

# TDR Summary

Takuto KUNIGO  
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v 0.01

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## 1. Introduction

## 2. Cut Conditions

explain cut conditions for each steps

## 3. Rate Reduction Tables

show result tables for each steps

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show result histograms for each steps

# 1 : Introduction

# 1: Introduction

- I studied rate reduction for 4 steps (These cut is for EndCap Trigger)
  - \* Step1: without cut (include L1\_MU15)
  - \* Step2: EI/FI cut
  - \* Step3: TILE cut (Run2)
  - \* Step4: NSW cut (Run3)
- check rate reduction for each steps

[https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/Checktrg/?](https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/Checktrg/)

# 2: Cut Conditions

# Step 1: data Cut Conditions

- Start from D3PD of 25ns runs

\* `/gpfs/fs2001/tkunigo/TDR/step00/*/*.root`

- skim code

<https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step01/?>

- skim events

`L1_MU15 = True`

# Step 2: data

- Start from skimmed D3PD(Step1)

- \* `/gpfs/fs2001/tkunigo/TDR/step01/*.root`

- skim code

- [https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step02/?](https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step02/)

# Step 2: Cut Conditions

1. SSC which efficiency  
is over 70%

2.else

I.  $d\theta < 0.2$  &&  $d\phi < 0.2$

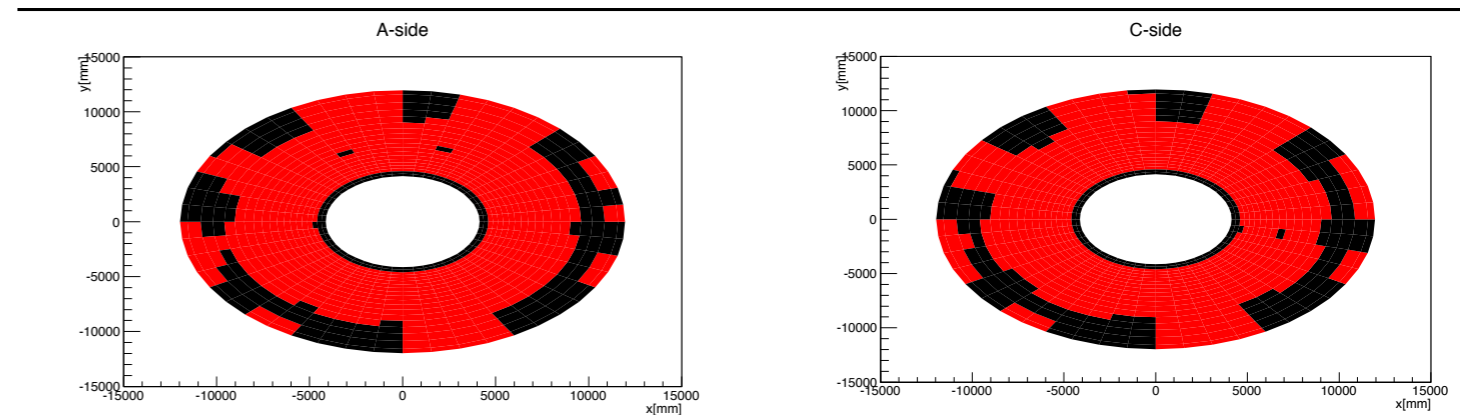
No cut

No cut

II. else

Cut!!

By Takuya TASHIRO



Check: EI/FI data is 8ch OR,  
so I used these central value



# Step 3: data

- Start from skimmed D3PD(Step2)

- \* `/gpfs/fs2001/tkunigo/TDR/step02/*.root`

- skim code

- [https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step02/?](https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step02/)

# Step 3: Cut Conditions

1. Smear TILE energy by Gaus( $\sigma = 200\text{Mev}$ )  
(Offline→Online: Suggested from TILE team)
2. Check 2 TILE Module Energy, which correspond to hit TGC Sector
3. Either of them are under TILE threshold(500Mev) kill this Trigger

# Step 3: Check

## L1\_MU15

Ev: 62

A[m1]: 41.6481

A[m2]: 6.39346

Ev: 74

A[m1]: -583.928

A[m2]: 1888.96

Ev: 78

C[m1]: -190.644

C[m2]: -85.5642

Ev: 84

A[m1]: -66.0927

A[m2]: 273.376

Ev: 97

A[m1]: -91.8926

A[m2]: 297.567

## L1\_MU20

Ev: 62

A[m1]: -37.434

A[m2]: -223.749

Ev: 74

A[m1]: 235.577

A[m2]: 1511.74

Ev: 78

C[m1]: -31.3149

C[m2]: -244.238

Ev: 84

A[m1]: -64.7696

A[m2]: -232.359

Ev: 97

A[m1]: 119.821

A[m2]: -515.896

Differ



# Step 4: data

- Start from skimmed D3PD(Step3)

\* `/gpfs/fs2001/tkunigo/TDR/step03/*.root`

- skim code

[https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step03/?](https://svnweb.cern.ch/cern/wsvn/atlas-tkunigo/tkunigo/TDR/step03/)

# Step 4: Cut Conditions

I used  $d\theta$ ,  $d\eta$ ,  $d\phi$  cut.

Threshold of them depend on  $|\eta|$

By. Yu SUZUKI

$ \eta $	$d\theta$	$d\eta$	$d\phi$
1.3 - 1.5	0.015	0.05	0.06
1.5 - 1.7	0.015	0.05	0.06
1.7 - 1.9	0.010	0.05	0.06
1.9 - 2.1	0.025	0.05	0.06
2.1 - 2.3	0.07	0.07	0.06
2.3 -	0.07	0.07	0.06

# 3: Rate Reduction Tables

# Terms

## 1. all Rol:

Fill all Triggers

## 2. 1 fill/event

Fill 1 Trigger/event.

(RPC < EndCap < Forward)

## 3. w staco( $dR < 0.1$ )

Fill Triggers which is associated with staco. ( $dR < 0.1$ )

# Table for PT5

	all RoI		1 fill/event		w staco(dR<0.1)	
S1 (before EI/FI cut)	867548		847765		265457	
	91596 (RPC)	775952 (TGC)	88138(RPC)	759627(TGC)	71224(RPC)	194233 (TGC)
S2 ( EI/FI cut)	560763		546751		252153	
	91596 (RPC)	469167 (TGC)	90179 (RPC)	456572 (TGC)	72915 (RPC)	179238 (TGC)
S3 (TILE cut)	514112		500664		250770	
	91596 (RPC)	422516 (TGC)	90183(RPC)	410481(TGC)	72917(RPC)	177853(TGC)
S4 (NSW cut)	223402		217052		183954	
	91596 (RPC)	131806 (TGC)	90248(RPC)	126804(TGC)	72975(RPC)	110979(TGC)

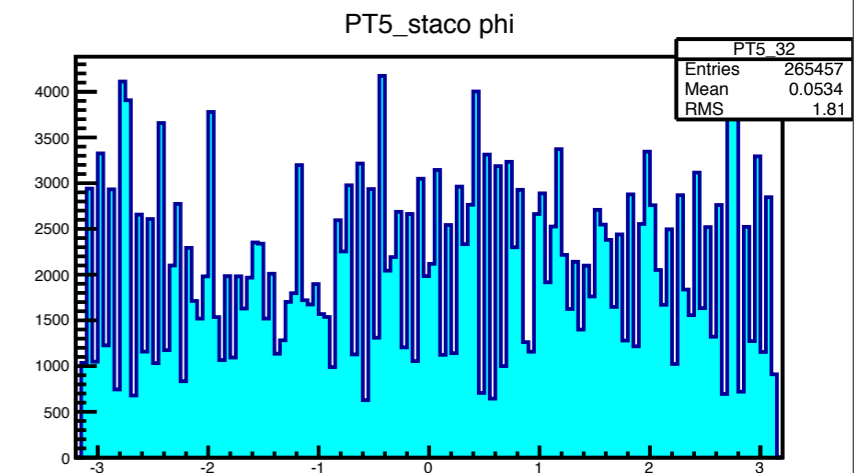
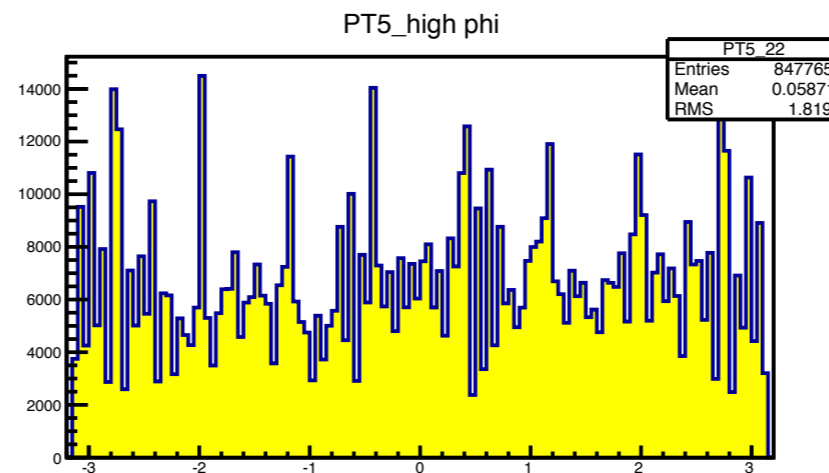
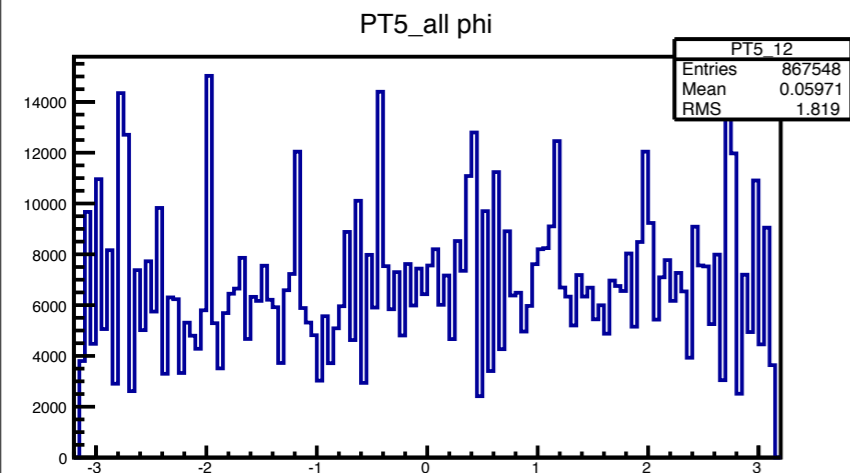
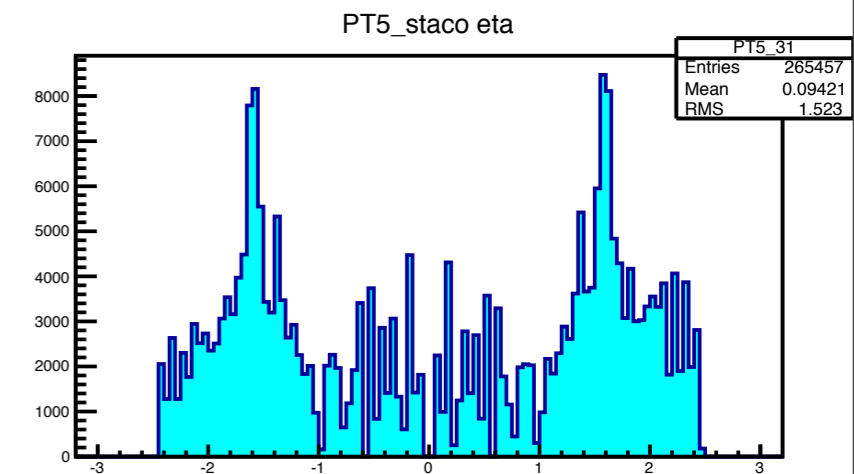
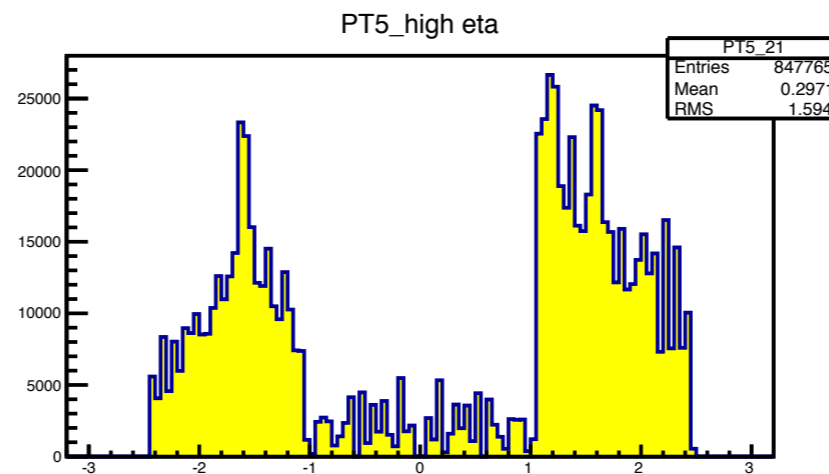
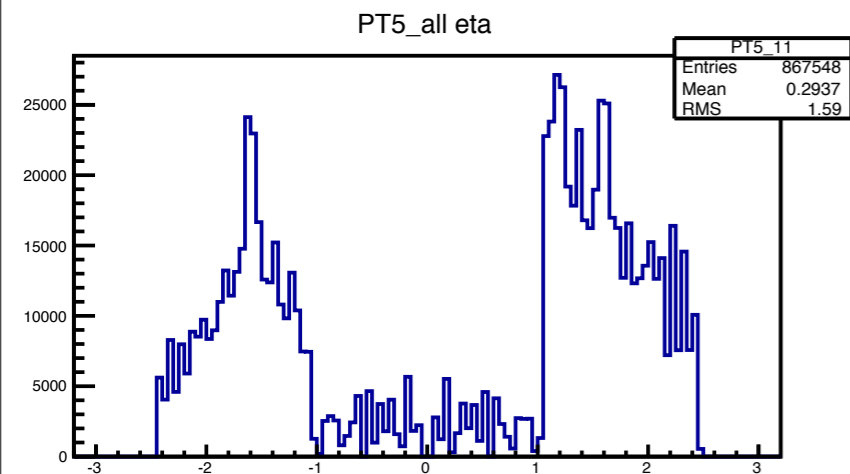
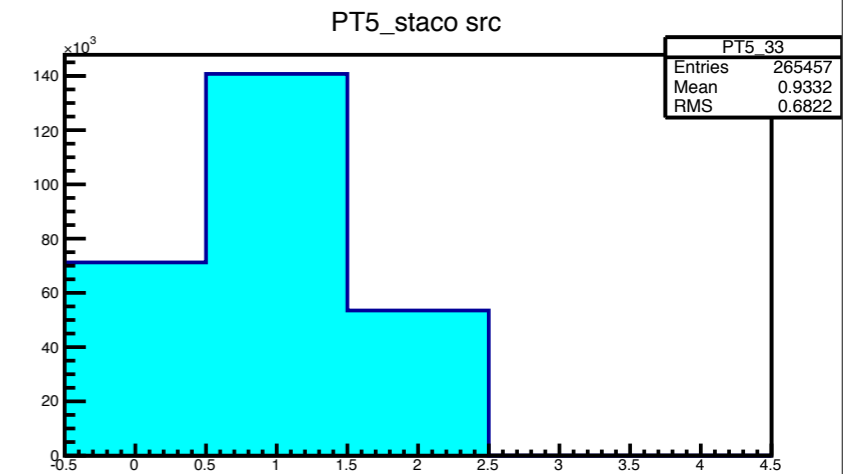
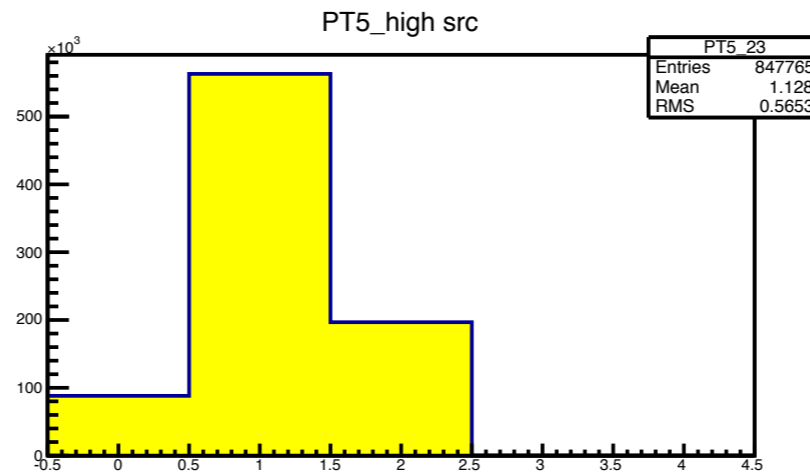
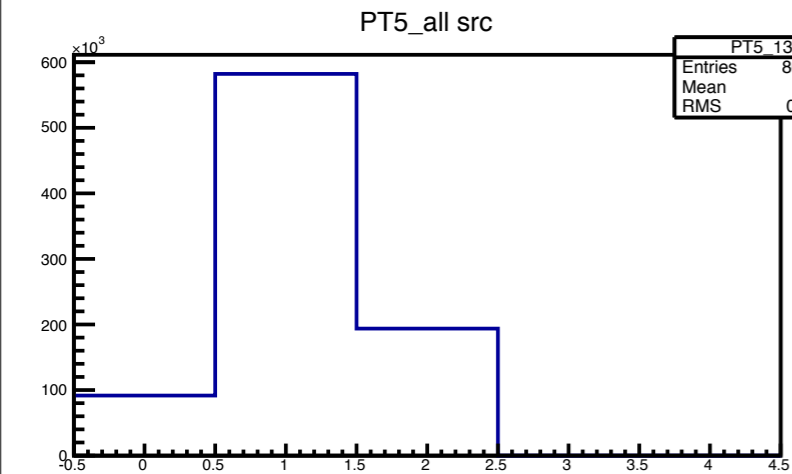


