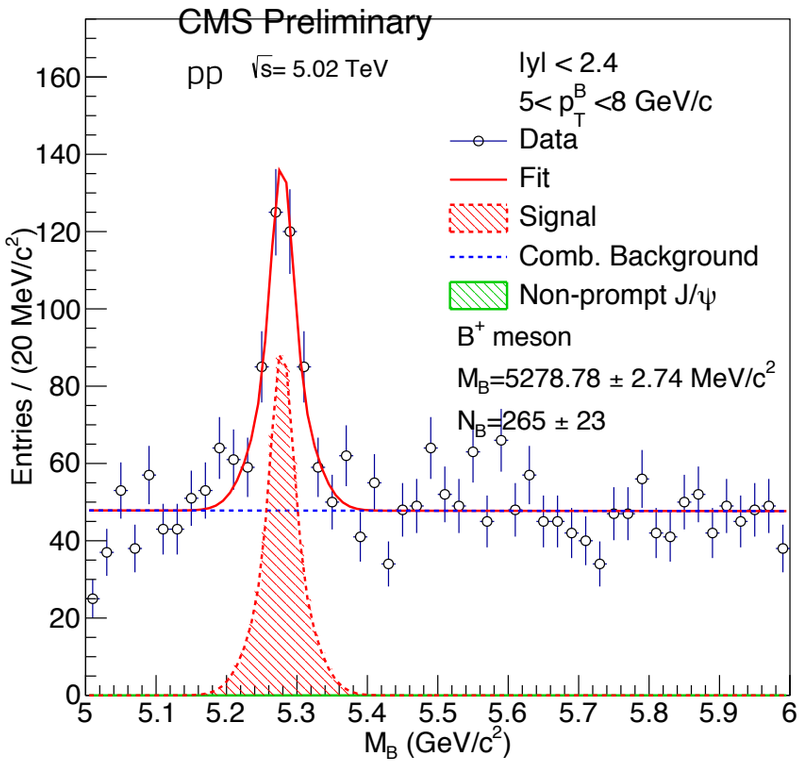
B background function study

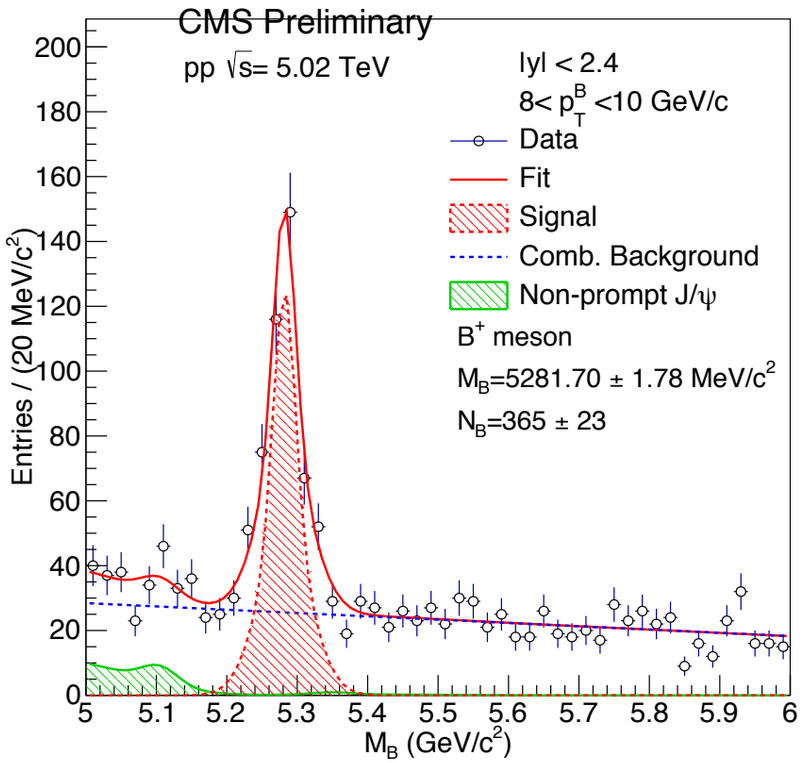
KiSoo Lee

Previously

$5 < p_T < 8$

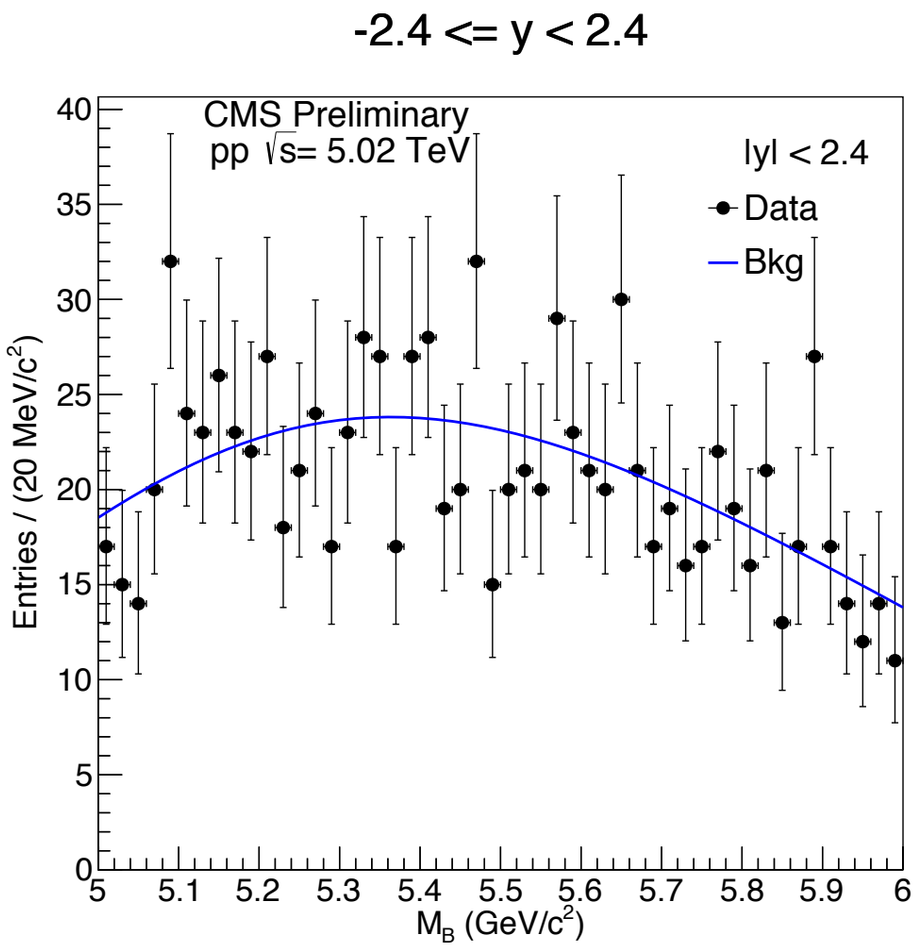


$8 < p_T < 10$



- For the pp case background function does not describe $5 < p_T < 8$ region well
- Need to find proper background function
  - Same sign

Same sign distribution(pp)

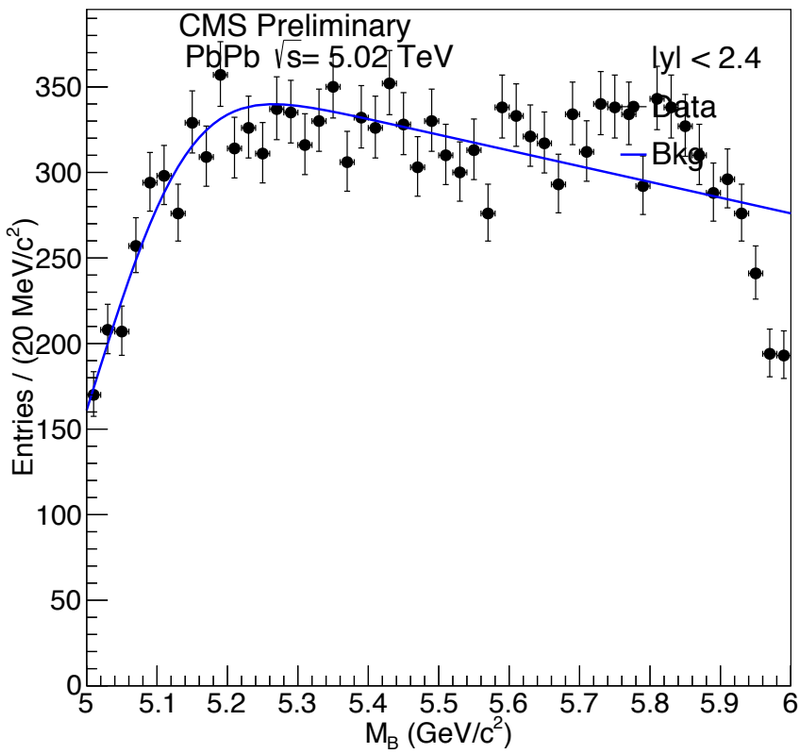


$$Bkg = (Erf((x-p_1)/p_2)+1)(p_3x+p_4)$$

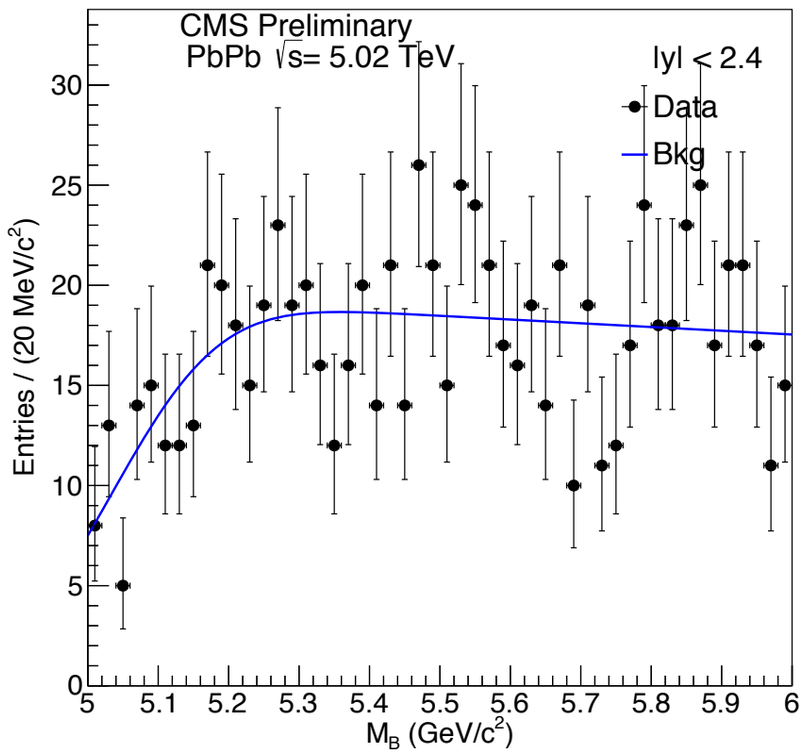
- Due to poor statistics, all p_T regions are integrated
- Statistics are not enough to convince fitting is proper or not

Same sign distribution(PbPb)

5.0 <= pt < 8.0



8.0 <= pt < 10.0



- Same background functions are applied to PbPb same sign
- Almost events are located in the $5 < p_T < 8$ region
- For PbPb case around 6 GeV also fall down
- Peaks from other B also not found in the same sign

Summary

- New background function is tested with same sign
- pp same sign statistics was too poor to fitting
- PbPb same sign is not fit with the background function in the high mass region
- MC skim is ready
  - Not merged yet
  - New background can be tested in the opposite sign anyway

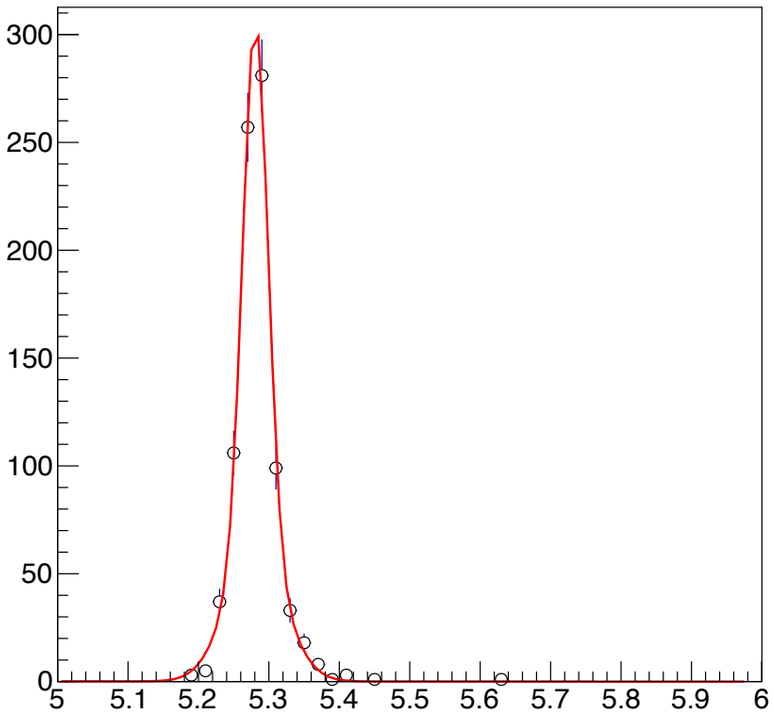
back up

Ntuple

- new ntuple with new skim is ready
- PbPb
- JSON file: /afs/cern.ch/cms/CAF/CMSCOMM/COMM_DQM/certification/Collisions15/HI/Cert_262548-263757_PromptReco_HICollisions15_JSON_MuonPhys_v2.txt
- Global Tag: 75X_dataRun2_v12
- Location: /xrootd/store/user/goni/160323_HIPromptReco**(KISTI)**
- pp
- Location: /xrootd/store/user/goni/PromptReco/DoubleMu_Run2015E-PromptReco-v1_Run_262081_262328_ONIASKIM_160116/DoubleMu/DoubleMu_Run2015E-PromptReco-v1_Run_262081_262328_ONIASKIM_160116/160115_152651/0000**(KISTI)**
- MC
- Hyunchul is working on(Current MC file is not available to obtain correct efficiency)

Fitting function

1. Fit MC with two Gaussian



σ of each Gaussian and ratio between two Gaussian is determined

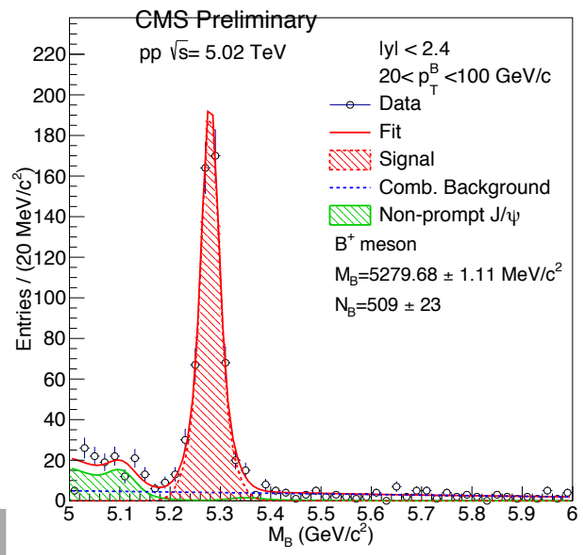
2. Peak from Other B

$$A\times\frac{1}{\sqrt{2\pi}\,\sigma_1}e^{-\frac{(x-\mu_1)^2}{2\sigma_1^2}}+B\times\frac{1}{\sqrt{2\pi}\,\sigma_2}e^{-\frac{(x-\mu_2)^2}{2\sigma_2^2}}+C\left(D\times e^{-\frac{(x-\mu_3)^2}{2\sigma_3^2}}+E\times e^{-\frac{(x-\mu_4)^2}{2\sigma_4^2}}\right)$$

