Results of stable Collision Data

Merve Ince

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Introduction

- We have analyzed **sqrt(s)=13 TeV** stable collision run **254790 - 254833** which was taken **3.8 Tesla/25 ns** . You can find more information about these runs in Evernote .

- According to Shuichi's requests, we analyzed run **254790** with **L1_SingleJet200** trigger and we shared our results in Evernote, you can find there .

- In additon we analyzed **express cosmic run 254663 – 254683** in order to see results of HPD/RBX Noise. Today, we will show their results and compare .

- We also analyzed **collision** run **254905** (**3.8 Tesla/25 ns**) . You can see results of it in Evernote .

- Analyzed setup and run information
  - CMSSW_7_4_8_patch1
  - GR_E_V47::All

Collision Run 254790 - 254833

/ExpressPhysics/Run2015C-Express-v1/FEVT

It was reconstructed by using Method 2

Summary

Run 254790 – 3.8 Tesla

CMS Fill 4243 Report

Fill 4243 BunchFill | LhcEvents | RuntimeLogger | ConditionBrowser

CreateTime (declared)	2015.08.21 02:20:37
BeginTime (stable)	2015.08.21 05:22:41
toReady (to HV on)	0.828 *minutes*
toDumpReady	n/a *minutes*
dumpReadyToDump	n/a *minutes*
EndTime (dumped)	2015.08.21 09:54:10
Type	*Proton* – PROTON vs PROTON
Energy	6500 GeV
InitialLumi	$722.795\times10^{30}cm^{-2}sec^{-1}$
PeakLumi	$722.795\times10^{30}cm^{-2}sec^{-1}$
PeakPileup (interactions/BX)	<*n*> = 0.000
PeakSpecificLumi	$32362387699.433\times10^{27}cm^{-2}sec^{-1}(10^{11}p)^{-2}$
DeliveredLumi	10.776 pb^{-1}
RecordedLumi	10.398 pb^{-1}
Efficiency by lumi	96.488%
Efficiency by time	98.631%
Physics Streams Rate	470.691 Hz
InjectionScheme	25ns_315b_303_270_276_72bpi9inj
IntensityBeam1	360.338×10^{11}
IntensityBeam2	361.009×10^{11}
nBunchesBeam1	315
nBunchesBeam2	315
nCollidingBunches	303
nTargetBunches	303
CrossingAngle	145.0 µrad
β*	80.0 cm

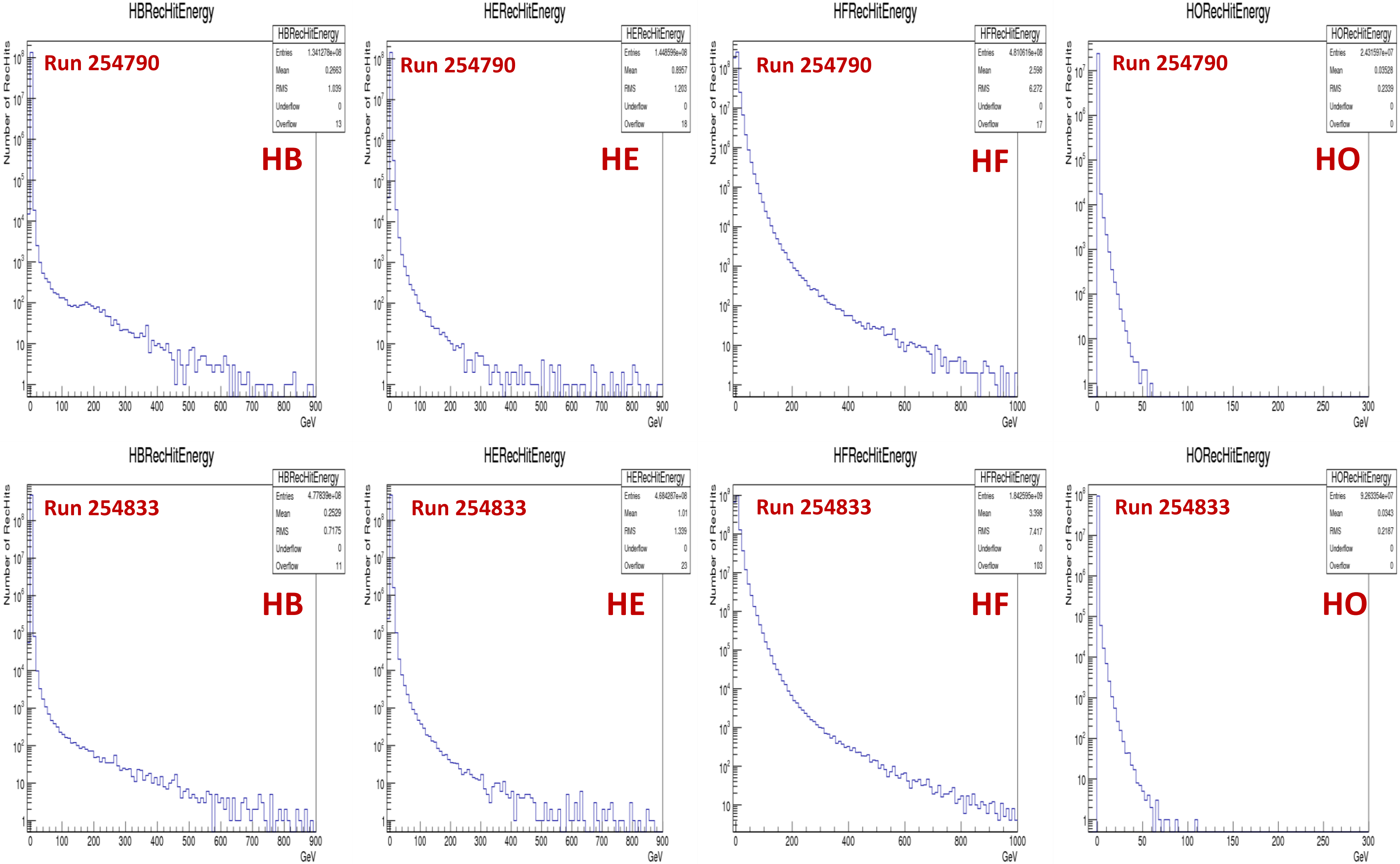
Run 254833 – 3.8 Tesla

CMS Fill 4246 Report

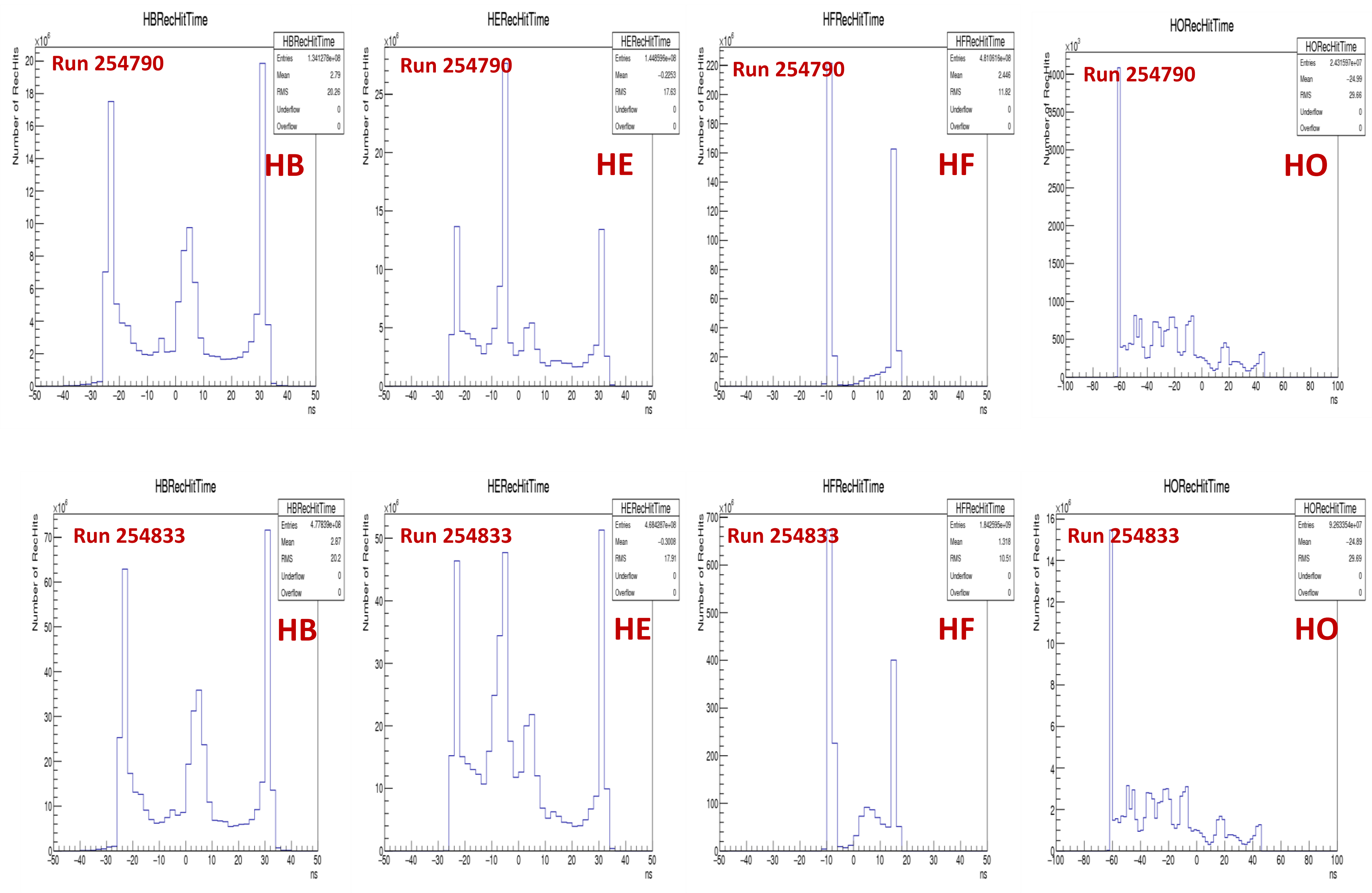
Fill 4246 BunchFill | LhcEvents | RuntimeLogger | ConditionBrowser