# Table for PT6

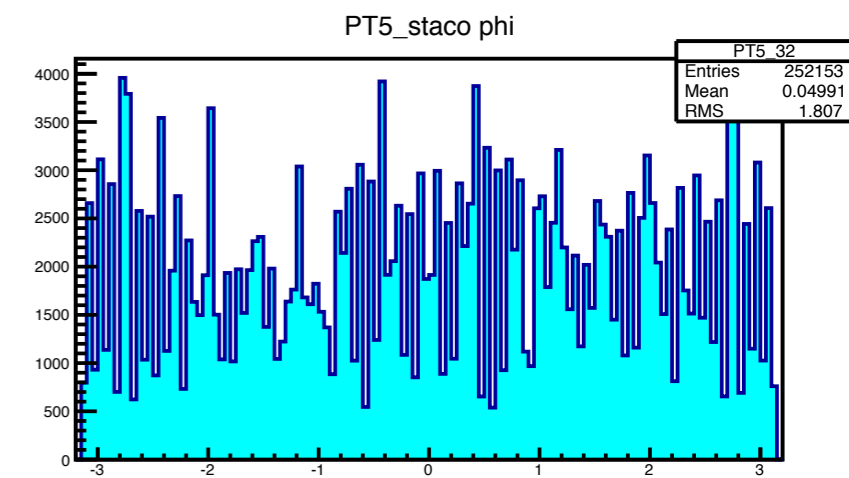
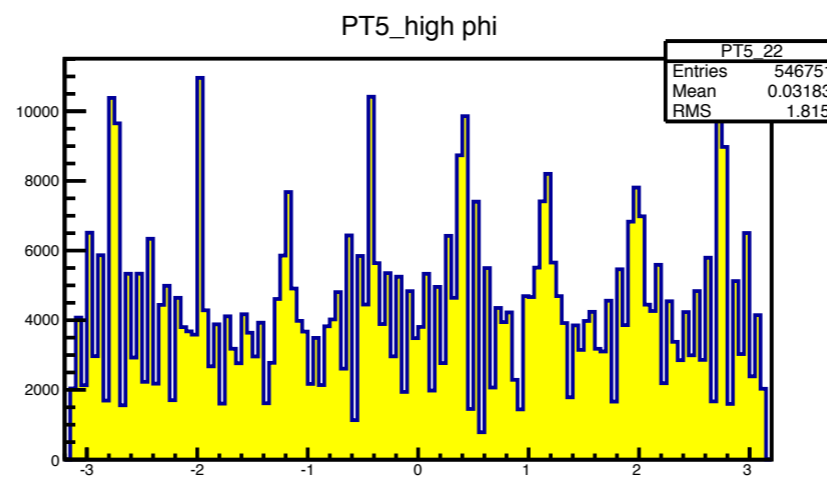
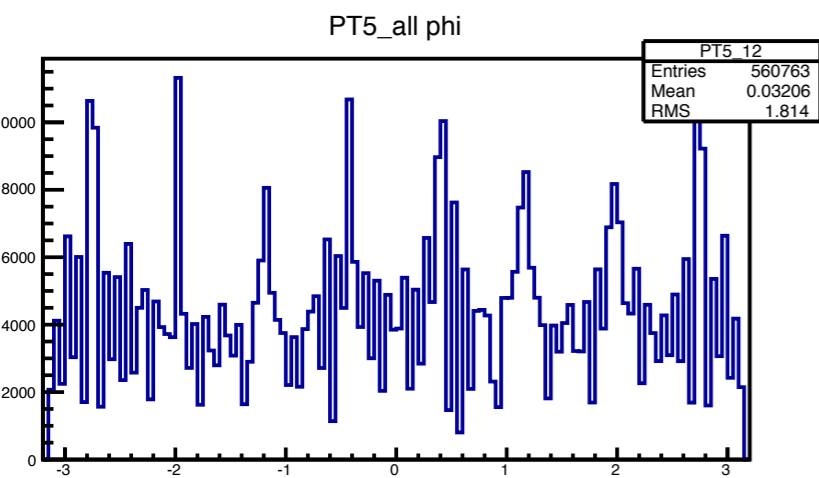
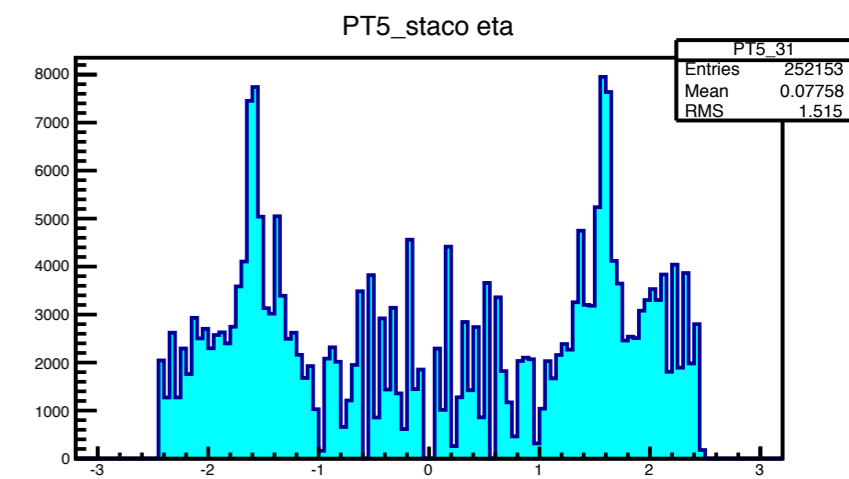
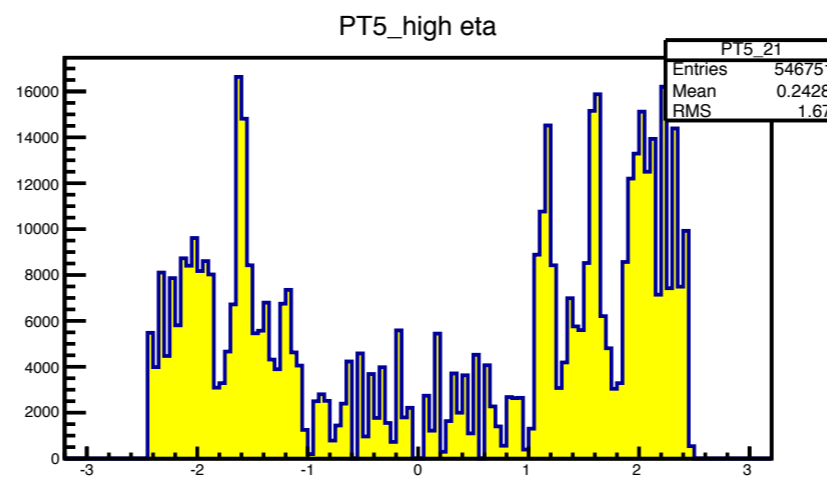
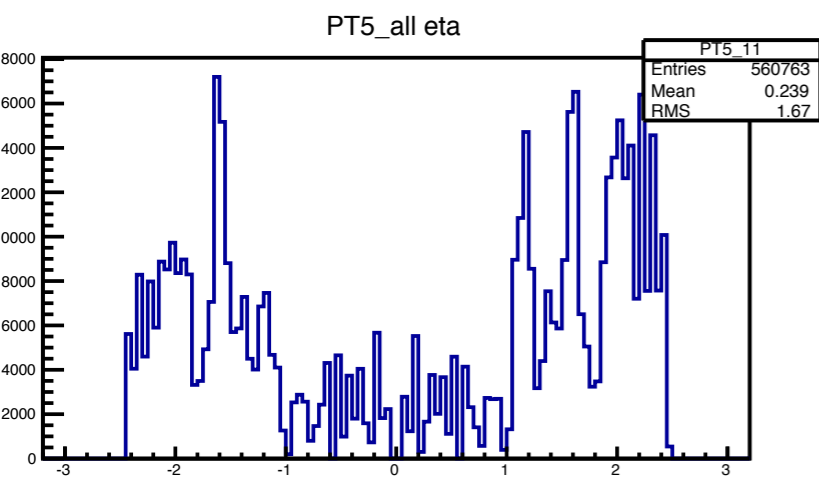
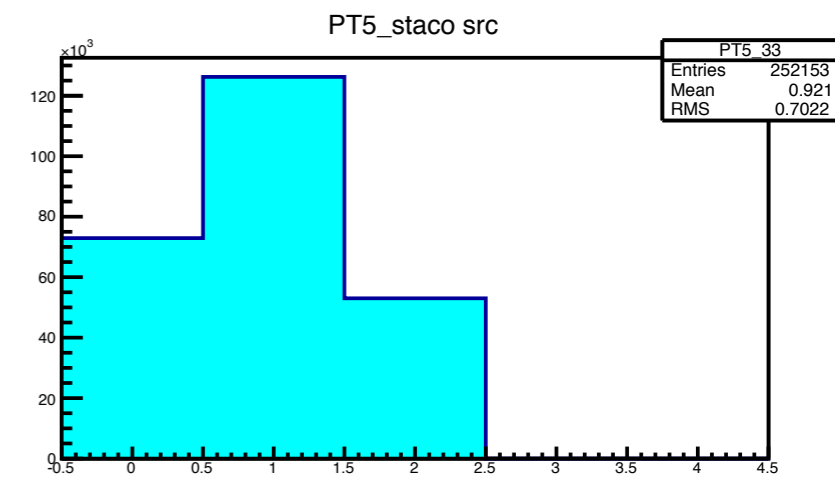
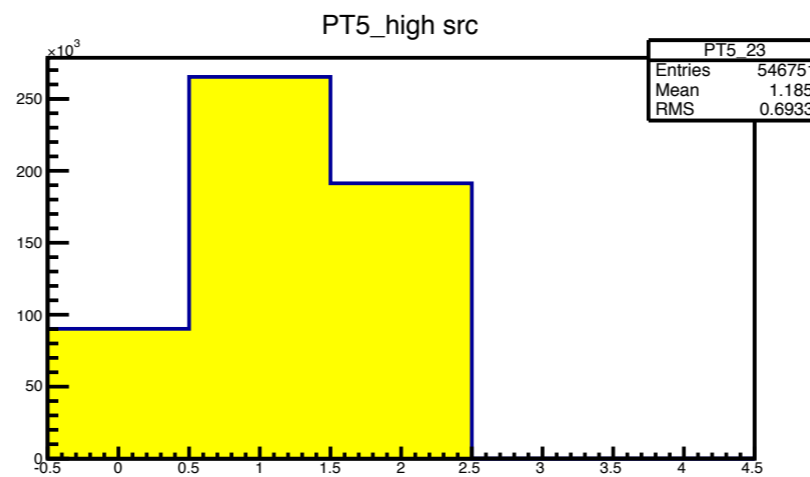
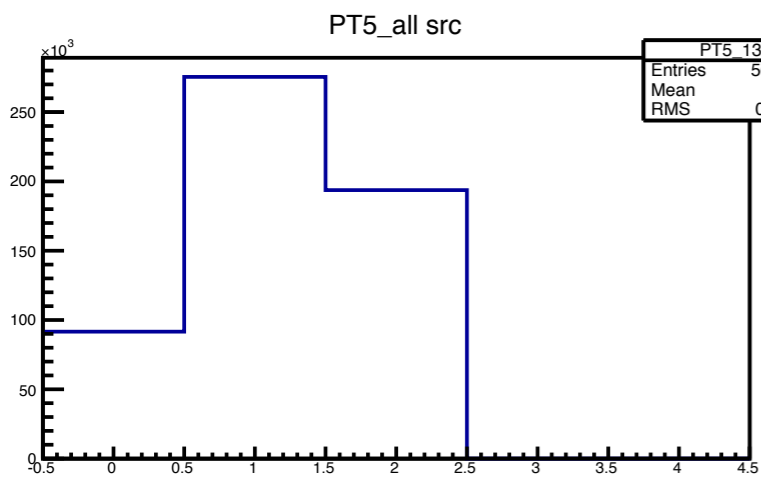
	all RoI		1 fill/event		w staco(dR<0.1)	
S1 (before EI/FI cut)	609212		595890		157250	
	53748 (RPC)	555464 (TGC)	51591 (RPC)	544299 (TGC)	41145 (RPC)	116105 (TGC)
S2 ( EI/FI cut)	376096		366918		148302	
	53748 (RPC)	322348 (TGC)	52915 (RPC)	314003 (TGC)	42245 (RPC)	106057 (TGC)
S3 (TILE cut)	342618		333795		147558	
	53748 (RPC)	288870 (TGC)	52916 (RPC)	280879 (TGC)	42245 (RPC)	105313 (TGC)
S4 (NSW cut)	136889		132683		110757	
	53748 (RPC)	83141 (TGC)	52944 (RPC)	79739 (TGC)	42268 (RPC)	68489 (TGC)