Obtained from MC RECO study
Every parameters are constant

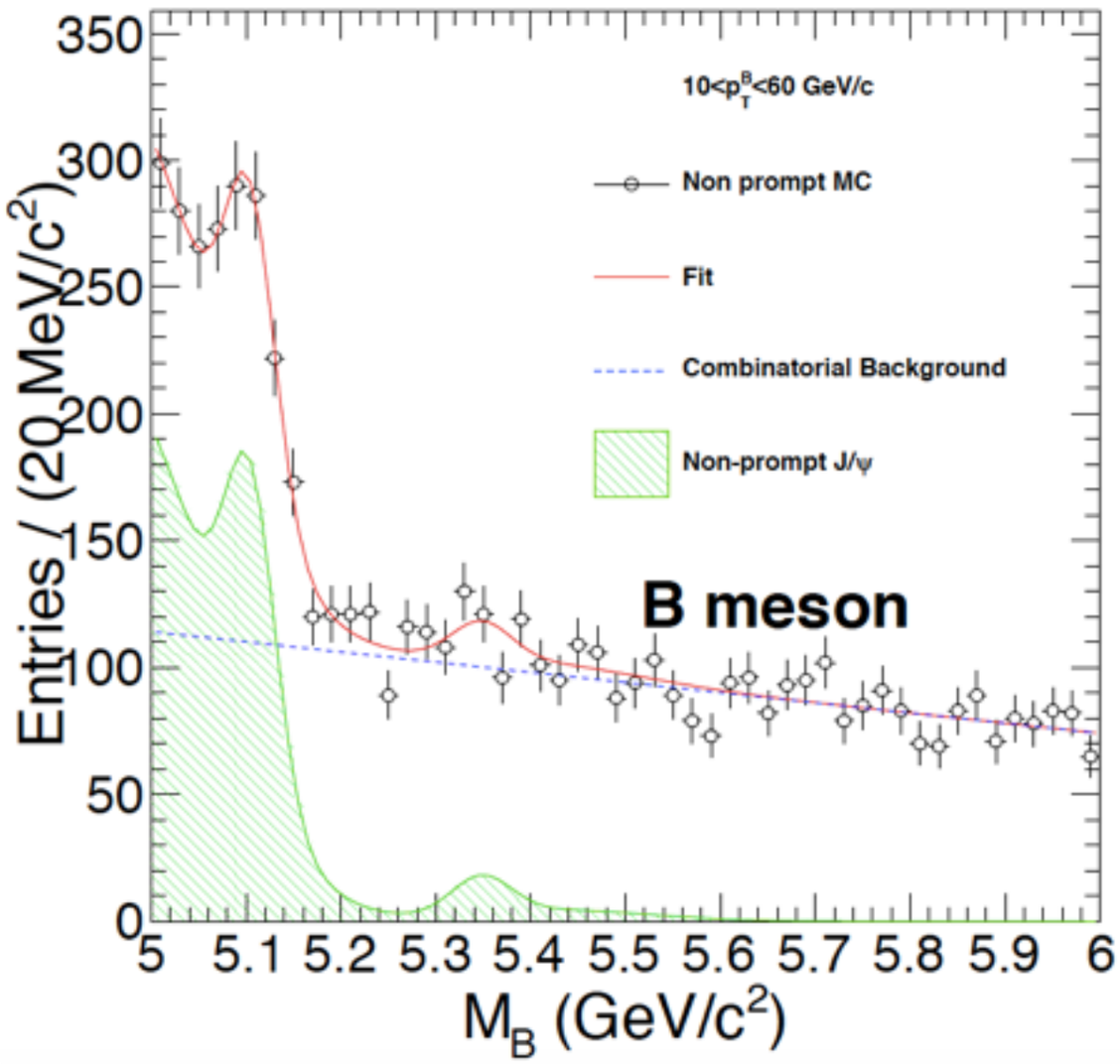
3. Total fit

Signal + Other B + Bkg.

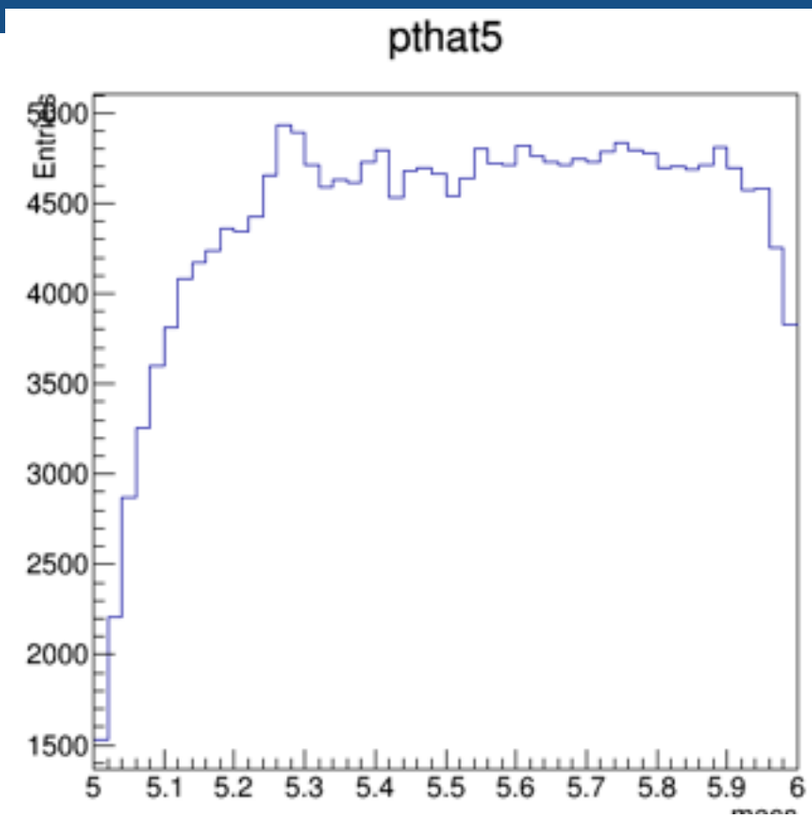


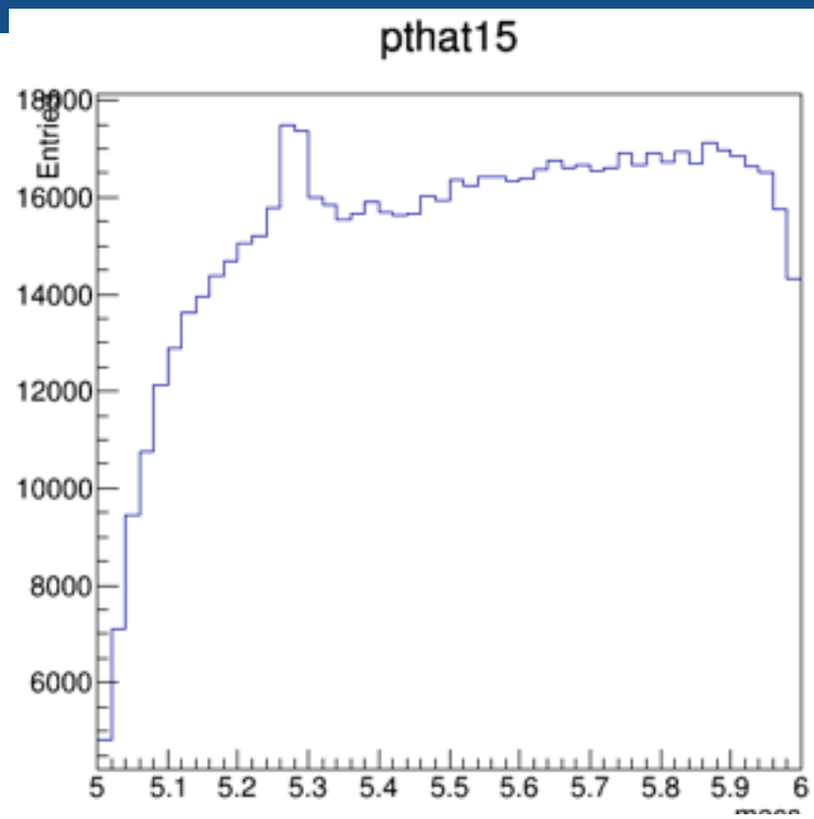
Non-Prompt shape

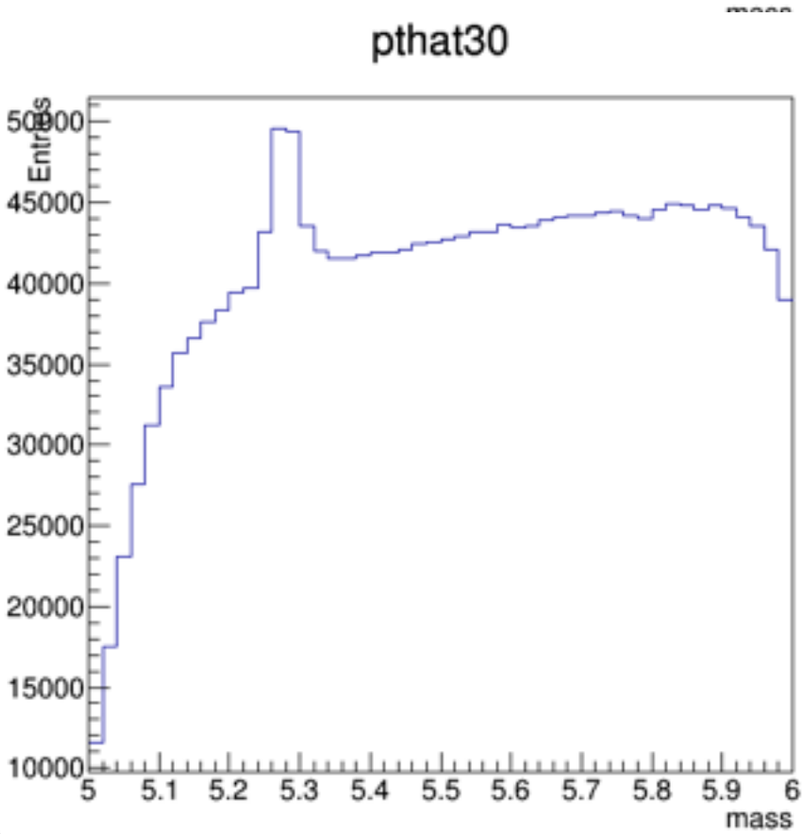
- 1. $B^+ \rightarrow J/\psi + \pi^+$(Double Gaussian)
- 2. Muti-body decay(Gaussian)
  - e.g.) $B^+ \rightarrow J/\psi + K^*(892)^+$