CreateTime (declared)	2015.08.21 18:01:45
BeginTime (stable)	2015.08.21 20:59:49
toReady (to HV on)	1.052 *minutes*
toDumpReady	3.710 *minutes*
dumpReadyToDump	3.577 *minutes*
EndTime (dumped)	2015.08.22 07:23:45
Type	*Proton* – PROTON vs PROTON
Energy	6500 GeV
InitialLumi	$919.705\times10^{30}cm^{-2}sec^{-1}$
PeakLumi	$919.705\times10^{30}cm^{-2}sec^{-1}$
PeakPileup (interactions/BX)	<*n*> = 0.000
PeakSpecificLumi	$83874484382.863\times10^{27}cm^{-2}sec^{-1}(10^{11}p)^{-2}$
DeliveredLumi	25.817 pb^{-1}
RecordedLumi	25.123 pb^{-1}
Efficiency by lumi	97.311%
Efficiency by time	99.346%
Physics Streams Rate	458.937 Hz
InjectionScheme	50ns_296b_254_36_246_36bpi12inj_alt
IntensityBeam1	352.035×10^{11}
IntensityBeam2	354.088×10^{11}
nBunchesBeam1	296
nBunchesBeam2	296
nCollidingBunches	328
nTargetBunches	254.0
CrossingAngle	145.0 µrad
β*	80.0 cm