# 4: Histograms

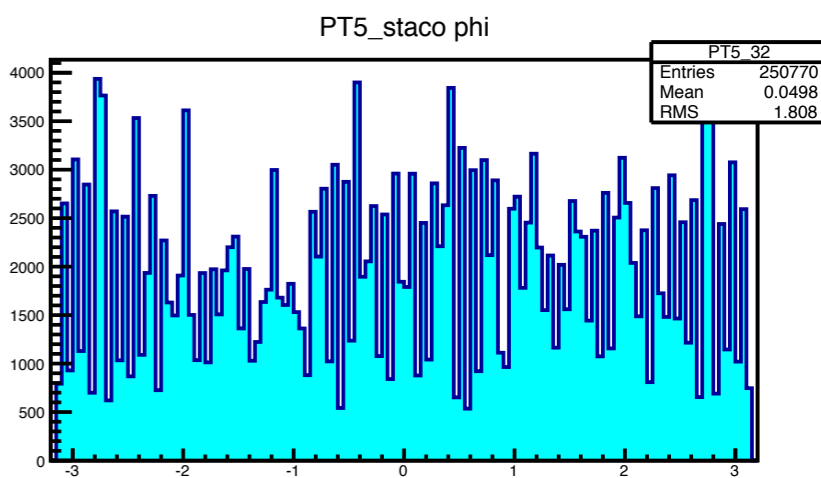
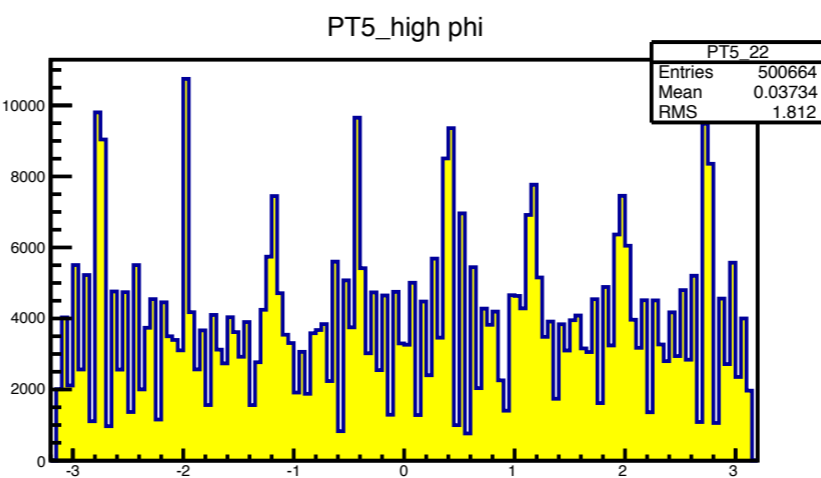
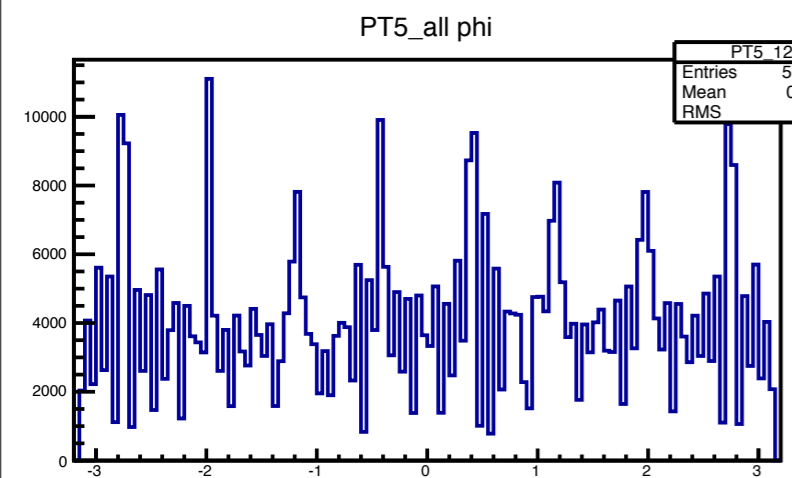
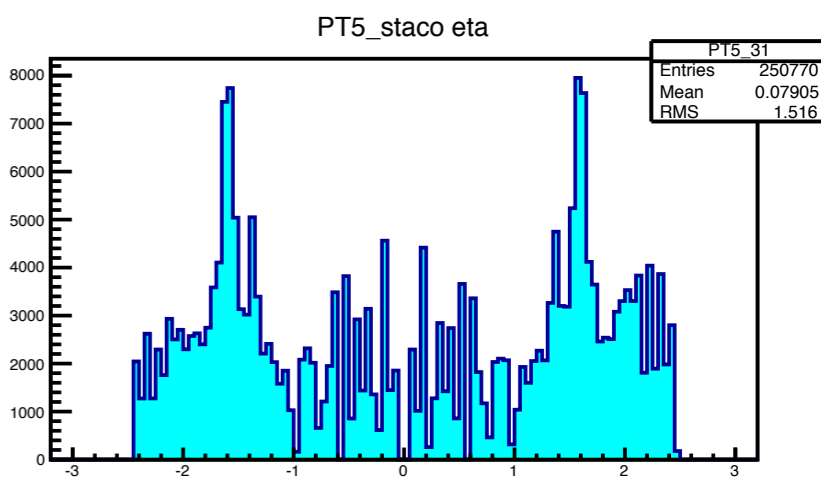
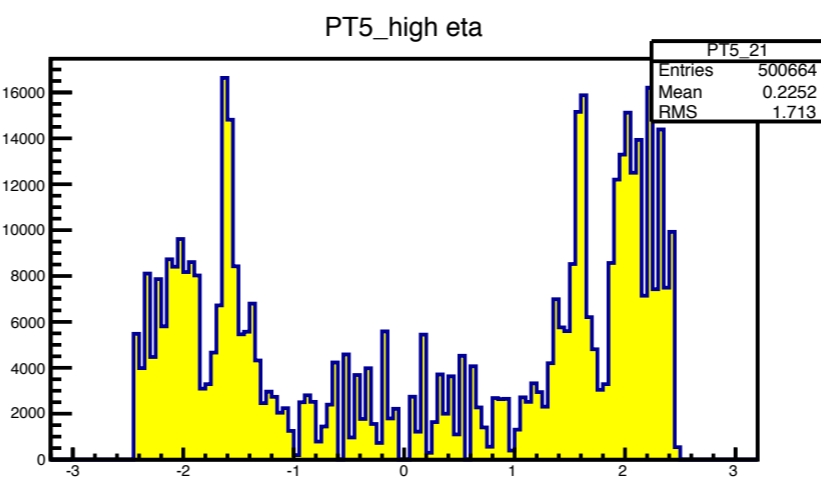
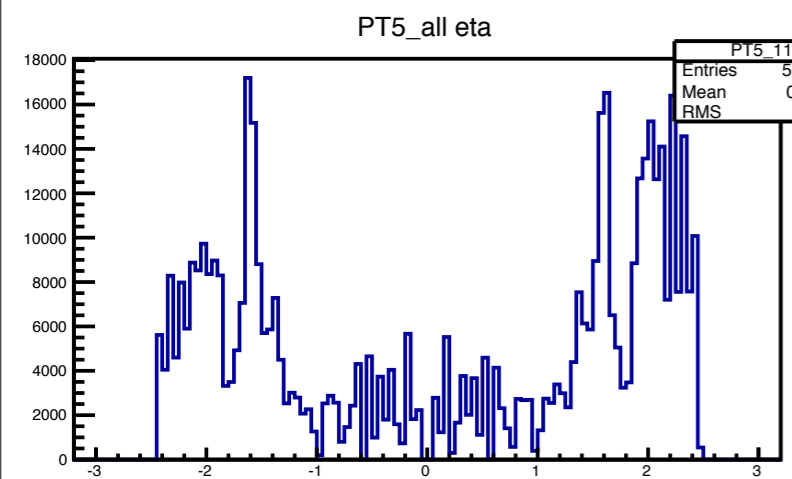
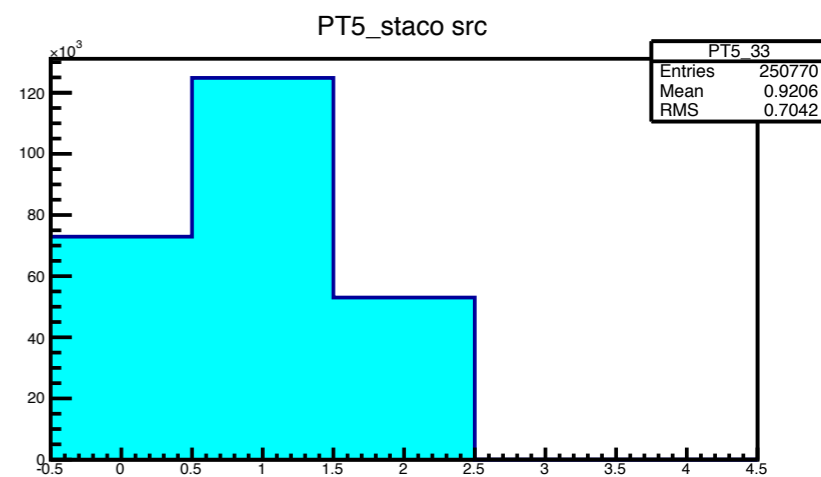
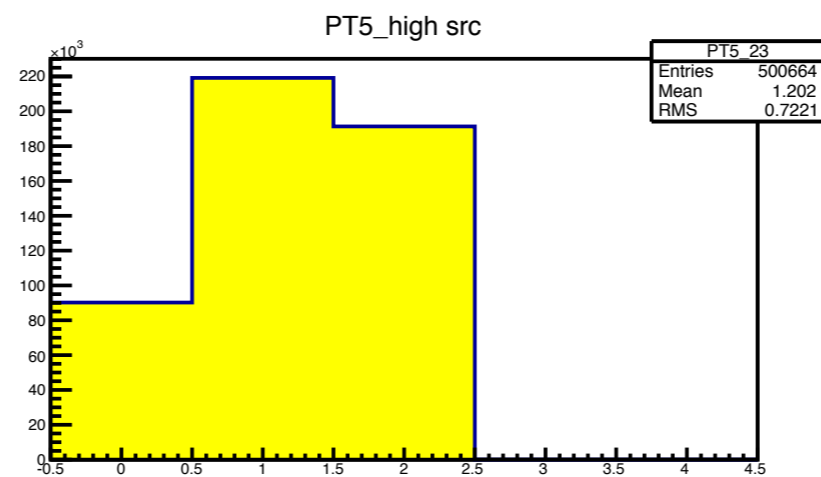
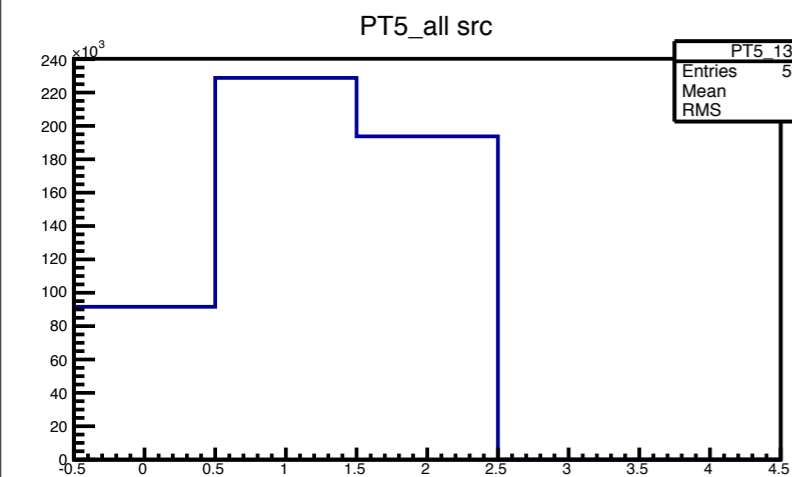
# Step 1: PT5



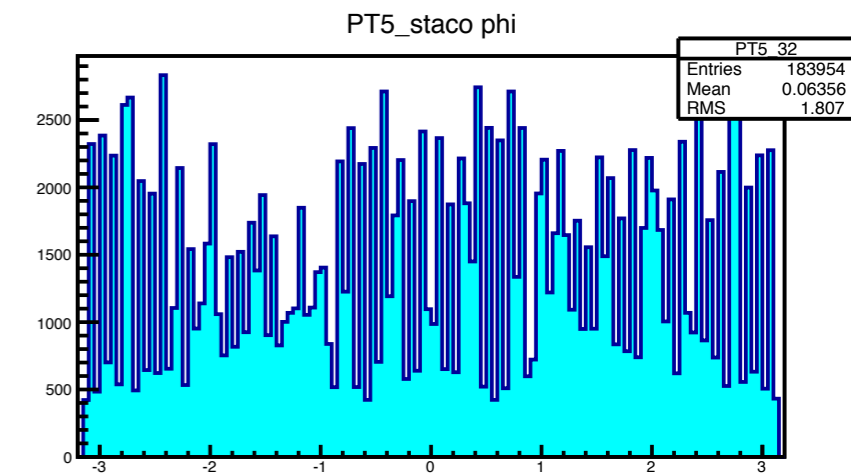
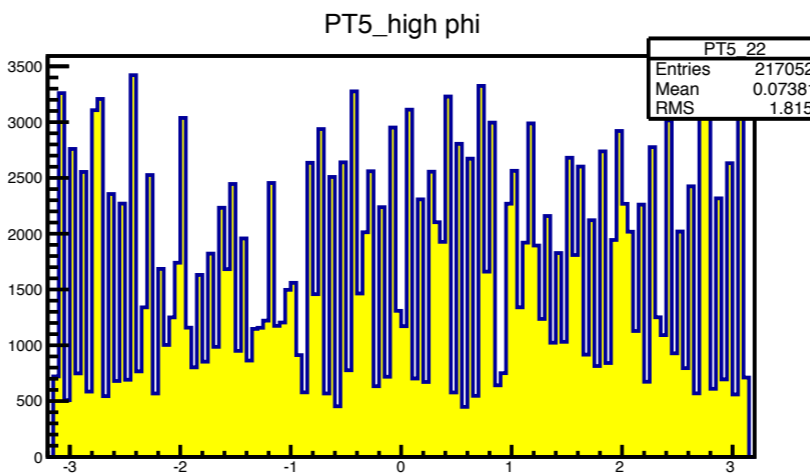
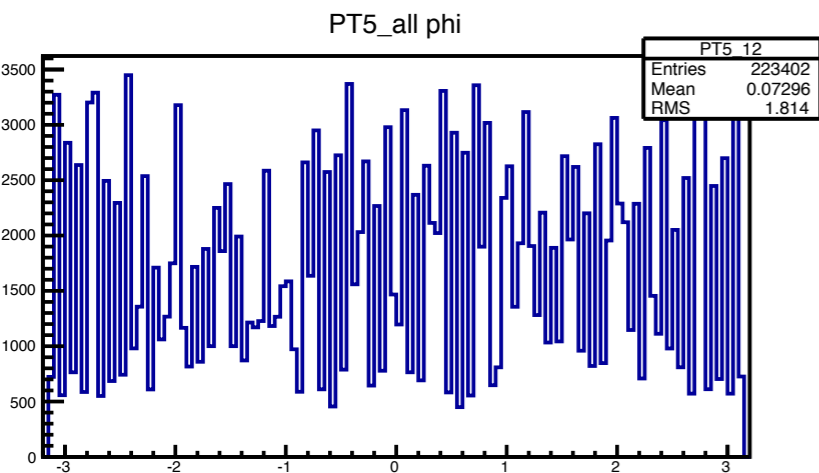
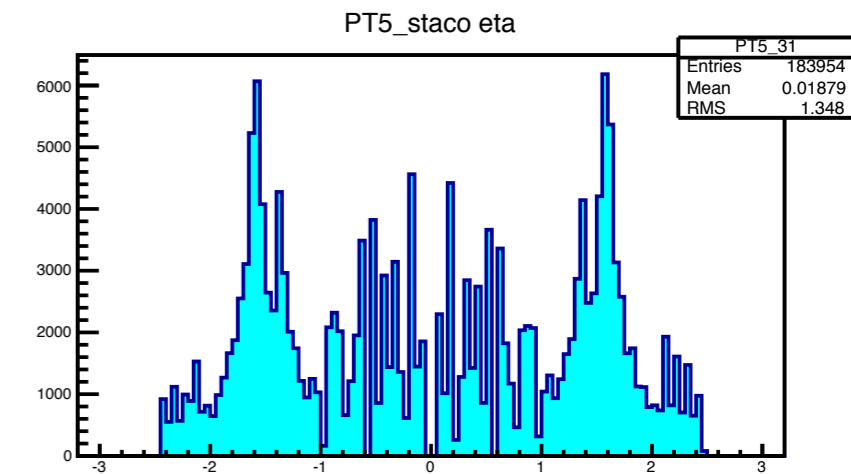
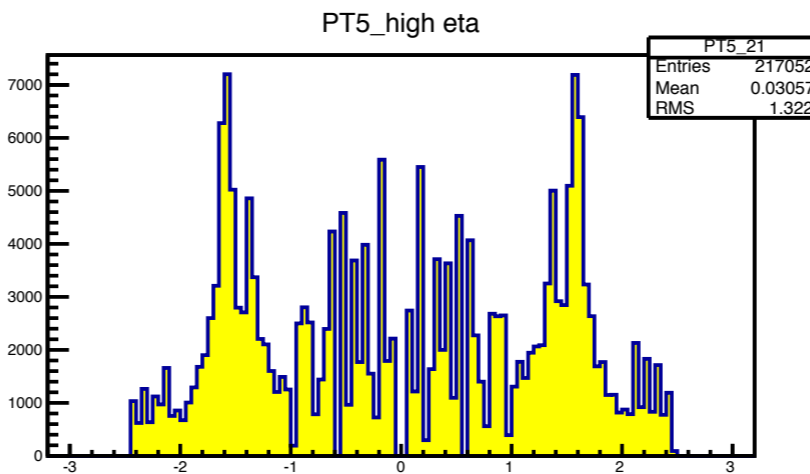
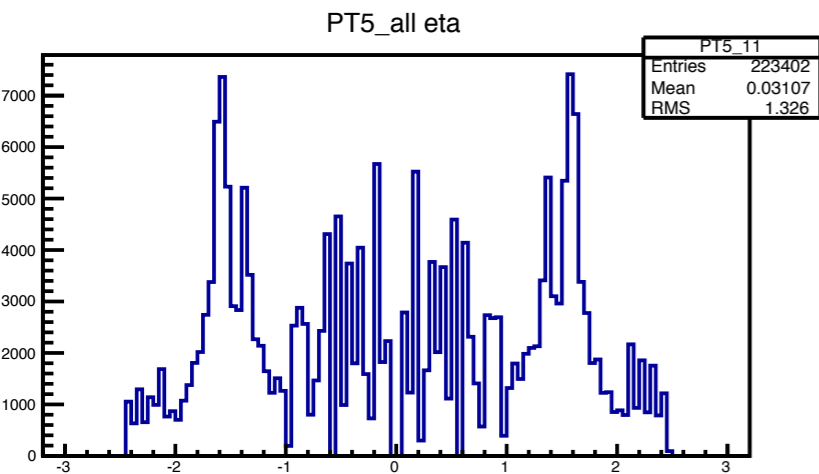
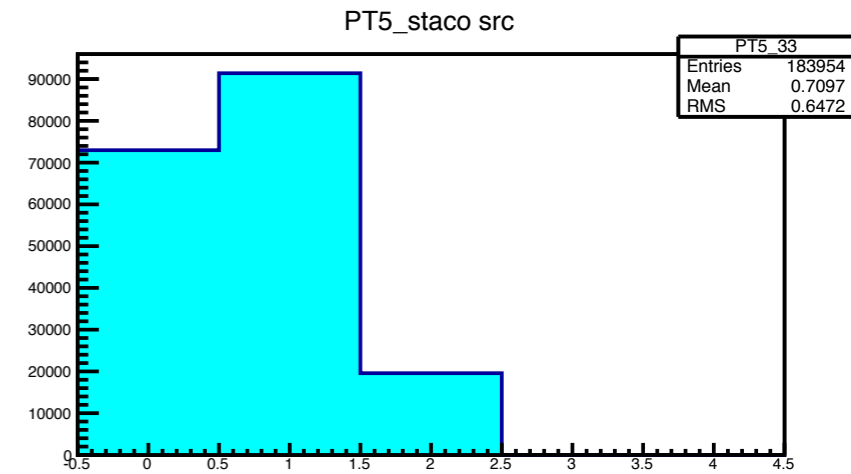
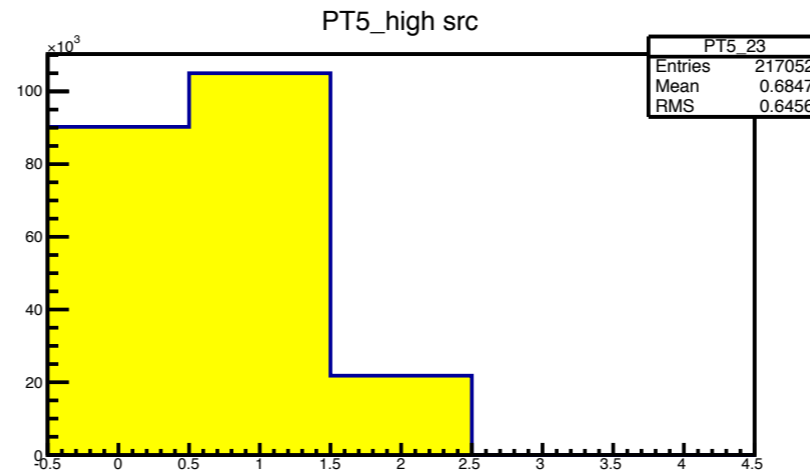
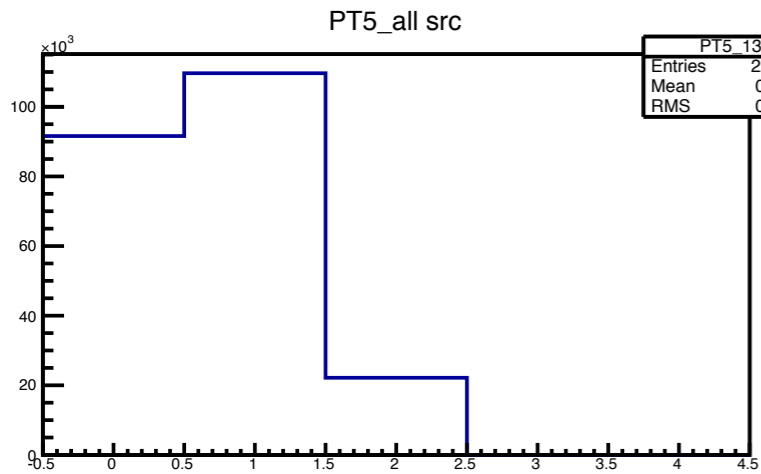
# Step 2: PT5



