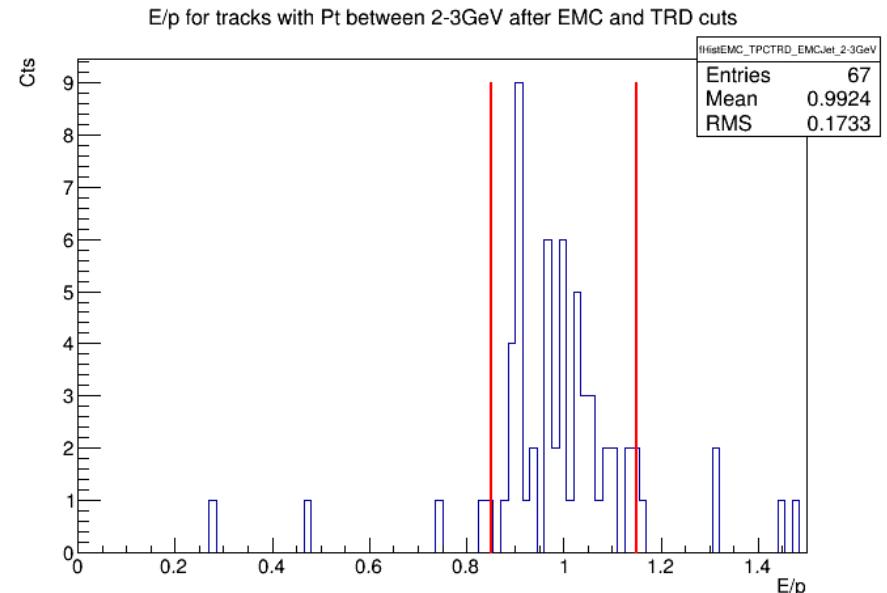
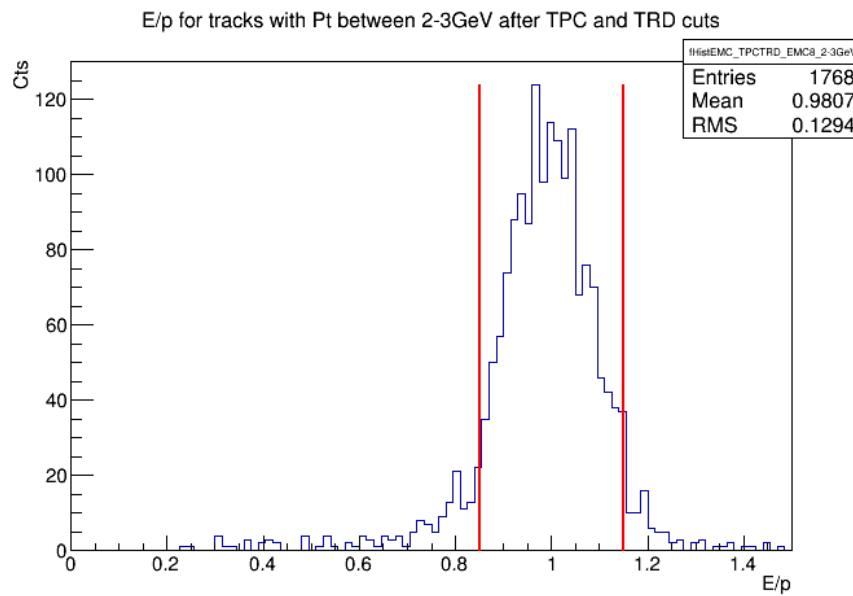
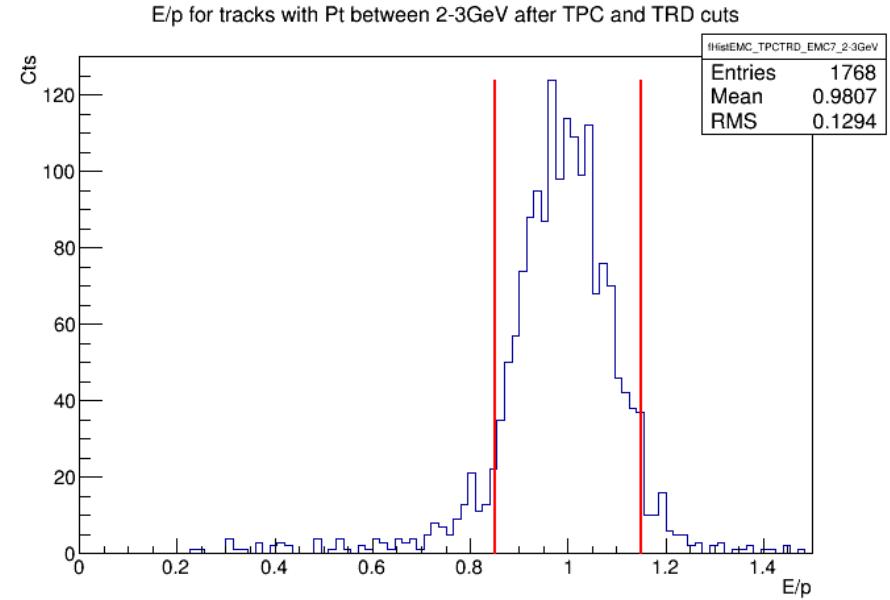
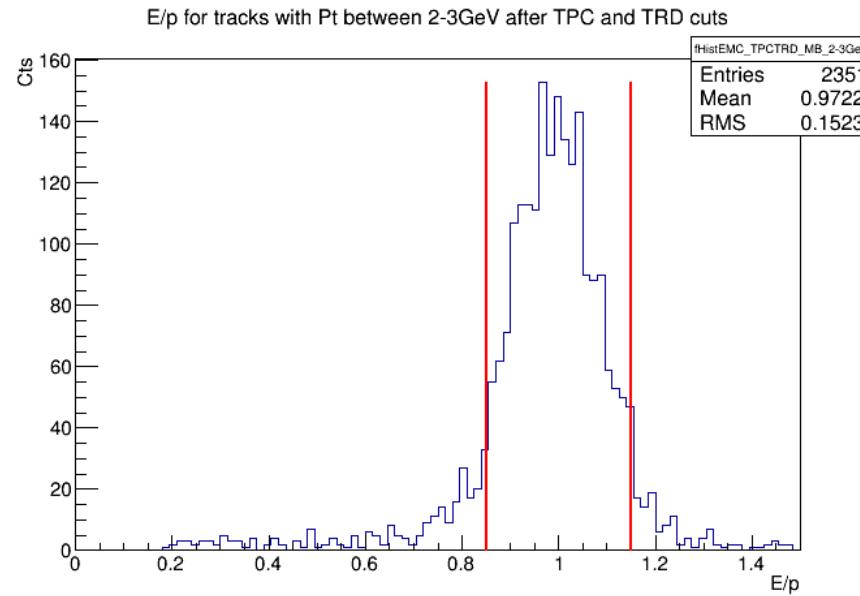
E/p from 1-2 Gev may benefit from TOF cuts

Though the TRD does a decent job in 1-2Gev, I believe this may be due to the stringent 0.9 cut which is usually much looser in other analyses that I have seen. I think that if we are to mimic these other analyses, we should consider using TOF PID info in this pt bin. By itself, though, a TOF cut is really terrible.



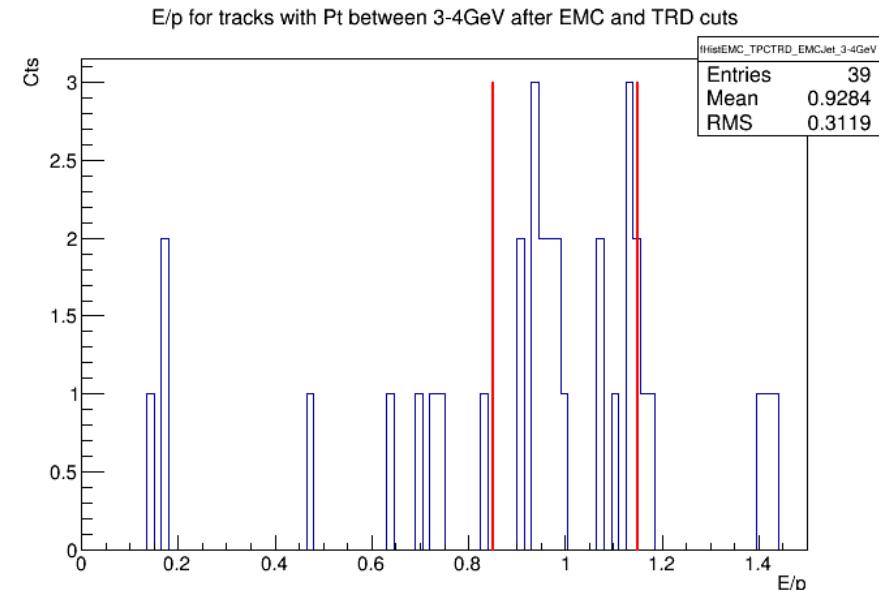
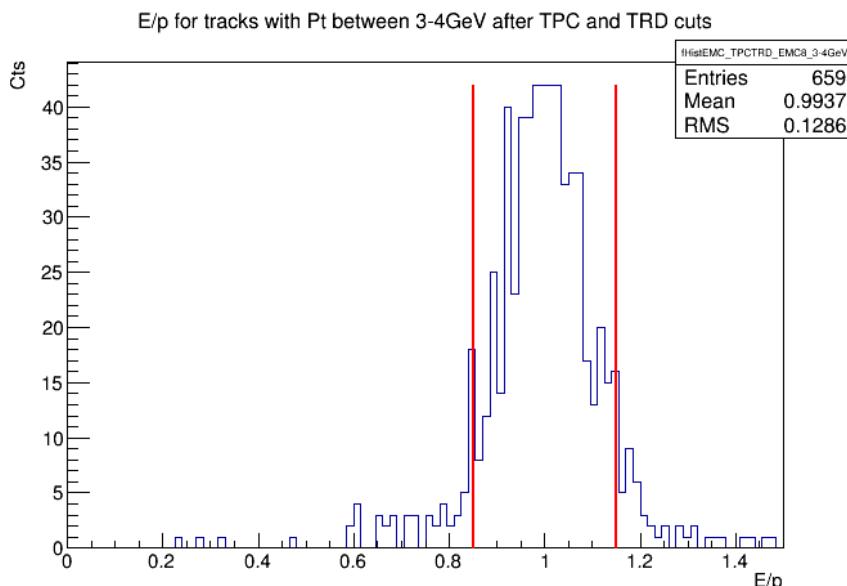
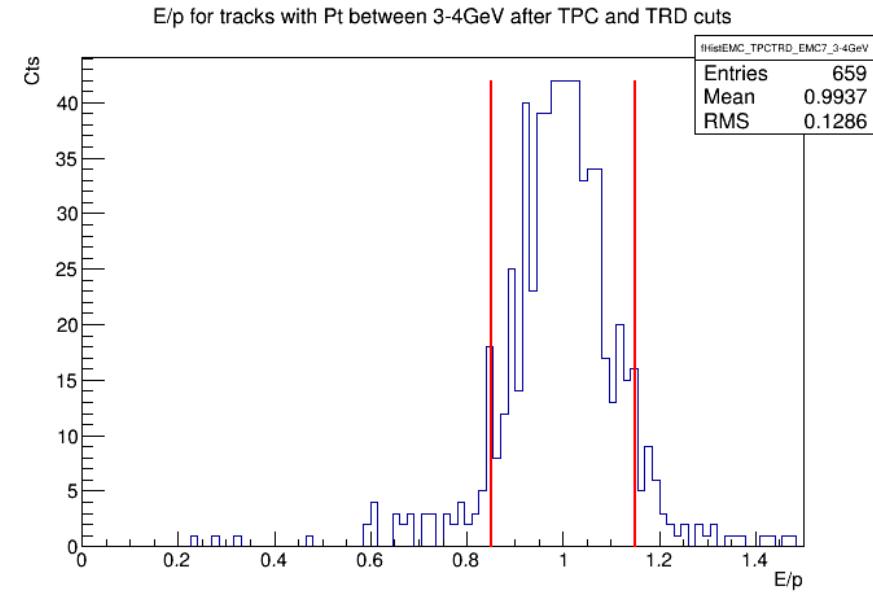
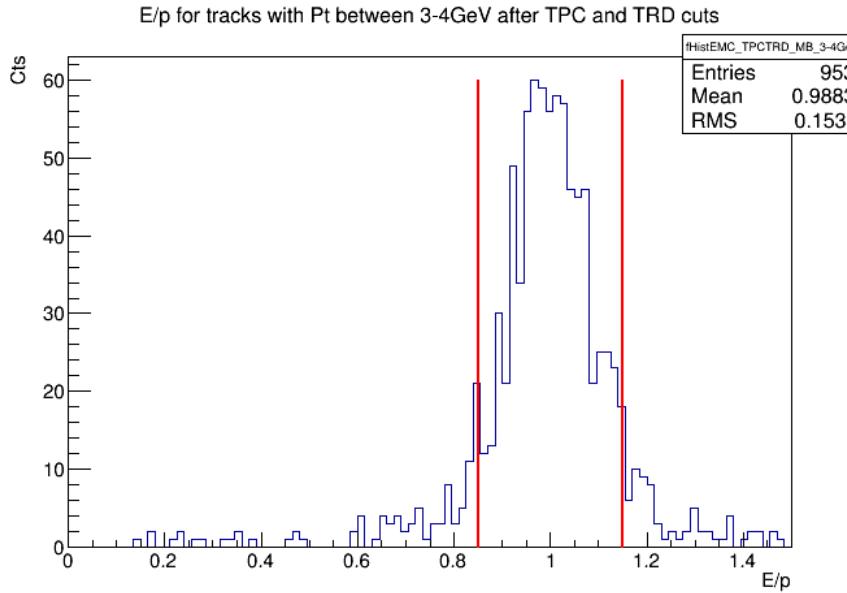
E/p after TPC, TRD cuts

2-3Gev



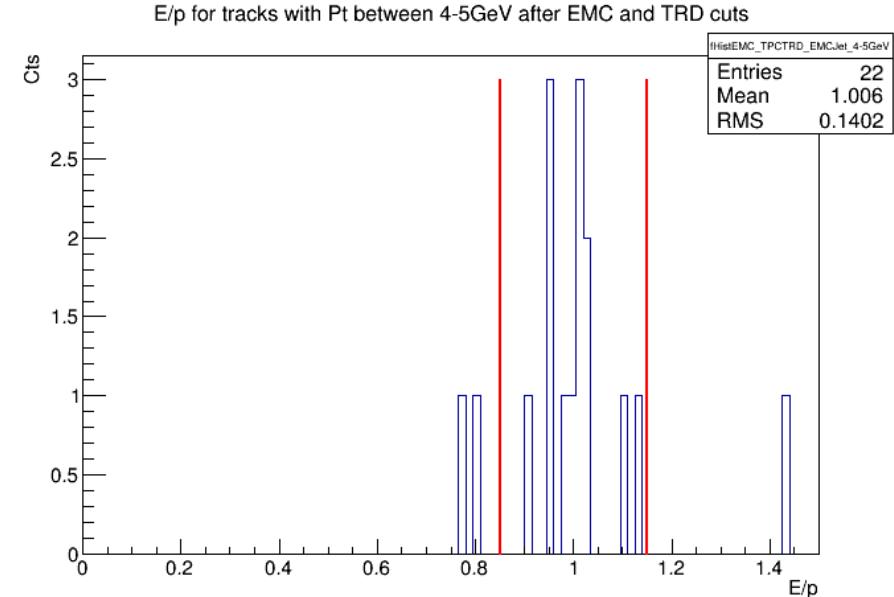
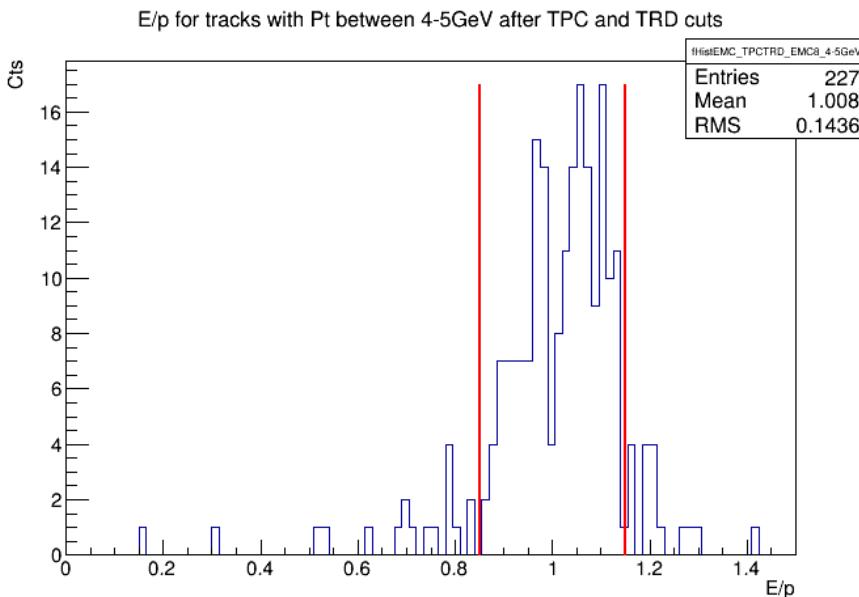
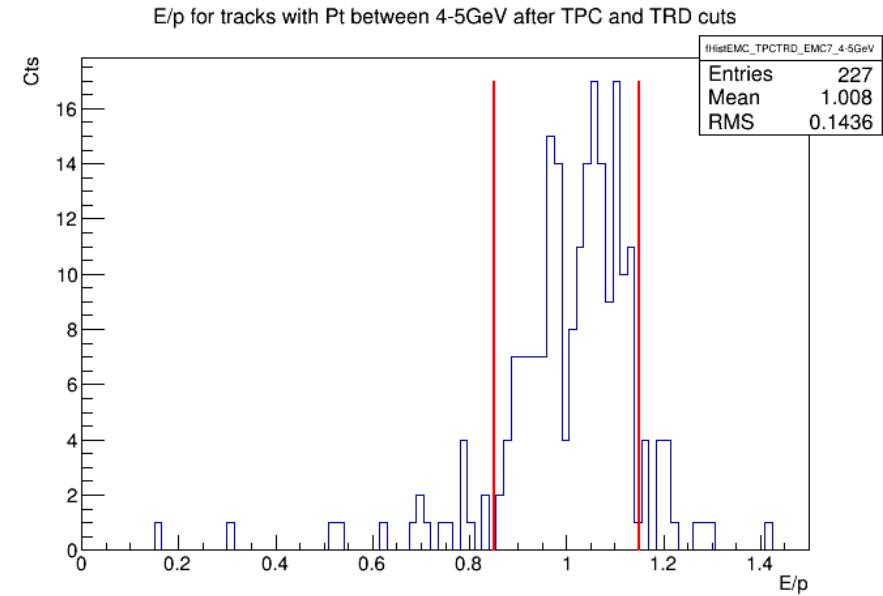
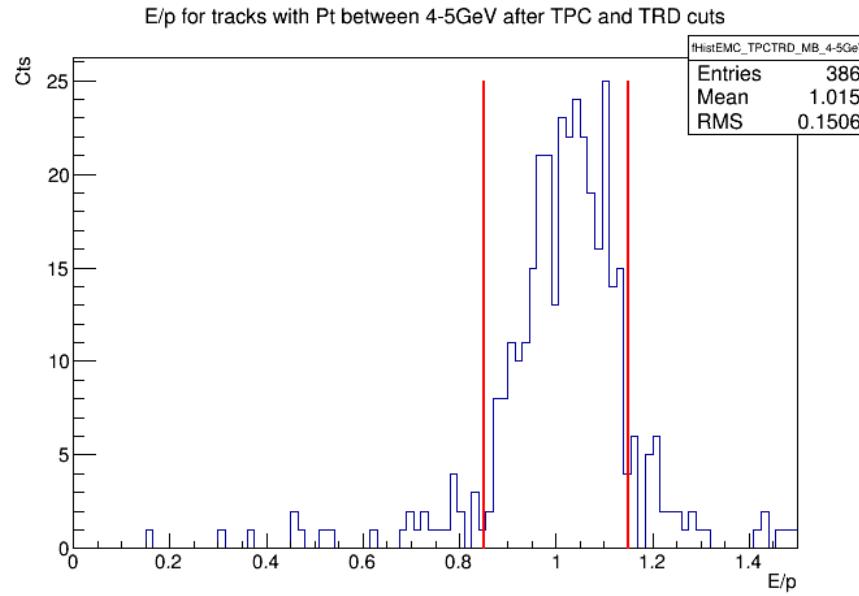
E/p after TPC, TRD cuts

3-4Gev



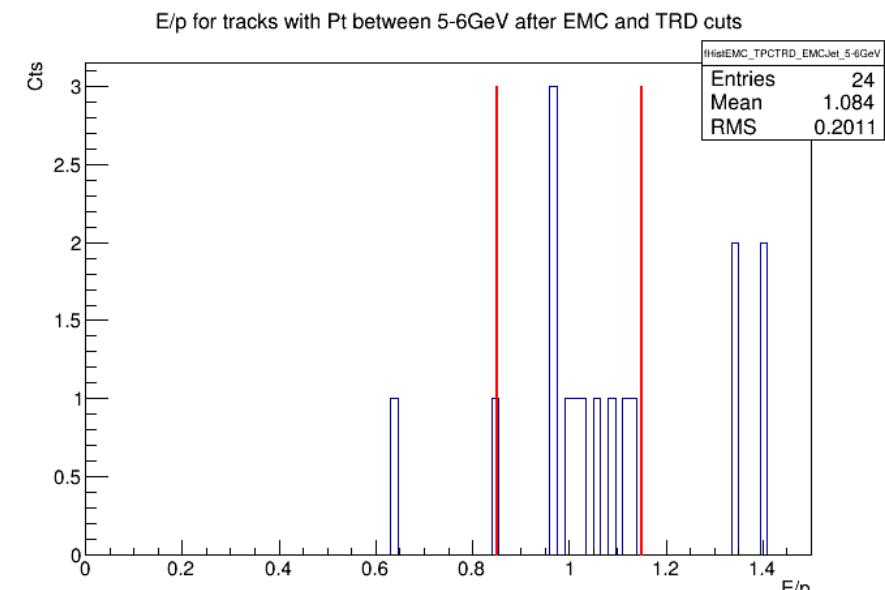
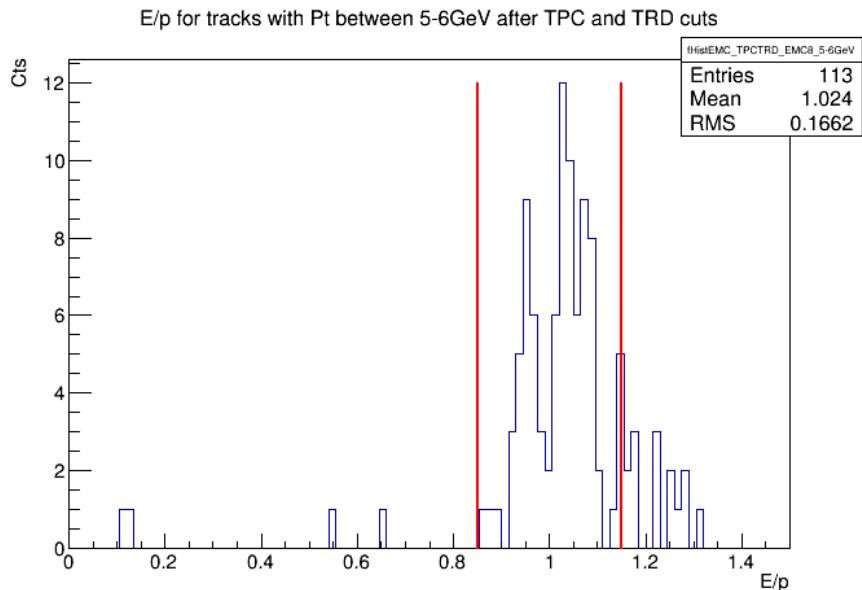
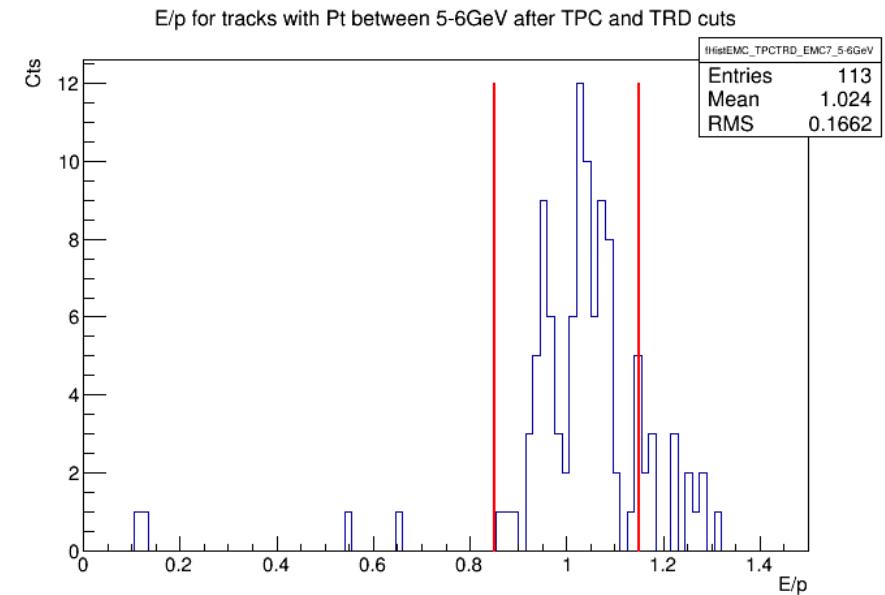
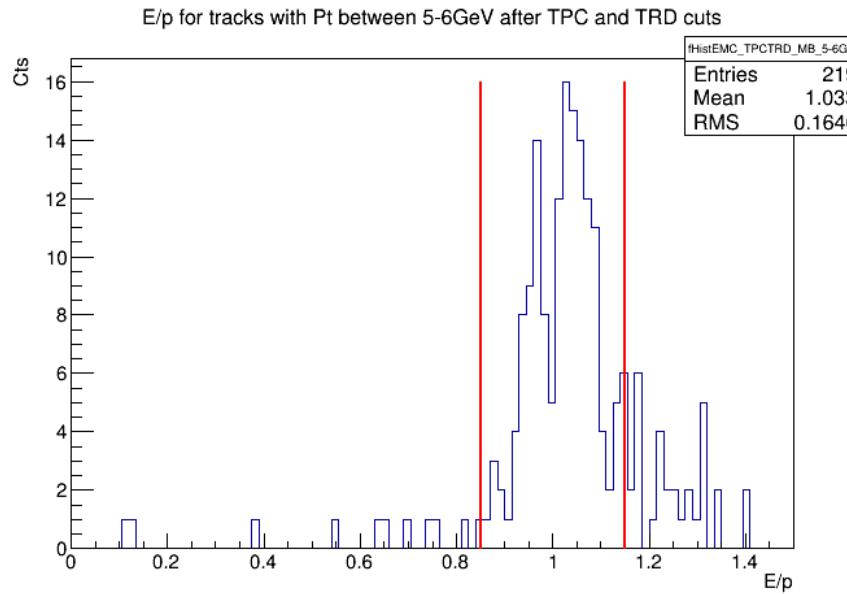
E/p after TPC, TRD cuts

4-5Gev



E/p after TPC, TRD cuts

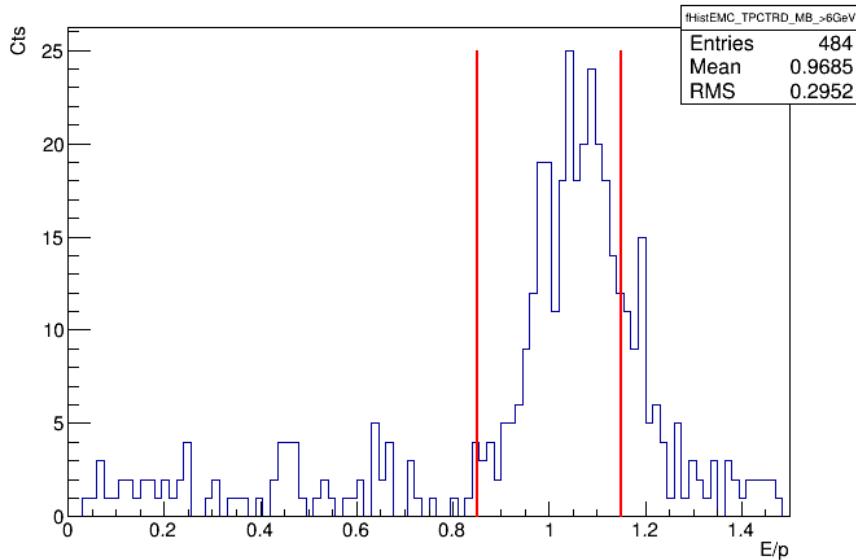
5-6Gev



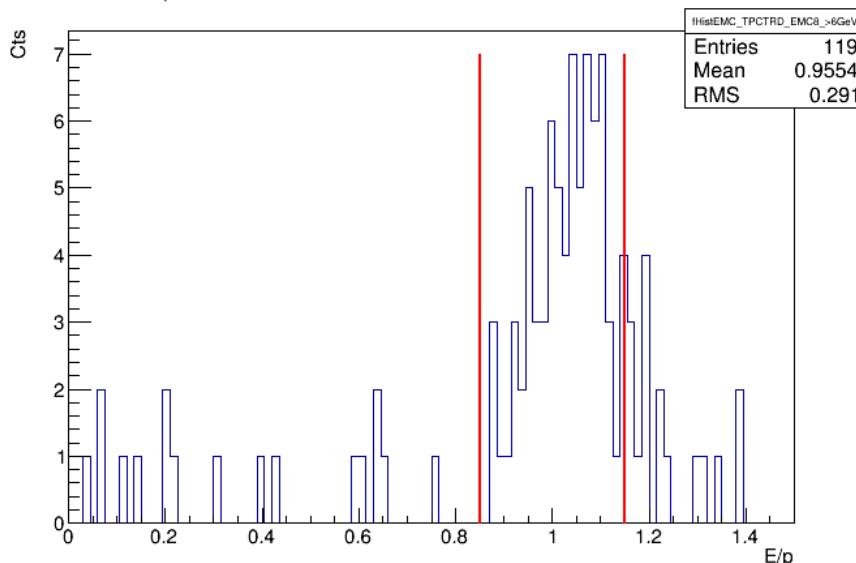
E/p after TPC, TRD cuts

>6Gev

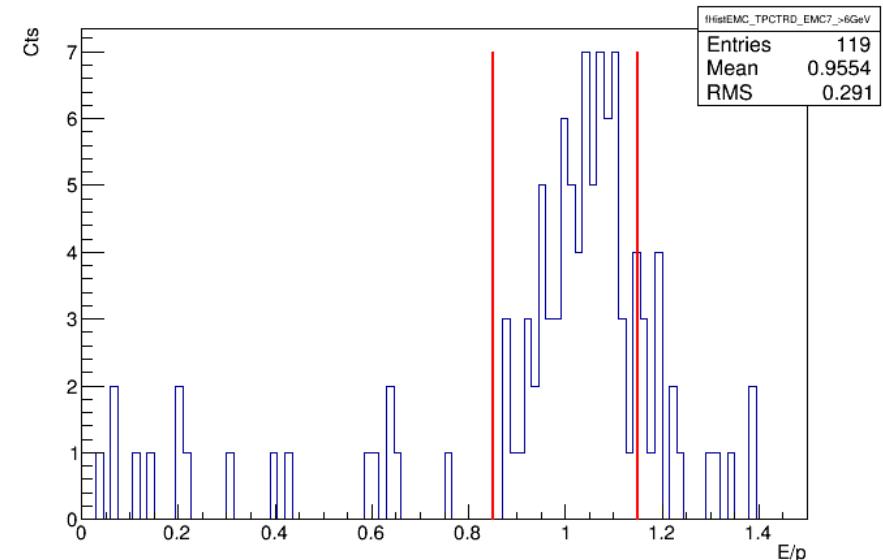
E/p for tracks with Pt between >6GeV after TPC and TRD cuts



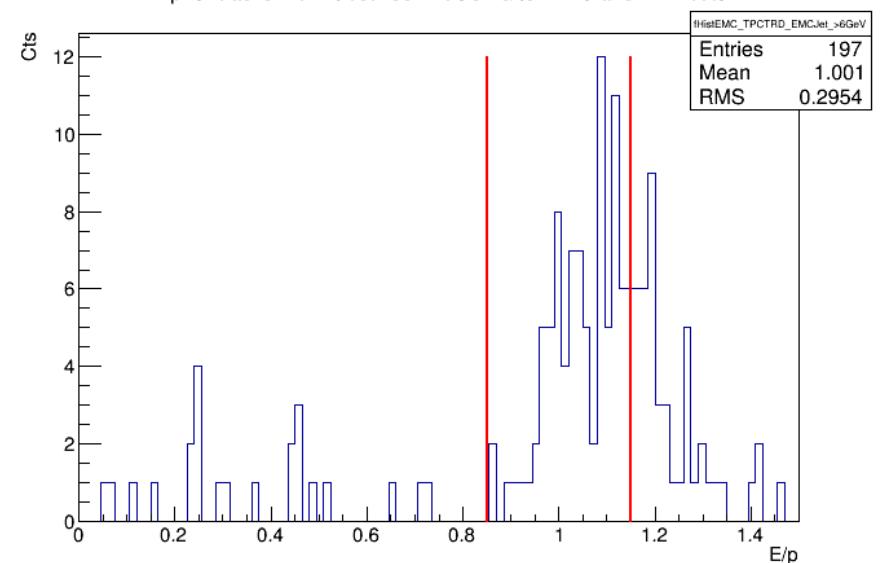
E/p for tracks with Pt between >6GeV after TPC and TRD cuts