RecHit Energy Distributions for HB, HE, HO, HF

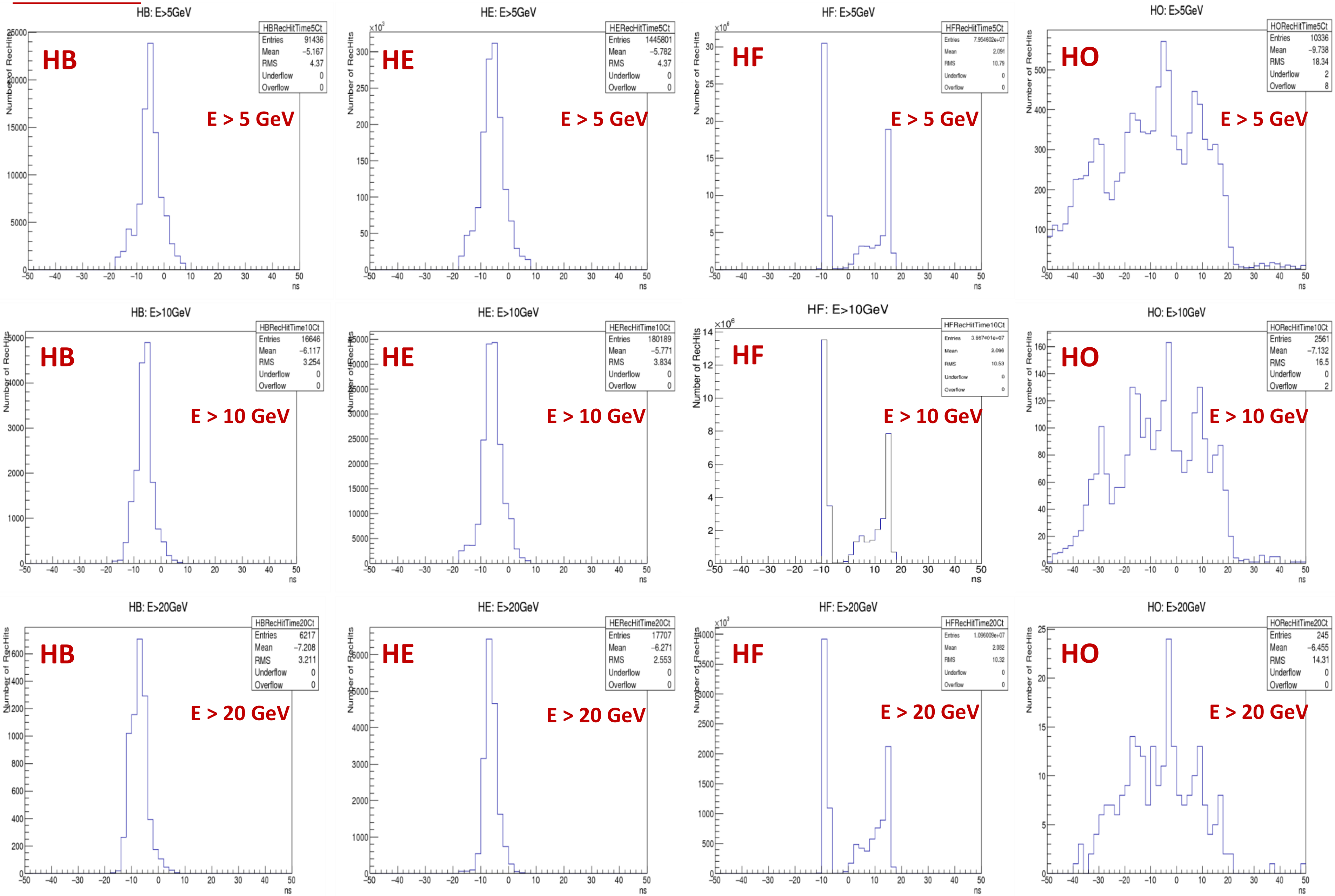


RecHit Time Distributions for HB, HE, HO, HF



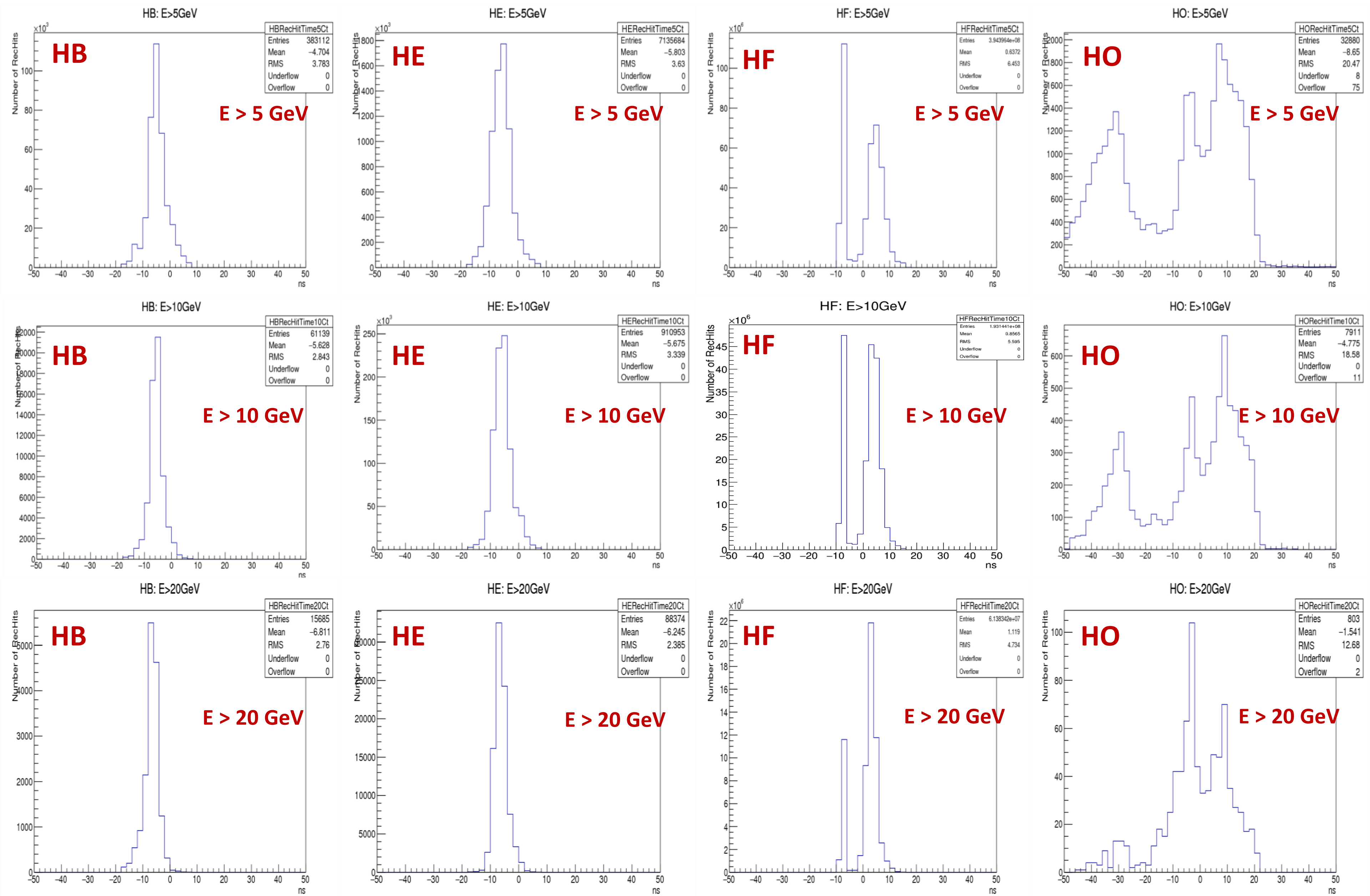
RecHit Time Distributions for HB, HE, HO, HF with E >5,10,20 GeV

Run 254790



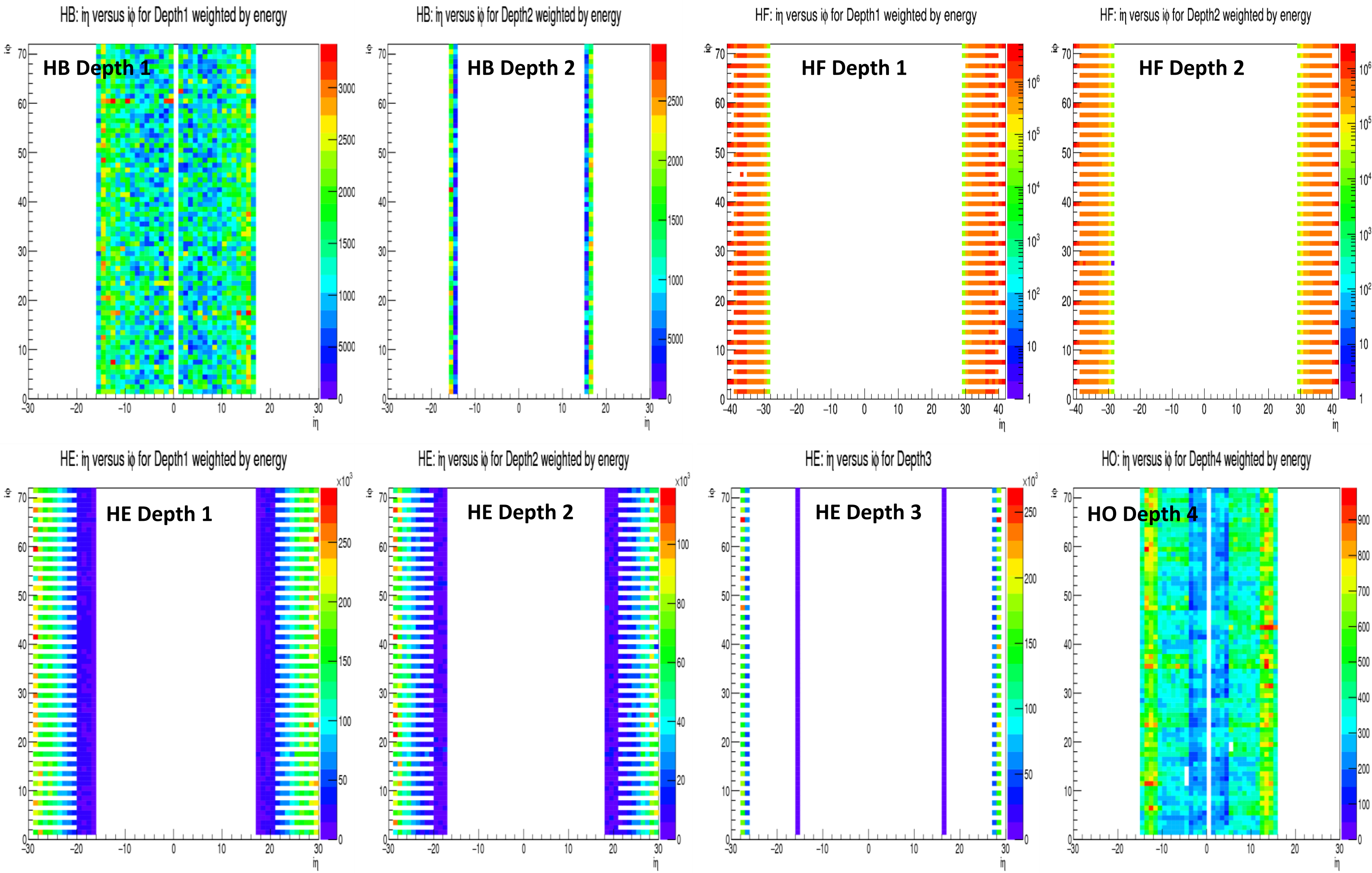
RecHit Time Distributions for HB, HE, HO, HF with E >5,10,20 GeV