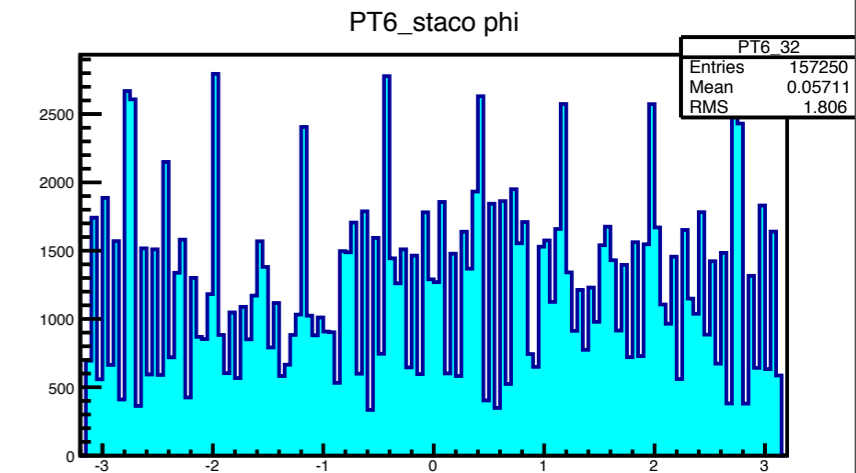
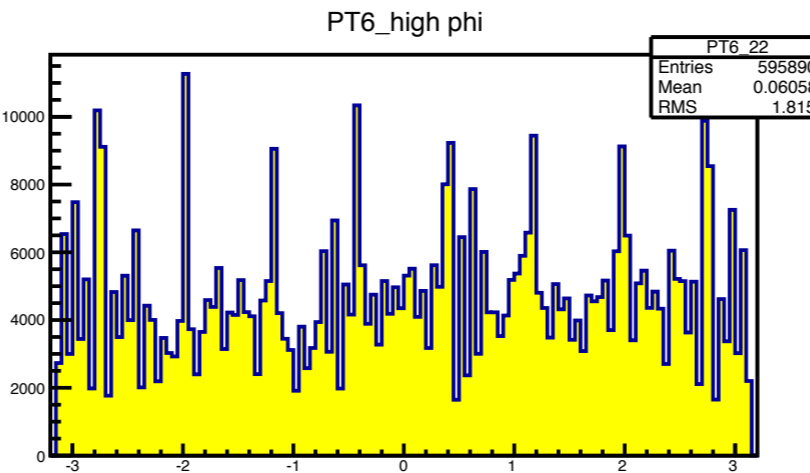
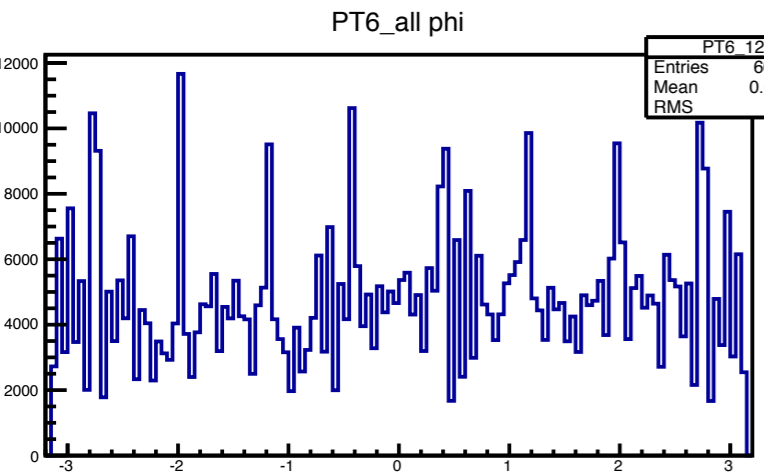
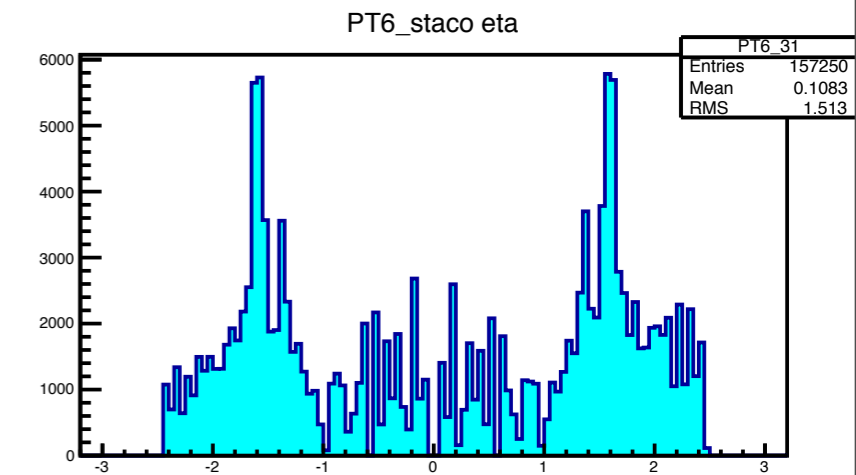
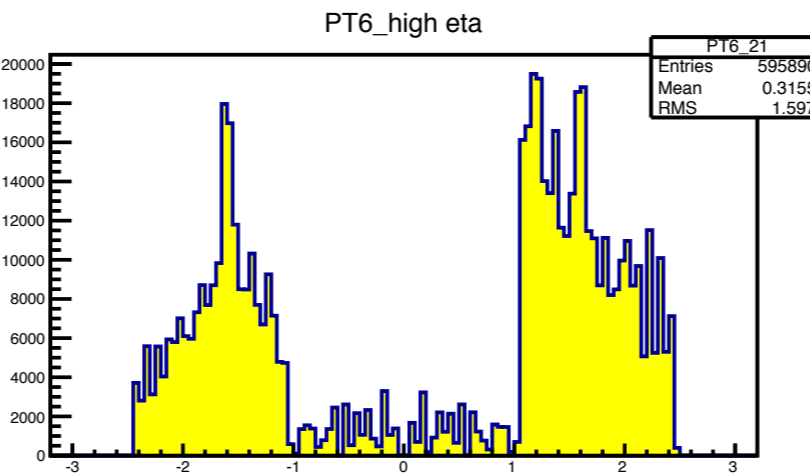
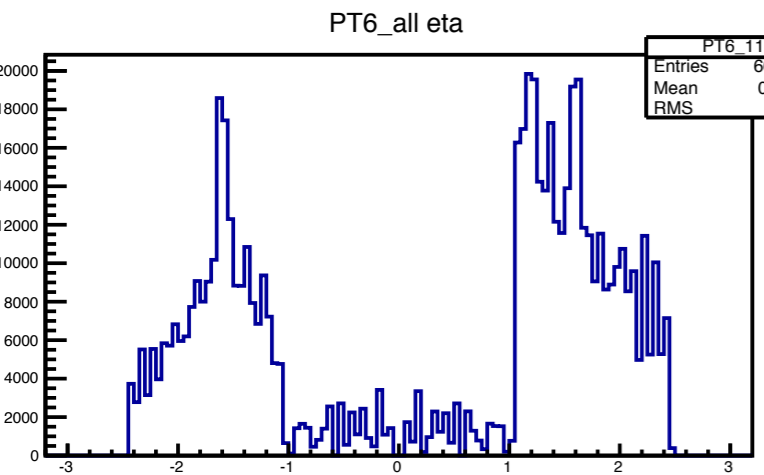
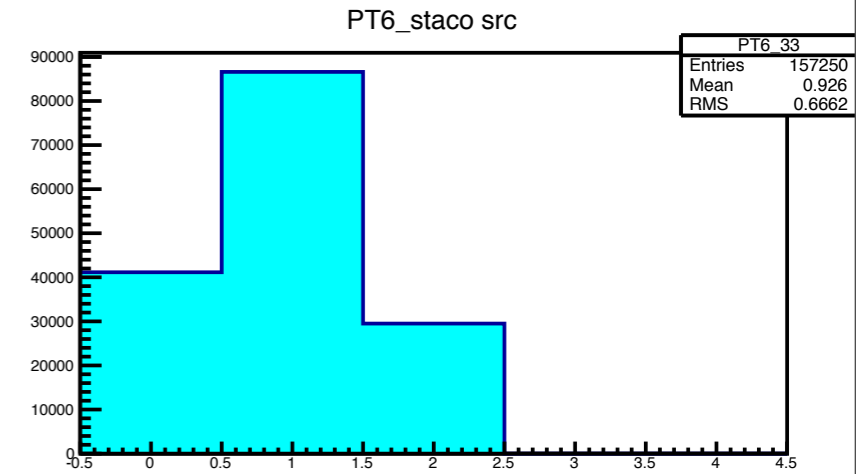
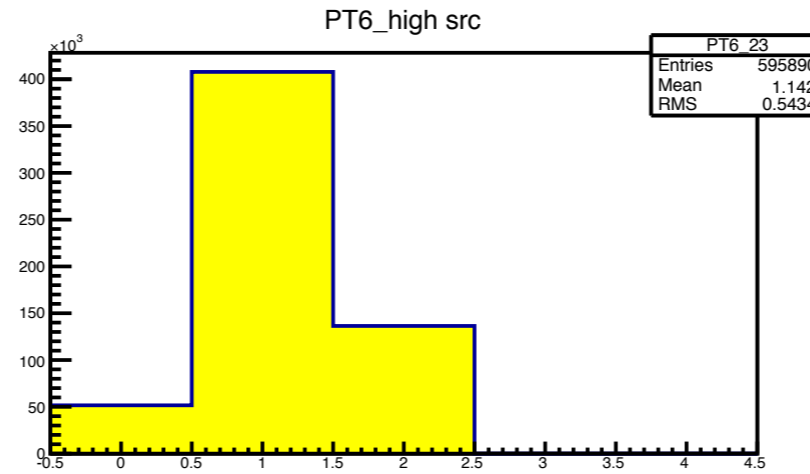
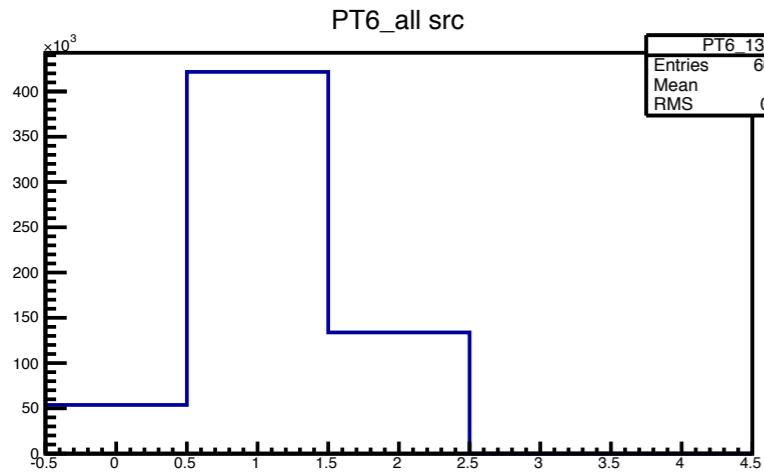
# Step 3: PT5