E/p for tracks with Pt between >6GeV after TPC and TRD cuts



E/p for tracks with Pt between >6GeV after EMC and TRD cuts

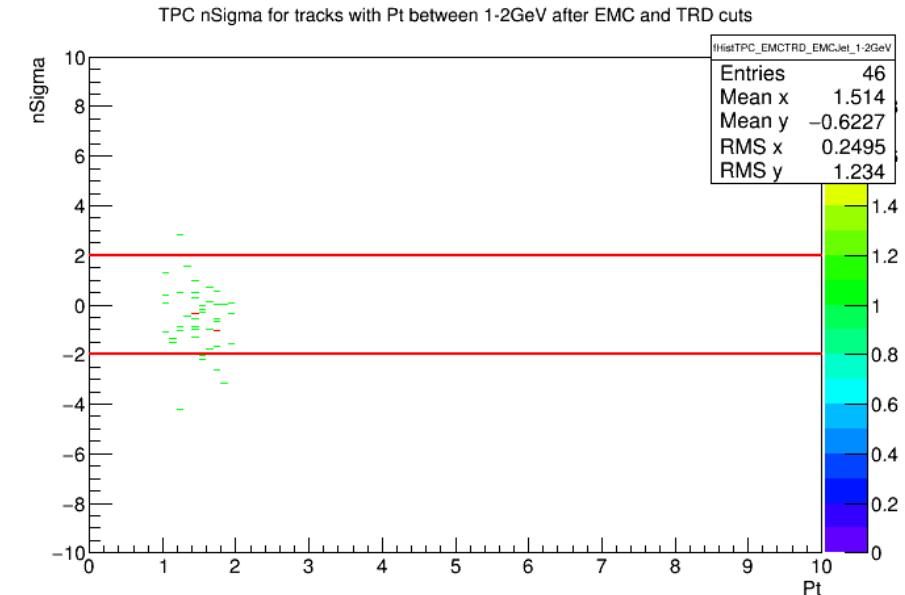
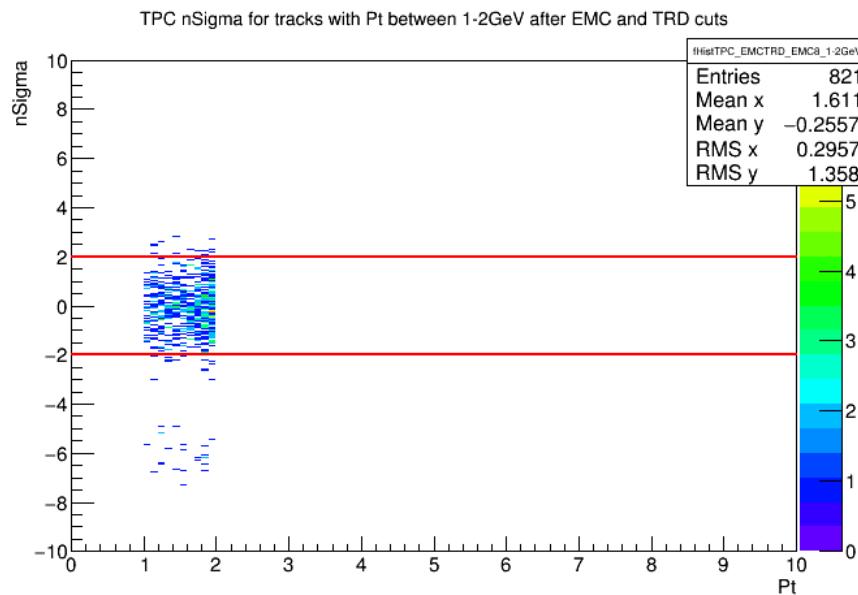
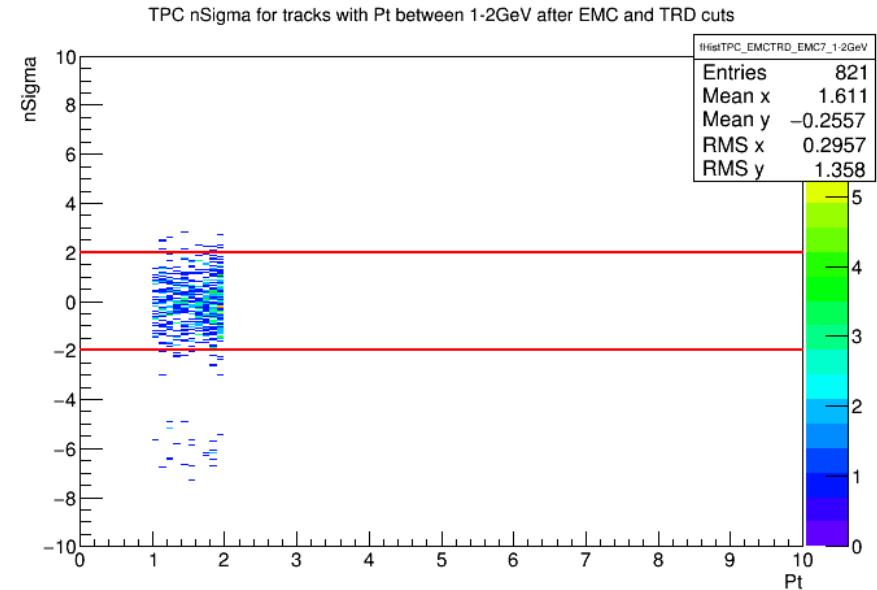
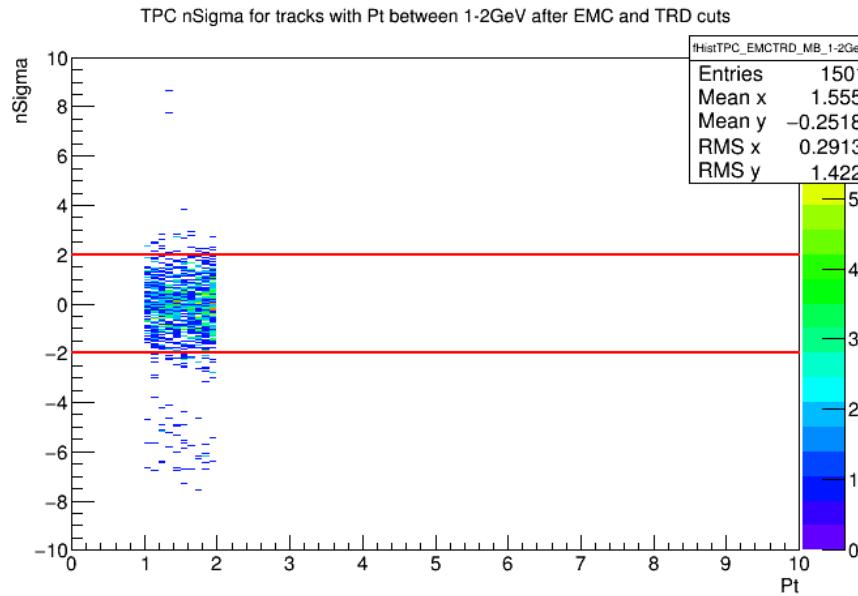


E/p conclusions

It seems like the cuts proposed provide a good sample of electrons for most pt bins. For >6 Gev, it would appear that we have something pulling the peak around 1 towards higher E/p. Could this be hadronic? I read in a paper that at higher pt, the TPC can no longer resolve electrons and protons. The solution that they gave was to use ITS PID.

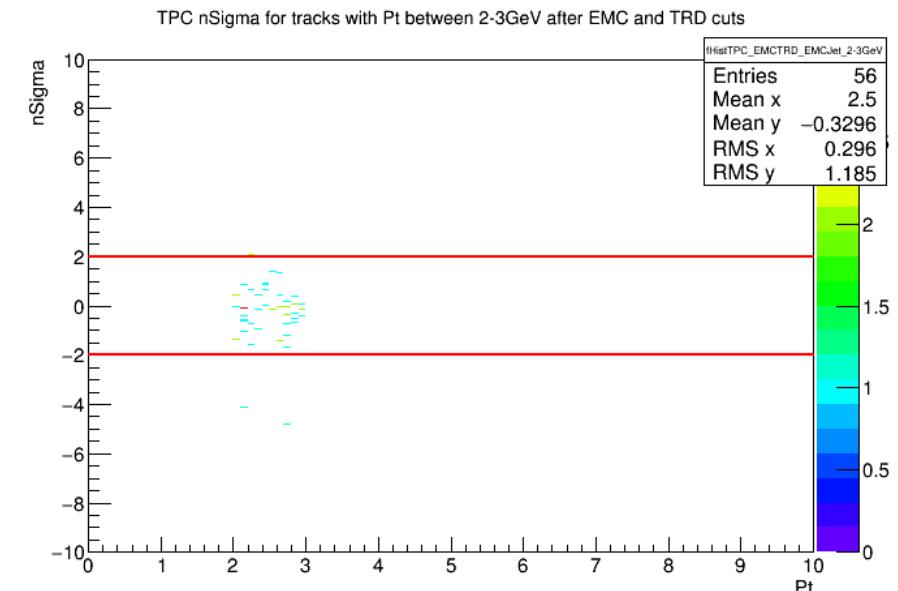
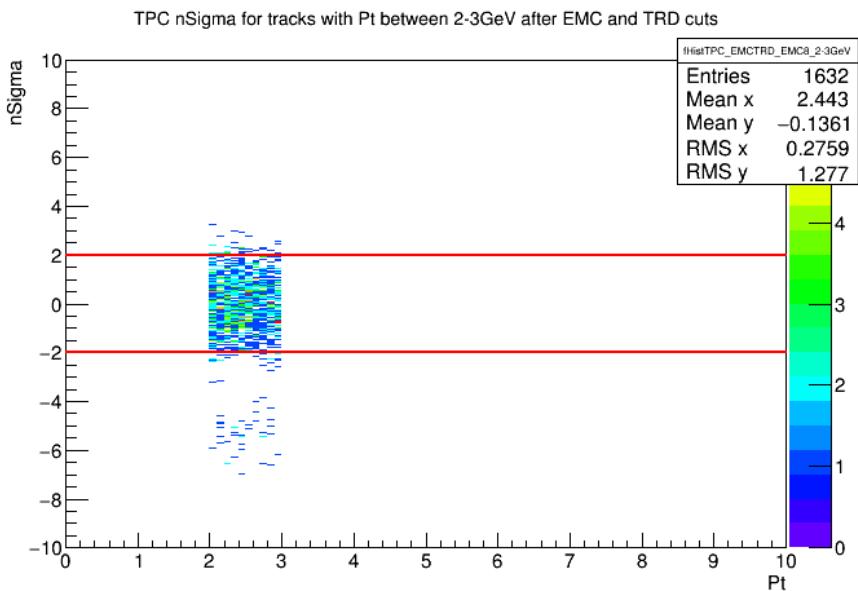
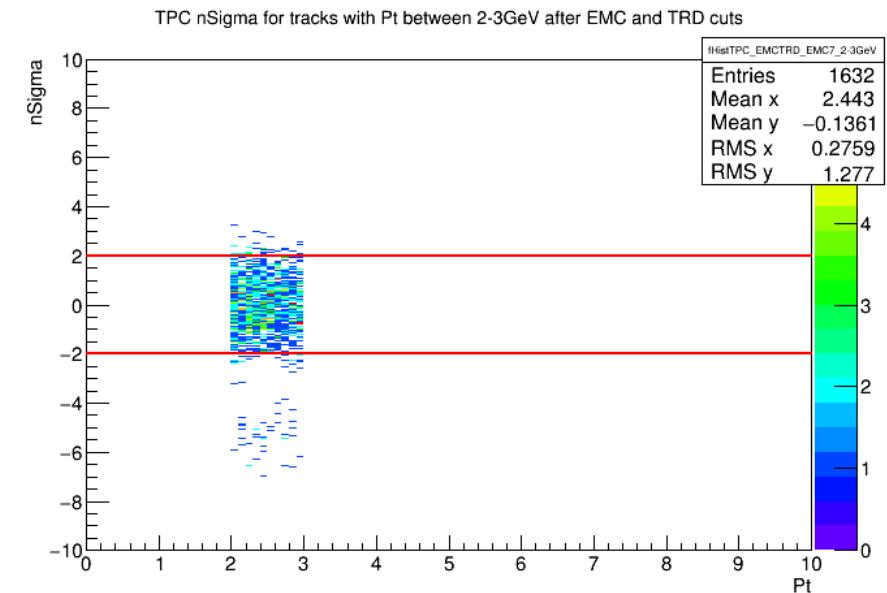
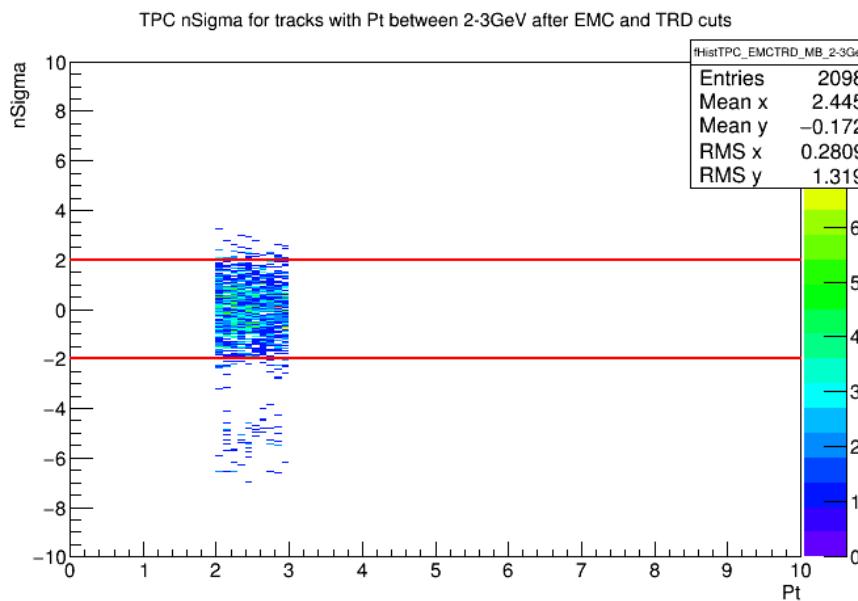
TPC nSigma after EMC, TRD cuts

1-2Gev



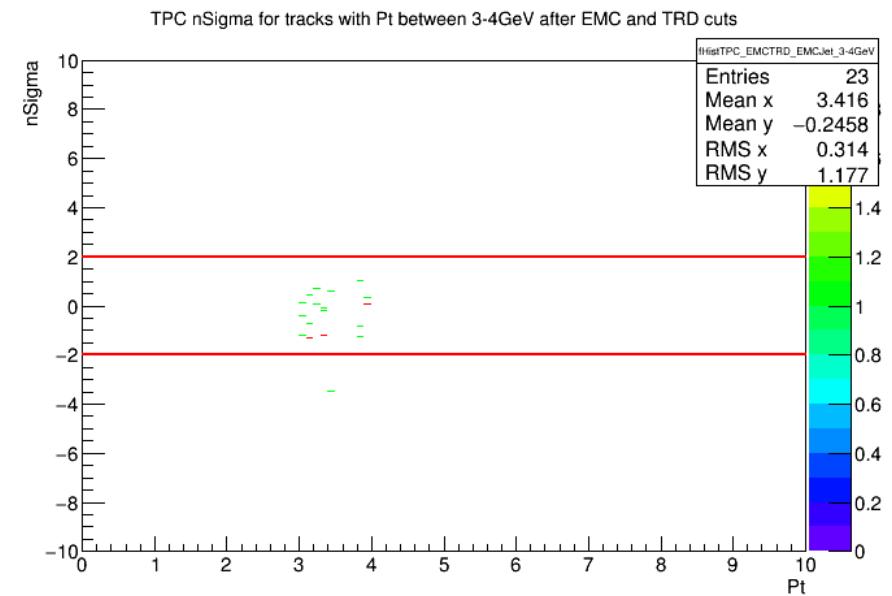
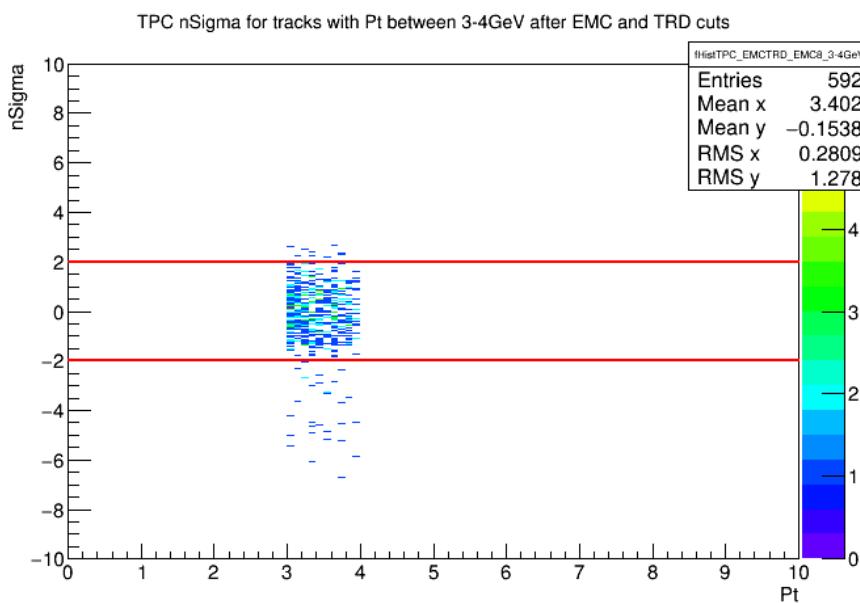
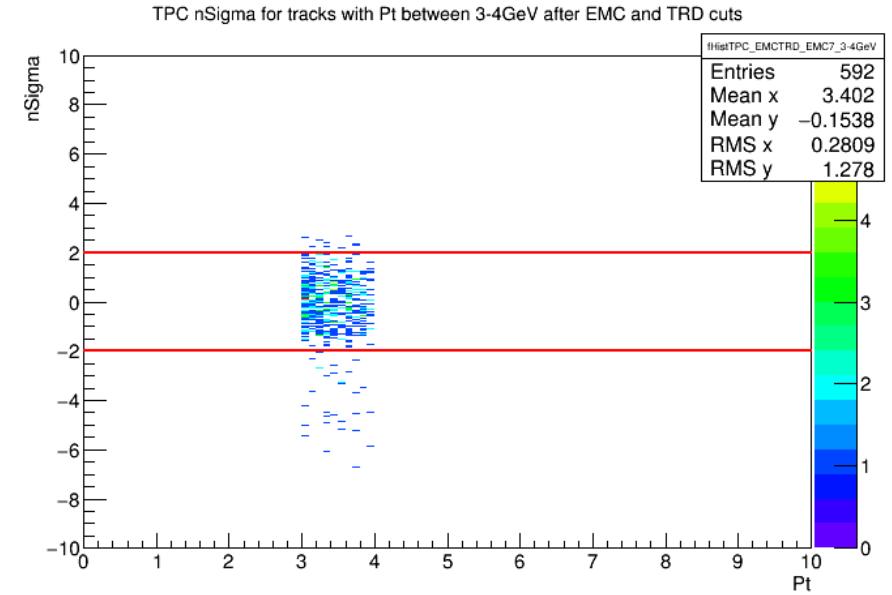
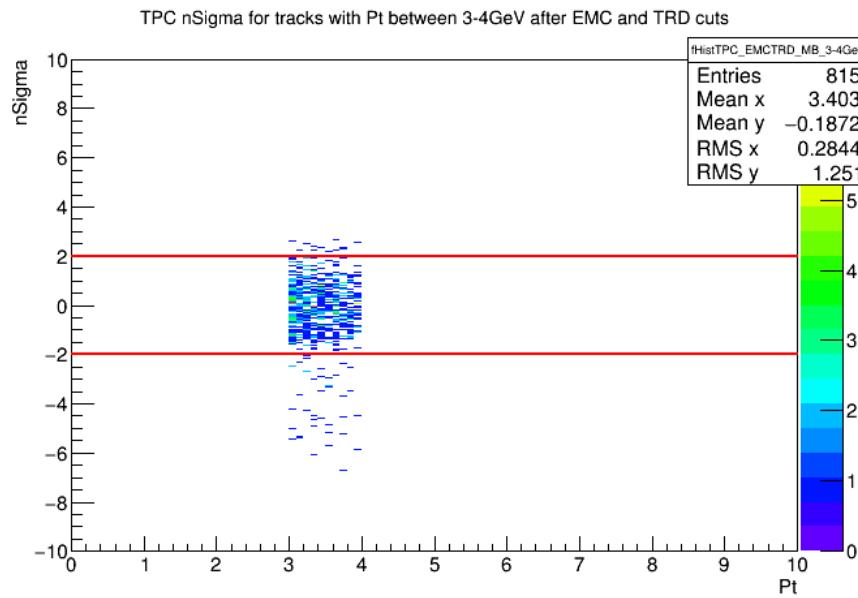
TPC nSigma after EMC, TRD cuts

2-3Gev



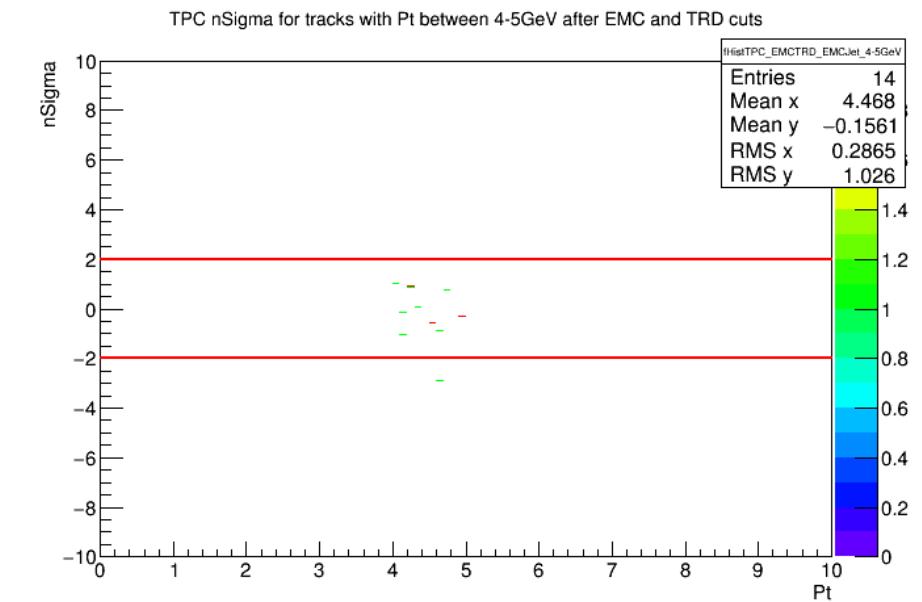
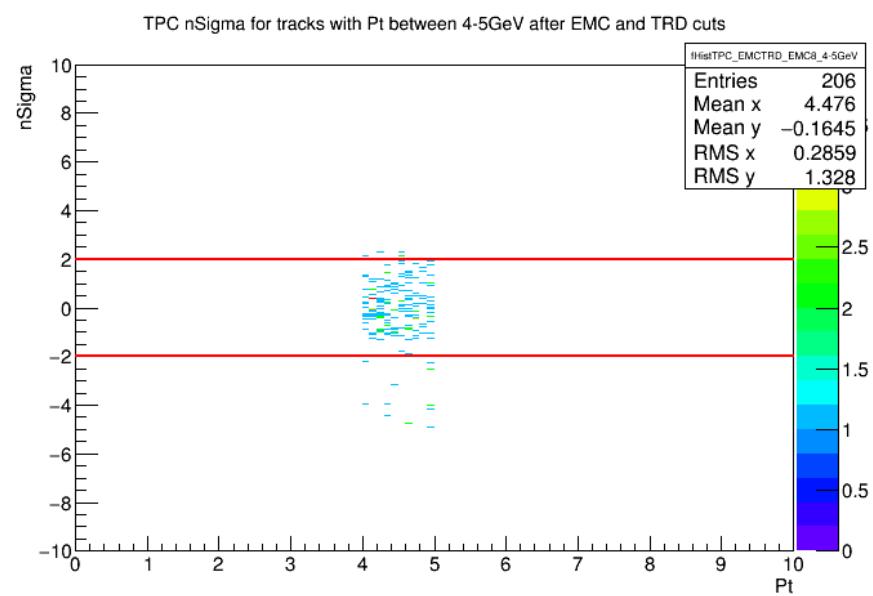
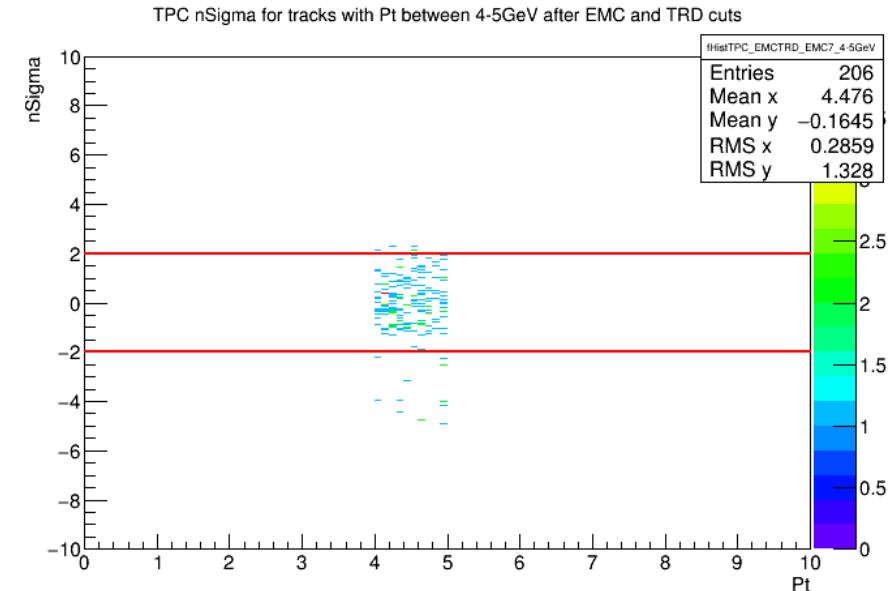
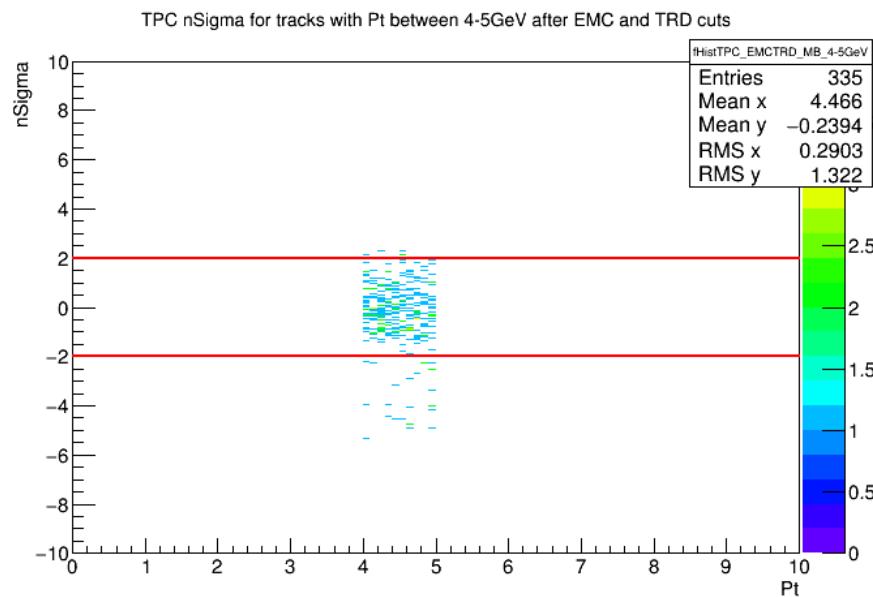
TPC nSigma after EMC, TRD cuts

3-4Gev



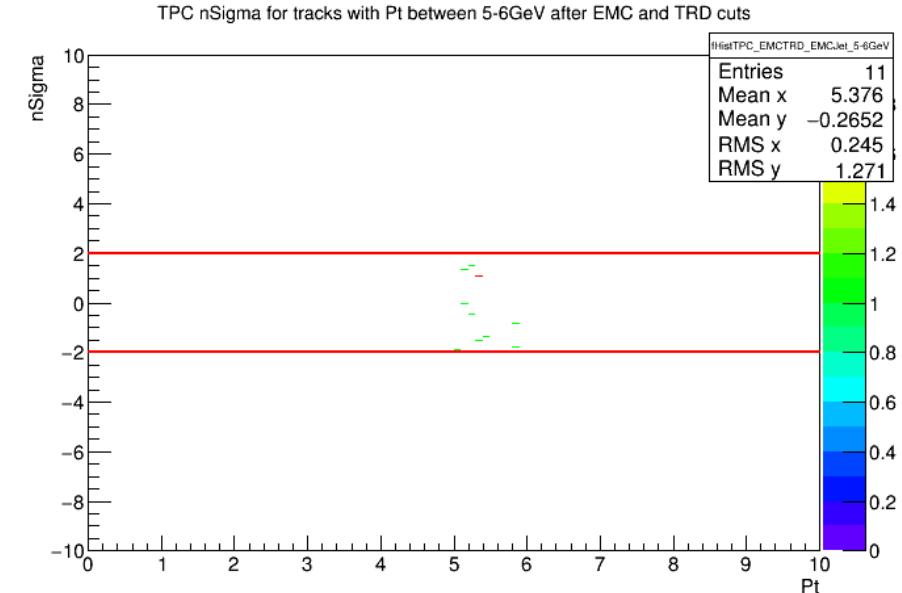
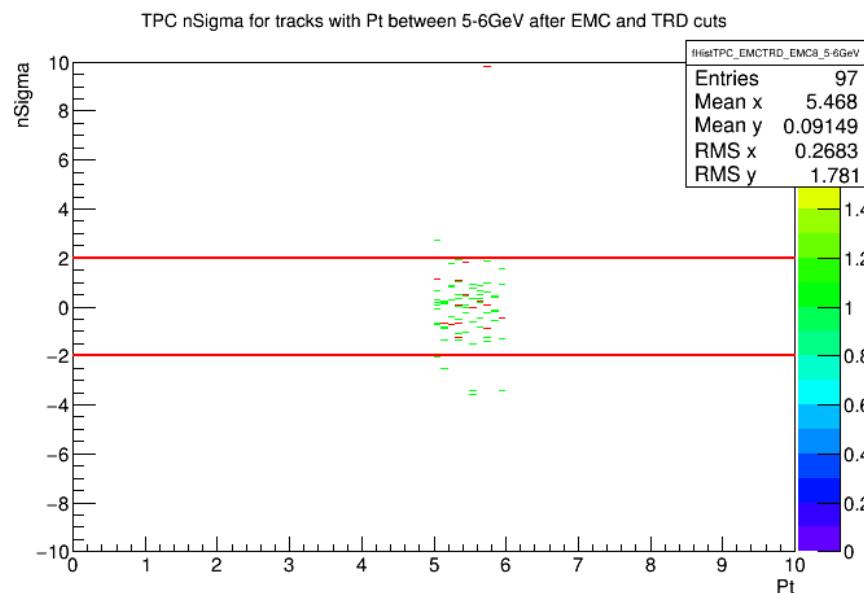
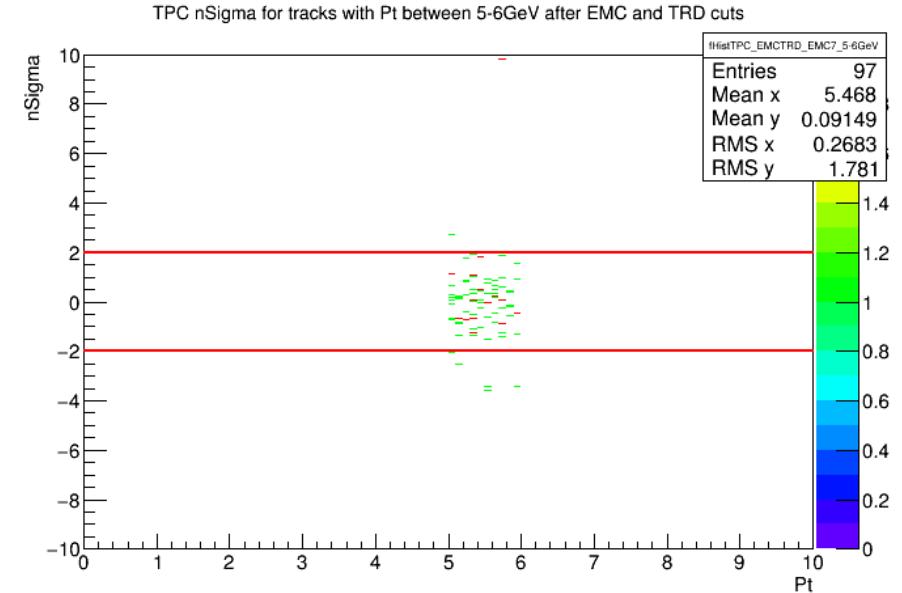
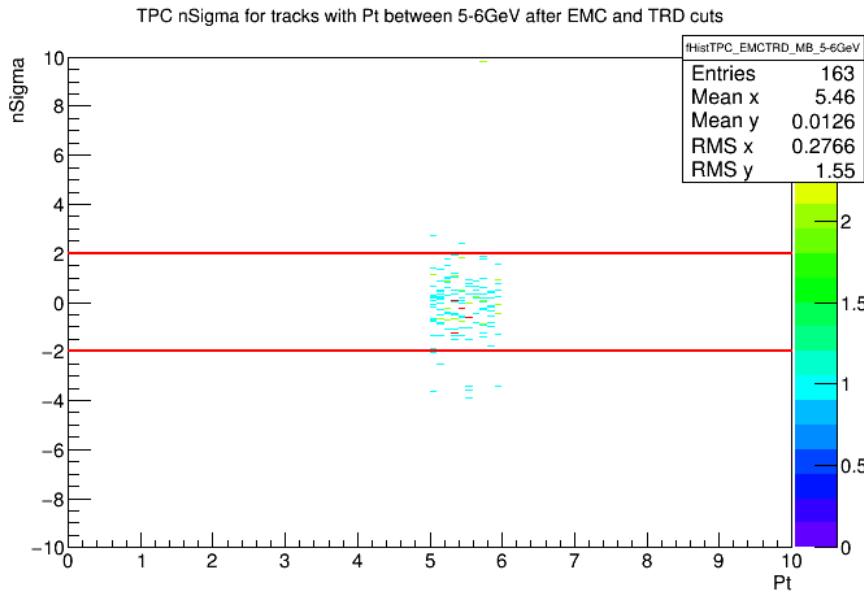
TPC nSigma after EMC, TRD cuts

