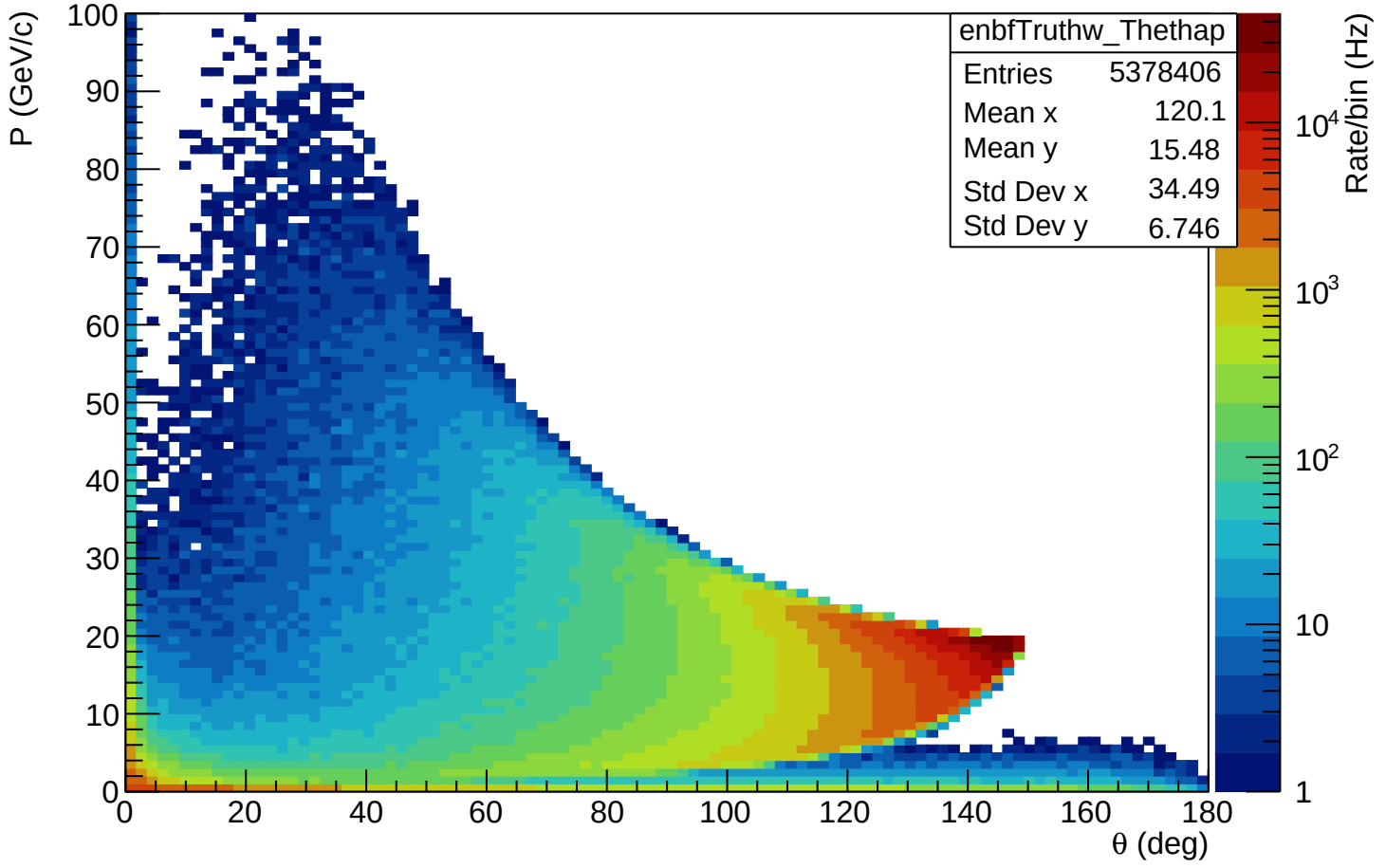
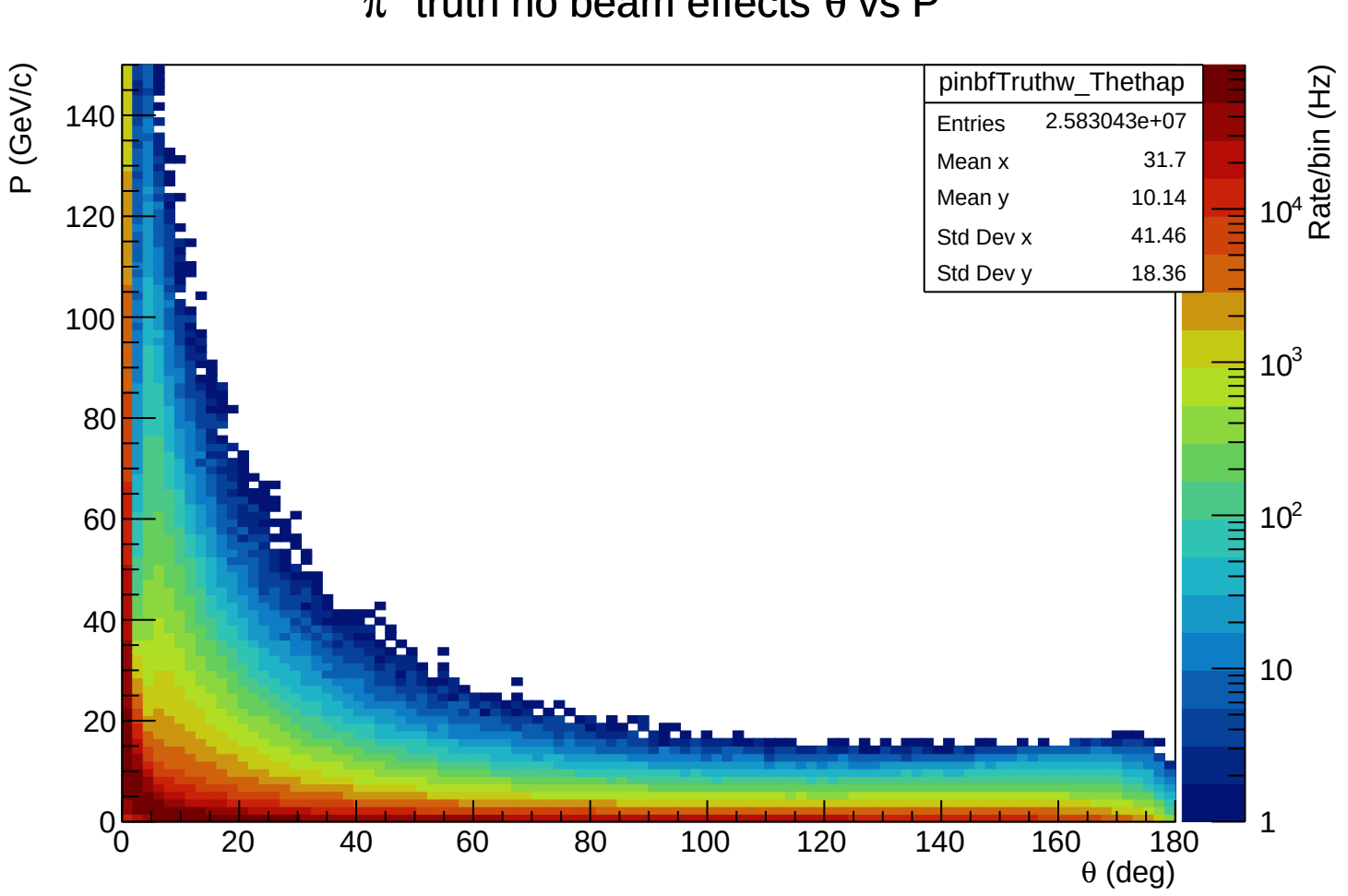
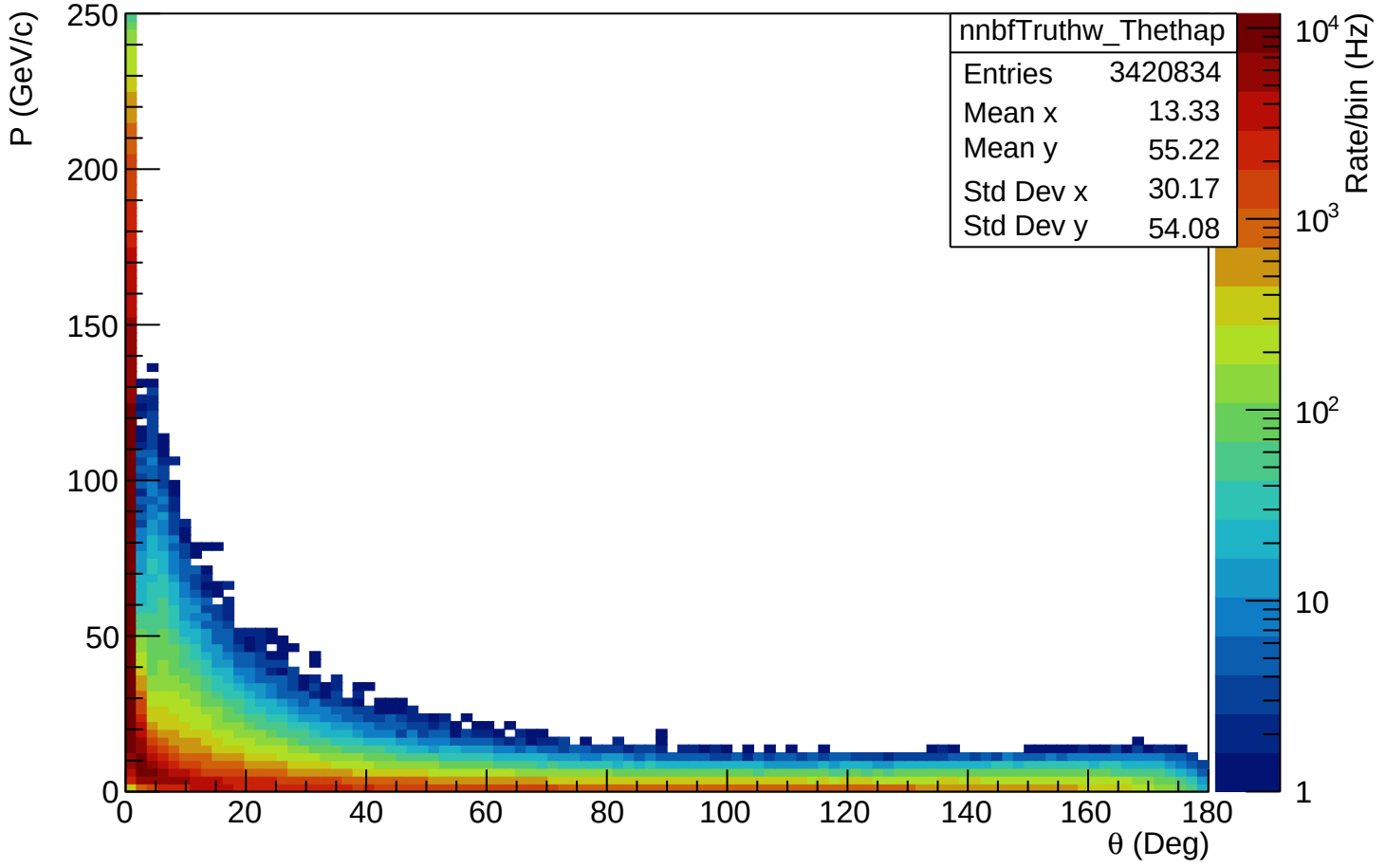
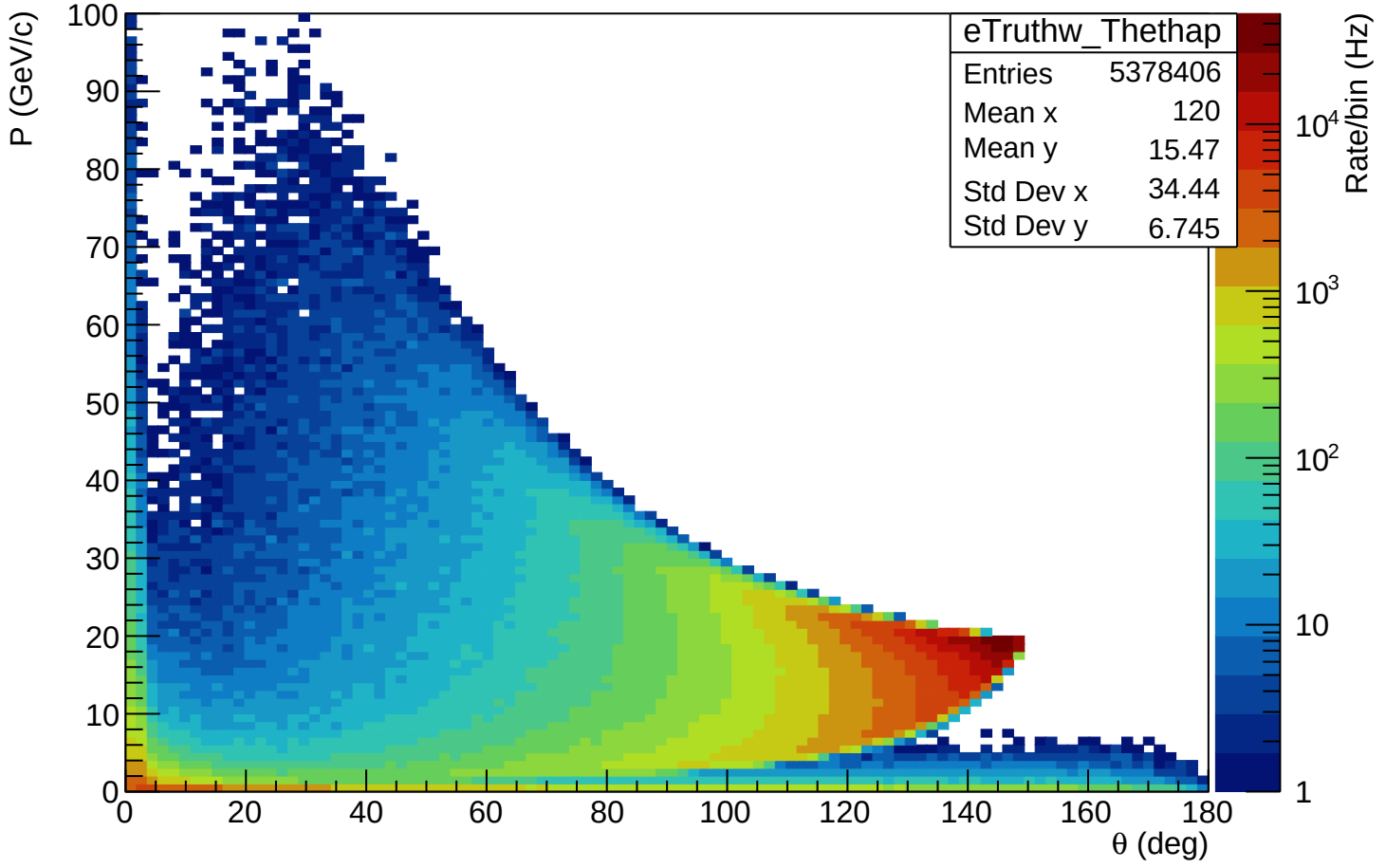
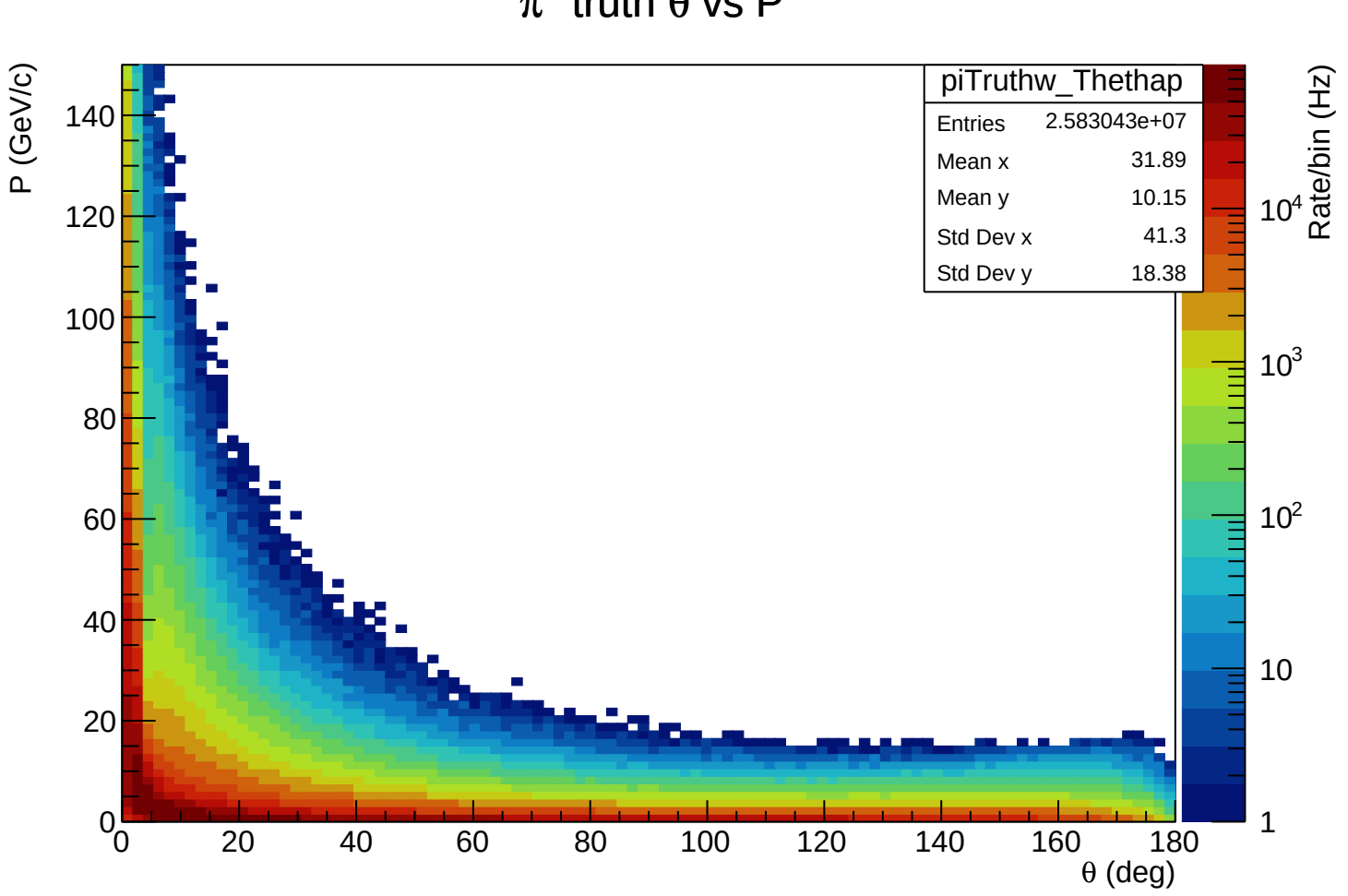
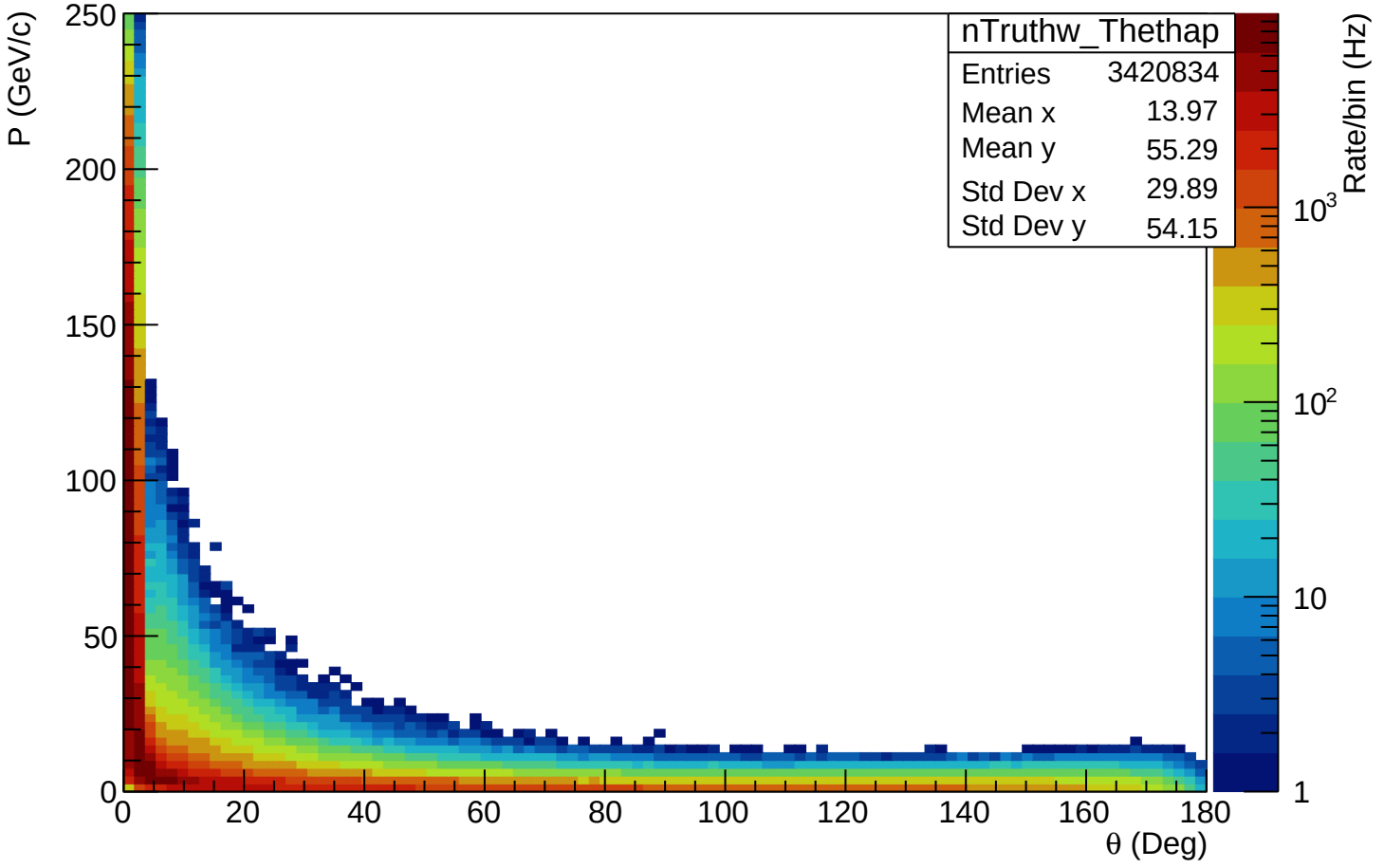

e' truth no beam effects θ vs P
enbfTruthw_Thethap
Entries 5378406
Mean x 120.1
Mean y 15.48
Std Dev x 34.49
Std Dev y 6.746
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0 10 20 30 40 50 60 70 80 90 100
0 20 40 60 80 100 120 140 160 180
1 10 10^2 10^3 10^4

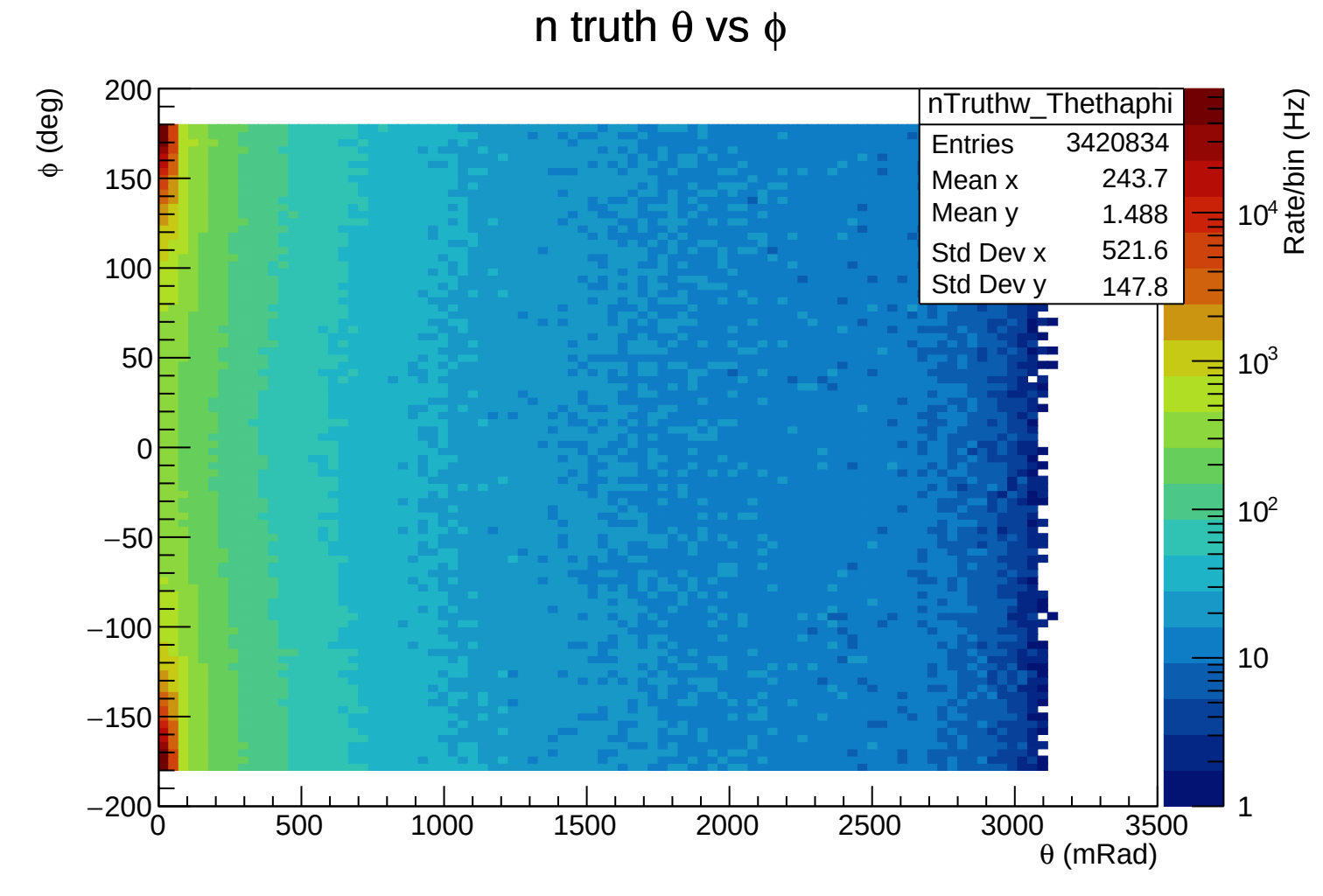

π^+ truth no beam effects θ vs P
pinbfTruthw_Thethap
Entries 2.583043e+07
Mean x 31.7
Mean y 10.14
Std Dev x 41.46
Std Dev y 18.36
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0
20
40
60
80
100
120
140
160
180
1
10
10^2
10^3
10^4

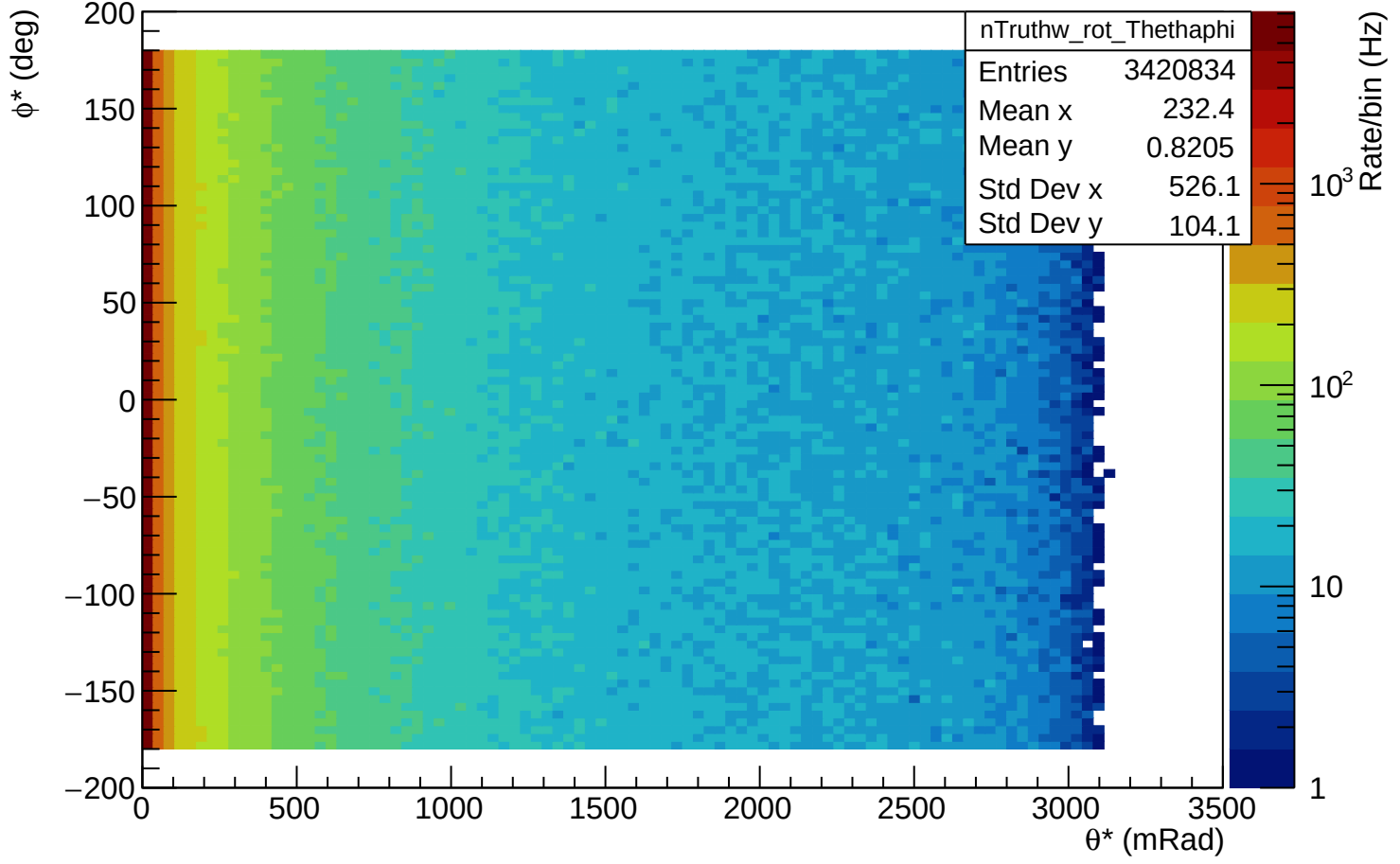

n truth no beam effects θ vs P
nnbfTruthw_Thethap
Entries 3420834
Mean x 13.33
Mean y 55.22
Std Dev x 30.17
Std Dev y 54.08
P (GeV/c)
θ (Deg)
Rate/bin (Hz)
0
50
100
150
200
250
0
20
40
60
80
100
120
140
160
180
1
10
10^2
10^3
10^4

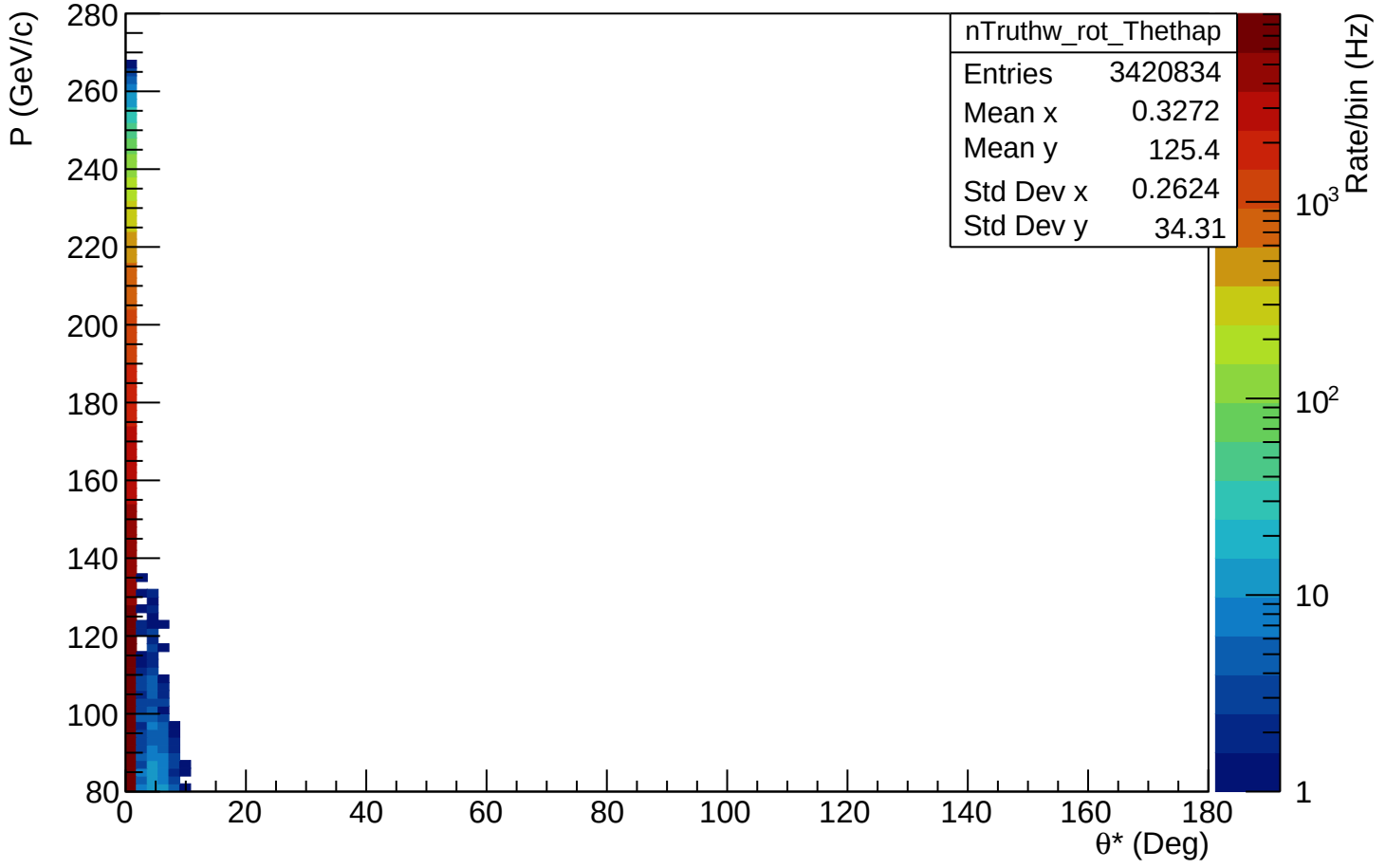

e' truth θ vs P
eTruthw_Thethap
Entries 5378406
Mean x 120
Mean y 15.47
Std Dev x 34.44
Std Dev y 6.745
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0 10 20 30 40 50 60 70 80 90 100
0 20 40 60 80 100 120 140 160 180
1 10 10^2 10^3 10^4

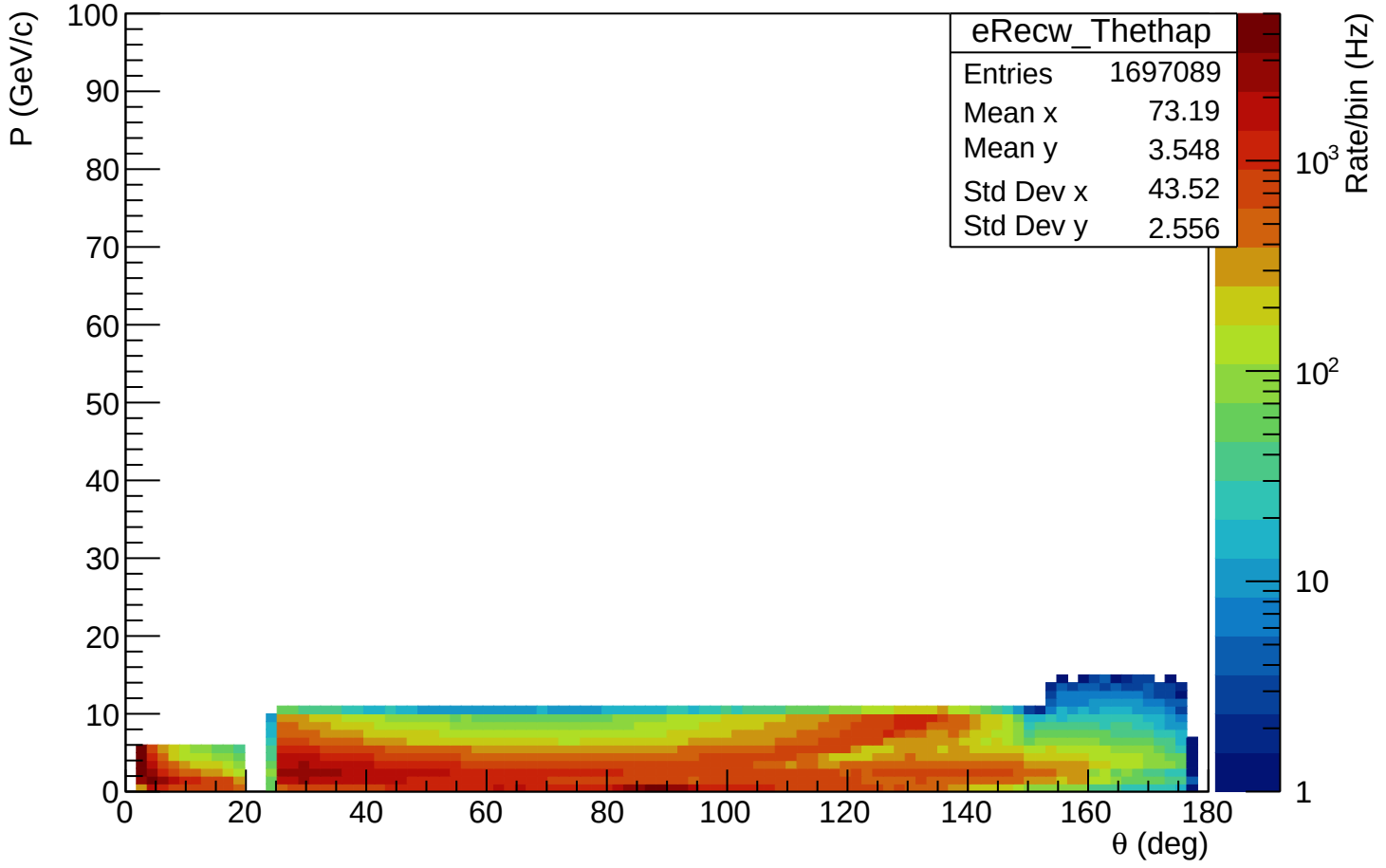

π^+ truth θ vs P
piTruthw_Thethap
Entries 2.583043e+07
Mean x 31.89
Mean y 10.15
Std Dev x 41.3
Std Dev y 18.38
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0
20
40
60
80
100
120
140
160
180
1
10
10^2
10^3
10^4