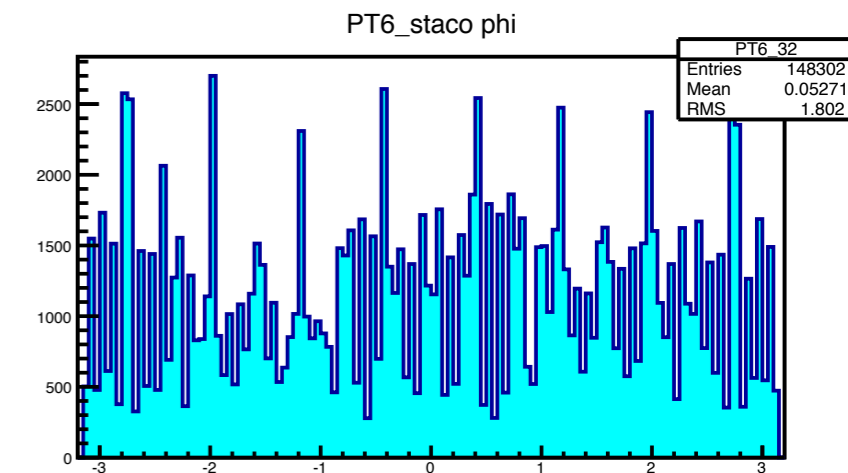
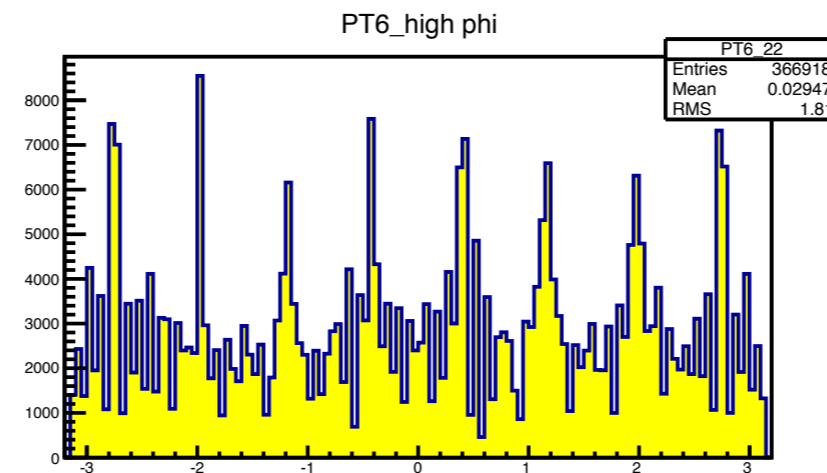
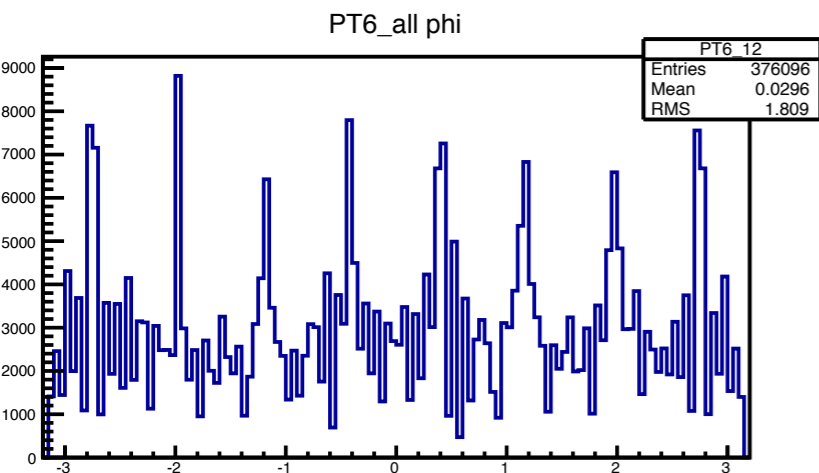
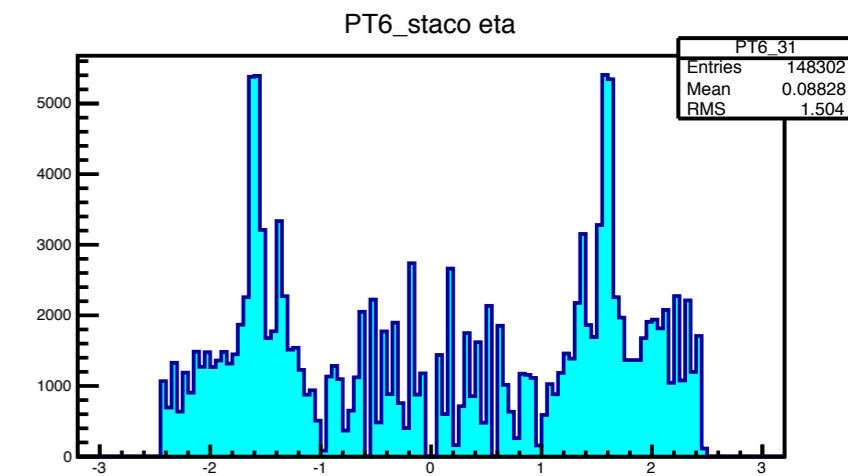
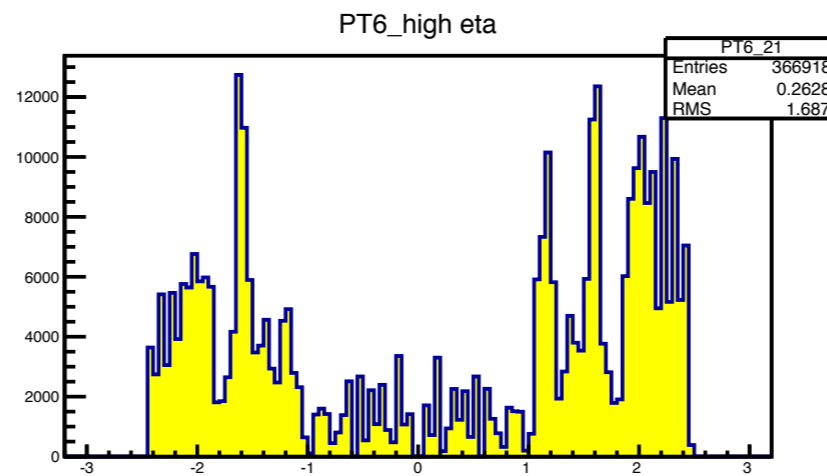
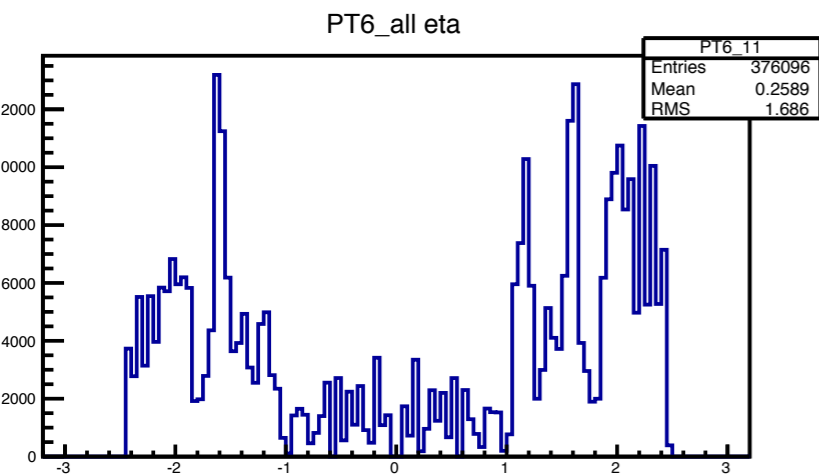
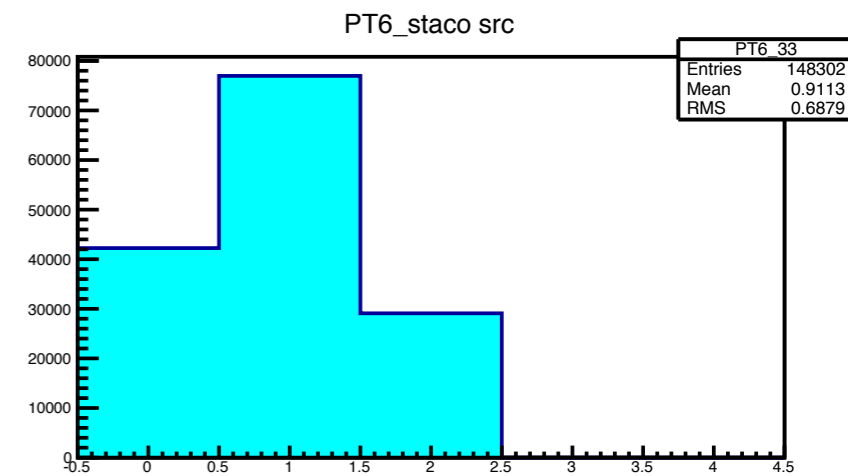
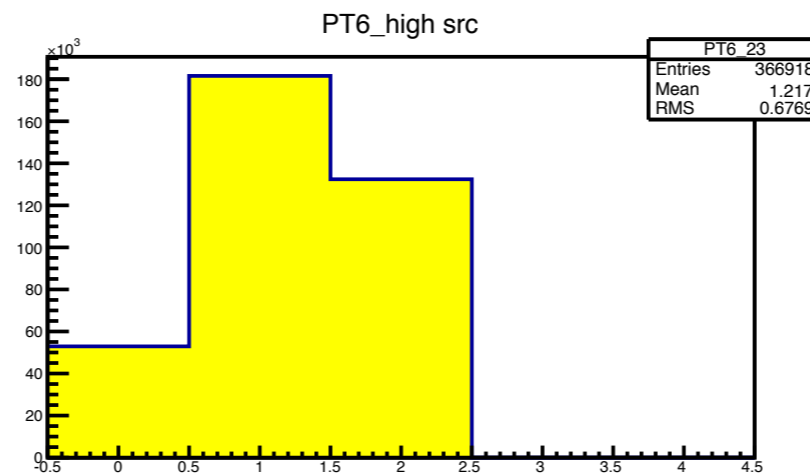
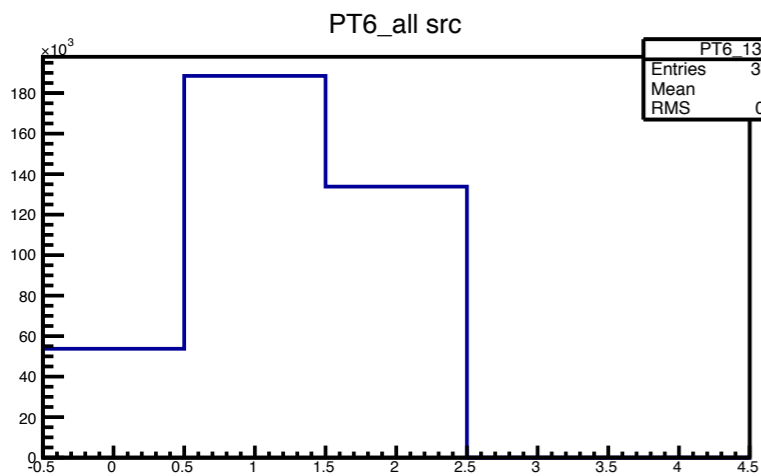
# Step 4: PT5



# Step 1: PT6

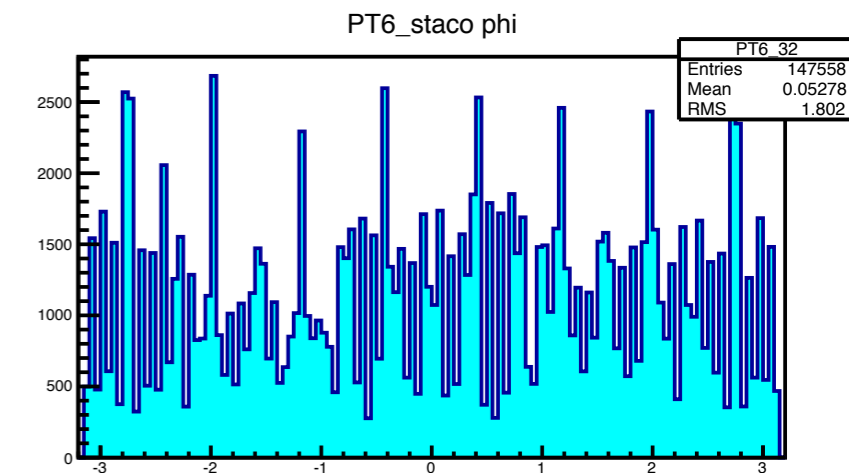
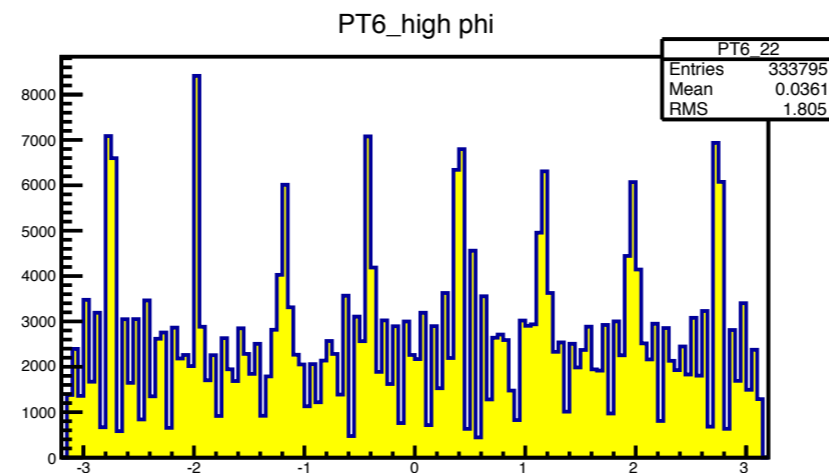
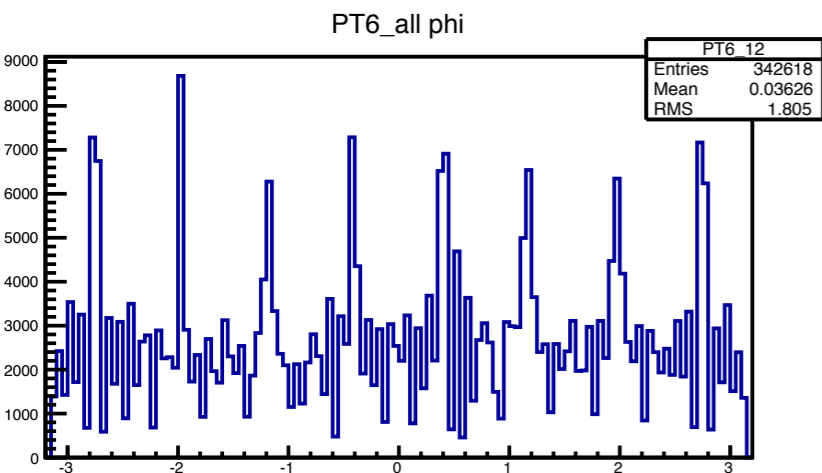
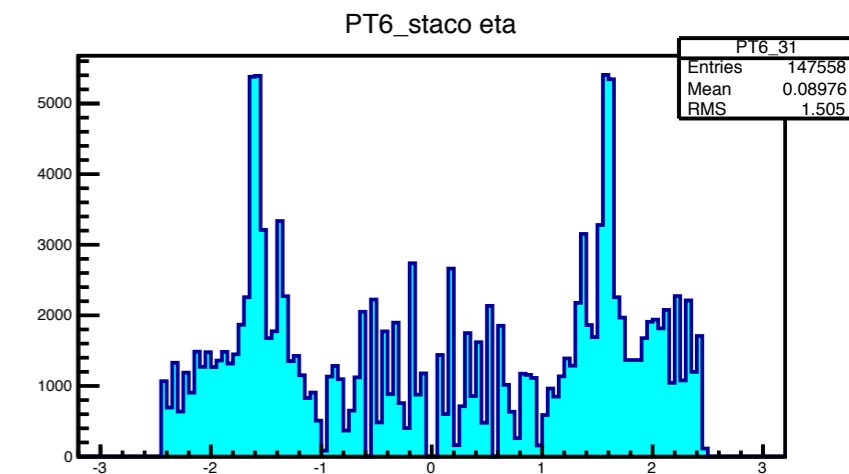
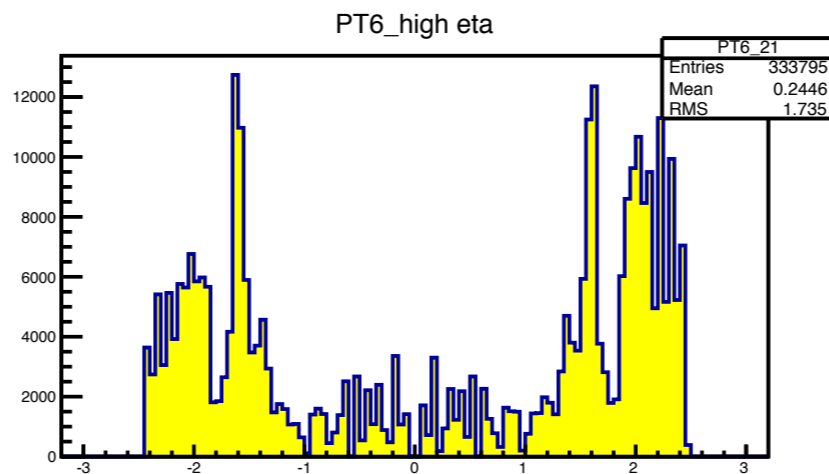
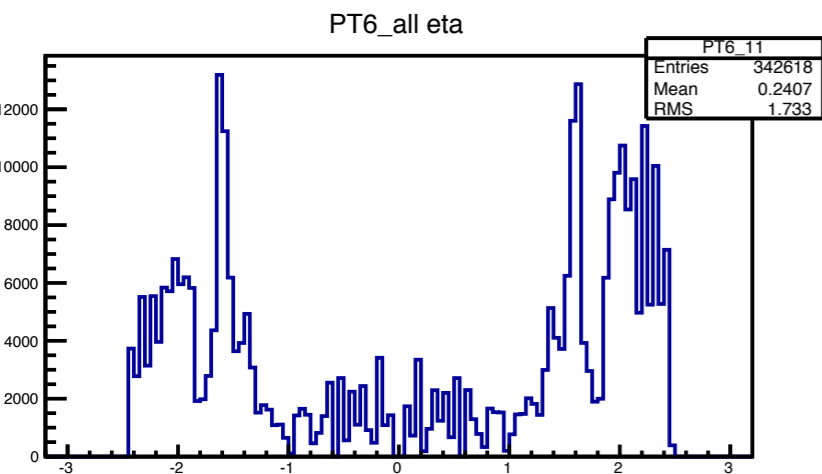
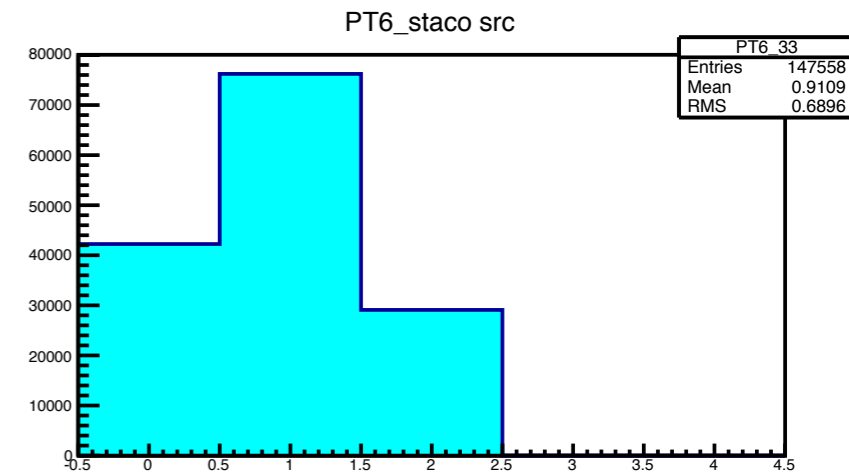
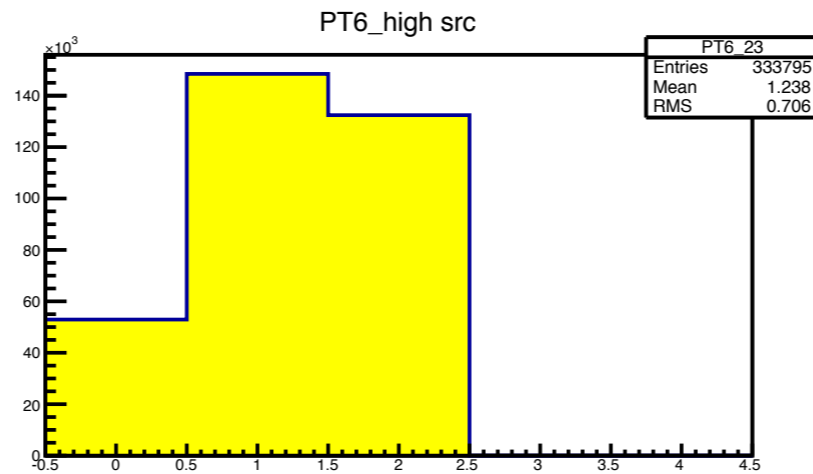
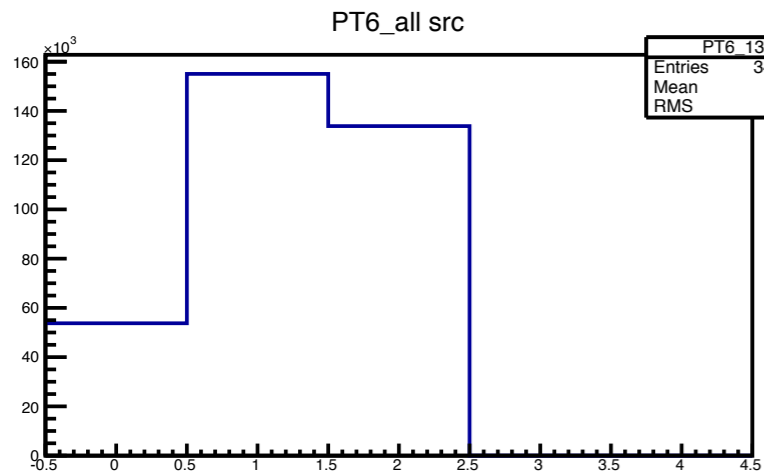