4-5Gev



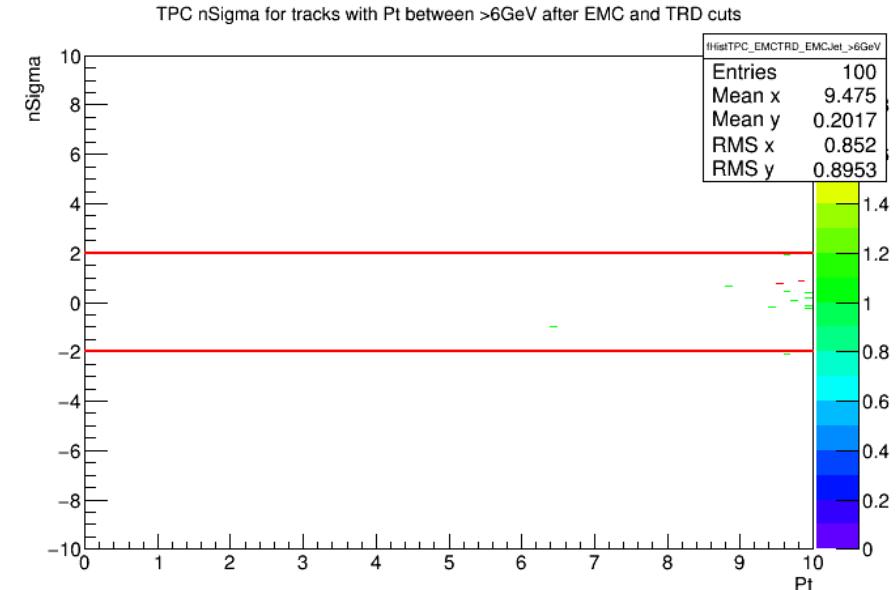
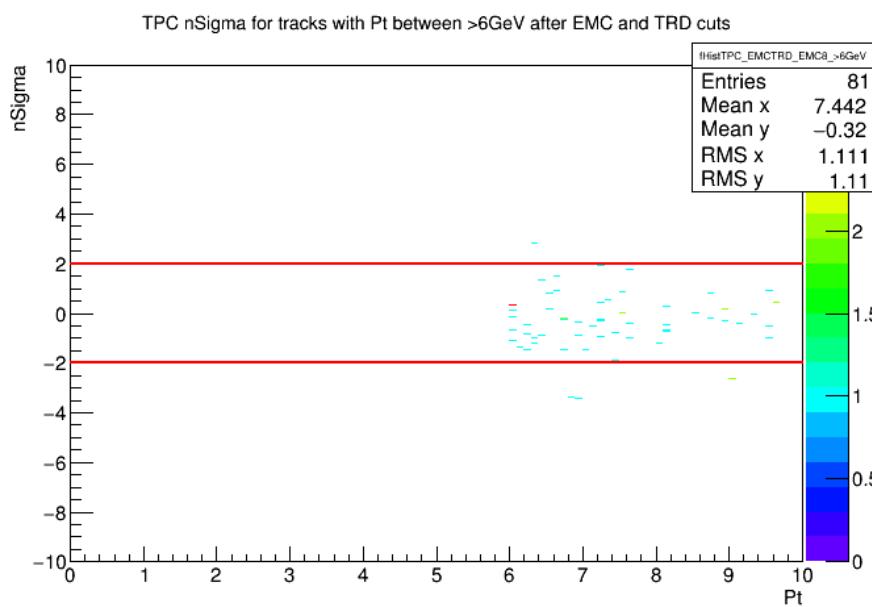
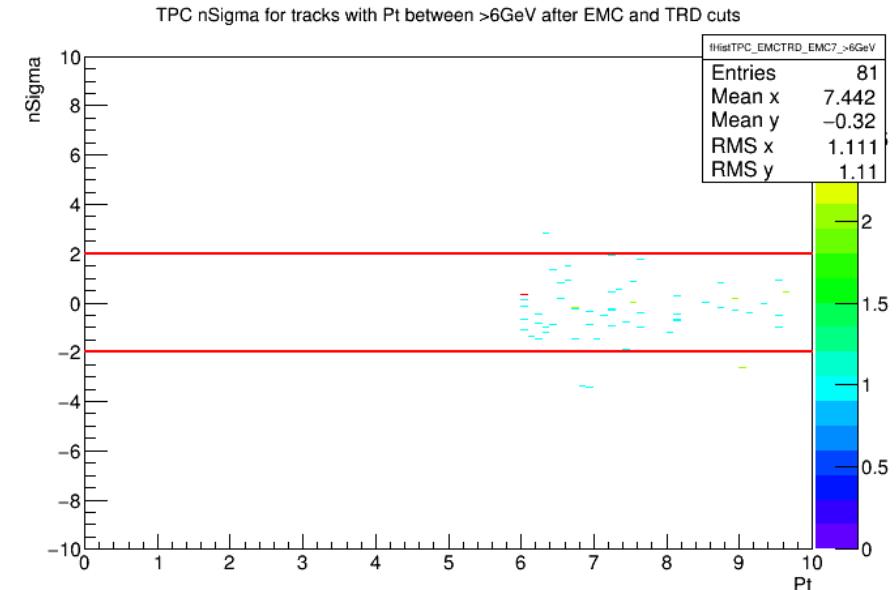
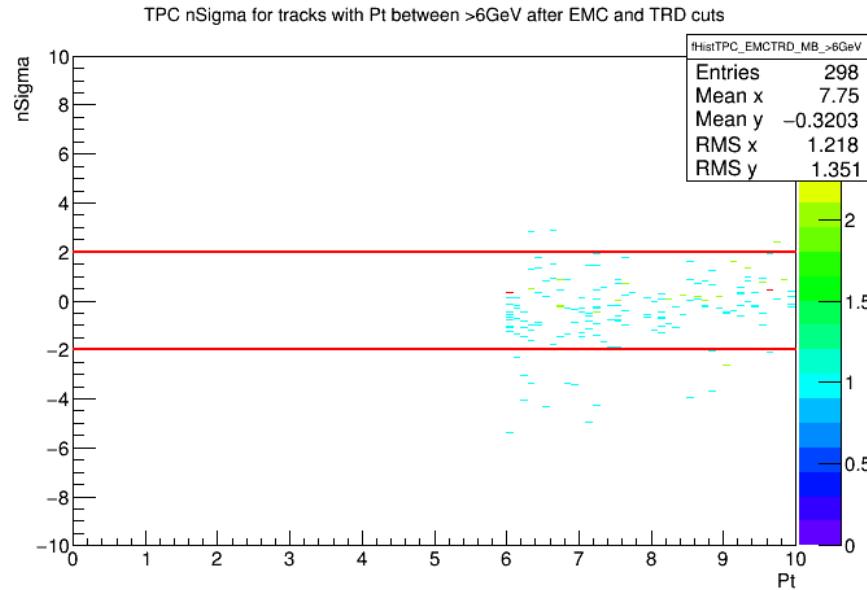
TPC nSigma after EMC, TRD cuts

5-6Gev



TPC nSigma after EMC, TRD cuts

>6Gev

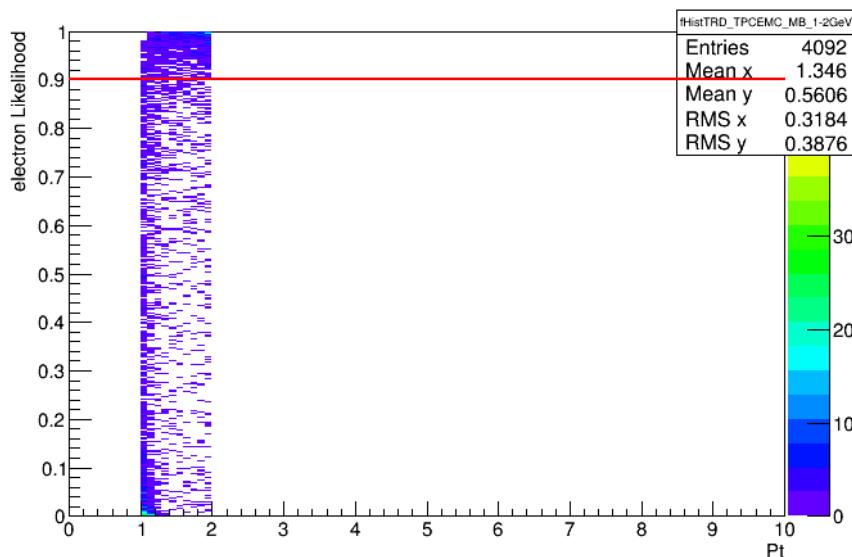


TPC nSigma conclusions

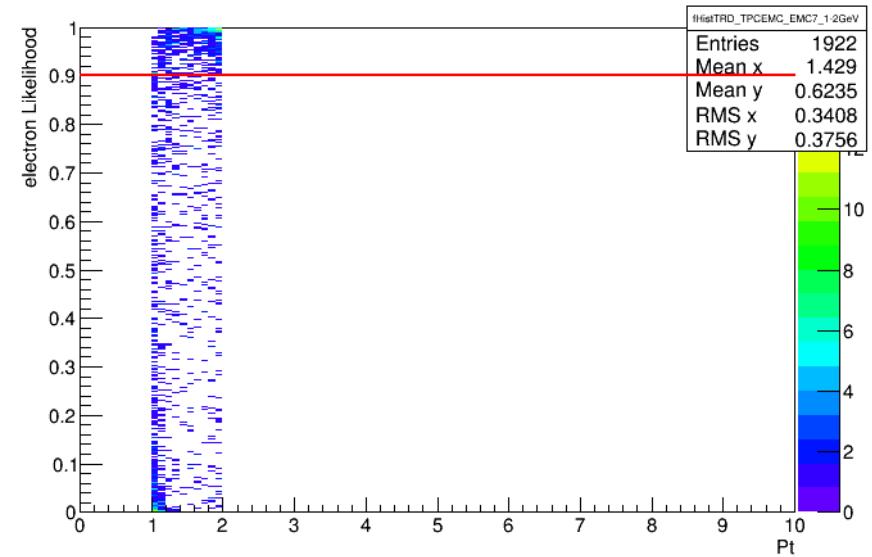
These plots all look good to me in all pt ranges.
Just bolsters our cut selections.

TRD electron likelihood after EMC, 1-2Gev TPC cuts

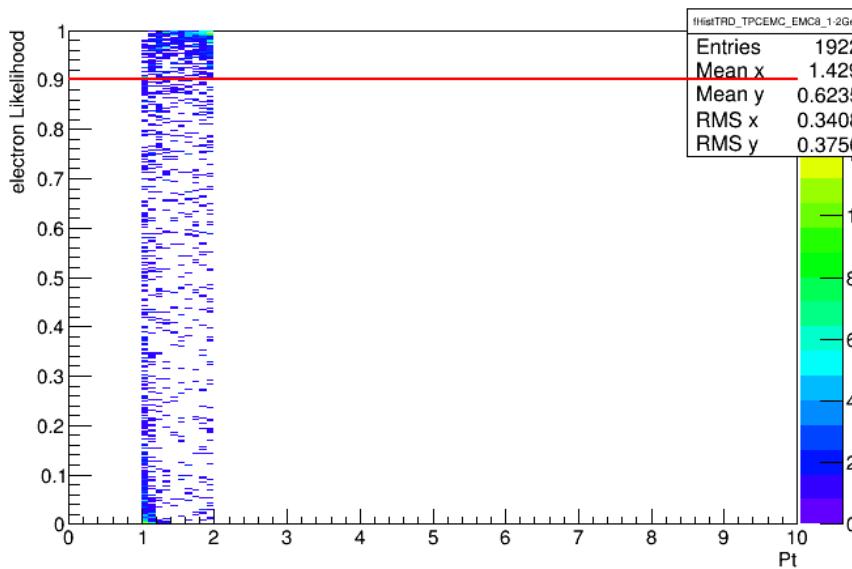
TRD electron Likelihood for tracks with Pt between 1-2GeV after TPC and EMC cuts



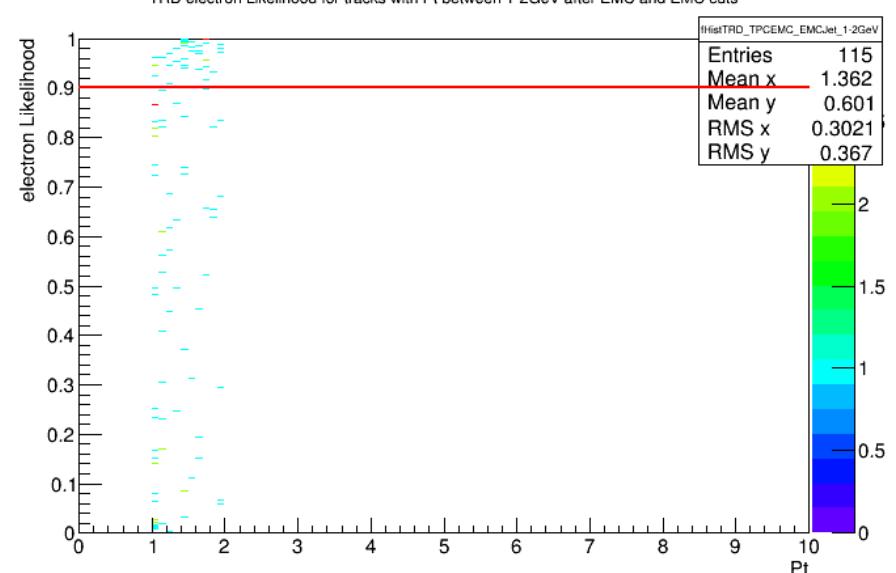
TRD electron Likelihood for tracks with Pt between 1-2GeV after TPC and EMC cuts



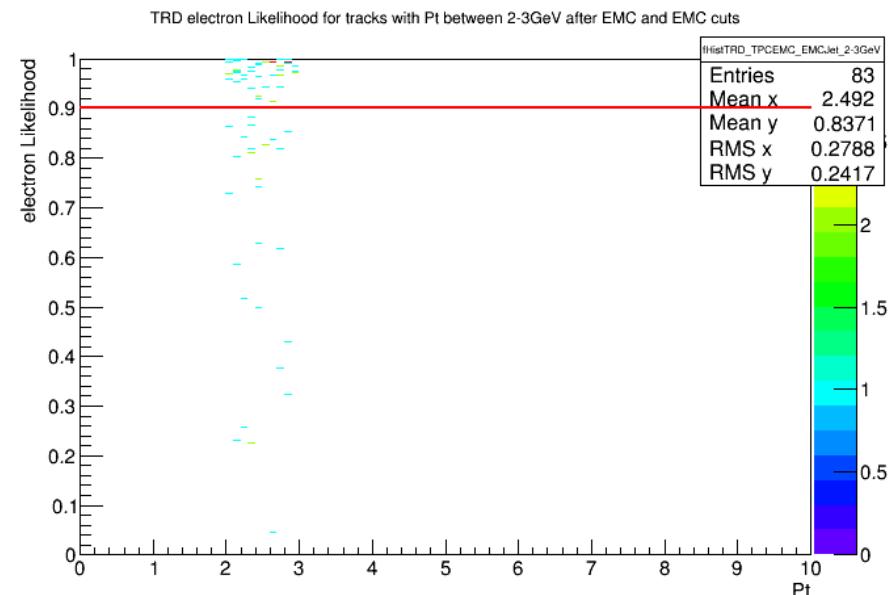
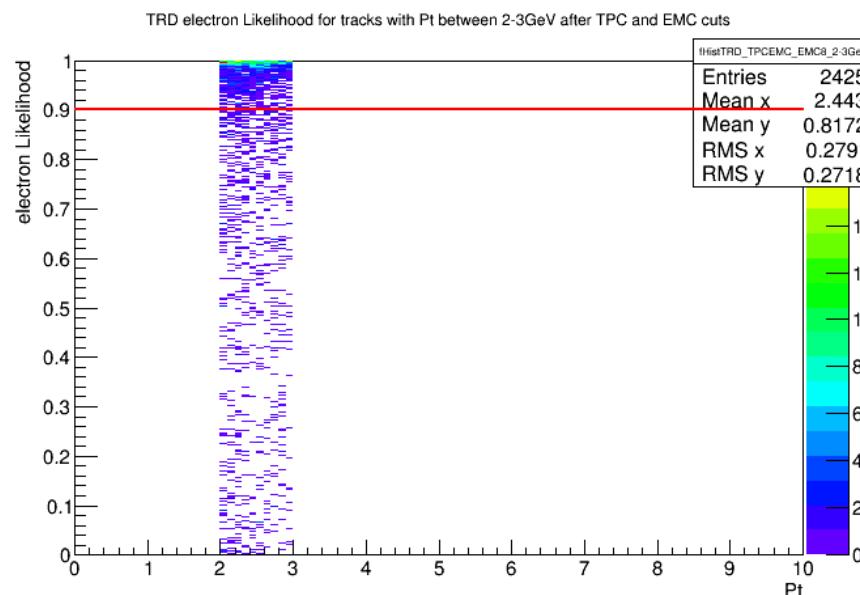
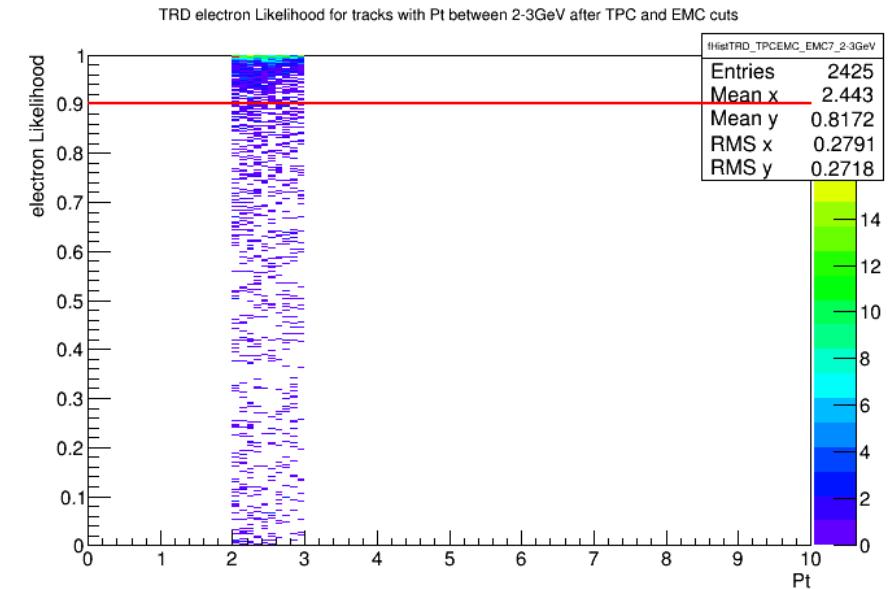
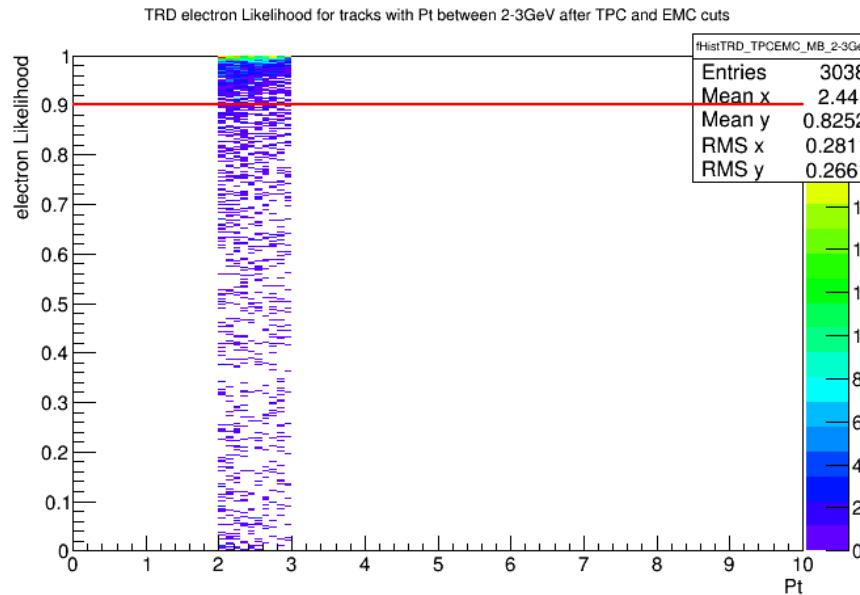
TRD electron Likelihood for tracks with Pt between 1-2GeV after TPC and EMC cuts



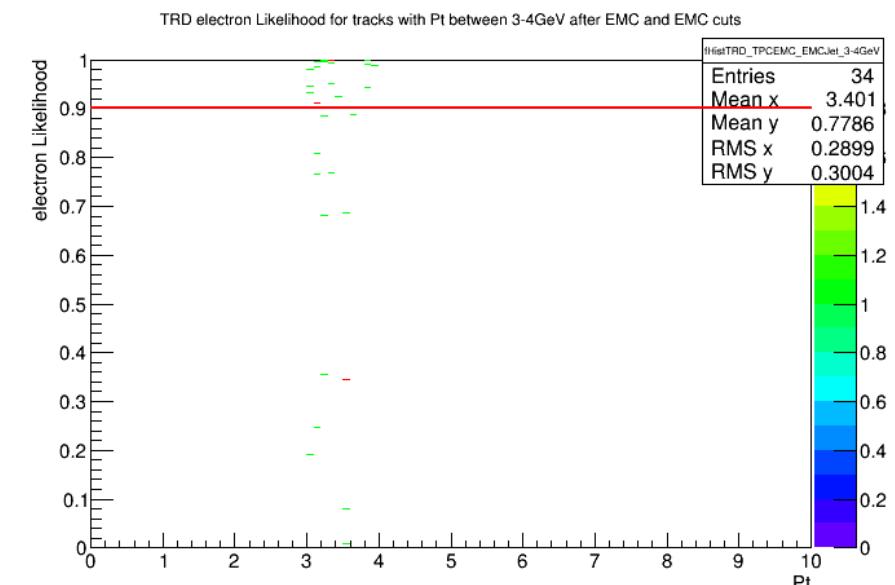
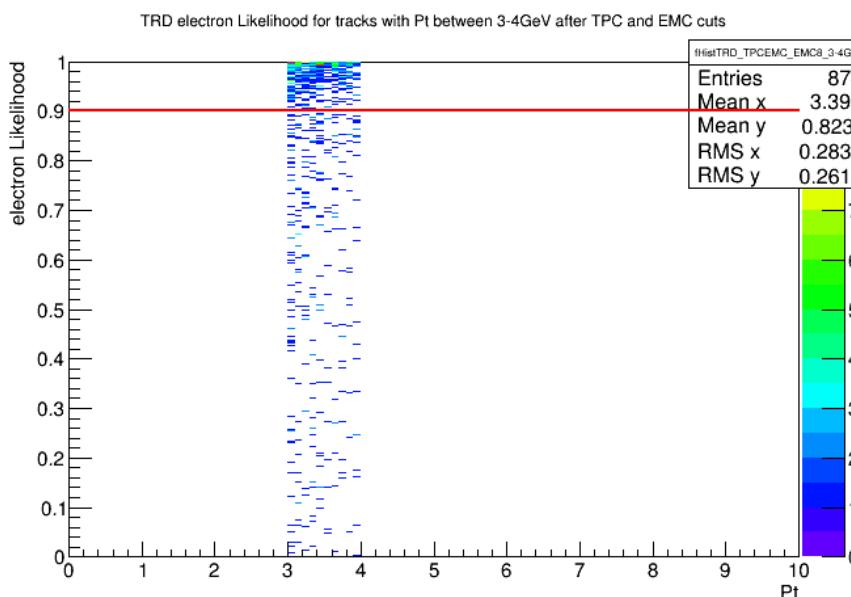
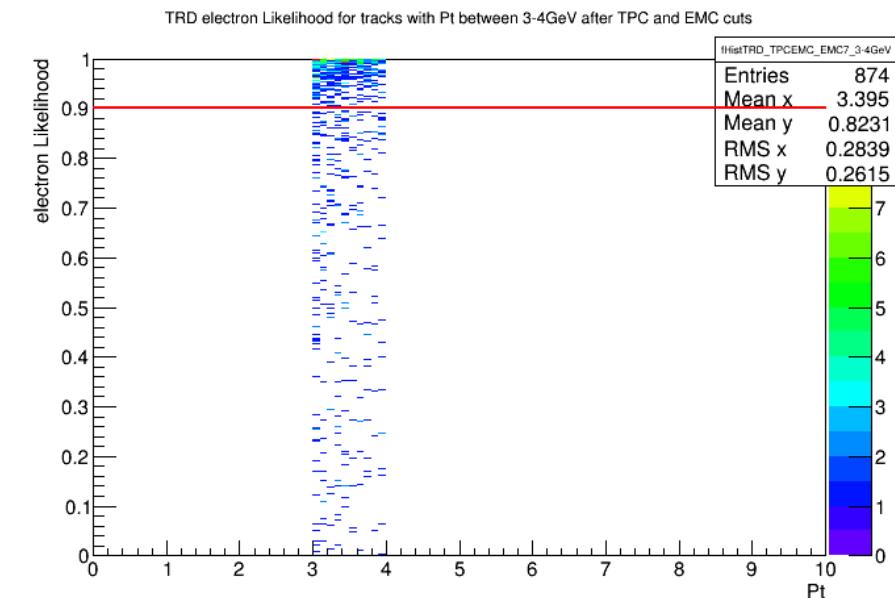
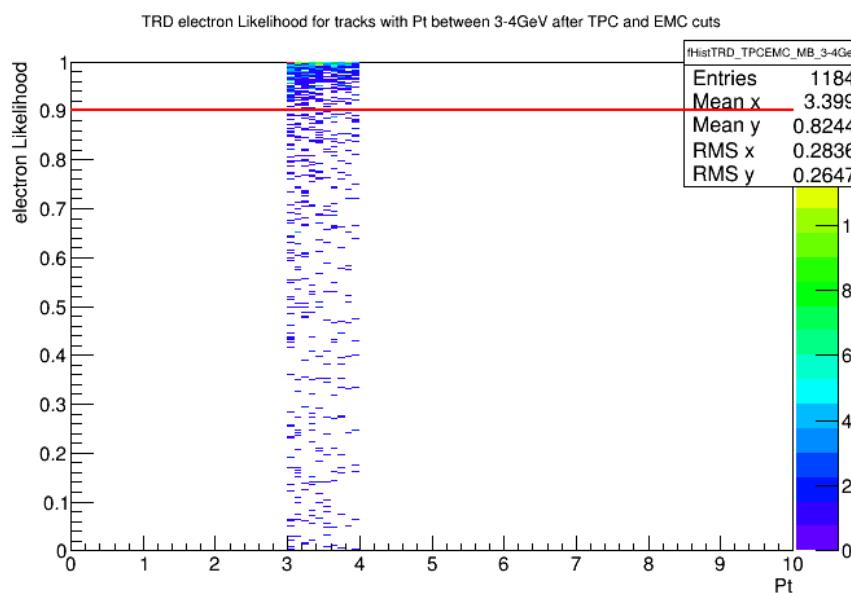
TRD electron Likelihood for tracks with Pt between 1-2GeV after EMC and EMC cuts



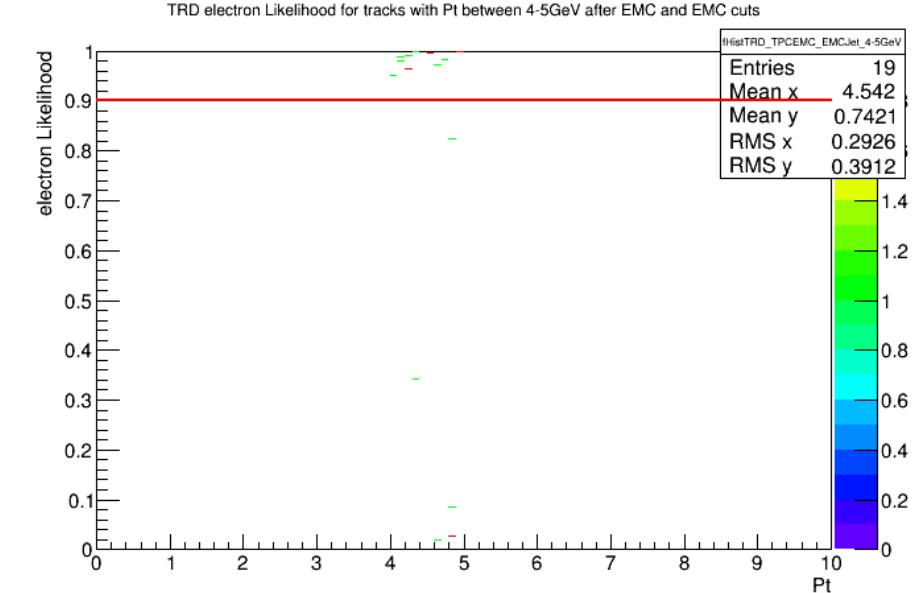
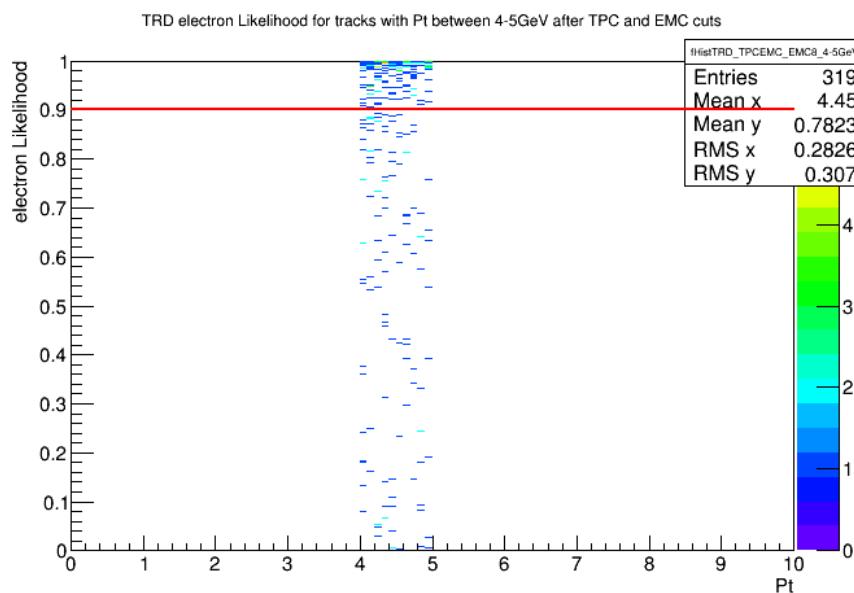
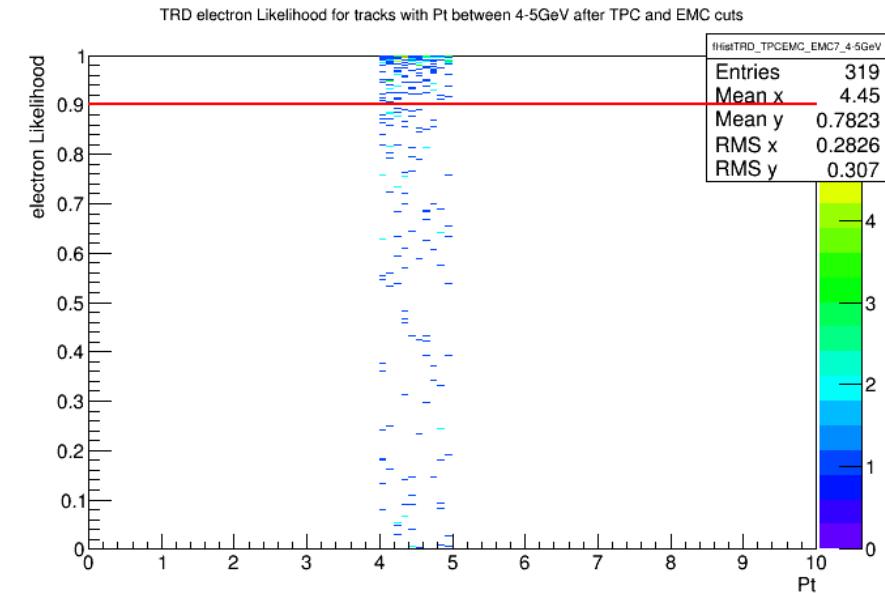
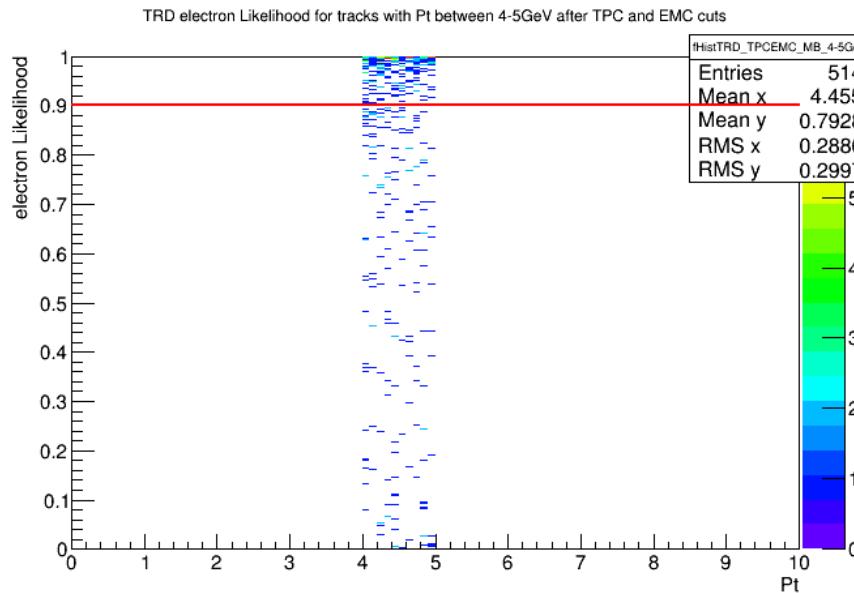
TRD electron likelihood after EMC, 2-3Gev TPC cuts