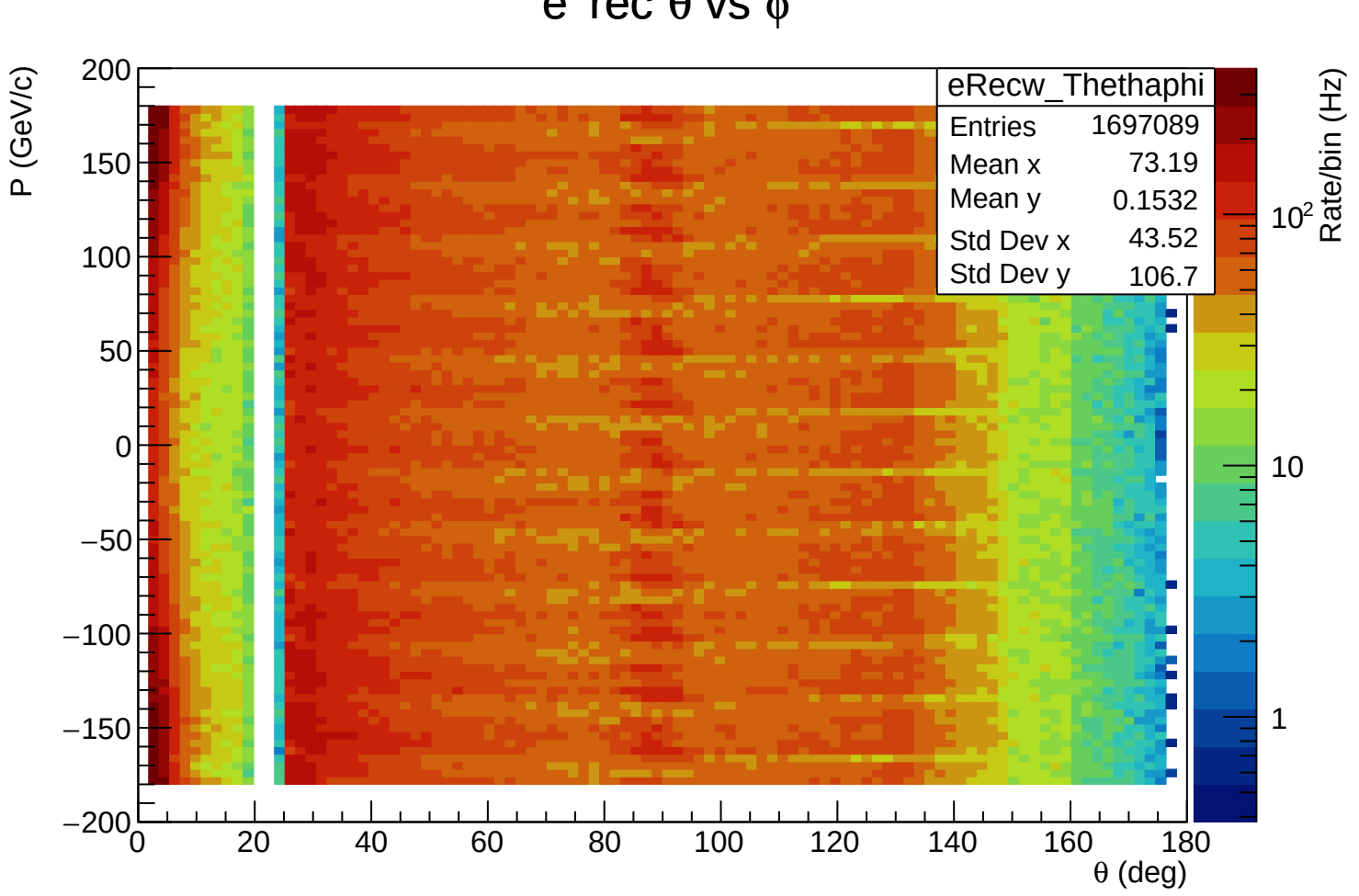

n truth θ vs P
nTruthw_Thethap
Entries 3420834
Mean x 13.97
Mean y 55.29
Std Dev x 29.89
Std Dev y 54.15
P (GeV/c)
θ (Deg)
Rate/bin (Hz)
0
50
100
150
200
250
0
20
40
60
80
100
120
140
160
180
1
10
10^2
10^3

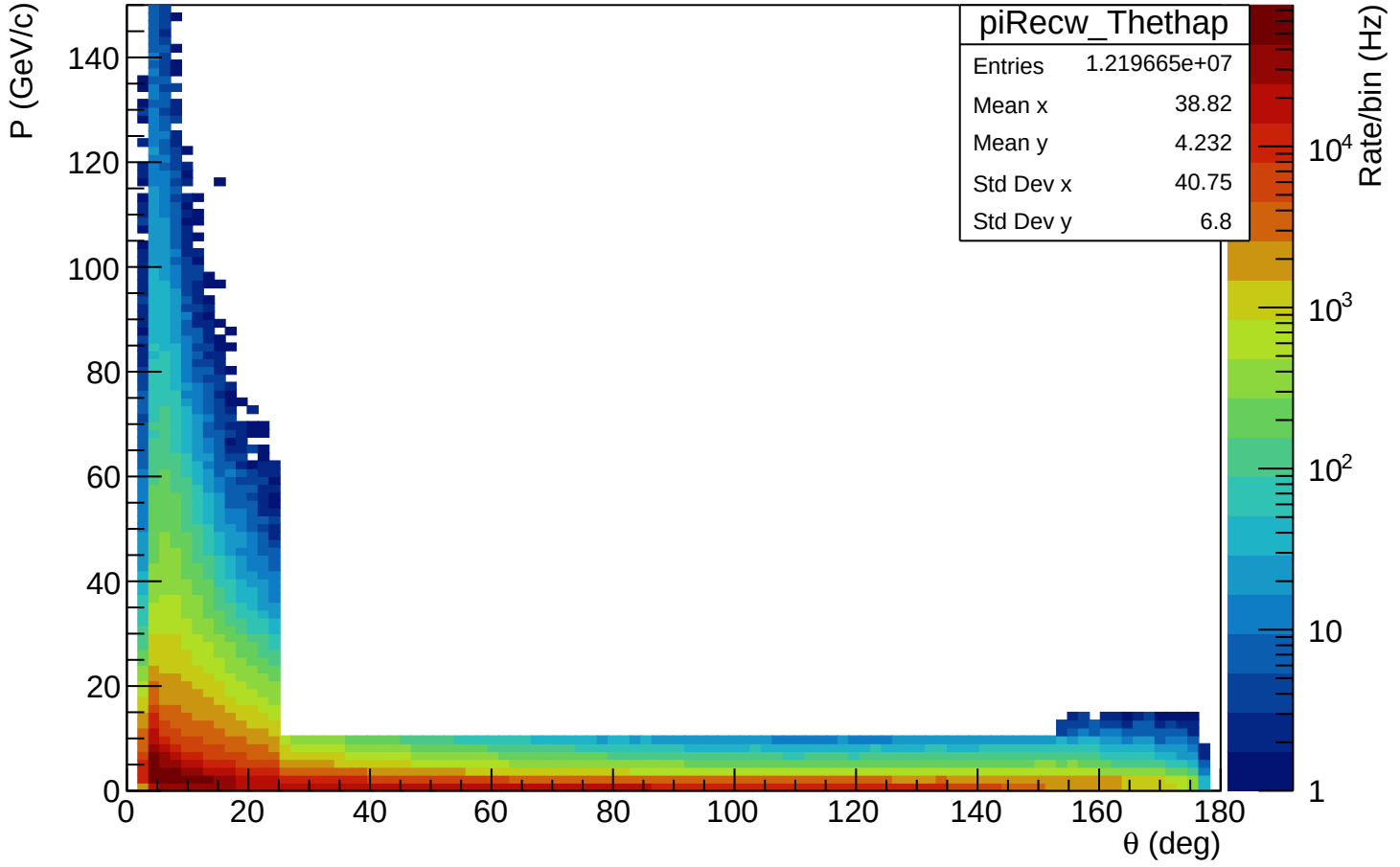

n truth θ vs ϕ
nTruthw_Thethaphi
Entries 3420834
Mean x 243.7
Mean y 1.488
Std Dev x 521.6
Std Dev y 147.8
ϕ (deg)
θ (mRad)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
0
500
1000
1500
2000
2500
3000
3500
10^4
10^3
10^2
10
1

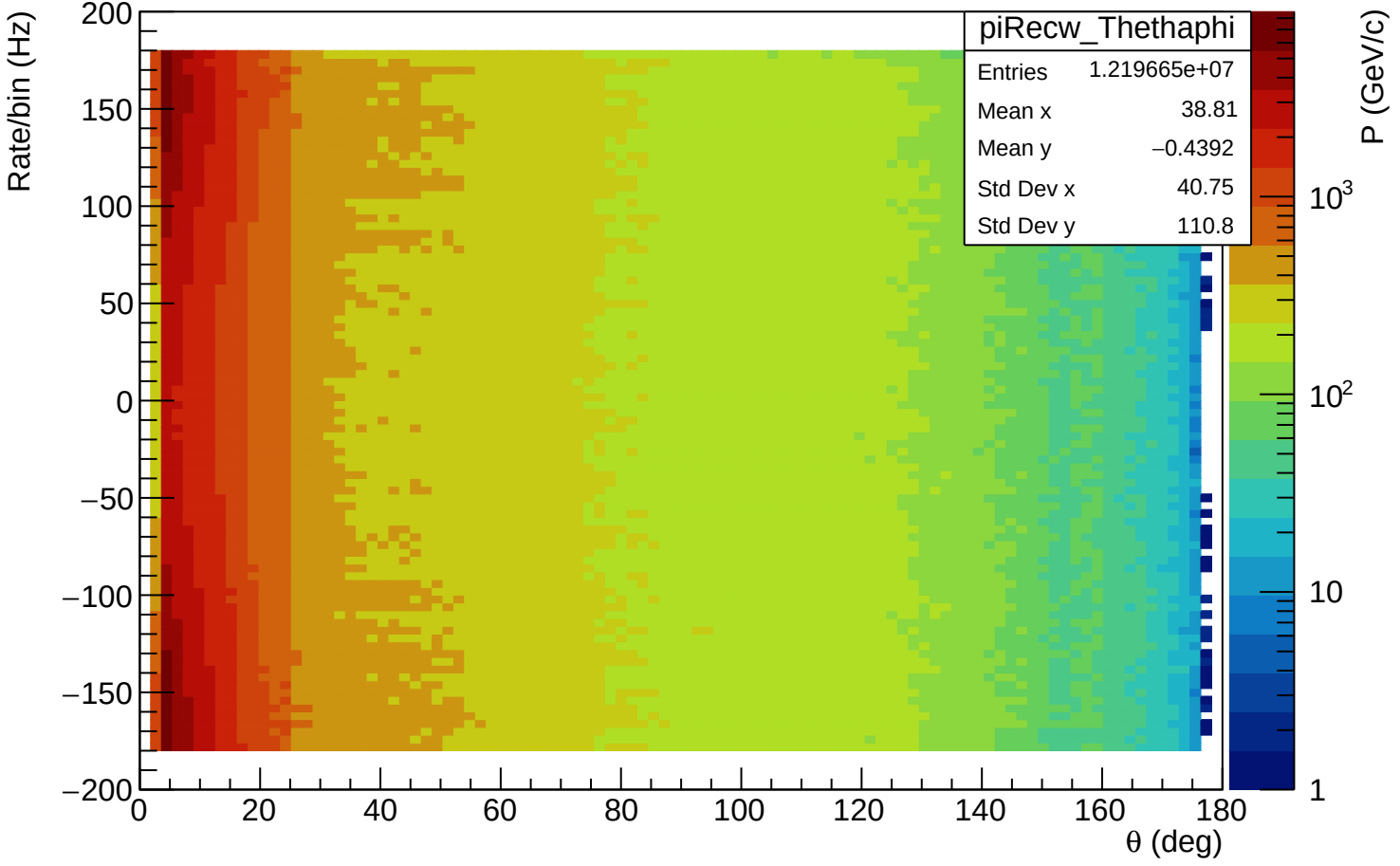

n truth θ* vs ϕ* around p axis
nTruthw_rot_Thethaphi
Entries 3420834
Mean x 232.4
Mean y 0.8205
Std Dev x 526.1
Std Dev y 104.1
ϕ* (deg)
θ* (mRad)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
0
500
1000
1500
2000
2500
3000
3500
10^3
10^2
10
1

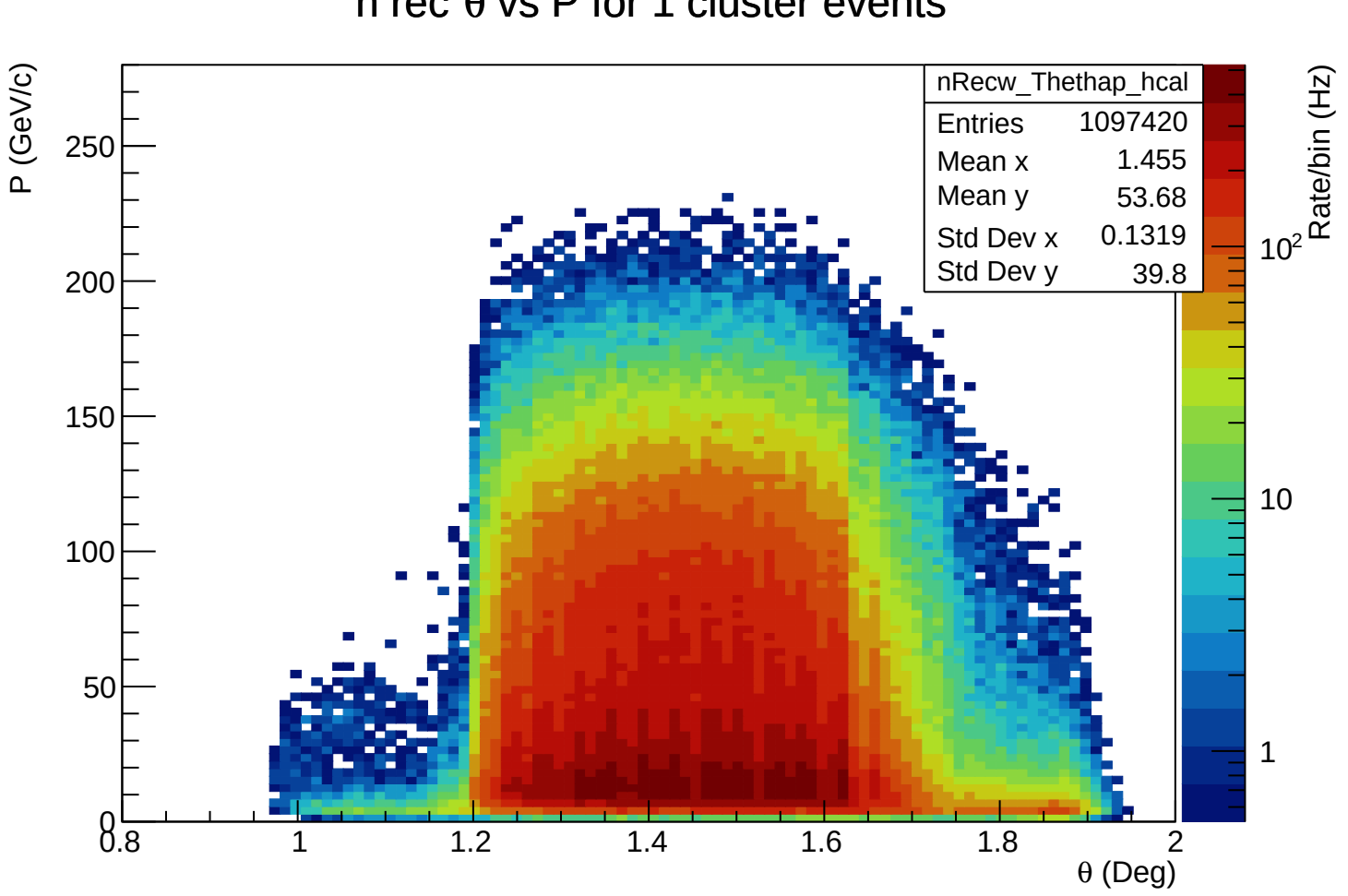

n truth θ* vs P around p axis
nTruthw_rot_Thethap
Entries 3420834
Mean x 0.3272
Mean y 125.4
Std Dev x 0.2624
Std Dev y 34.31
P (GeV/c)
θ* (Deg)
Rate/bin (Hz)
280
260
240
220
200
180
160
140
120
100
80
0
20
40
60
80
100
120
140
160
180
10^3
10^2
10
1

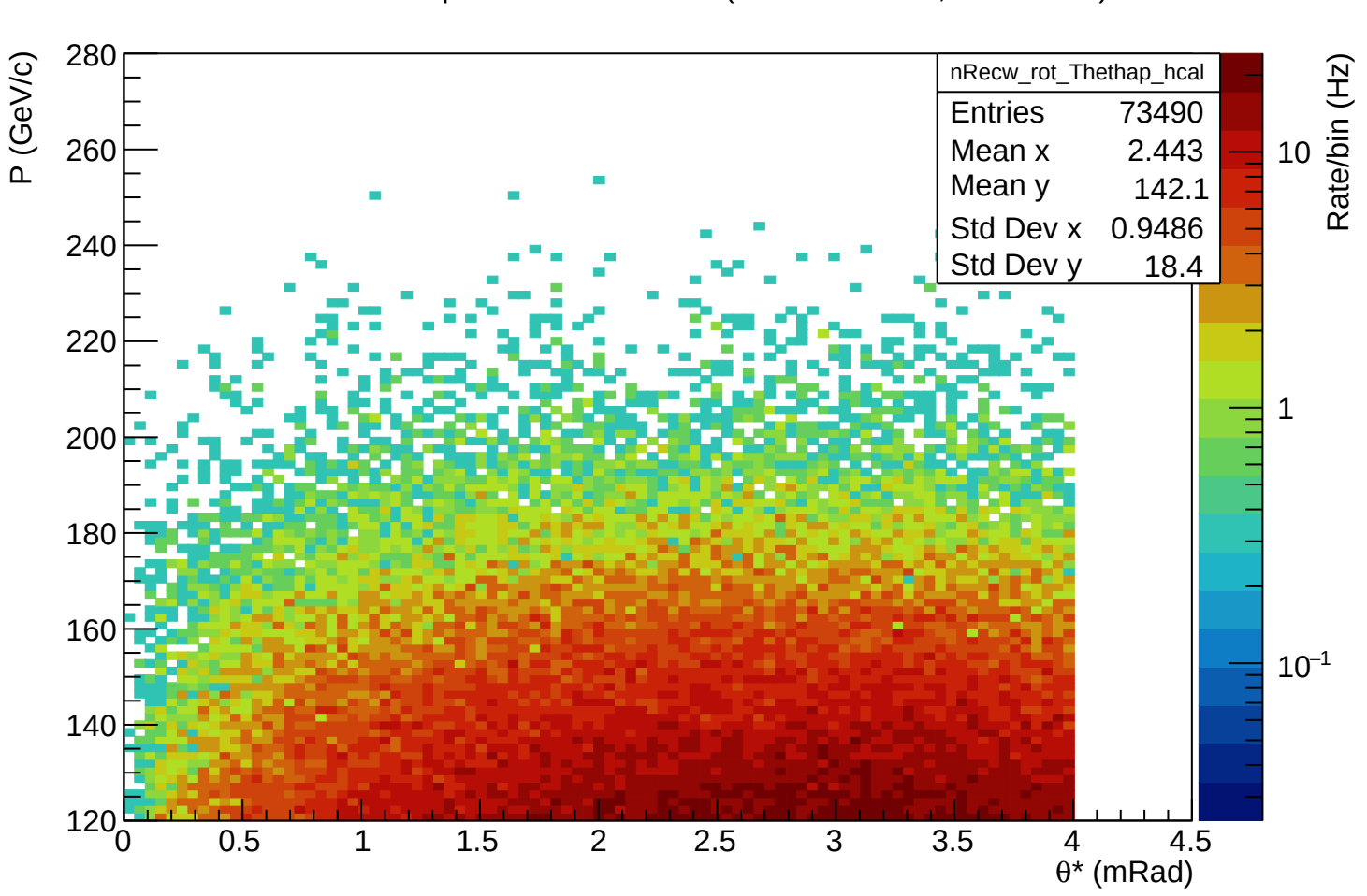

e' rec θ vs P
eRecw_Thethap
Entries 1697089
Mean x 73.19
Mean y 3.548
Std Dev x 43.52
Std Dev y 2.556
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0
10
20
30
40
50
60
70
80
90
100
120
140
160
180
1
10^2
10^3

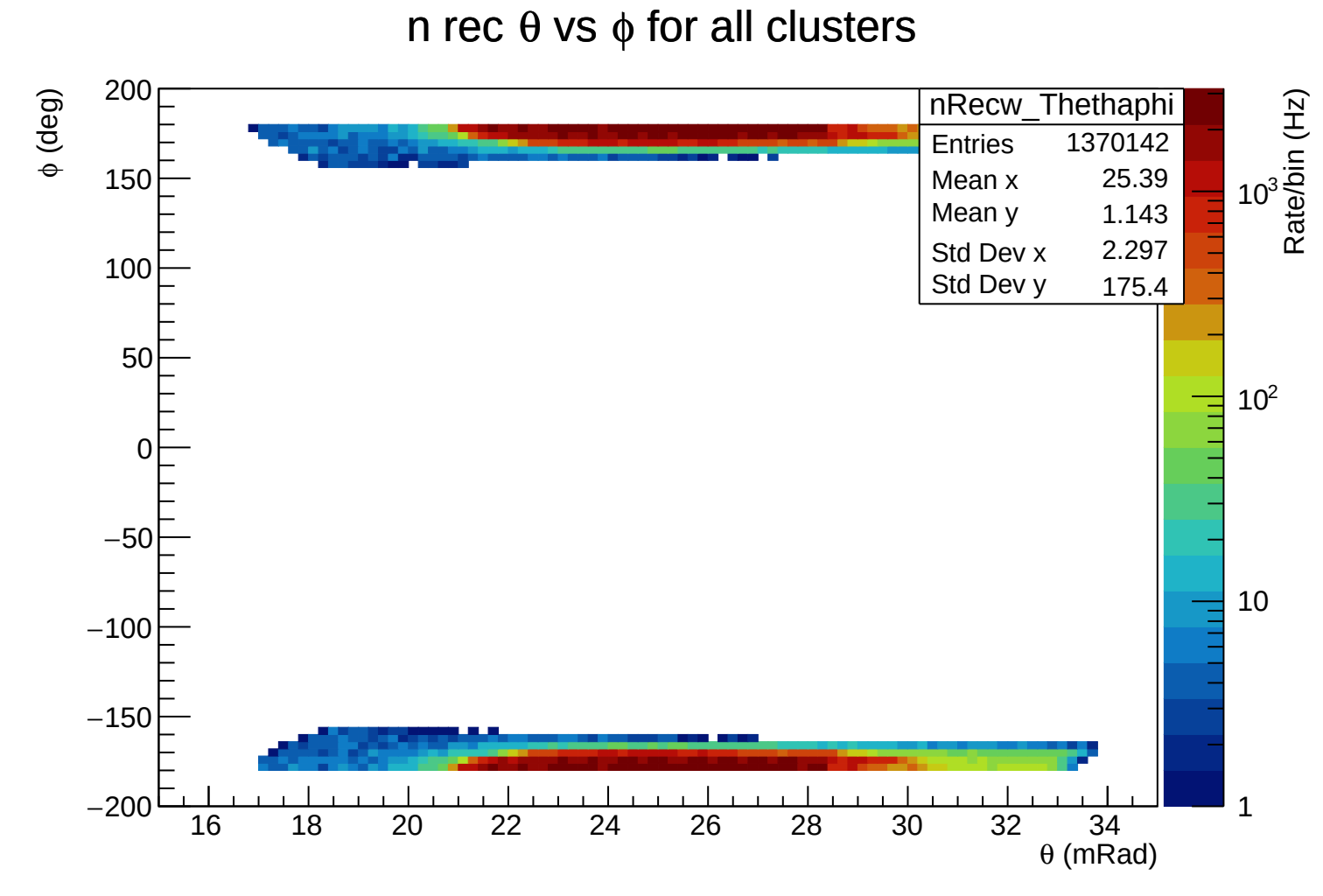

e' rec θ vs ϕ
eRecw_Thethaphi
Entries 1697089
Mean x 73.19
Mean y 0.1532
Std Dev x 43.52
Std Dev y 106.7
P (GeV/c)
θ (deg)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180
10^2
10
1

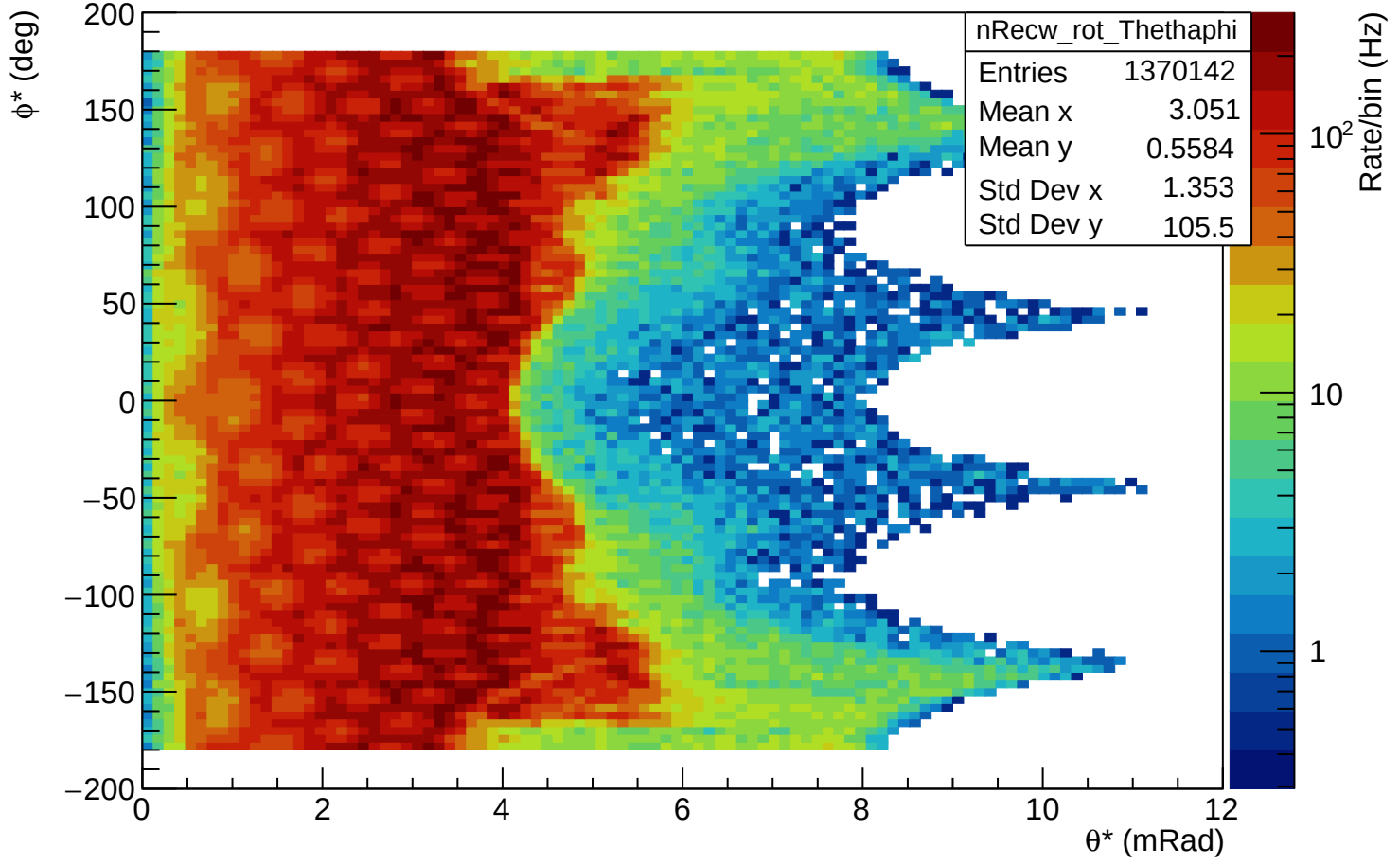

π+ rec θ vs P
piRecw_Thethap
Entries 1.219665e+07
Mean x 38.82
Mean y 4.232
Std Dev x 40.75
Std Dev y 6.8
P (GeV/c)
θ (deg)
Rate/bin (Hz)
0
20
40
60
80
100
120
140
160
180
1
10
10^2
10^3
10^4

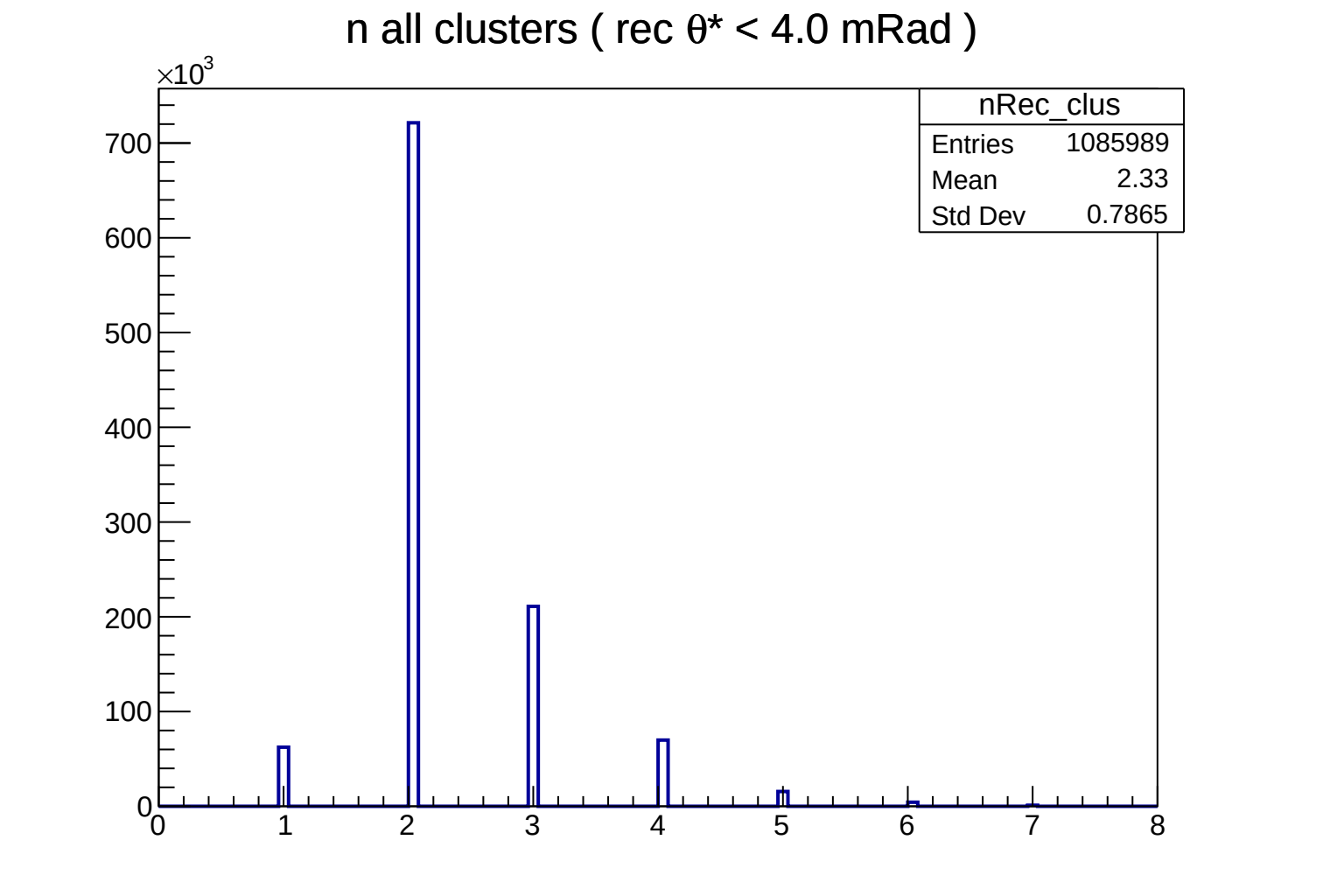

π^+ rec θ vs ϕ
piRecw_Thethaphi
Entries 1.219665e+07
Mean x 38.81
Mean y −0.4392
Std Dev x 40.75
Std Dev y 110.8
Rate/bin (Hz)
θ (deg)
P (GeV/c)
200
150
100
50
0
−50
−100
−150
−200
0
20
40
60
80
100
120
140
160
180
10^3
10^2
10
1

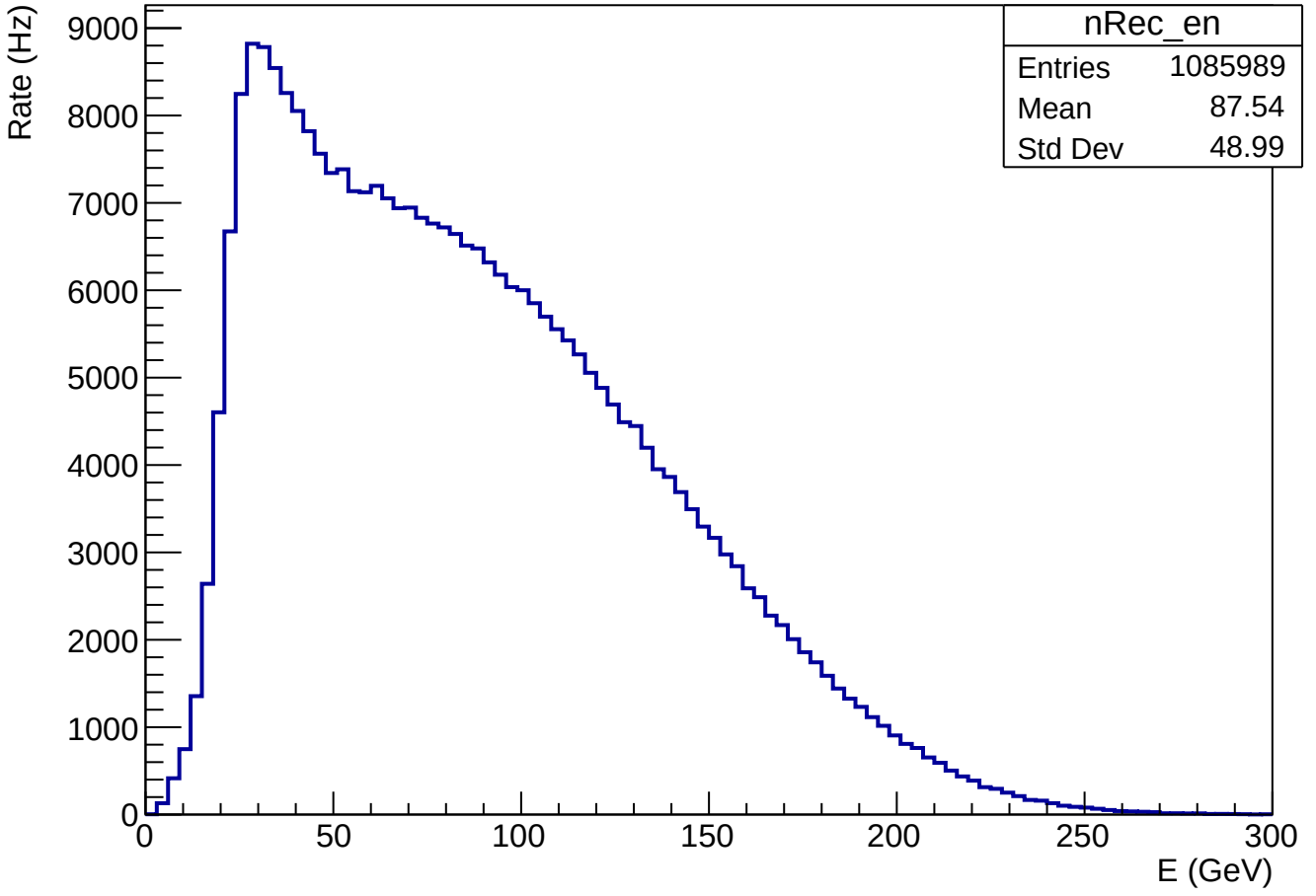

n rec θ vs P for 1 cluster events
nRecw_Thethap_hcal
Entries 1097420
Mean x 1.455
Mean y 53.68
Std Dev x 0.1319
Std Dev y 39.8
P (GeV/c)
θ (Deg)
Rate/bin (Hz)
0
50
100
150
200
250
0.8
1
1.2
1.4
1.6
1.8
2
1
10
10^2