# Step 2: PT6

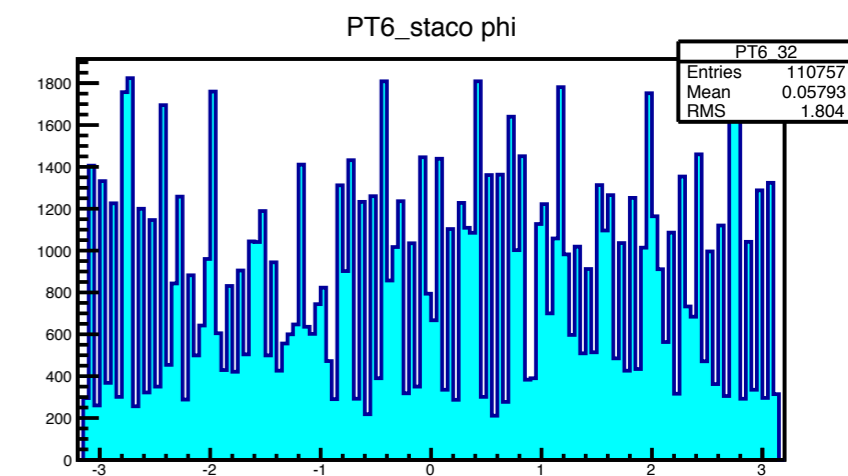
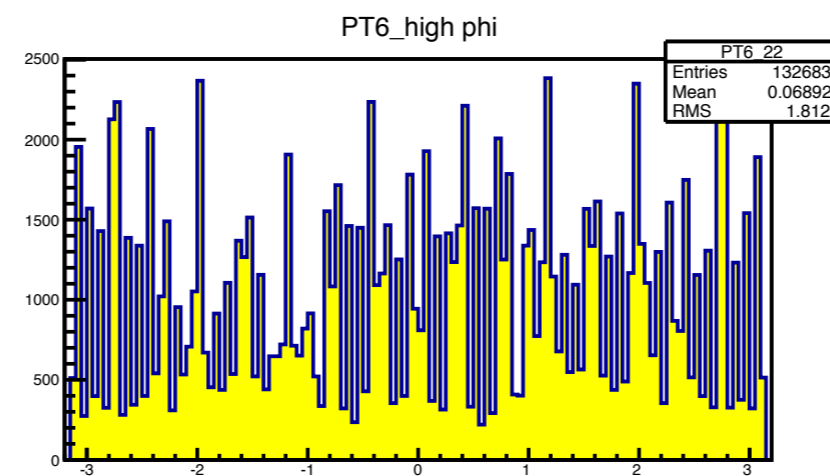
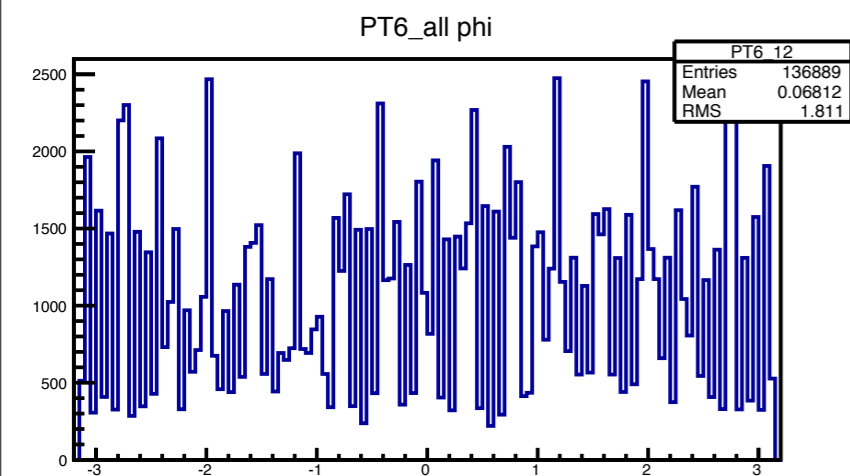
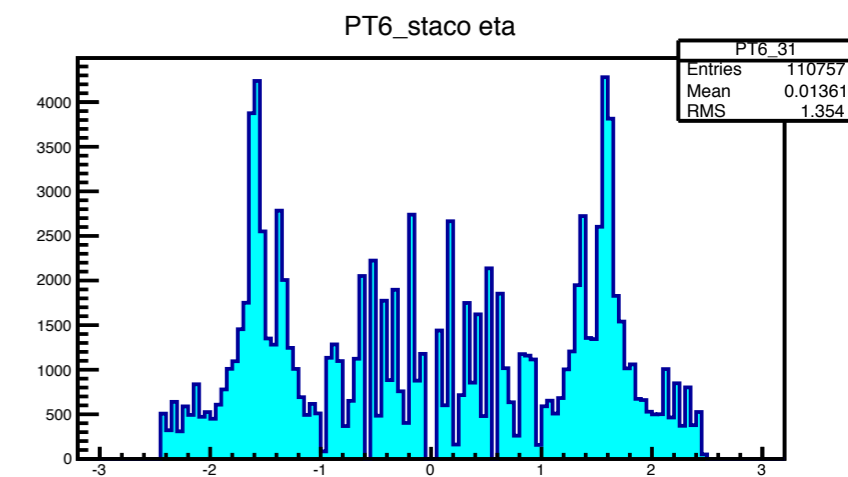
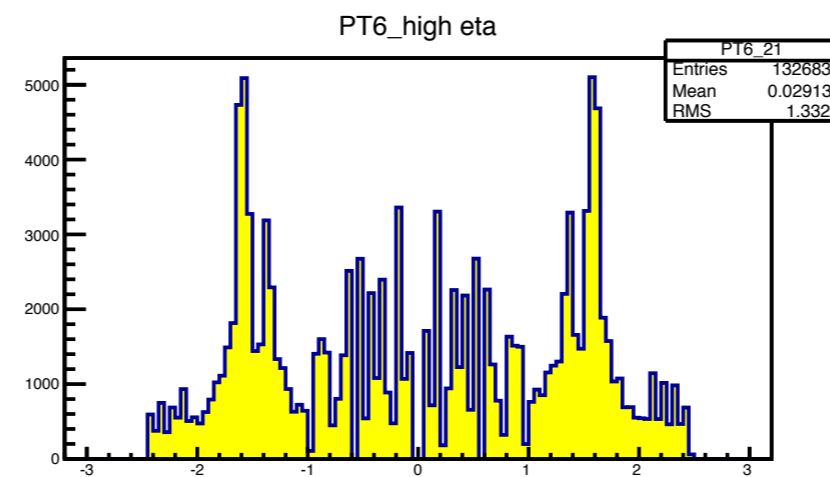
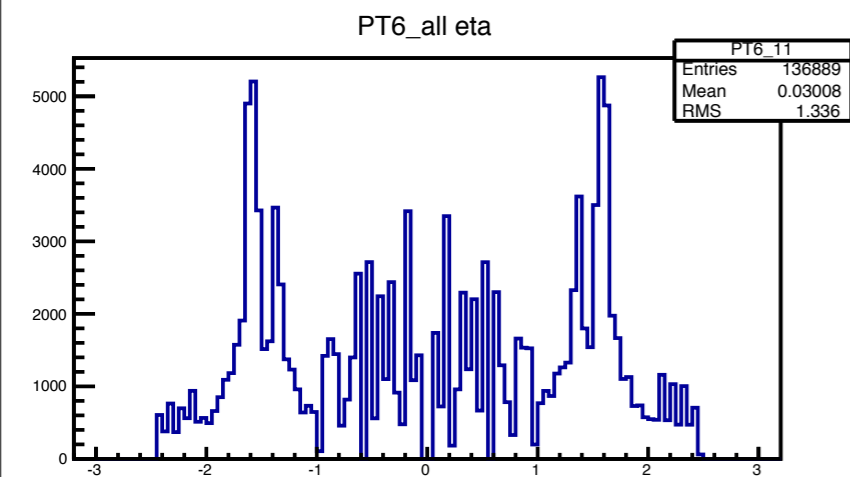
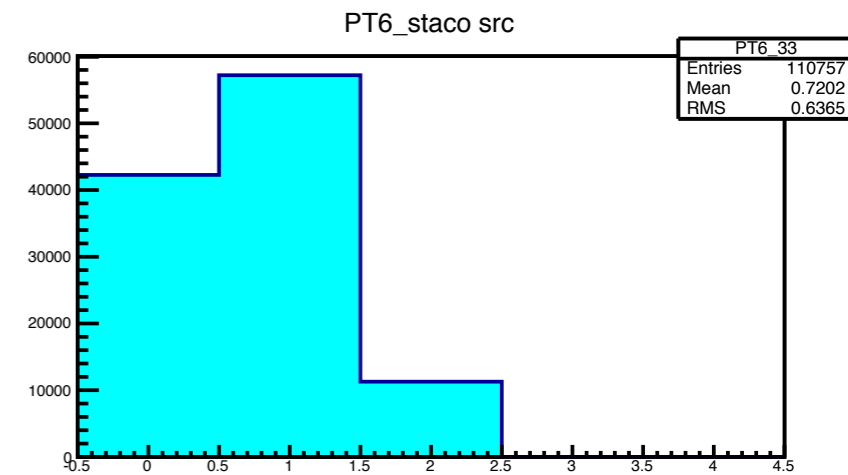
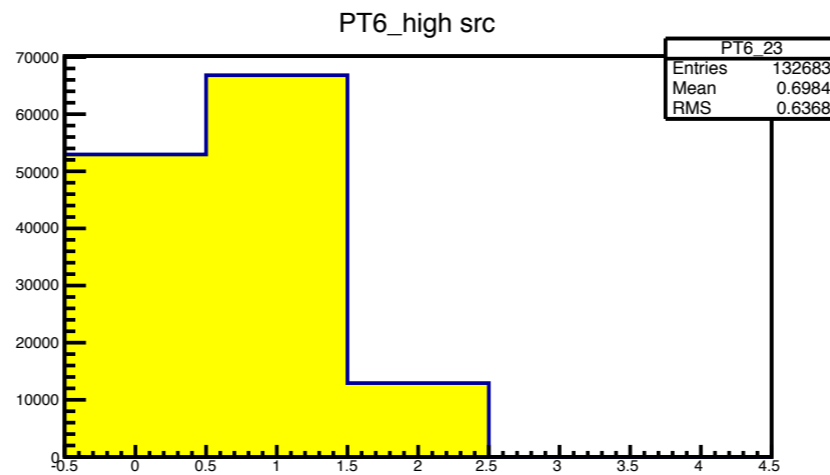
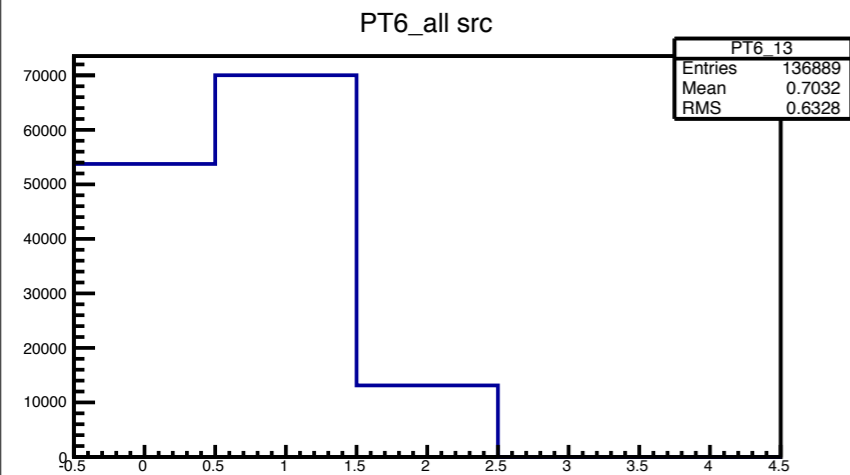