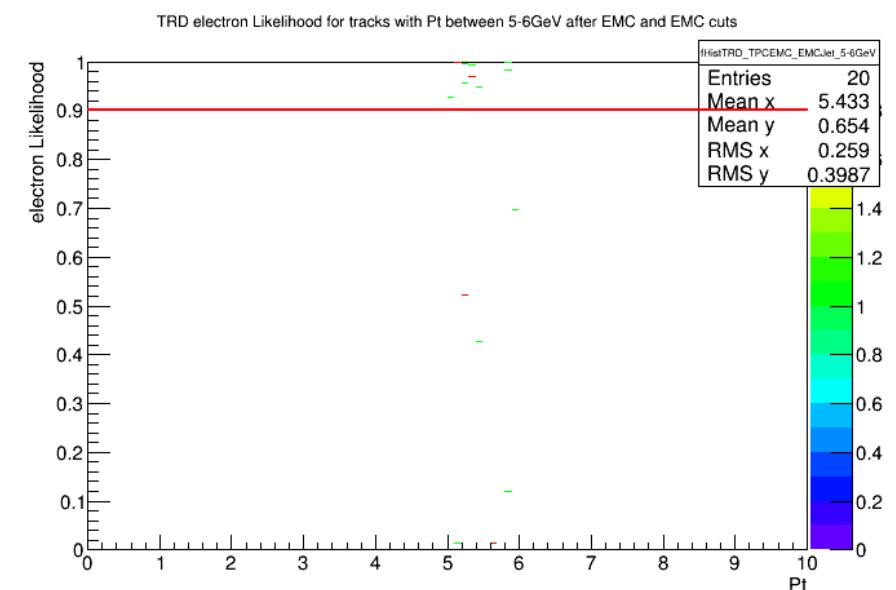
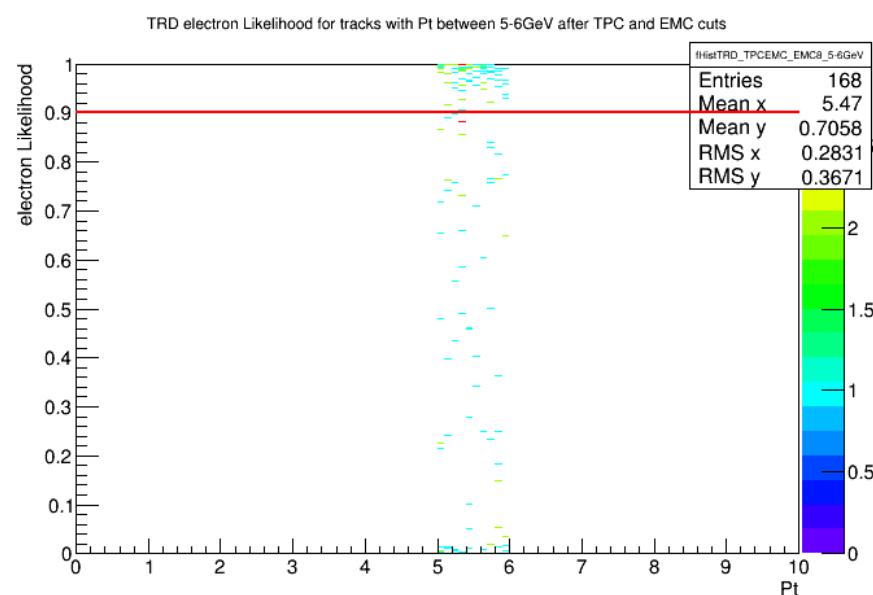
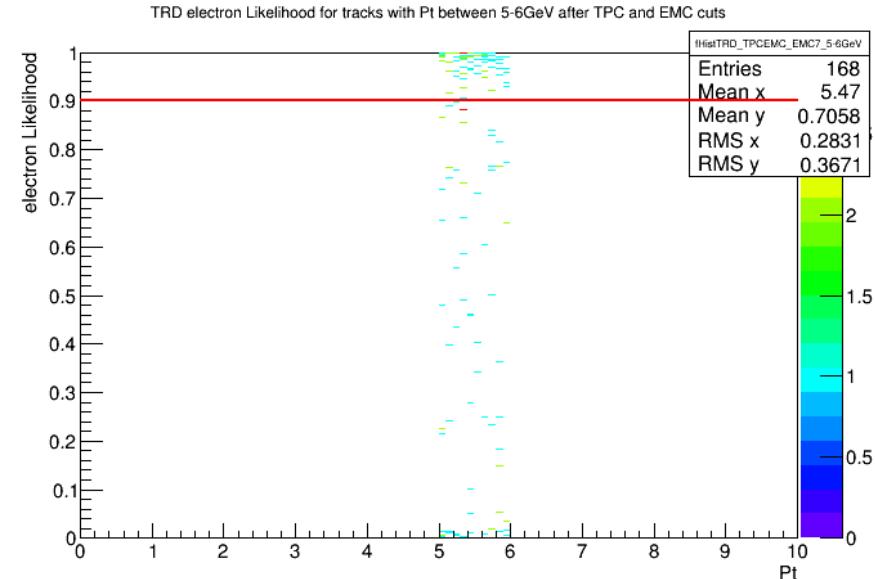
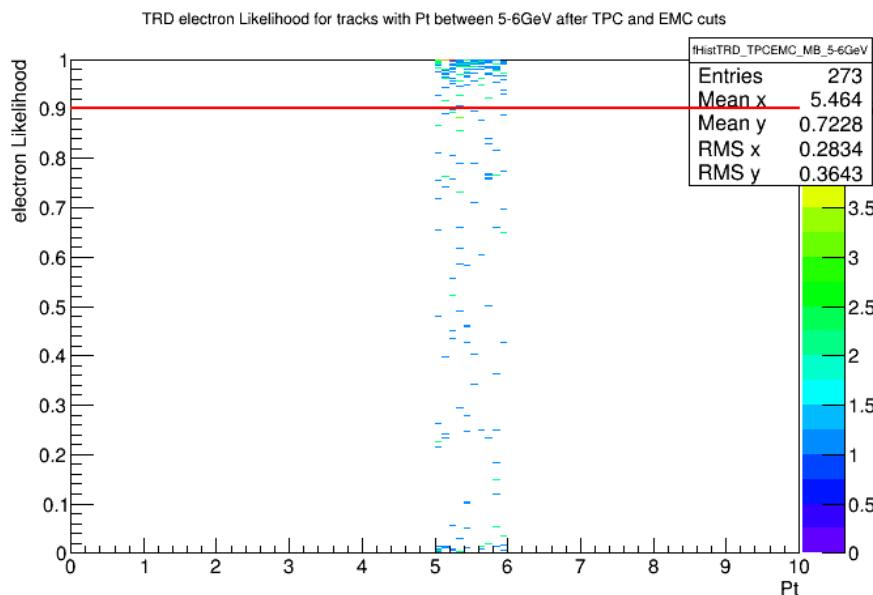
TRD electron likelihood after EMC, 3-4Gev TPC cuts



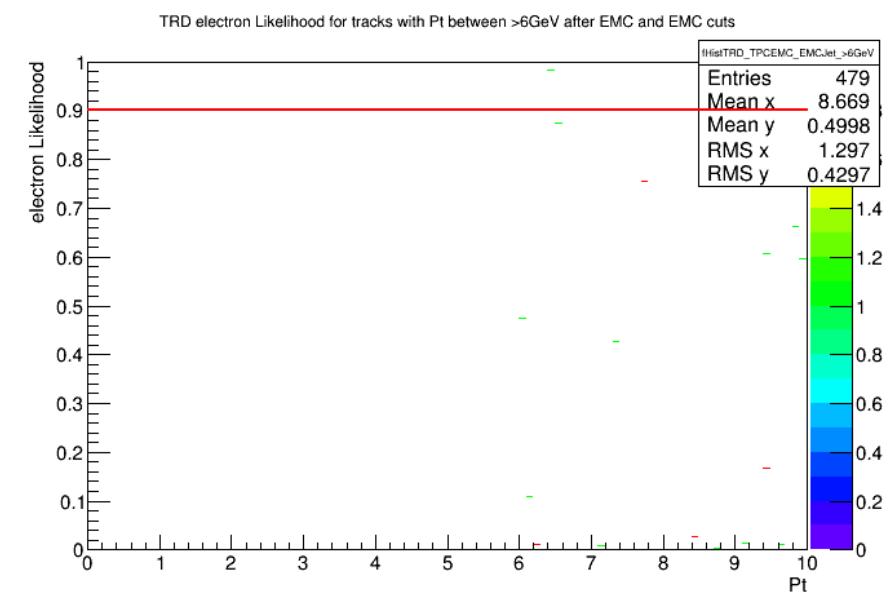
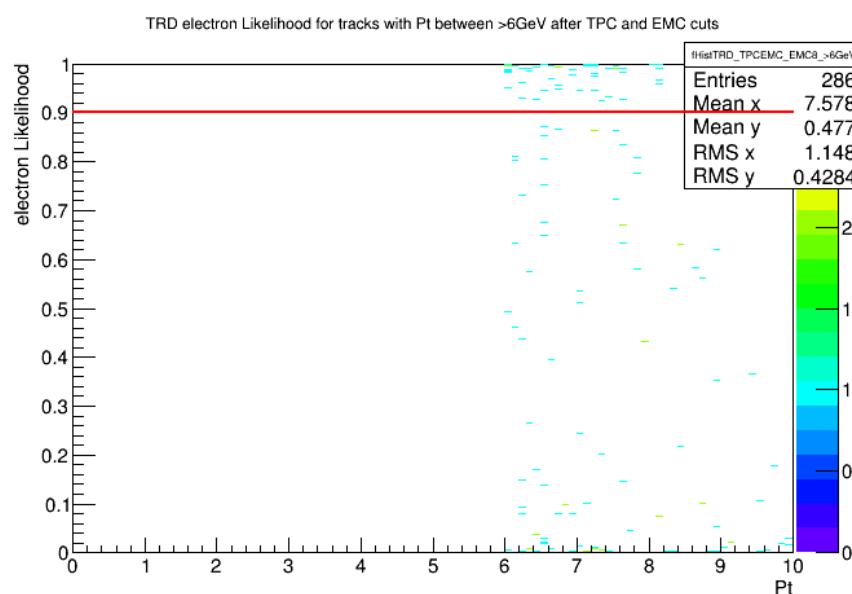
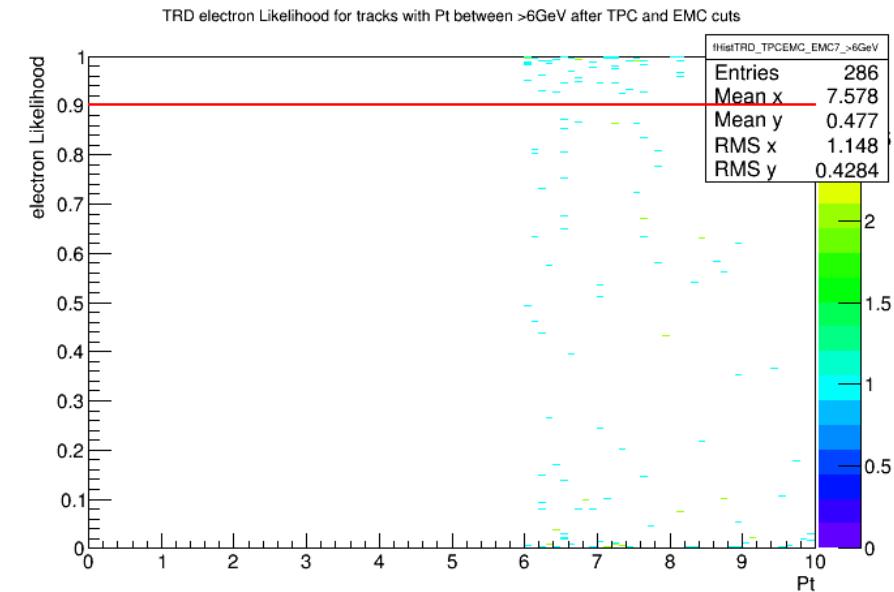
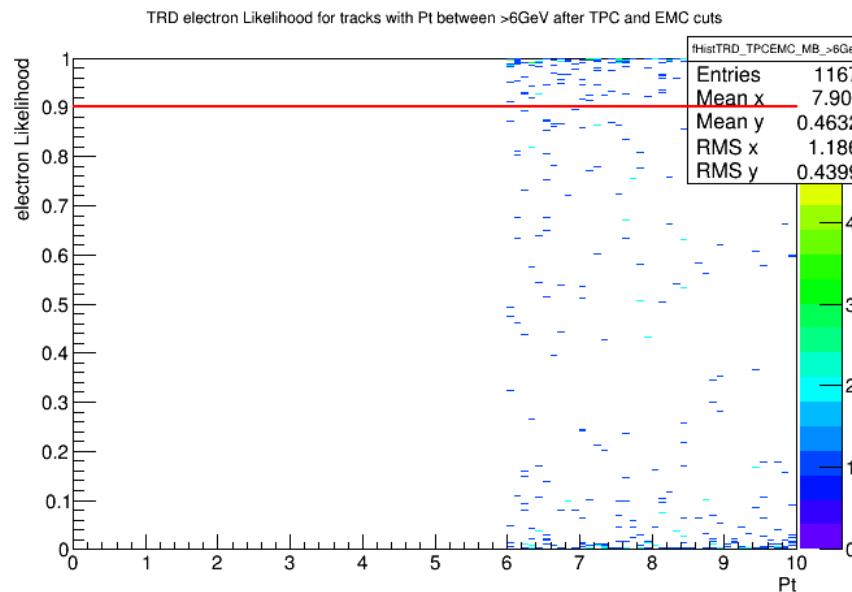
TRD electron likelihood after EMC, 4-5Gev TPC cuts



TRD electron likelihood after EMC, 5-6Gev TPC cuts



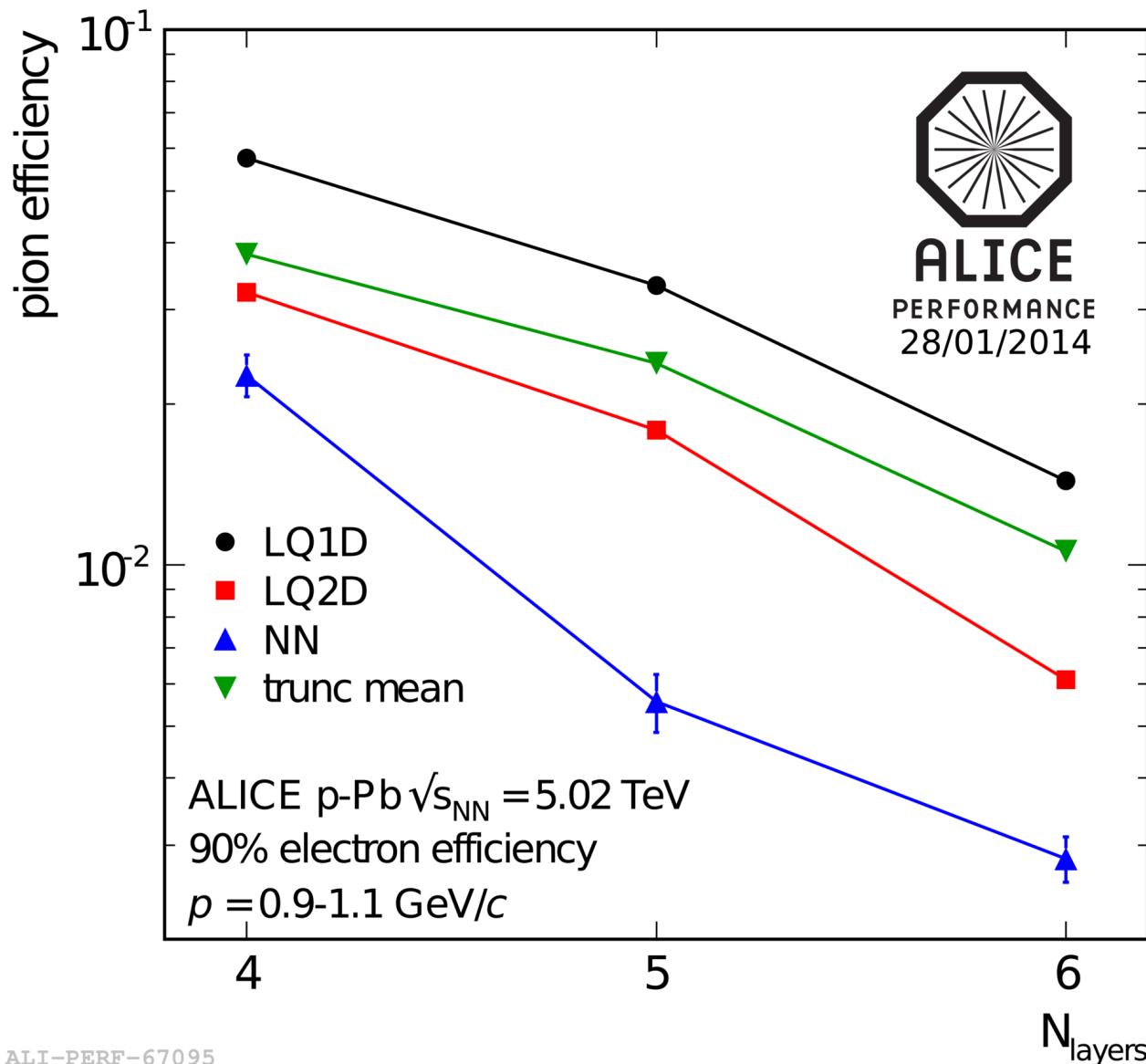
TRD electron likelihood after EMC, >6Gev TPC cuts



TRD electron likelihood conclusions

I think we have a decent sample for pt bins $>3\text{Gev}$. For $1\text{-}2\text{Gev}$ and $2\text{-}3\text{Gev}$ I could definitely see how a formulaic pt cut starting at around 0.8 for 1Gev to 0.85 for 2Gev and reaching 0.9 for 3Gev would work well. I'm not sure how to choose a function for this though. The statistics are heavily reduced when we use the TRD. The possible ways to avoid this are to use a looser cut on number of tracklets and use a better method, but I think this would provide worse PID than the statistics would be worth. See next slide for a reference.

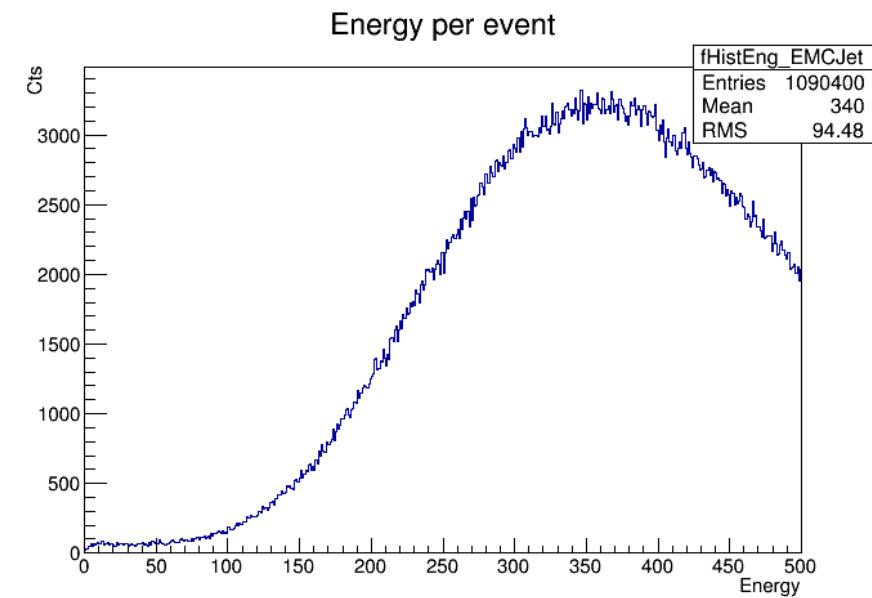
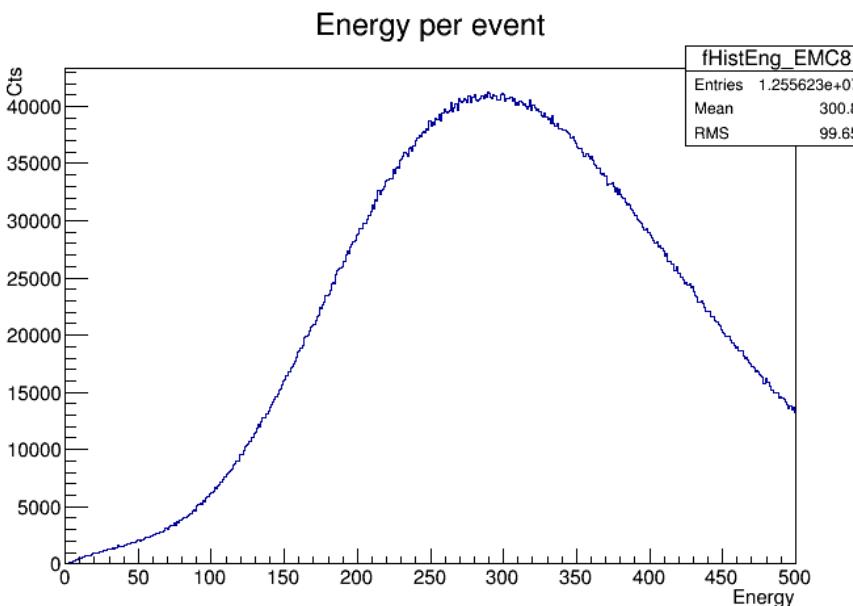
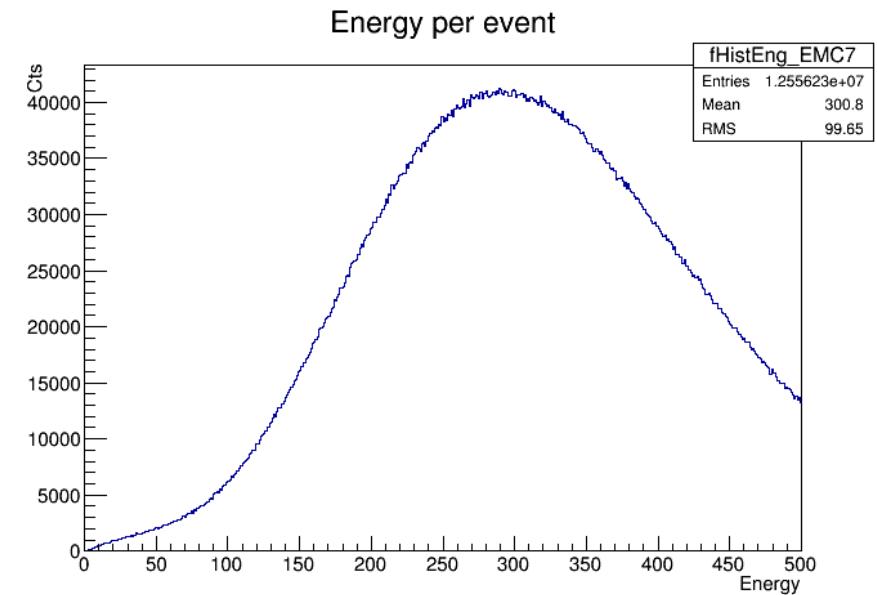
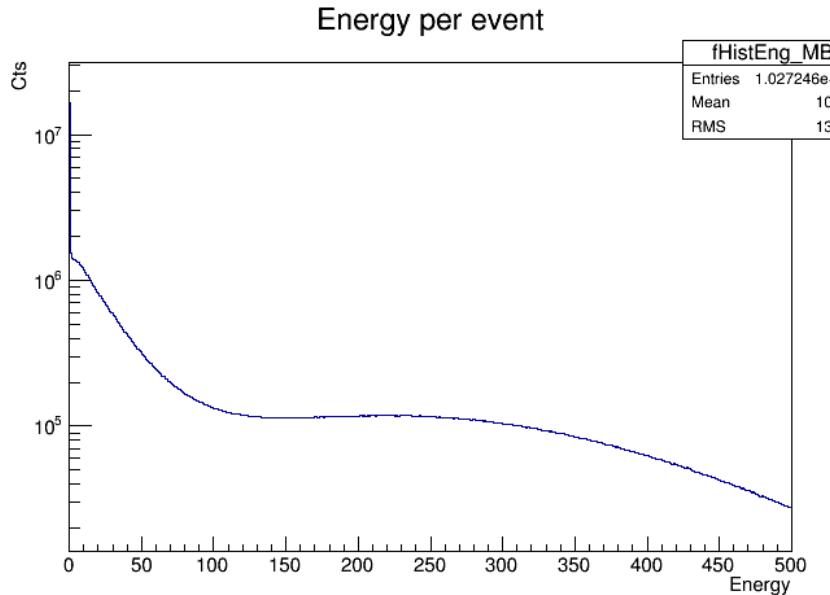
TRD PID



I am currently using LQ1D. In the next iteration I will use LQ2D.

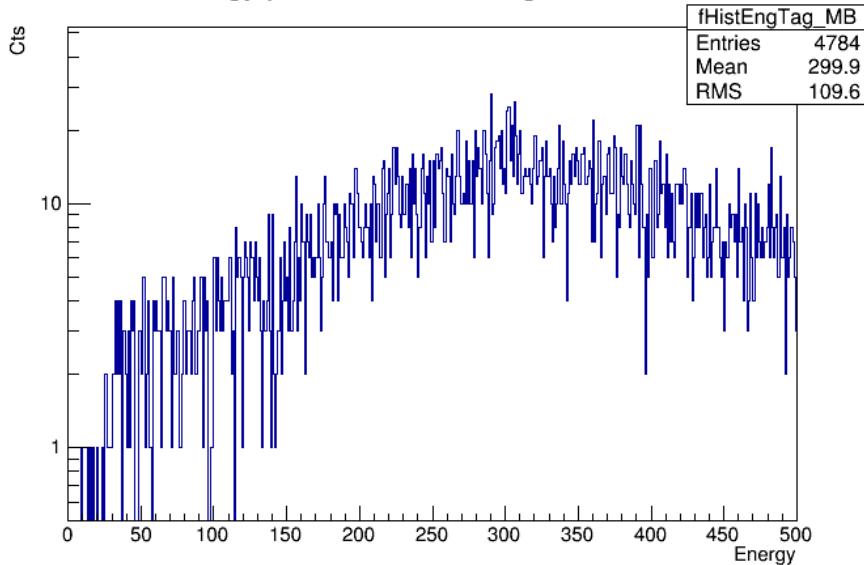
General Event

Event energy(Sum of track energies)

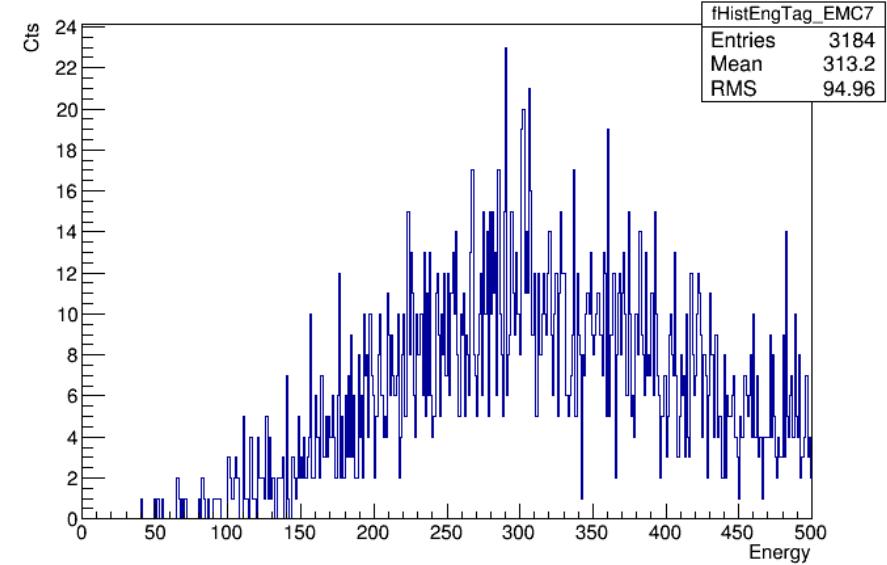


Event energy for events with an electron(Sum of track energies)

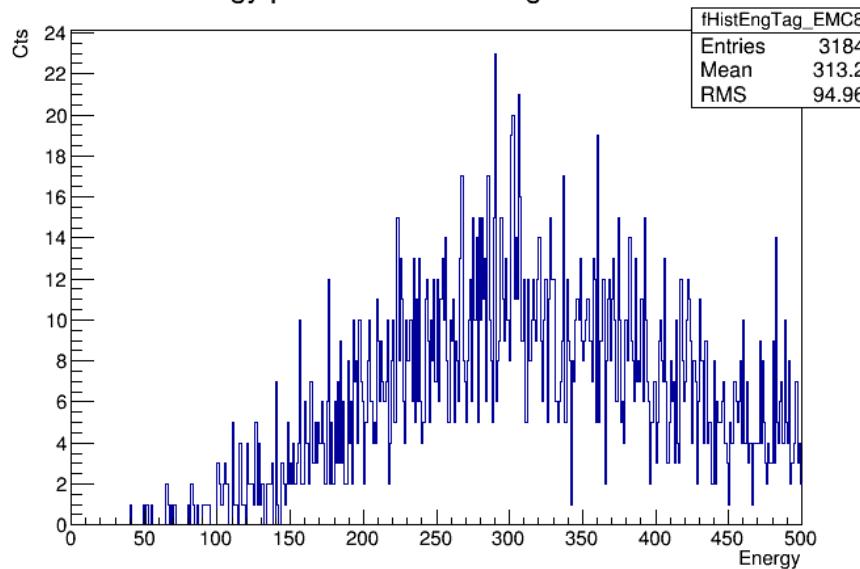
Energy per event containing a candidate



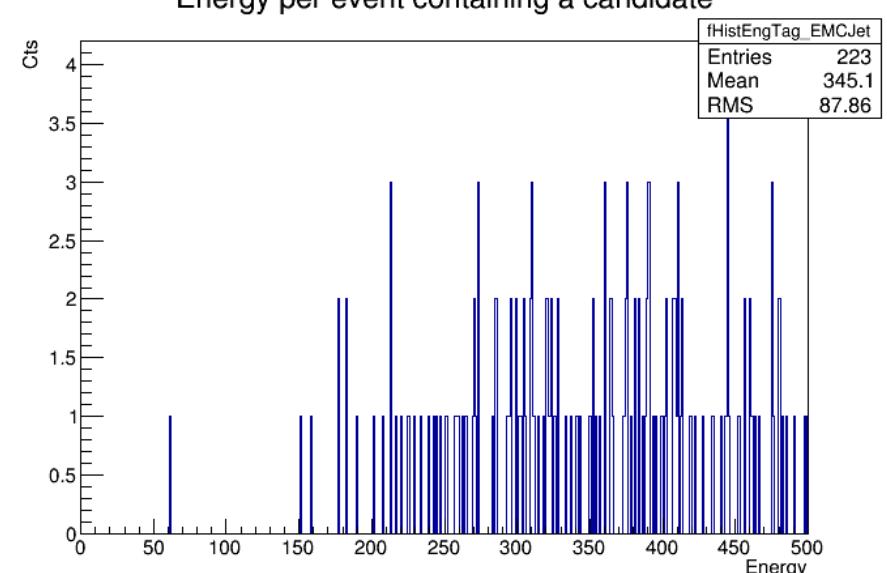
Energy per event containing a candidate



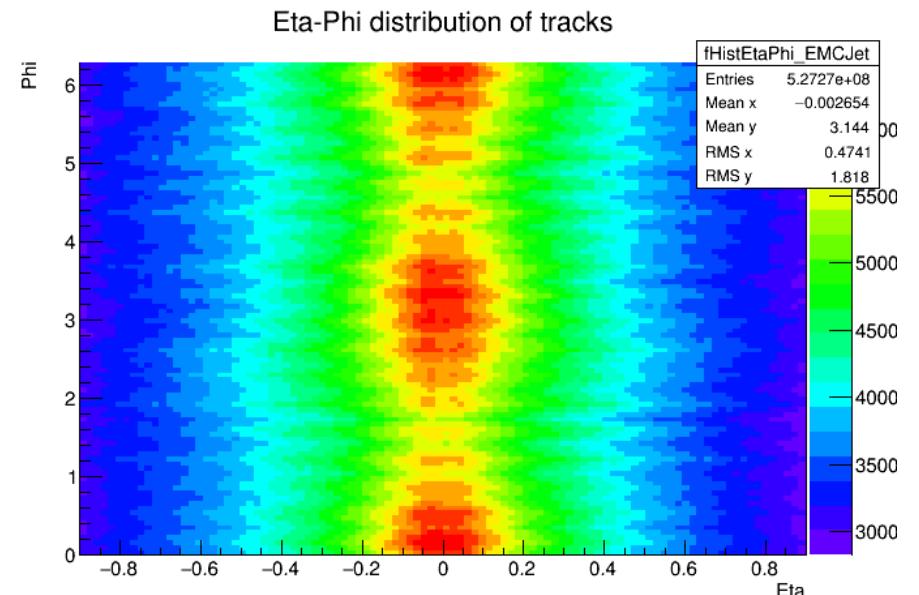
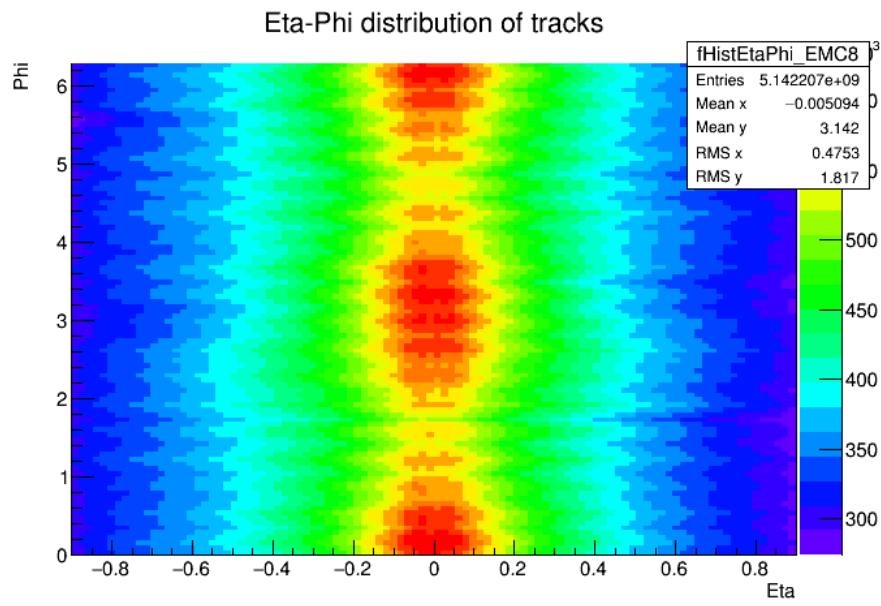
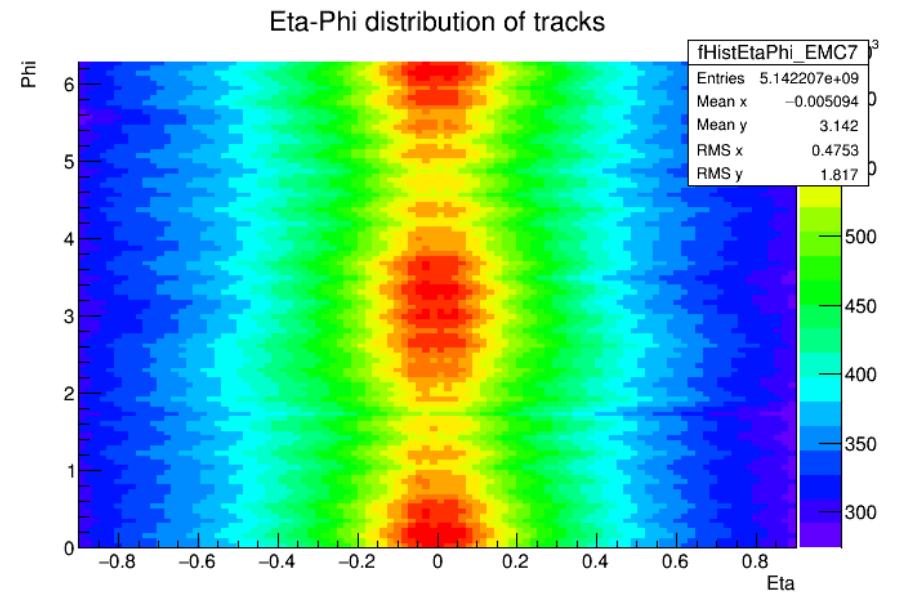
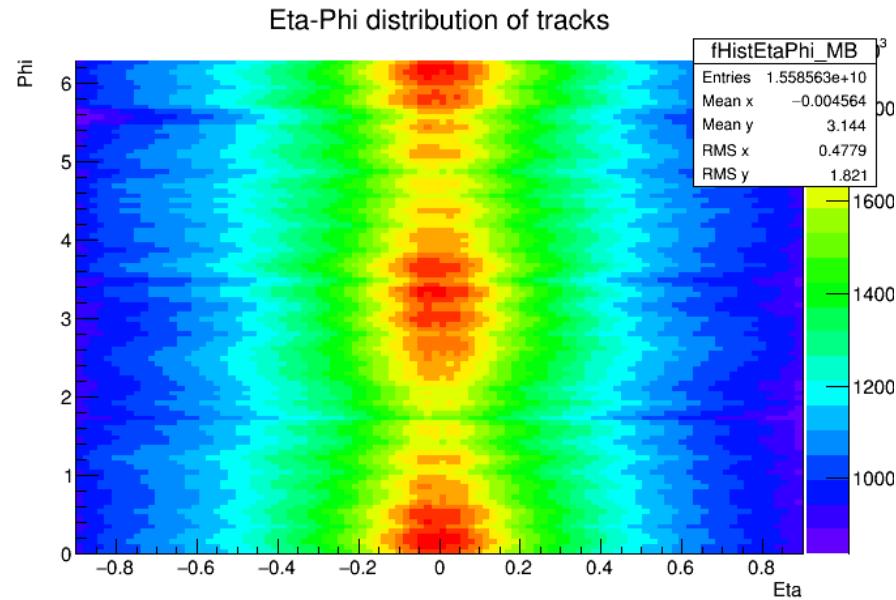
Energy per event containing a candidate