Run 254833



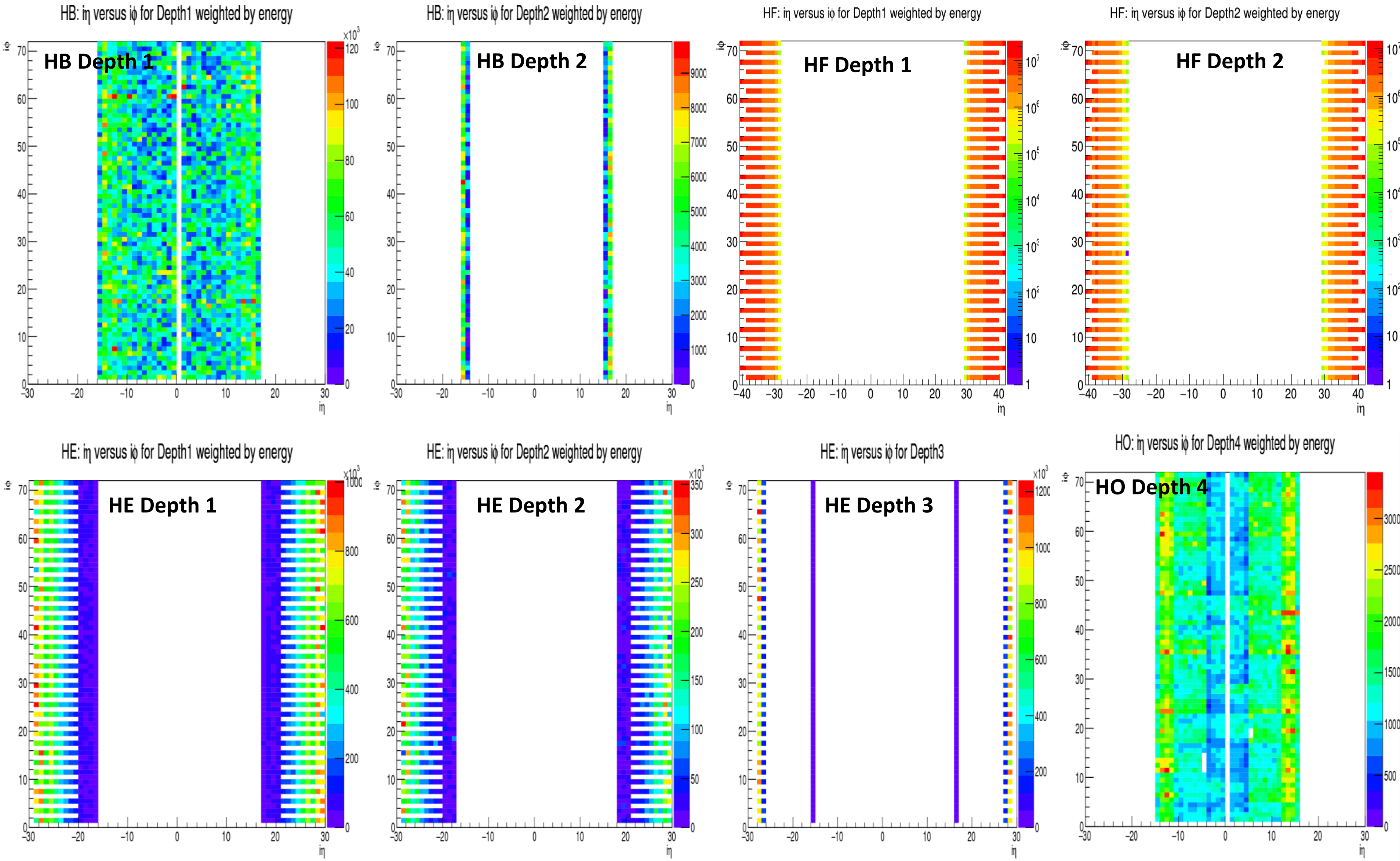
ieta Vs iphi weighted by Energy for HB, HE, HO, HF

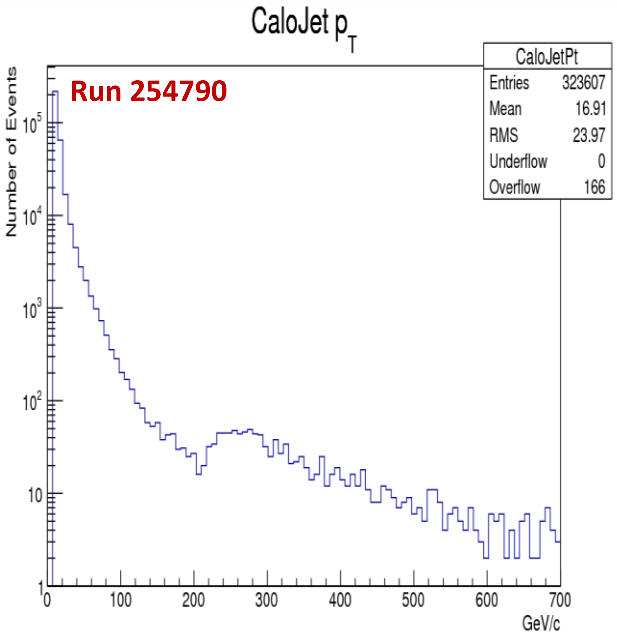
Run 254790

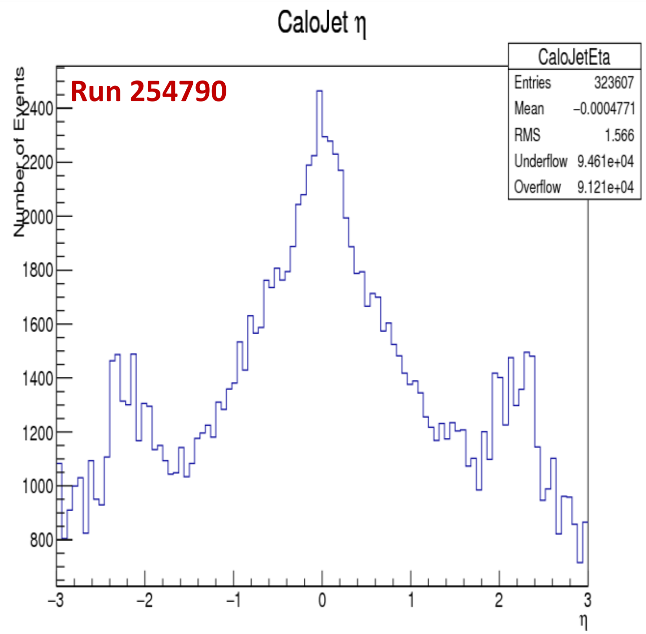


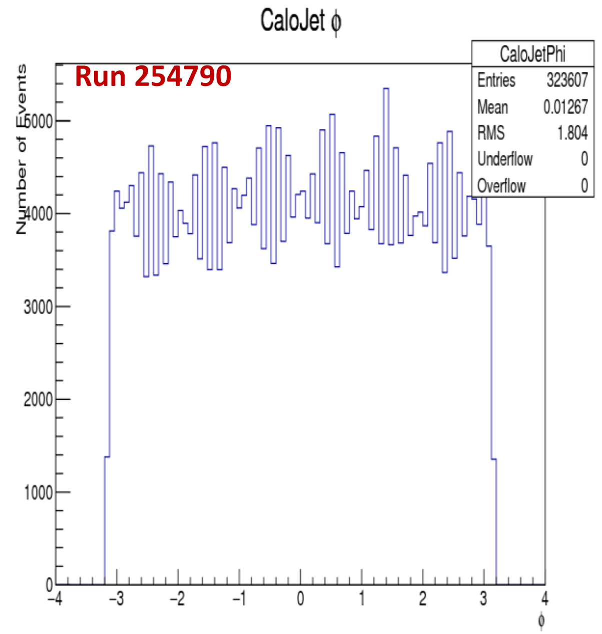
ieta Vs iphi weighted by Energy for HB, HE, HO, HF