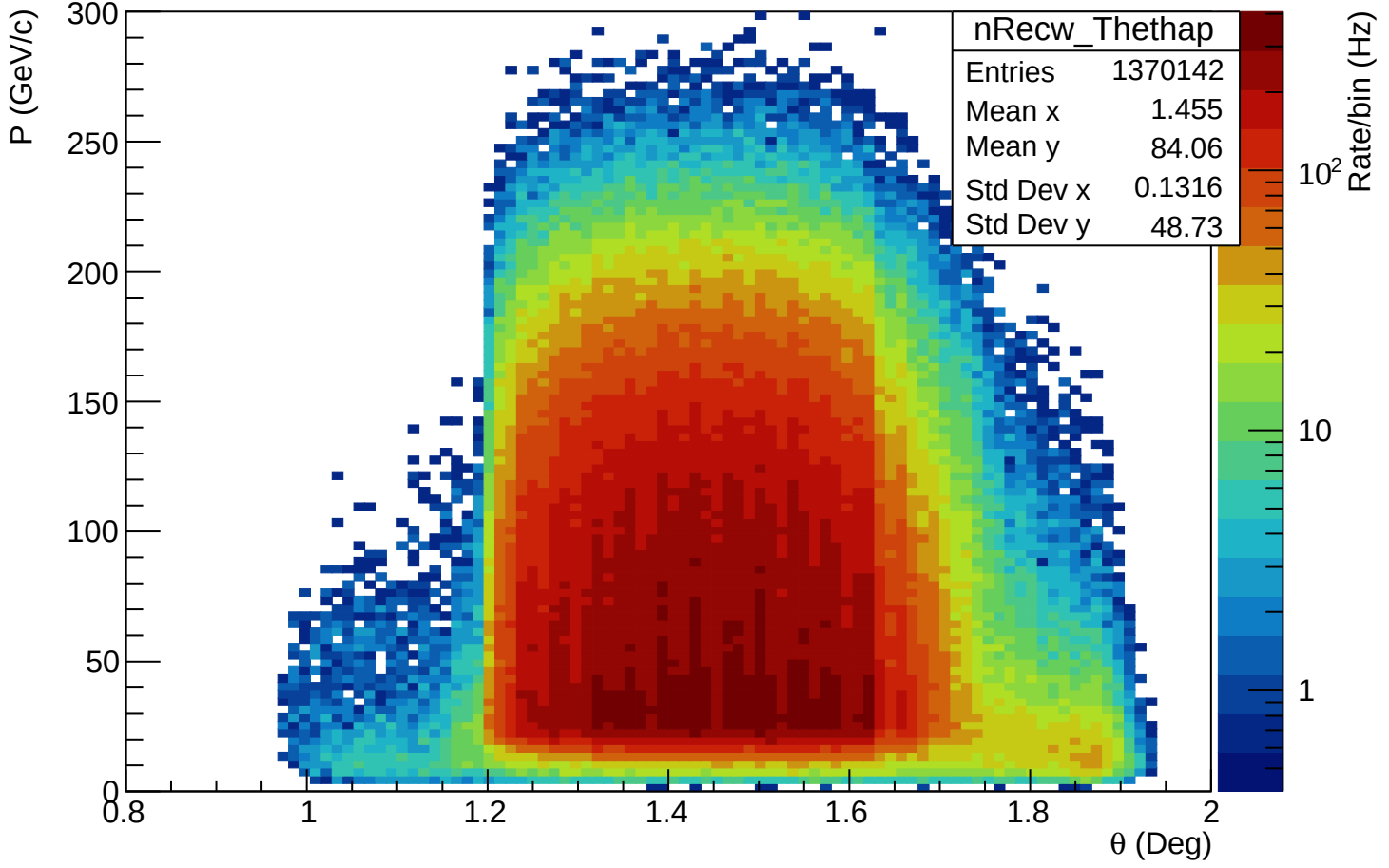

n rec θ* vs P around p axis for 1 cluster events (rec θ* < 4.0 mRad, E > 120 GeV)
nRecw_rot_Thethap_hcal
Entries 73490
Mean x 2.443
Mean y 142.1
Std Dev x 0.9486
Std Dev y 18.4
P (GeV/c)
θ* (mRad)
Rate/bin (Hz)
280
260
240
220
200
180
160
140
120
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
10
1
10⁻¹

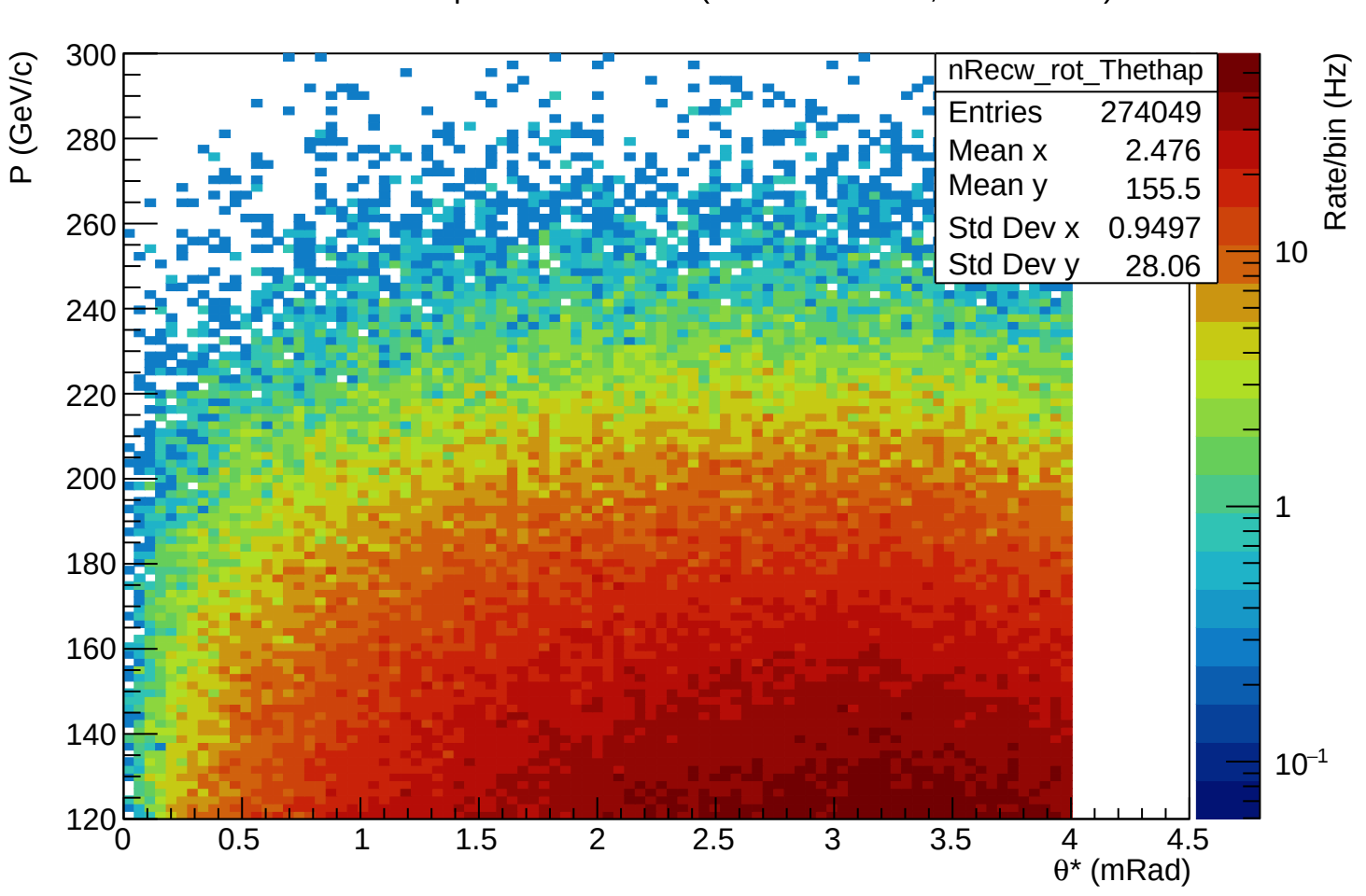

n rec θ vs ϕ for all clusters
nRecw_Thethaphi
Entries 1370142
Mean x 25.39
Mean y 1.143
Std Dev x 2.297
Std Dev y 175.4
ϕ (deg)
θ (mRad)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
16
18
20
22
24
26
28
30
32
34
10^3
10^2
10
1

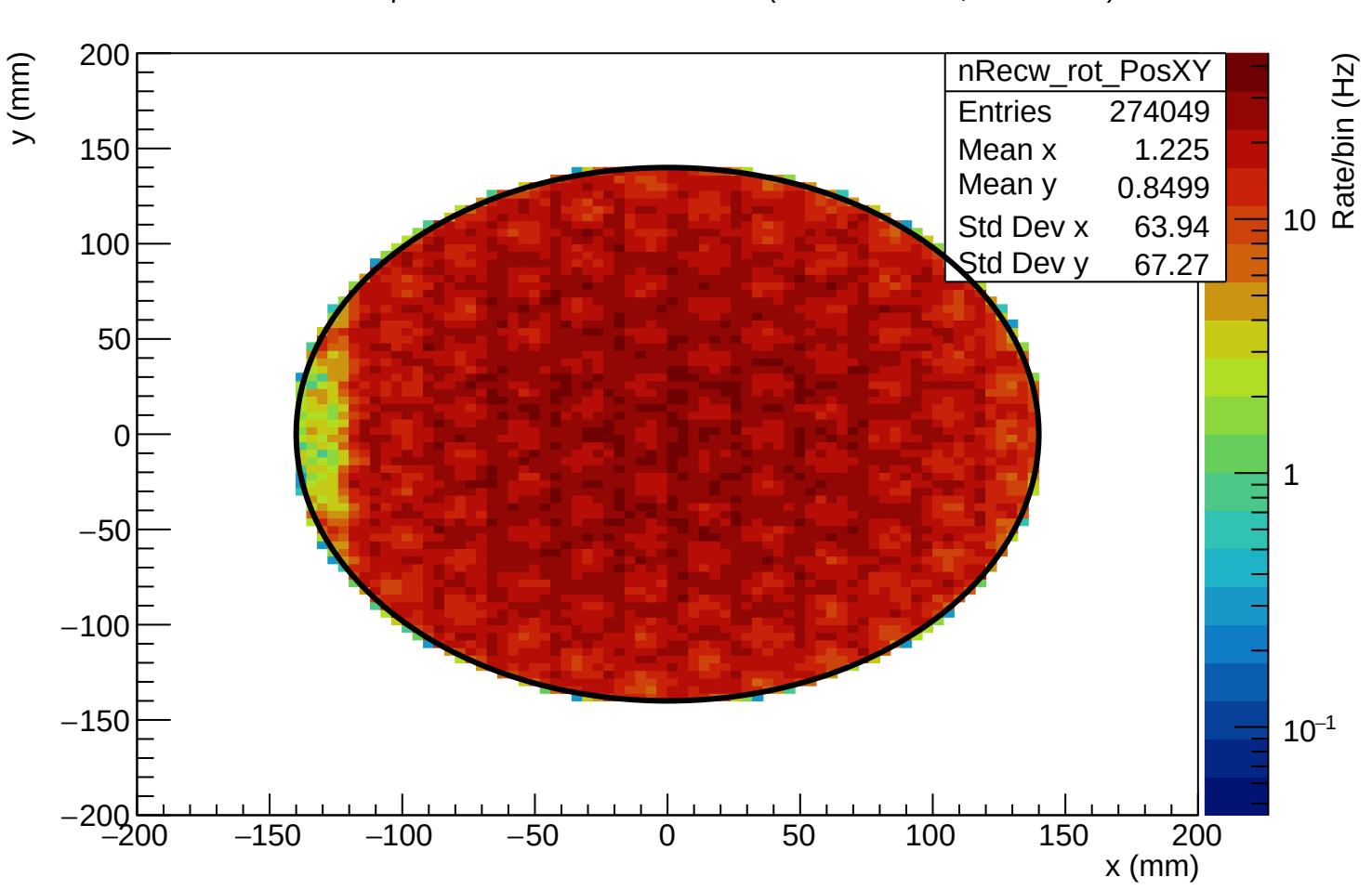

n rec θ* vs ϕ* around p axis for all clusters
ϕ* (deg)
θ* (mRad)
Rate/bin (Hz)
nRecw_rot_Thethaphi
Entries 1370142
Mean x 3.051
Mean y 0.5584
Std Dev x 1.353
Std Dev y 105.5
200
150
100
50
0
−50
−100
−150
−200
0
2
4
6
8
10
12
10^2
10
1

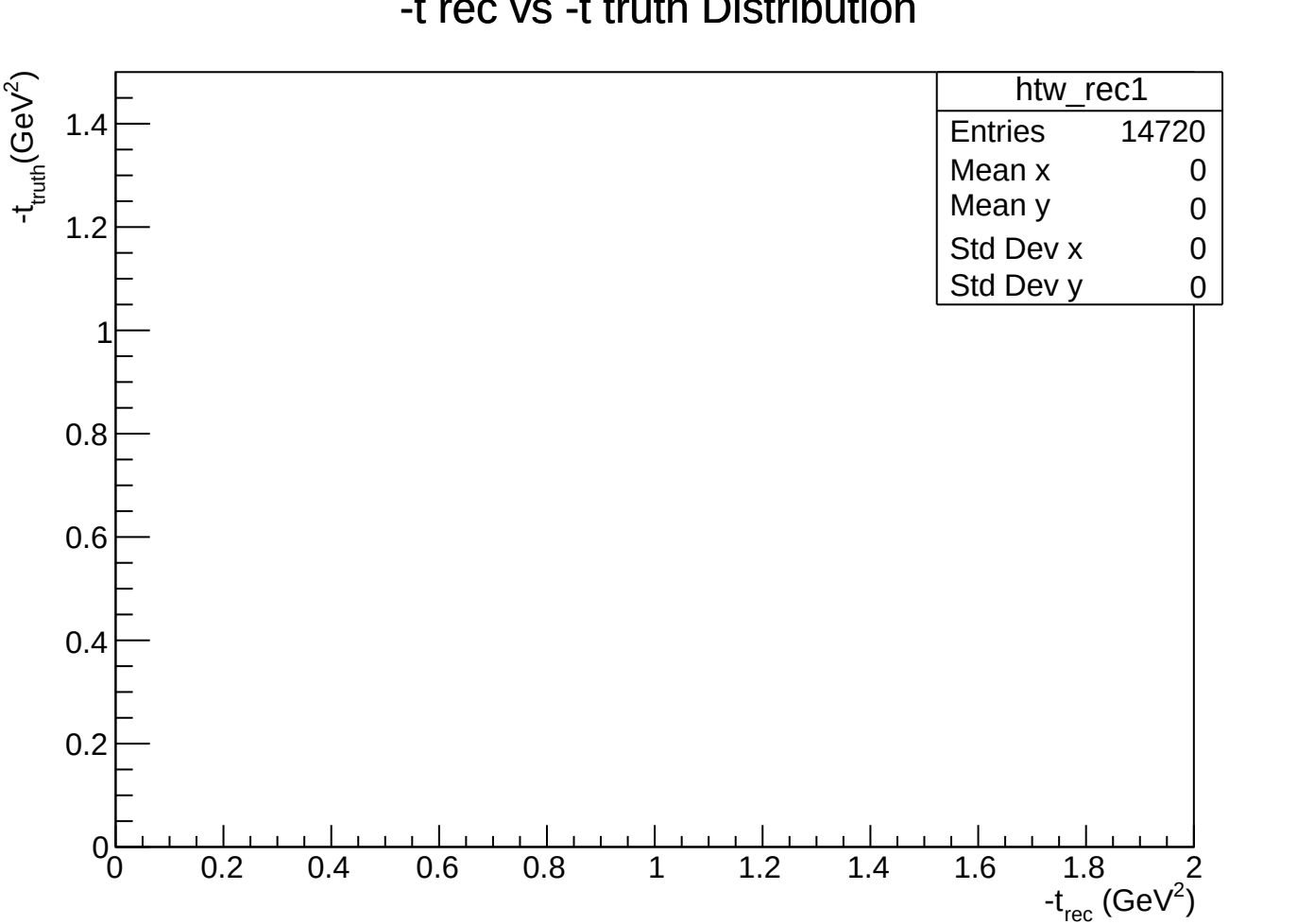

n all clusters (rec θ* < 4.0 mRad)
×10^3
nRec_clus
Entries 1085989
Mean 2.33
Std Dev 0.7865
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
8

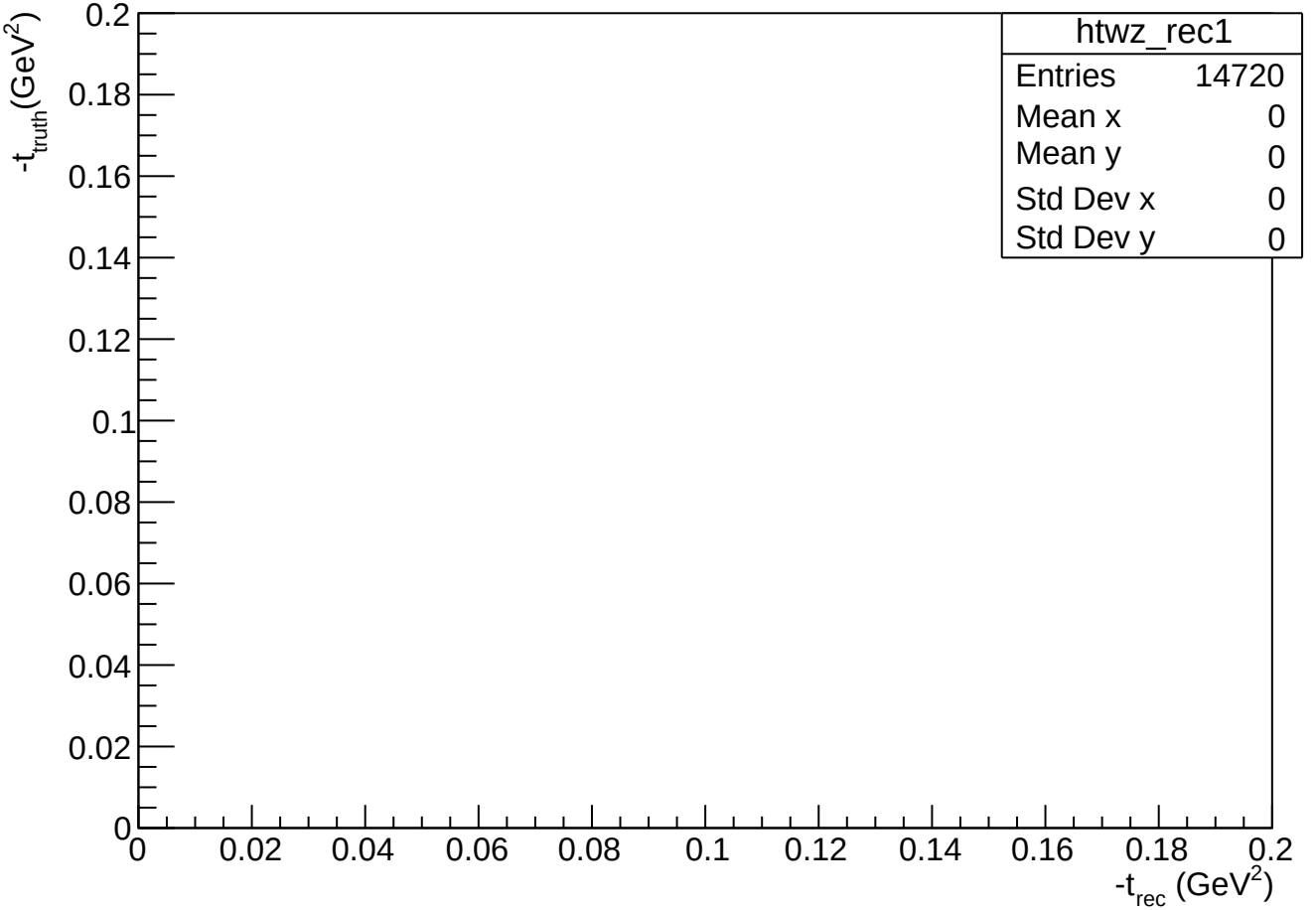

n rec E for all clusters (rec θ* < 4.0 mRad)
nRec_en
Entries 1085989
Mean 87.54
Std Dev 48.99
Rate (Hz)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
0
50
100
150
200
250
300
E (GeV)

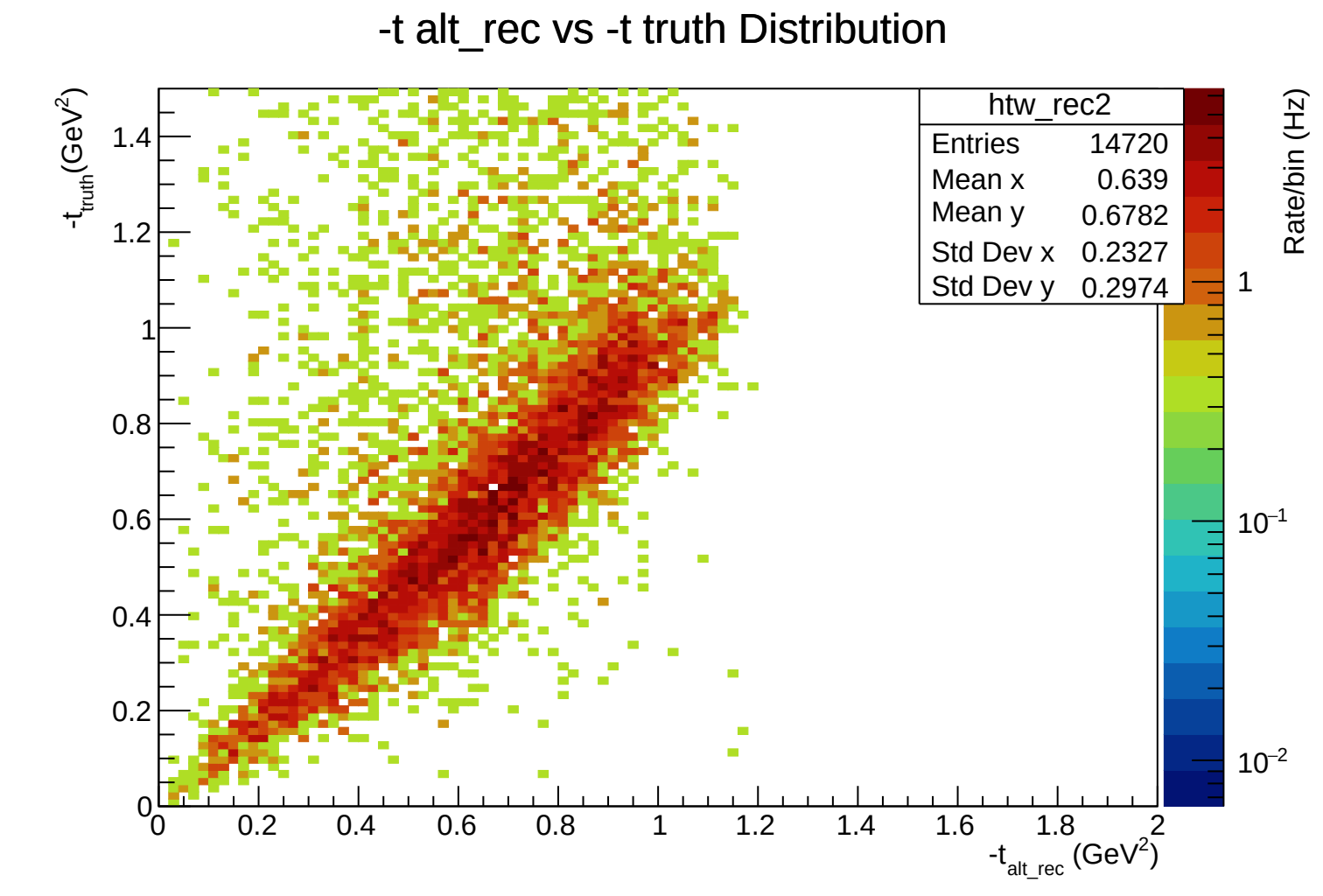

n rec θ vs P for all clusters
nRecw_Thethap
Entries 1370142
Mean x 1.455
Mean y 84.06
Std Dev x 0.1316
Std Dev y 48.73
P (GeV/c)
θ (Deg)
Rate/bin (Hz)
300
250
200
150
100
50
0
0.8
1
1.2
1.4
1.6
1.8
2
10^2
10
1

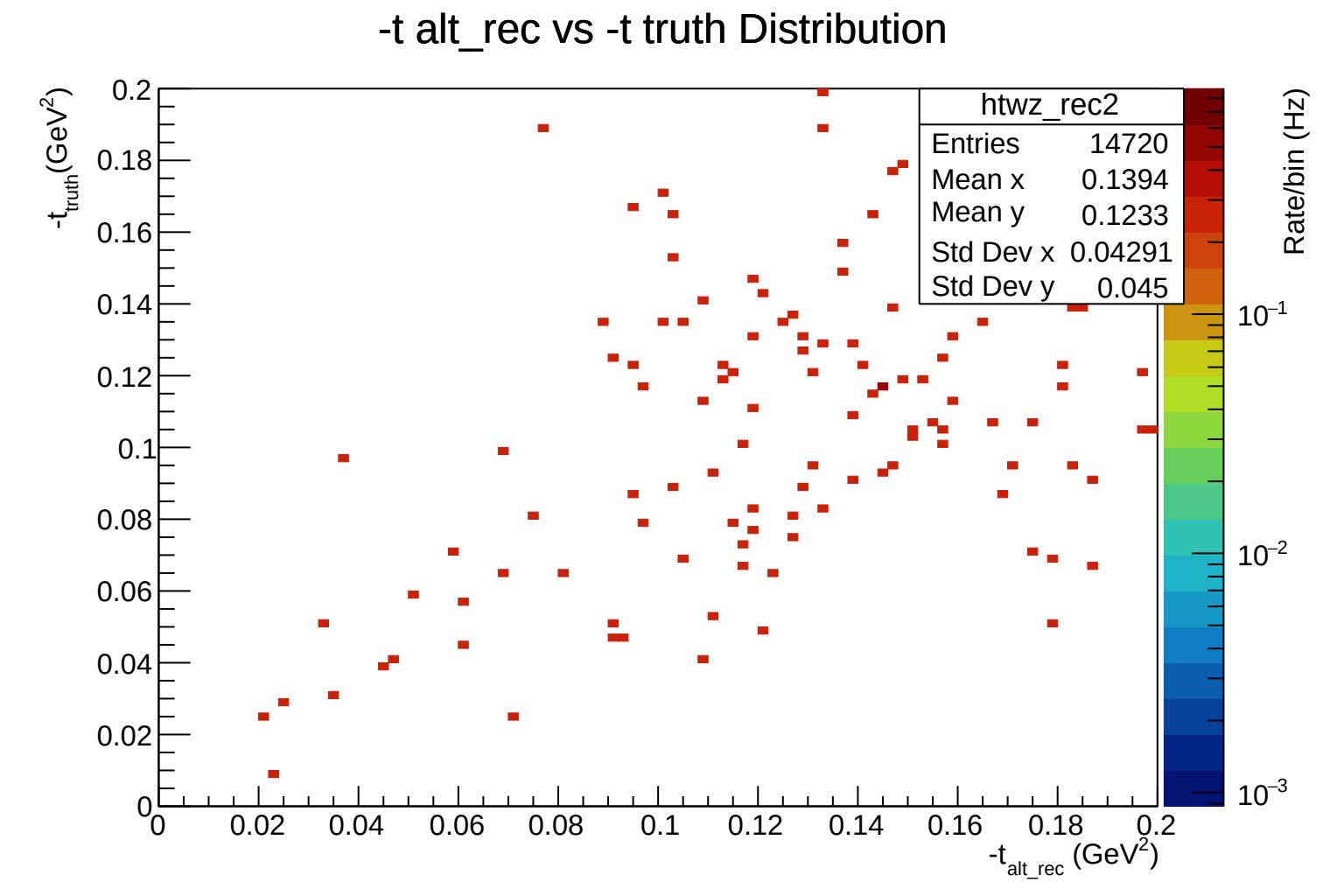

n rec θ* vs P around p axis for all clusters (rec θ* < 4.0 mRad, E > 120 GeV)
nRecw_rot_Thethap
Entries 274049
Mean x 2.476
Mean y 155.5
Std Dev x 0.9497
Std Dev y 28.06
P (GeV/c)
θ* (mRad)
Rate/bin (Hz)
300
280
260
240
220
200
180
160
140
120
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
10
1
10⁻¹

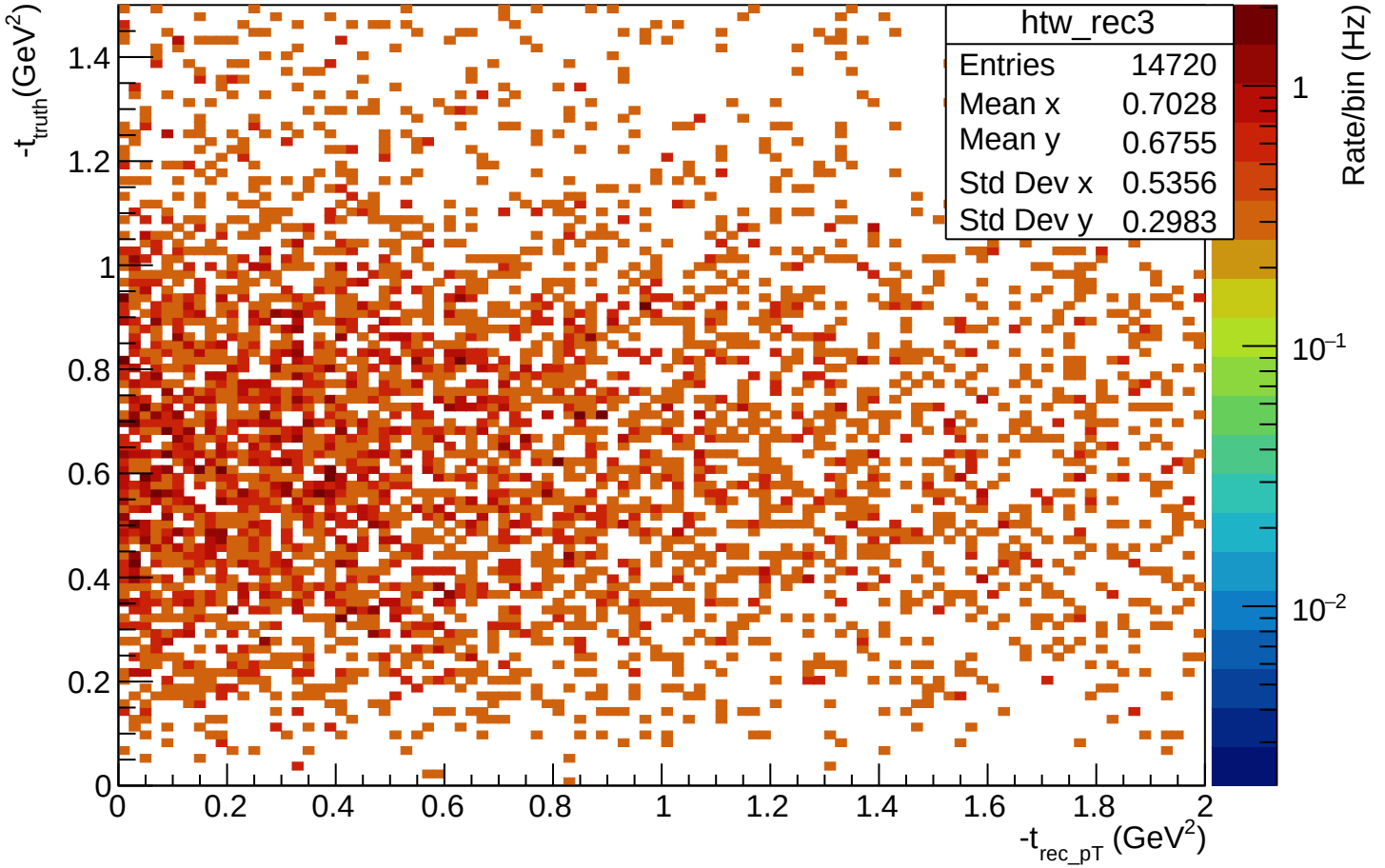

n X vs Y around proton axis at Z = 35 m for all clusters (rec θ* < 4.0 mRad, E > 120 GeV)
nRecw_rot_PosXY
Entries 274049
Mean x 1.225
Mean y 0.8499
Std Dev x 63.94
Std Dev y 67.27
y (mm)
x (mm)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
10
1
10^{-1}

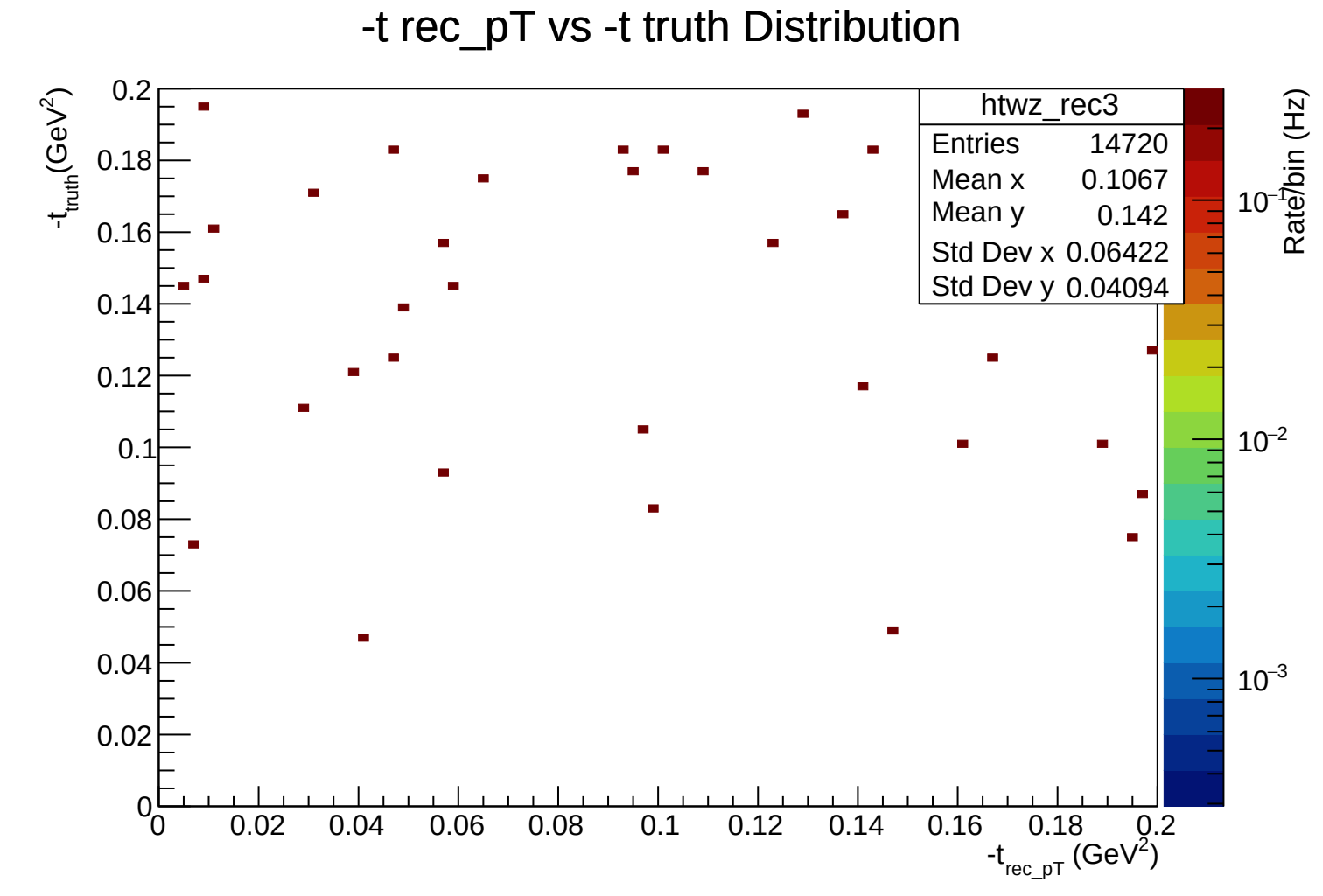

-t rec vs -t truth Distribution
htw_rec1
Entries 14720
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
$-t_{truth}(GeV^2)$
$-t_{rec}\ (GeV^2)$
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2