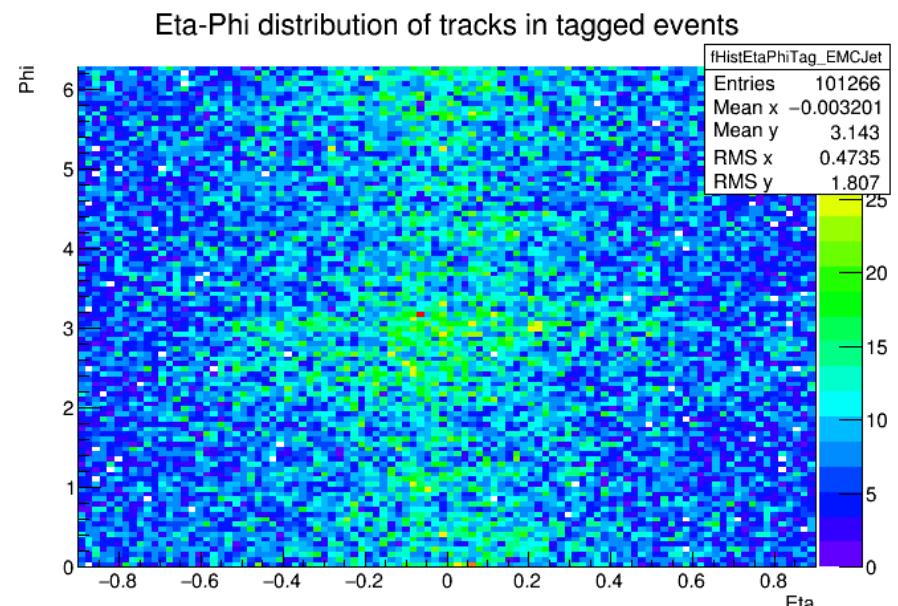
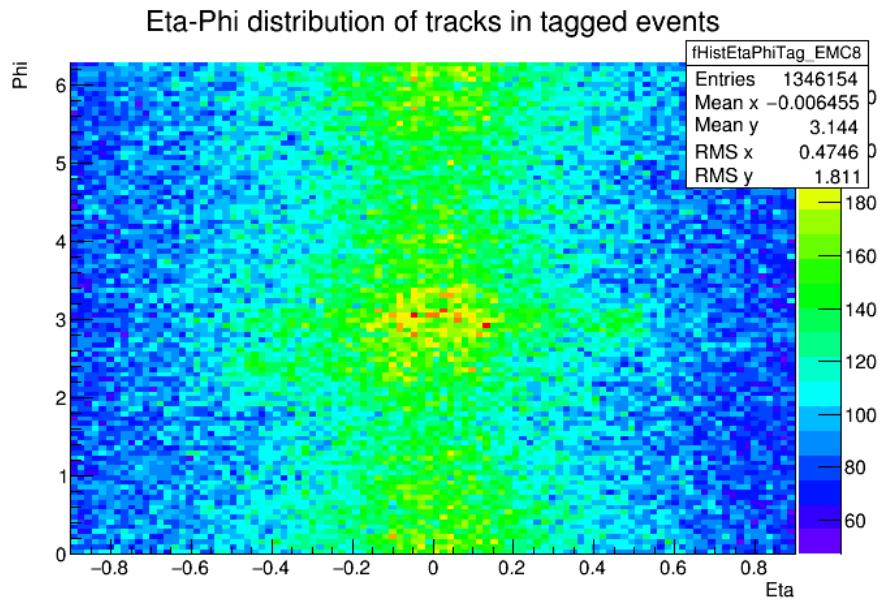
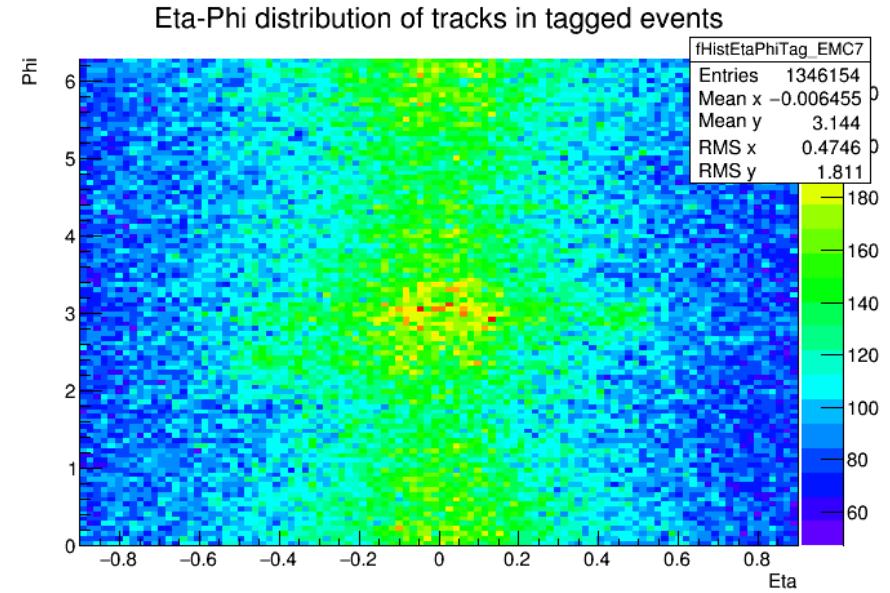
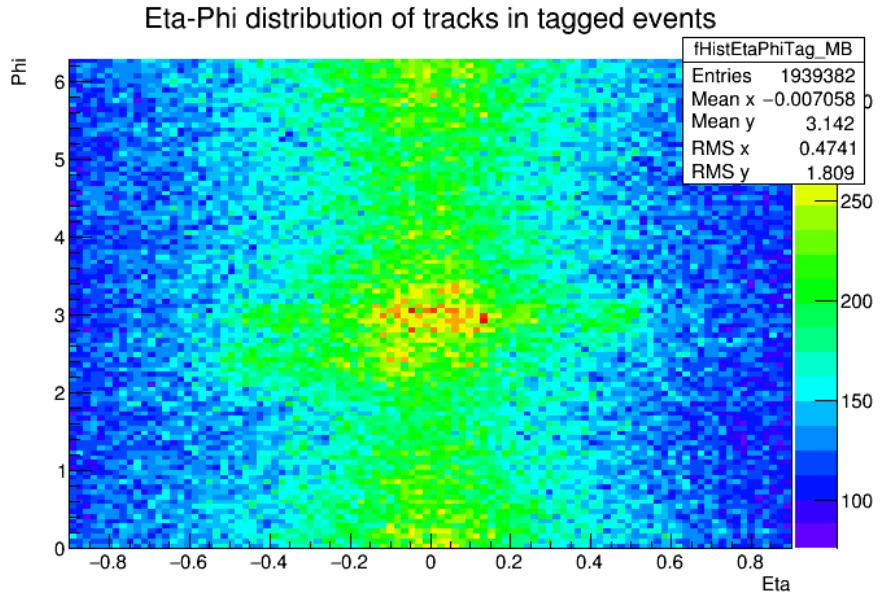
Energy per event containing a candidate



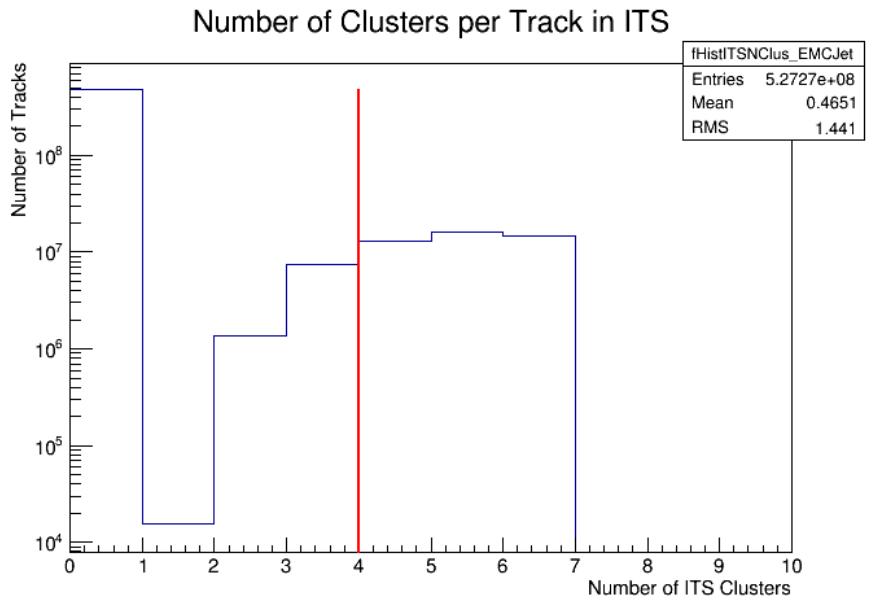
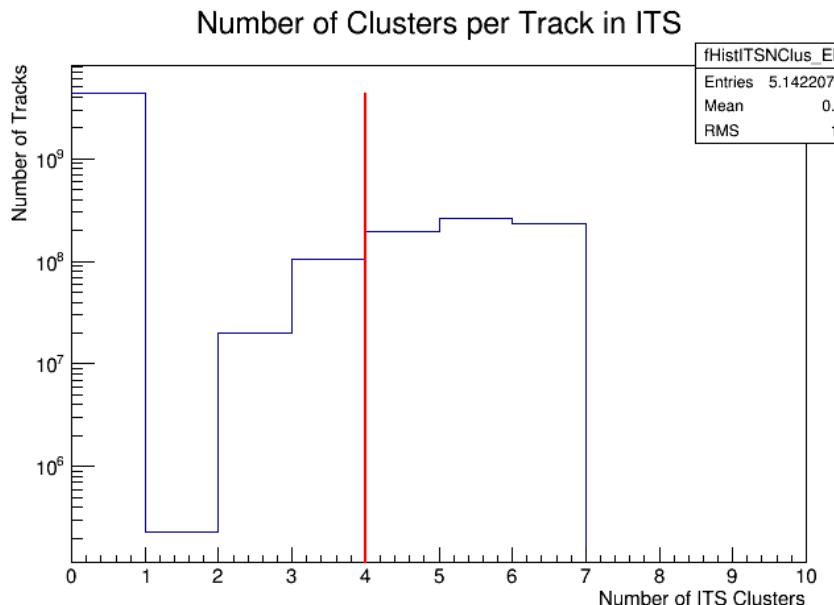
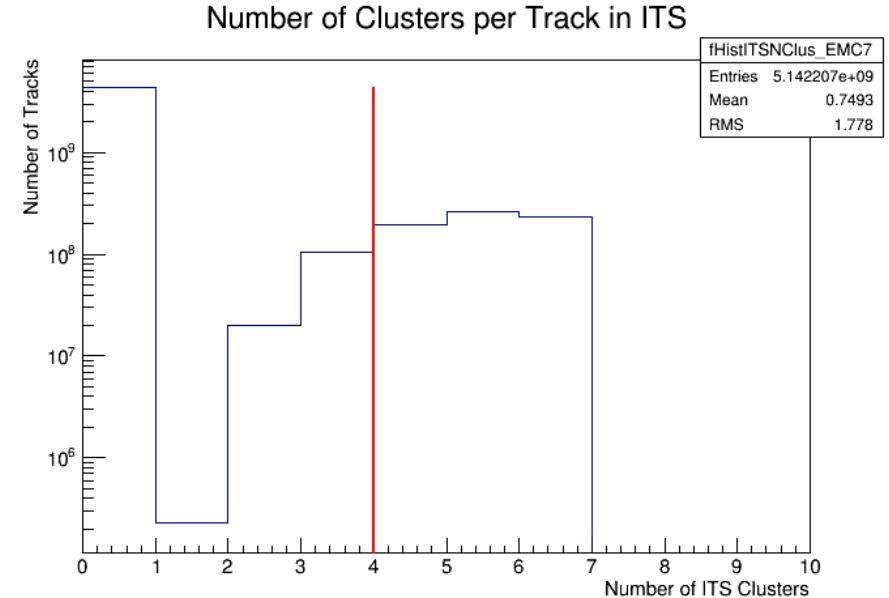
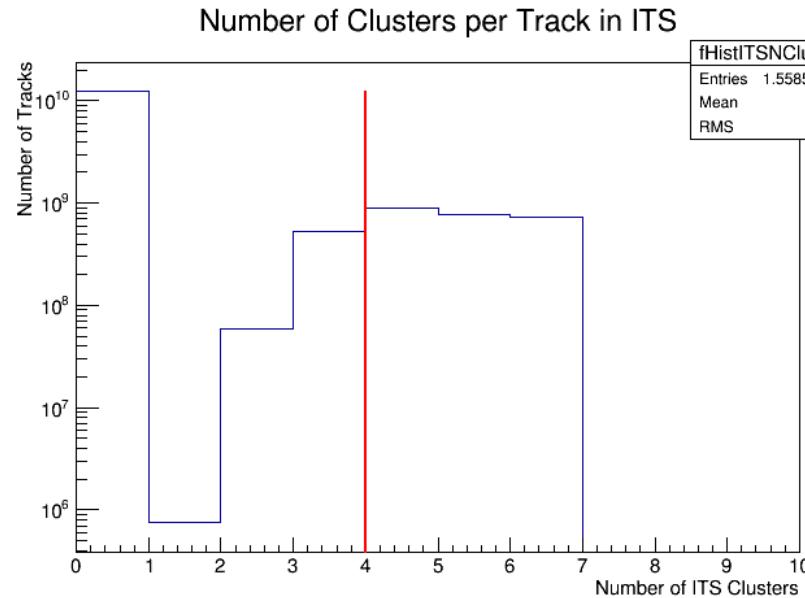
Eta-Phi Distribution



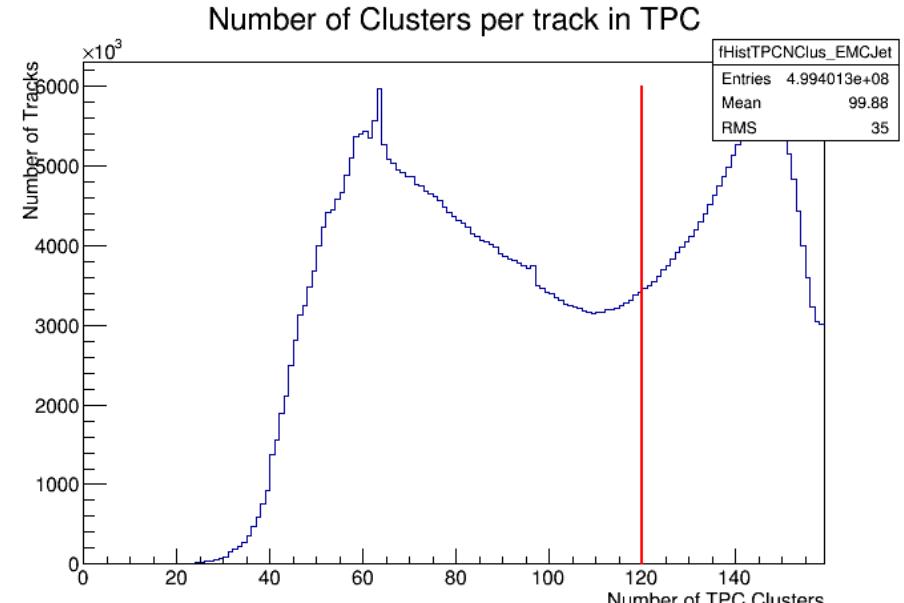
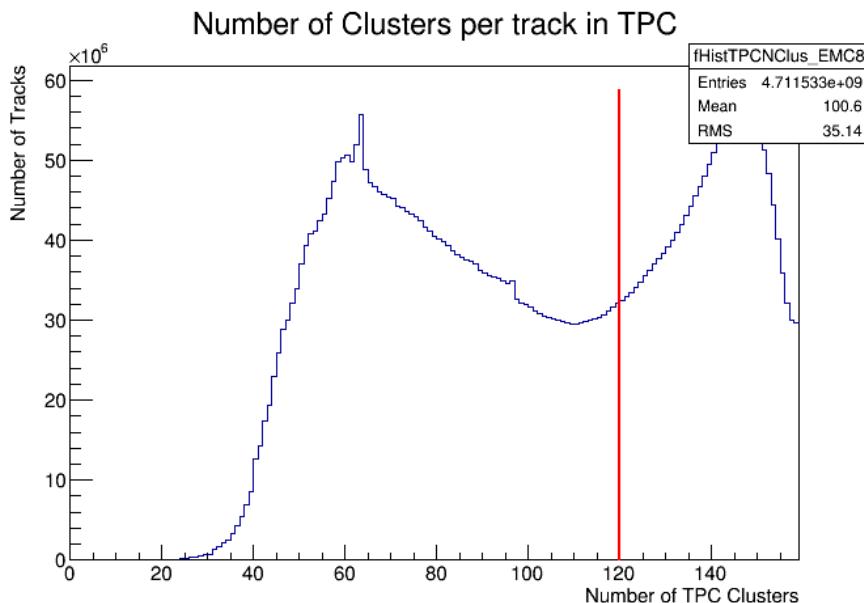
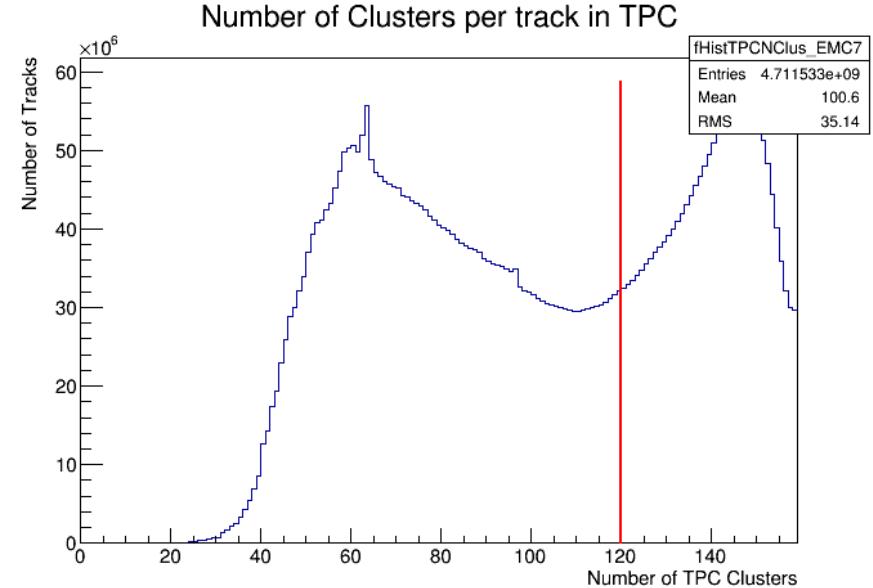
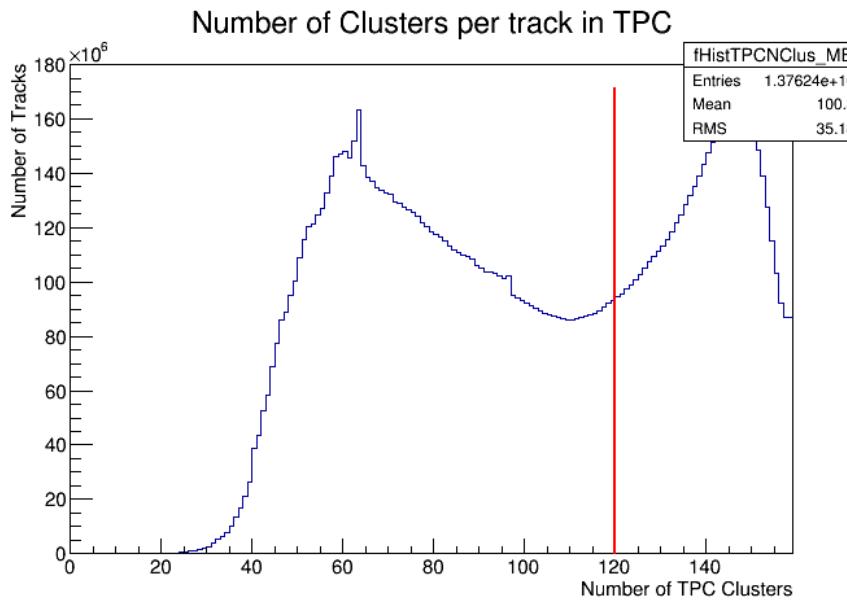
Eta-Phi Distribution for events with an electron



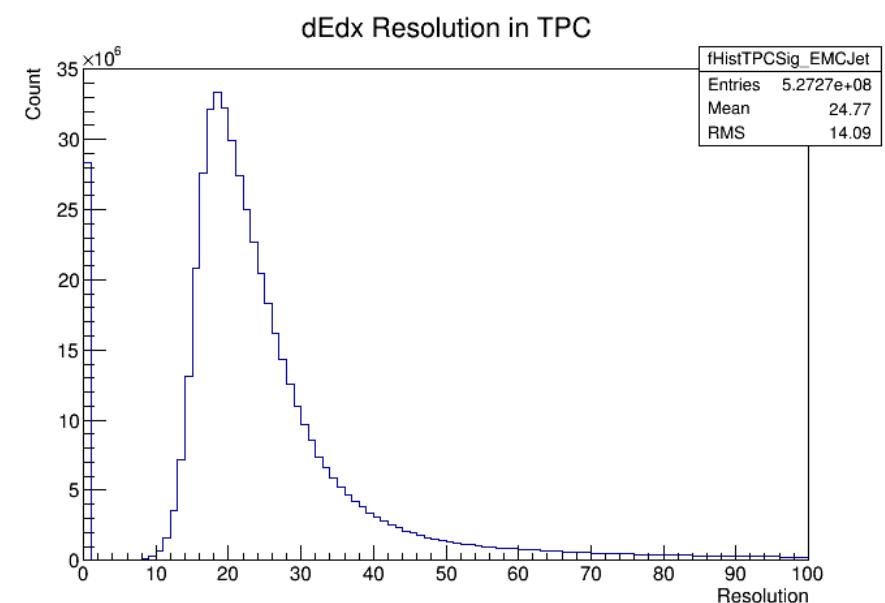
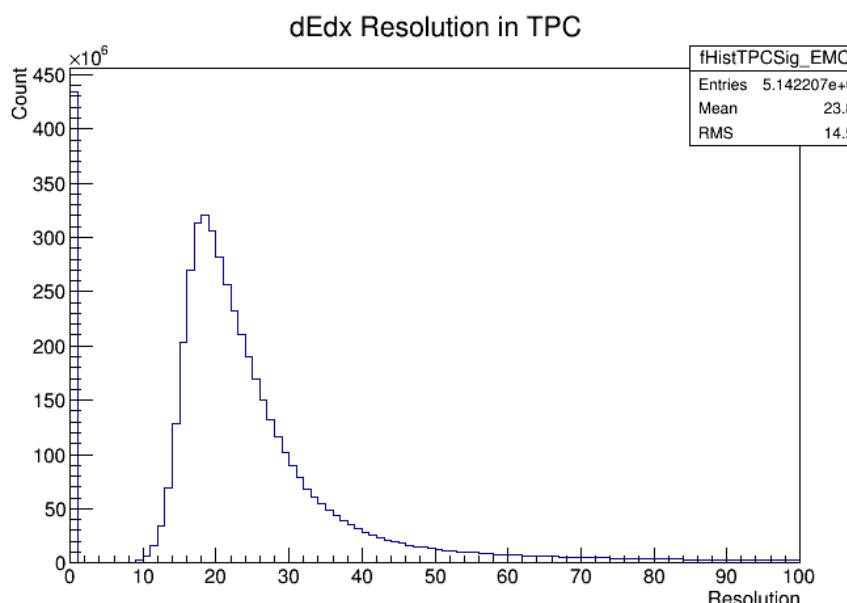
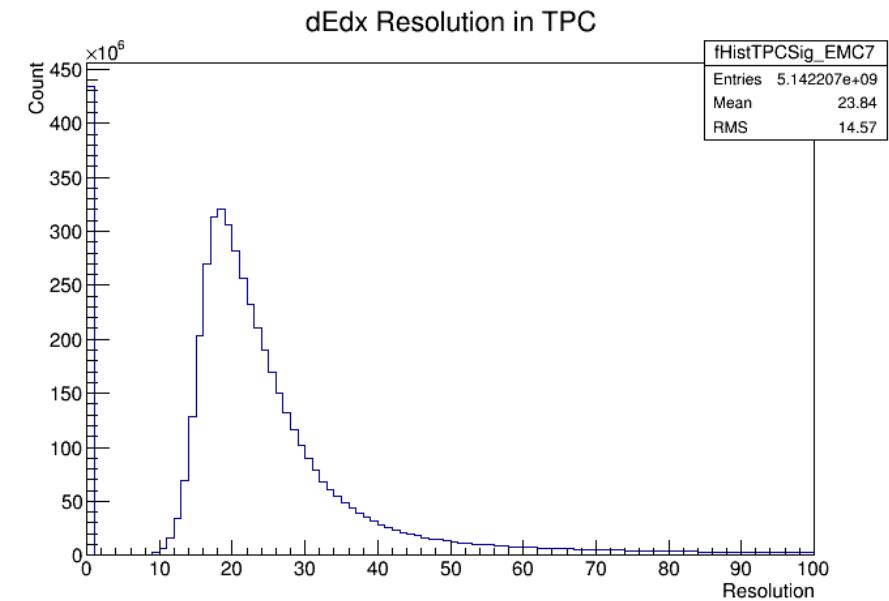
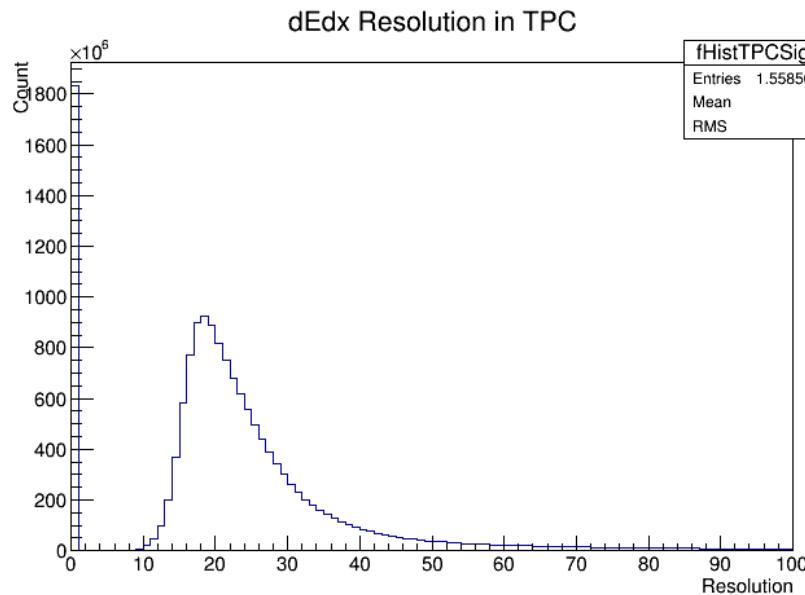
Number of clusters per track in ITS



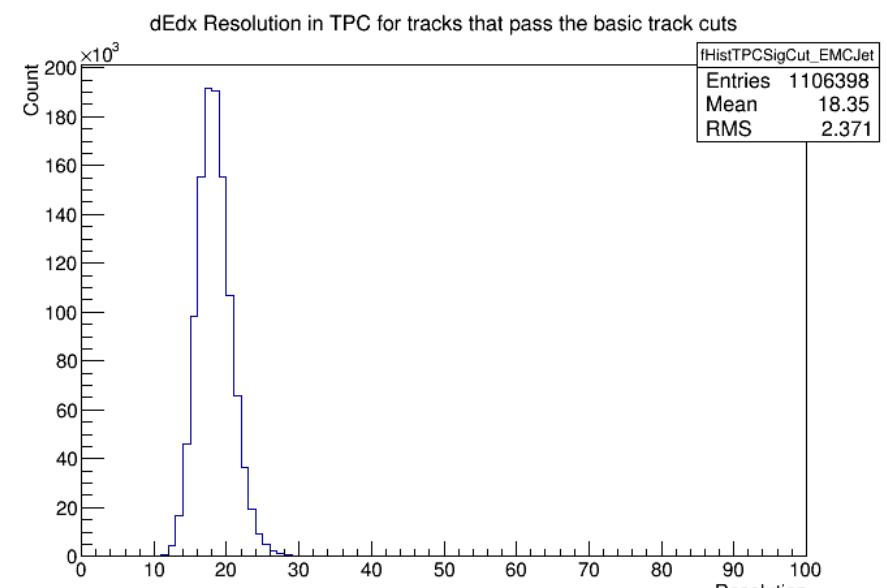
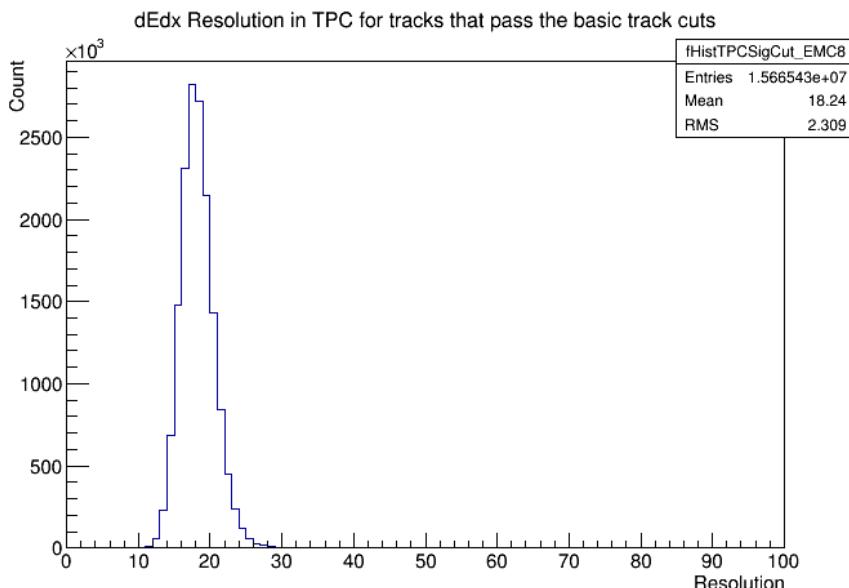
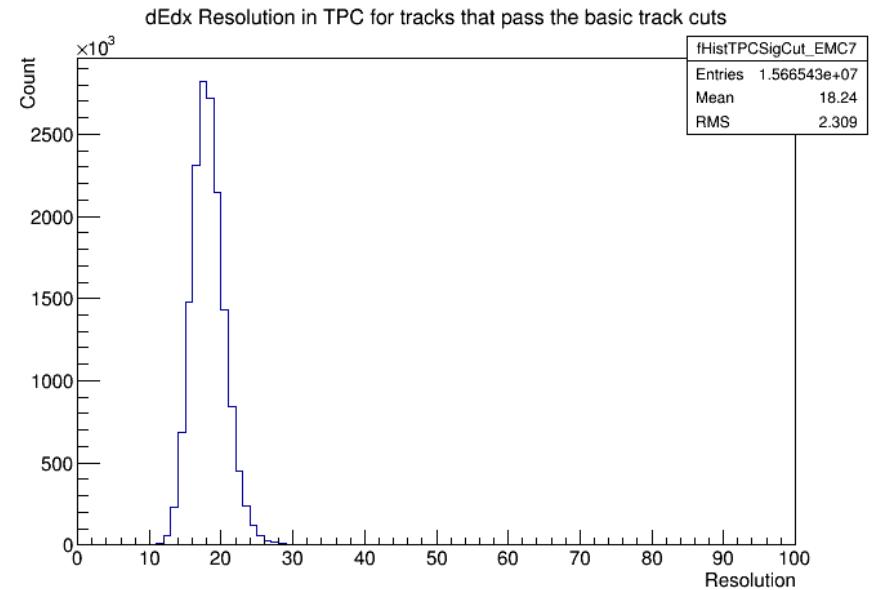
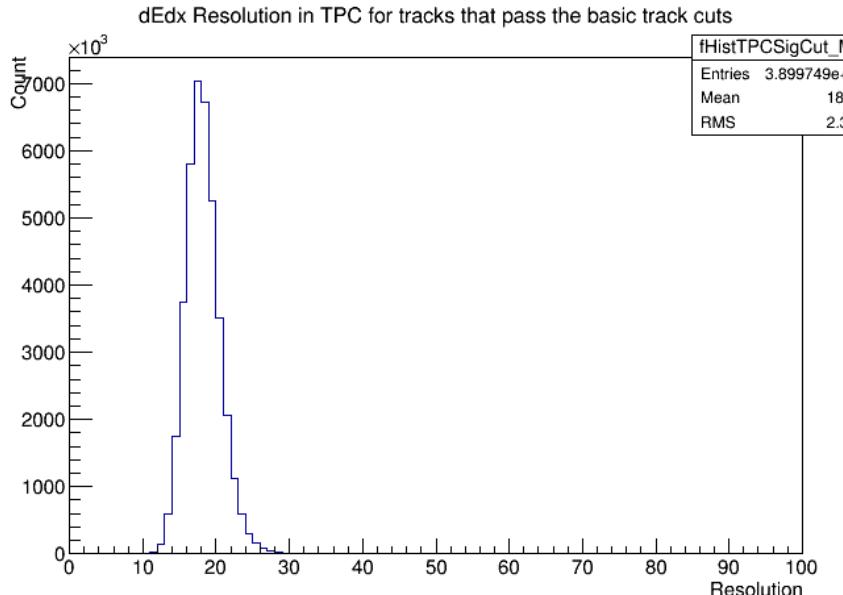
Number of clusters per track in TPC