# Step 3: PT6

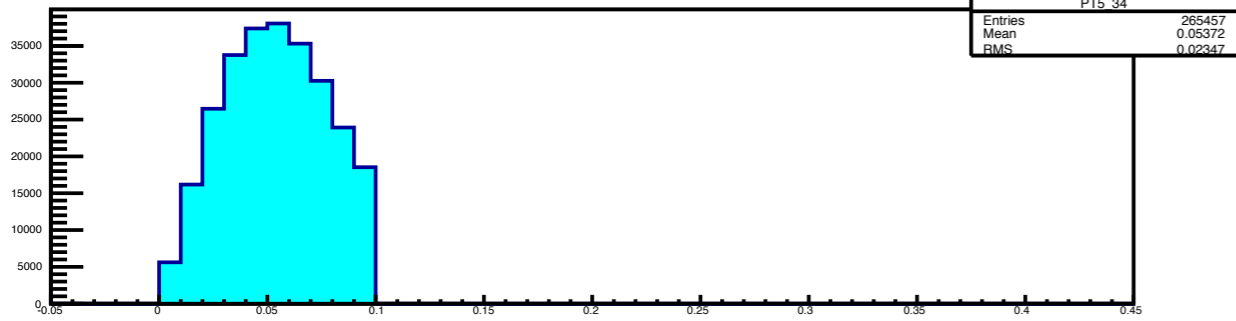


# Step 4: PT6

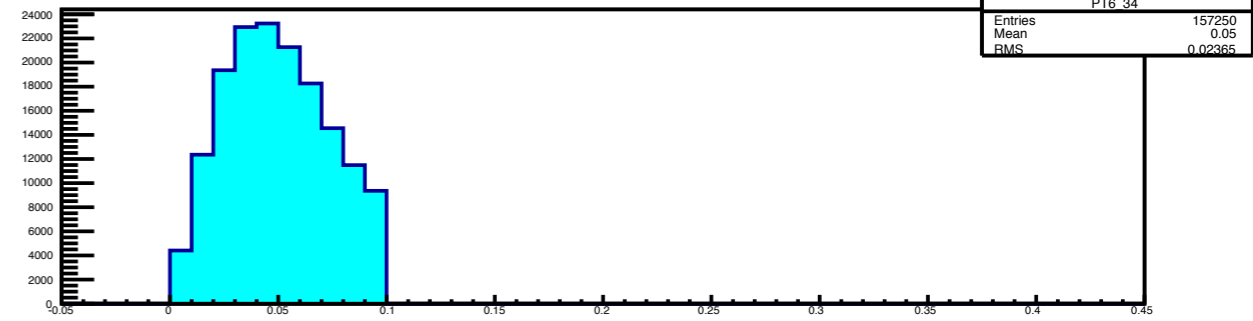


# Step 1: Compare

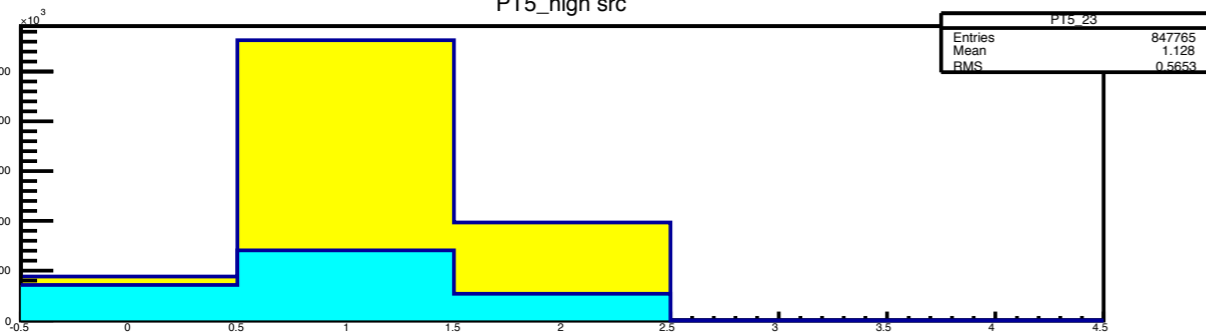
PT5\_staco dR



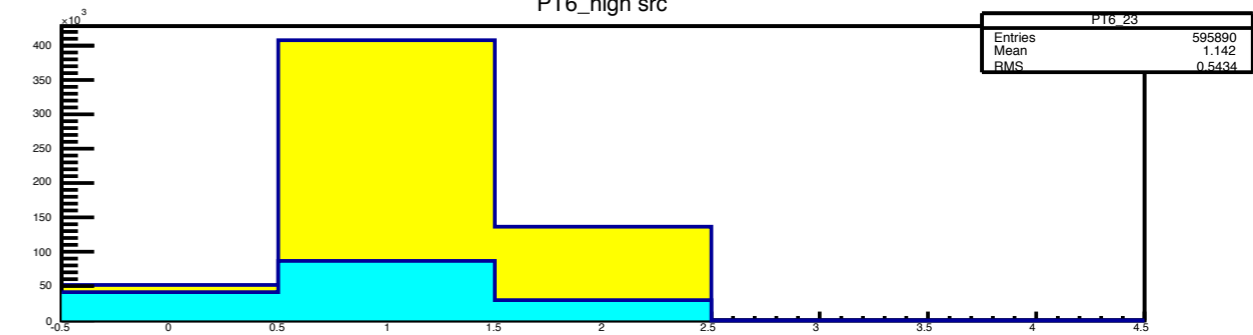
PT6\_staco dR



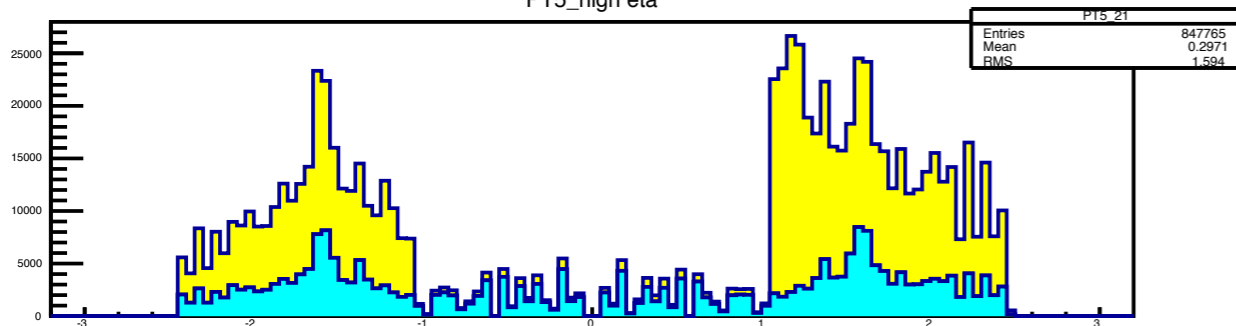
PT5\_high src



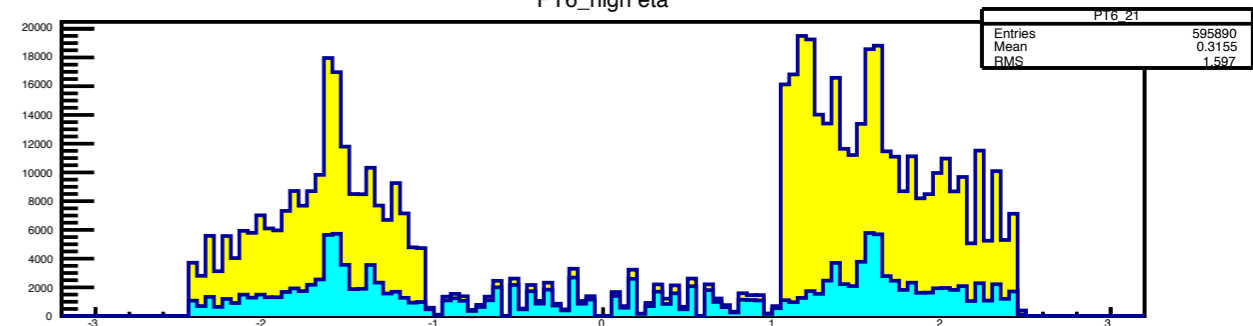
PT6\_high src



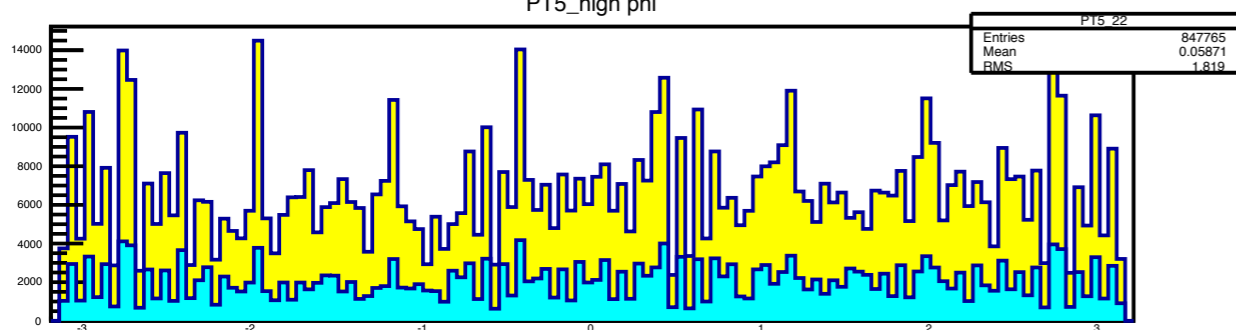
PT5\_high eta



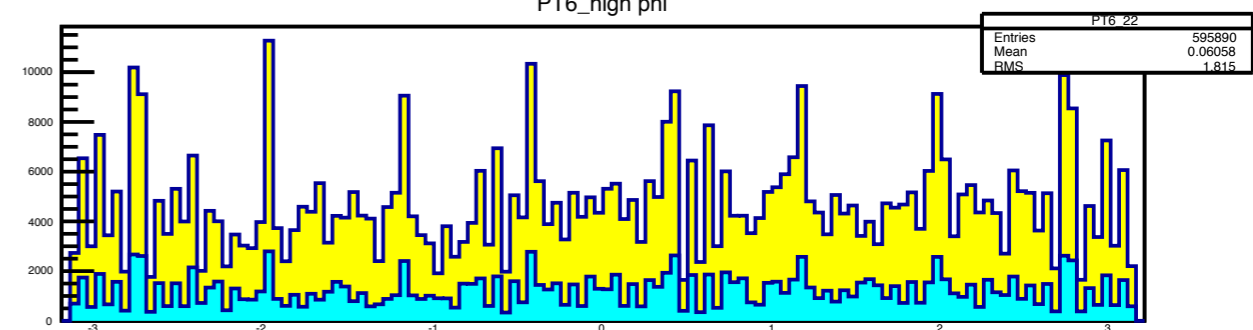
PT6\_high eta



PT5\_high phi

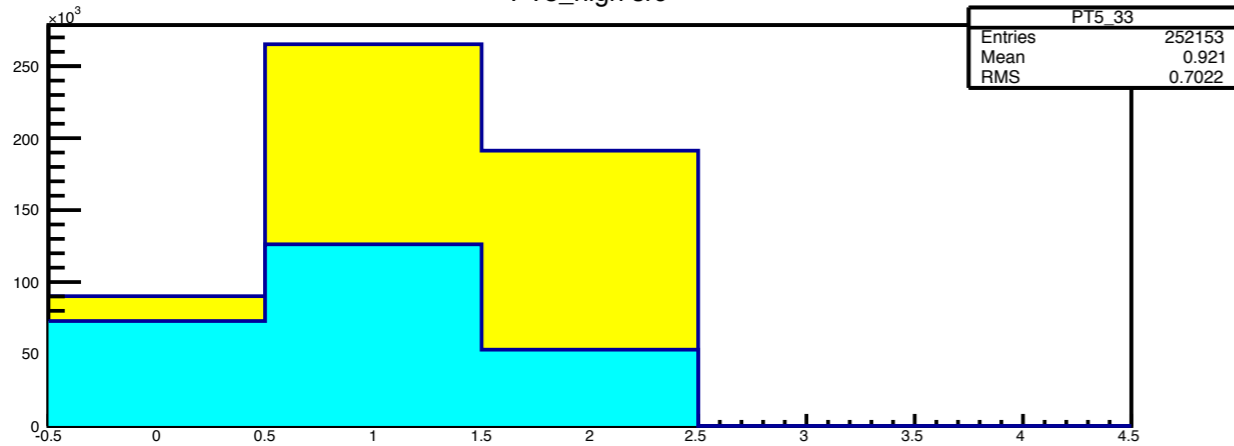


PT6\_high phi

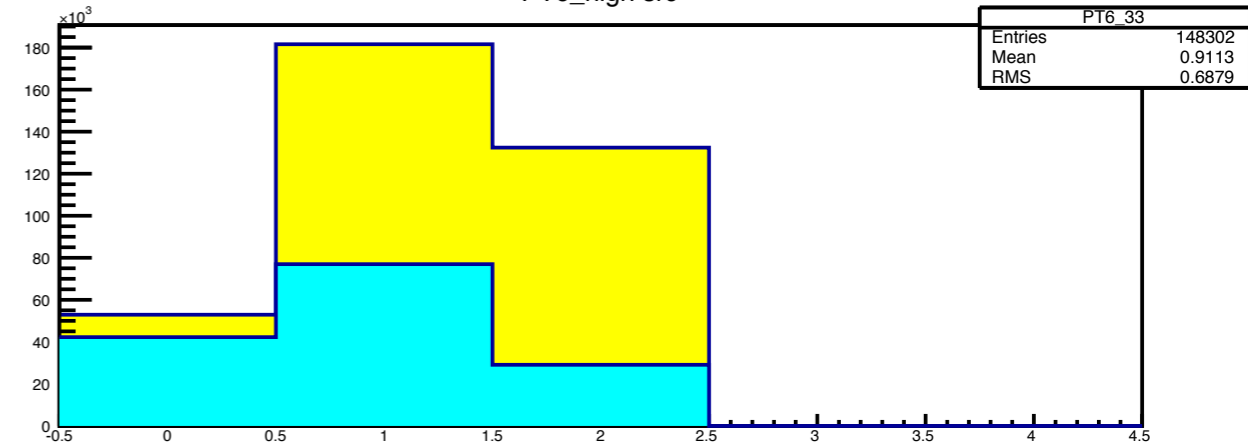