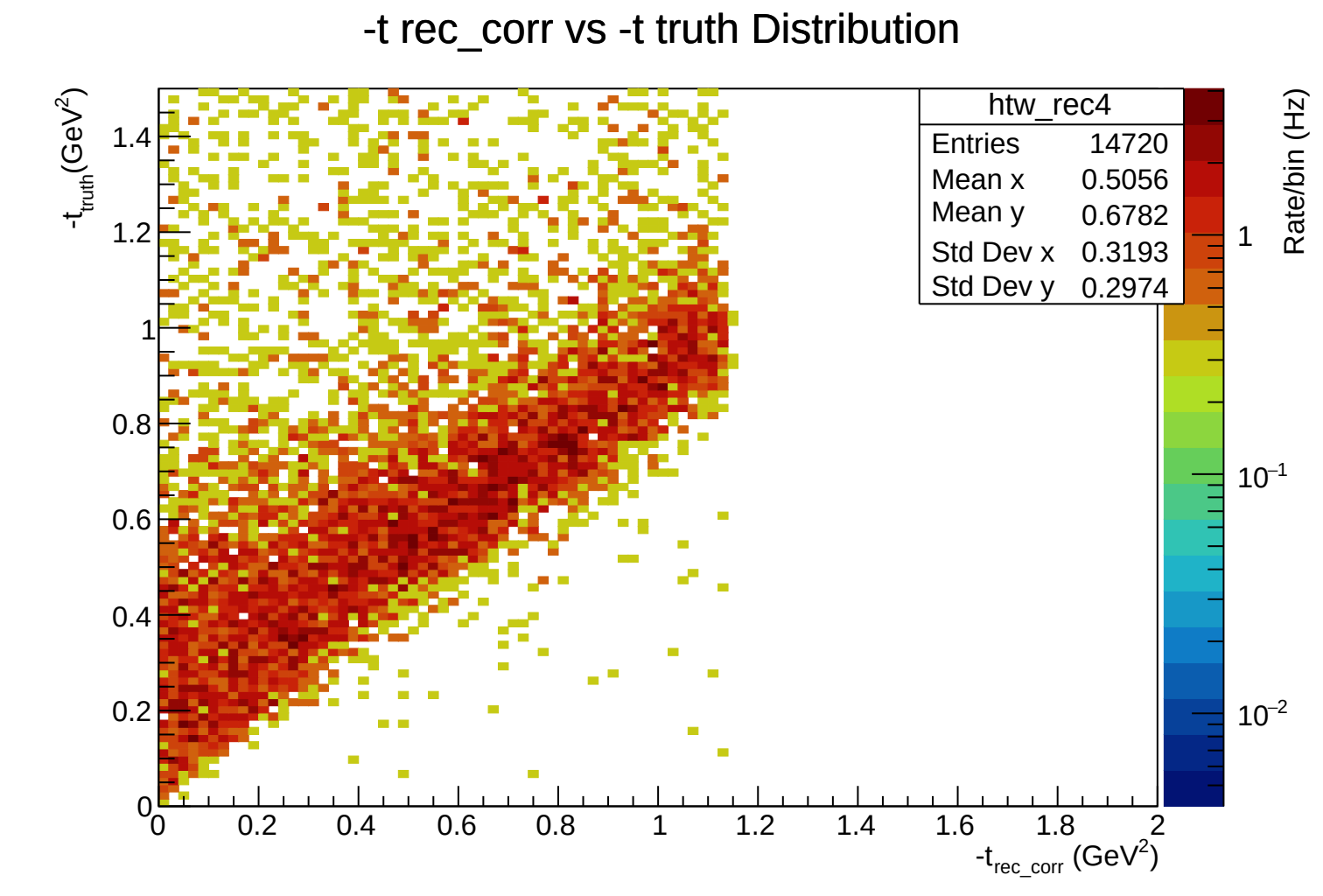

-t rec vs -t truth Distribution
htwz_rec1
Entries 14720
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
$-t_{truth}(GeV^2)$
$-t_{rec}$ (GeV^2)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2

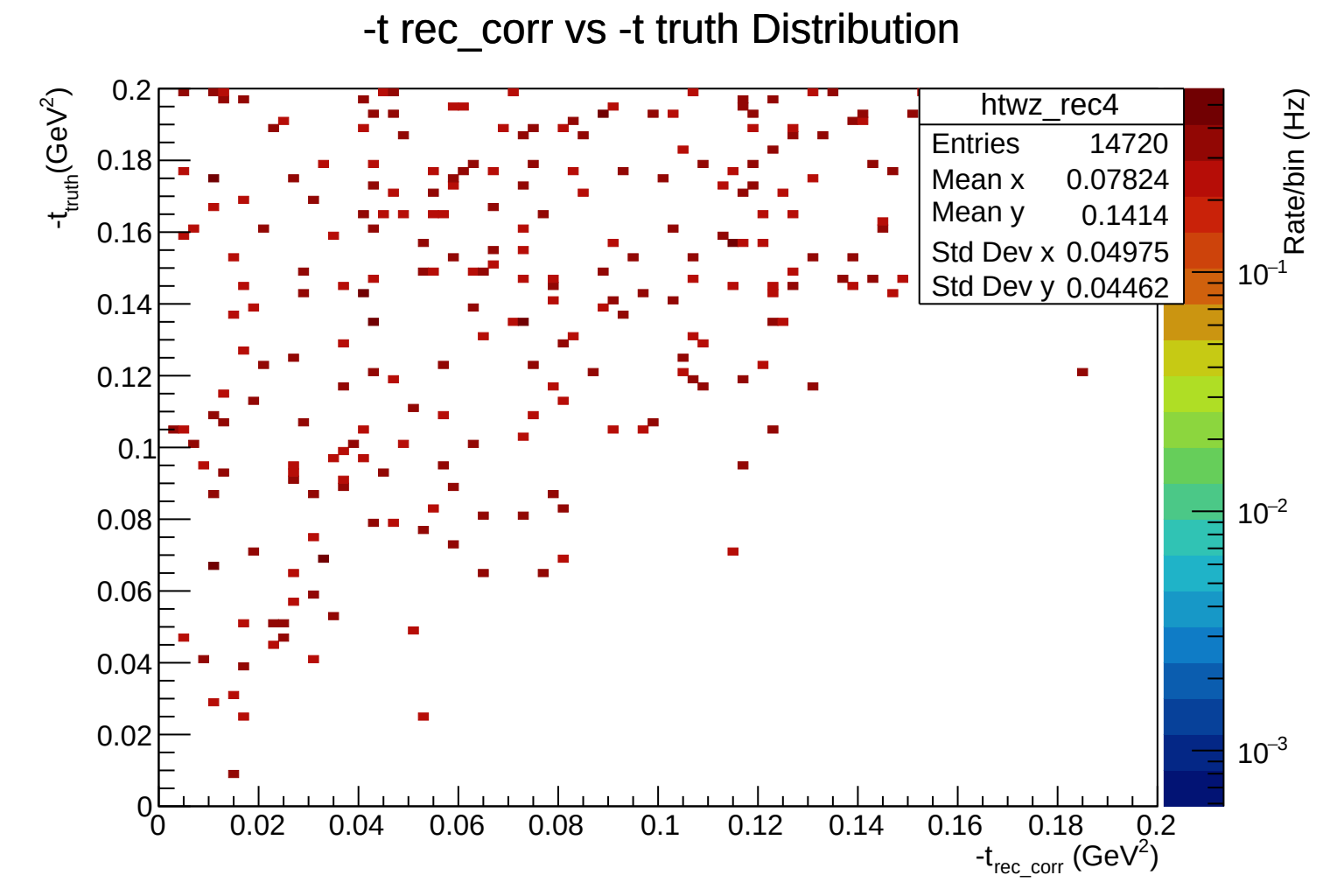

-t alt_rec vs -t truth Distribution
htw_rec2
Entries 14720
Mean x 0.639
Mean y 0.6782
Std Dev x 0.2327
Std Dev y 0.2974
-t_truth (GeV^2)
-t_alt_rec (GeV^2)
Rate/bin (Hz)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
10^-1
10^-2


-t alt_rec vs -t truth Distribution
htwz_rec2
Entries 14720
Mean x 0.1394
Mean y 0.1233
Std Dev x 0.04291
Std Dev y 0.045
-t_truth (GeV^2)
-t_alt_rec (GeV^2)
Rate/bin (Hz)
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2
10^-1 10^-2 10^-3

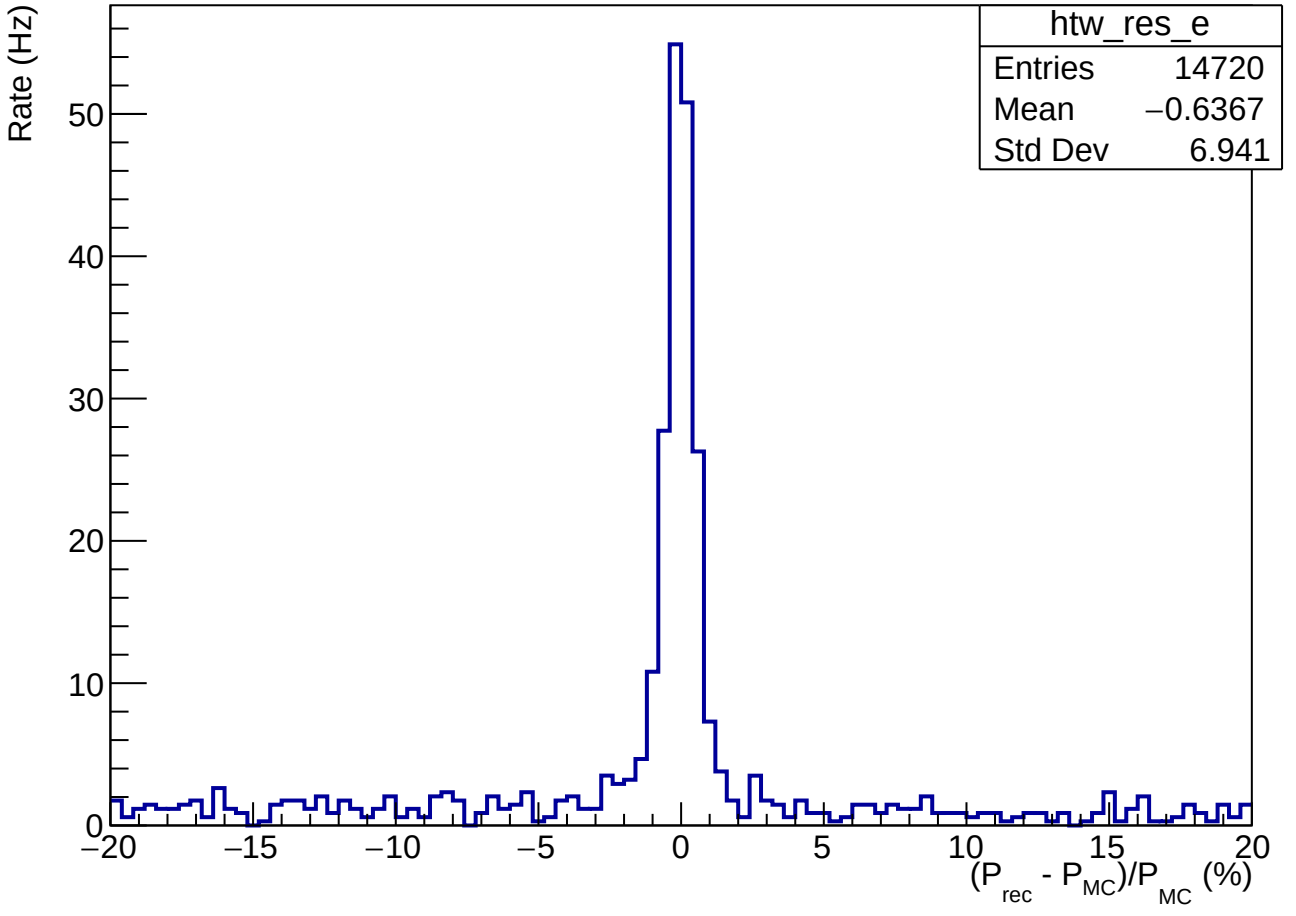

-t rec_pT vs -t truth Distribution
htw_rec3
Entries 14720
Mean x 0.7028
Mean y 0.6755
Std Dev x 0.5356
Std Dev y 0.2983
-t_truth (GeV^2)
-t_rec_pT (GeV^2)
Rate/bin (Hz)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
10^-1
10^-2

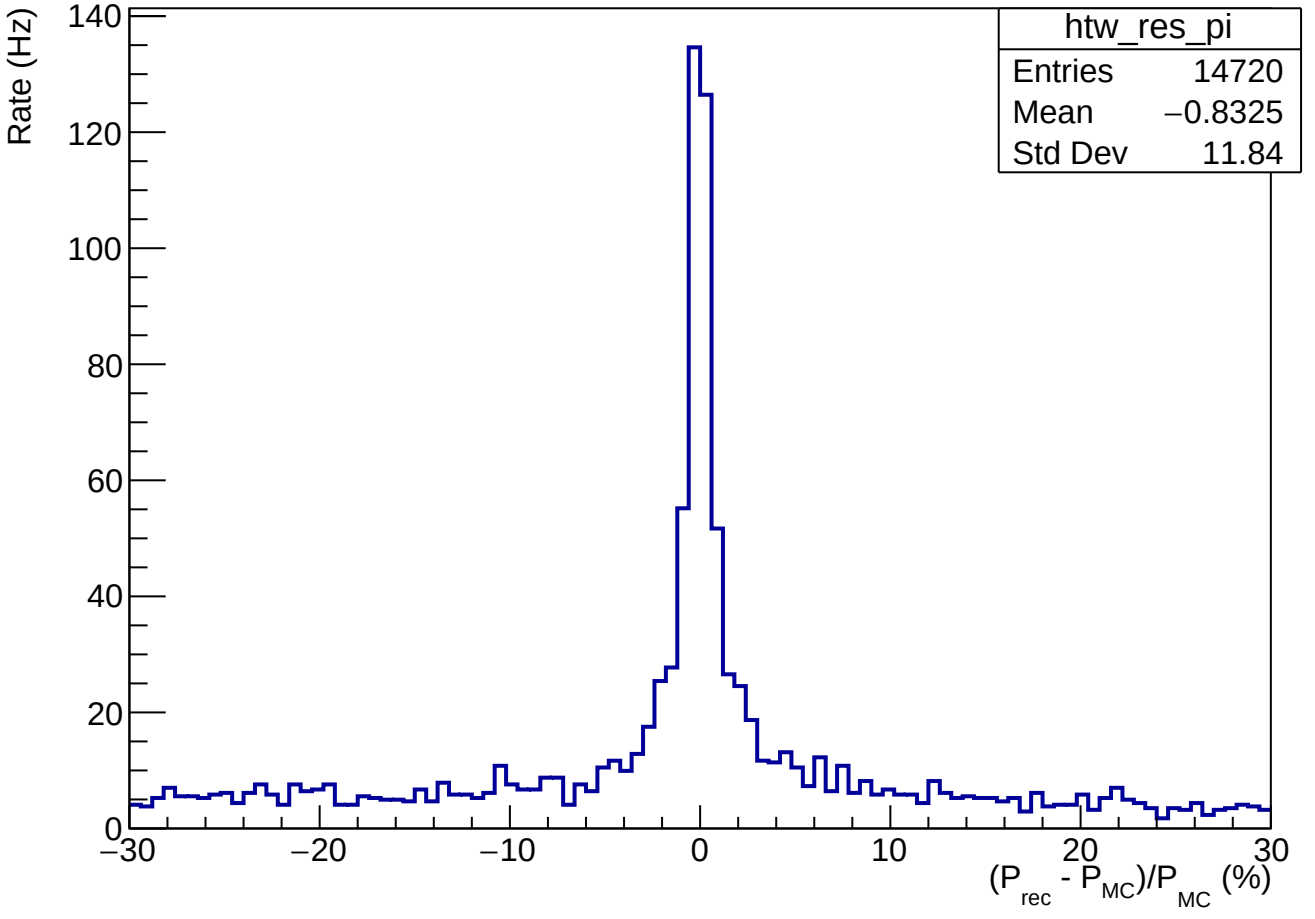

-t rec_pT vs -t truth Distribution
htwz_rec3
Entries 14720
Mean x 0.1067
Mean y 0.142
Std Dev x 0.06422
Std Dev y 0.04094
-t_truth (GeV^2)
-t_rec_pT (GeV^2)
Rate/bin (Hz)
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2
10^-1 10^-2 10^-3

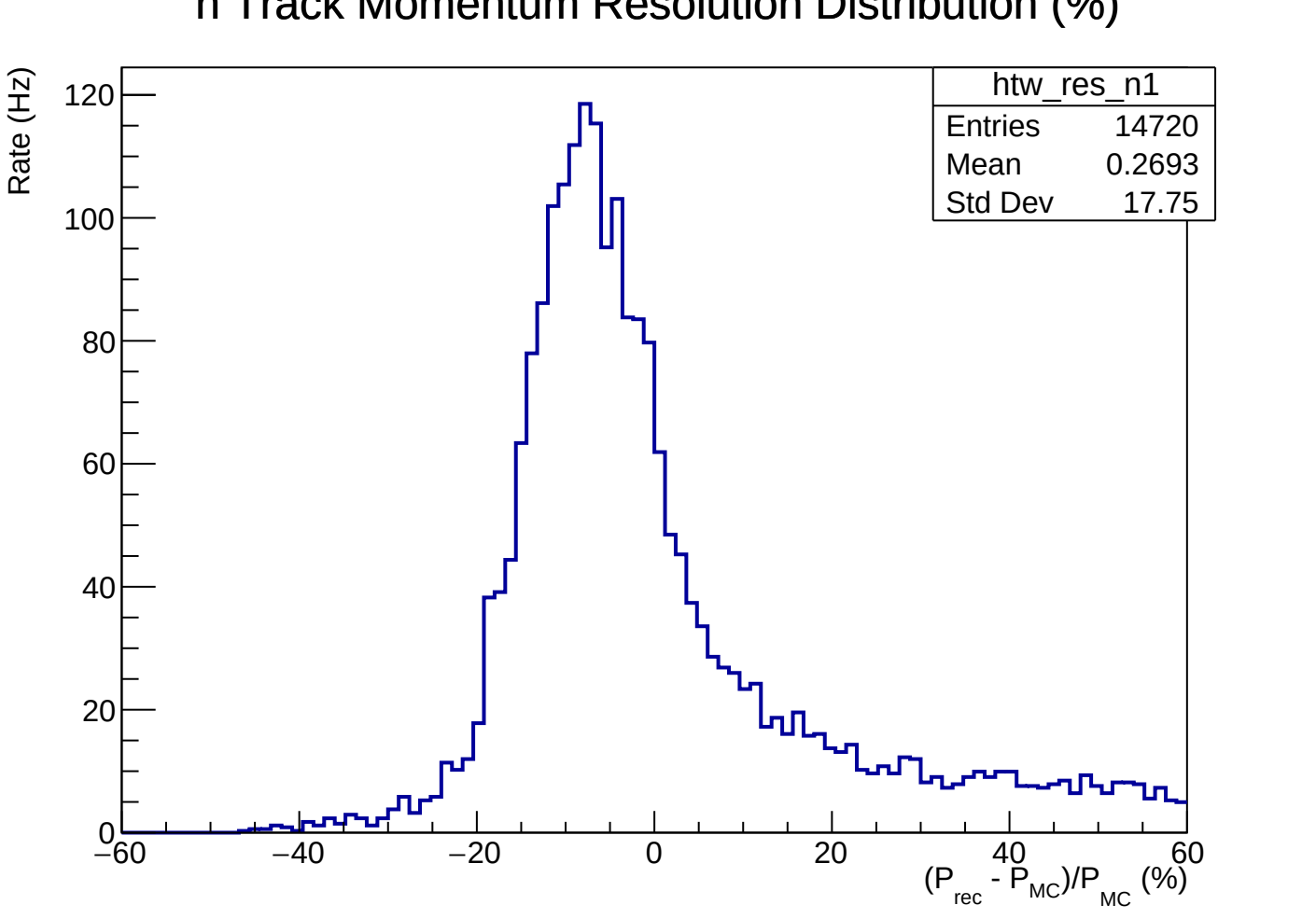

-t rec_corr vs -t truth Distribution
htw_rec4
Entries 14720
Mean x 0.5056
Mean y 0.6782
Std Dev x 0.3193
Std Dev y 0.2974
-t_truth (GeV^2)
-t_rec_corr (GeV^2)
Rate/bin (Hz)
0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2
0 0.2 0.4 0.6 0.8 1 1.2 1.4
1
10^-1
10^-2

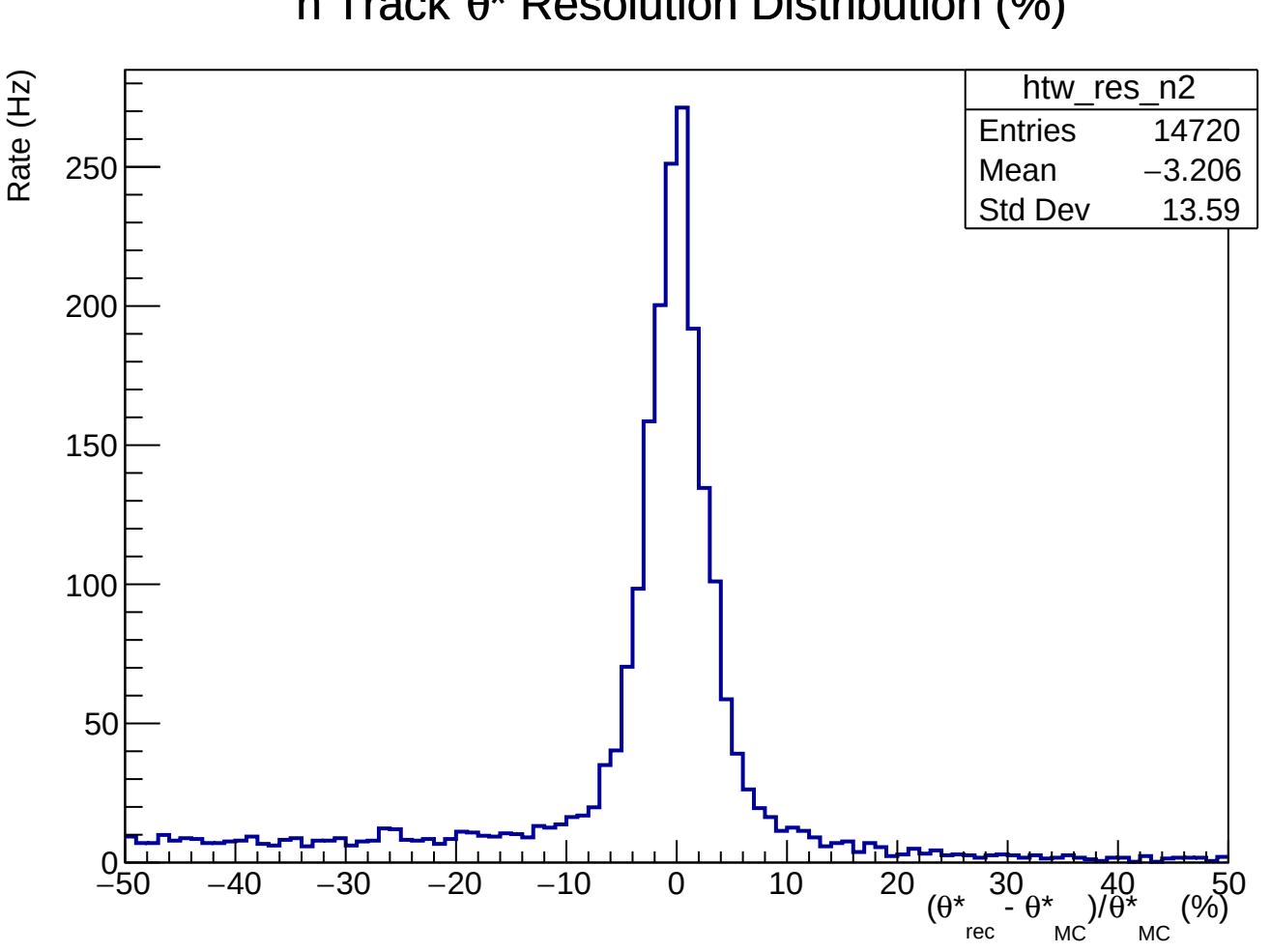

-t rec_corr vs -t truth Distribution
htwz_rec4
Entries 14720
Mean x 0.07824
Mean y 0.1414
Std Dev x 0.04975
Std Dev y 0.04462
-t_truth (GeV^2)
-t_rec_corr (GeV^2)
Rate/bin (Hz)
0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2
10^-1 10^-2 10^-3

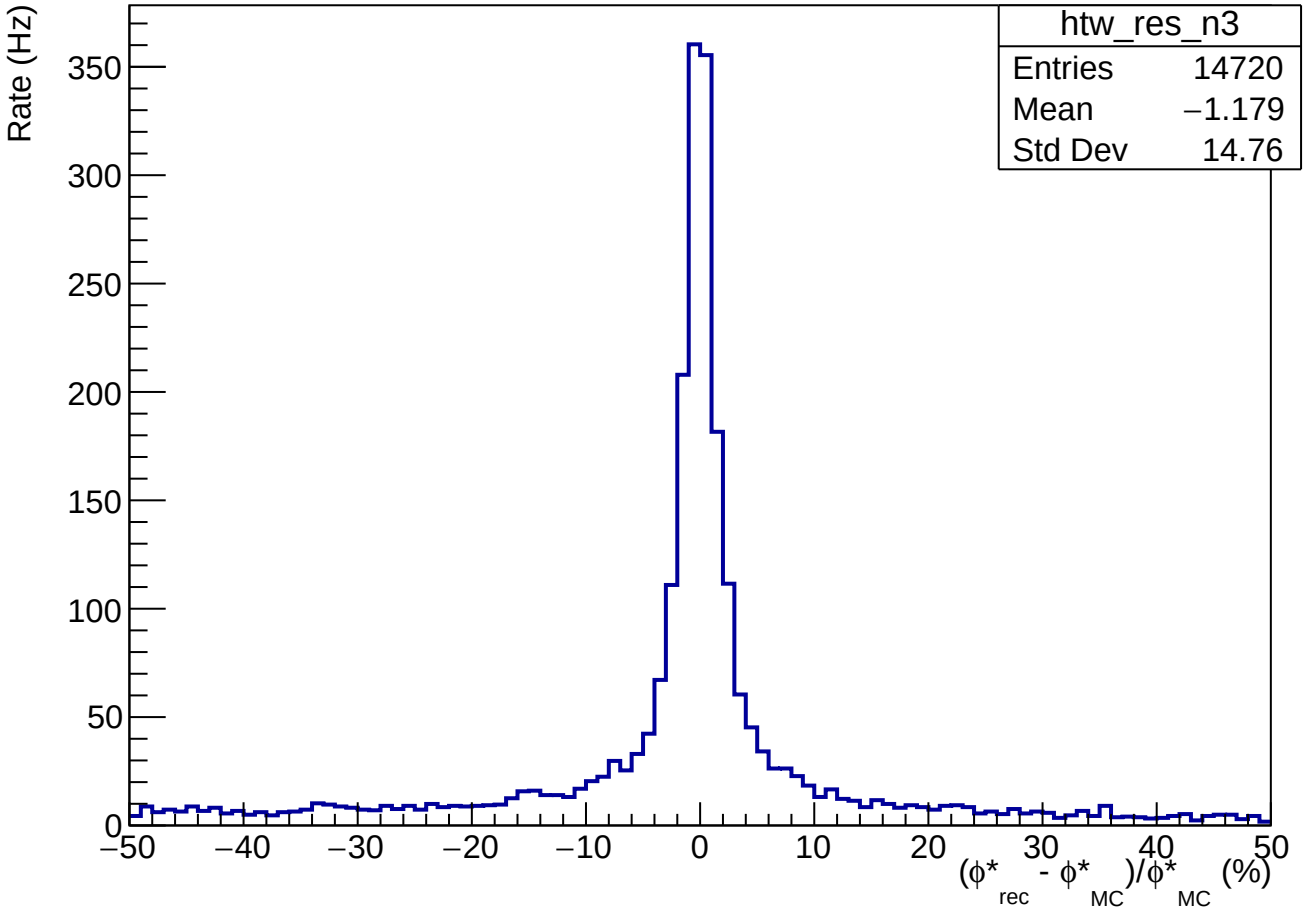
e' Track Momentum Resolution Distribution (%)



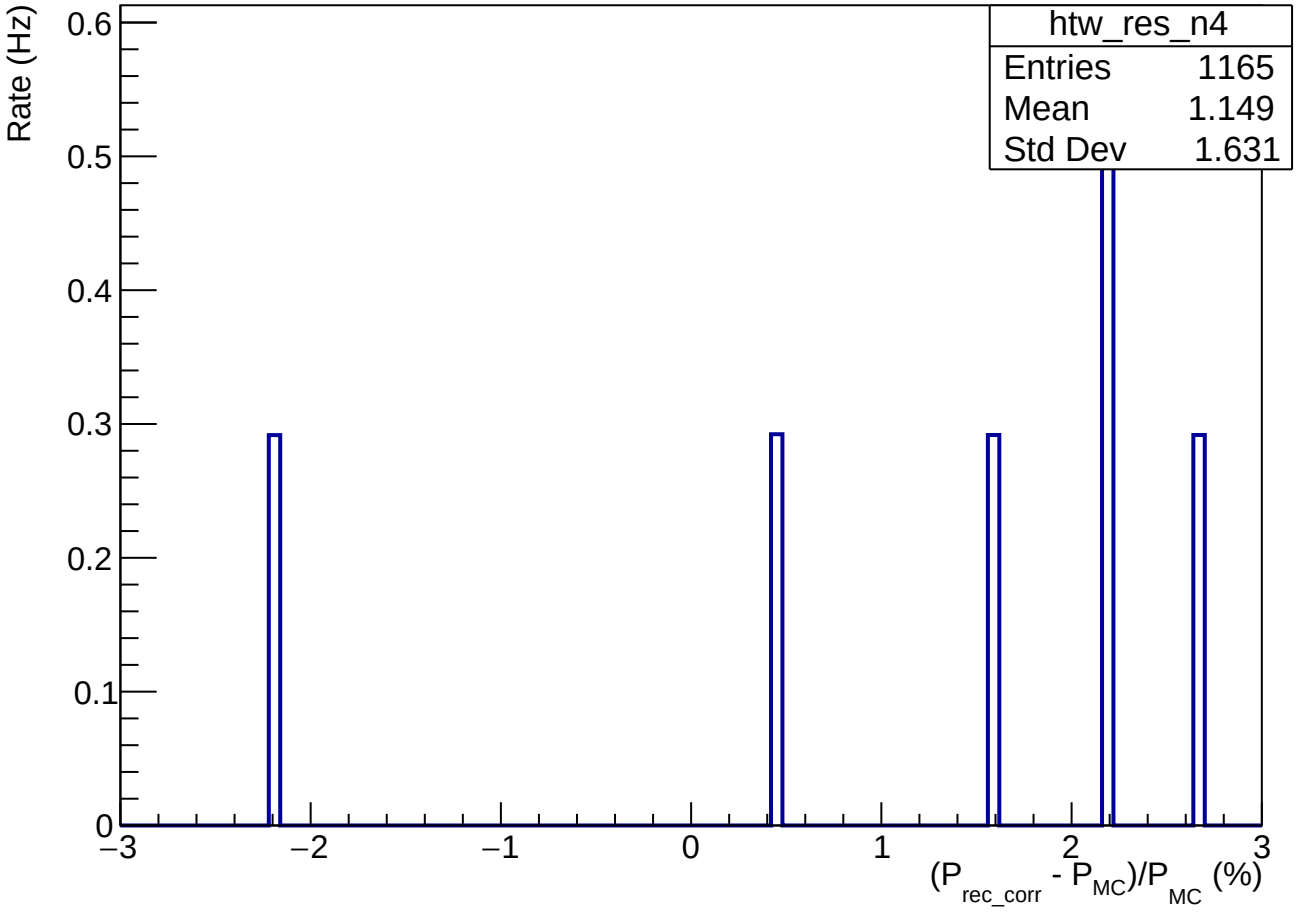

π^+ Track Momentum Resolution Distribution (%)
htw_res_pi
Entries 14720
Mean −0.8325
Std Dev 11.84
Rate (Hz)
140
120
100
80
60
40
20
0
−30
−20
−10
0
10
20
30
$(P_{rec} - P_{MC})/P_{MC}$ (%)

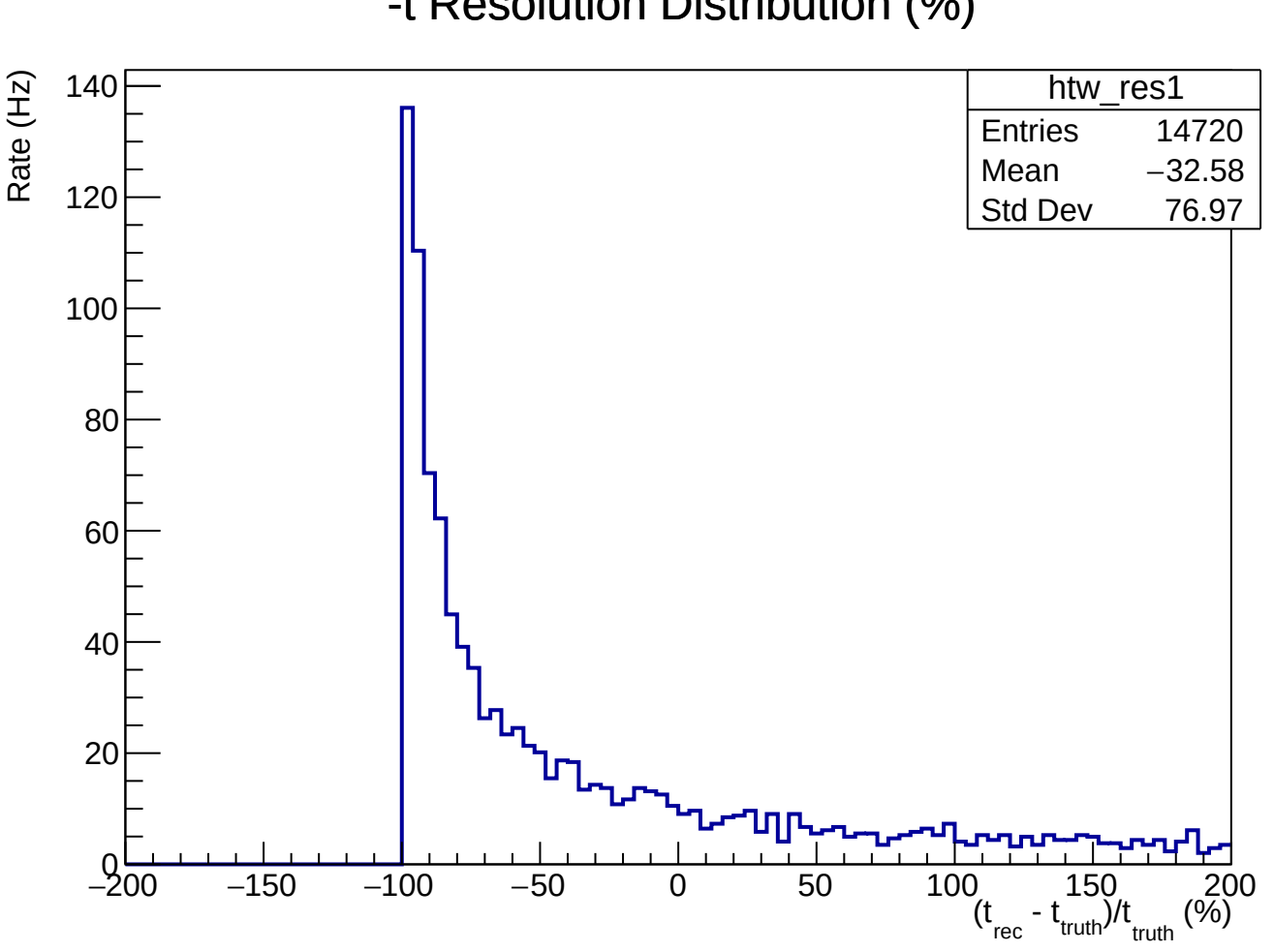

n Track Momentum Resolution Distribution (%)
htw_res_n1
Entries 14720
Mean 0.2693
Std Dev 17.75
Rate (Hz)
120
100
80
60
40
20
0
−60
−40
−20
0
20
40
60
(P rec - P MC)/P MC (%)