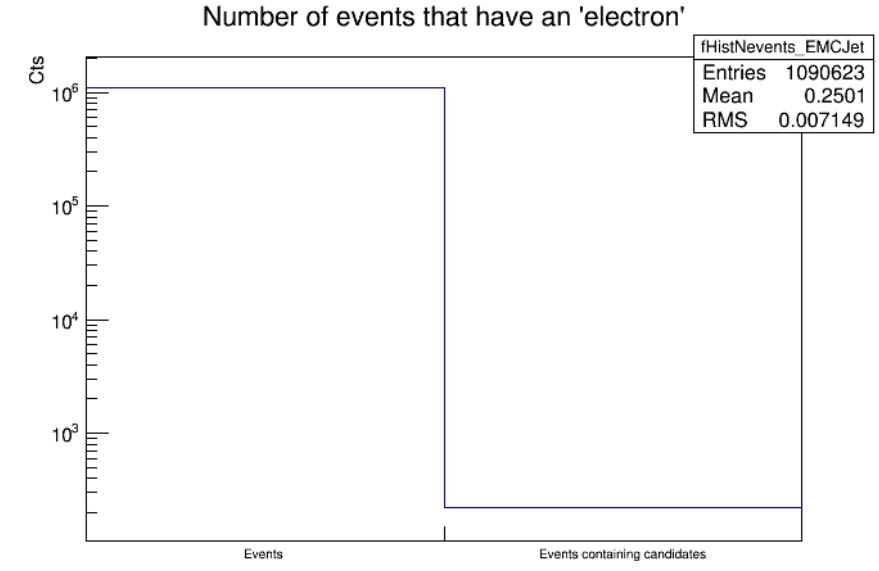
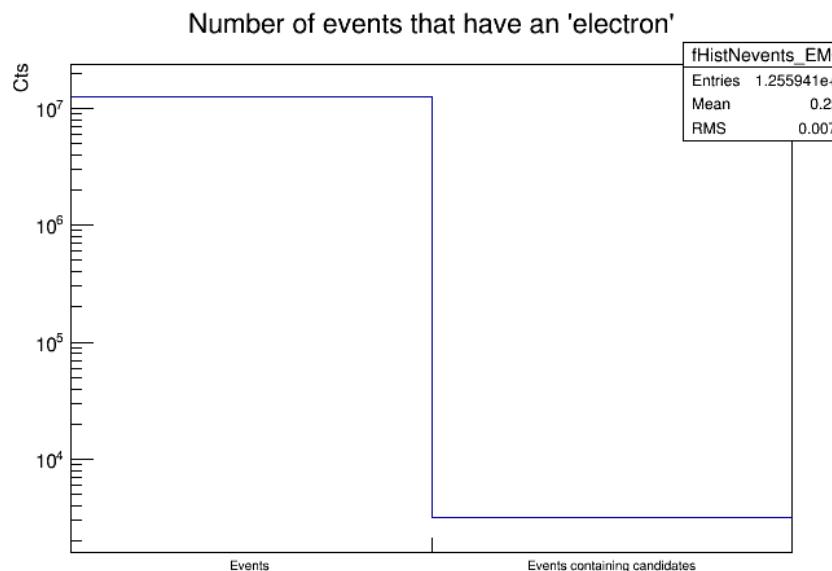
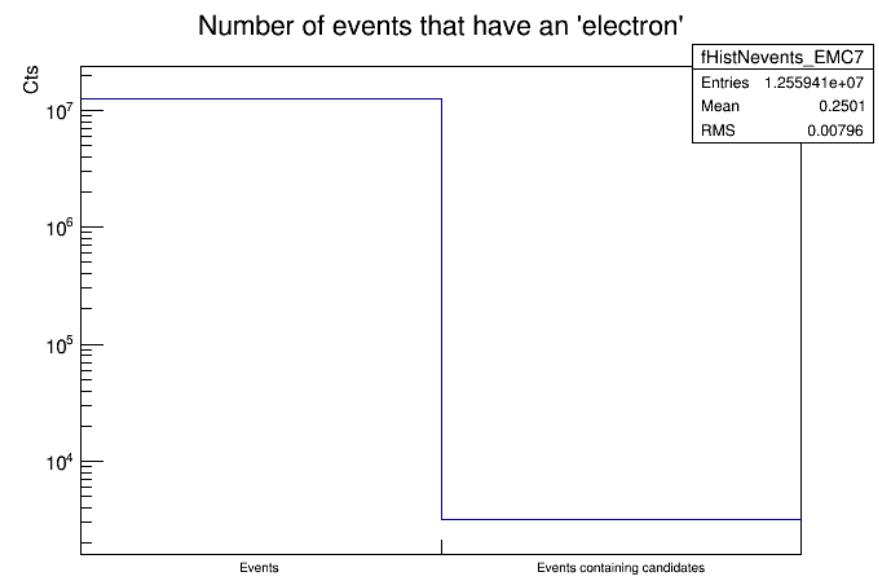
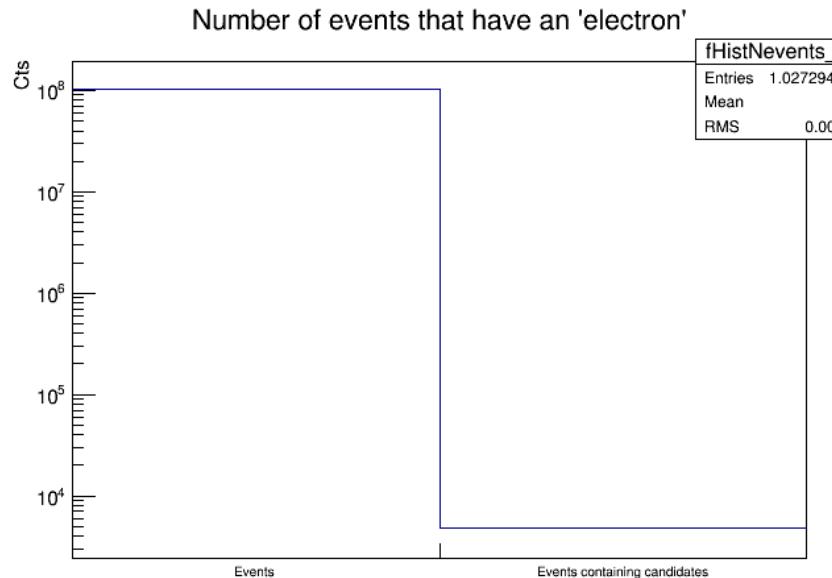
TPC dEdx resolution for all tracks



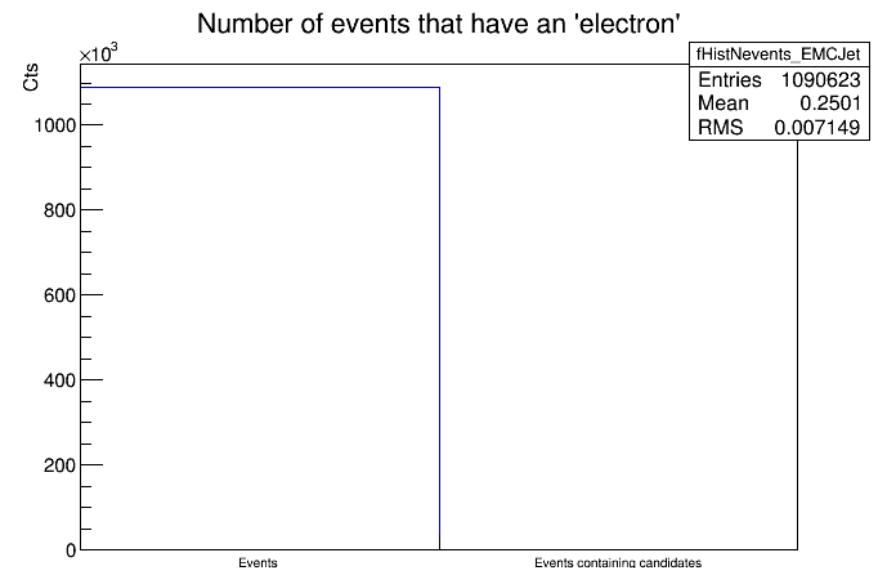
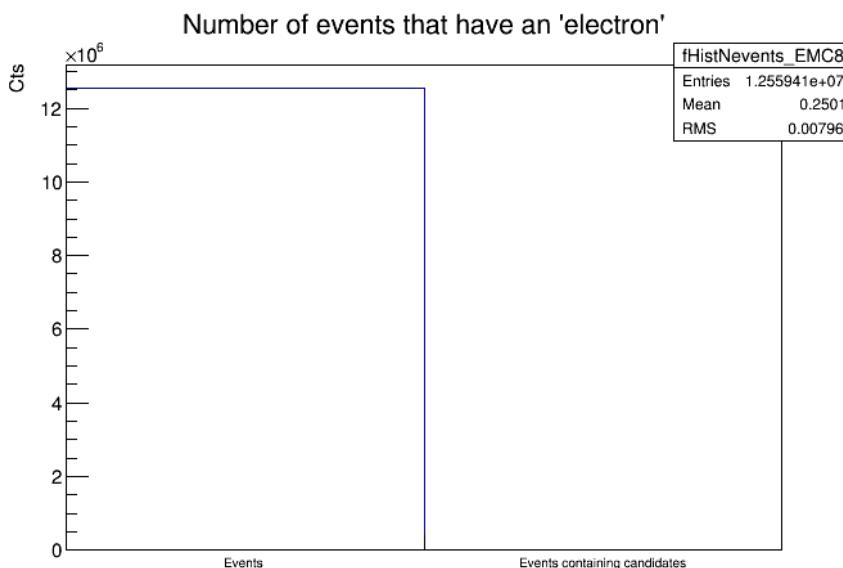
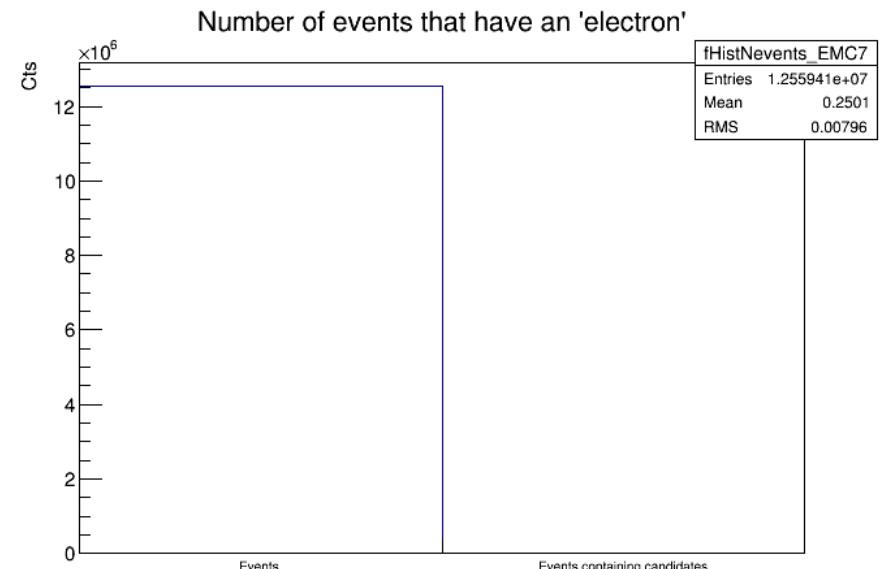
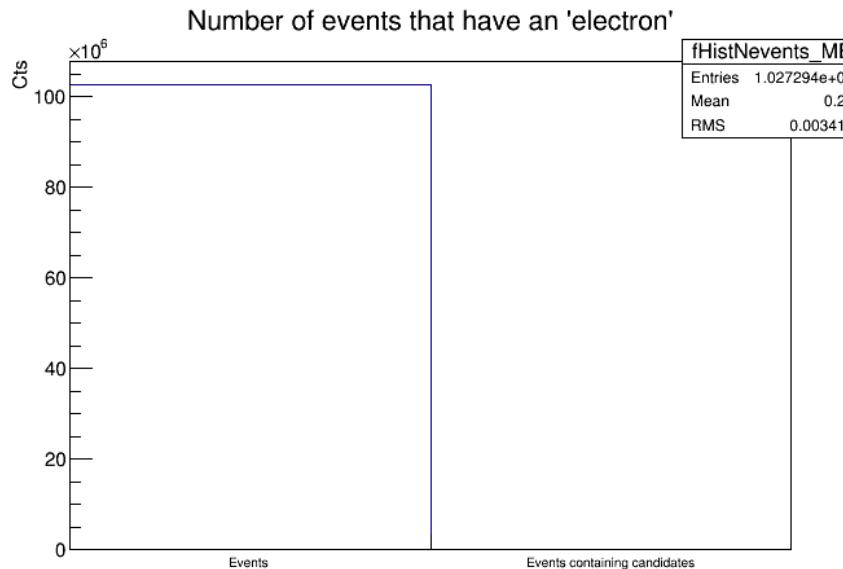
TPC dEdx resolution for tracks that pass basic cuts



Number of events with an electron



Number of events with an electron



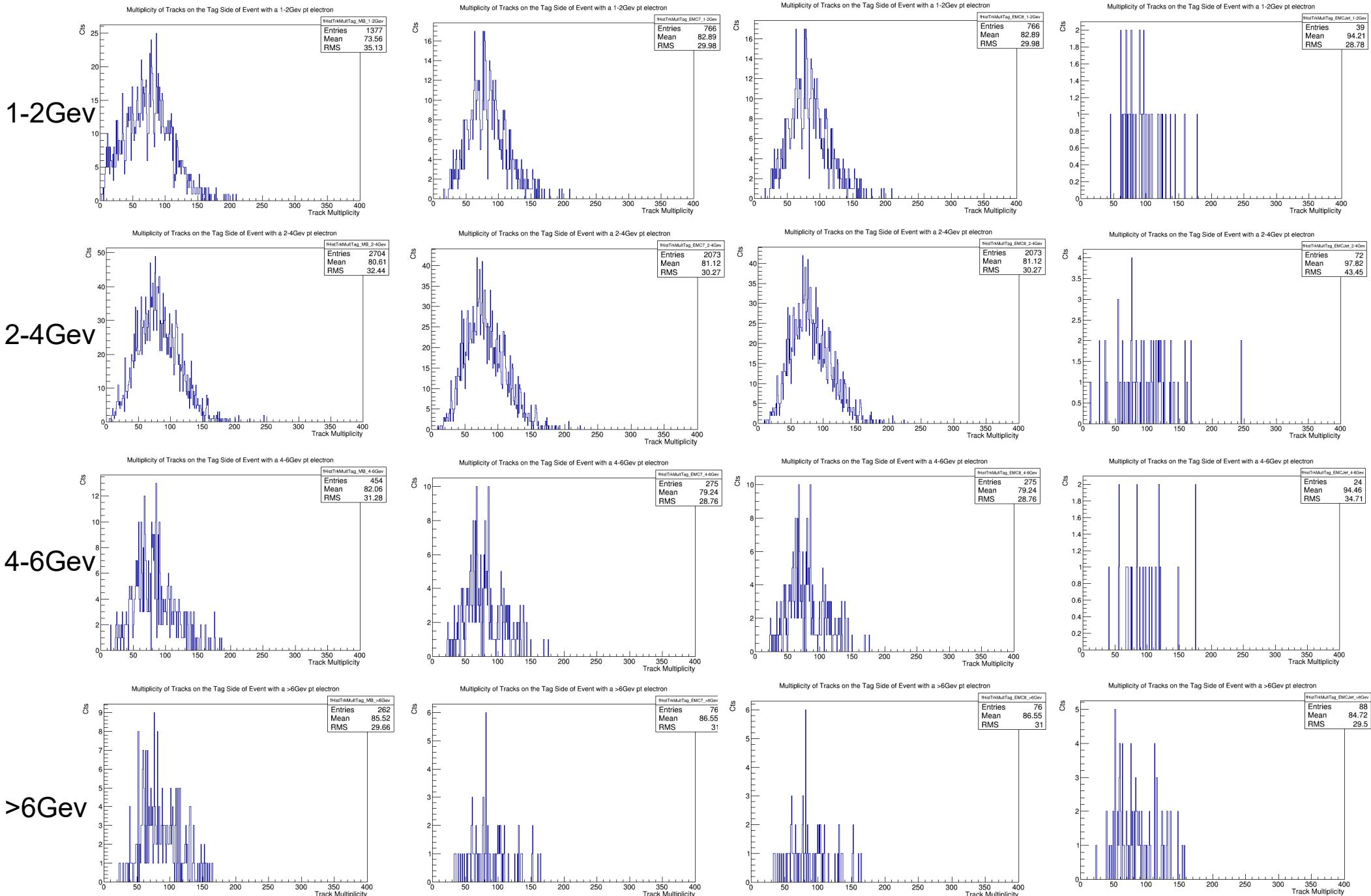
Region Plots

Tag Side
Min-Bias

Track multiplicities

EMC7 EMC8

EMCJet



Away Side
Min-Bias

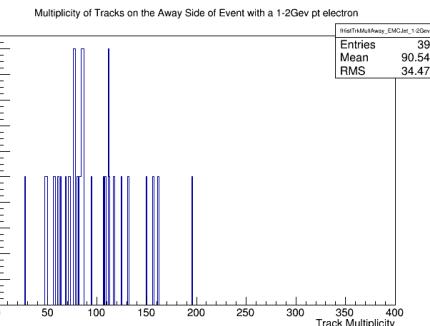
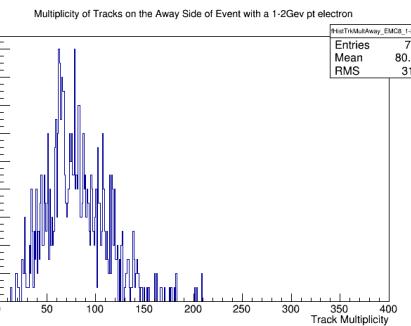
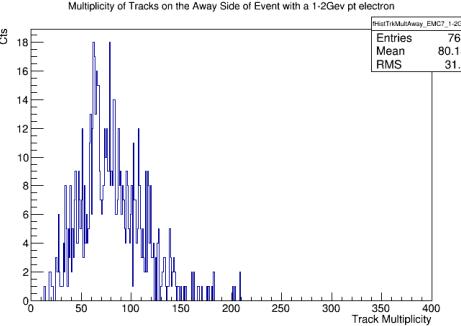
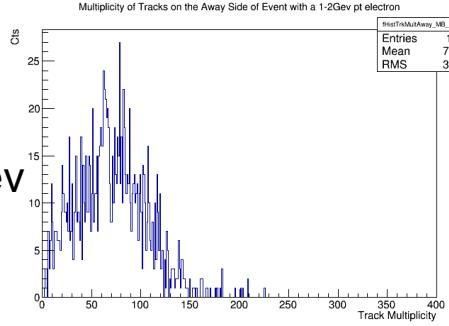
Track multiplicities

EMC7

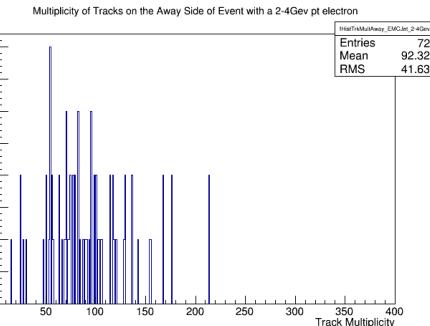
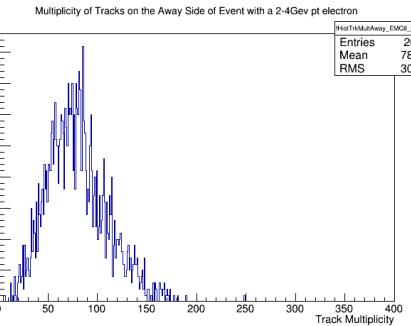
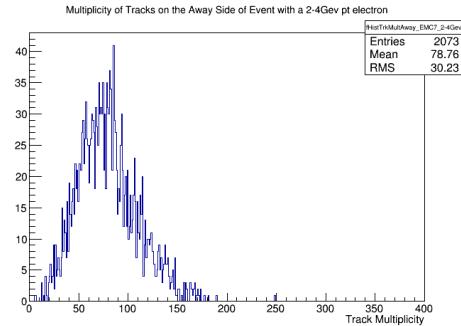
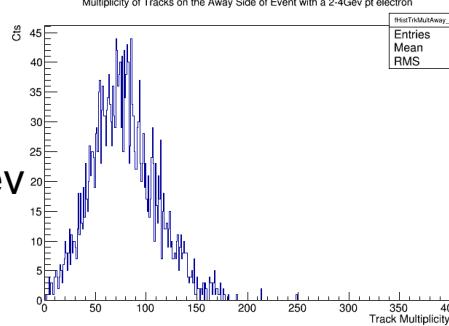
EMC8

EMCJet

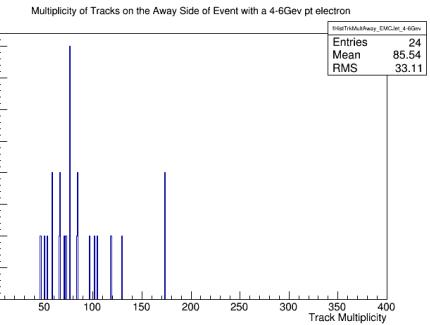
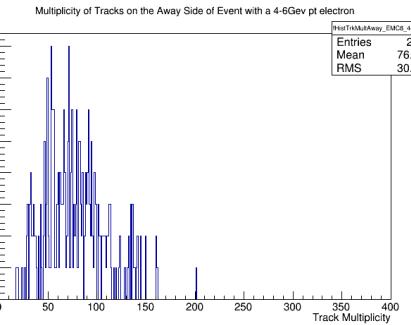
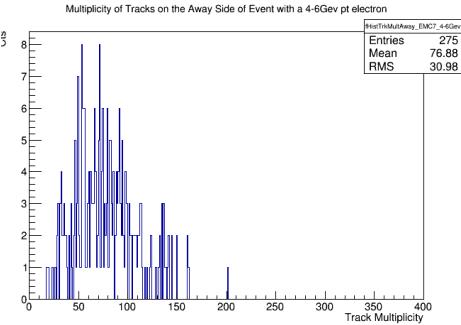
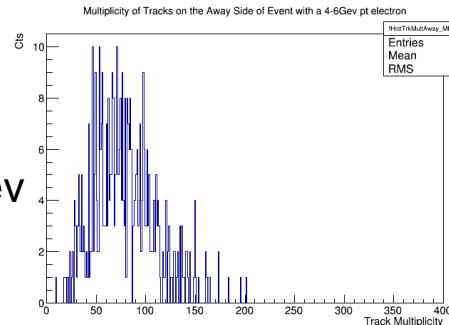
1-2Gev



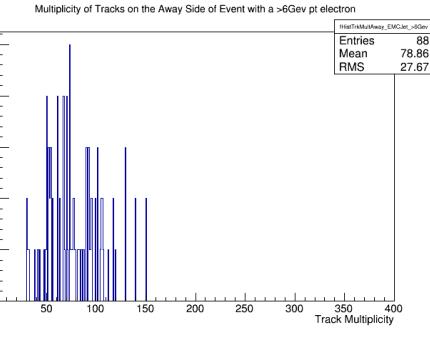
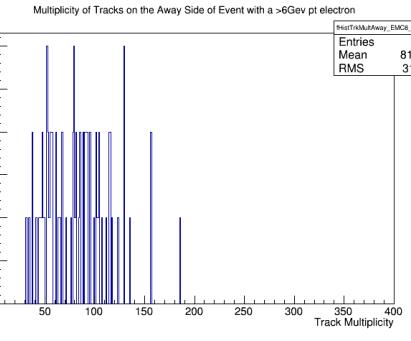
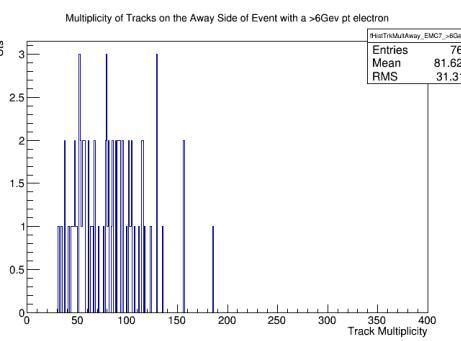
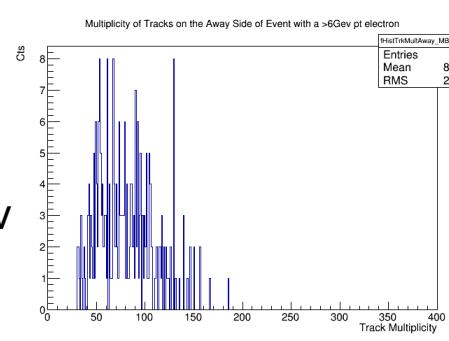
2-4Gev



4-6Gev



>6Gev



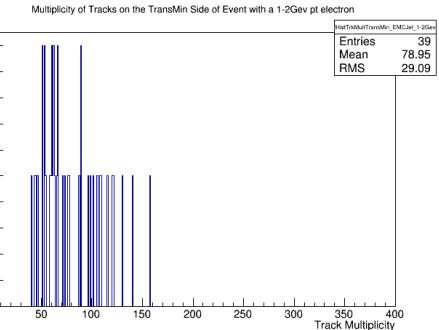
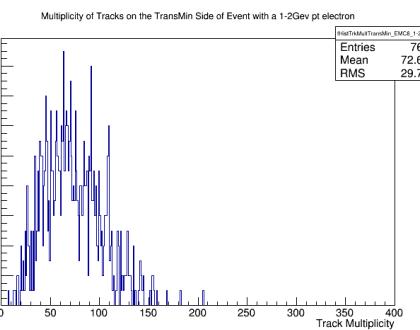
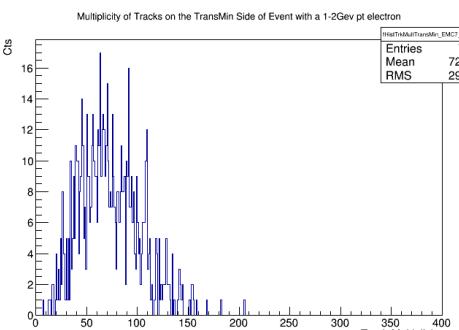
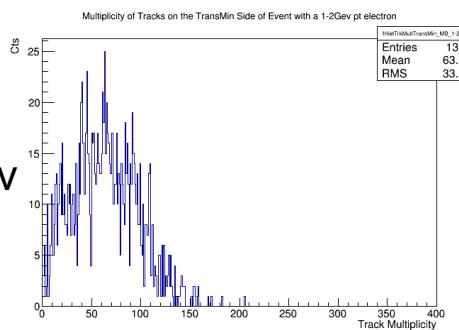
TransMin Side
Min-Bias

Track multiplicities

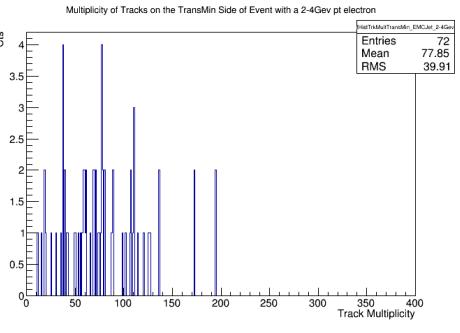
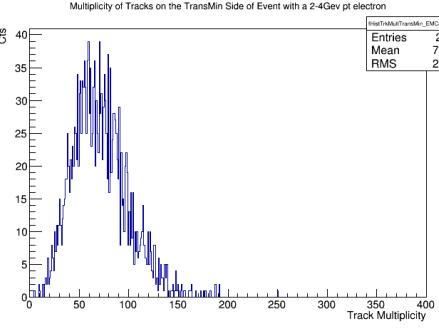
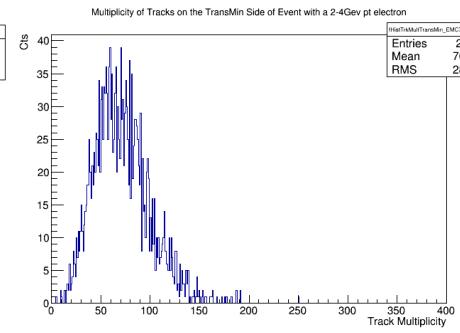
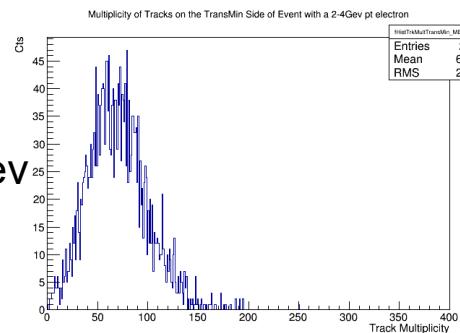
EMC7 EMC8

EMCJet

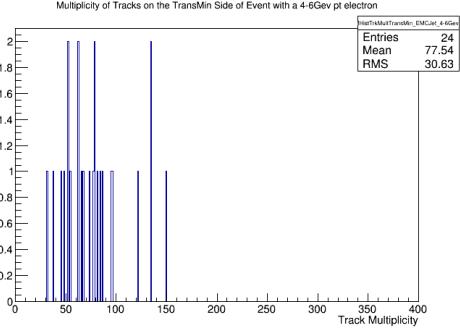
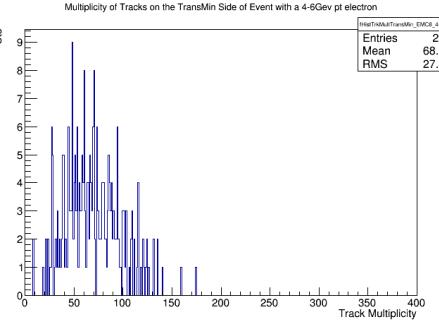
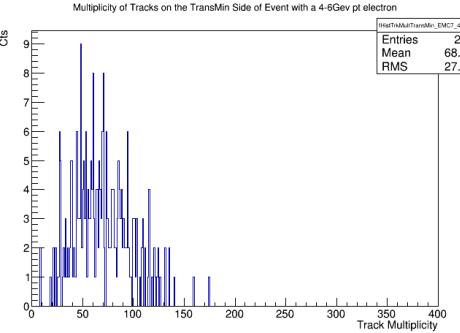
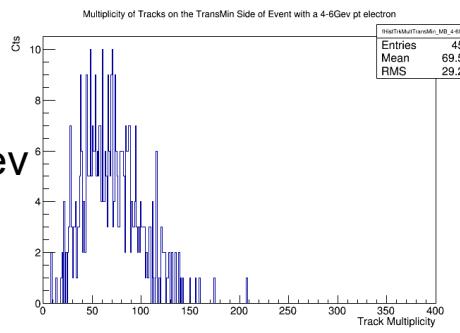
1-2Gev