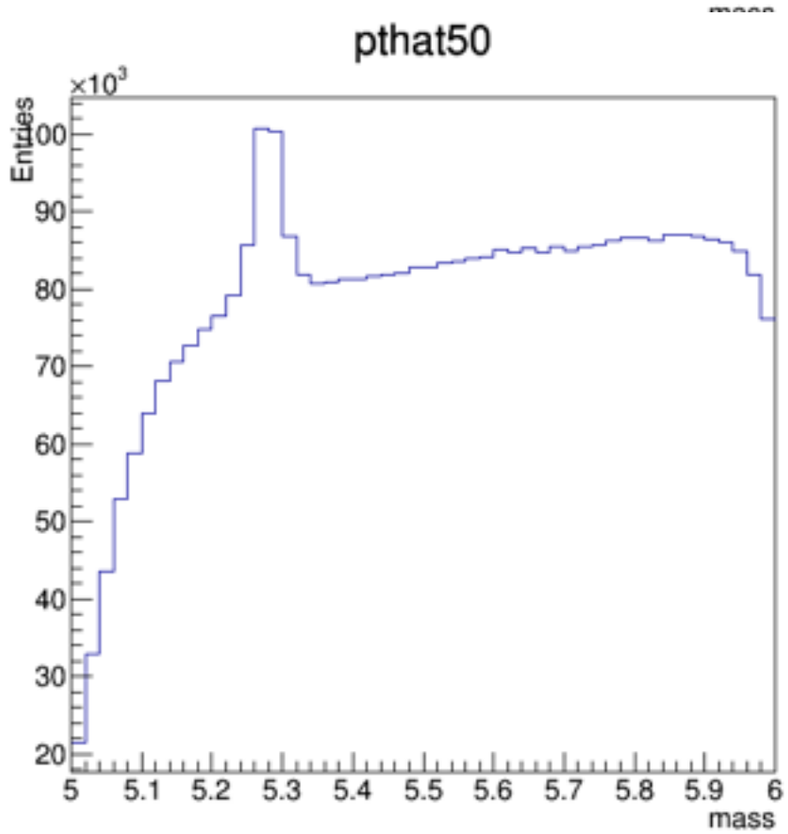


MC check Reco Mass

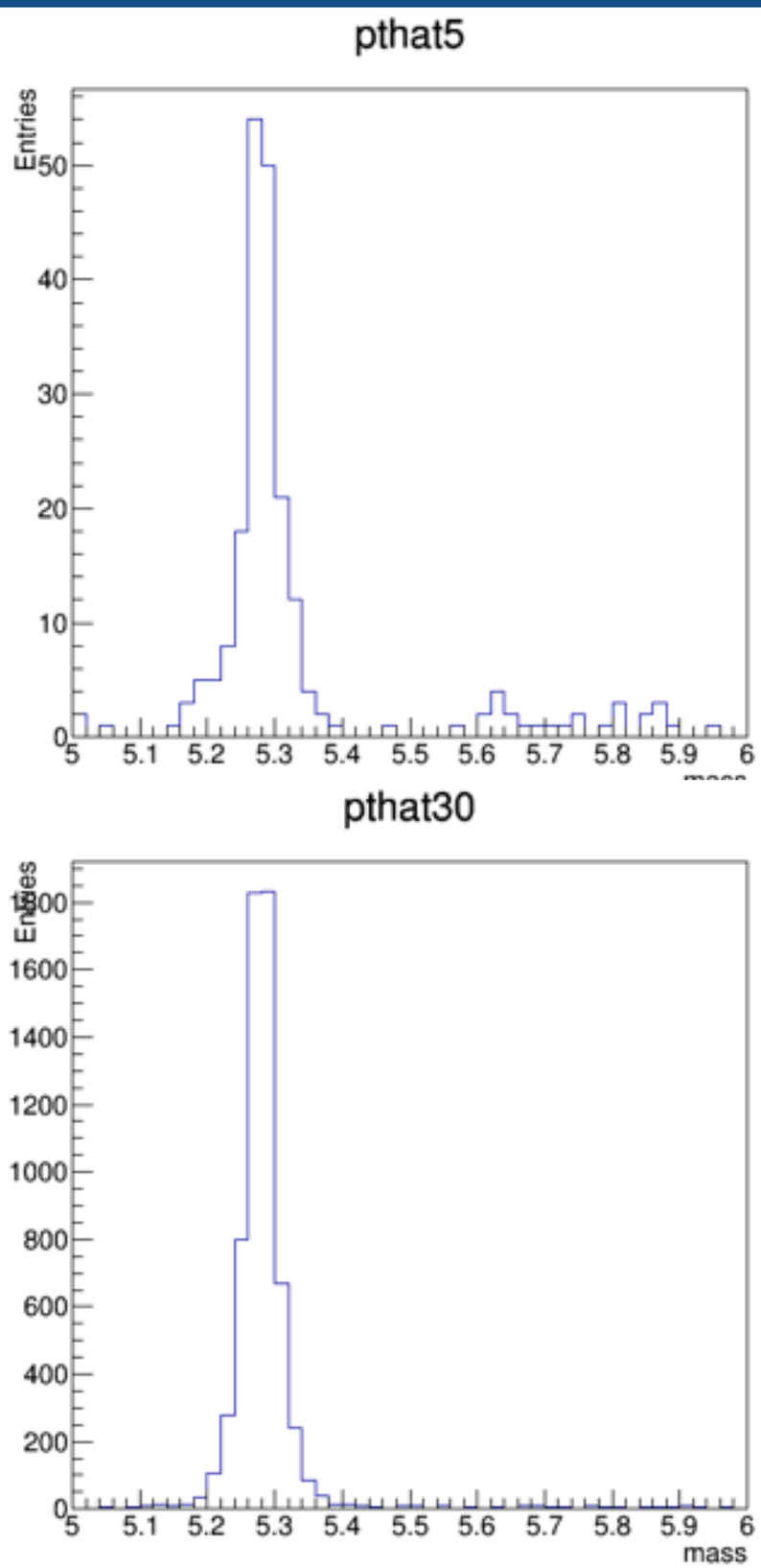


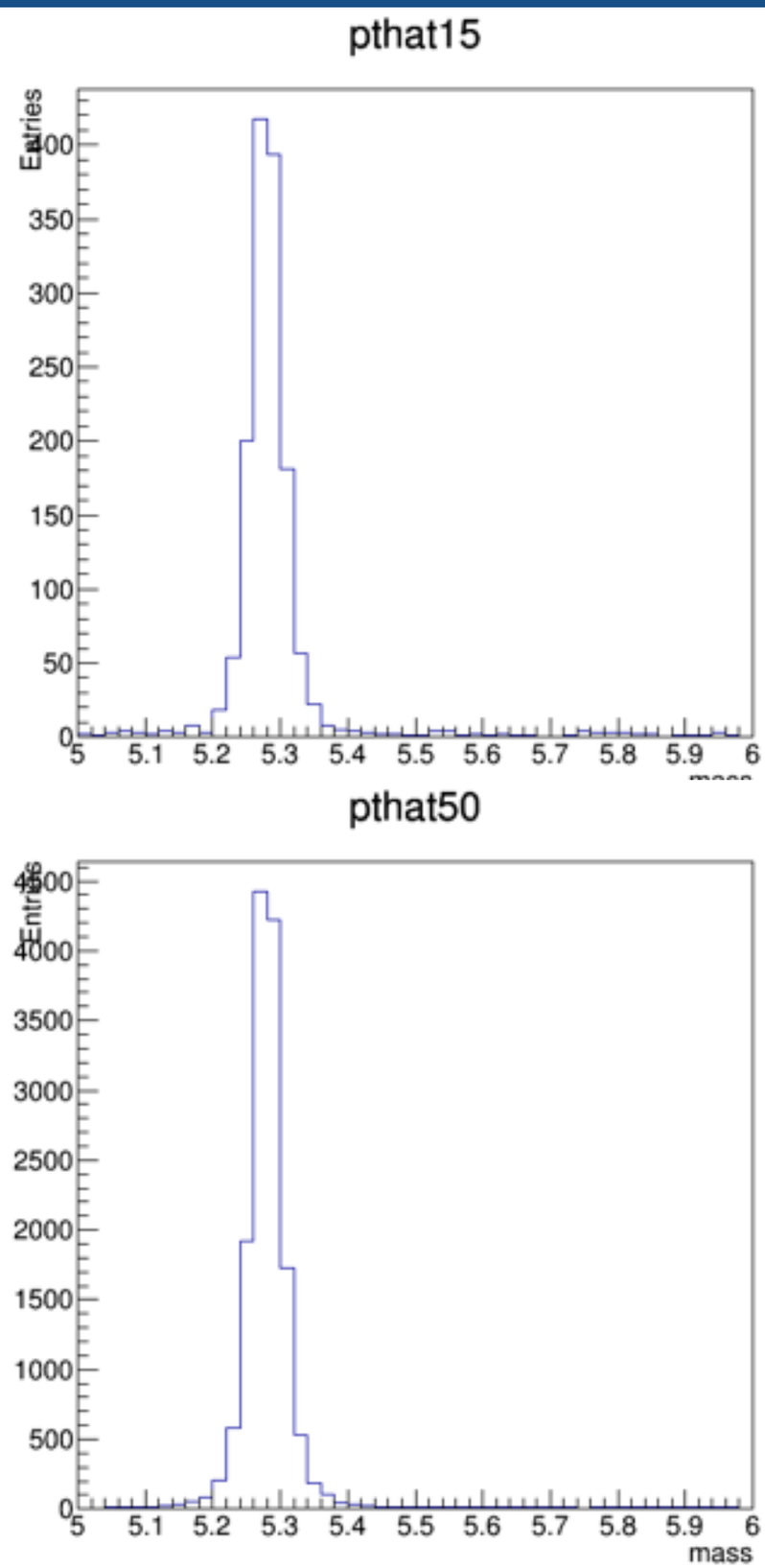




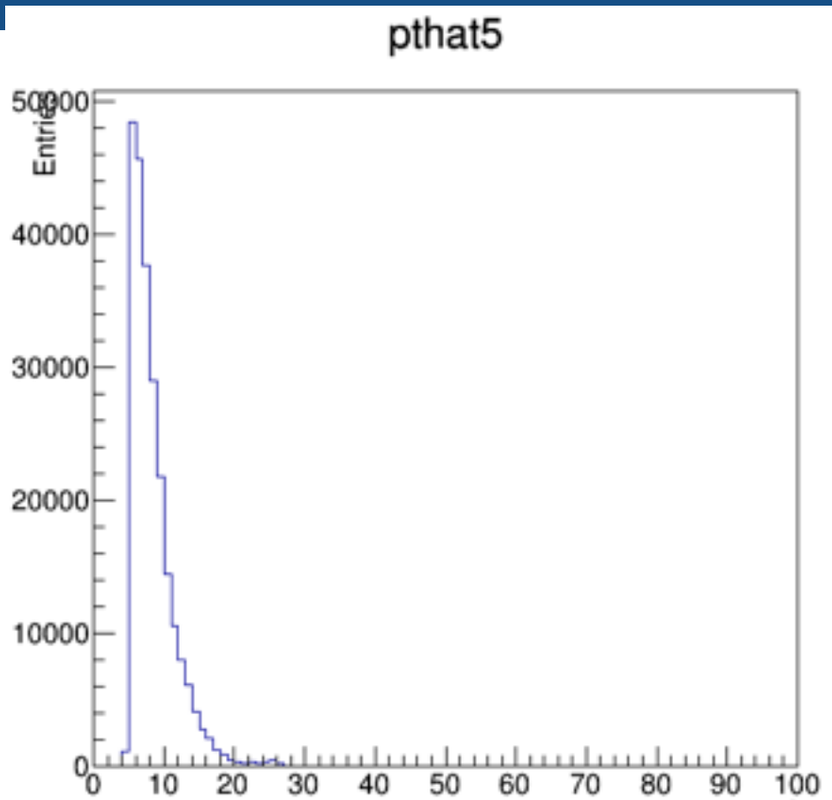


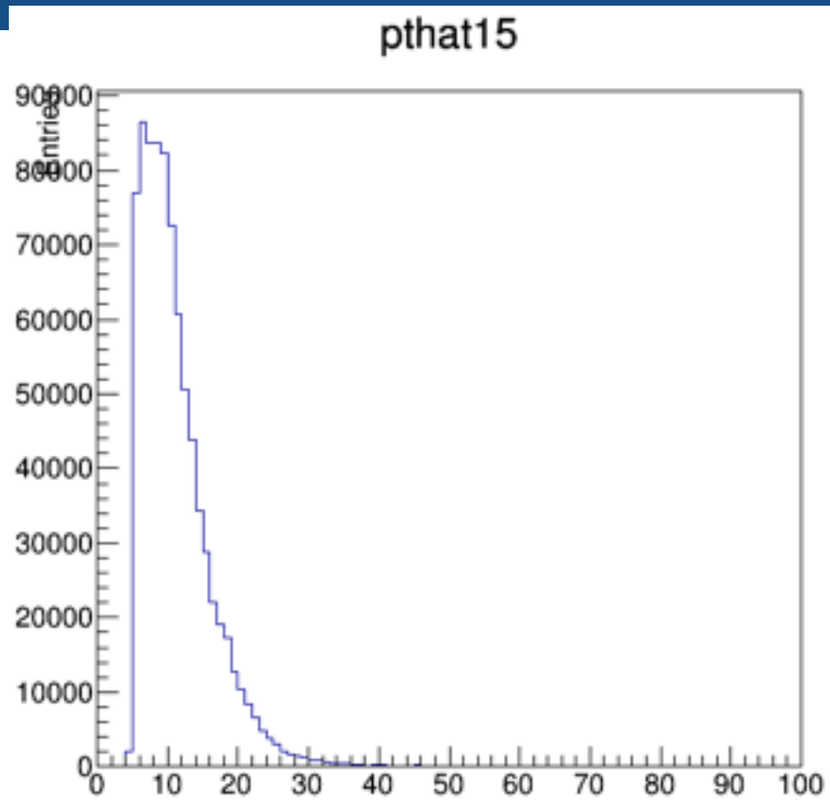
MC check Reco Mass(id=521)