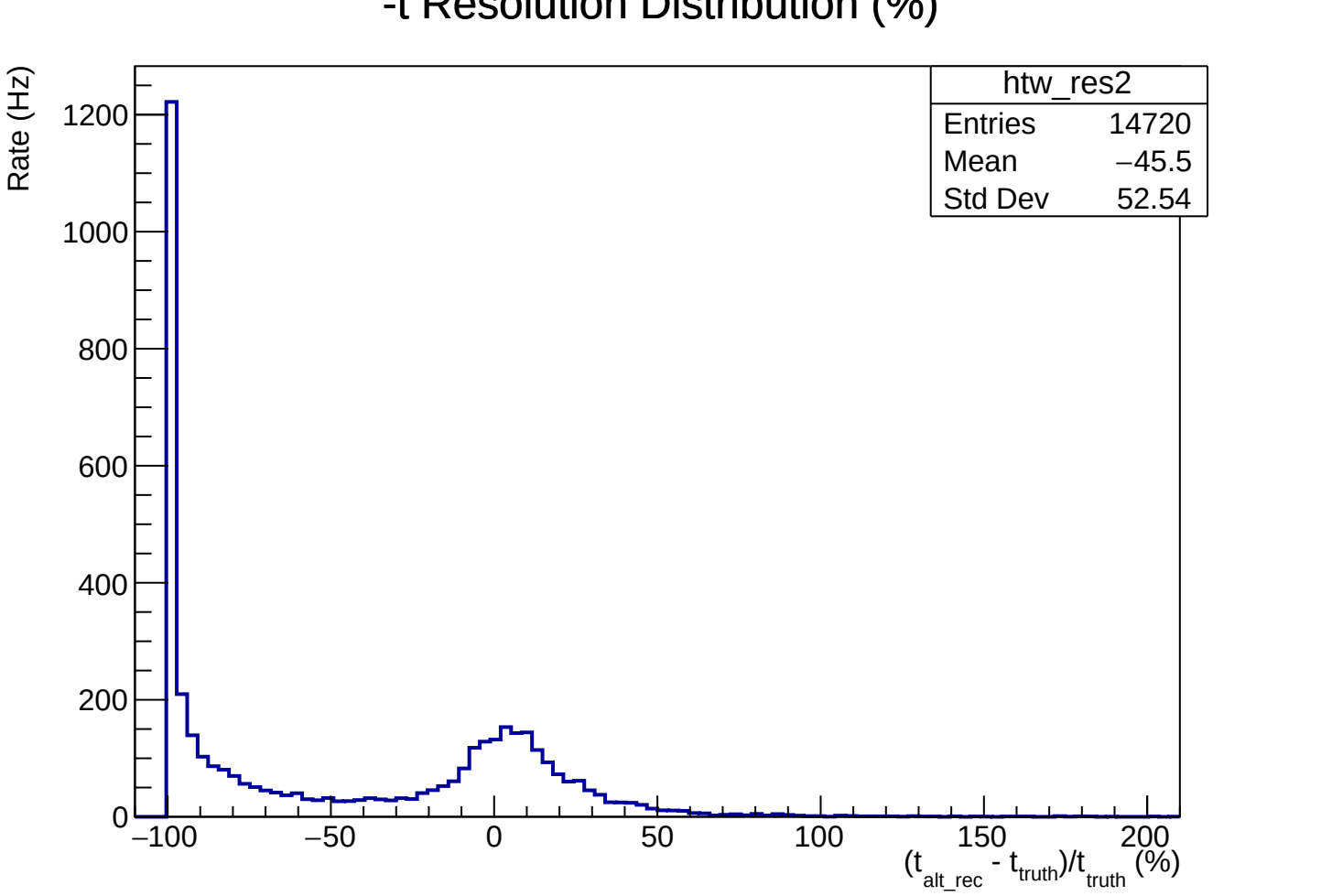

n Track θ* Resolution Distribution (%)
htw_res_n2
Entries 14720
Mean −3.206
Std Dev 13.59
Rate (Hz)
250
200
150
100
50
0
−50
−40
−30
−20
−10
0
10
20
30
40
50
(θ*rec - θ*MC)/θ*MC (%)

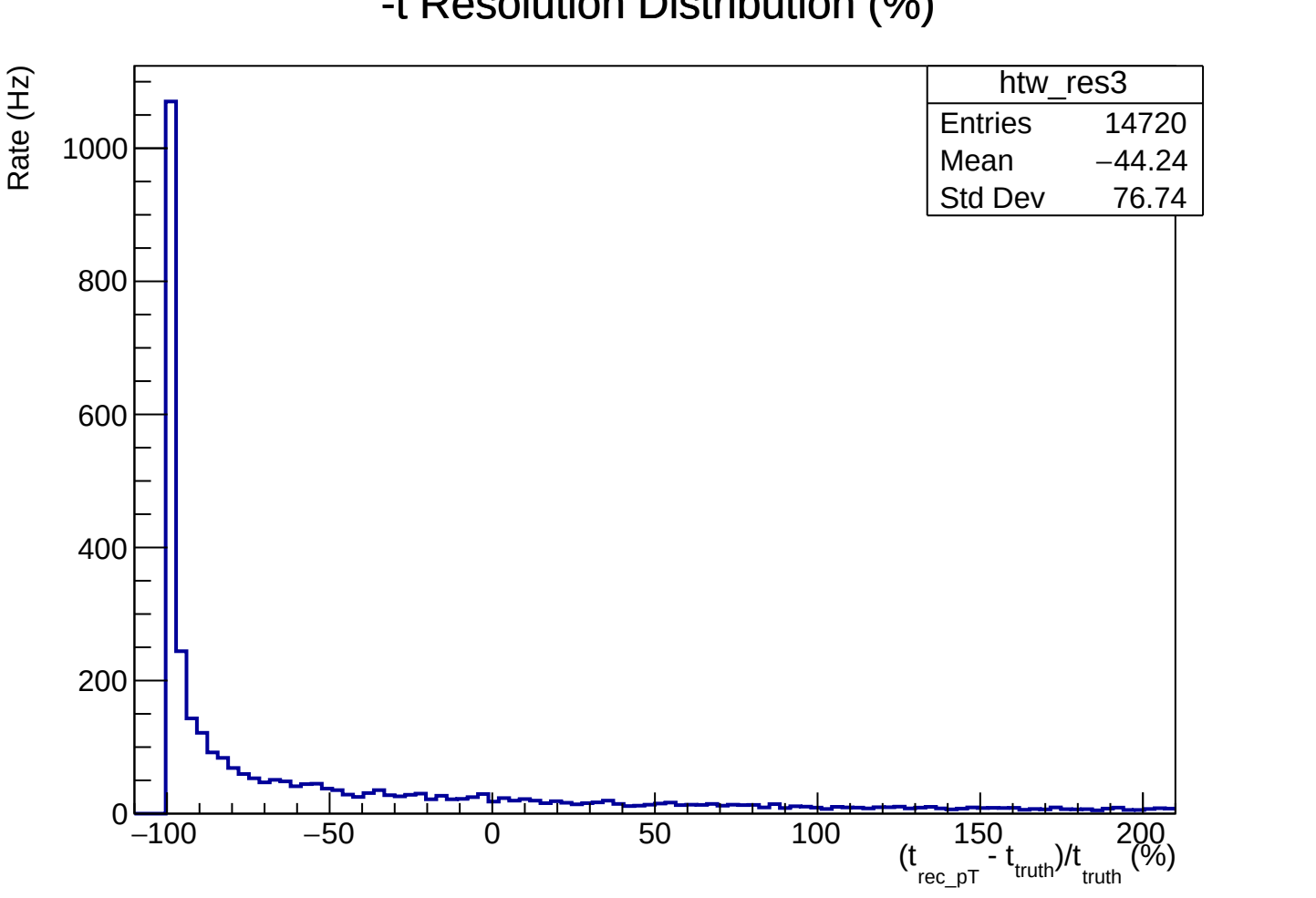

n Track ϕ* Resolution Distribution (%)
htw_res_n3
Entries 14720
Mean −1.179
Std Dev 14.76
Rate (Hz)
0
50
100
150
200
250
300
350
−50
−40
−30
−20
−10
0
10
20
30
40
50
(ϕ*rec - ϕ*MC)/ϕ*MC (%)

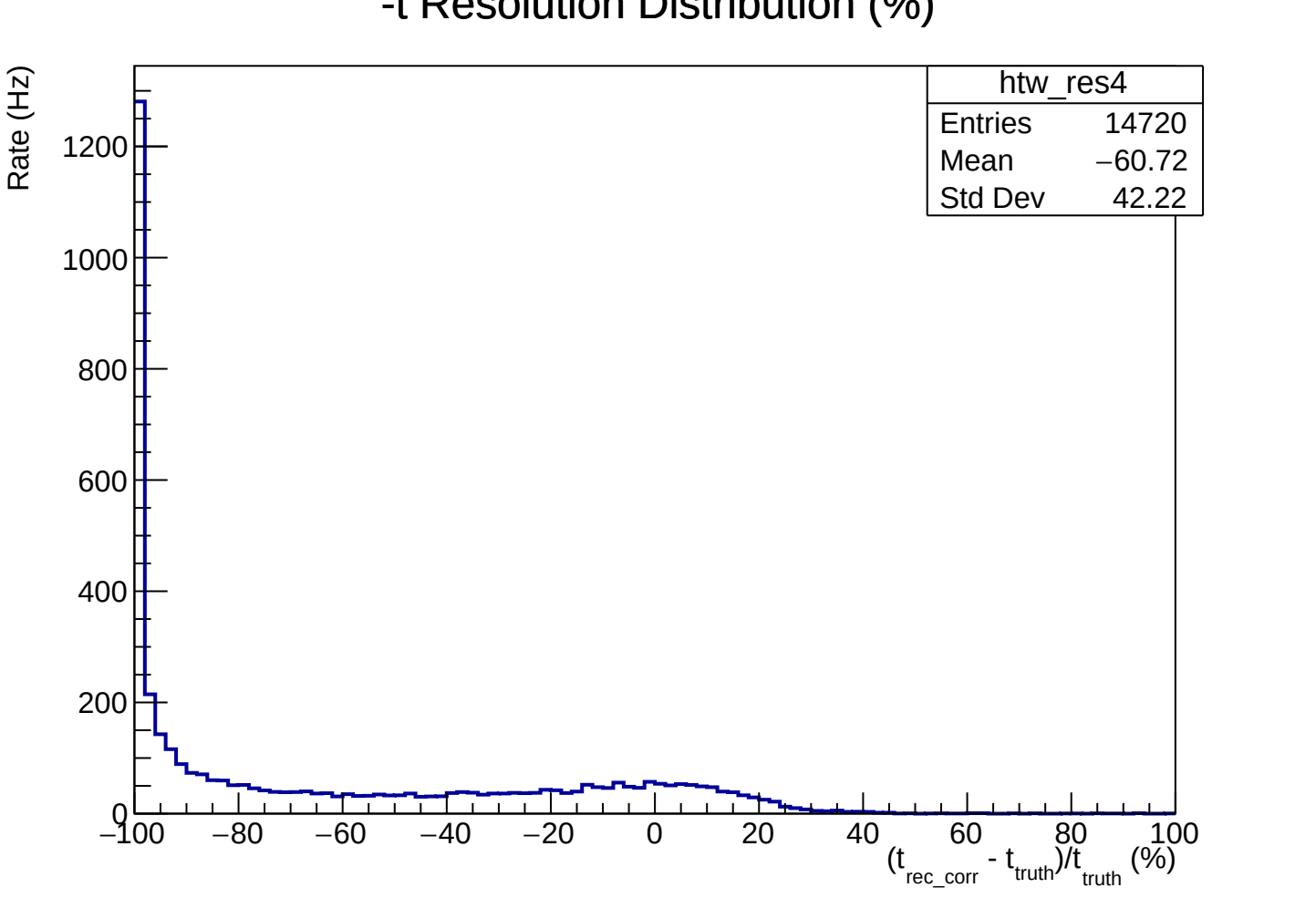
n Track Momentum Resolution Distribution (%)

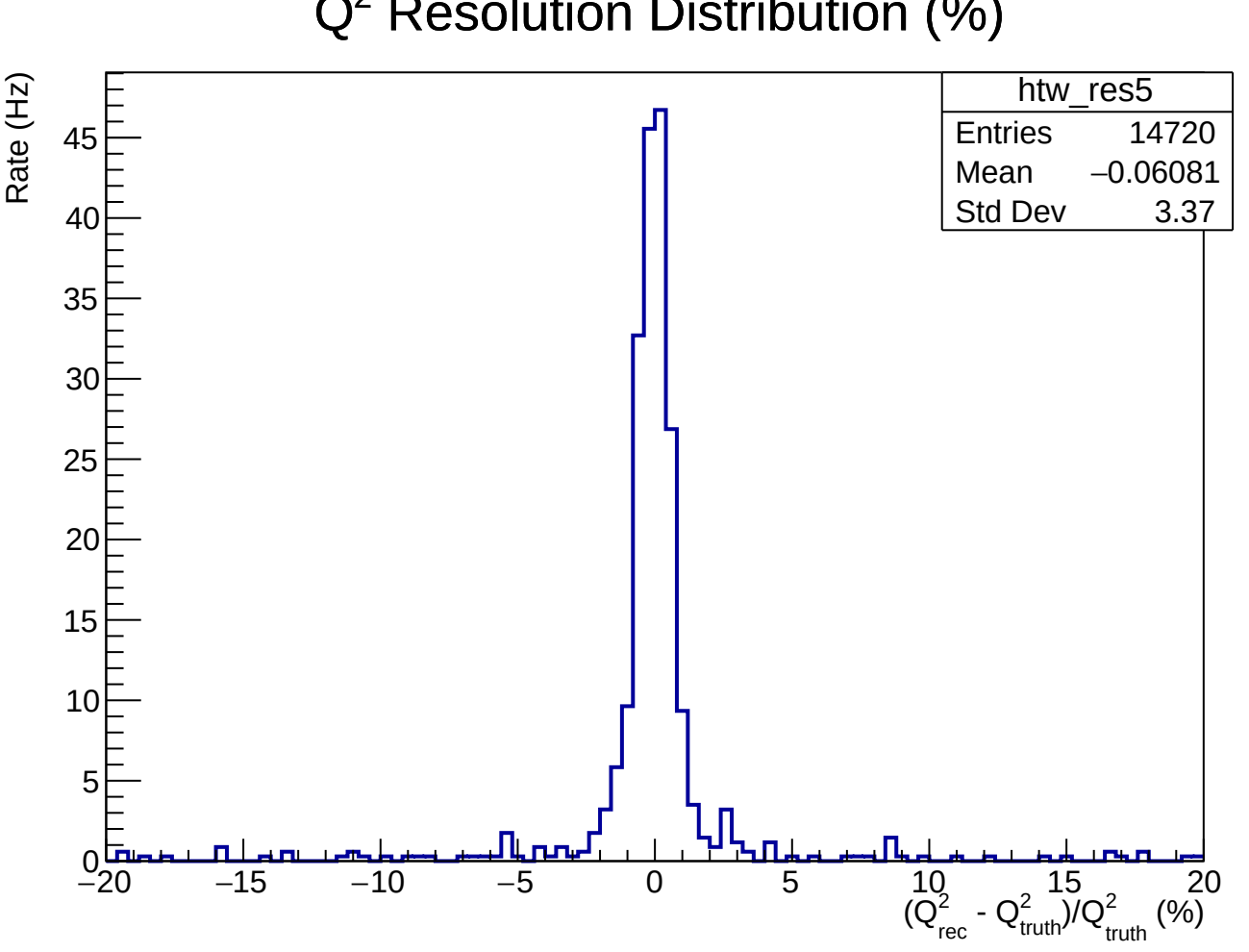


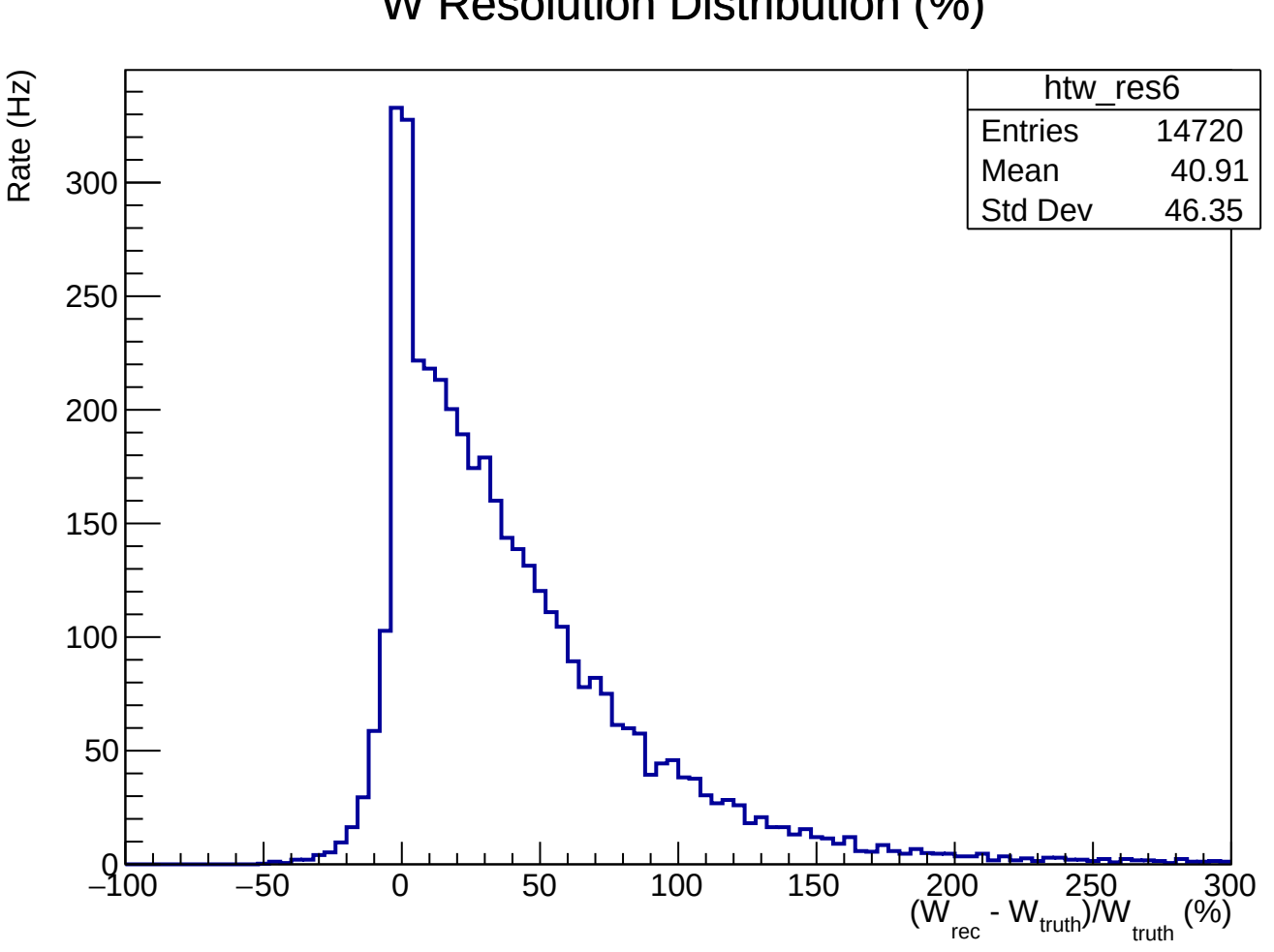

-t Resolution Distribution (%)
htw_res1
Entries 14720
Mean −32.58
Std Dev 76.97
Rate (Hz)
140
120
100
80
60
40
20
0
−200
−150
−100
−50
0
50
100
150
200
(t_rec - t_truth)/t_truth (%)

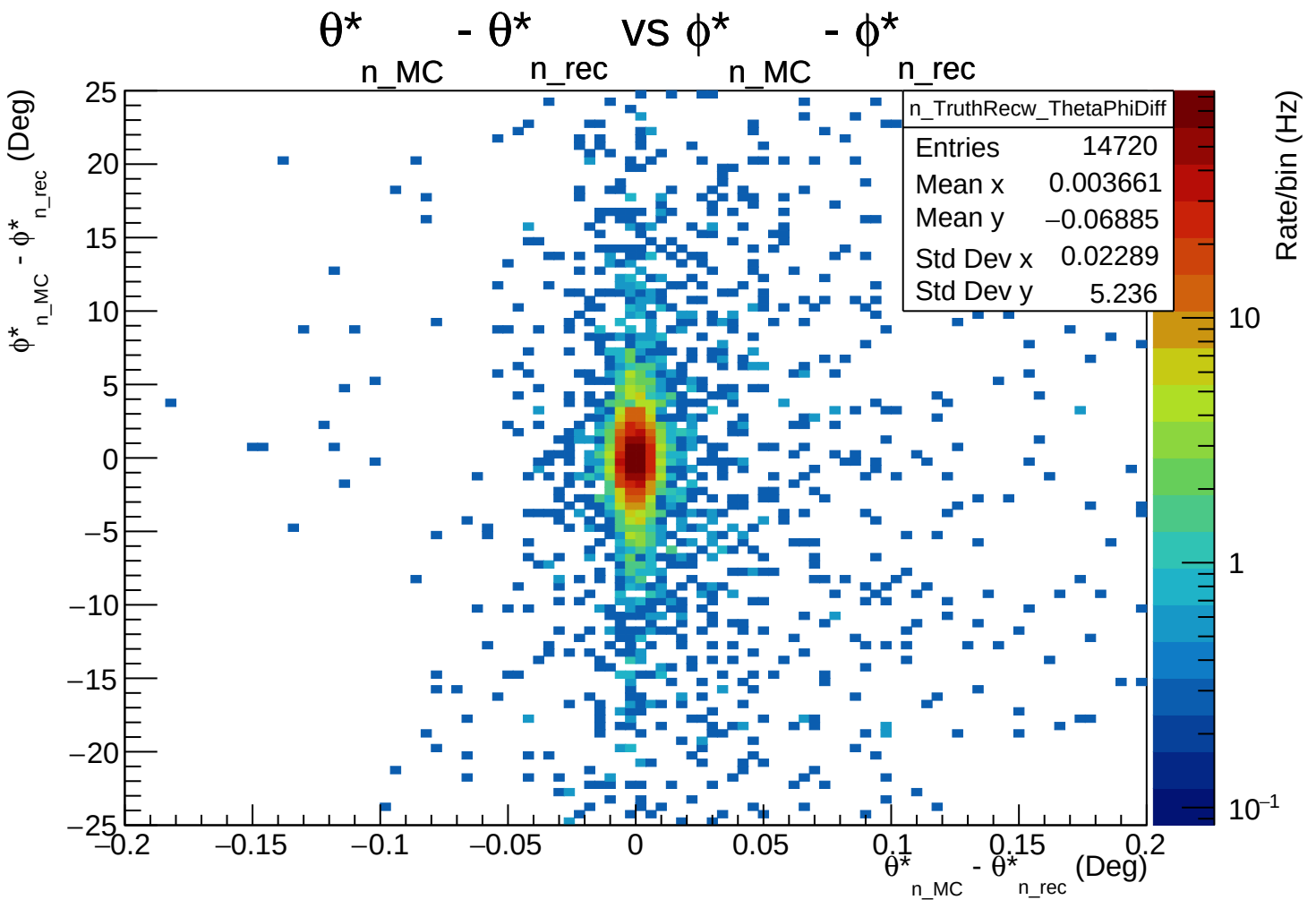

-t Resolution Distribution (%)
htw_res2
Entries 14720
Mean −45.5
Std Dev 52.54
Rate (Hz)
0
200
400
600
800
1000
1200
−100
−50
0
50
100
150
200
(t alt_rec - t truth)/t truth (%)

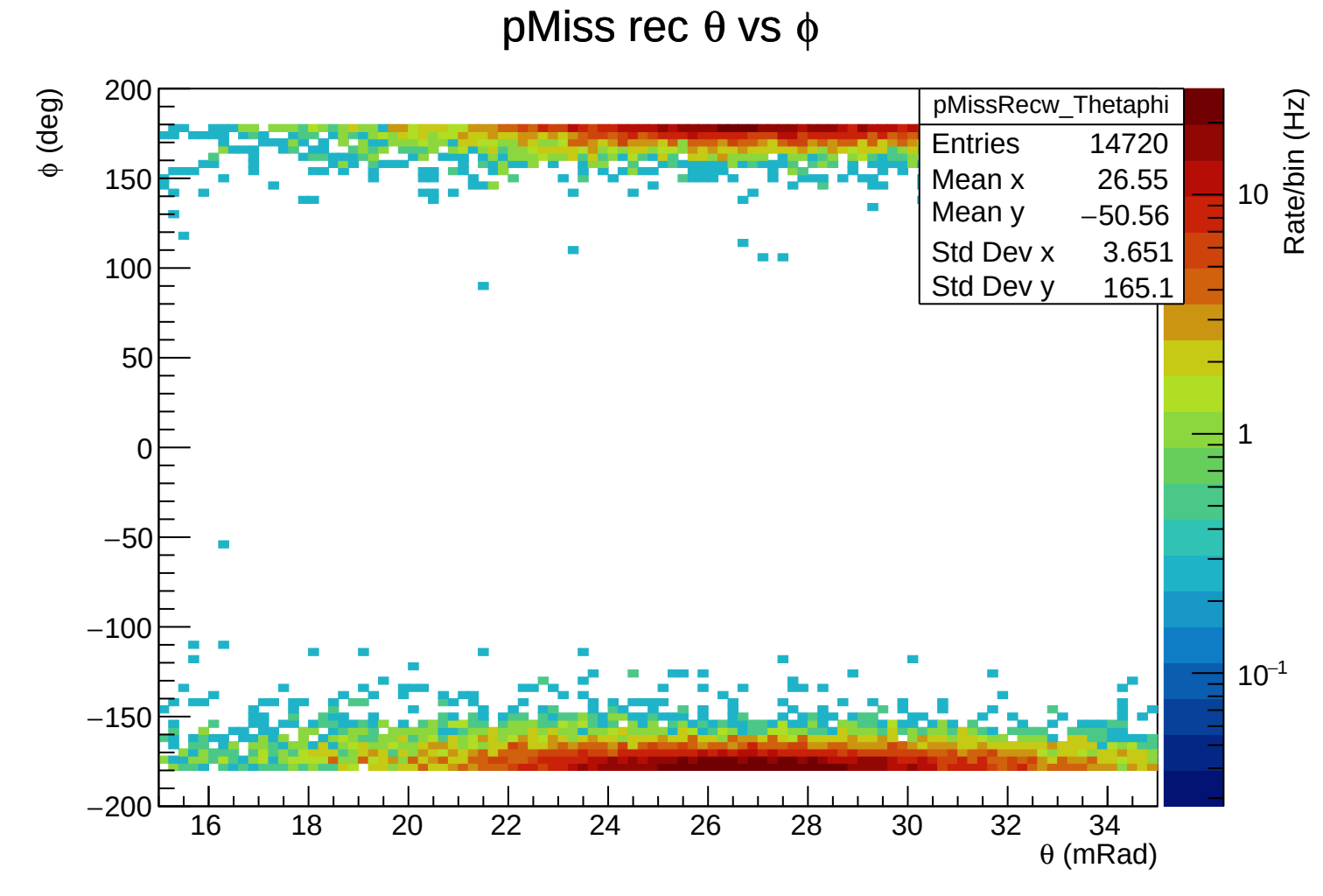

-t Resolution Distribution (%)
htw_res3
Entries 14720
Mean −44.24
Std Dev 76.74
Rate (Hz)
1000
800
600
400
200
0
−100
−50
0
50
100
150
200
(t rec_pT - t truth)/t truth (%)

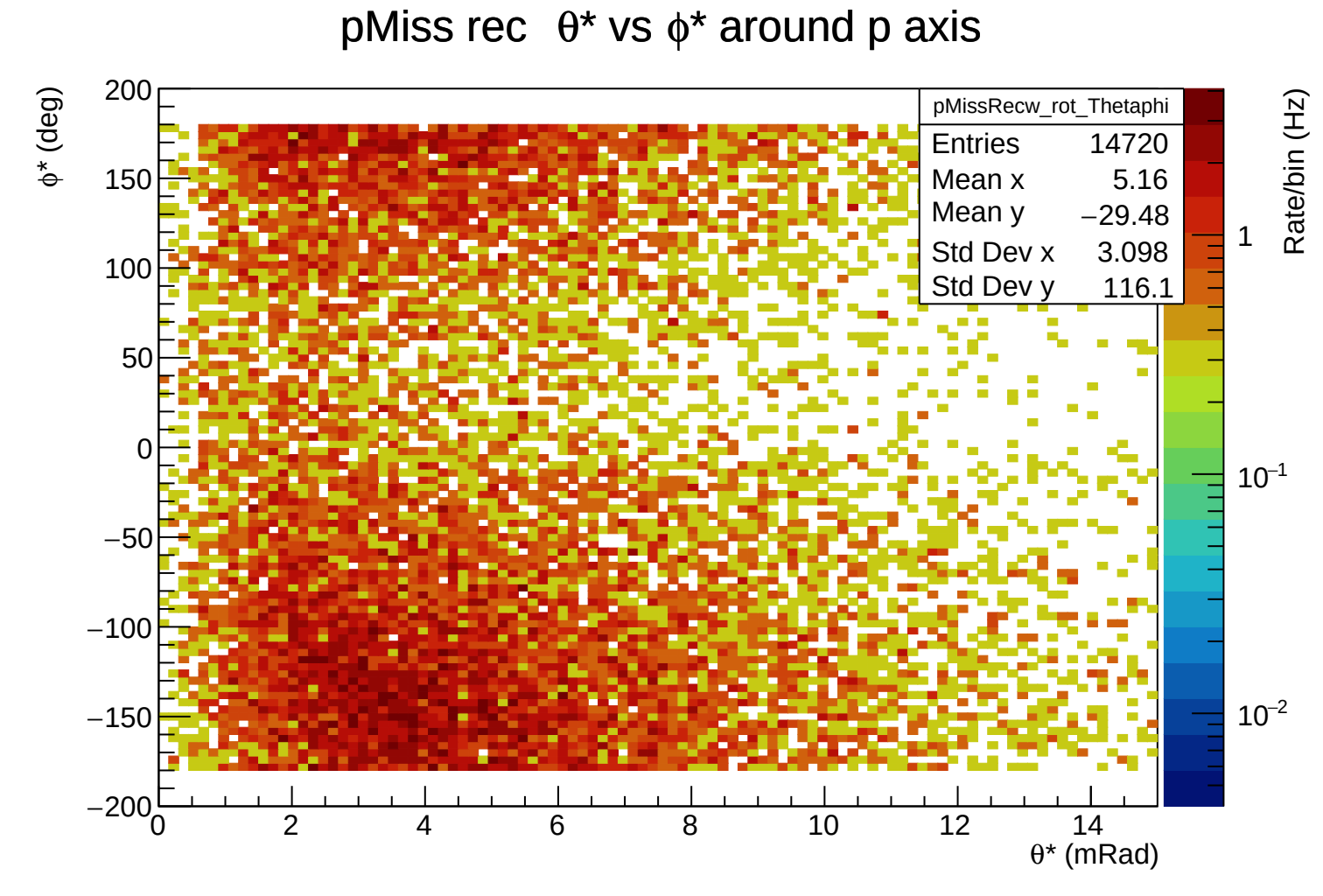

-t Resolution Distribution (%)
htw_res4
Entries 14720
Mean −60.72
Std Dev 42.22
Rate (Hz)
0
200
400
600
800
1000
1200
−100
−80
−60
−40
−20
0
20
40
60
80
100
(t rec_corr - t truth)/t truth (%)

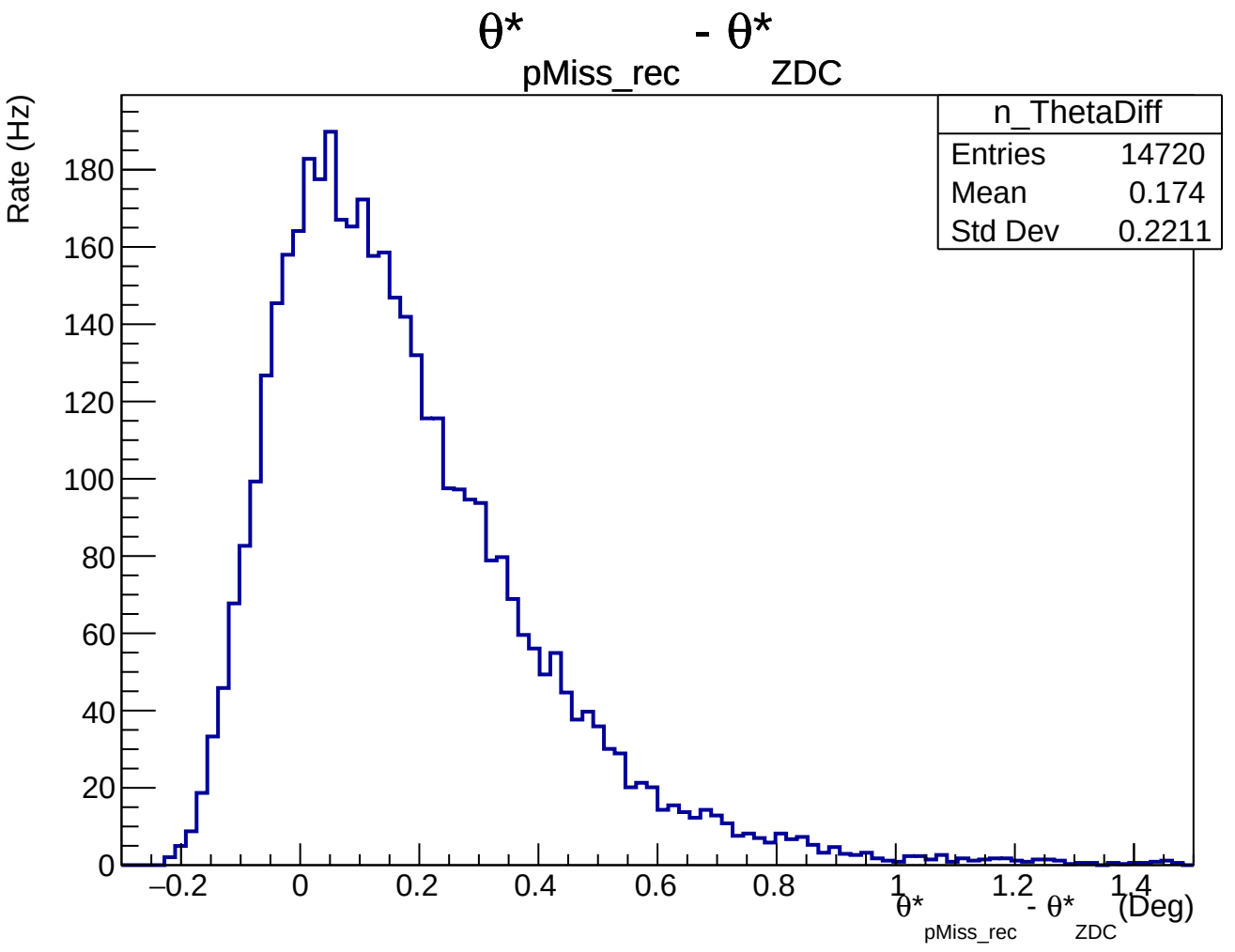

Q^2 Resolution Distribution (%)
htw_res5
Entries 14720
Mean −0.06081
Std Dev 3.37
Rate (Hz)
0
5
10
15
20
25
30
35
40
45
−20
−15
−10
−5
0
5
10
15
20
$(Q^2_{rec} - Q^2_{truth})/Q^2_{truth}$ (%)