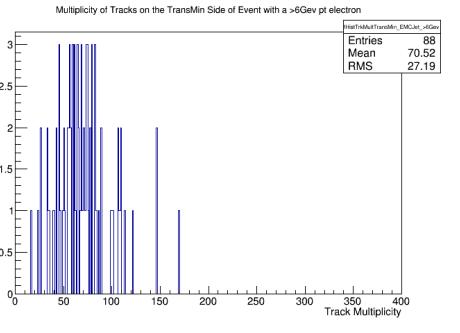
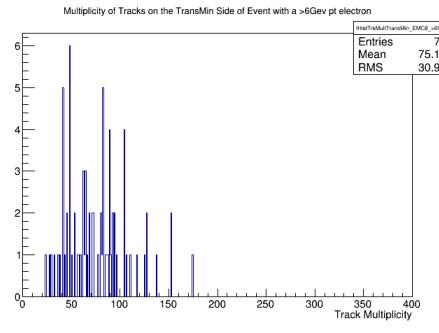
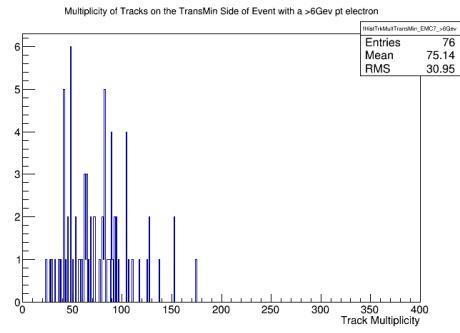
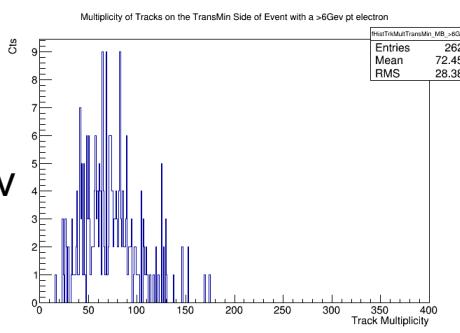
2-4Gev



4-6Gev



>6Gev



TransMax Side

Min-Bias

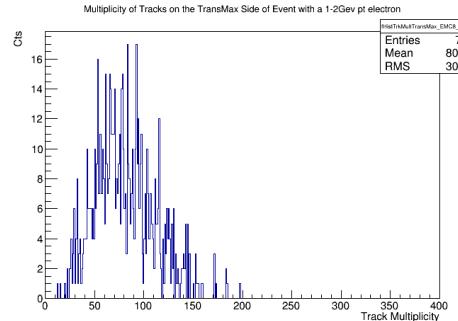
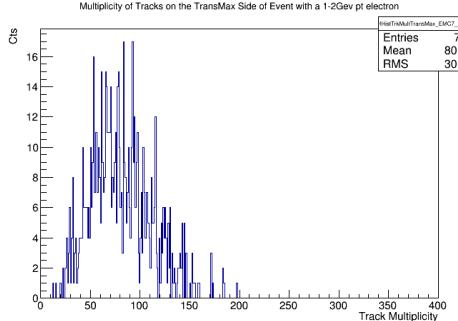
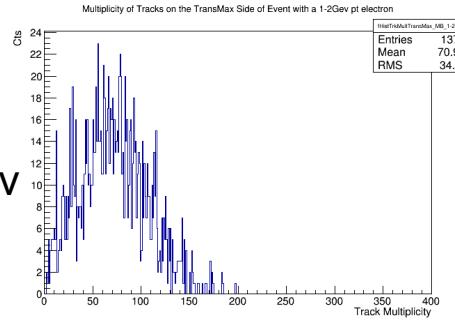
Track multiplicities

EMC7

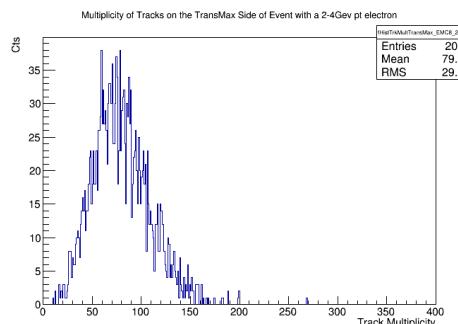
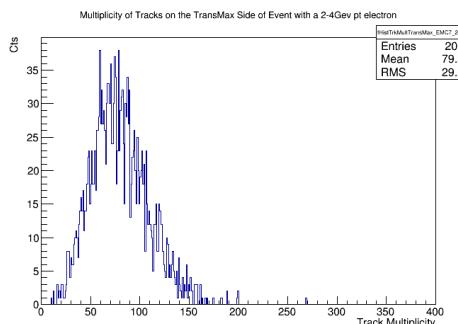
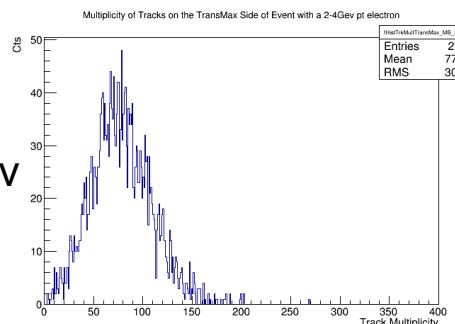
EMC8

EMCJet

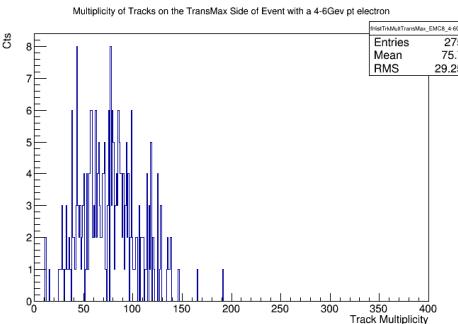
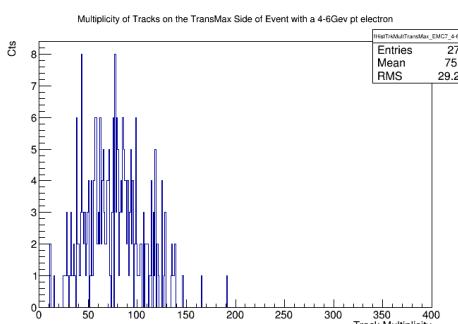
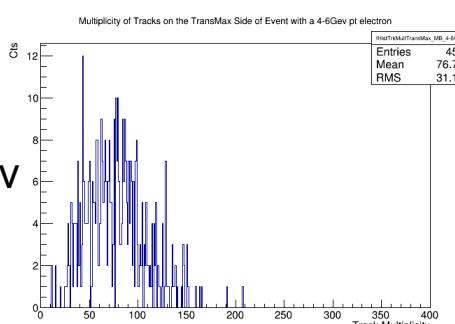
1-2Gev



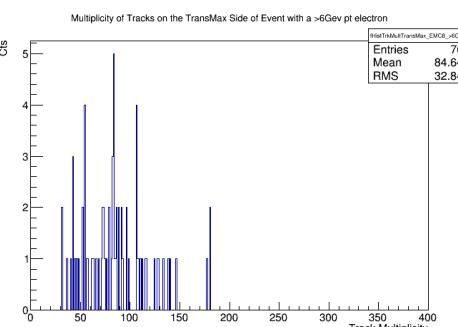
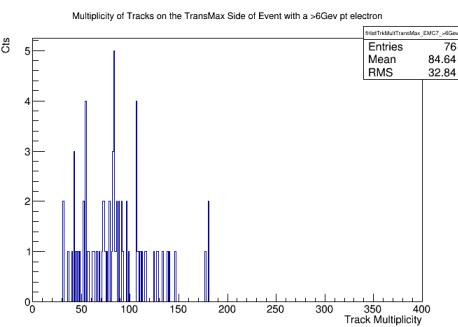
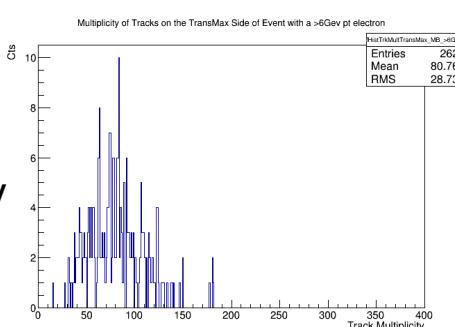
2-4Gev

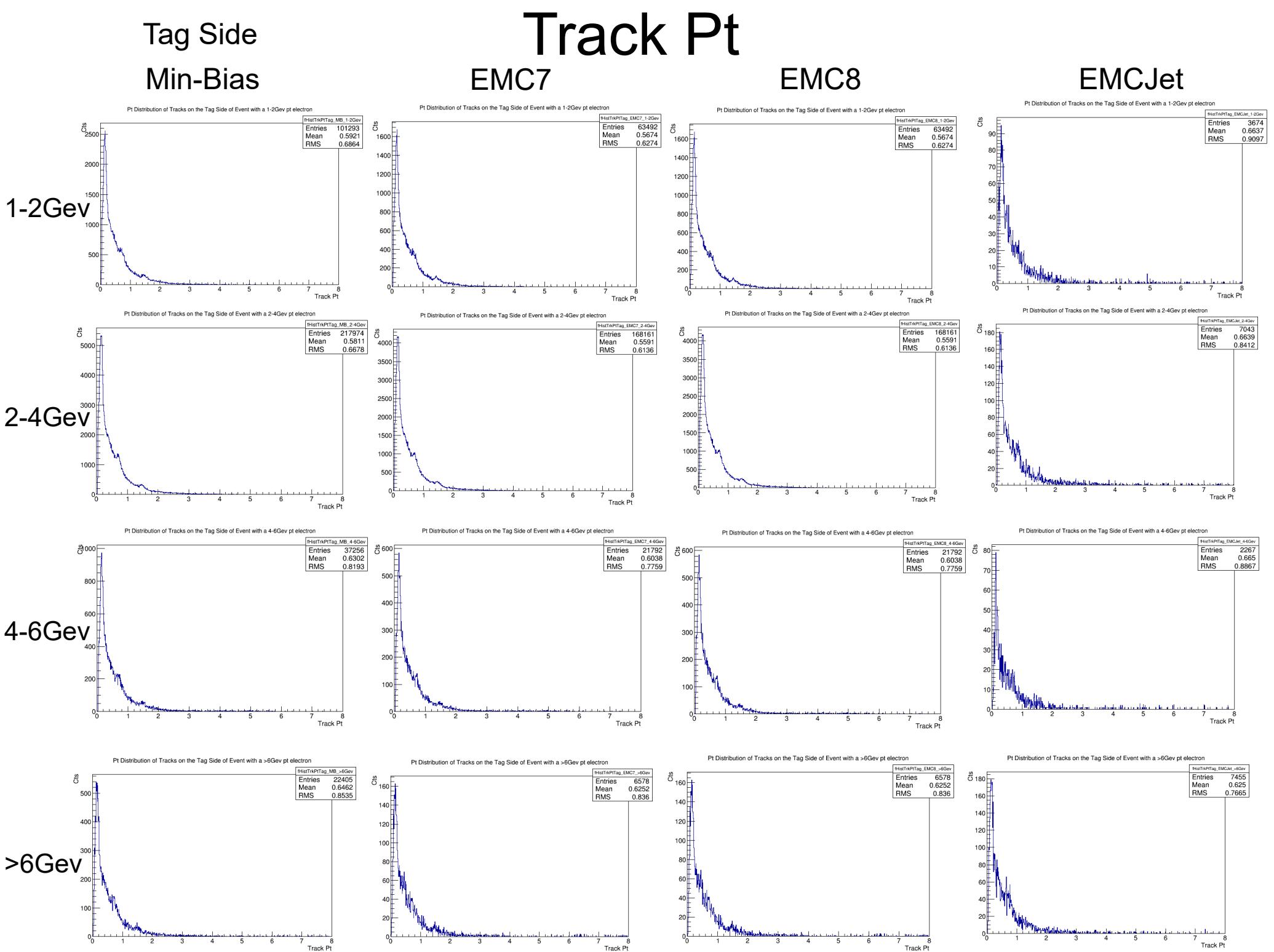


4-6Gev



>6Gev





Away Side Min-Bias

Track Pt

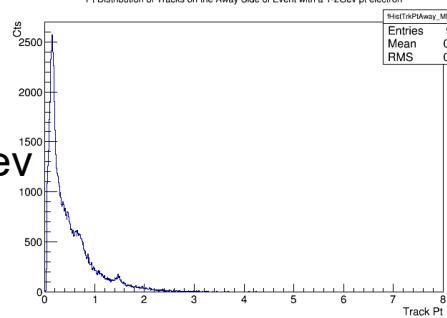
EMC7

EMC8

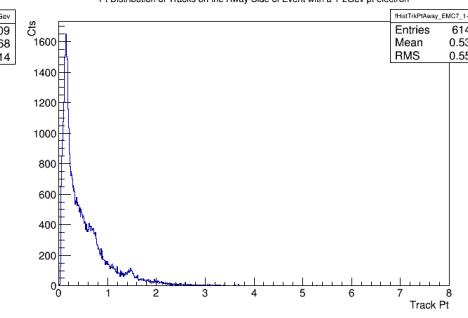
EMCJet

1-2Gev

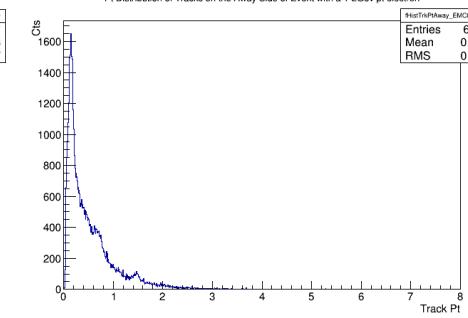
Pt Distribution of Tracks on the Away Side of Event with a 1-2Gev pt electron



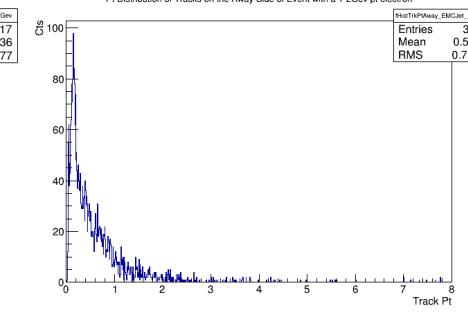
Pt Distribution of Tracks on the Away Side of Event with a 1-2Gev pt electron



Pt Distribution of Tracks on the Away Side of Event with a 1-2Gev pt electron

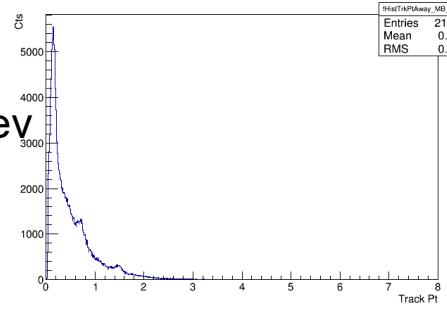


Pt Distribution of Tracks on the Away Side of Event with a 1-2Gev pt electron

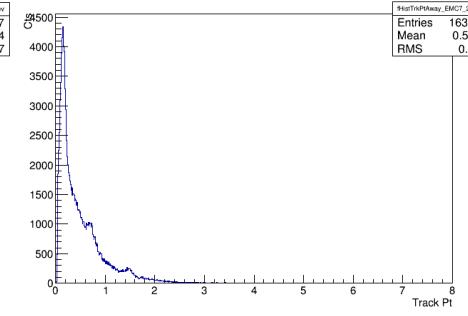


2-4Gev

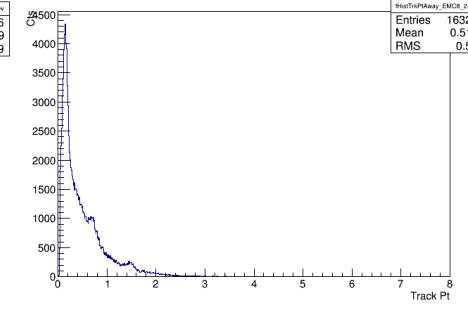
Pt Distribution of Tracks on the Away Side of Event with a 2-4Gev pt electron



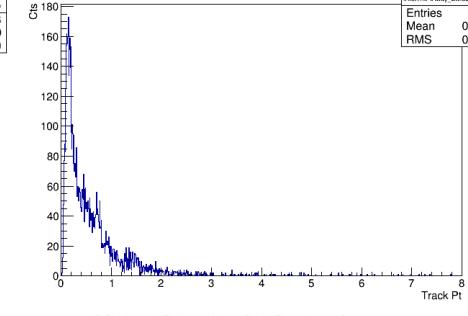
Pt Distribution of Tracks on the Away Side of Event with a 2-4Gev pt electron



Pt Distribution of Tracks on the Away Side of Event with a 2-4Gev pt electron

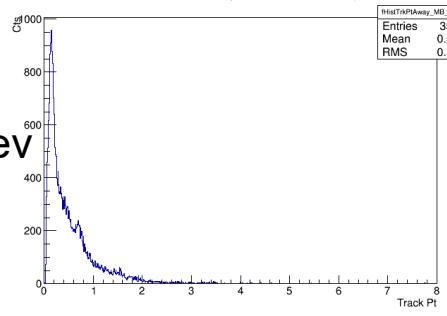


Pt Distribution of Tracks on the Away Side of Event with a 2-4Gev pt electron

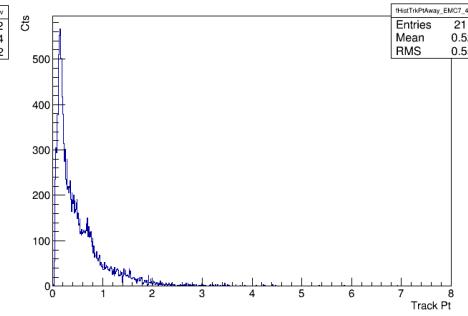


4-6Gev

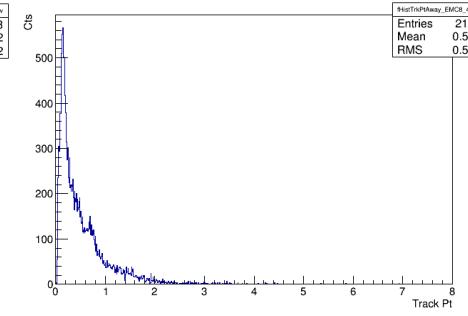
Pt Distribution of Tracks on the Away Side of Event with a 4-6Gev pt electron



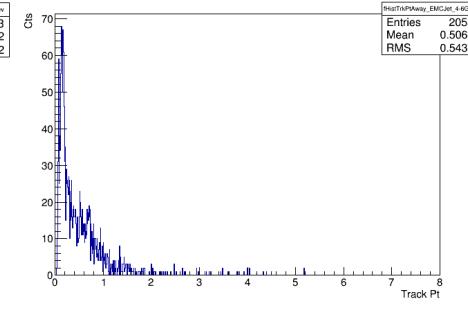
Pt Distribution of Tracks on the Away Side of Event with a 4-6Gev pt electron



Pt Distribution of Tracks on the Away Side of Event with a 4-6Gev pt electron

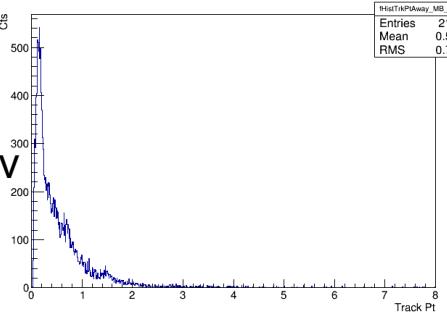


Pt Distribution of Tracks on the Away Side of Event with a 4-6Gev pt electron

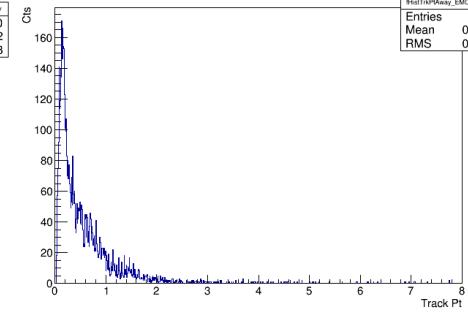


>6Gev

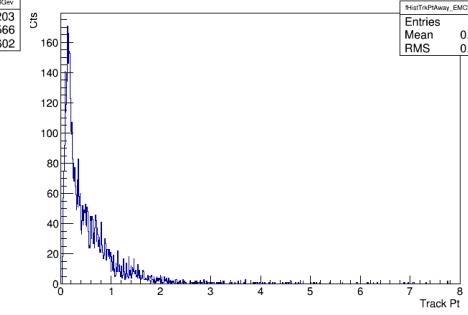
Pt Distribution of Tracks on the Away Side of Event with a >6Gev pt electron



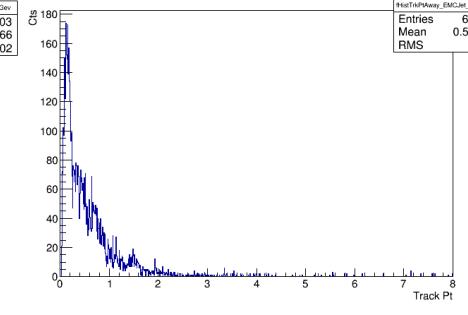
Pt Distribution of Tracks on the Away Side of Event with a >6Gev pt electron



Pt Distribution of Tracks on the Away Side of Event with a >6Gev pt electron



Pt Distribution of Tracks on the Away Side of Event with a >6Gev pt electron



TransMin Side

Min-Bias

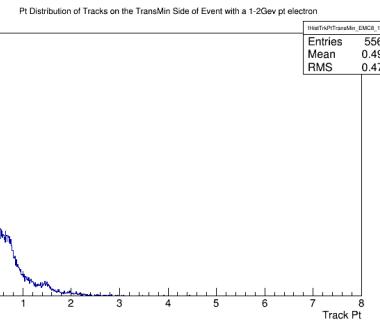
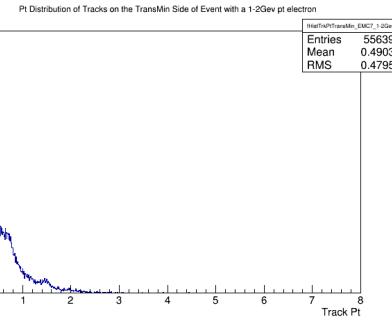
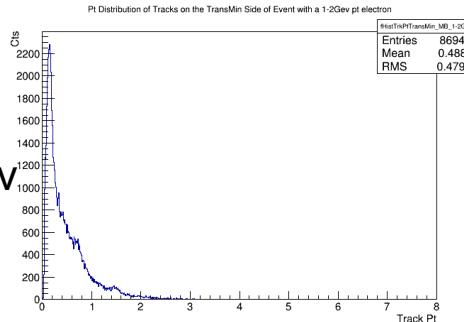
Track Pt

EMC7

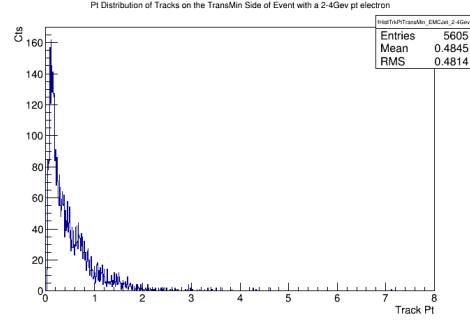
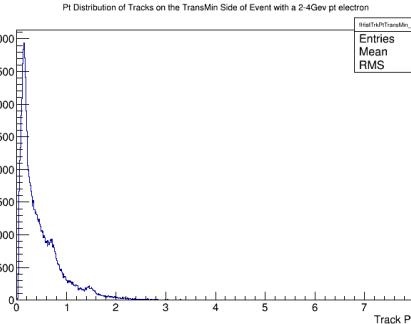
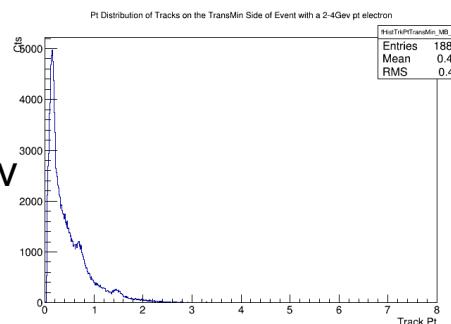
EMC8

EMCJet

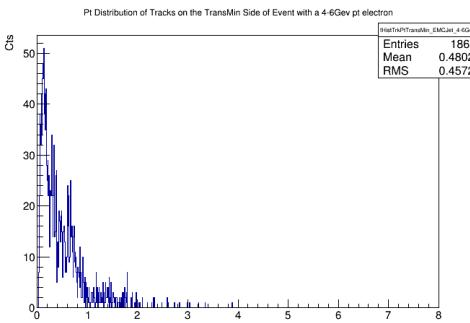
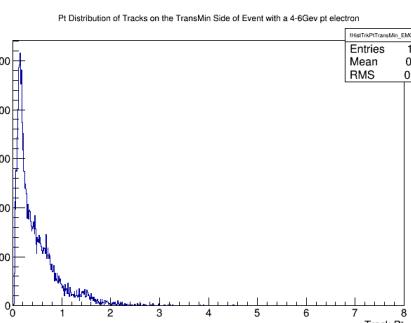
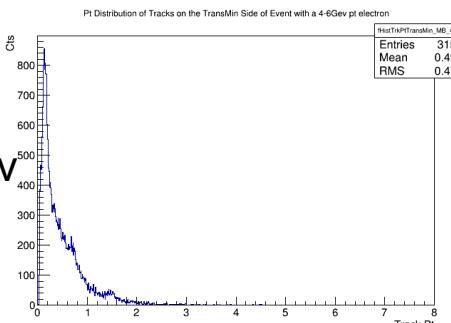
1-2Gev



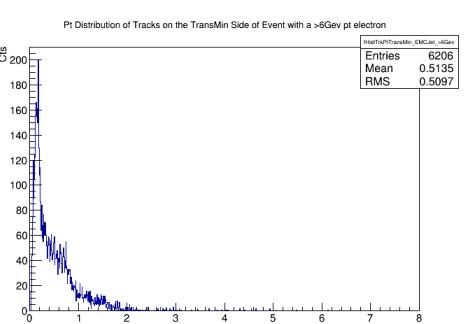
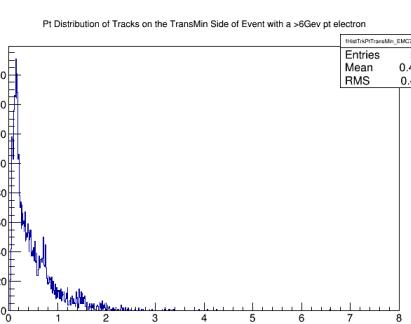
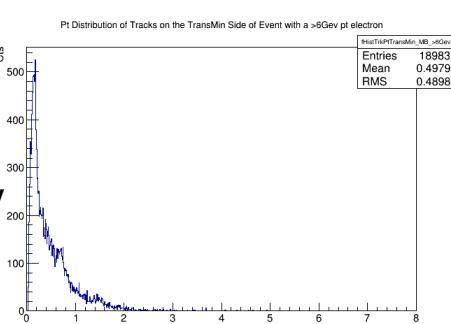
2-4Gev



4-6Gev



>6Gev



TransMax Side

Min-Bias

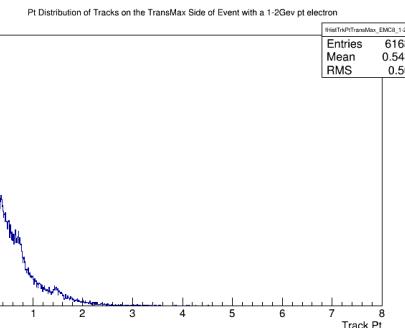
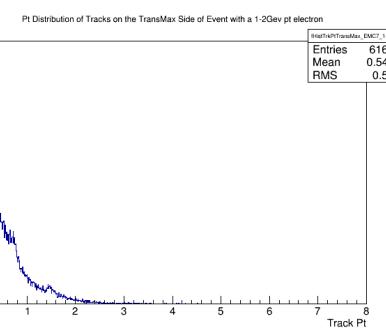
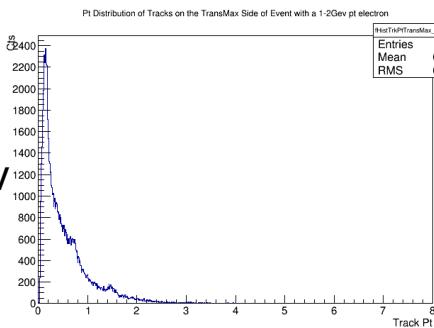
Track Pt

EMC7

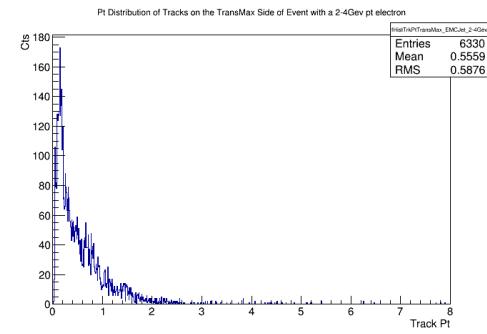
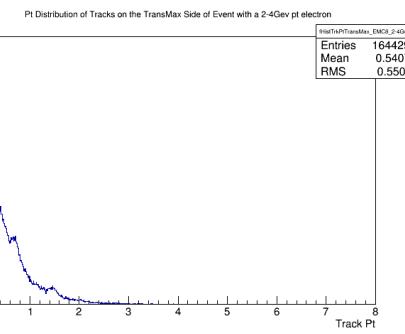
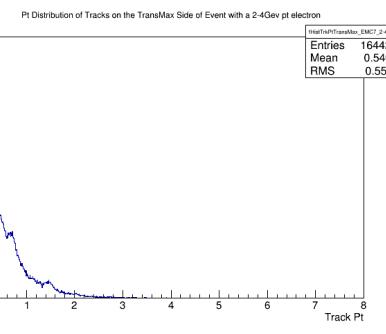
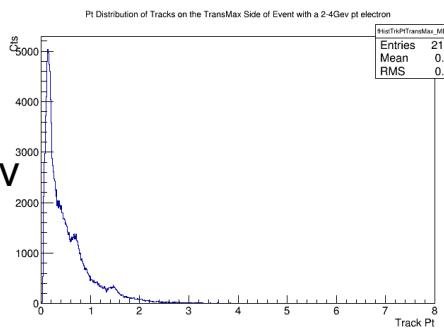
EMC8

EMCJet

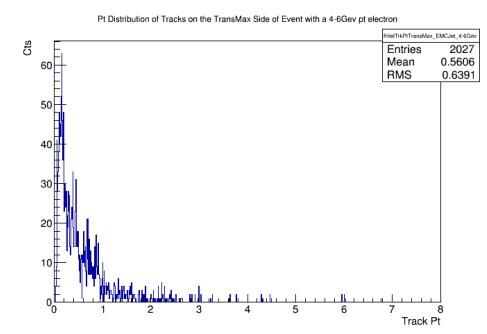
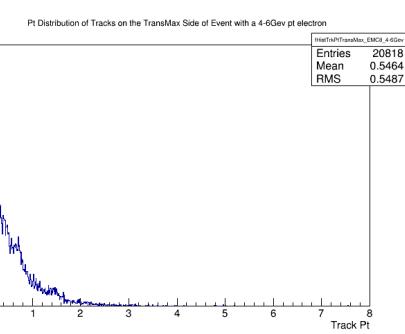
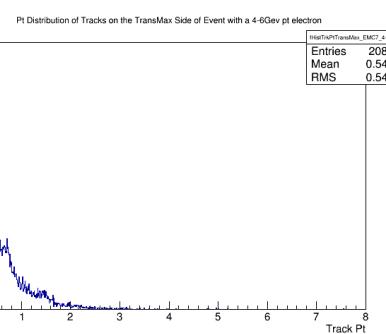
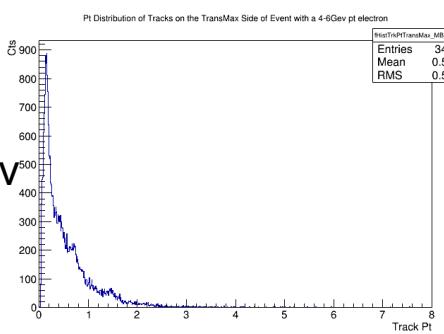
1-2Gev



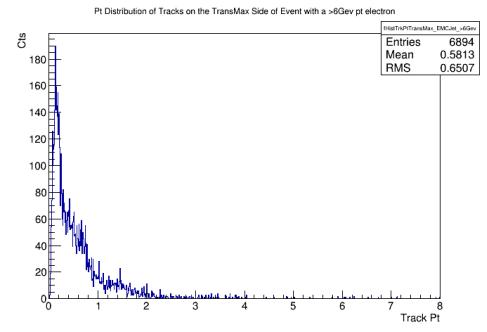
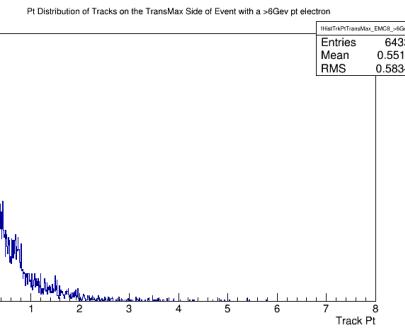
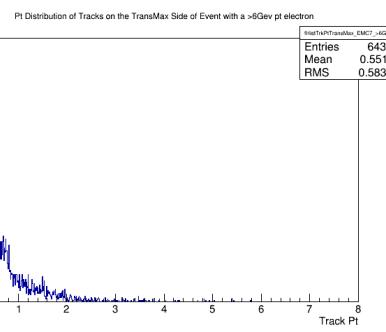
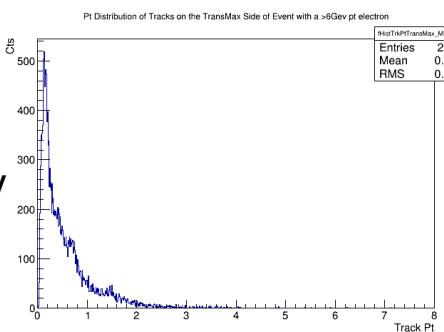
2-4Gev



4-6Gev



>6Gev



Tag Side Min-Bias

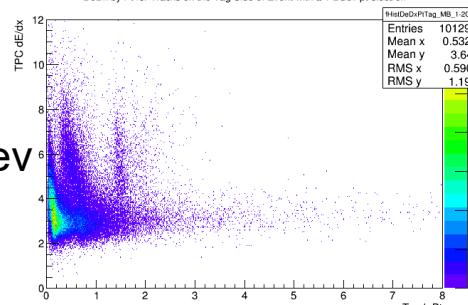
dE/dx v. Pt

EMC7

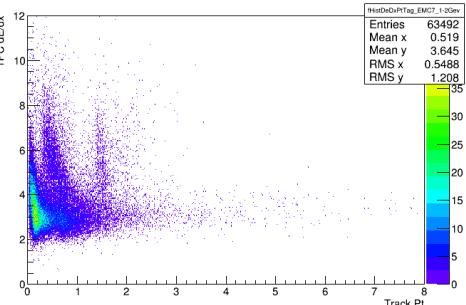
EMC8

EMCJet

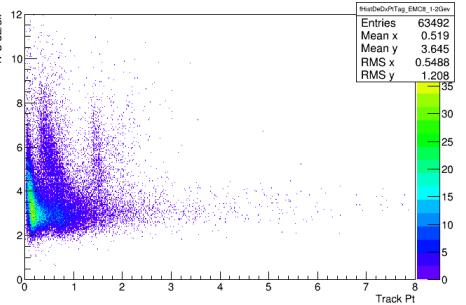
DeDx by Pt for Tracks on the Tag Side of Event with a 1-2Gev pt electron