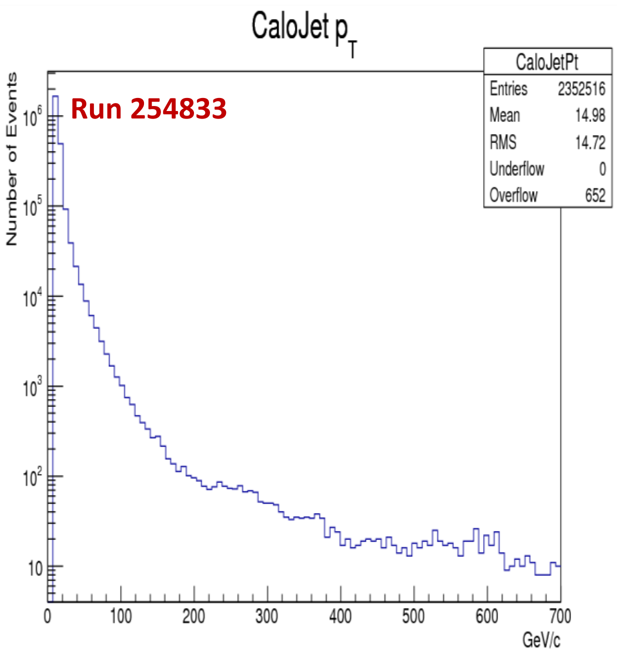
Run 254833

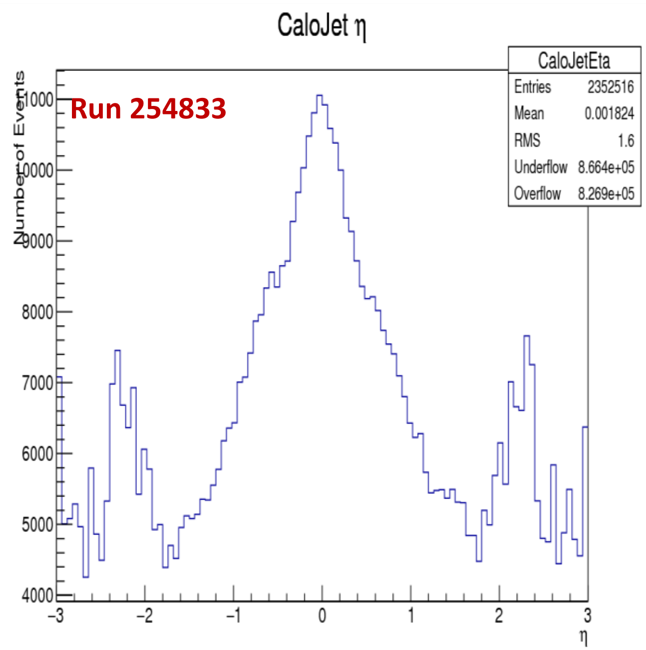


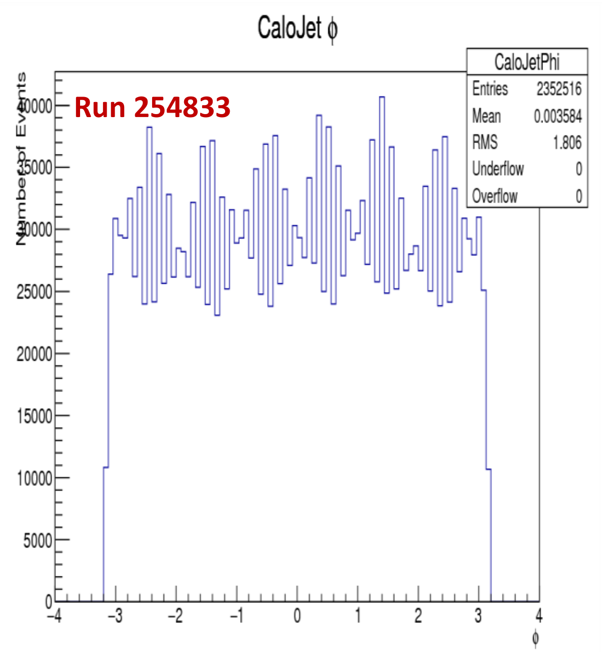

CaloJet p_T
CaloJetPt
Entries 323607
Mean 16.91
RMS 23.97
Underflow 0
Overflow 166
Run 254790
Number of Events
GeV/c

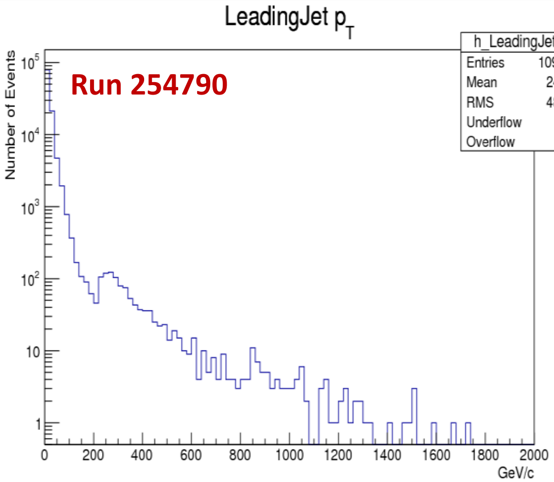

CaloJet η
CaloJetEta
Entries 323607
Mean −0.0004771
RMS 1.566
Underflow 9.461e+04
Overflow 9.121e+04
Run 254790
Number of Events
η

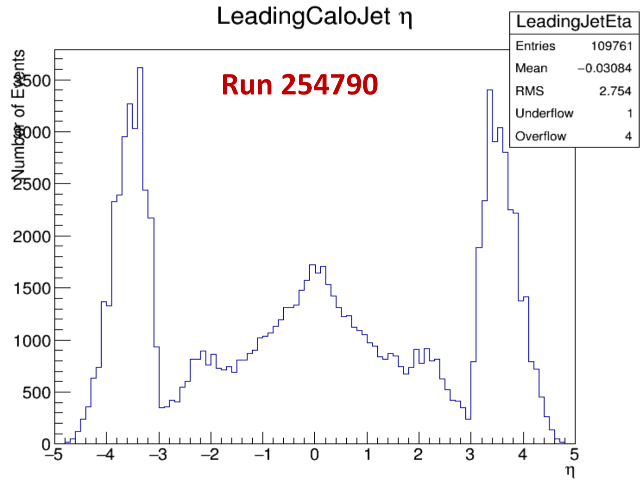

CaloJet ϕ
CaloJetPhi
Entries 323607
Mean 0.01267
RMS 1.804
Underflow 0
Overflow 0
Run 254790
Number of Events
ϕ

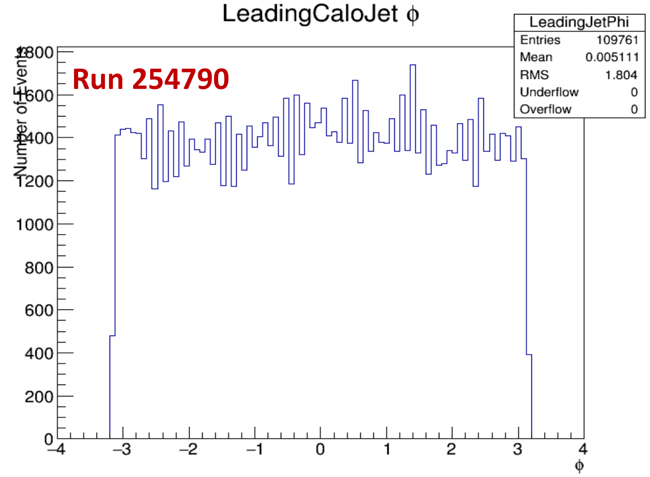

CaloJet p_T
CaloJetPt
Entries 2352516
Mean 14.98
RMS 14.72
Underflow 0
Overflow 652
Run 254833
Number of Events
GeV/c

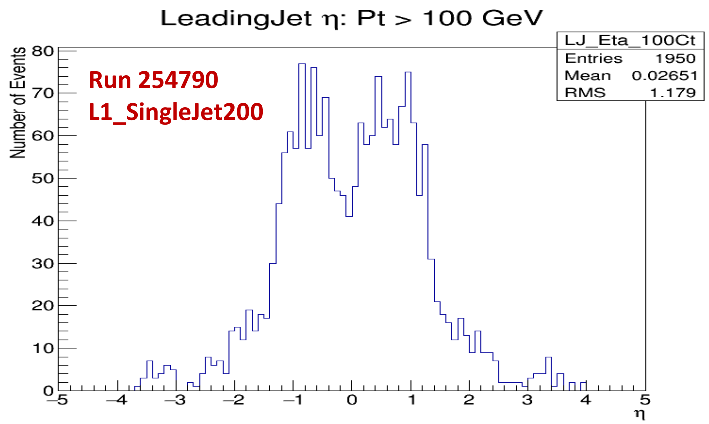

CaloJet η
CaloJetEta
Entries 2352516
Mean 0.001824
RMS 1.6
Underflow 8.664e+05
Overflow 8.269e+05
Run 254833
Number of Events
η

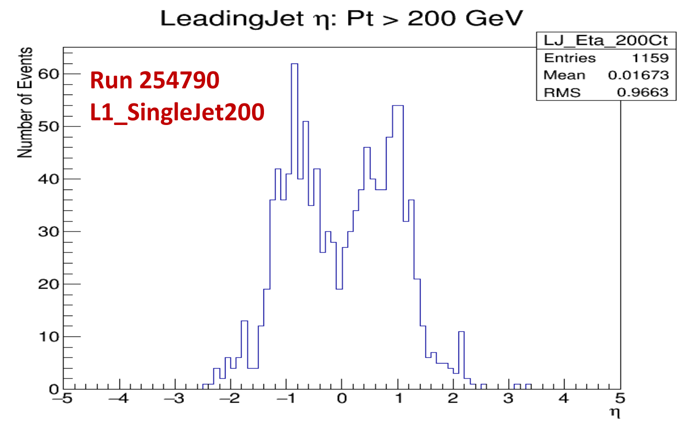

CaloJet ϕ
CaloJetPhi
Entries 2352516
Mean 0.003584
RMS 1.806
Underflow 0
Overflow 0
Run 254833
Number of Events
ϕ