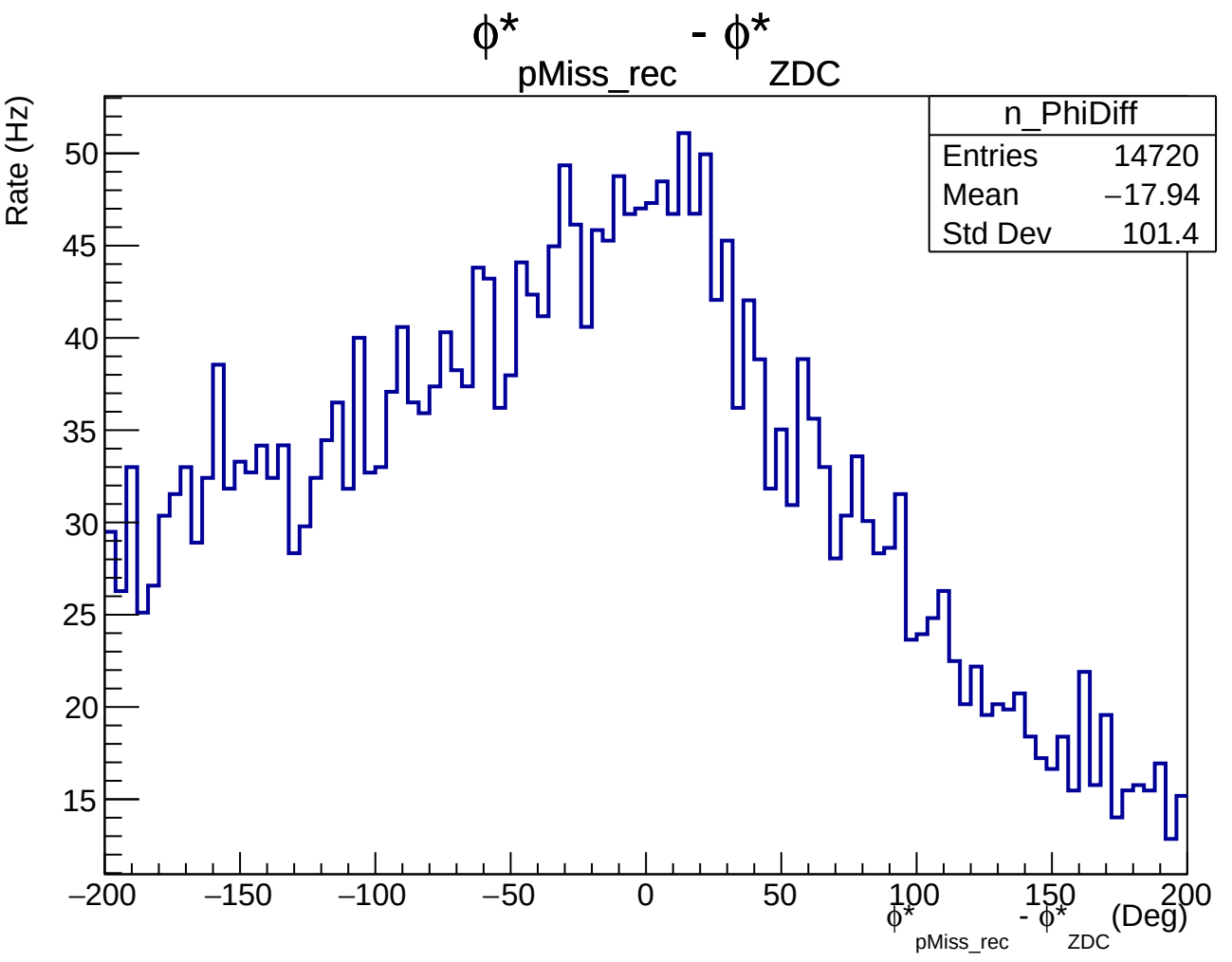

W Resolution Distribution (%)
htw_res6
Entries 14720
Mean 40.91
Std Dev 46.35
Rate (Hz)
300
250
200
150
100
50
0
−100
−50
0
50
100
150
200
250
300
(W rec - W truth)/W truth (%)

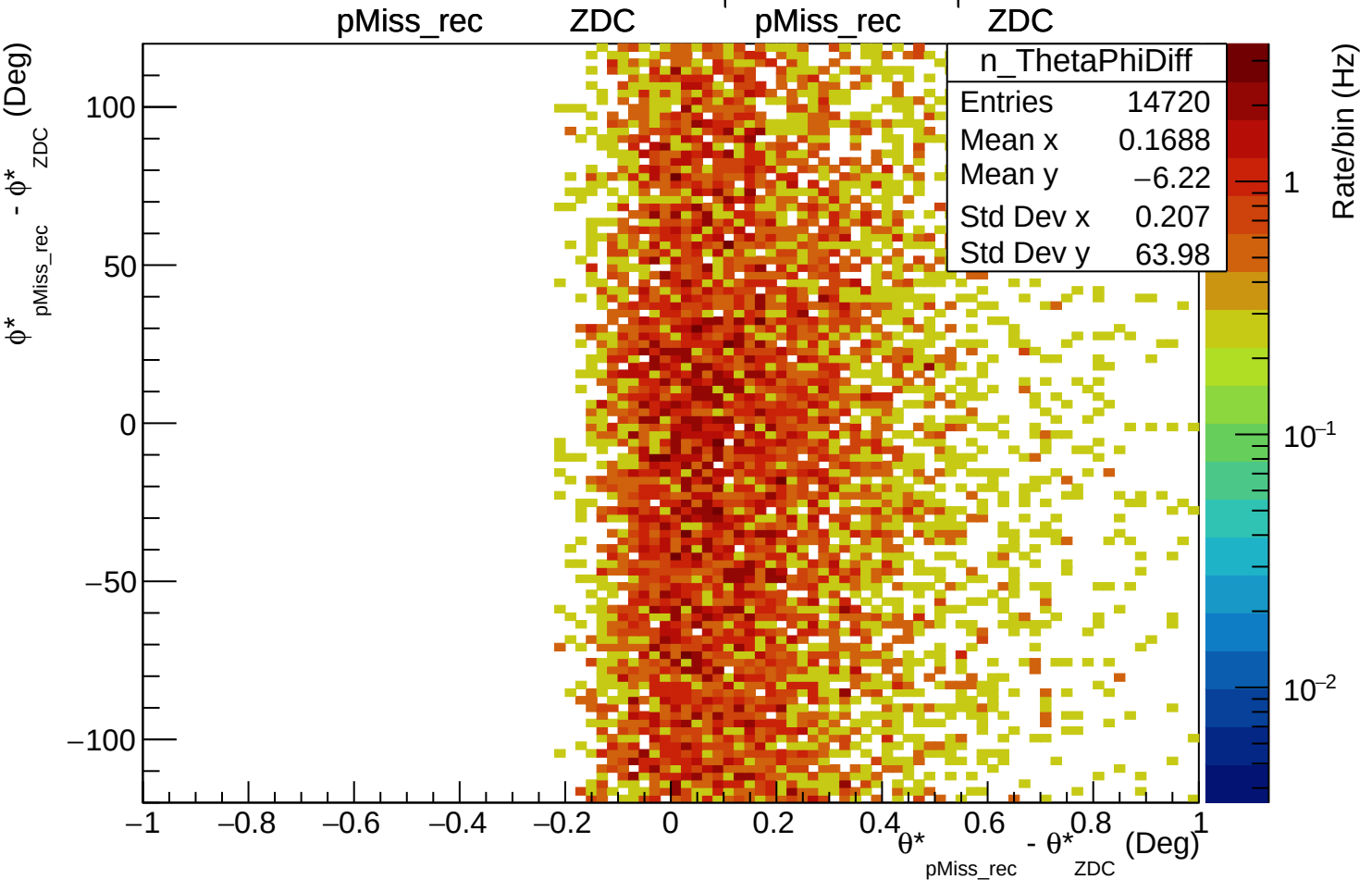

θ* n_MC - θ* n_rec vs ϕ* n_MC - ϕ* n_rec
n_TruthRecw_ThetaPhiDiff
Entries 14720
Mean x 0.003661
Mean y −0.06885
Std Dev x 0.02289
Std Dev y 5.236
ϕ* n_MC - ϕ* n_rec (Deg)
θ* n_MC - θ* n_rec (Deg)
Rate/bin (Hz)
25
20
15
10
5
0
−5
−10
−15
−20
−25
−0.2
−0.15
−0.1
−0.05
0
0.05
0.1
0.15
0.2
10
1
10⁻¹

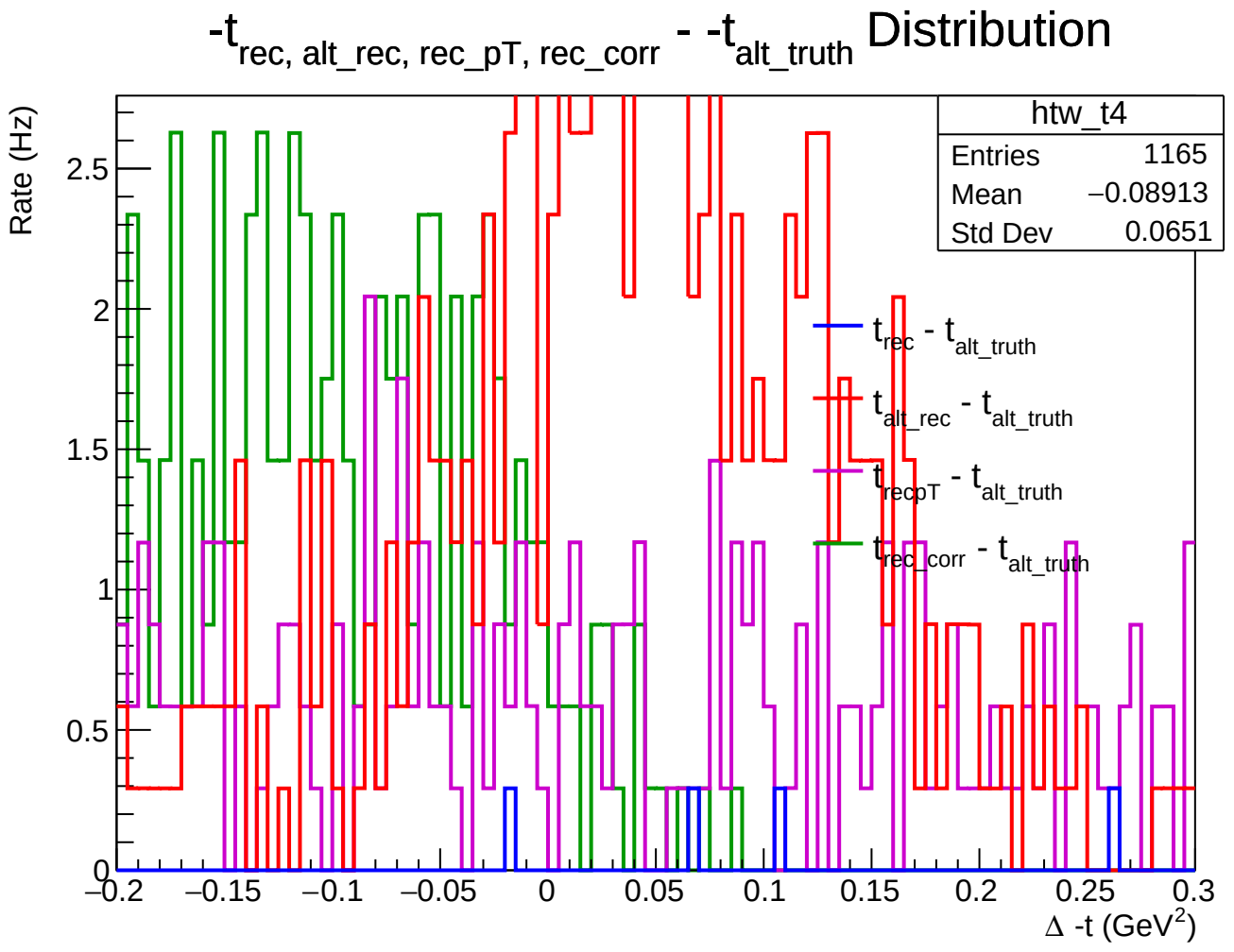

pMiss rec θ vs ϕ
pMissRecw_Thetaphi
Entries 14720
Mean x 26.55
Mean y −50.56
Std Dev x 3.651
Std Dev y 165.1
ϕ (deg)
θ (mRad)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
16
18
20
22
24
26
28
30
32
34
10
1
10−1

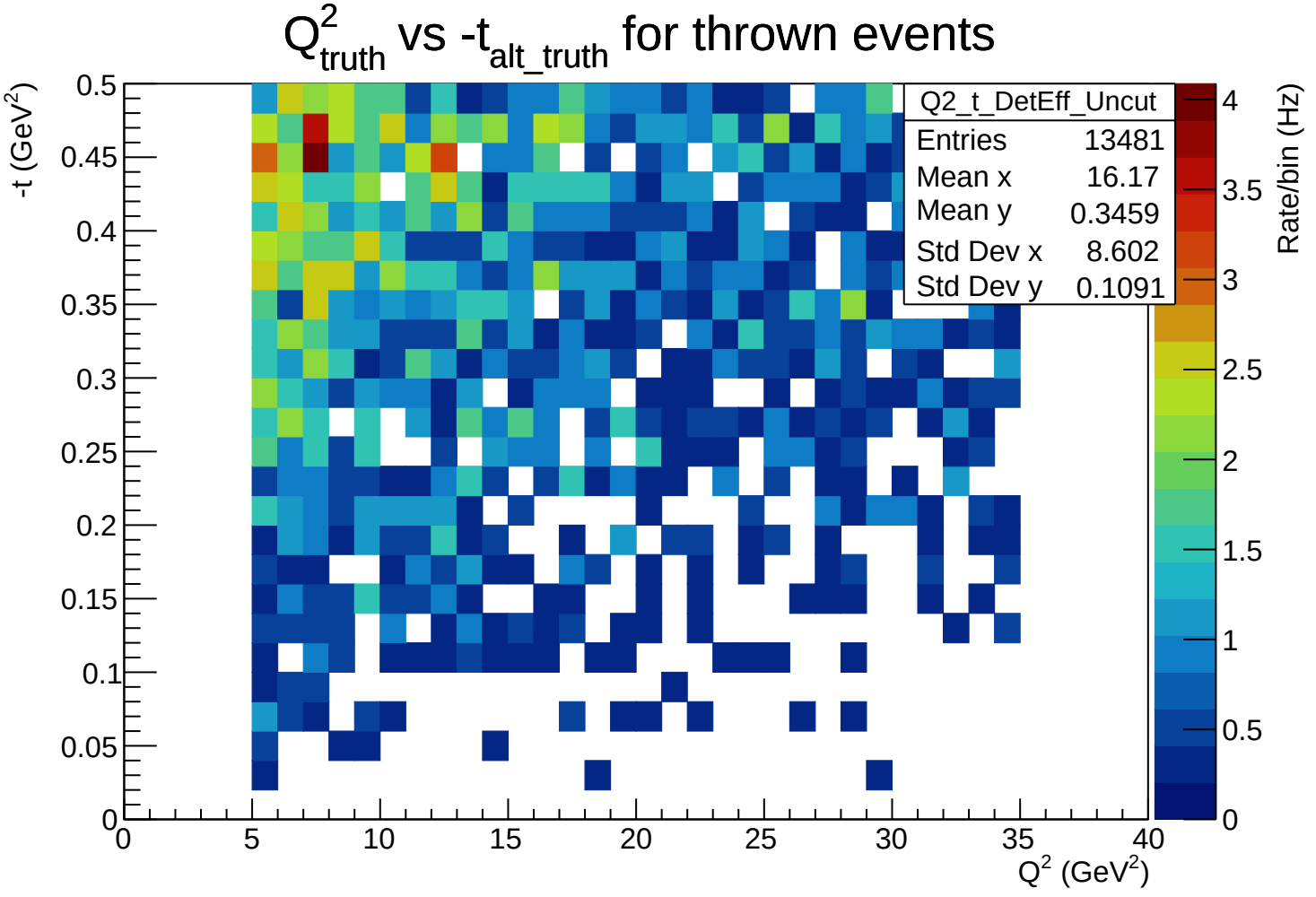

pMiss rec θ* vs ϕ* around p axis
pMissRecw_rot_Thetaphi
Entries 14720
Mean x 5.16
Mean y −29.48
Std Dev x 3.098
Std Dev y 116.1
ϕ* (deg)
θ* (mRad)
Rate/bin (Hz)
200
150
100
50
0
−50
−100
−150
−200
0
2
4
6
8
10
12
14
1
10^{-1}
10^{-2}

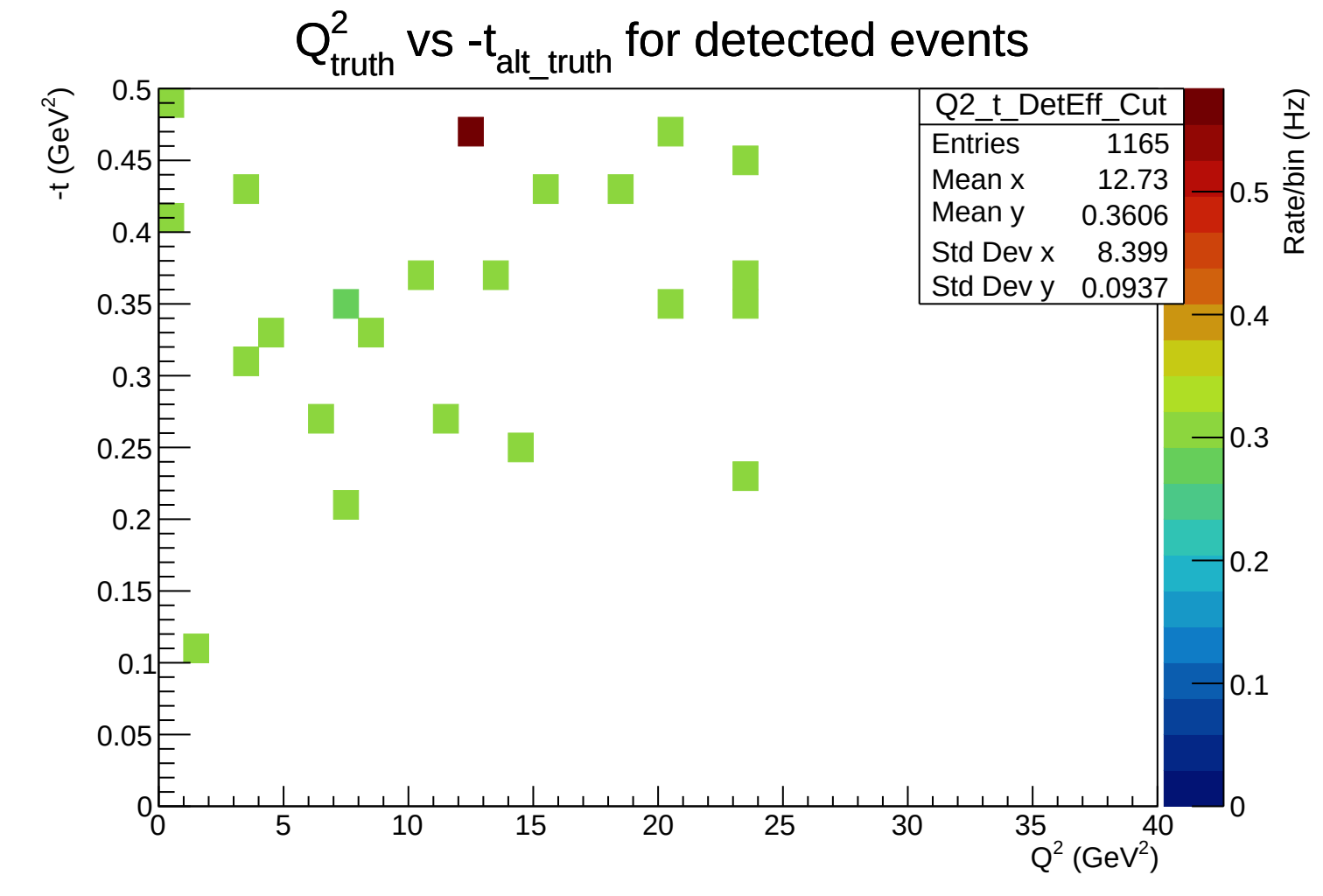

θ* - θ*
pMiss_rec ZDC
n_ThetaDiff
Entries 14720
Mean 0.174
Std Dev 0.2211
Rate (Hz)
0
20
40
60
80
100
120
140
160
180
–0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
θ* - θ* (Deg)
pMiss_rec ZDC

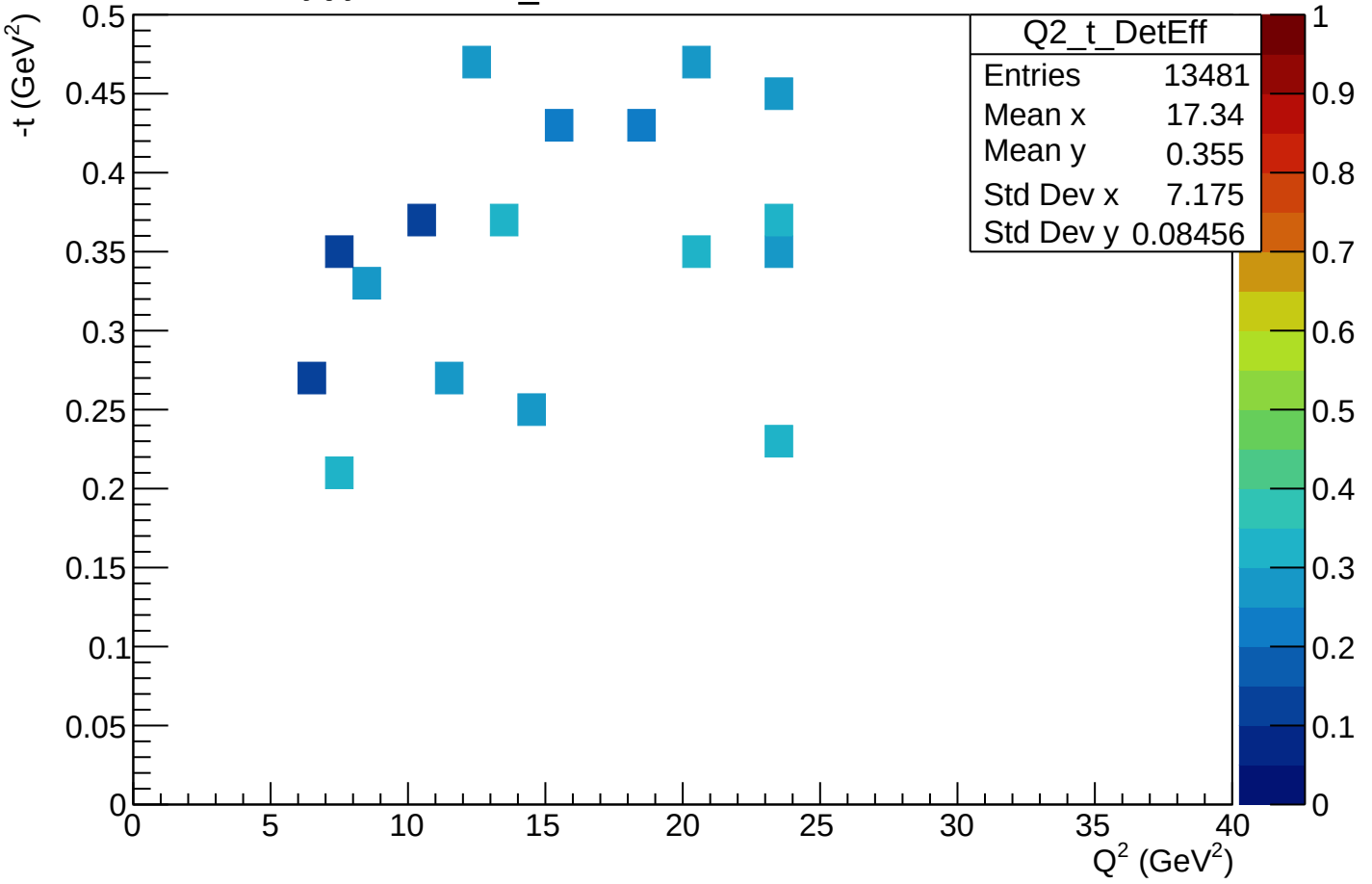

ϕ* - ϕ*
pMiss_rec ZDC
n_PhiDiff
Entries 14720
Mean −17.94
Std Dev 101.4
Rate (Hz)
50
45
40
35
30
25
20
15
−200
−150
−100
−50
0
50
100
150
200
ϕ* - ϕ* (Deg)
pMiss_rec ZDC


θ* pMiss_rec - θ* ZDC vs ϕ* pMiss_rec - ϕ* ZDC
n_ThetaPhiDiff
Entries 14720
Mean x 0.1688
Mean y −6.22
Std Dev x 0.207
Std Dev y 63.98
ϕ* pMiss_rec - ϕ* ZDC (Deg)
θ* pMiss_rec - θ* ZDC (Deg)
Rate/bin (Hz)
100
50
0
−50
−100
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
1
10−1
10−2

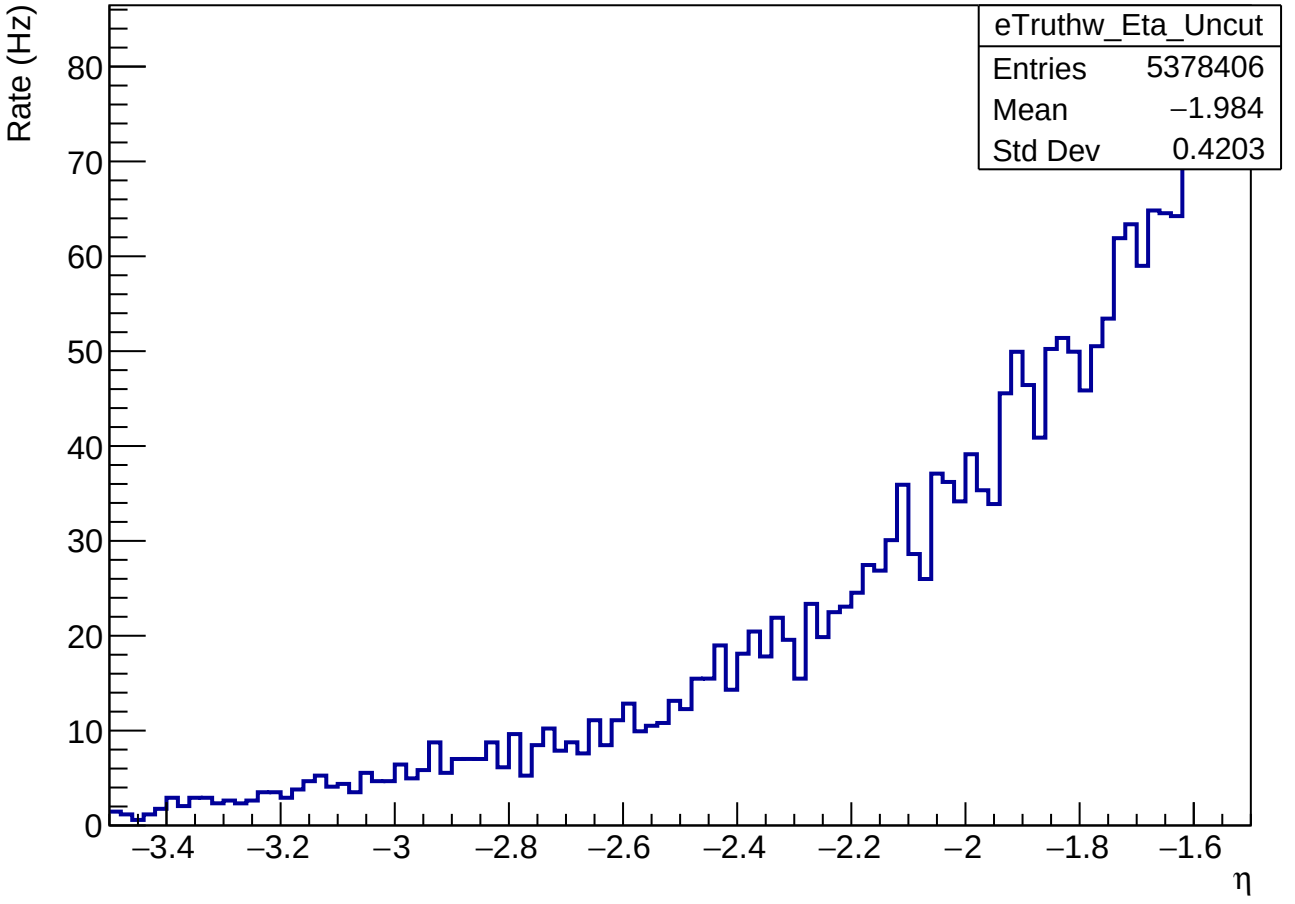

-t rec, alt_rec, rec_pT, rec_corr - -t alt_truth Distribution
htw_t4
Entries 1165
Mean −0.08913
Std Dev 0.0651
t rec - t alt_truth
t alt_rec - t alt_truth
t recpT - t alt_truth
t rec_corr - t alt_truth
Rate (Hz)
Δ -t (GeV²)
0
0.5
1
1.5
2
2.5
−0.2
−0.15
−0.1
−0.05
0
0.05
0.1
0.15
0.2
0.25
0.3

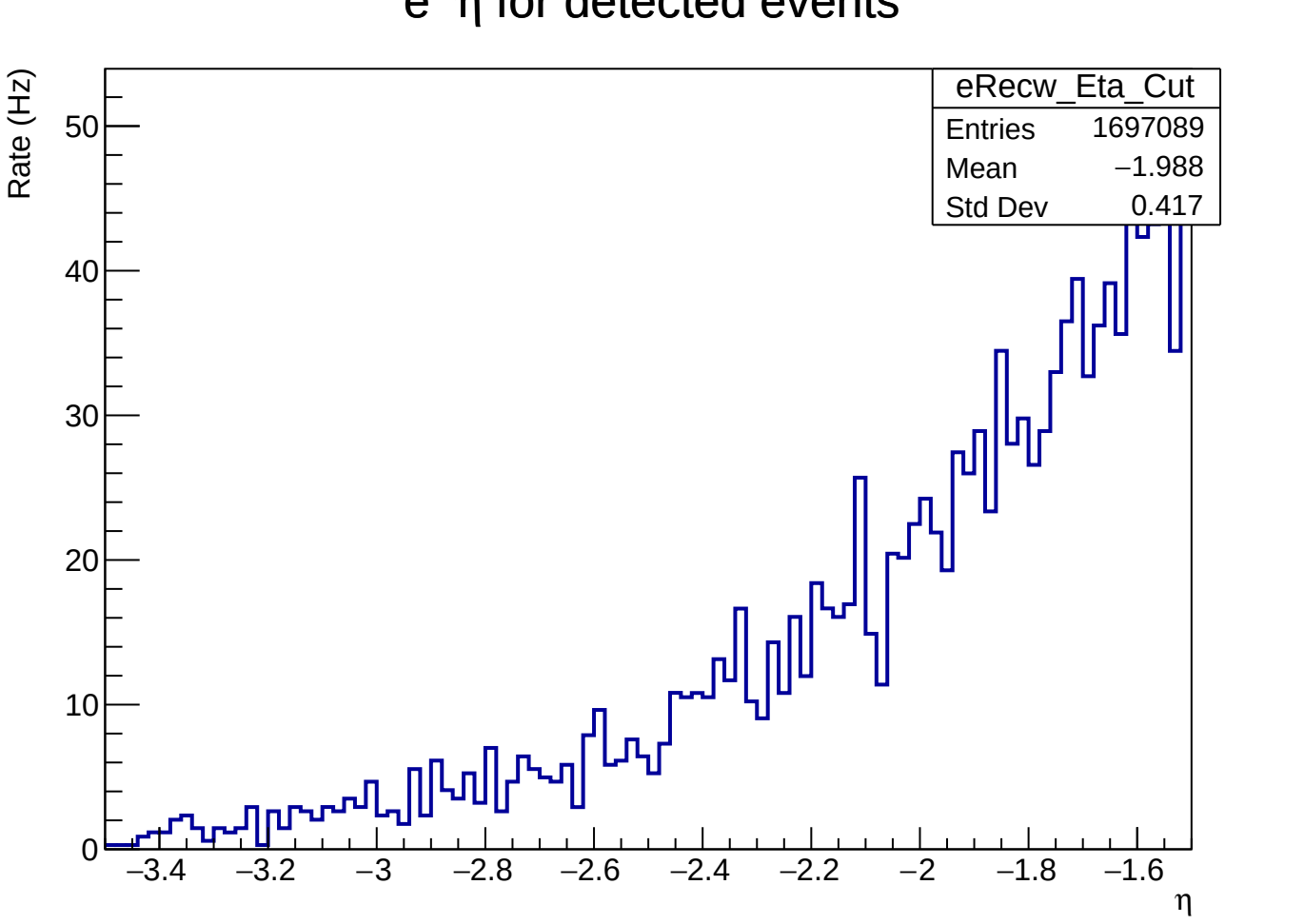

Q^2_{truth} vs $-t_{alt\_truth}$ for thrown events
Q2_t_DetEff_Uncut
Entries 13481
Mean x 16.17
Mean y 0.3459
Std Dev x 8.602
Std Dev y 0.1091
-t (GeV^2)
Q^2 (GeV^2)
Rate/bin (Hz)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0
5
10
15
20
25
30
35
40
0
0.5
1
1.5
2
2.5
3
3.5
4

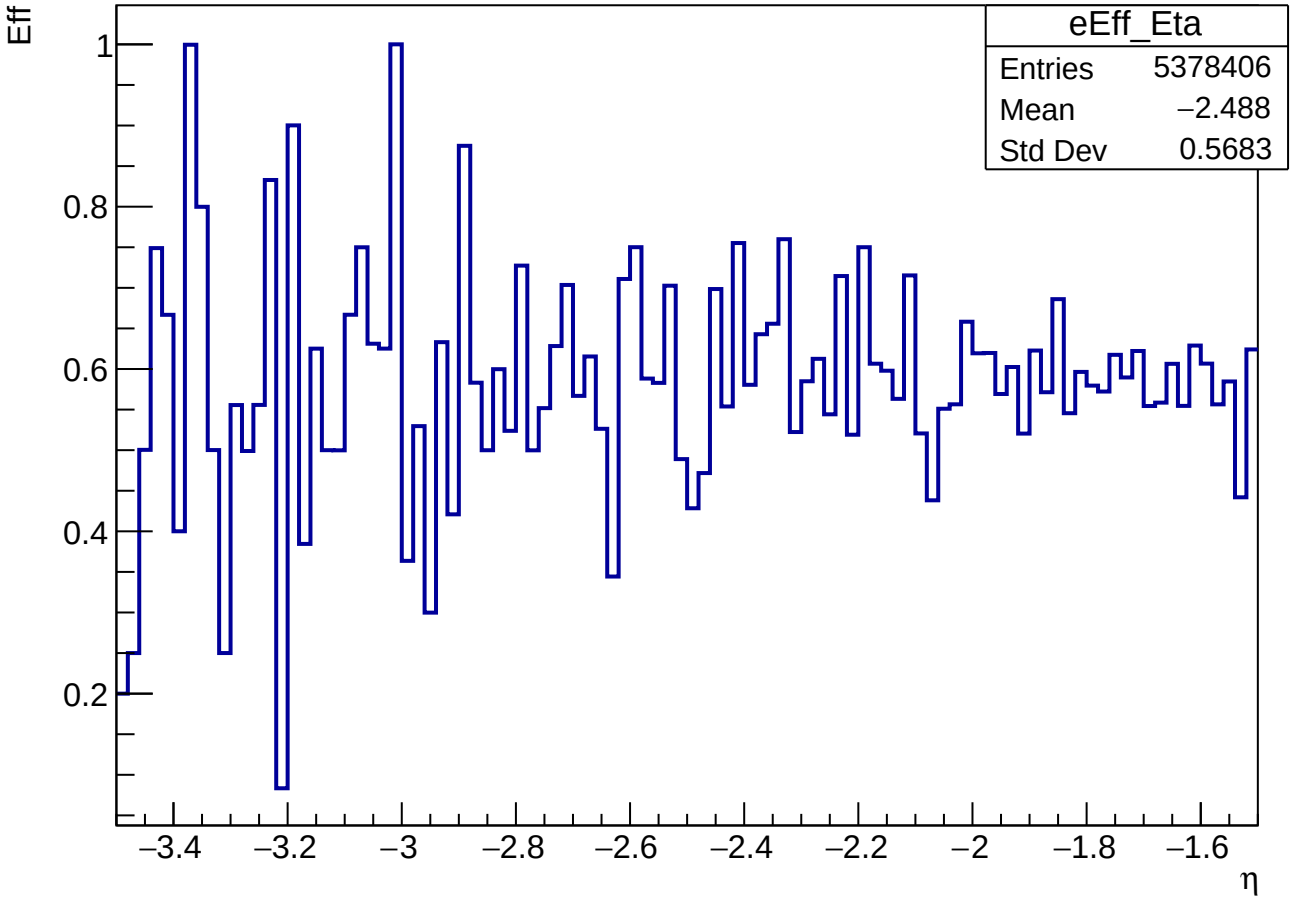

Q^2_{truth} vs $-t_{alt\_truth}$ for detected events
Q2_t_DetEff_Cut
Entries 1165
Mean x 12.73
Mean y 0.3606
Std Dev x 8.399
Std Dev y 0.0937
-t (GeV^2)
Q^2 (GeV^2)
Rate/bin (Hz)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0
5
10
15
20
25
30
35
40