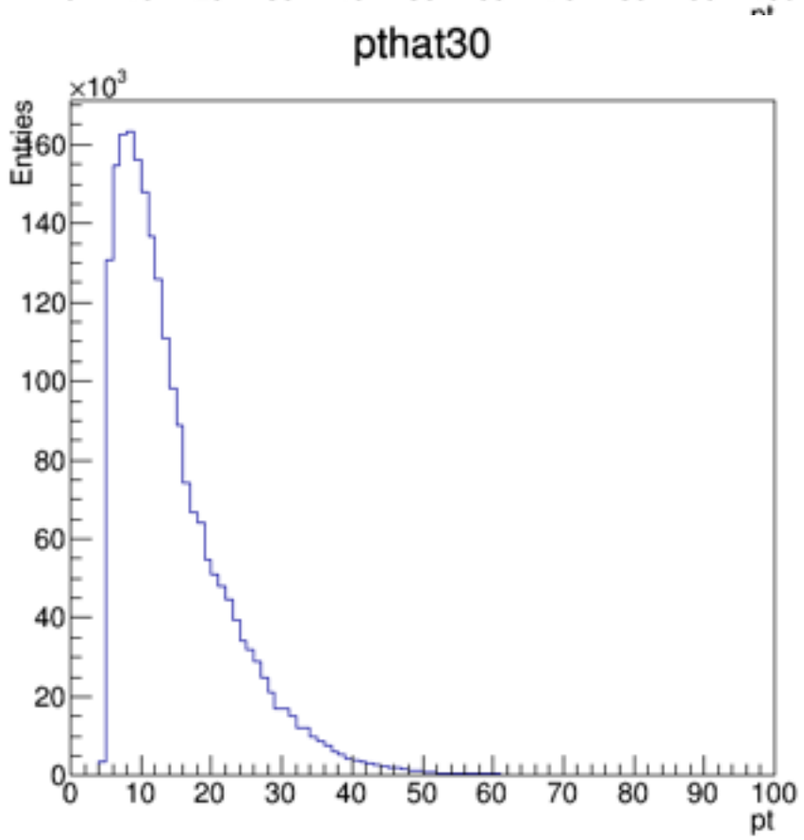


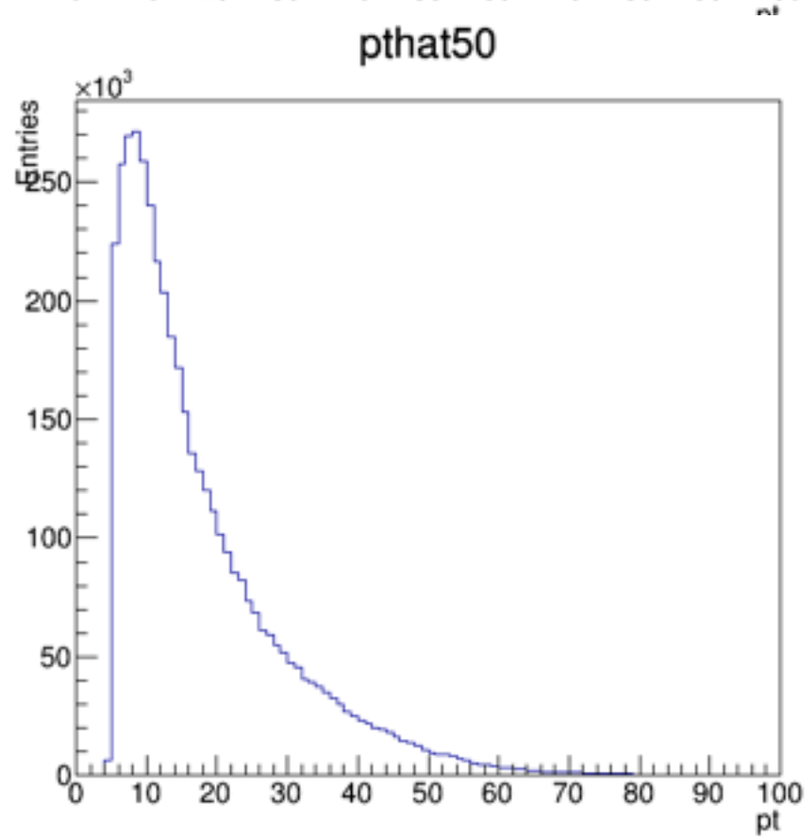


MC check Reco Pt









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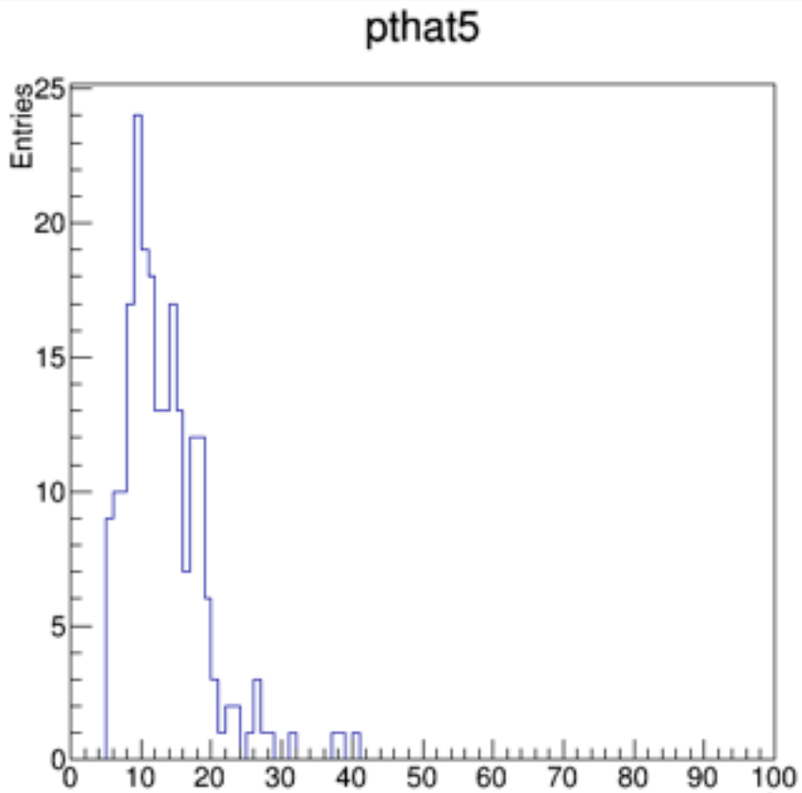
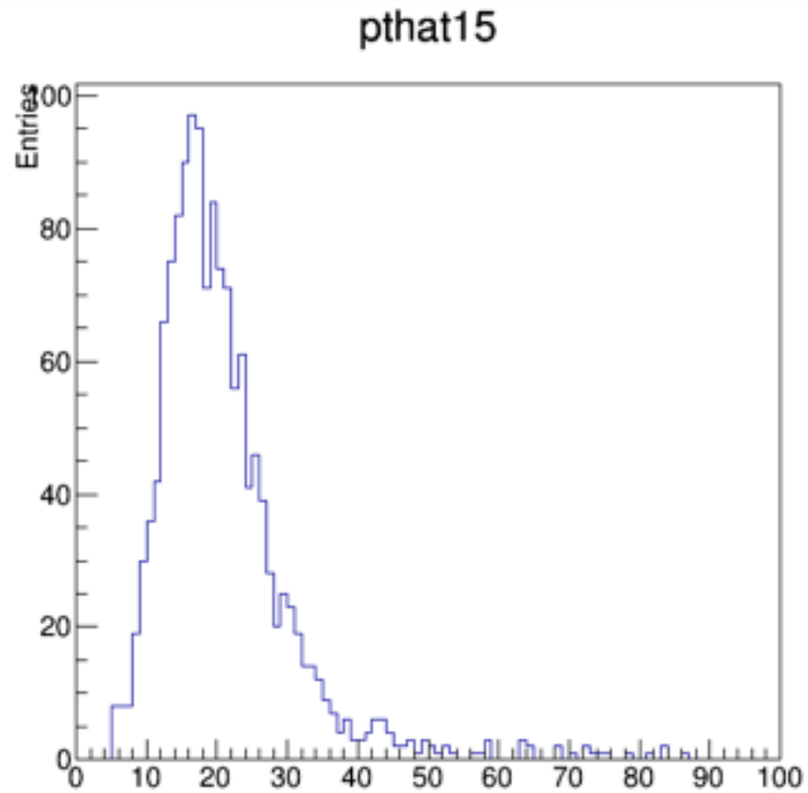
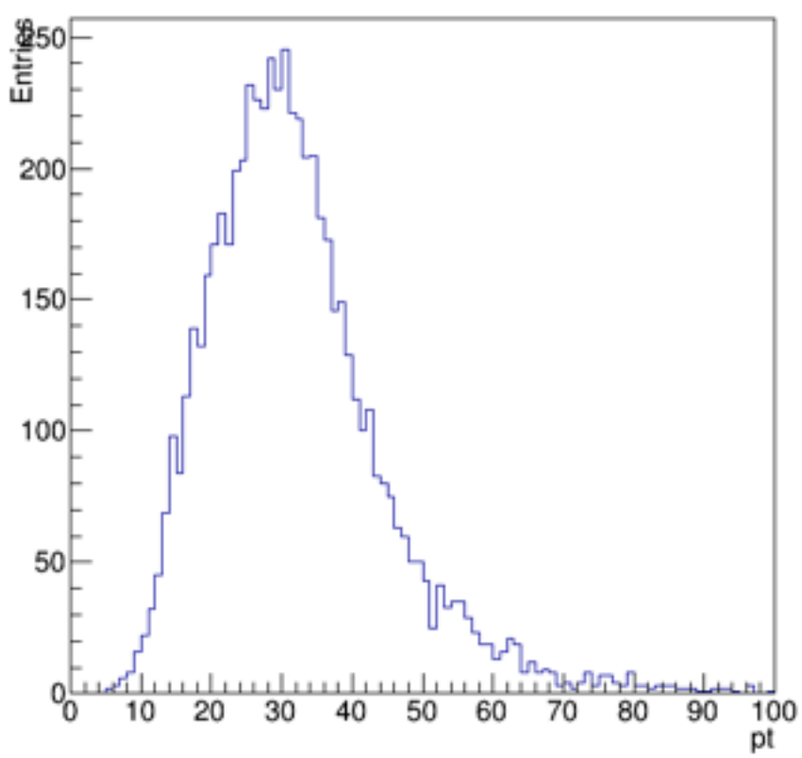
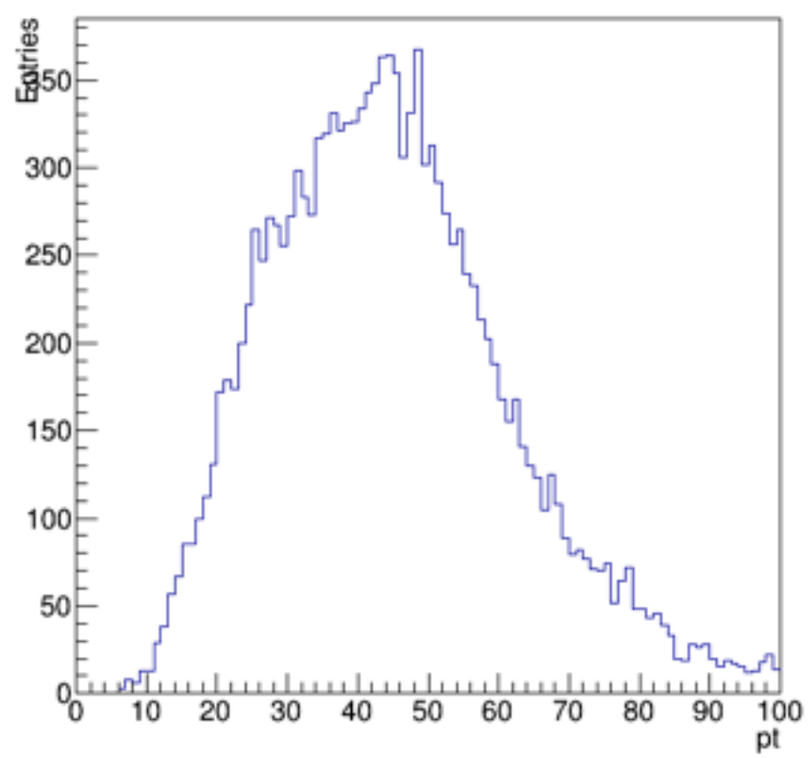
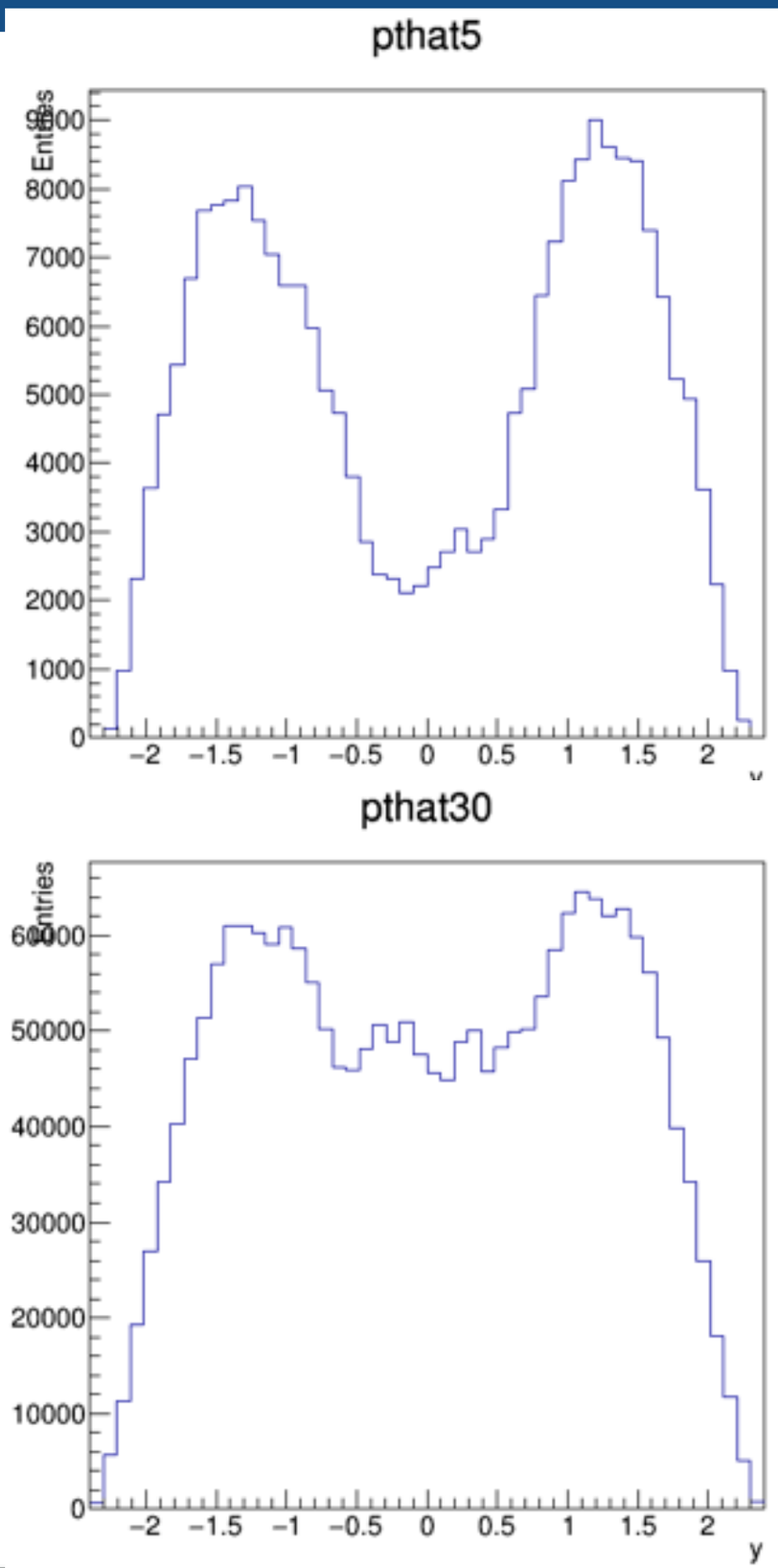