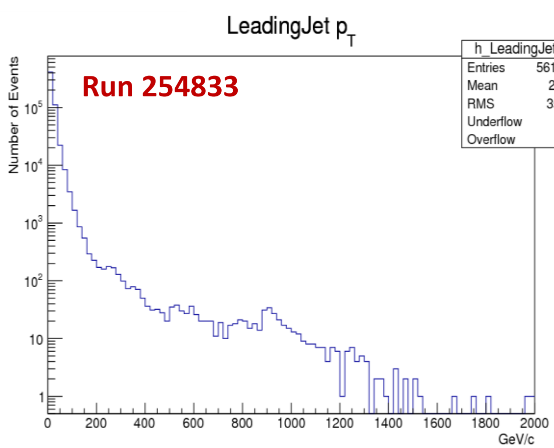

LeadingJet p_T
h_LeadingJetPt
Entries 109761
Mean 24.06
RMS 48.74
Underflow 0
Overflow 5
Run 254790
Number of Events
GeV/c

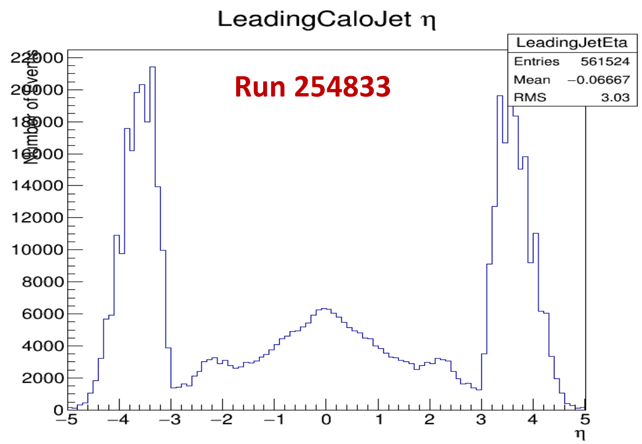

LeadingCaloJet η
LeadingJetEta
Entries 109761
Mean −0.03084
RMS 2.754
Underflow 1
Overflow 4
Run 254790
Number of Events
η

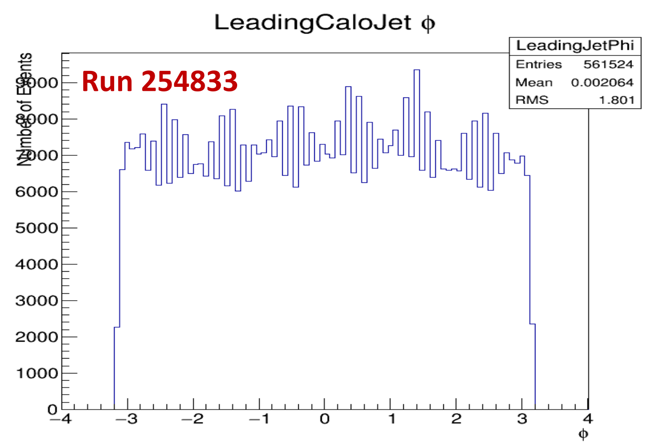

LeadingCaloJet ϕ
LeadingJetPhi
Entries 109761
Mean 0.005111
RMS 1.804
Underflow 0
Overflow 0
Run 254790
Number of Events
ϕ


LeadingJet η: Pt > 100 GeV
LJ_Eta_100Ct
Entries 1950
Mean 0.02651
RMS 1.179
Run 254790
L1_SingleJet200
Number of Events
η


LeadingJet η: Pt > 200 GeV
LJ_Eta_200Ct
Entries 1159
Mean 0.01673
RMS 0.9663
Run 254790
L1_SingleJet200
Number of Events
η

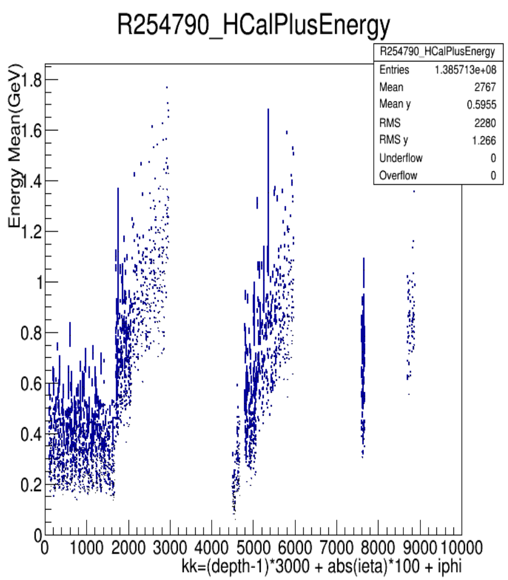

LeadingJet p_T
h_LeadingJetPt
Entries 561524
Mean 21.41
RMS 35.45
Underflow 0
Overflow 23
Run 254833
Number of Events
GeV/c

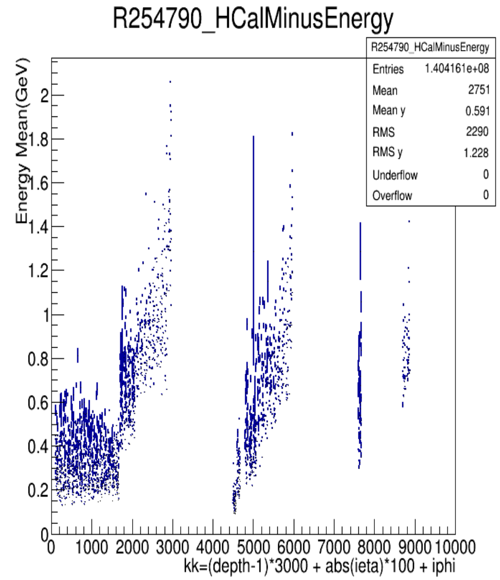

LeadingCaloJet η
LeadingJetEta
Entries 561524
Mean −0.06667
RMS 3.03
Run 254833
Number of Events
η

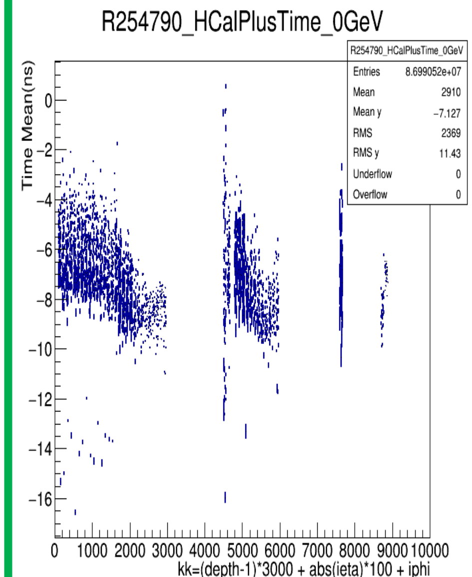

LeadingCaloJet ϕ
LeadingJetPhi
Entries 561524
Mean 0.002064
RMS 1.801
Run 254833
Number of Events
ϕ

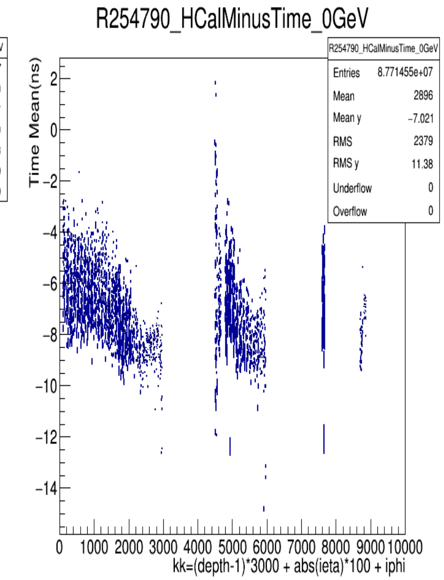
HBHE RecoHit Energy&Time vs Channel ID for Minus and Plus Side (before/after 4GeV cut)