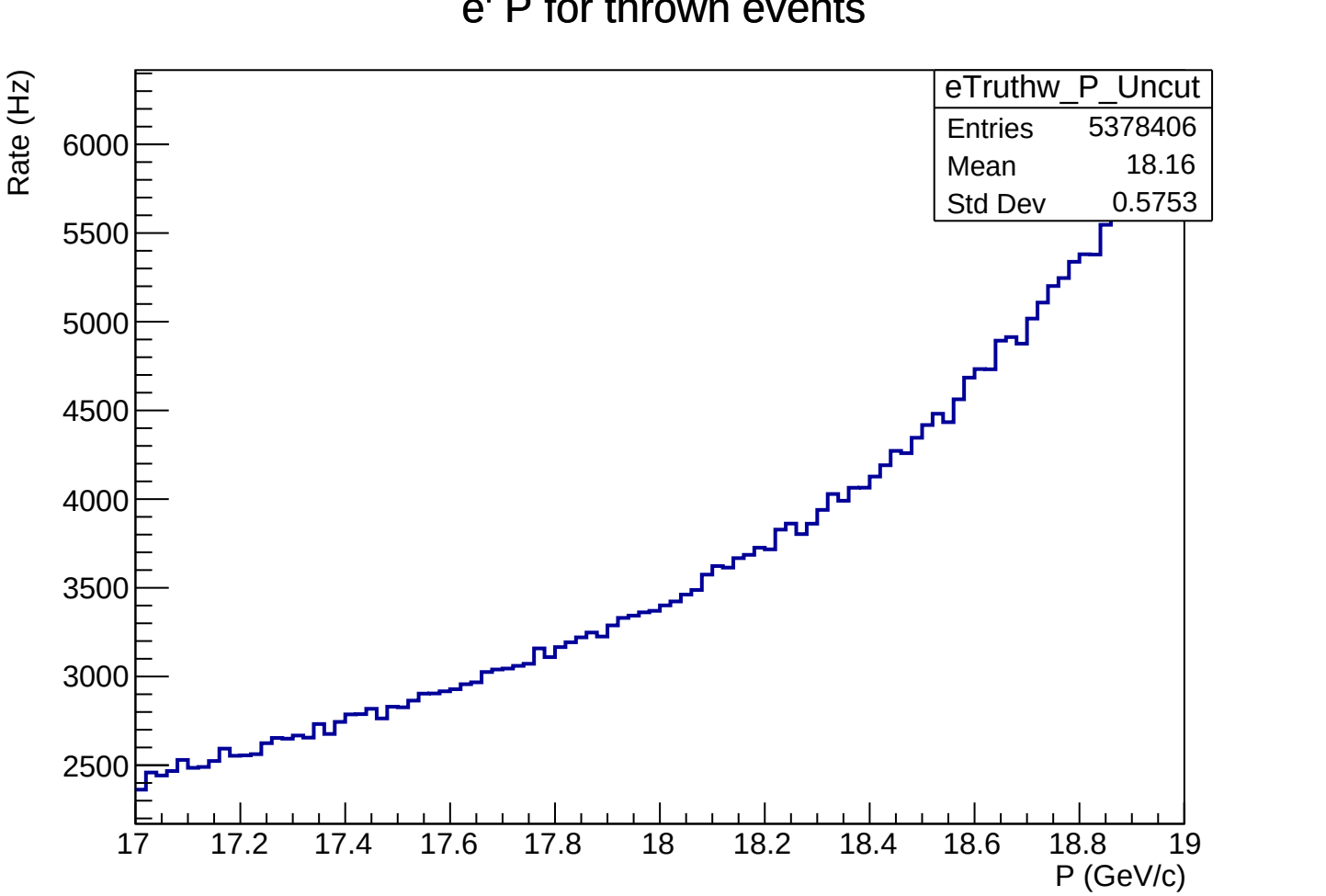

Q^2_{truth} vs $-t_{alt\_truth}$ detected/thrown ratio
Q2_t_DetEff
Entries 13481
Mean x 17.34
Mean y 0.355
Std Dev x 7.175
Std Dev y 0.08456
-t (GeV^2)
Q^2 (GeV^2)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5
0 5 10 15 20 25 30 35 40
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

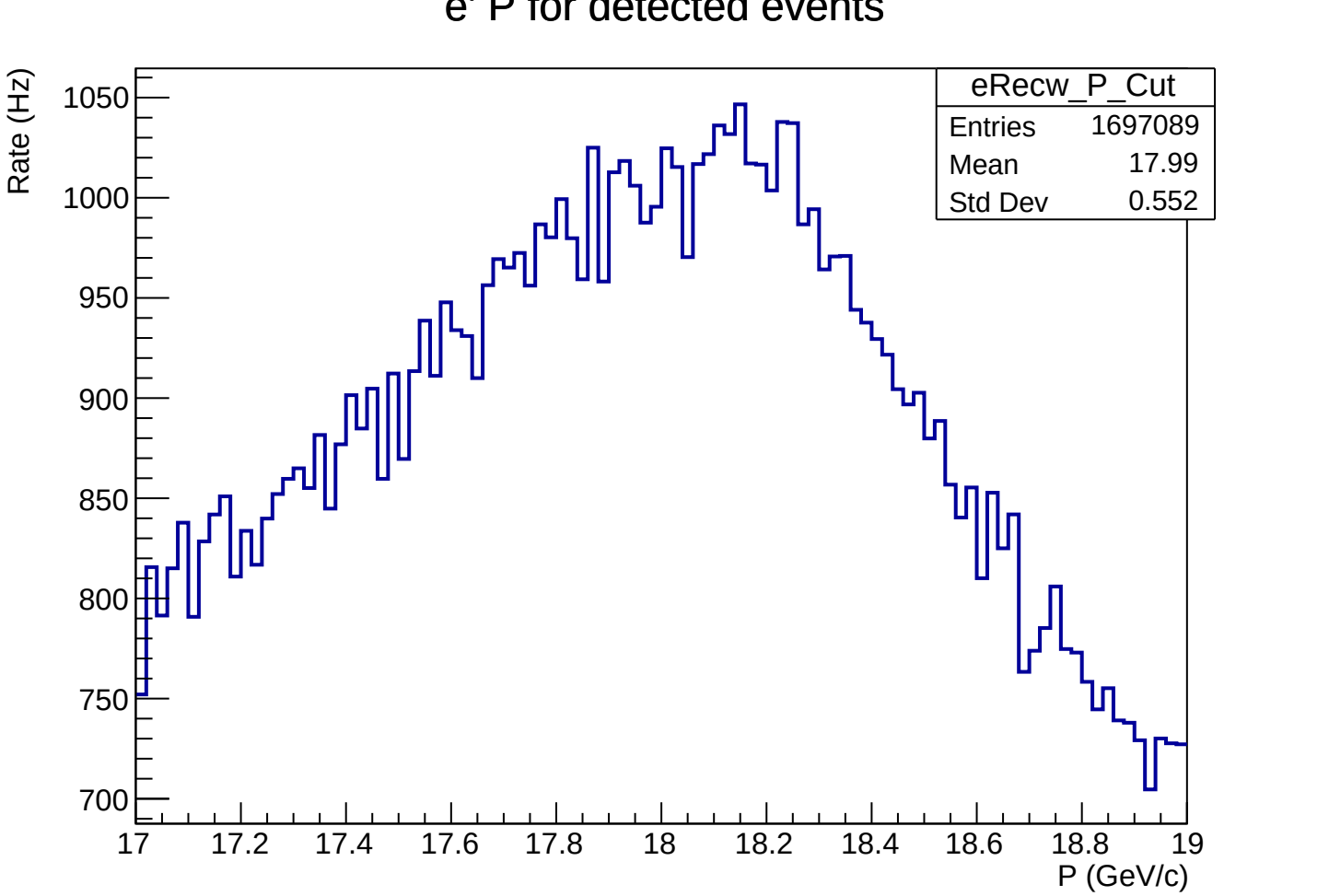
e' η for thrown events



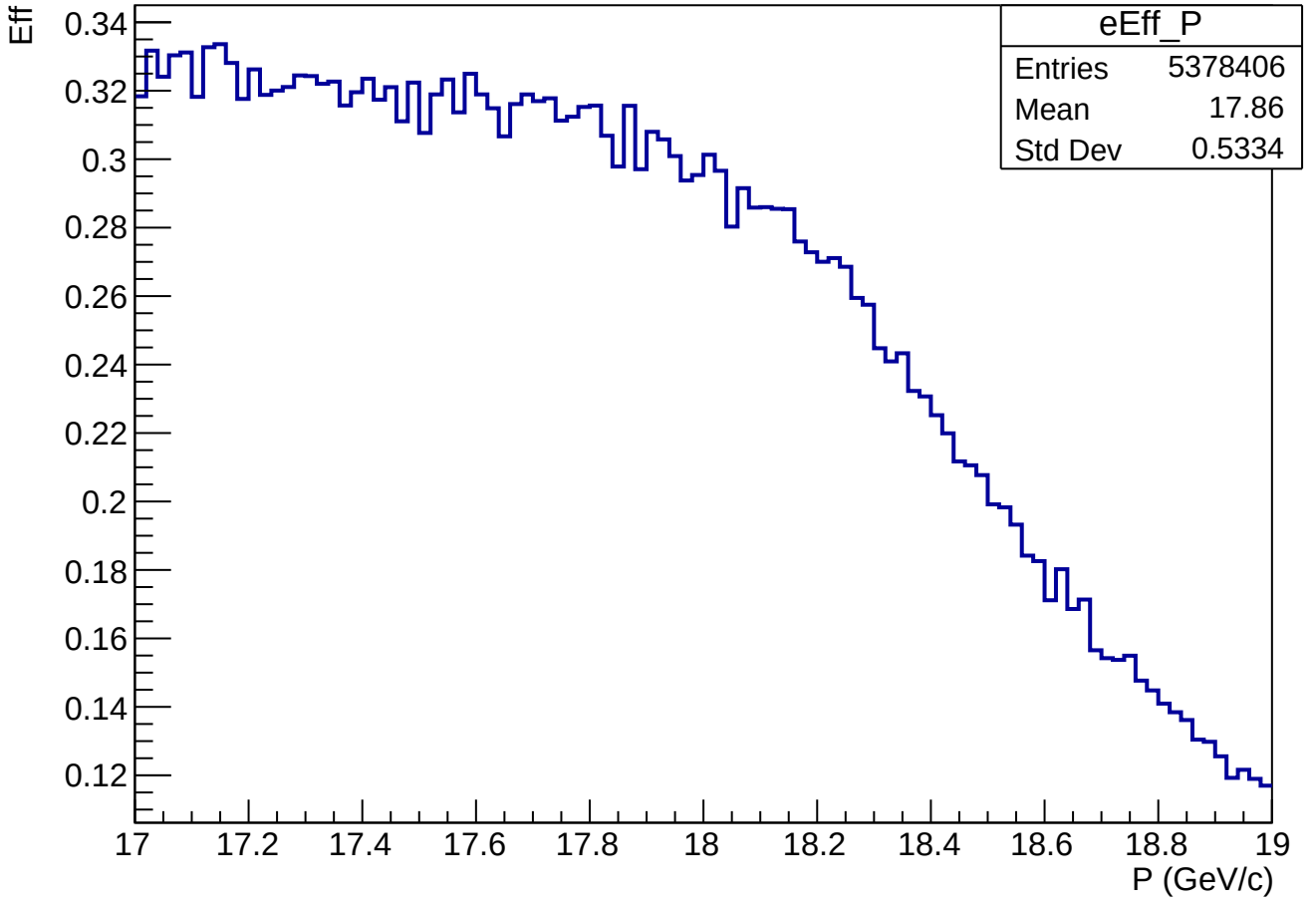

e' η for detected events
eRecw_Eta_Cut
Entries 1697089
Mean −1.988
Std Dev 0.417
Rate (Hz)
0
10
20
30
40
50
−3.4
−3.2
−3
−2.8
−2.6
−2.4
−2.2
−2
−1.8
−1.6
η

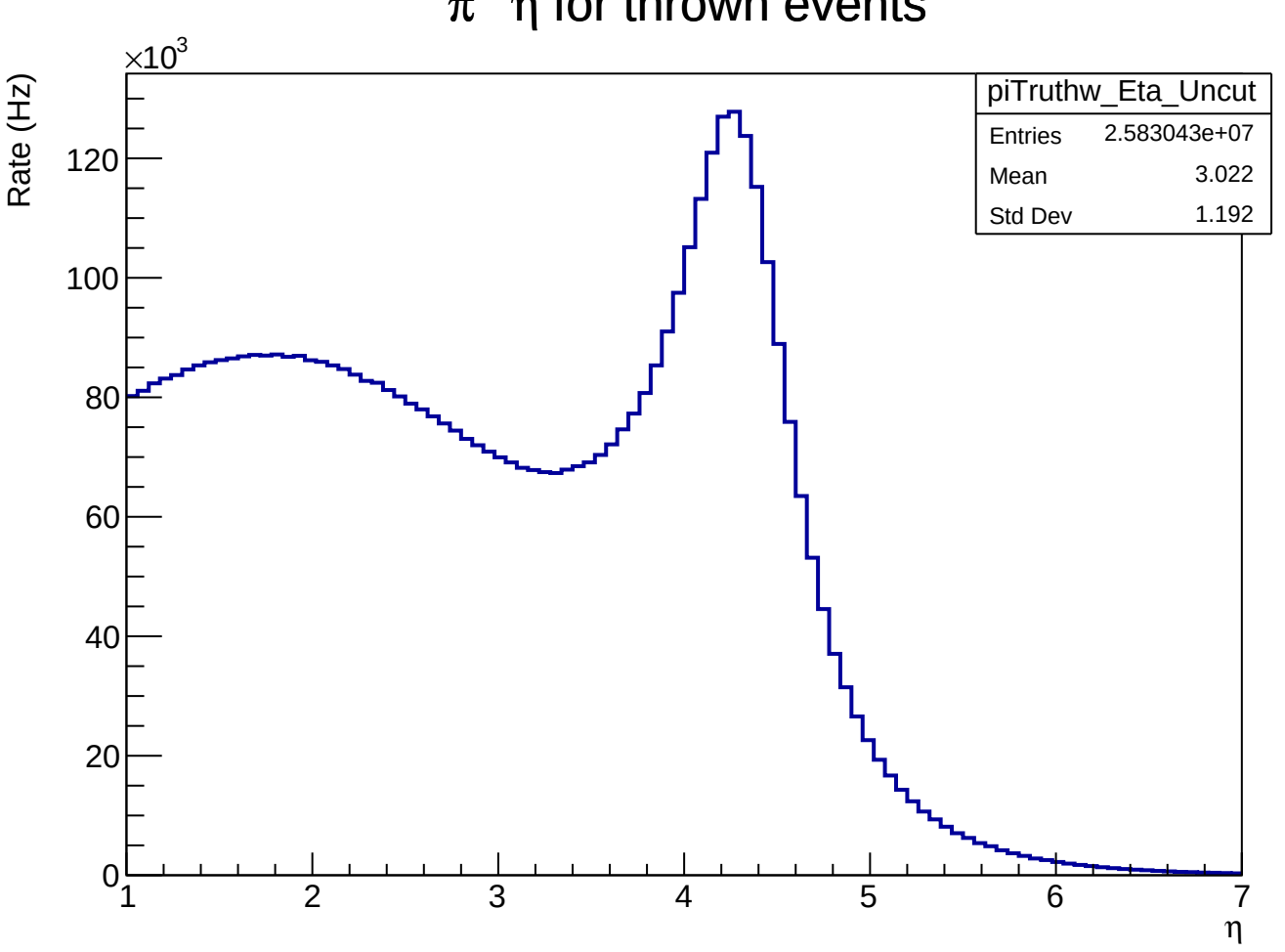

e' Tracking efficiency as fn of η
Eff
1
0.8
0.6
0.4
0.2
eEff_Eta
Entries 5378406
Mean −2.488
Std Dev 0.5683
−3.4
−3.2
−3
−2.8
−2.6
−2.4
−2.2
−2
−1.8
−1.6
η

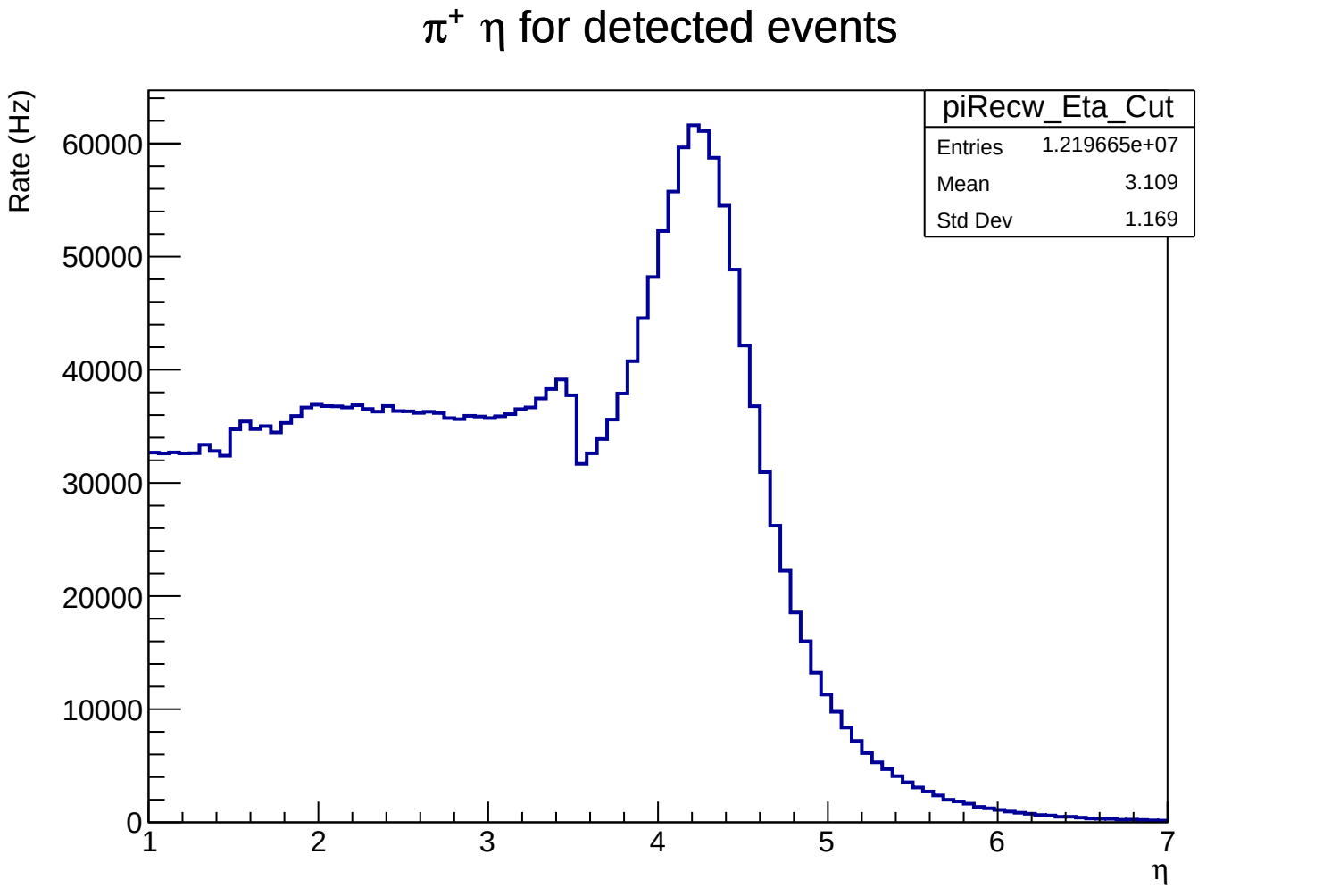

e' P for thrown events
eTruthw_P_Uncut
Entries 5378406
Mean 18.16
Std Dev 0.5753
Rate (Hz)
6000
5500
5000
4500
4000
3500
3000
2500
17
17.2
17.4
17.6
17.8
18
18.2
18.4
18.6
18.8
19
P (GeV/c)

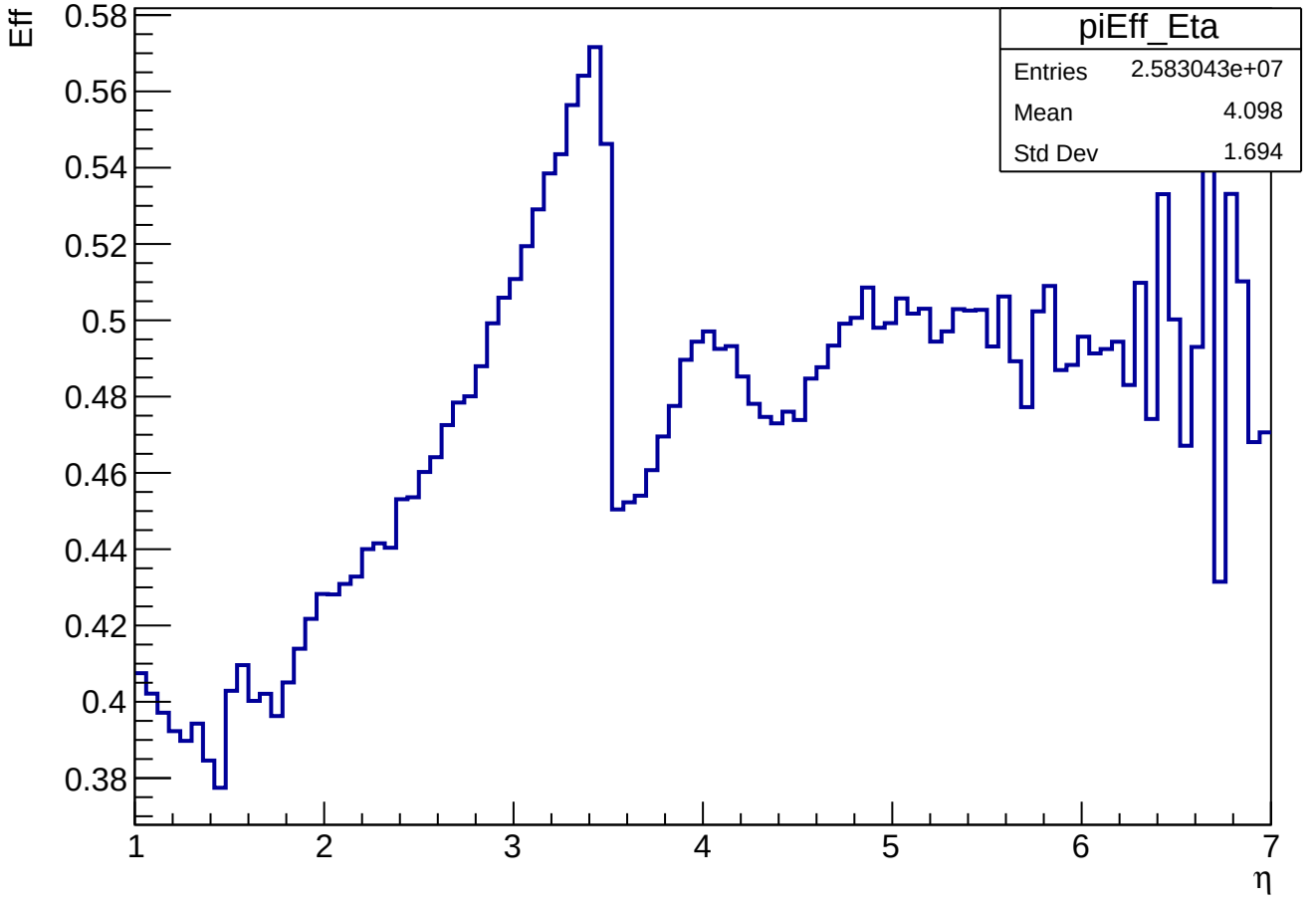

e' P for detected events
eRecw_P_Cut
Entries 1697089
Mean 17.99
Std Dev 0.552
Rate (Hz)
1050
1000
950
900
850
800
750
700
17
17.2
17.4
17.6
17.8
18
18.2
18.4
18.6
18.8
19
P (GeV/c)

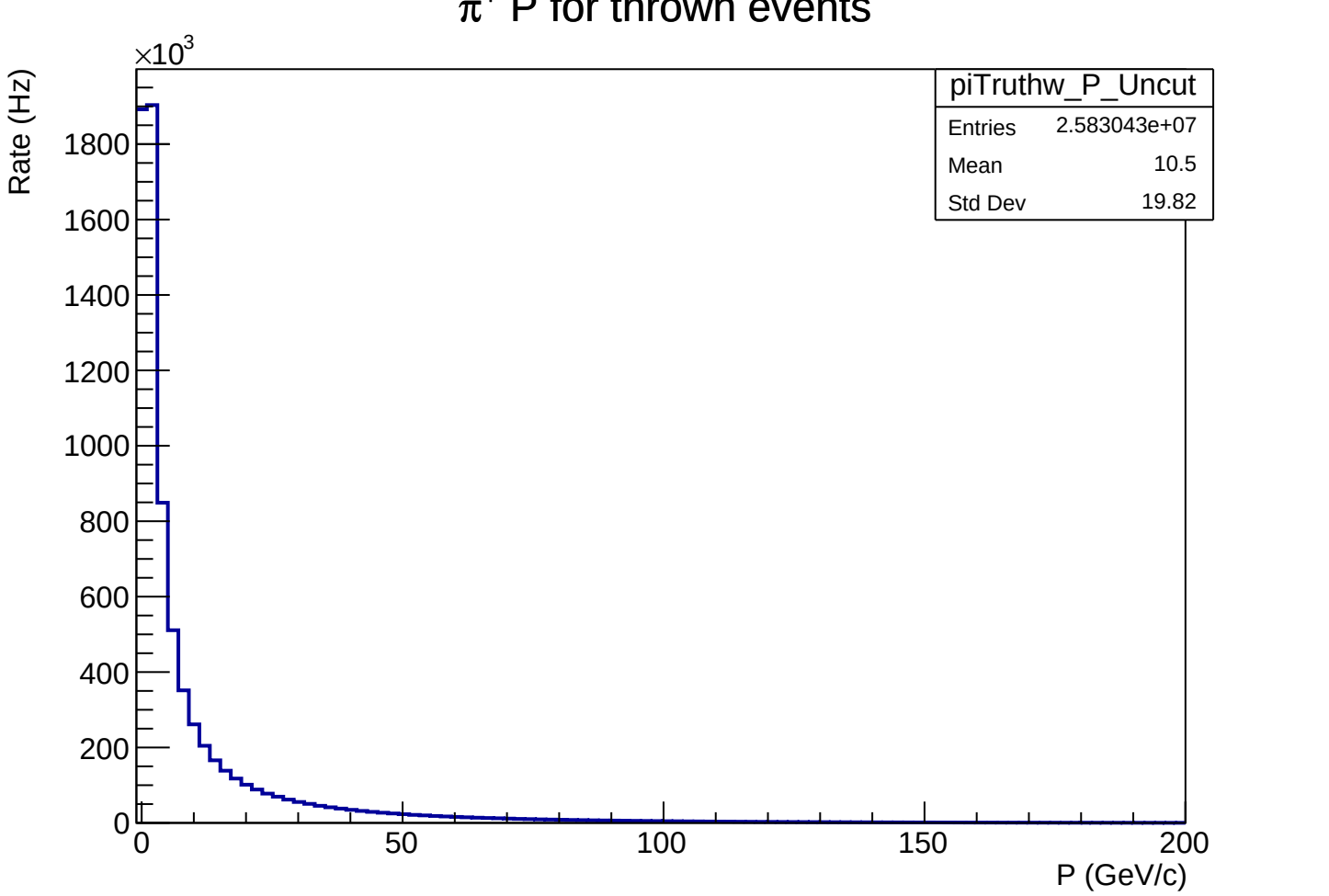
e' Tracking efficiency as fn of P

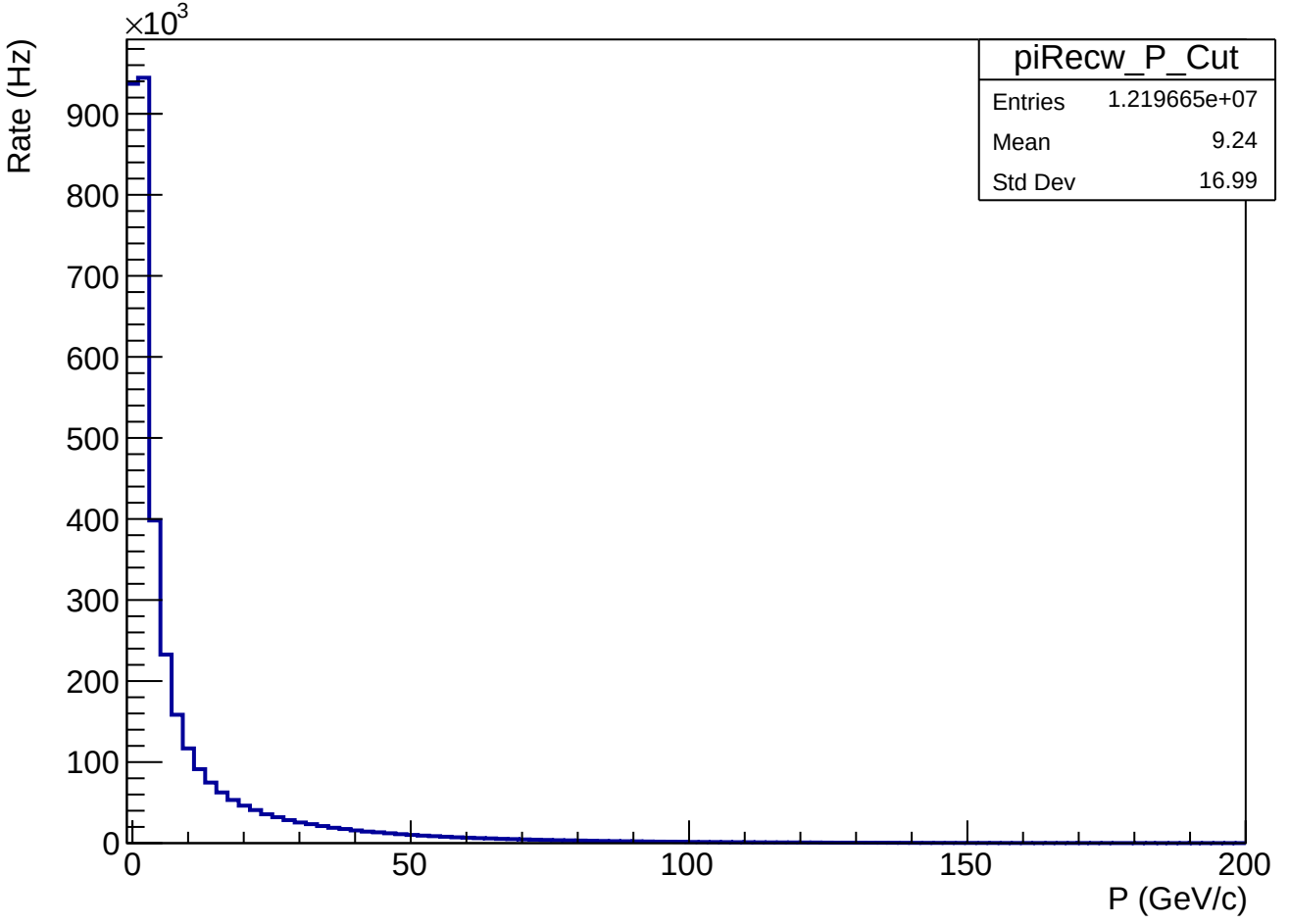


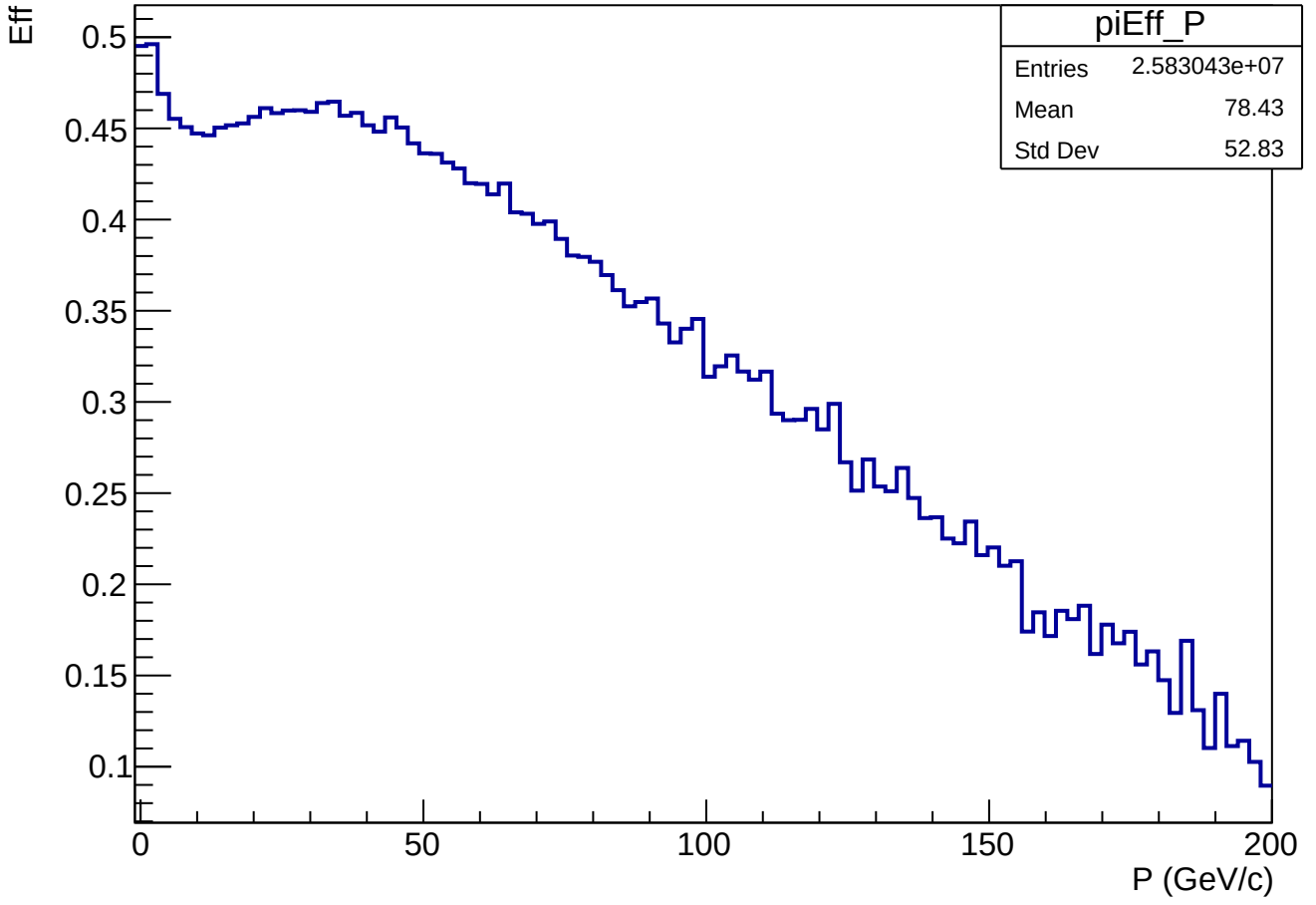

π^+ η for thrown events
×10^3
Rate (Hz)
120
100
80
60
40
20
0
1
2
3
4
5
6
7
η
piTruthw_Eta_Uncut
Entries 2.583043e+07
Mean 3.022
Std Dev 1.192

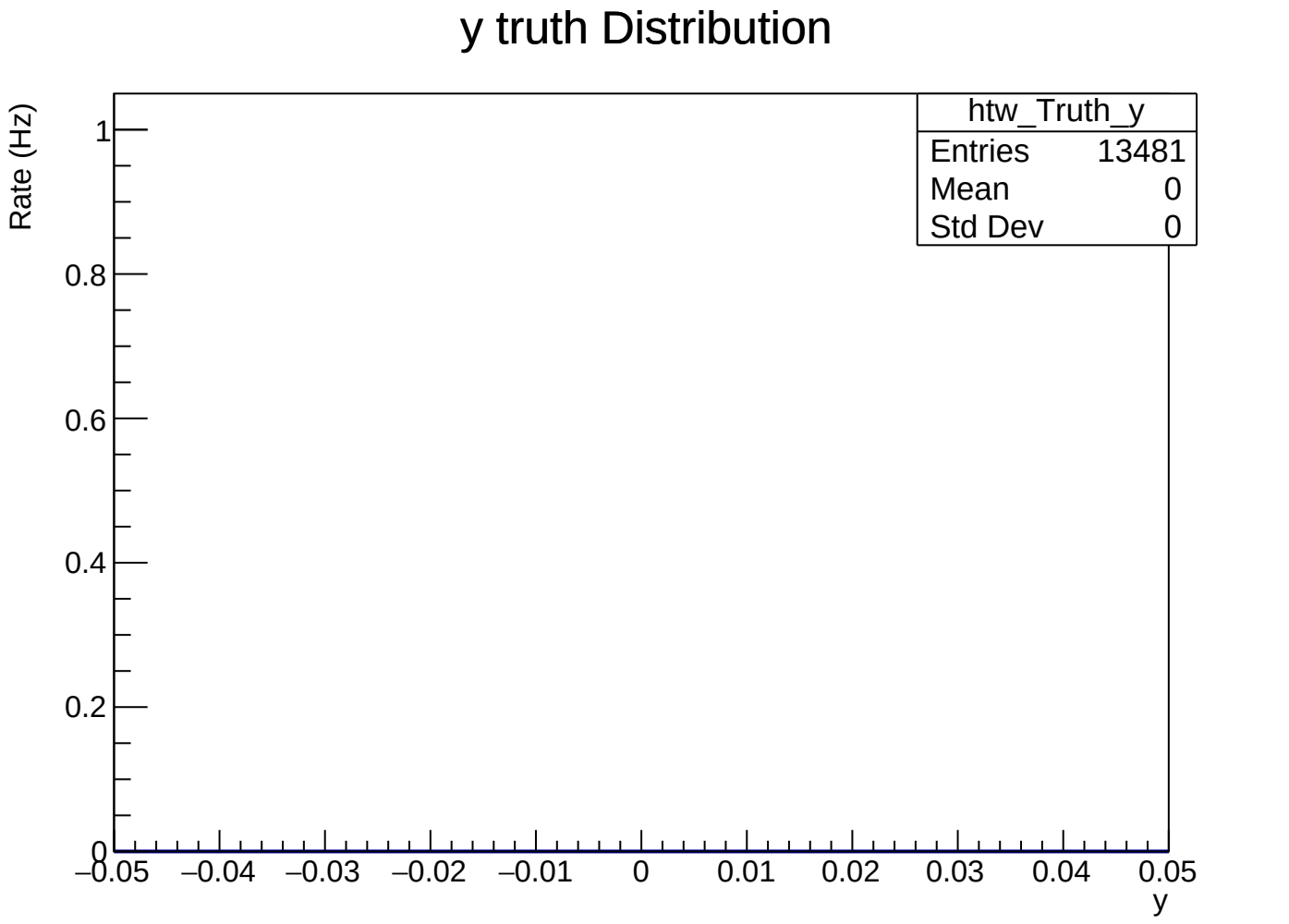

π^+ η for detected events
piRecw_Eta_Cut
Entries 1.219665e+07
Mean 3.109
Std Dev 1.169
Rate (Hz)
60000
50000
40000
30000
20000
10000
0
1
2
3
4
5
6
7
η