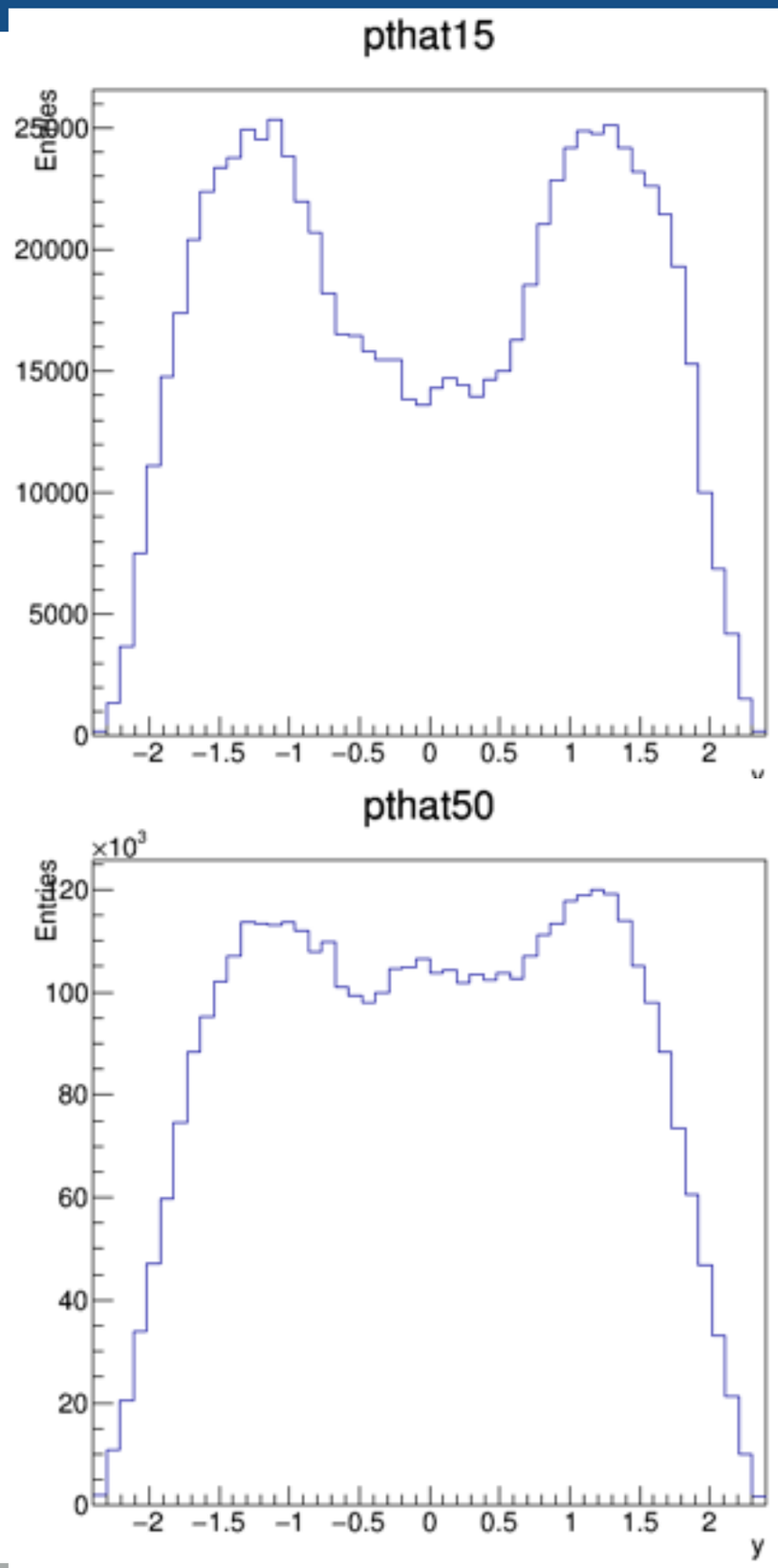






MC check Reco Rapidity





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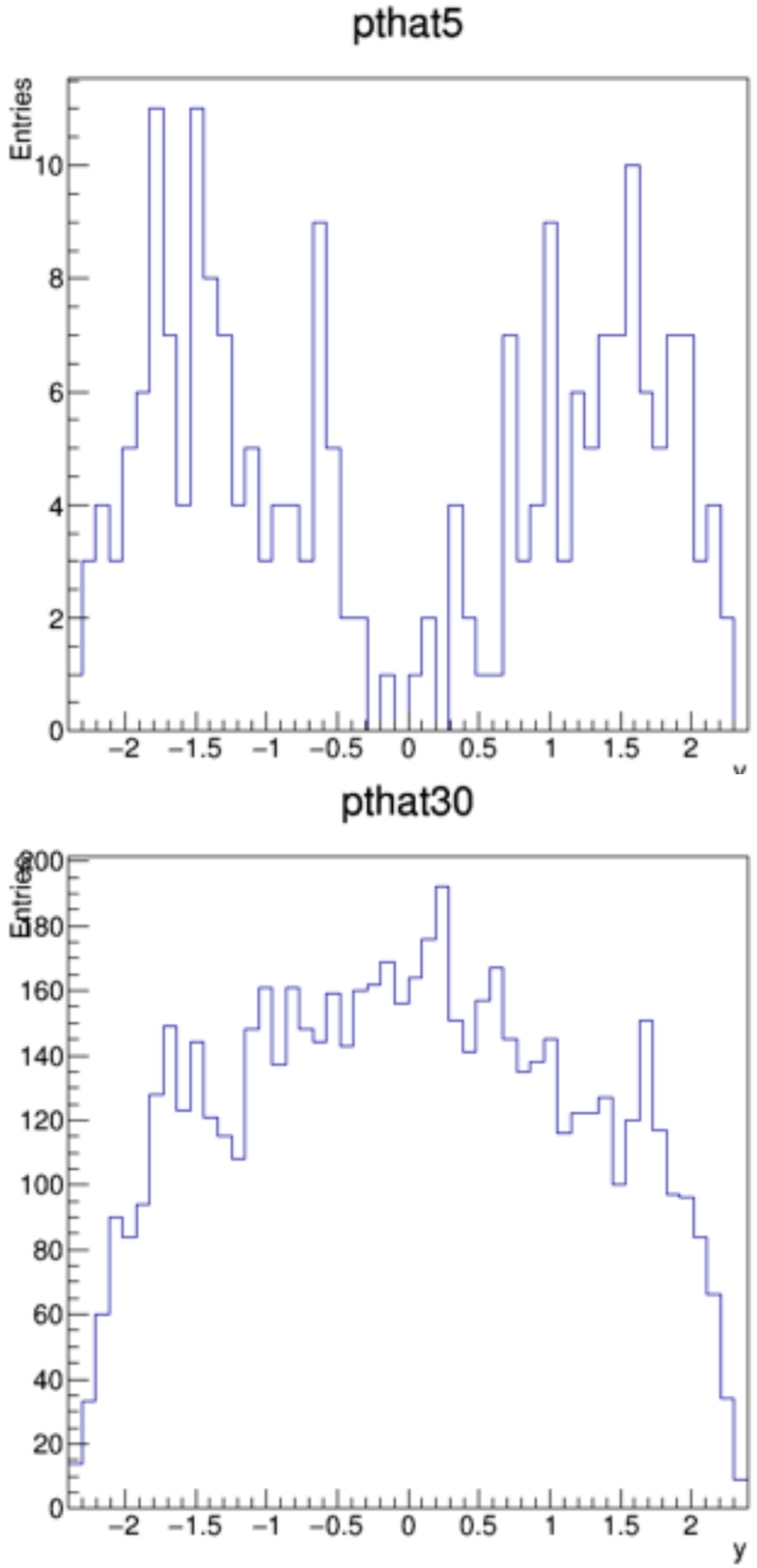

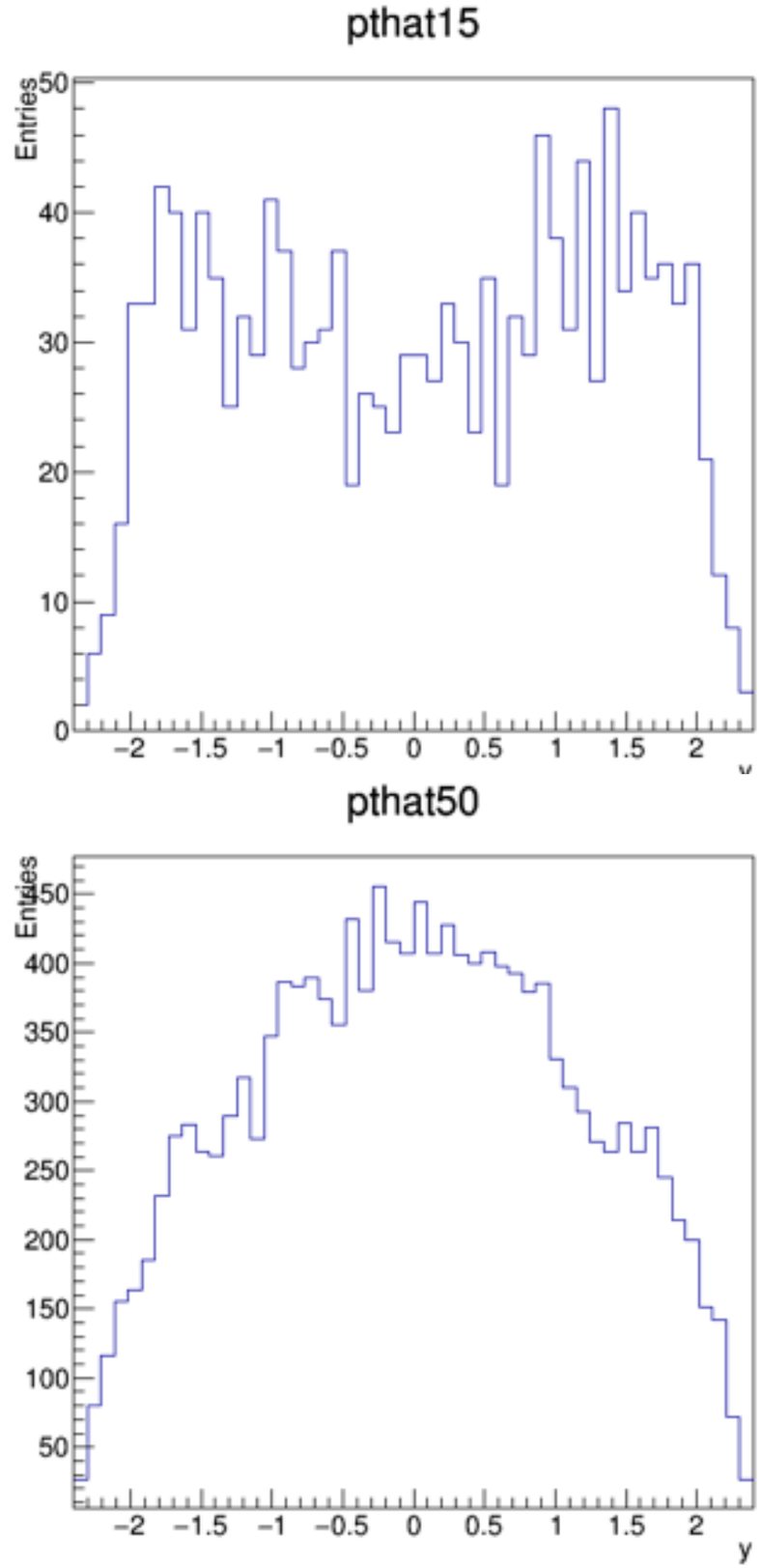

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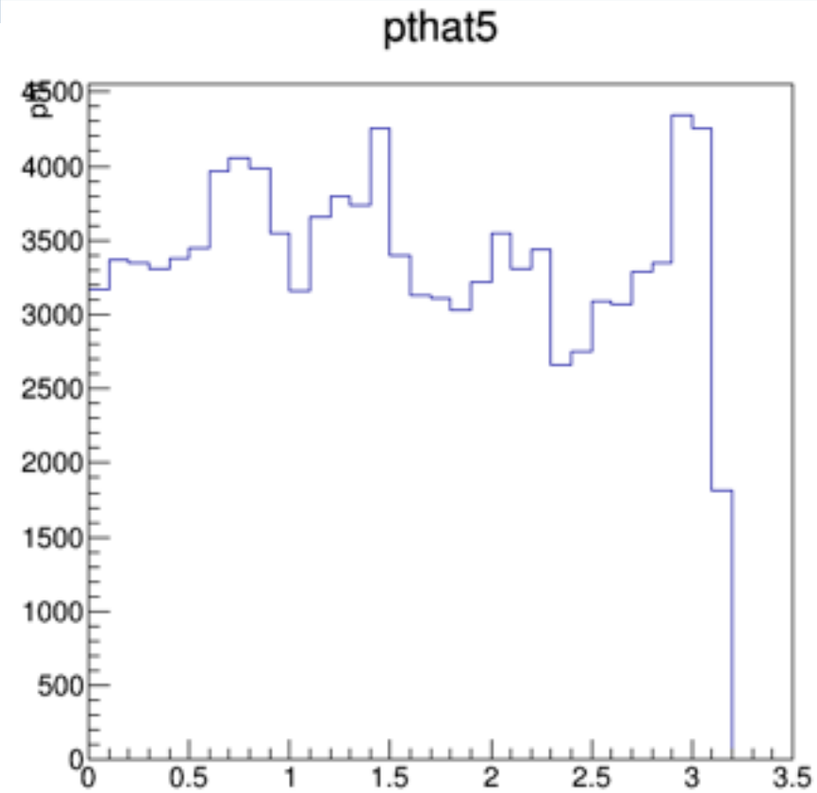