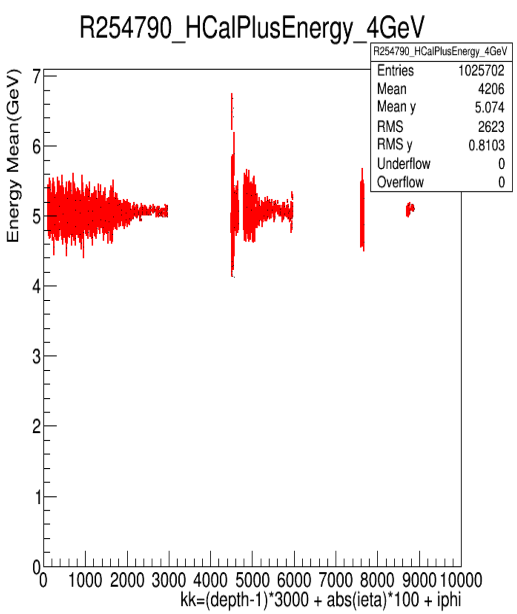
Run 254790

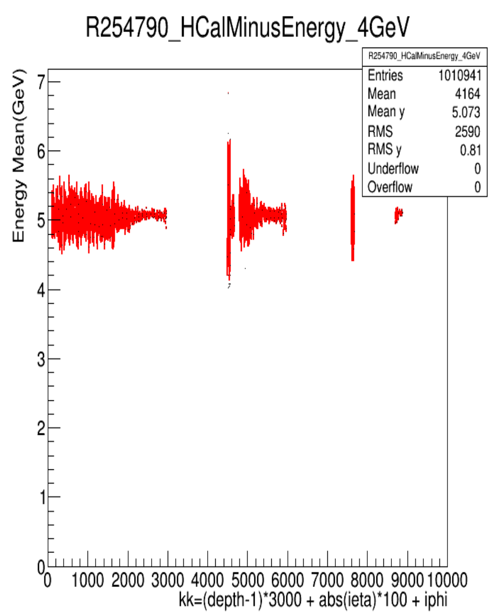


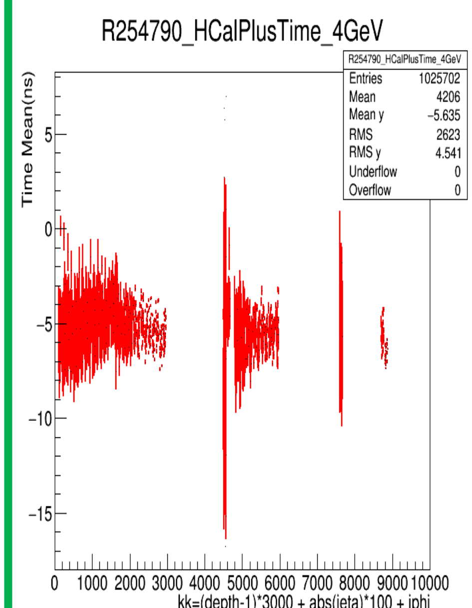


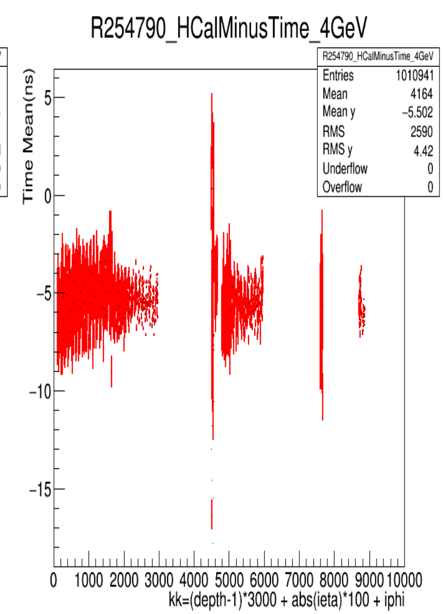






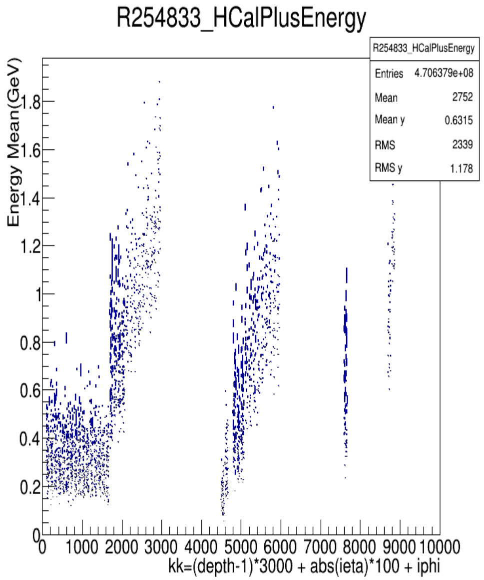


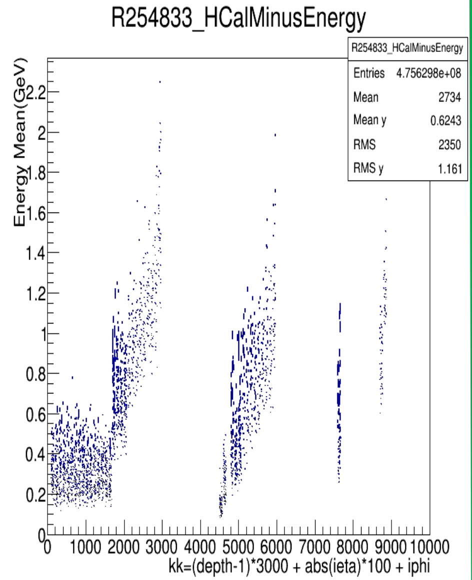


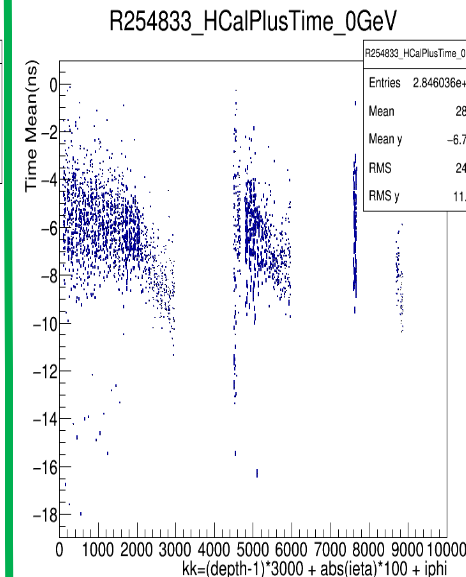


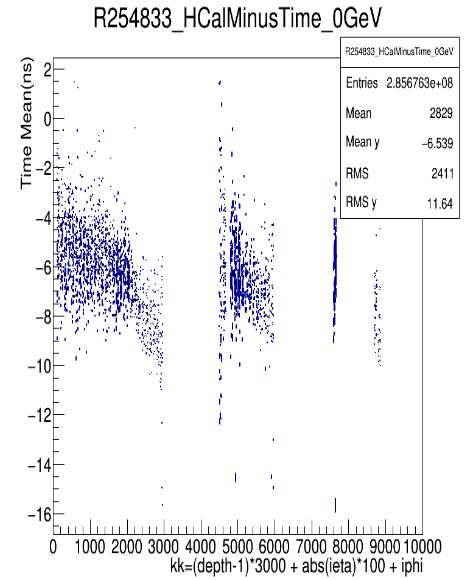
HBHE RecoHit Energy&Time vs Channel ID for Minus and Plus Side (before/after 4GeV cut)