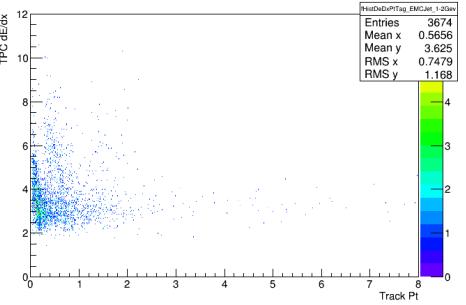
DeDx by Pt for Tracks on the Tag Side of Event with a 1-2Gev pt electron



DeDx by Pt for Tracks on the Tag Side of Event with a 1-2Gev pt electron

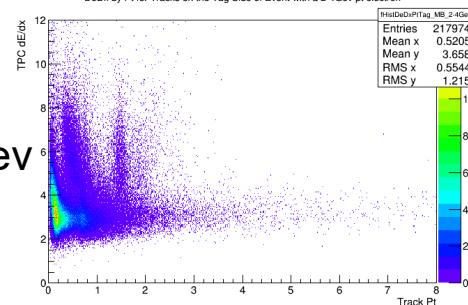


DeDx by Pt for Tracks on the Tag Side of Event with a 1-2Gev pt electron

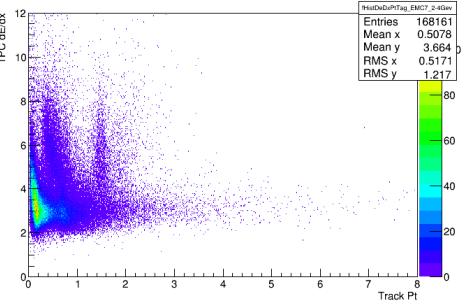


1-2Gev

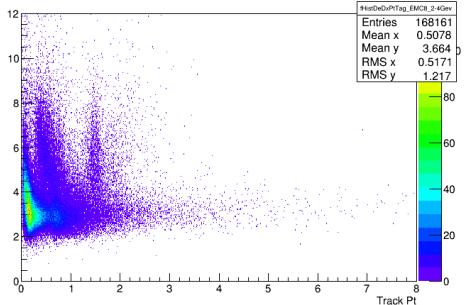
DeDx by Pt for Tracks on the Tag Side of Event with a 2-4Gev pt electron



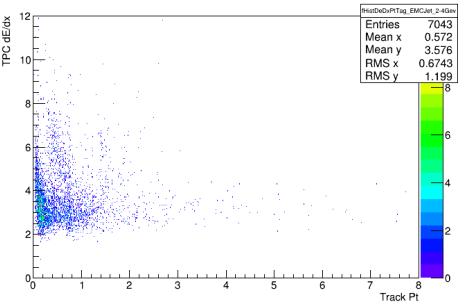
DeDx by Pt for Tracks on the Tag Side of Event with a 2-4Gev pt electron



DeDx by Pt for Tracks on the Tag Side of Event with a 2-4Gev pt electron

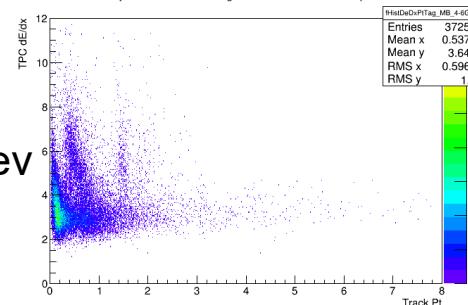


DeDx by Pt for Tracks on the Tag Side of Event with a 2-4Gev pt electron

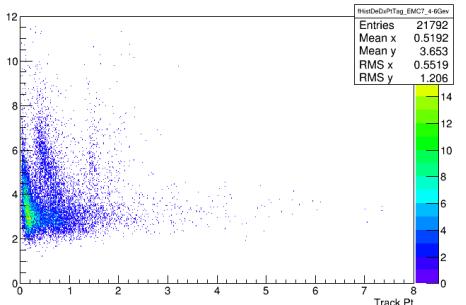


2-4Gev

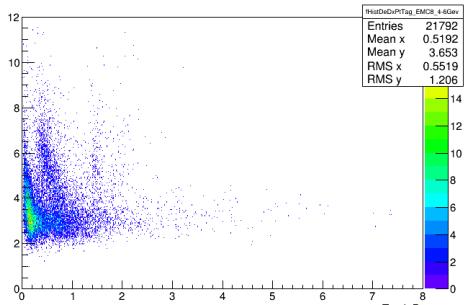
DeDx by Pt for Tracks on the Tag Side of Event with a 4-6Gev pt electron



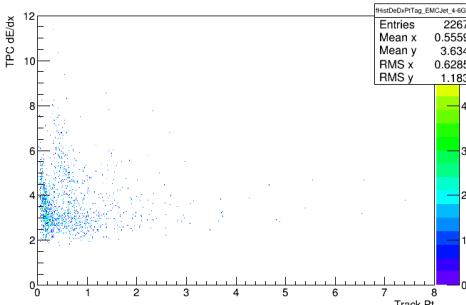
DeDx by Pt for Tracks on the Tag Side of Event with a 4-6Gev pt electron



DeDx by Pt for Tracks on the Tag Side of Event with a 4-6Gev pt electron

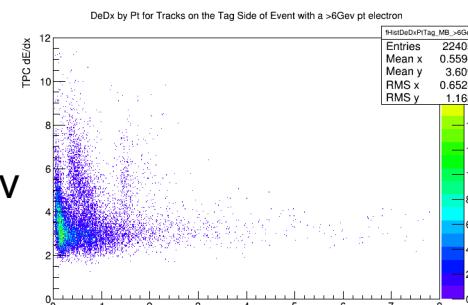


DeDx by Pt for Tracks on the Tag Side of Event with a 4-6Gev pt electron

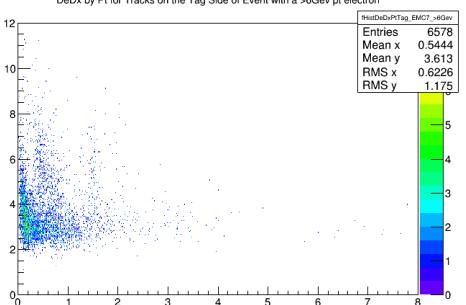


4-6Gev

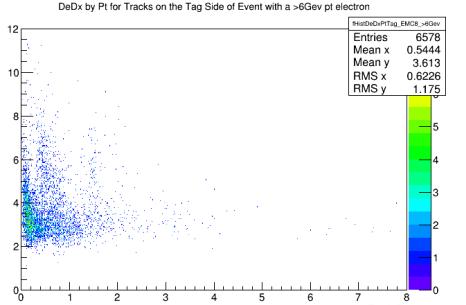
DeDx by Pt for Tracks on the Tag Side of Event with a >6Gev pt electron



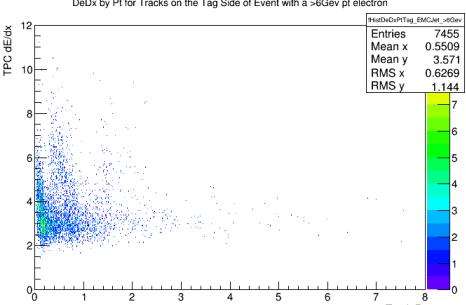
DeDx by Pt for Tracks on the Tag Side of Event with a >6Gev pt electron



DeDx by Pt for Tracks on the Tag Side of Event with a >6Gev pt electron



DeDx by Pt for Tracks on the Tag Side of Event with a >6Gev pt electron



>6Gev

Away Side Min-Bias

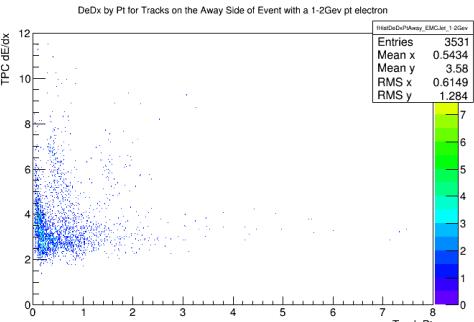
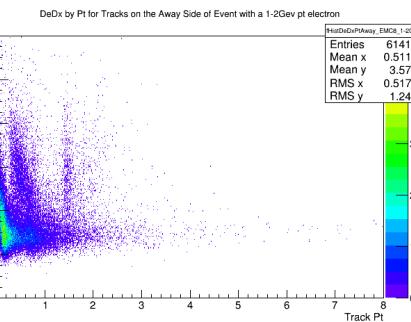
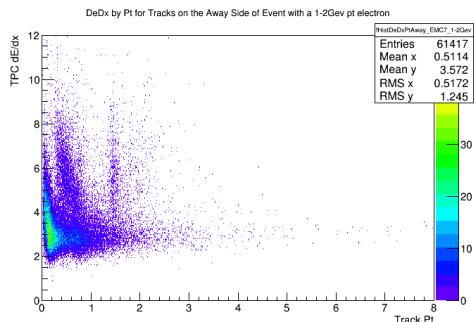
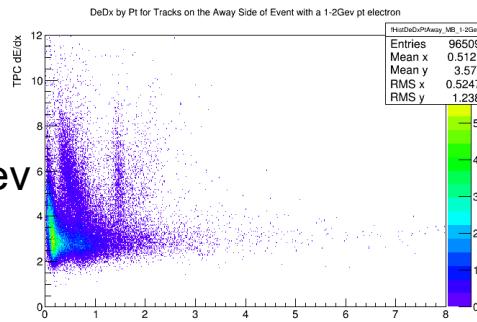
dE/dx v. Pt

EMC7

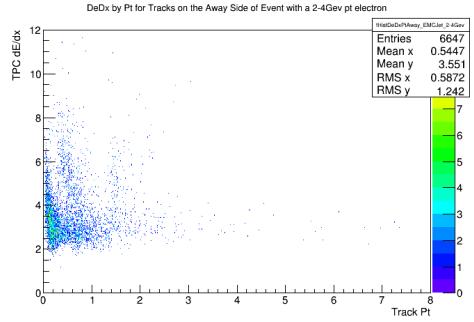
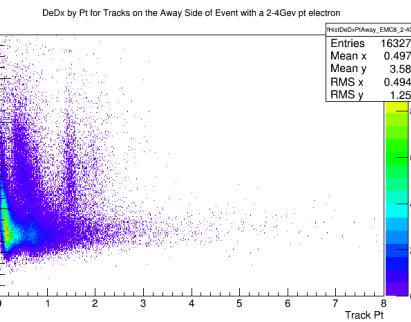
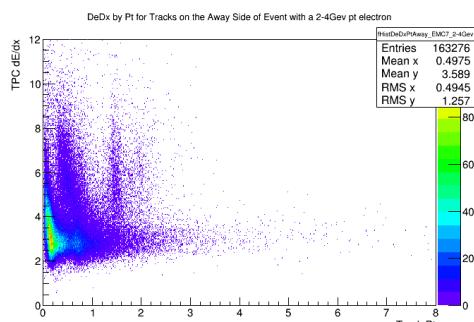
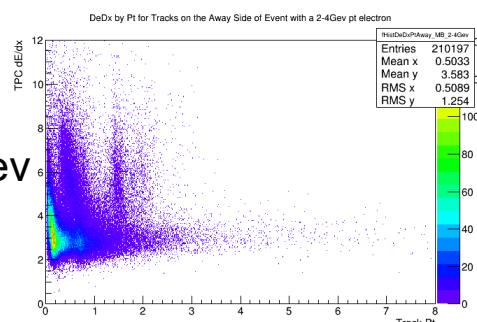
EMC8

EMCJet

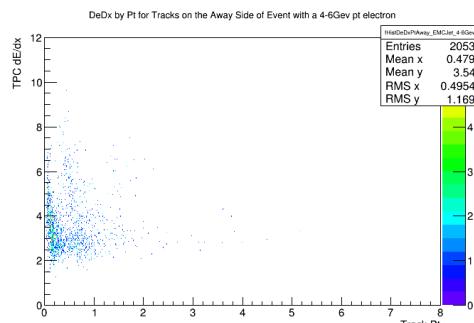
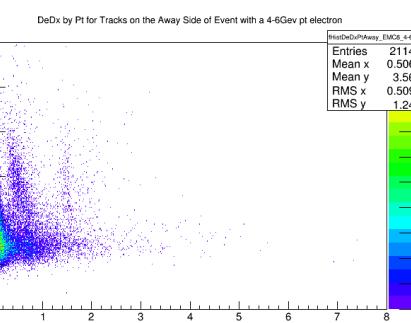
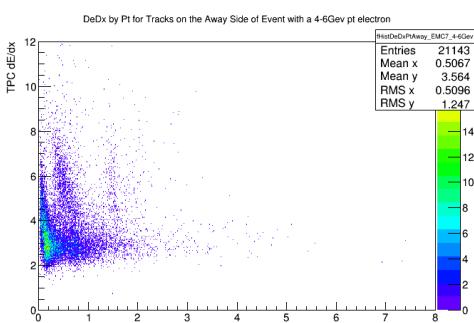
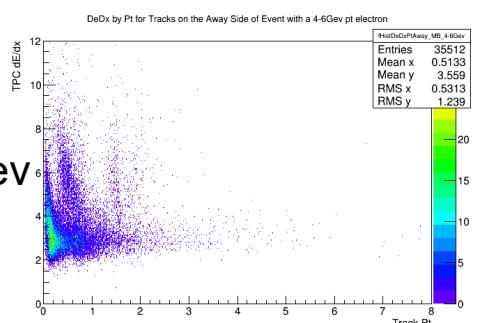
1-2Gev



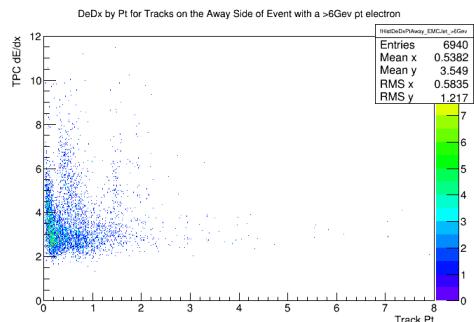
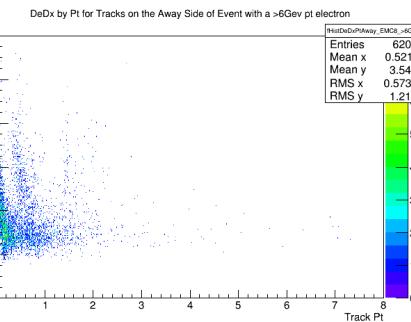
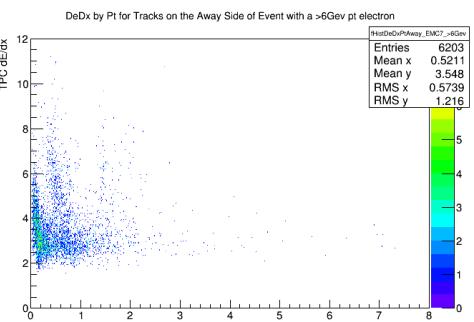
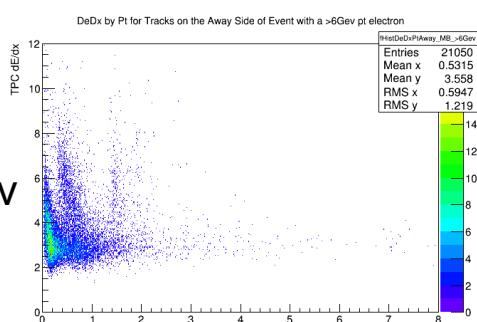
2-4Gev



4-6Gev



>6Gev



TransMin Side

Min-Bias

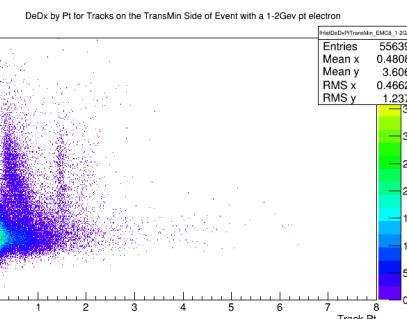
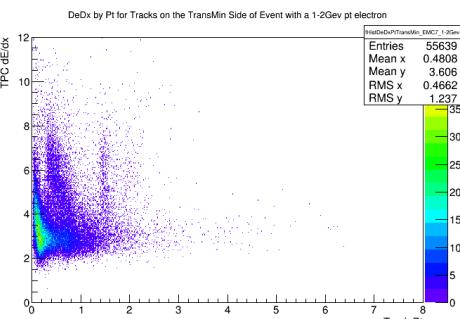
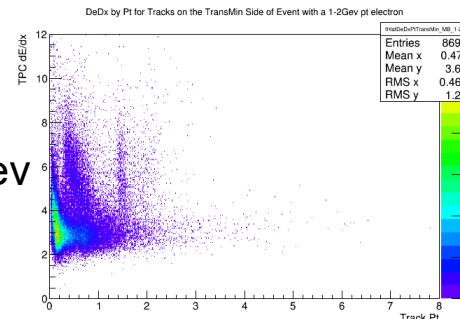
dE/dx v. Pt

EMC7

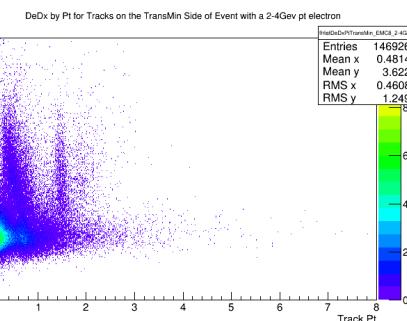
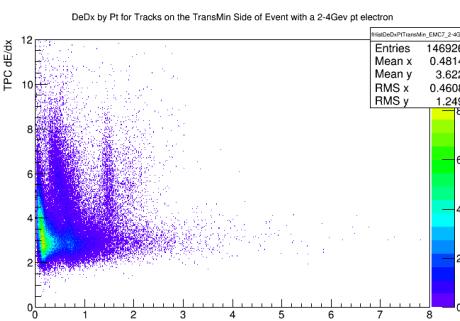
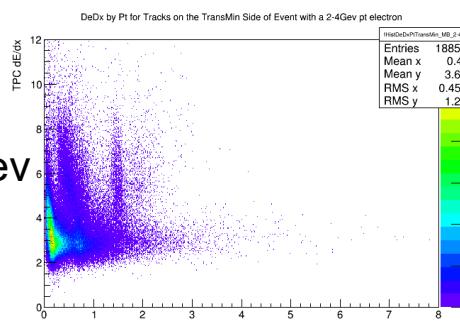
EMC8

EMCJet

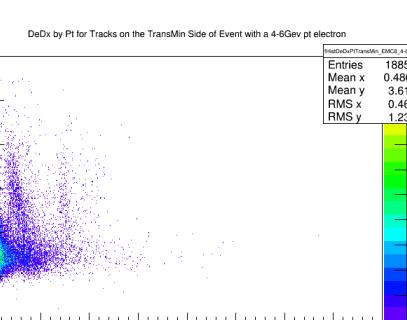
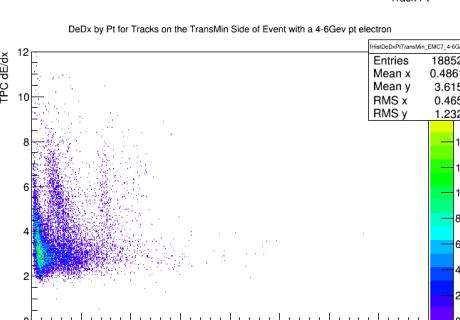
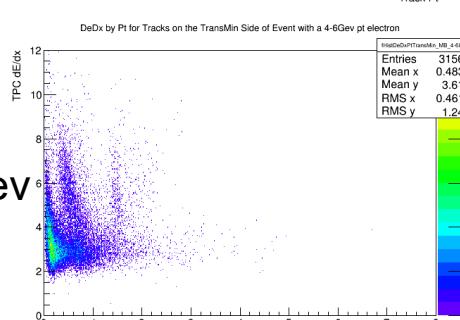
1-2Gev



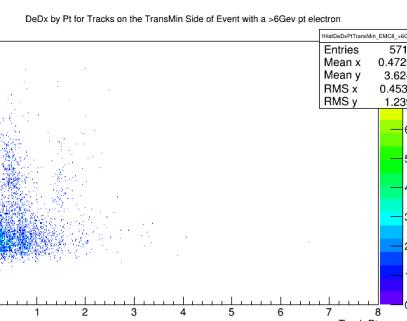
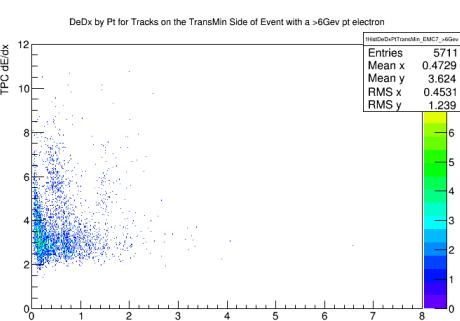
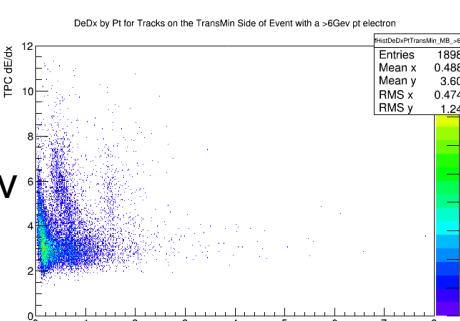
2-4Gev



4-6Gev



>6Gev



TransMax Side

Min-Bias

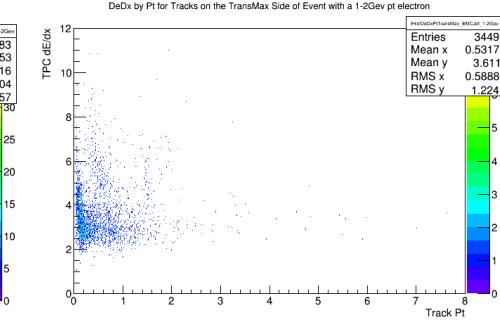
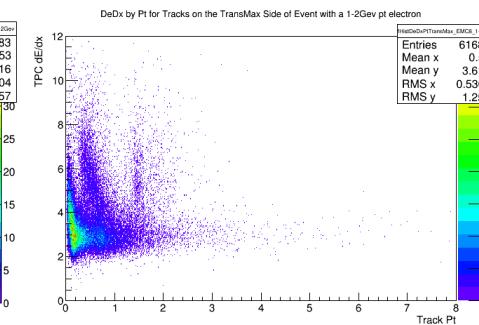
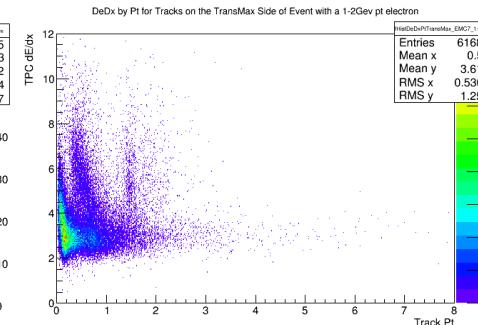
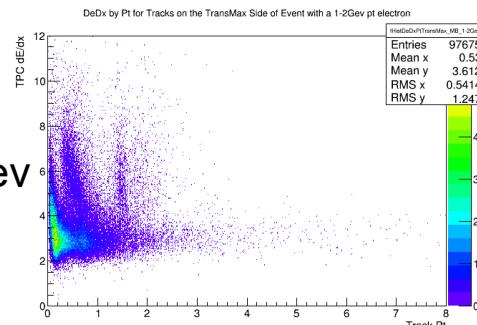
dE/dx v. Pt

EMC7

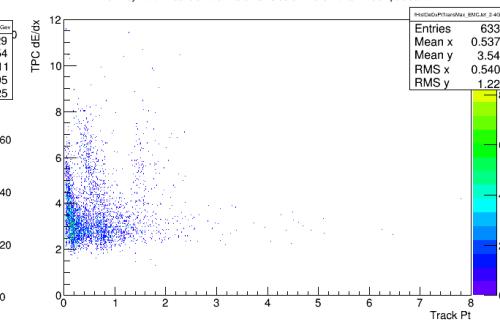
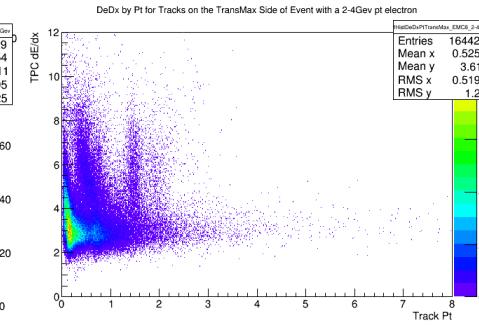
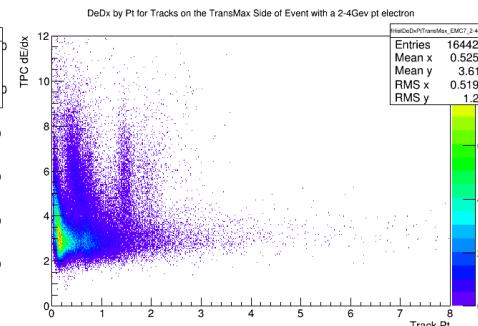
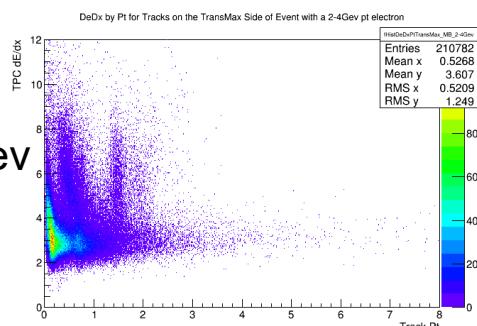
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EMCJet

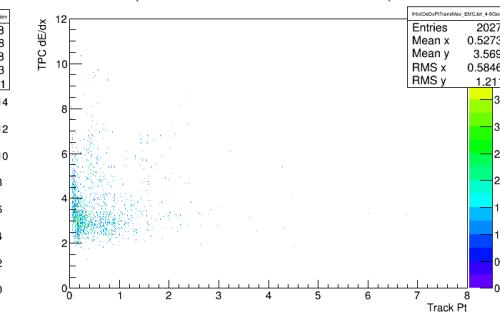
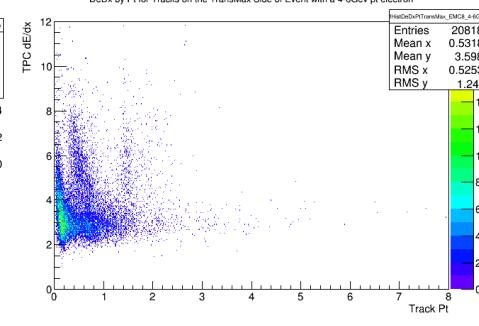
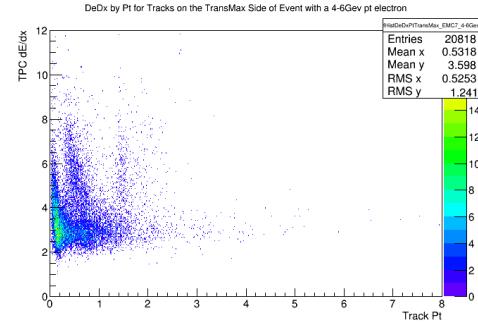
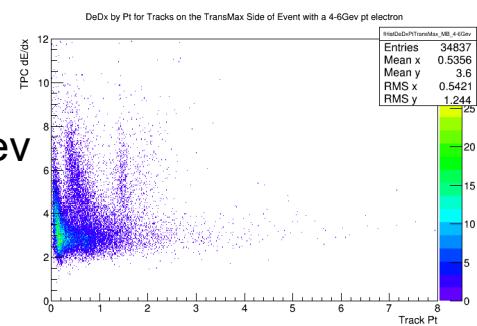
1-2Gev



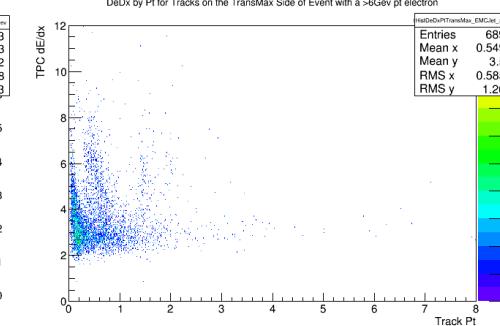
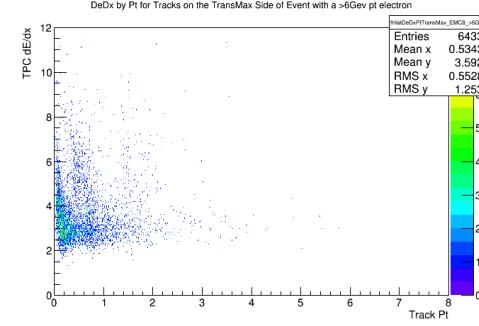
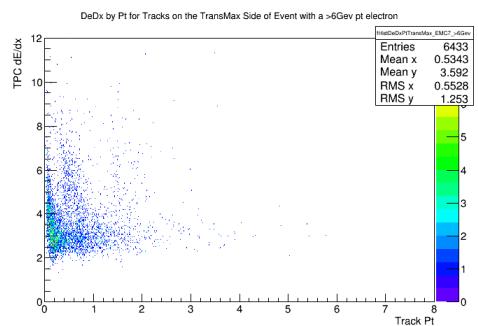
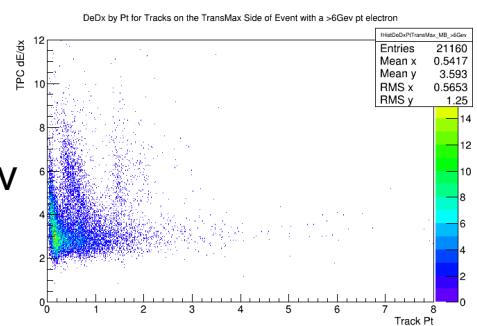
2-4Gev



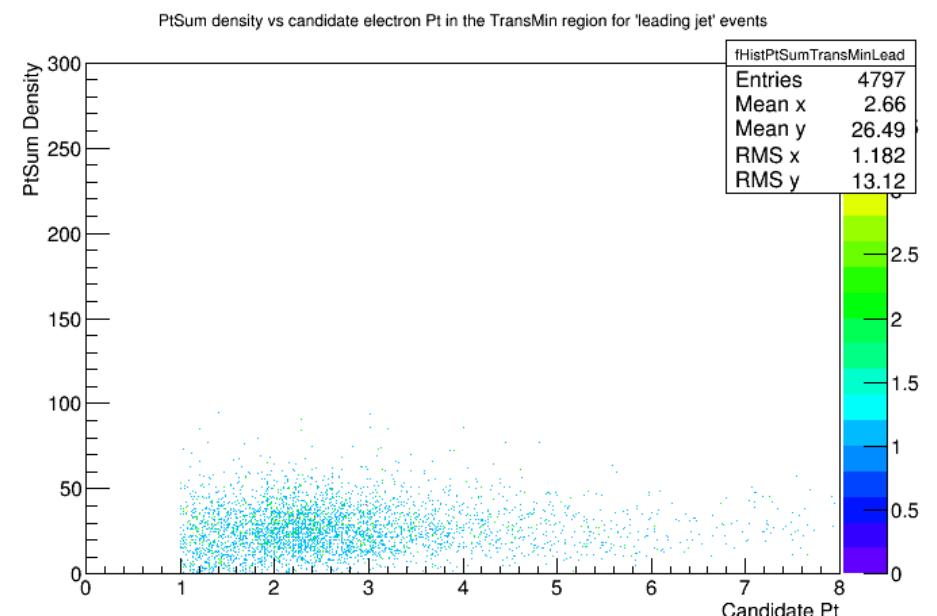
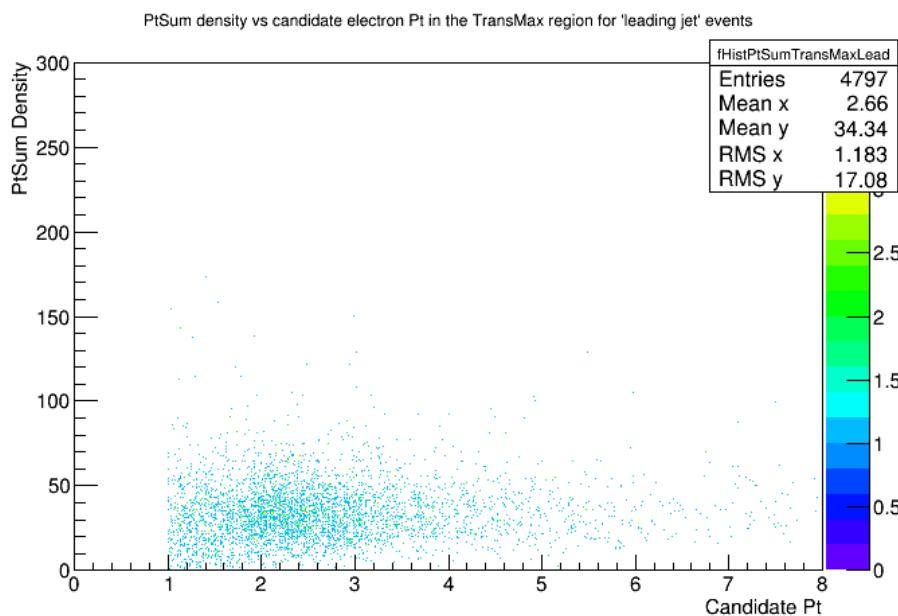
4-6Gev



>6Gev



Pt Sum Density for events with one candidate in the “tag-side” and none in the “away-side”



Notes on the Region plots

— \ (†) / —