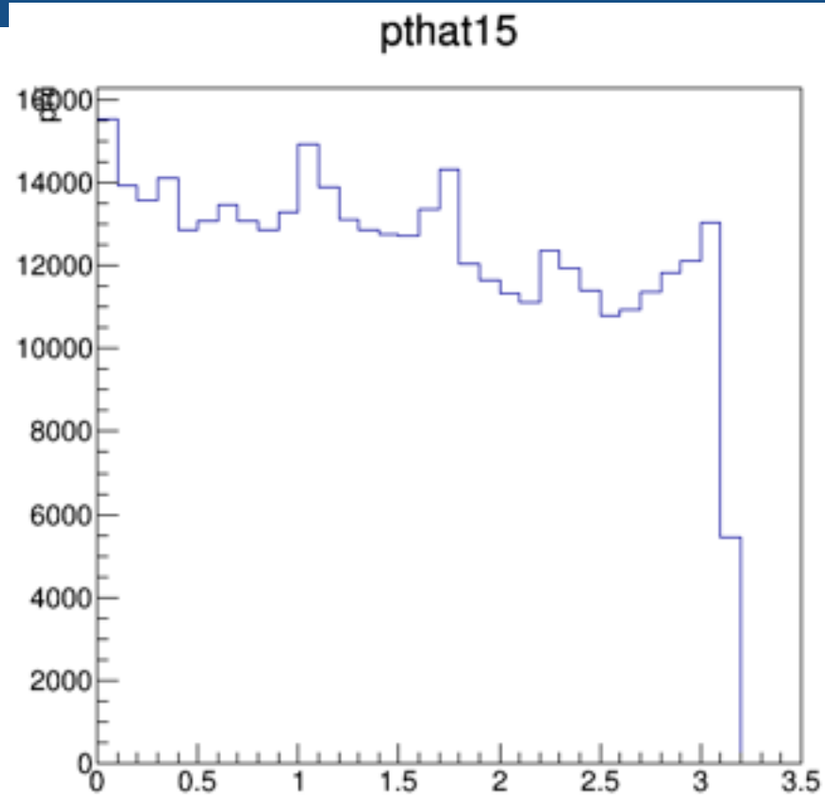

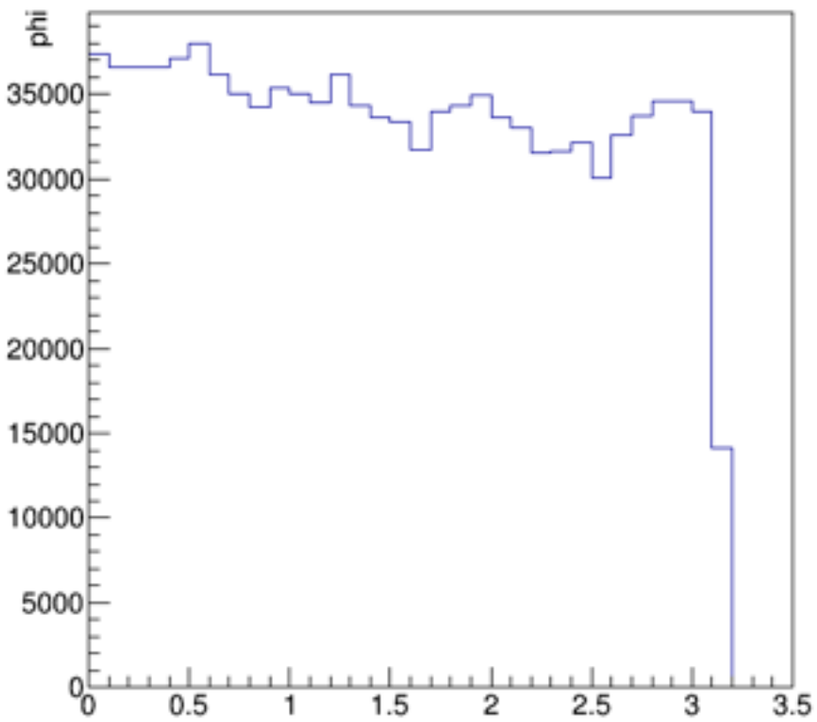

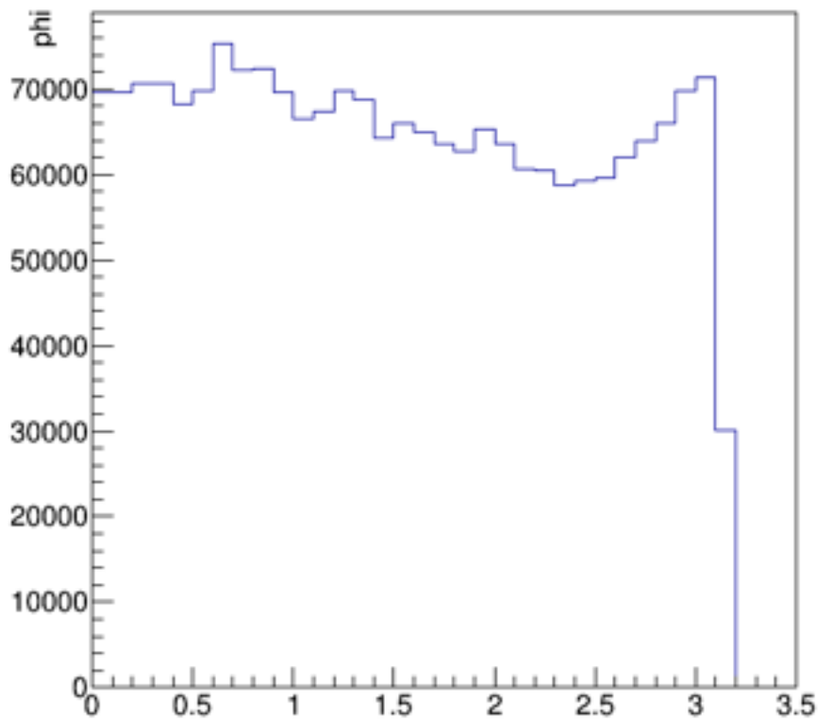

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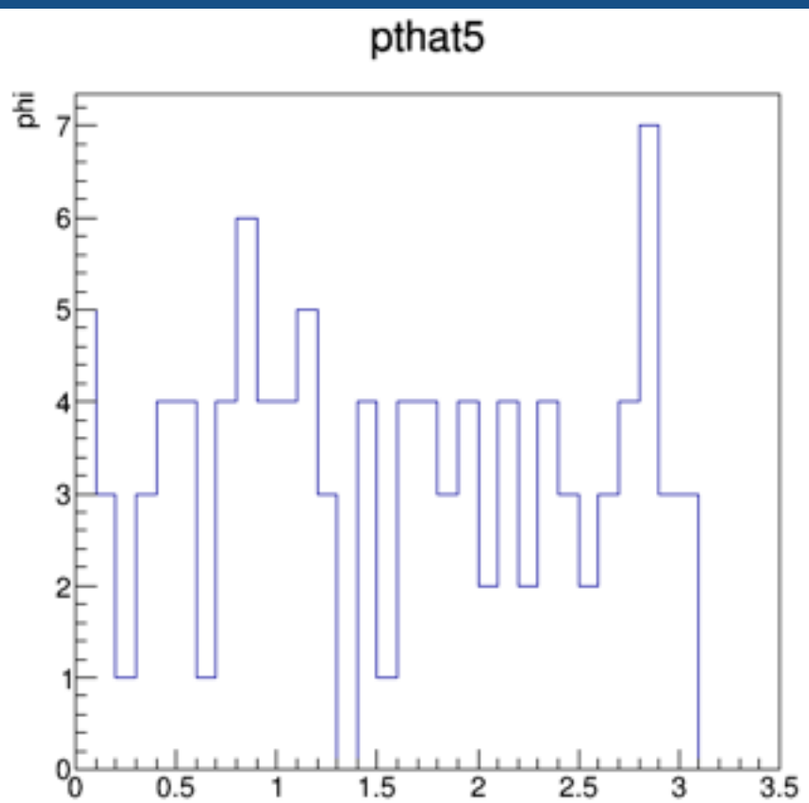
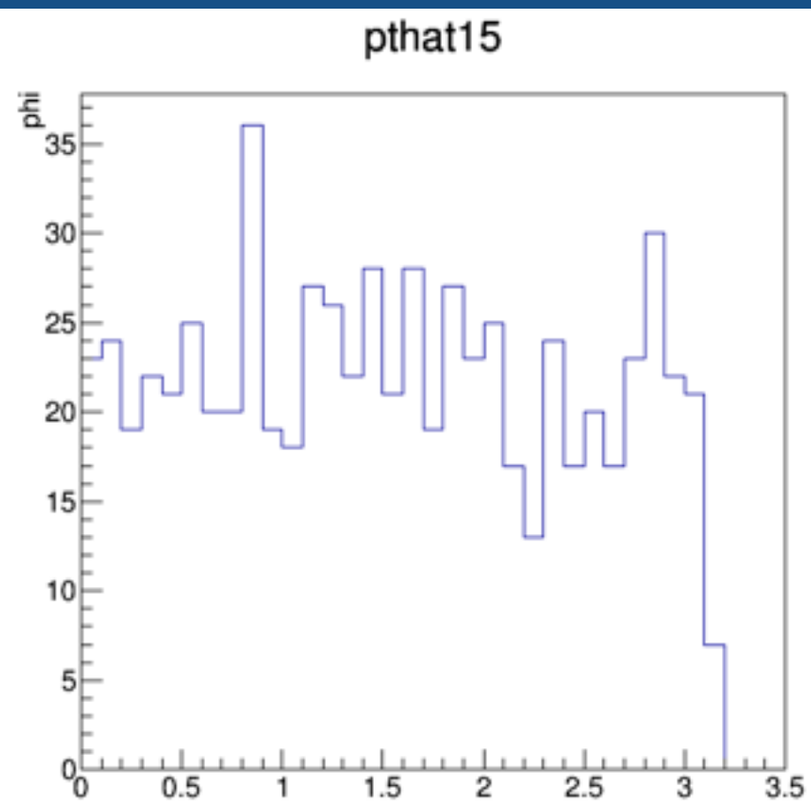
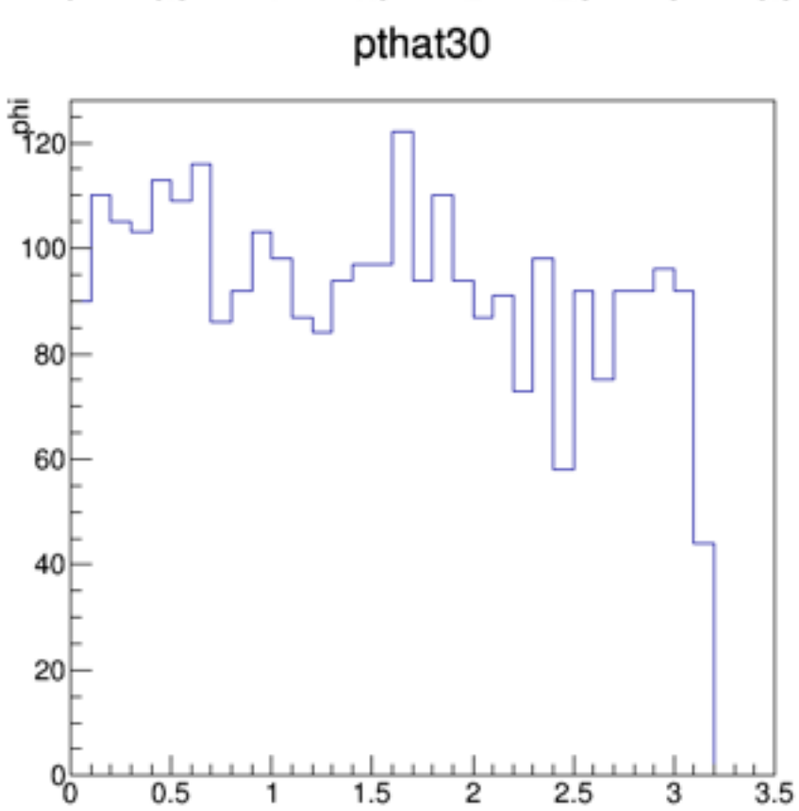
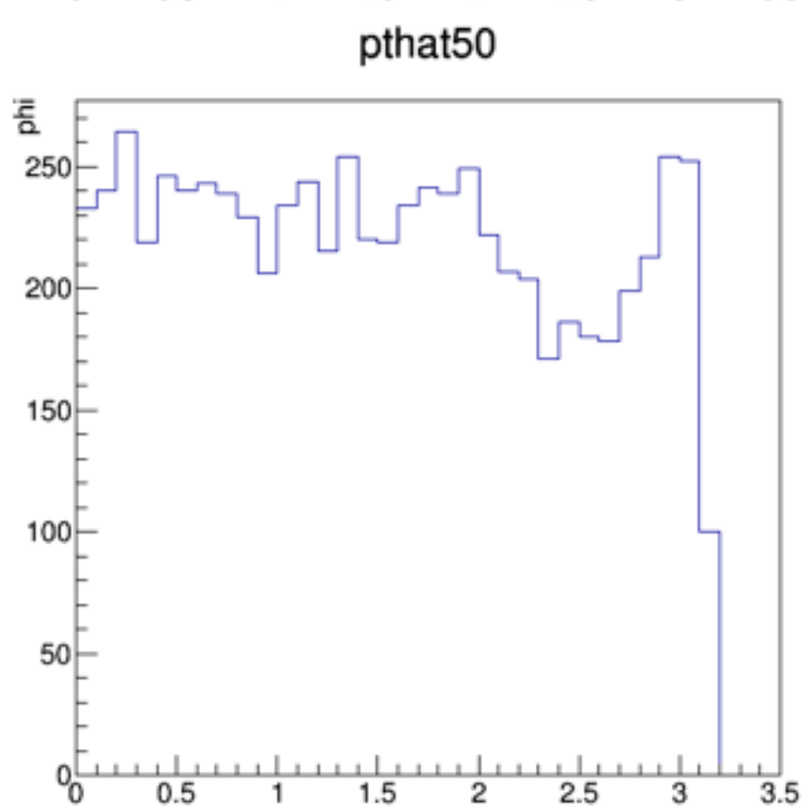
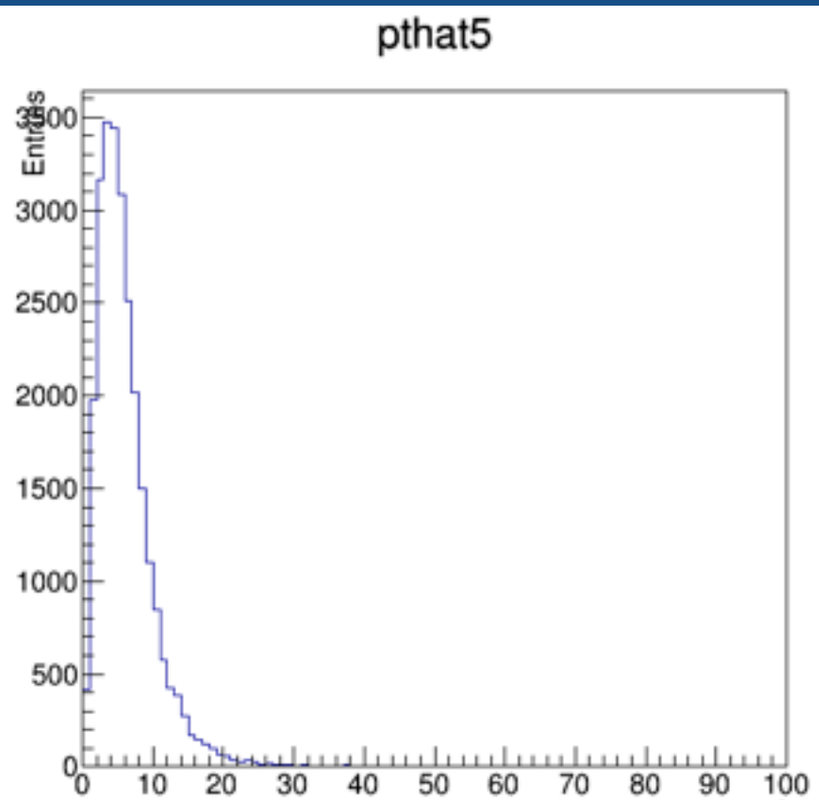