# Step 2: Compare

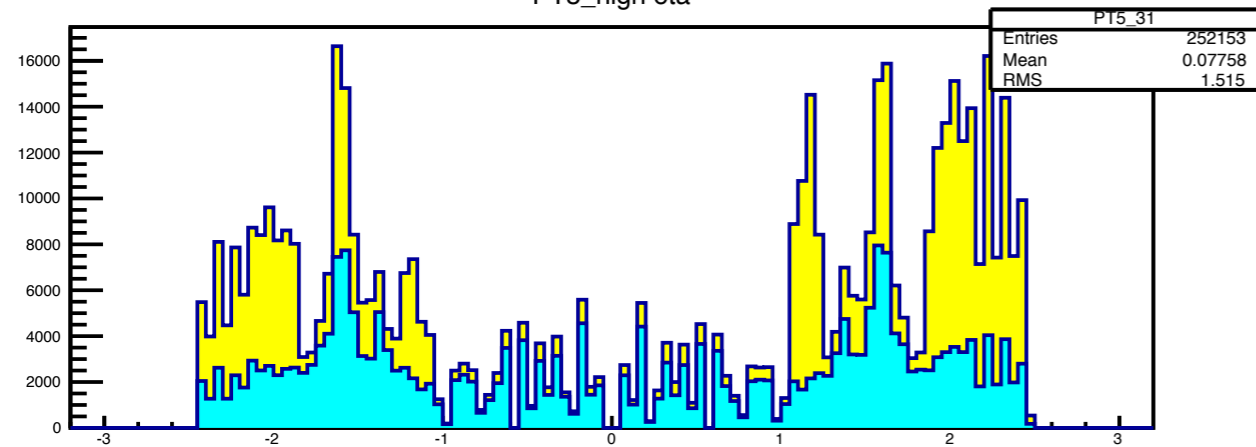
PT5\_high src



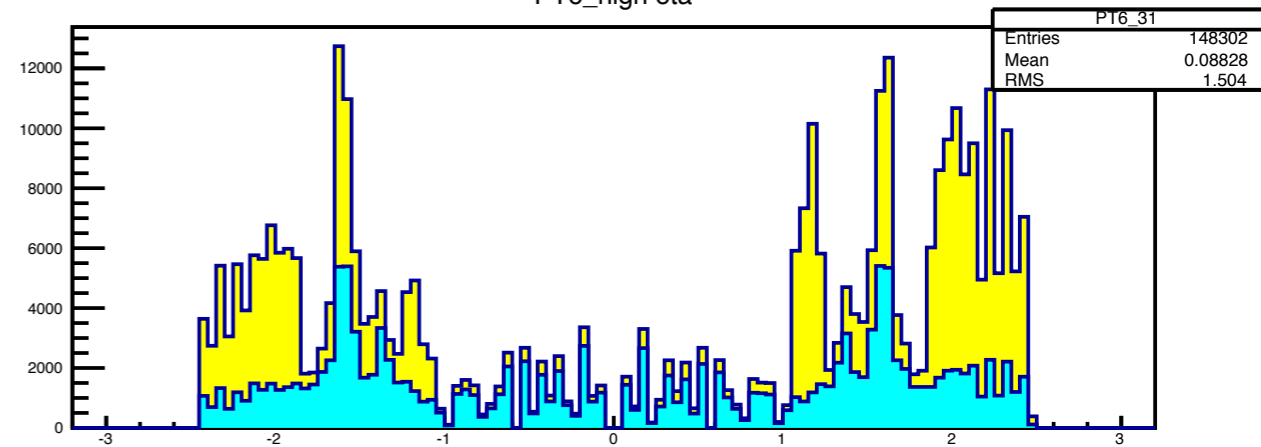
PT6\_high src



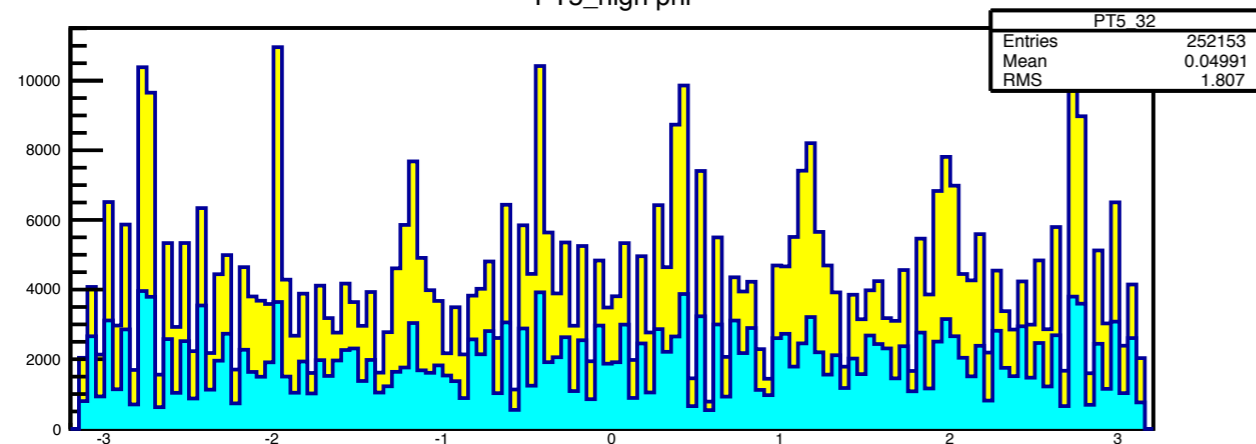
PT5\_high eta



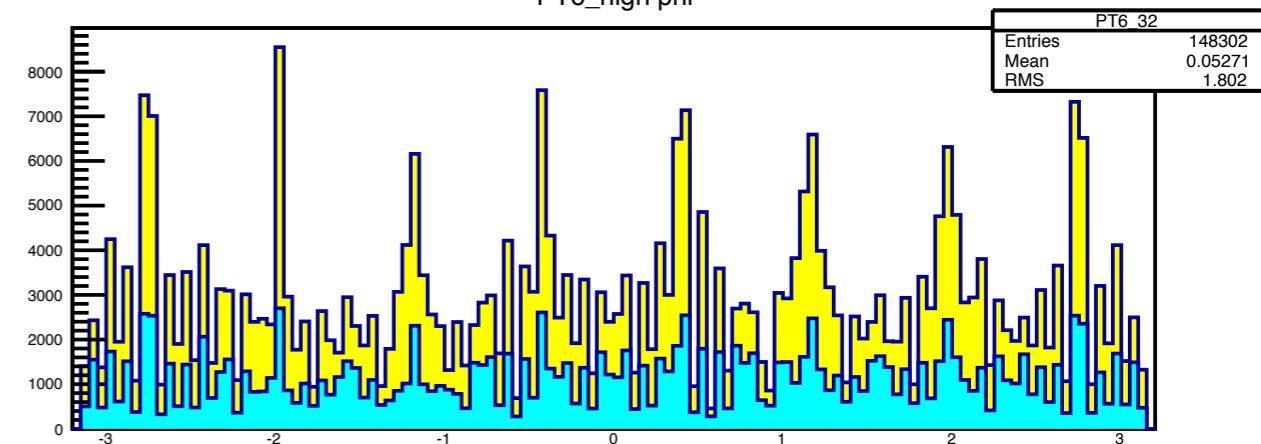
PT6\_high eta



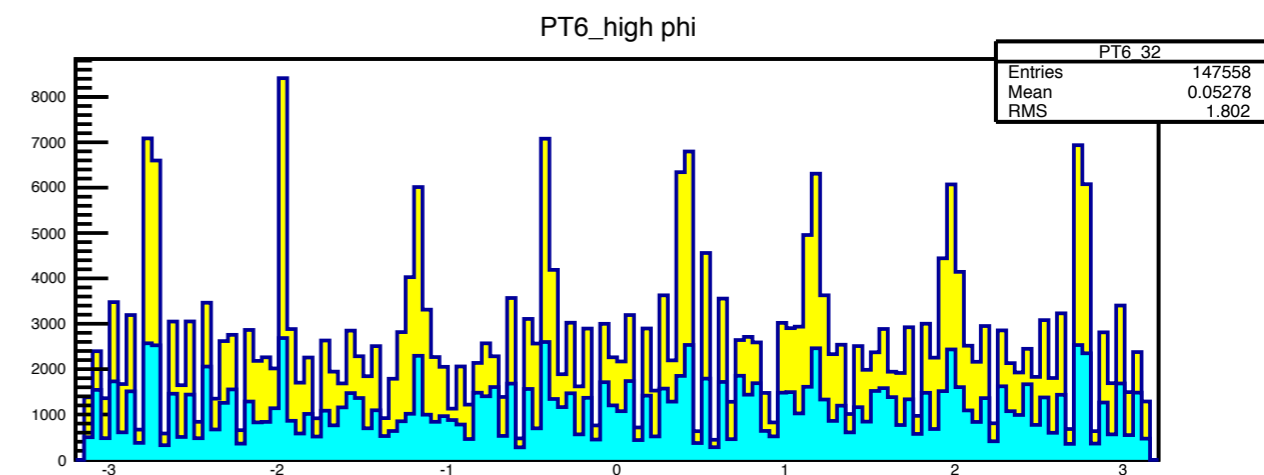
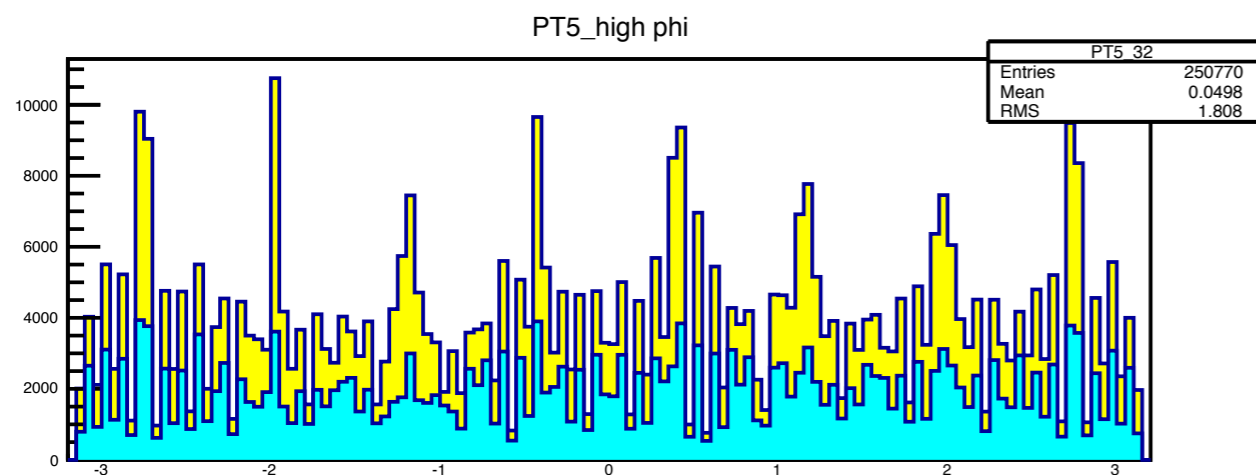
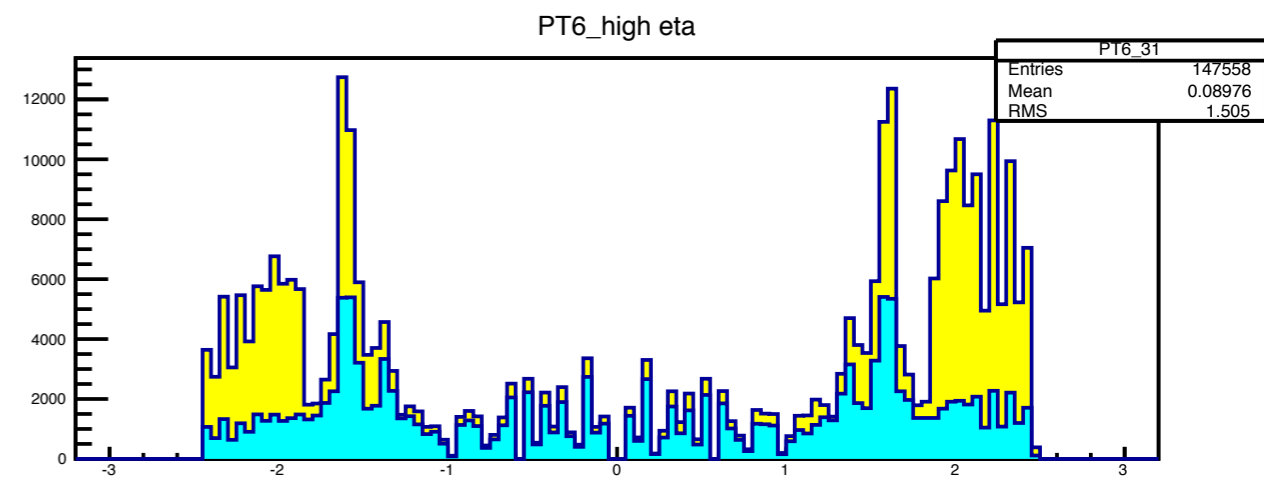
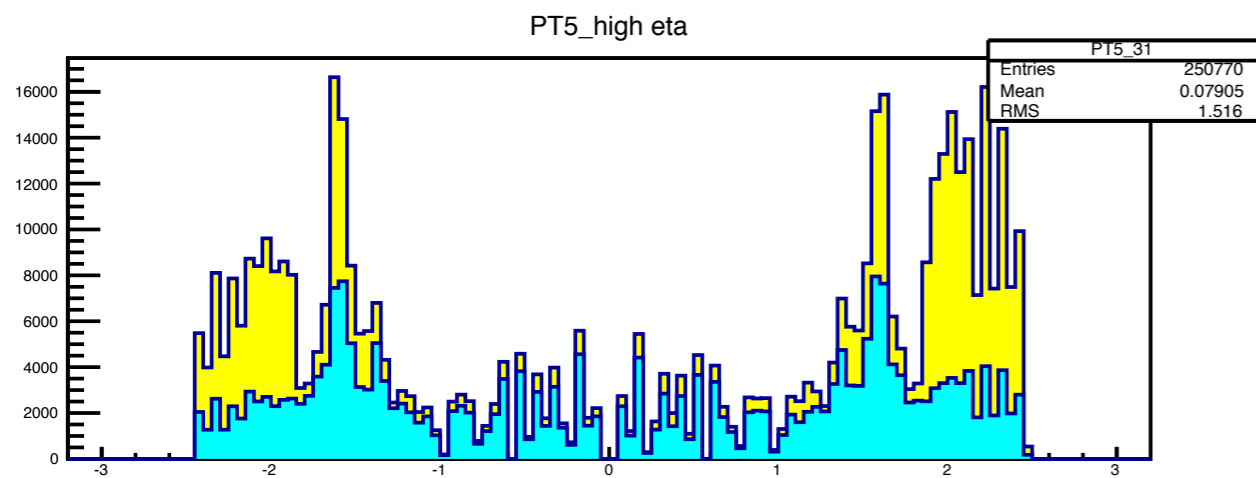
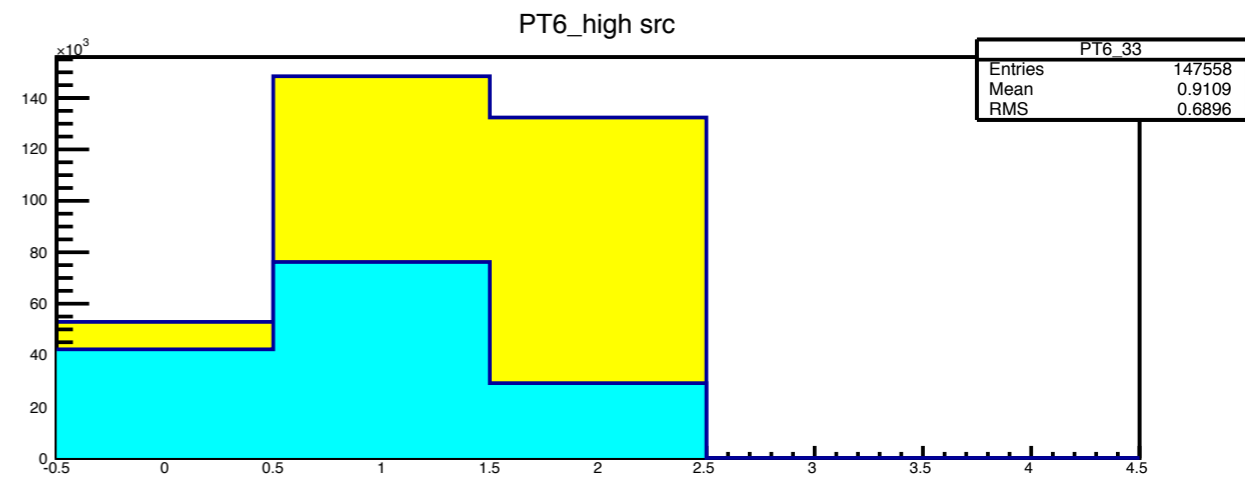
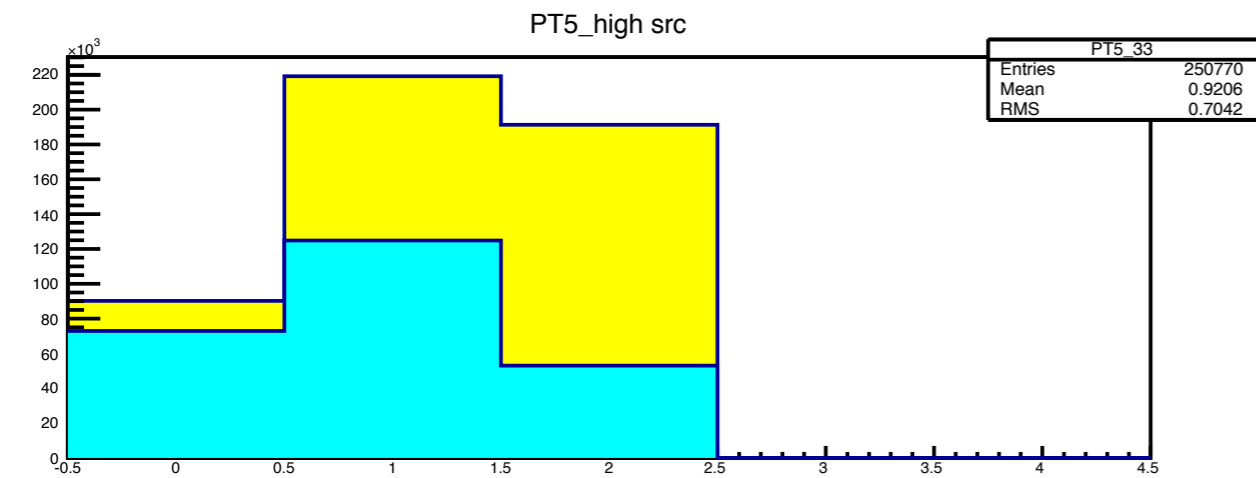
PT5\_high phi



PT6\_high phi



# Step 3: Compare



# Step 4: Compare