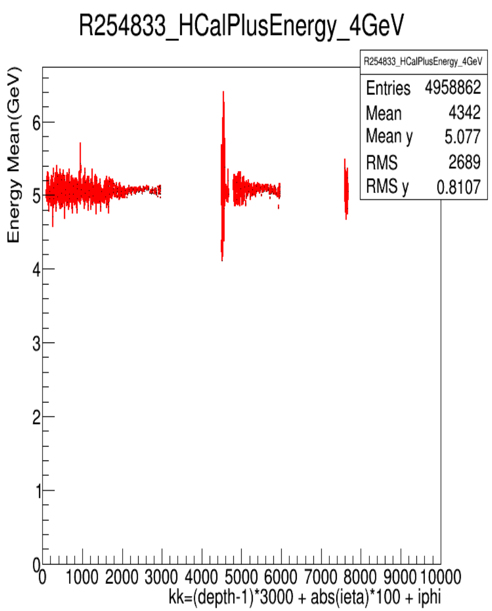
Run 254833

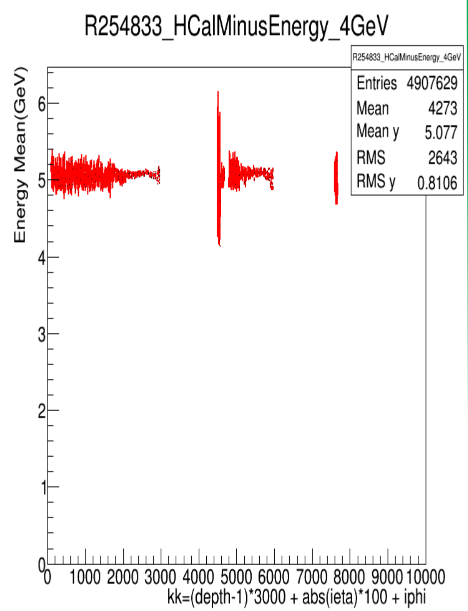


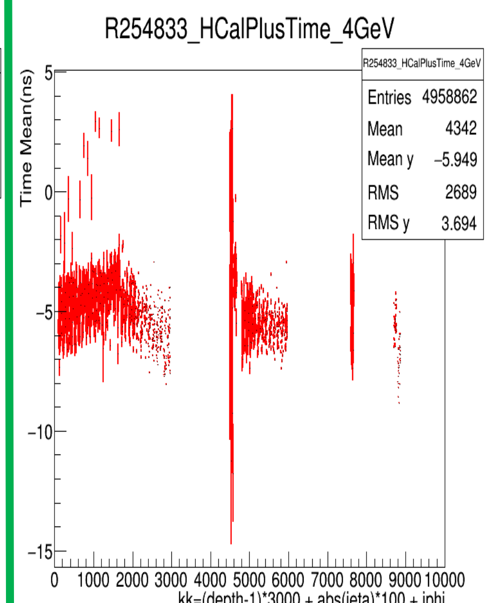


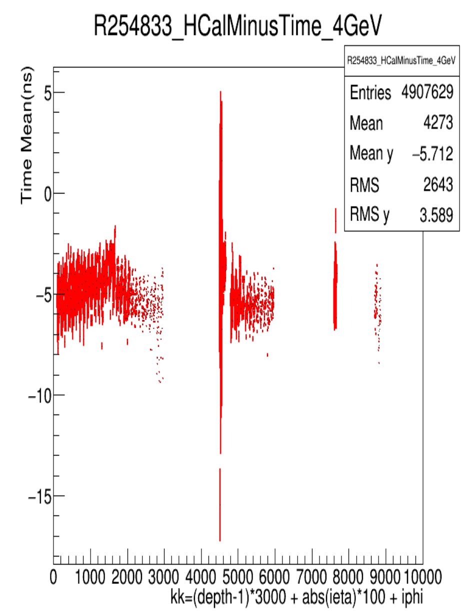








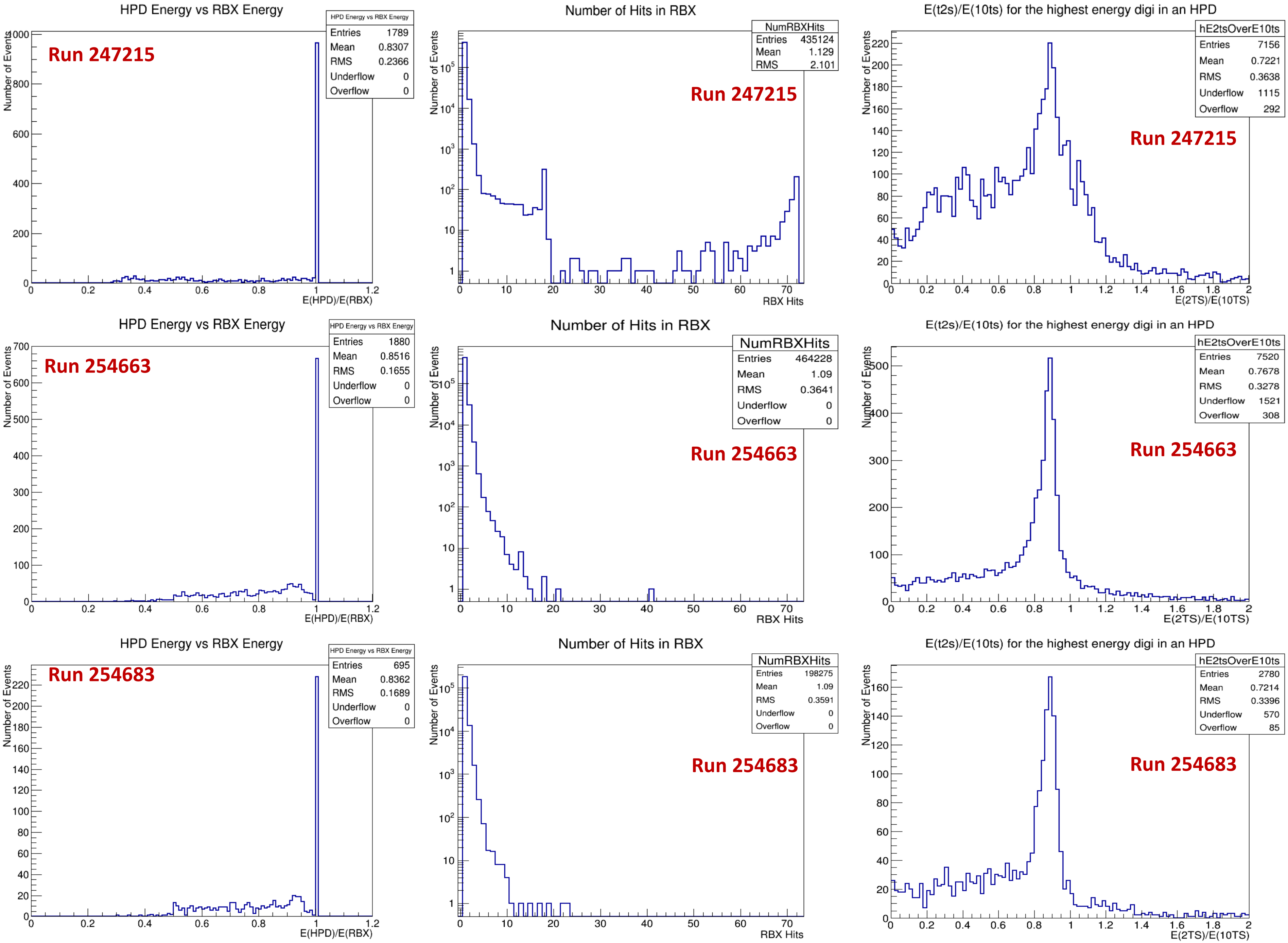




HPD/RBX Noise Studies

Run : 247215 - 254663 - 254683

/ExpressCosmics/Run2015C-Express-v1/FEVT


HPD Energy vs RBX Energy
HPD Energy vs RBX Energy
Entries 1789
Mean 0.8307
RMS 0.2366
Underflow 0
Overflow 0
Run 247215
Number of Events
E(HPD)/E(RBX)
Number of Hits in RBX
NumRBXHits
Entries 435124
Mean 1.129
RMS 2.101
Run 247215
Number of Events
RBX Hits
E(t2s)/E(10ts) for the highest energy digi in an HPD
hE2tsOverE10ts
Entries 7156
Mean 0.7221
RMS 0.3638
Underflow 1115
Overflow 292
Run 247215
Number of Events
E(2TS)/E(10TS)
HPD Energy vs RBX Energy
HPD Energy vs RBX Energy
Entries 1880
Mean 0.8516
RMS 0.1655
Underflow 0
Overflow 0
Run 254663
Number of Events
E(HPD)/E(RBX)
Number of Hits in RBX
NumRBXHits
Entries 464228
Mean 1.09
RMS 0.3641
Underflow 0
Overflow 0
Run 254663
Number of Events
RBX Hits
E(t2s)/E(10ts) for the highest energy digi in an HPD
hE2tsOverE10ts
Entries 7520
Mean 0.7678
RMS 0.3278
Underflow 1521
Overflow 308
Run 254663
Number of Events
E(2TS)/E(10TS)
HPD Energy vs RBX Energy
HPD Energy vs RBX Energy
Entries 695
Mean 0.8362
RMS 0.1689
Underflow 0
Overflow 0
Run 254683
Number of Events
E(HPD)/E(RBX)
Number of Hits in RBX
NumRBXHits
Entries 198275
Mean 1.09
RMS 0.3591
Underflow 0
Overflow 0
Run 254683
Number of Events
RBX Hits
E(t2s)/E(10ts) for the highest energy digi in an HPD
hE2tsOverE10ts
Entries 2780
Mean 0.7214
RMS 0.3396
Underflow 570
Overflow 85
Run 254683
Number of Events
E(2TS)/E(10TS)

Conclusion

- This week we analyzed some collision and express cosmic runs which was taken different periods – qualities . We try to share some results with you, also you can find more runs results in Evernote.

- We checked detector performance by looking at some usual plots .

- Our next plans;

  - New collision runs will be analyzed
  - RBX Noise Collection will be checked any cosmic run and their results will be shared.