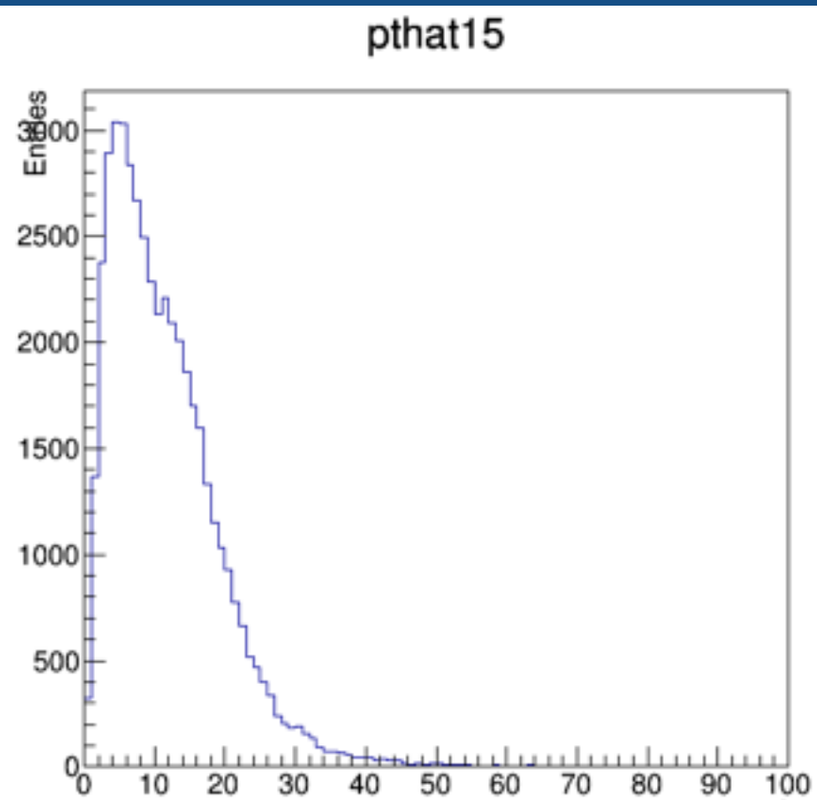


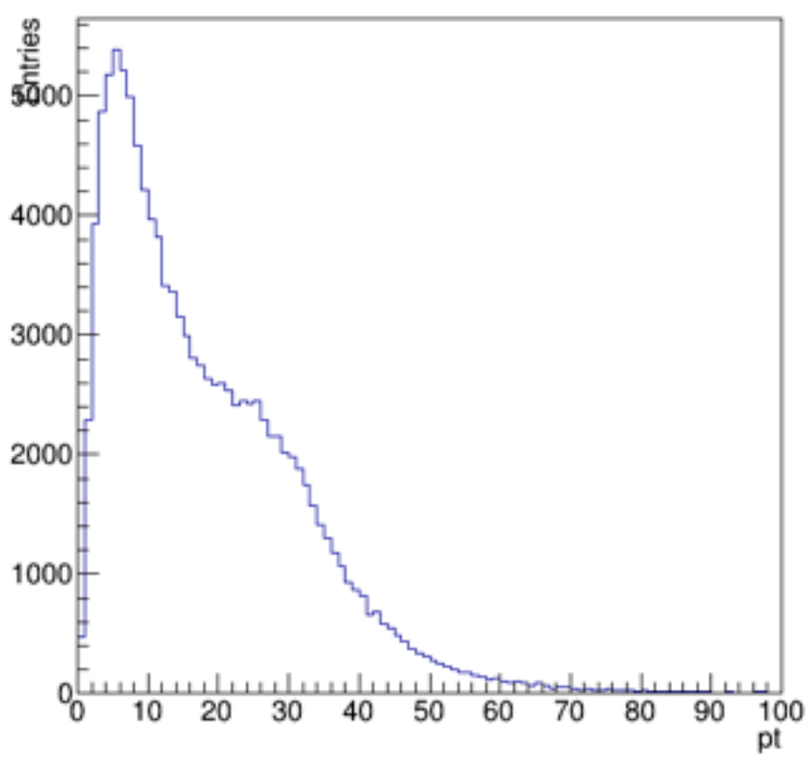


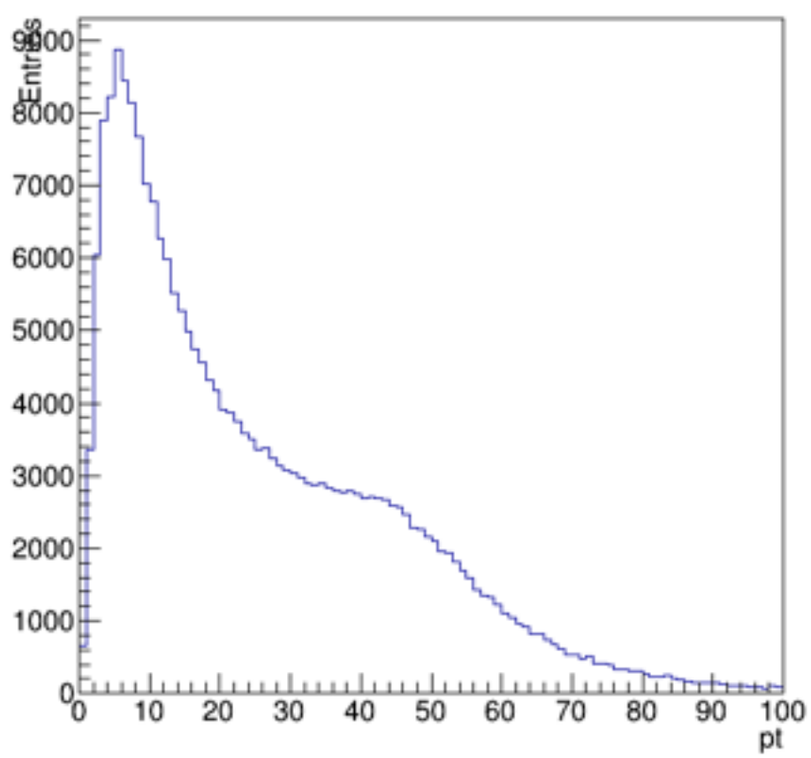


MC check Gen Pt



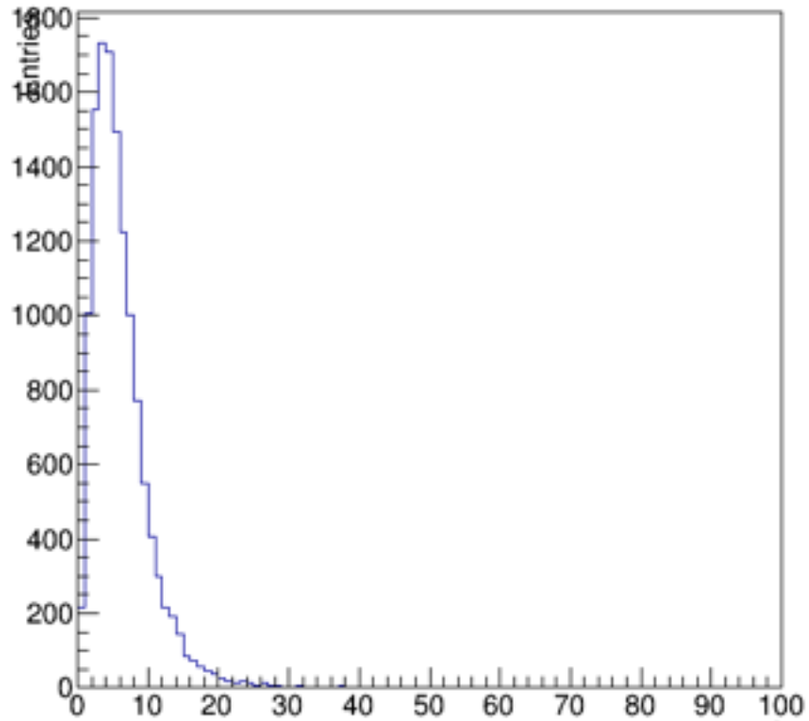




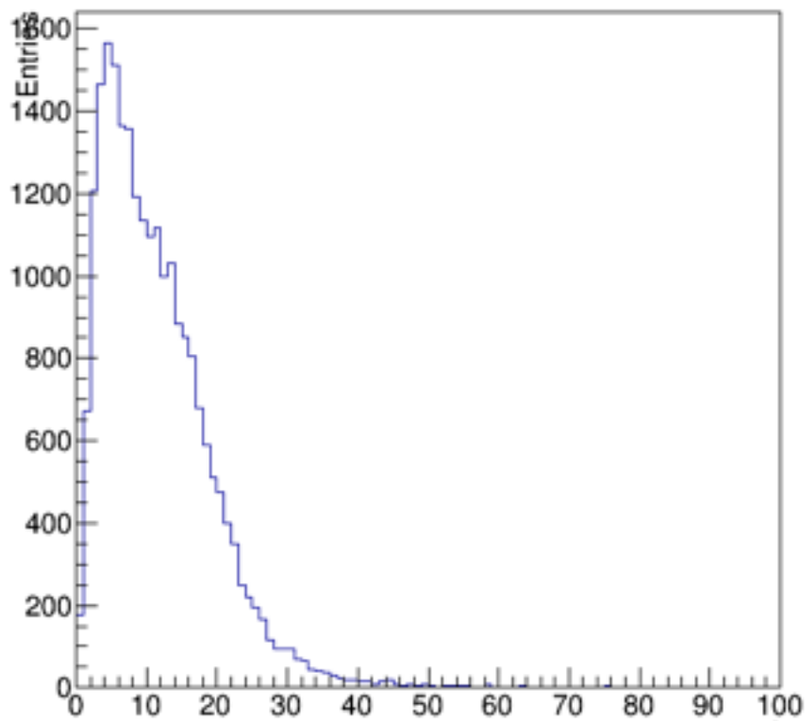


MC check Gen Pt(id=521)

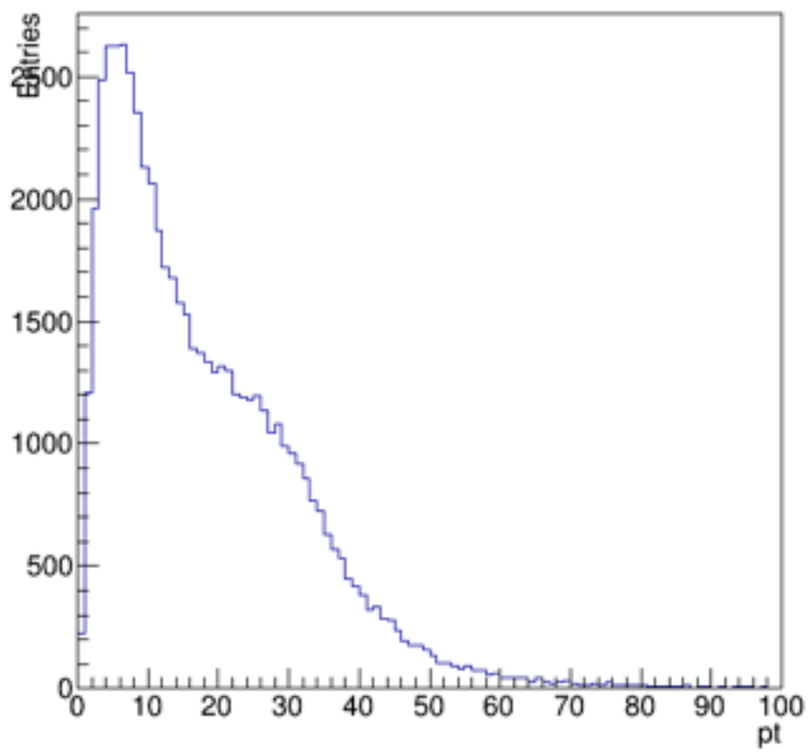
pthat5



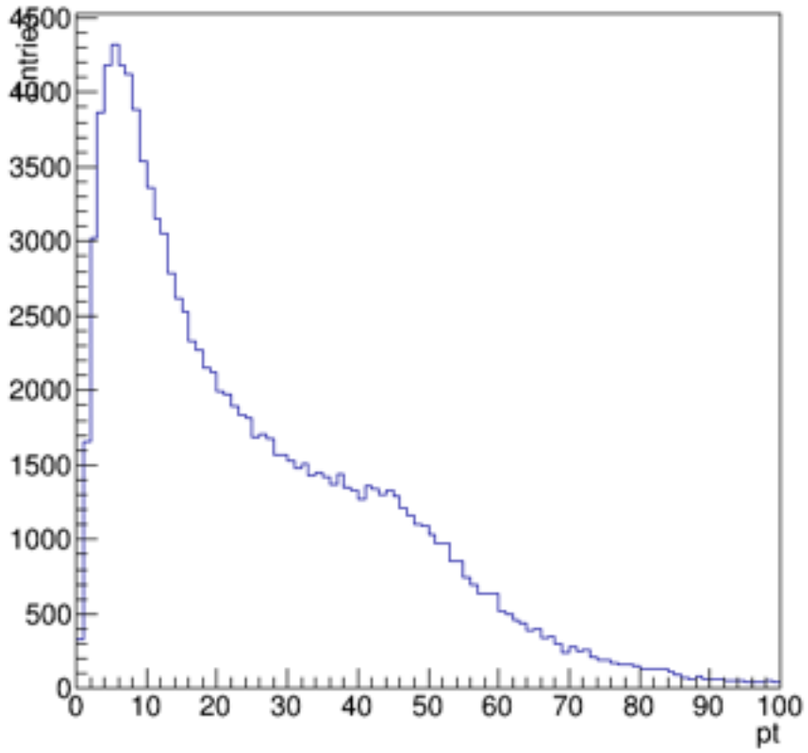
pthat15



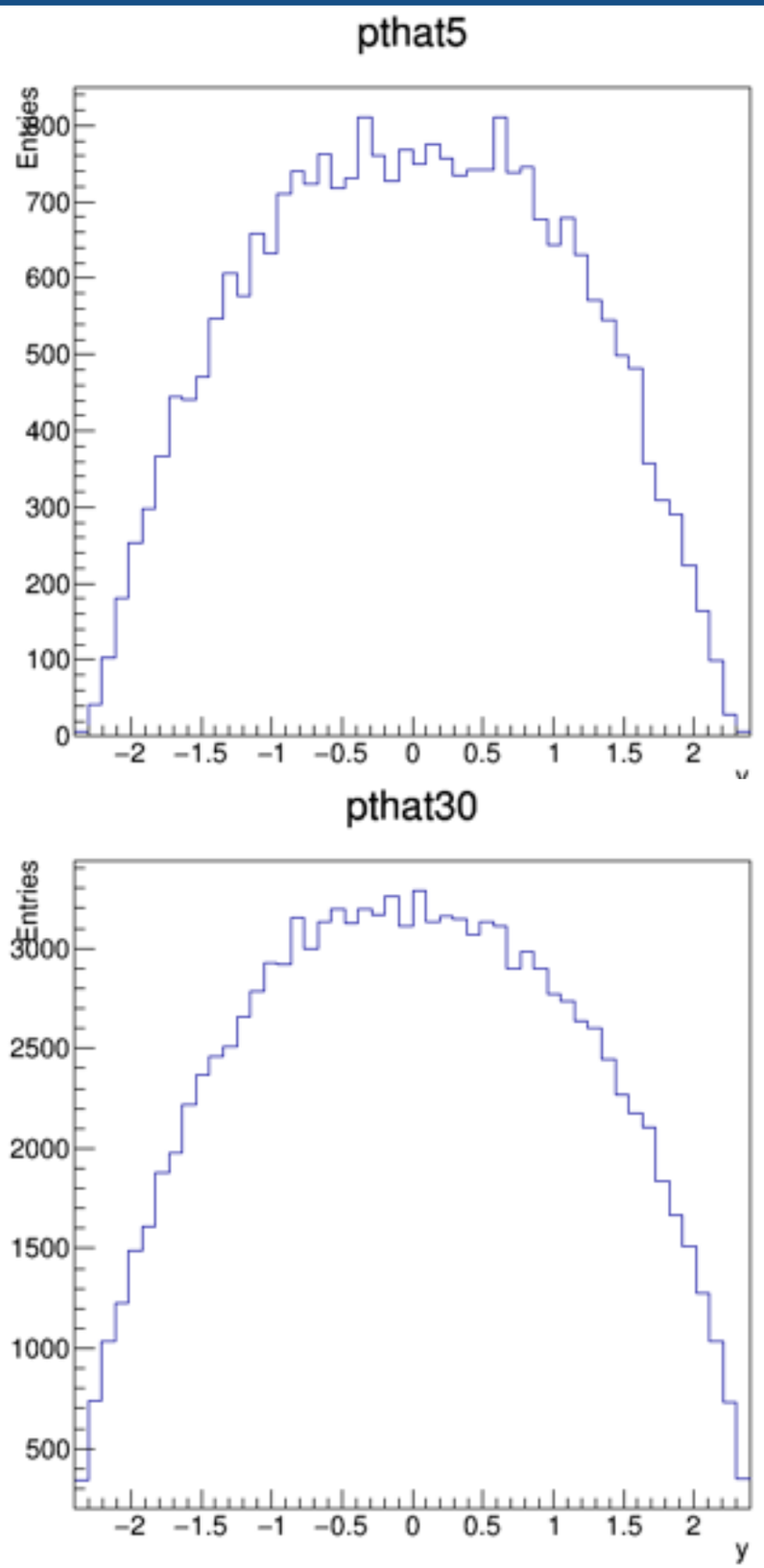
pthat30

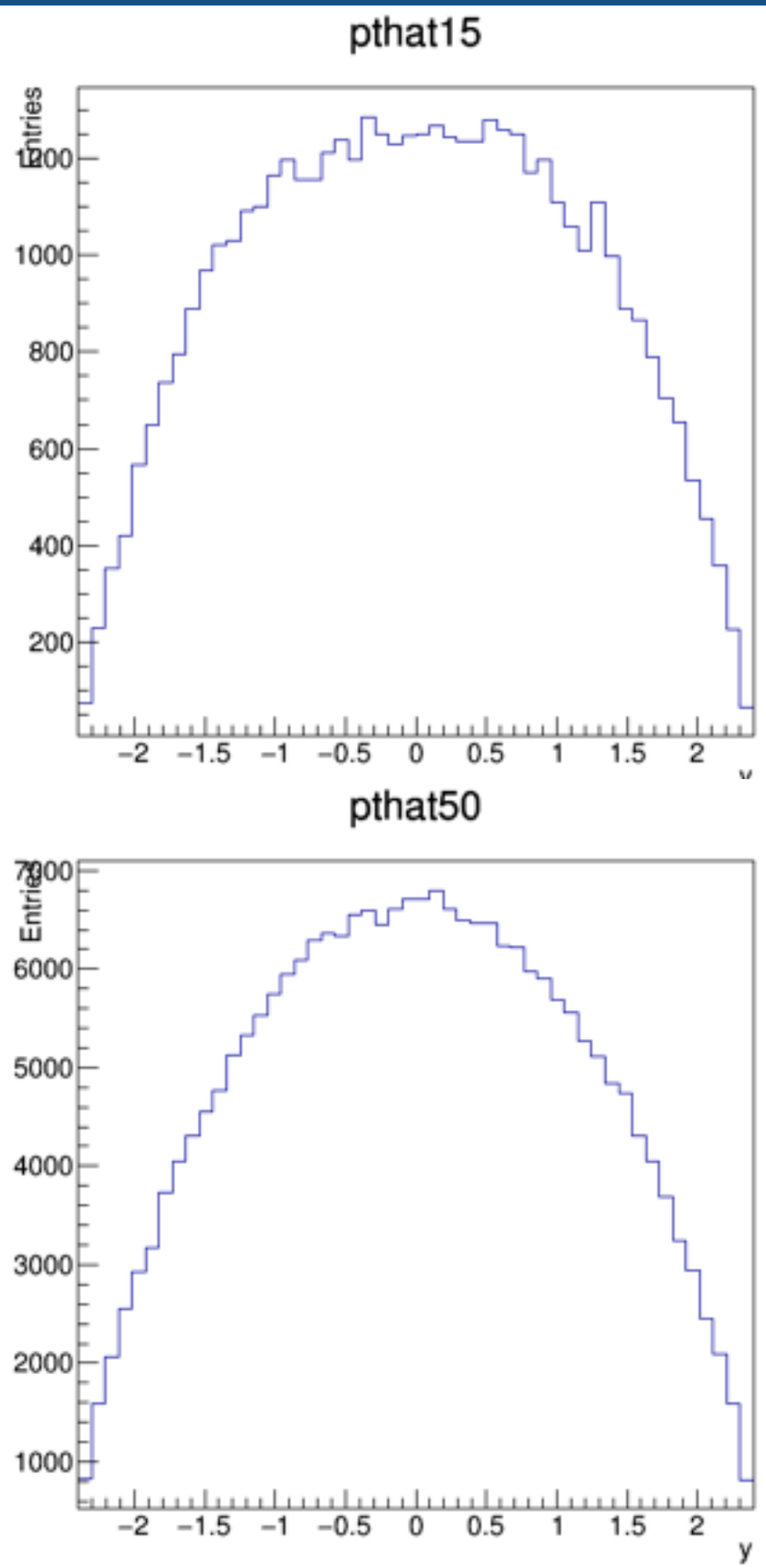


pthat50



MC check Gen Rapidity





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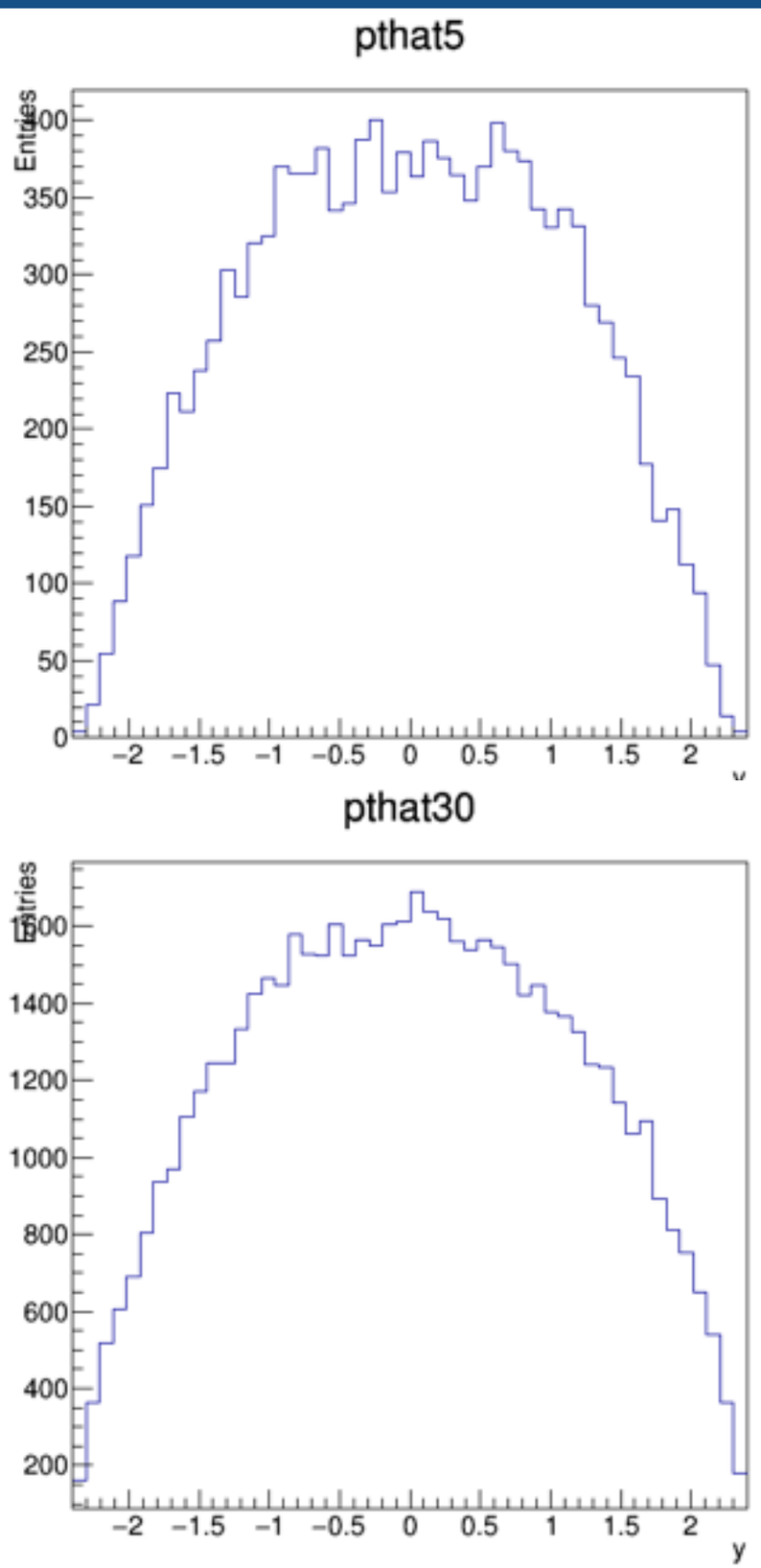
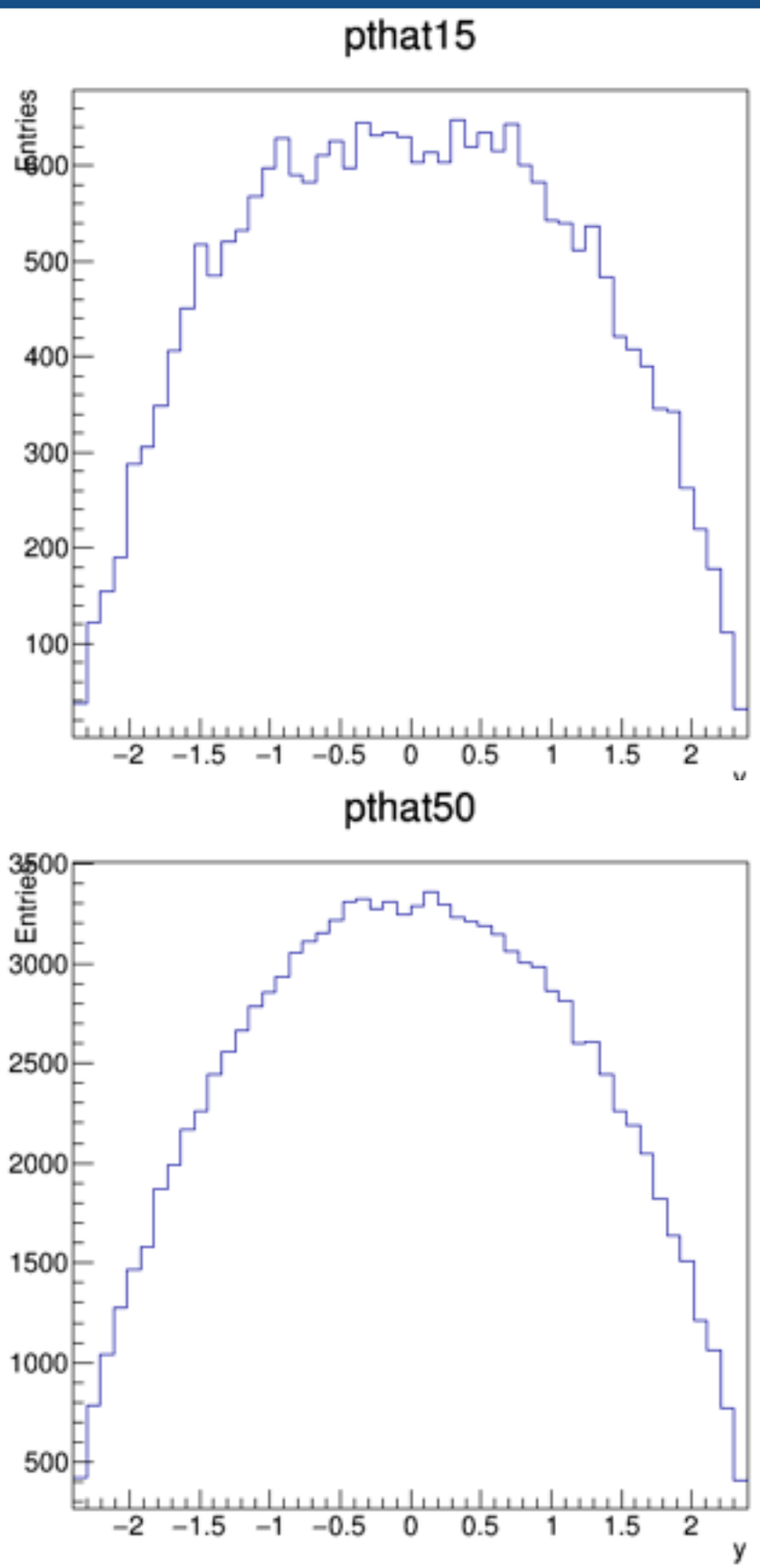
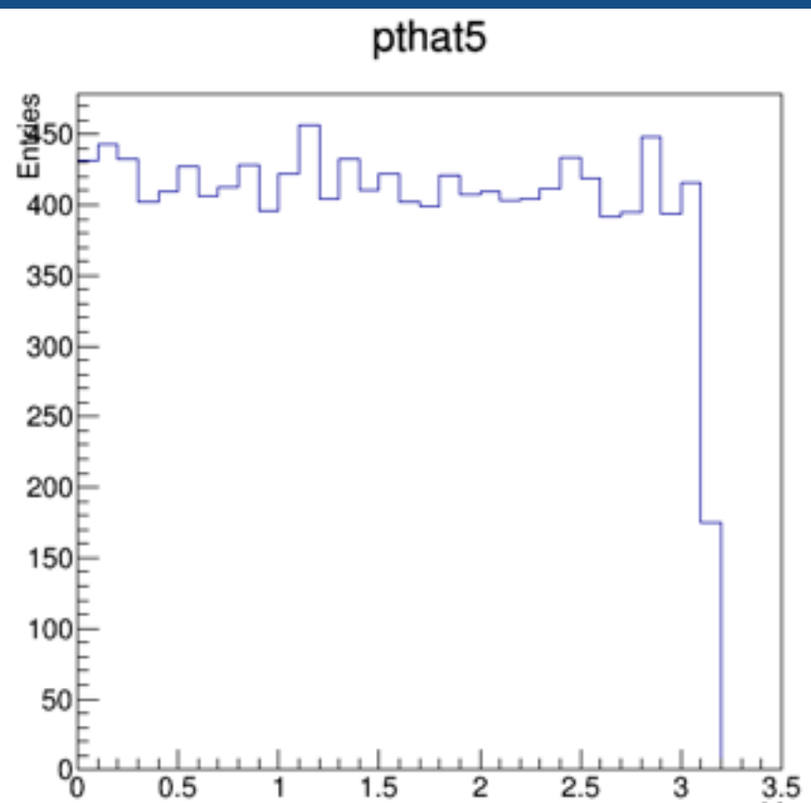
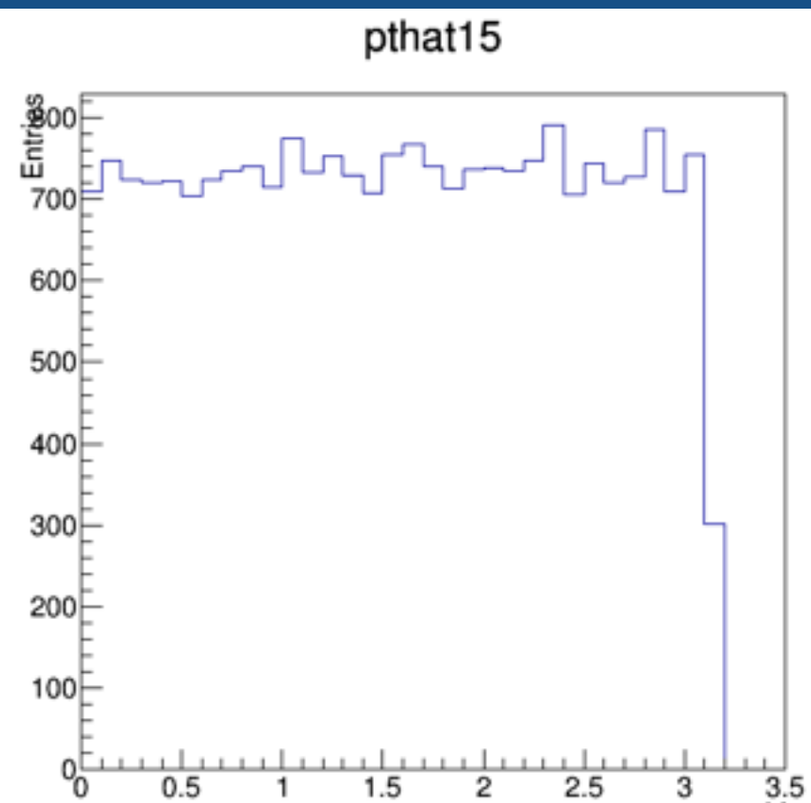
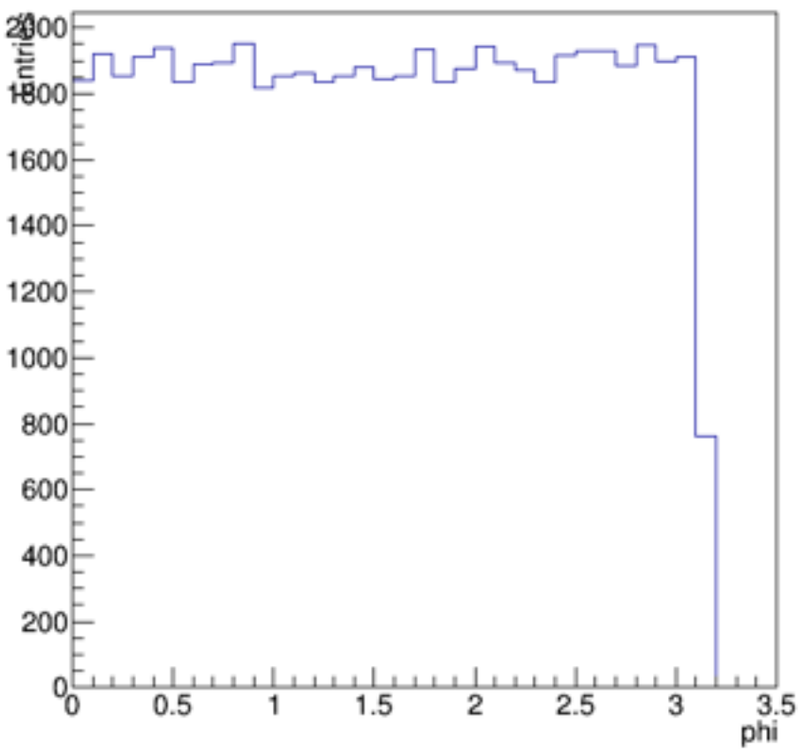


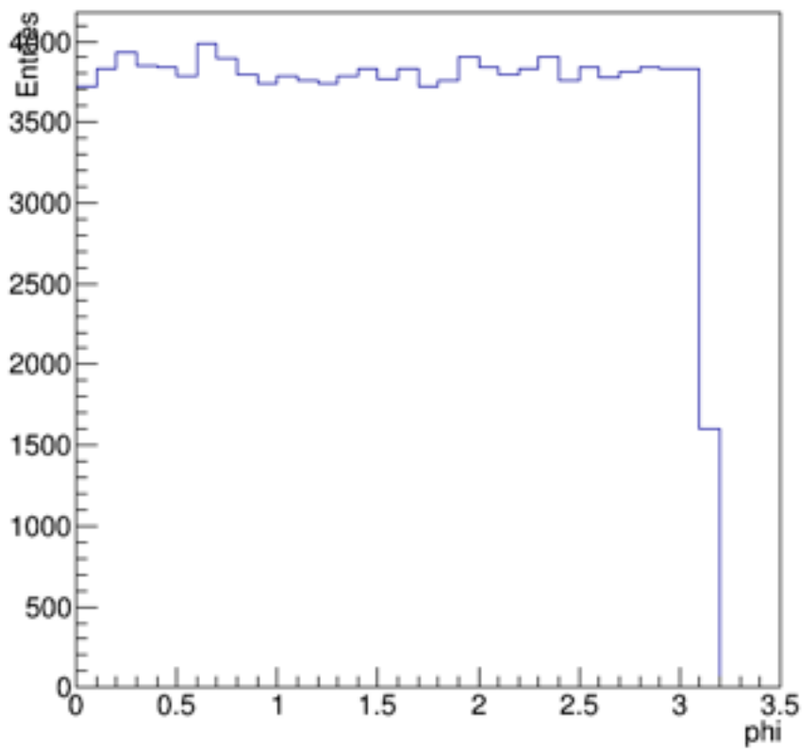


MC check Gen Phi









MC check Gen Phi(id=521)