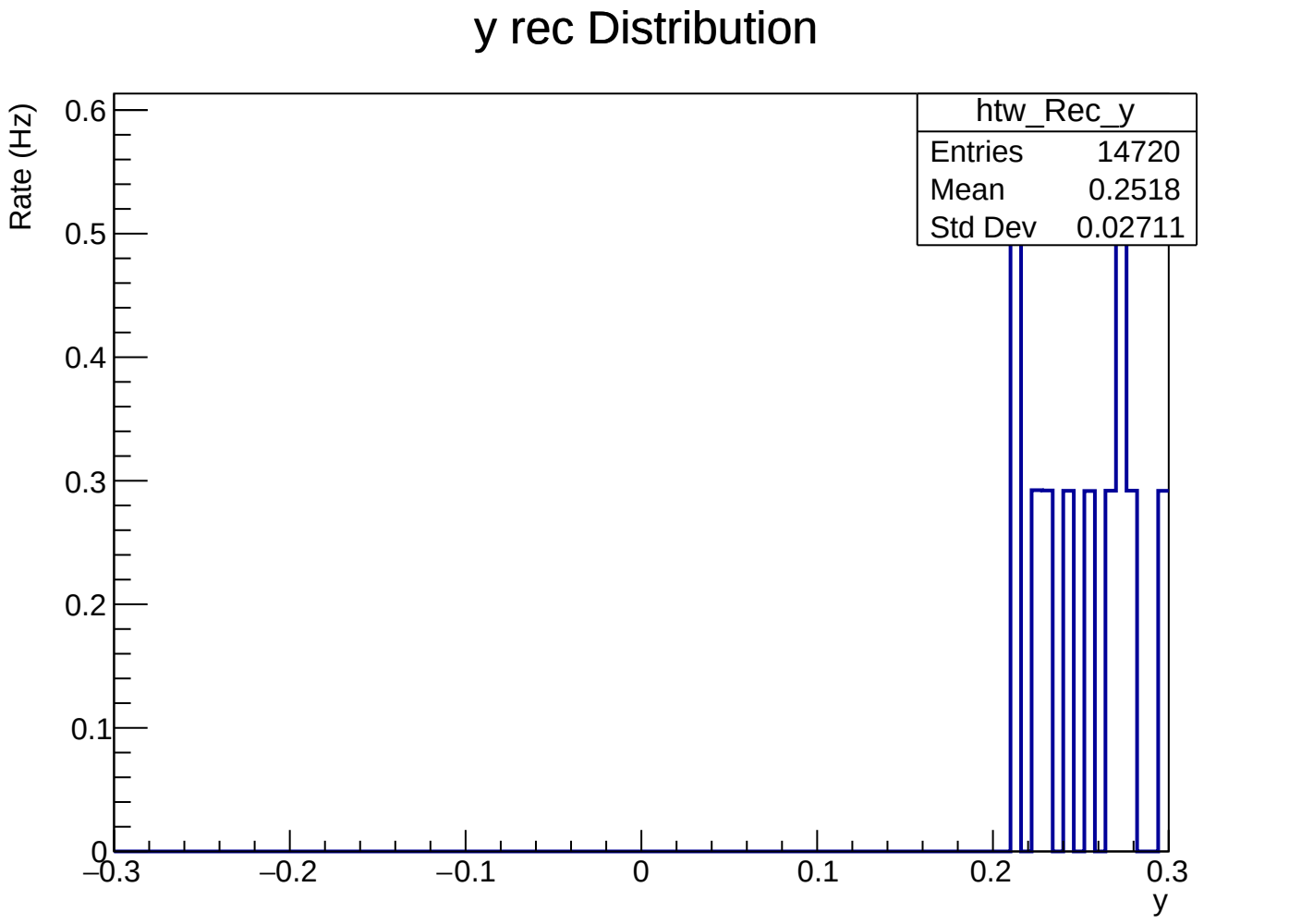

π^+ Tracking efficiency as fn of η
Eff
0.58
0.56
0.54
0.52
0.5
0.48
0.46
0.44
0.42
0.4
0.38
1
2
3
4
5
6
7
η
piEff_Eta
Entries 2.583043e+07
Mean 4.098
Std Dev 1.694

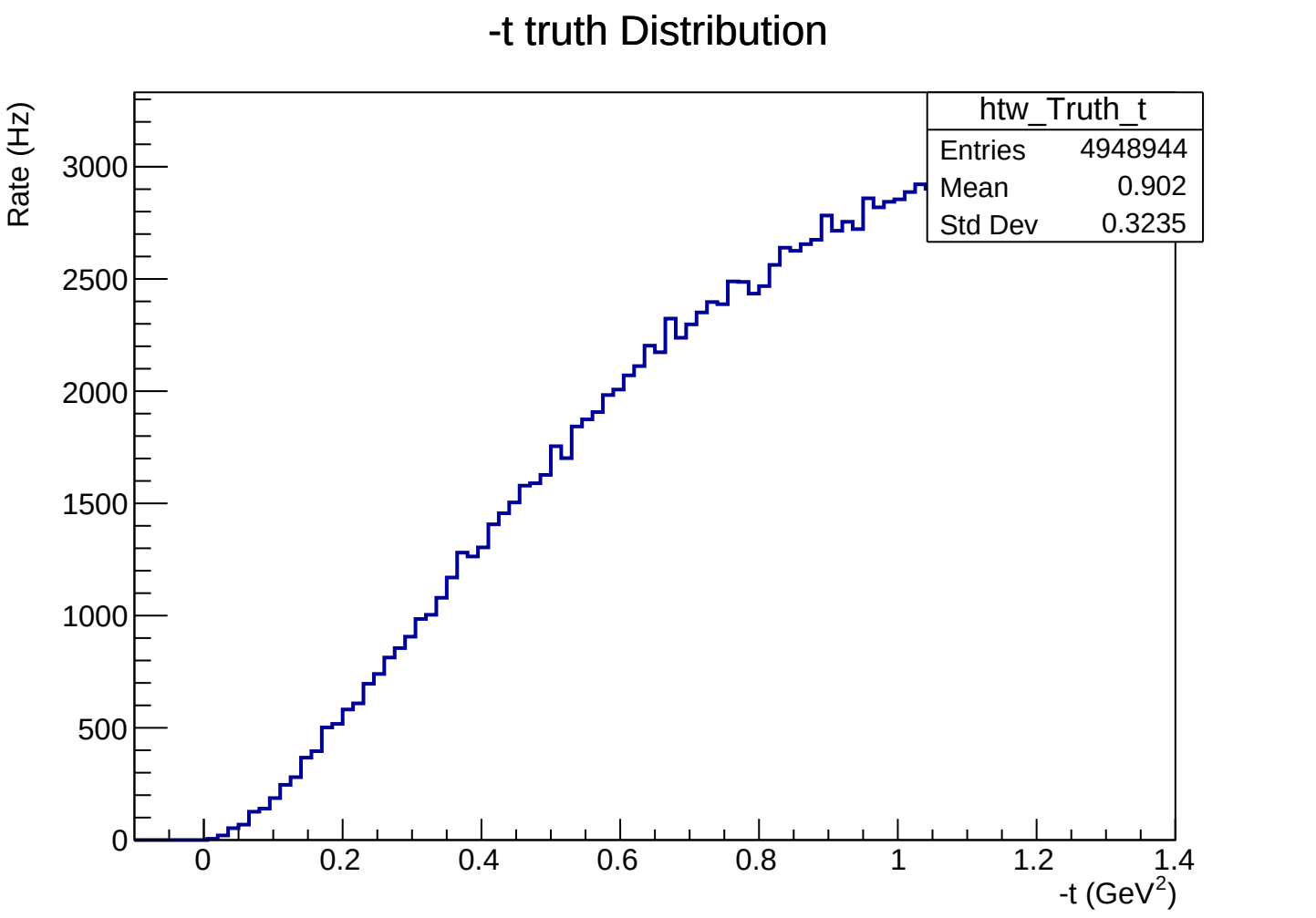

π^+ P for thrown events
$\times 10^3$
Rate (Hz)
1800
1600
1400
1200
1000
800
600
400
200
0
0
50
100
150
200
P (GeV/c)
piTruthw_P_Uncut
Entries 2.583043e+07
Mean 10.5
Std Dev 19.82

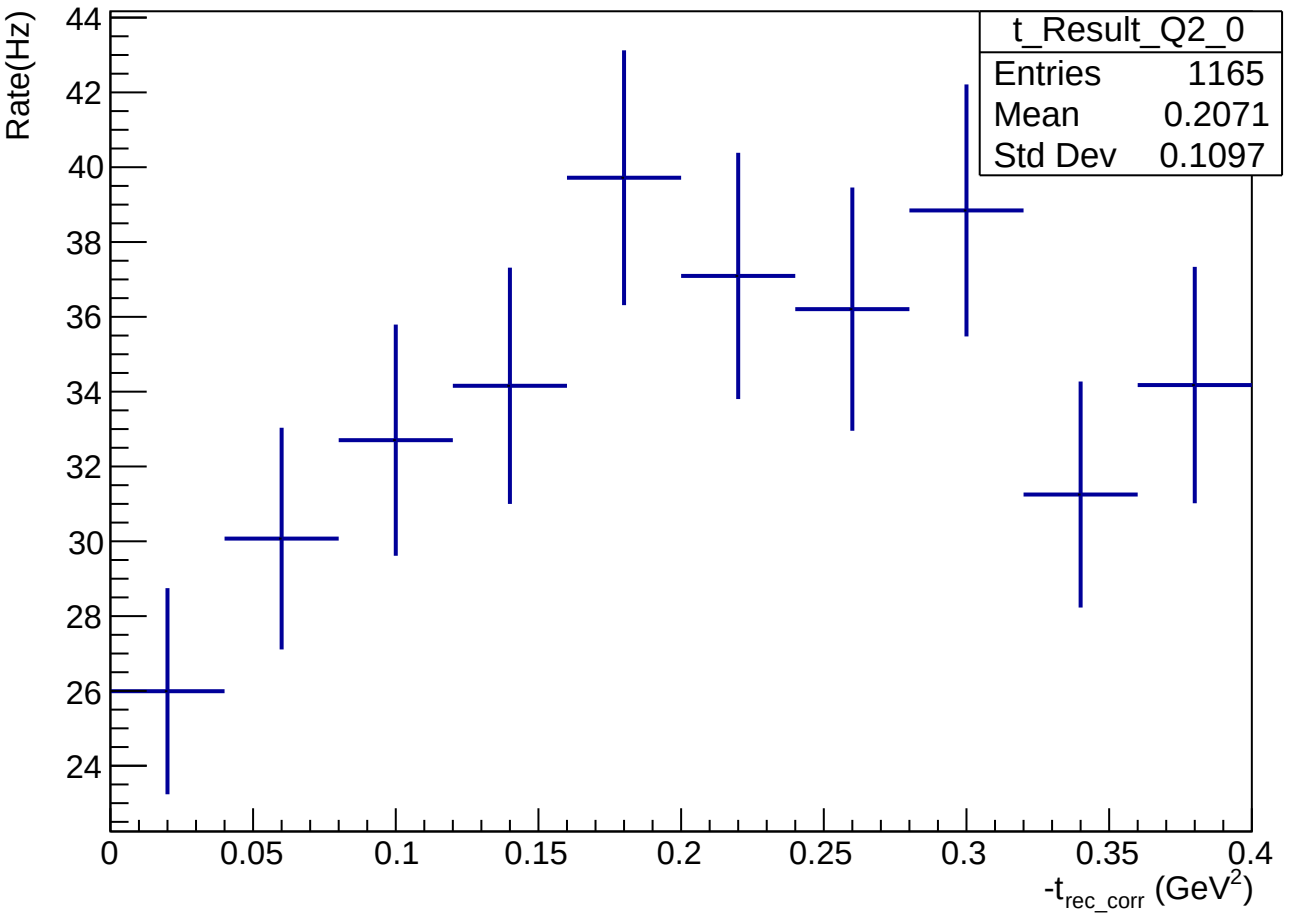

π^+ P for detected events
$\times 10^3$
Rate (Hz)
900
800
700
600
500
400
300
200
100
0
piRecw_P_Cut
Entries 1.219665e+07
Mean 9.24
Std Dev 16.99
0
50
100
150
200
P (GeV/c)

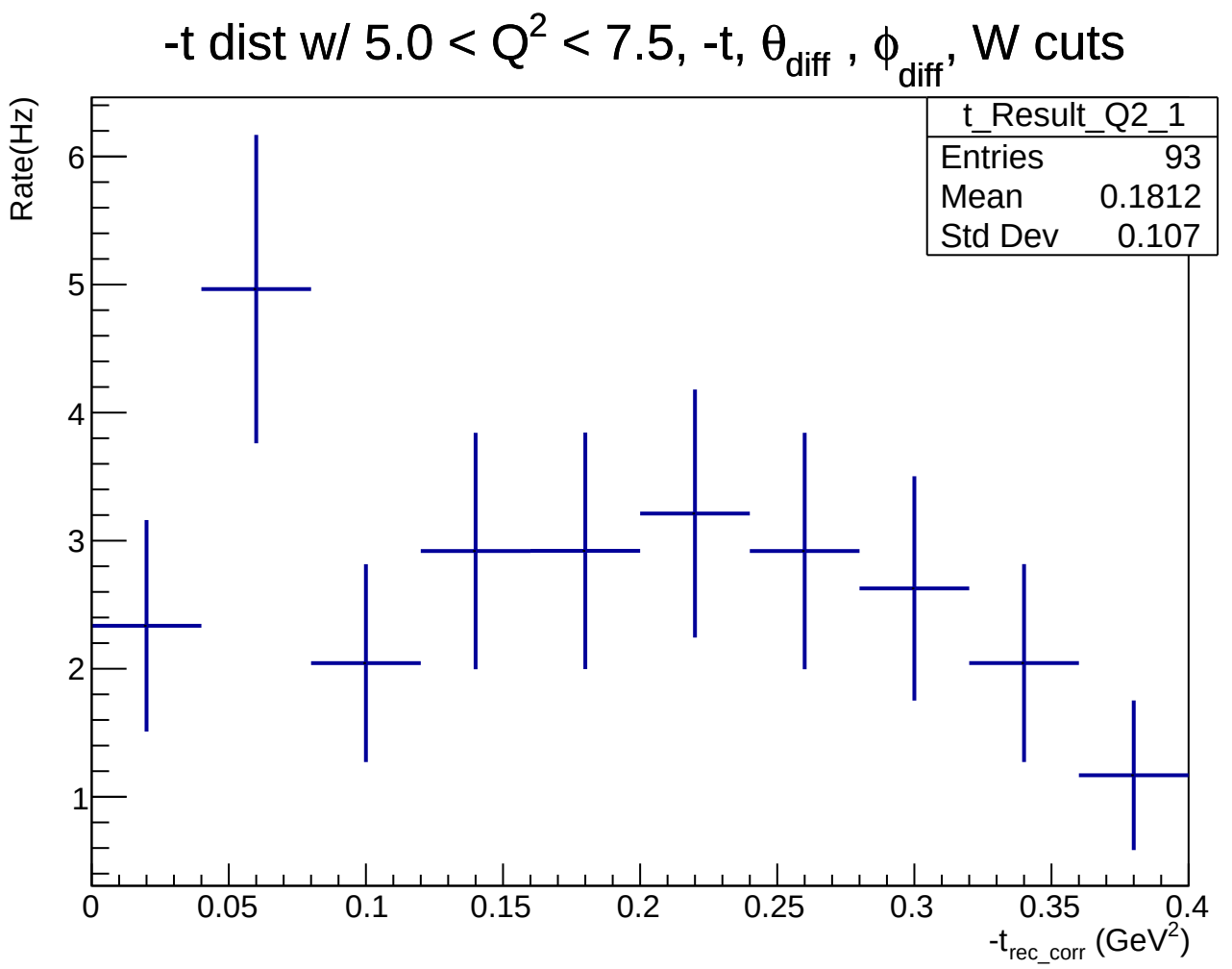

π^+ Tracking efficiency as fn of P
Eff
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0
50
100
150
200
P (GeV/c)
piEff_P
Entries 2.583043e+07
Mean 78.43
Std Dev 52.83

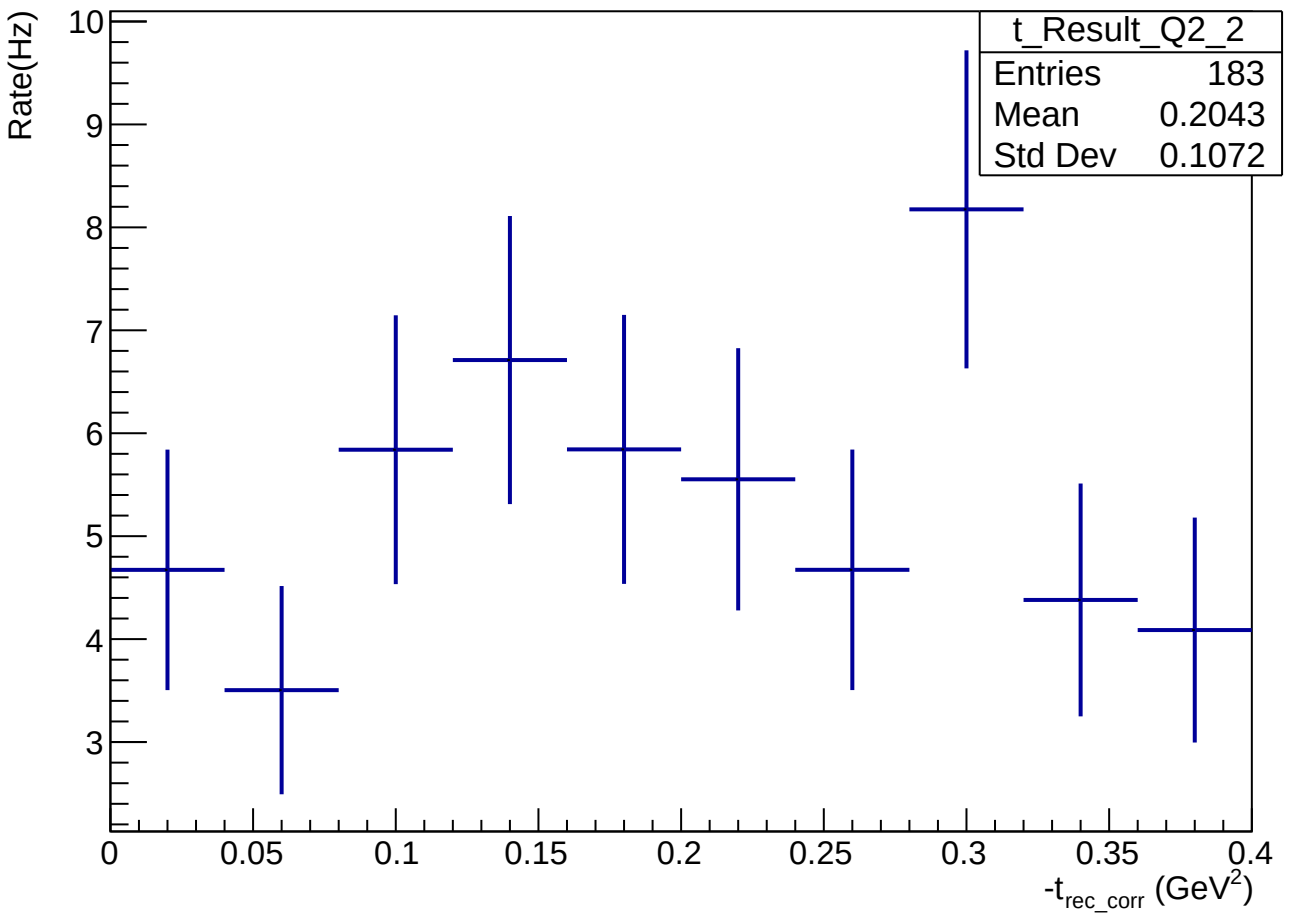

y truth Distribution
htw_Truth_y
Entries 13481
Mean 0
Std Dev 0
Rate (Hz)
1
0.8
0.6
0.4
0.2
0
–0.05
–0.04
–0.03
–0.02
–0.01
0
0.01
0.02
0.03
0.04
0.05
y

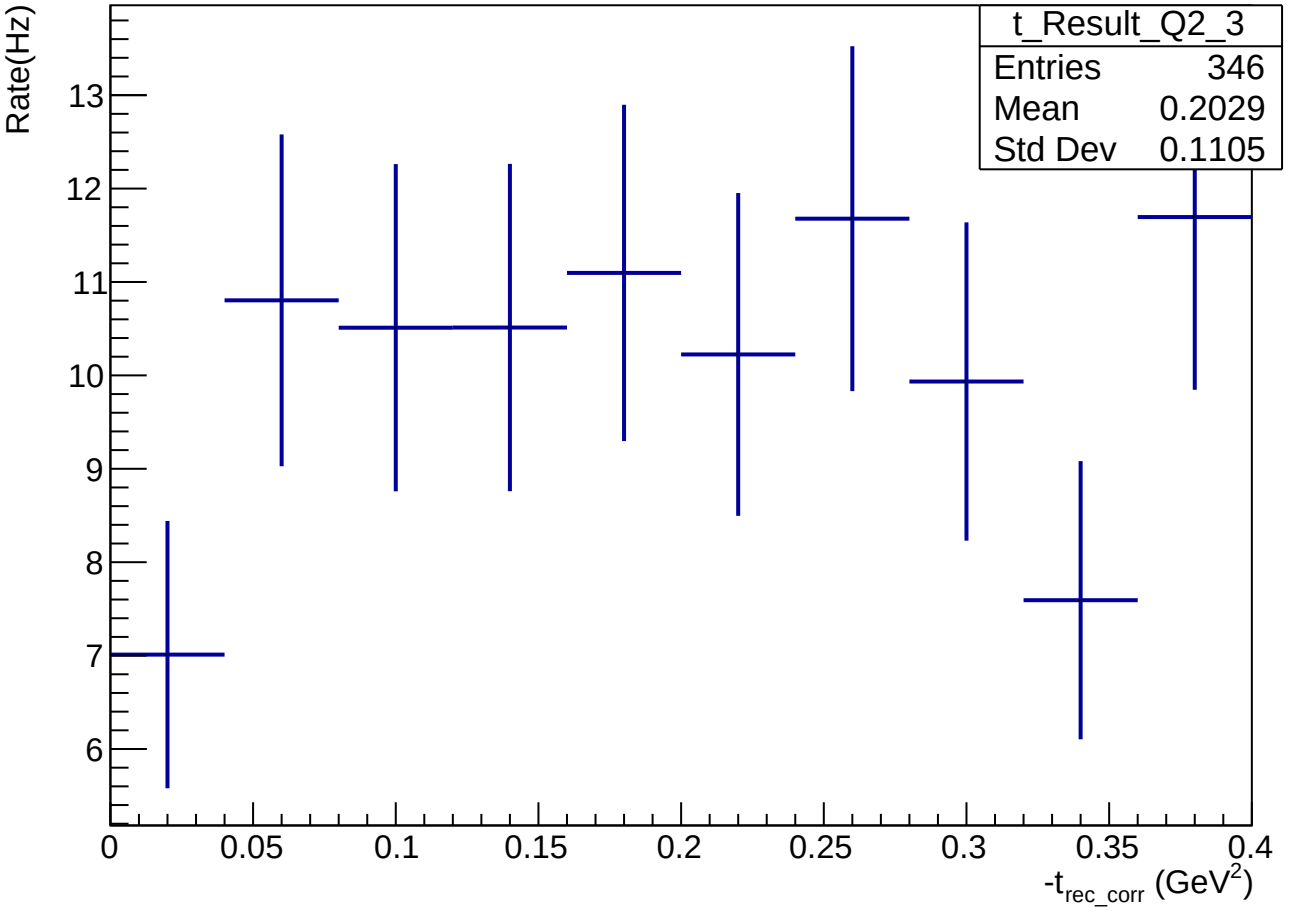

y rec Distribution
htw_Rec_y
Entries 14720
Mean 0.2518
Std Dev 0.02711
Rate (Hz)
0.6
0.5
0.4
0.3
0.2
0.1
0
–0.3
–0.2
–0.1
0
0.1
0.2
0.3
y

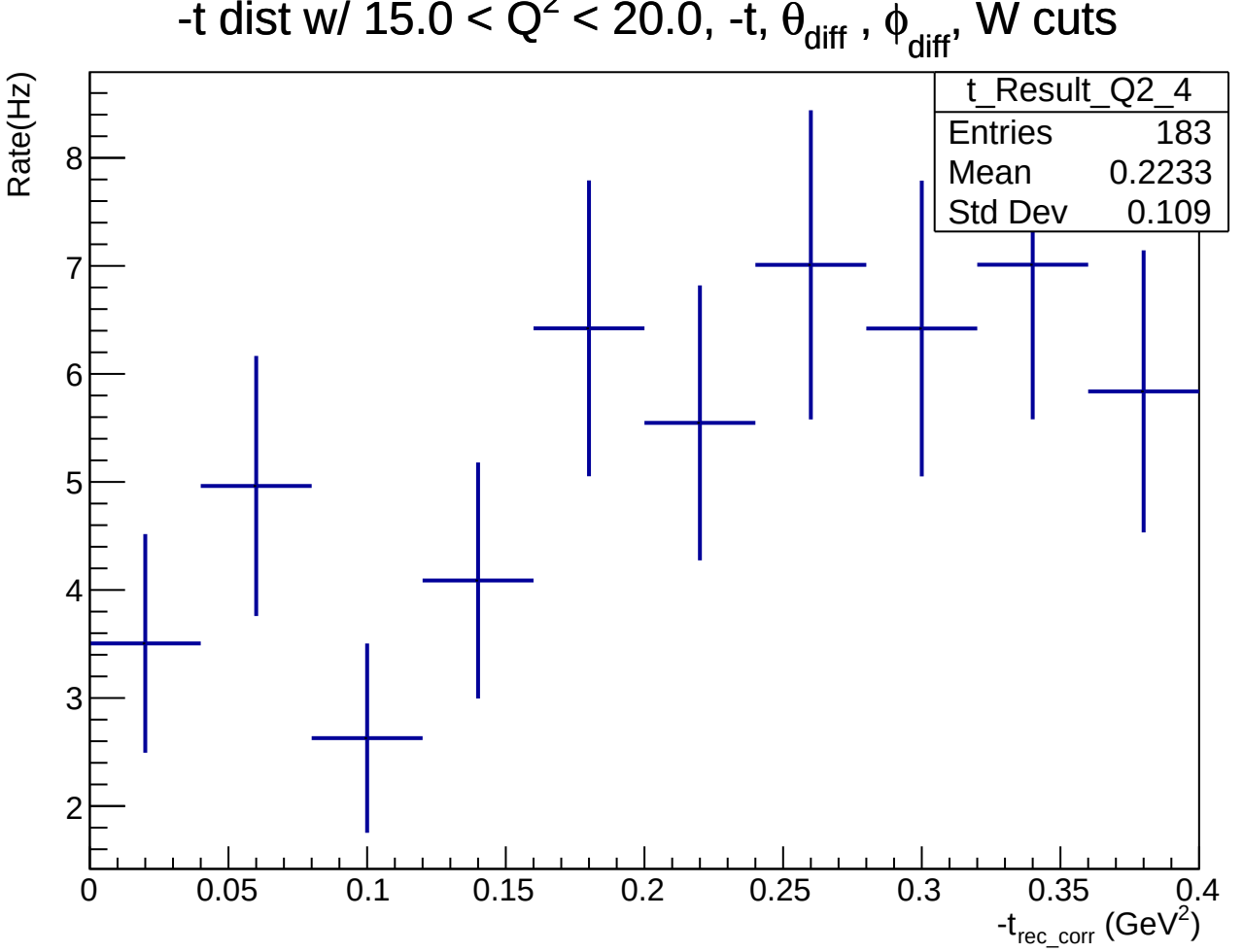

-t truth Distribution
htw_Truth_t
Entries 4948944
Mean 0.902
Std Dev 0.3235
Rate (Hz)
3000
2500
2000
1500
1000
500
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
-t (GeV^2)

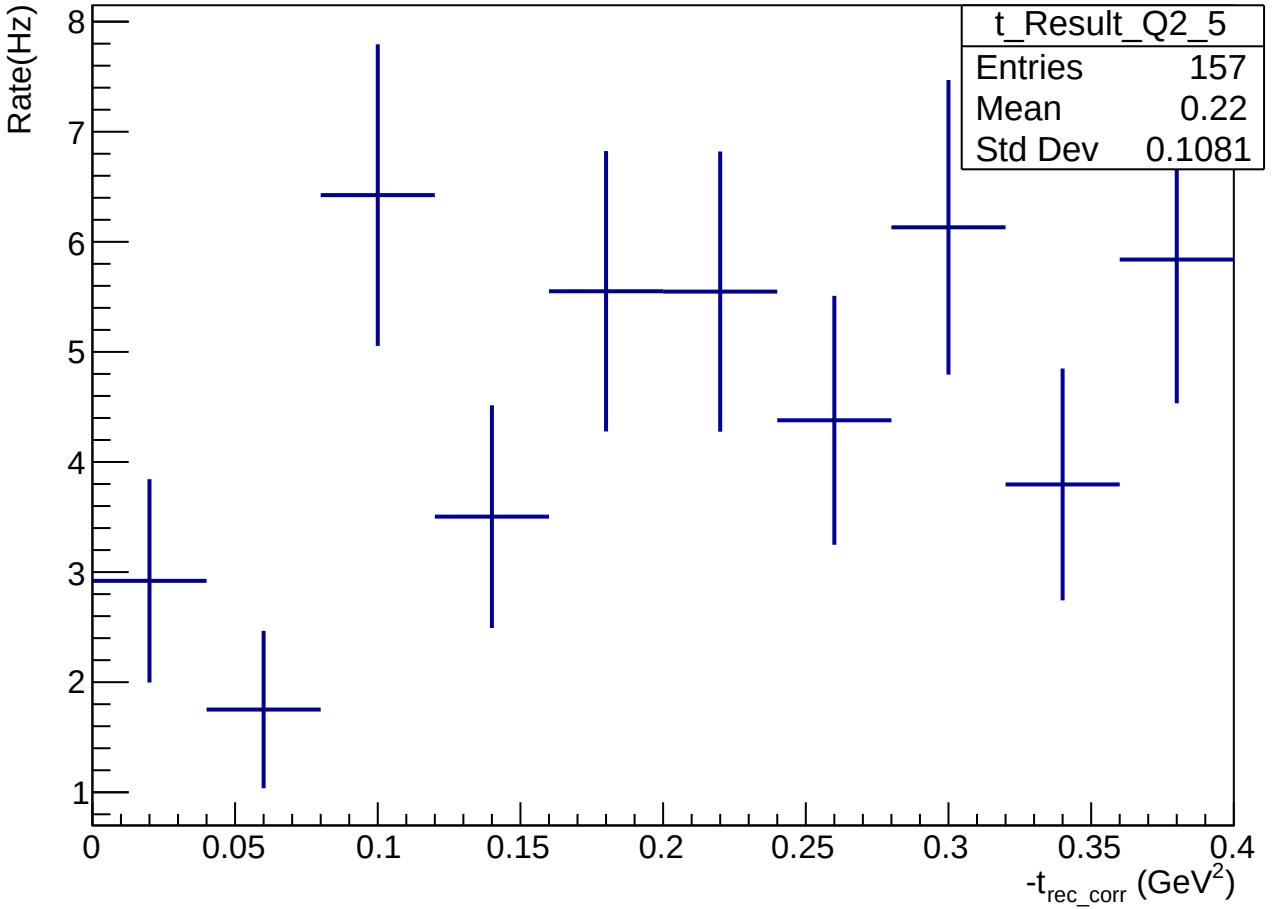

-t dist w/ 5.0 < Q2 < 35.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_0
Entries 1165
Mean 0.2071
Std Dev 0.1097
Rate(Hz)
44
42
40
38
36
34
32
30
28
26
24
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

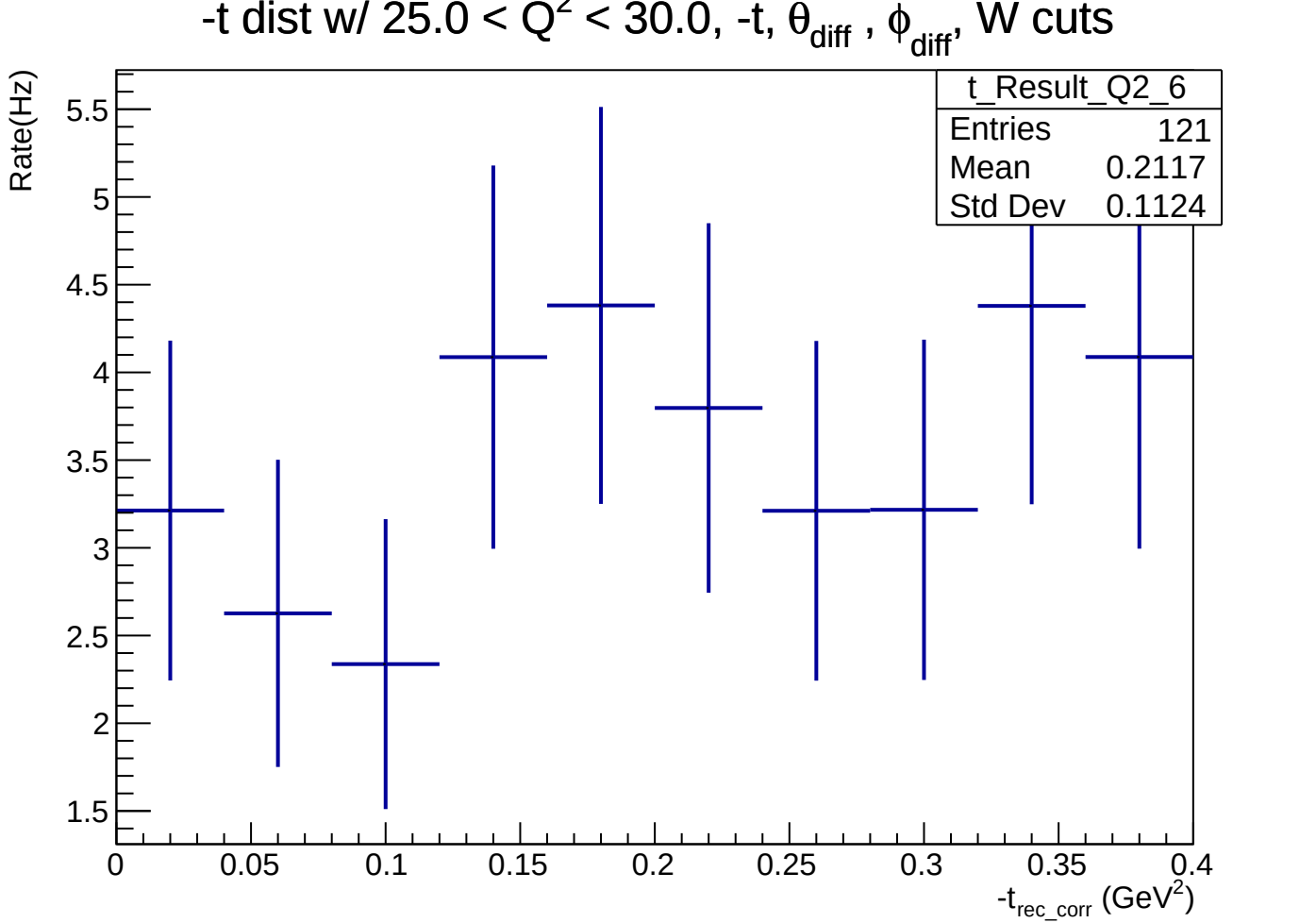

-t dist w/ 5.0 < Q2 < 7.5, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_1
Entries 93
Mean 0.1812
Std Dev 0.107
Rate(Hz)
1
2
3
4
5
6
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

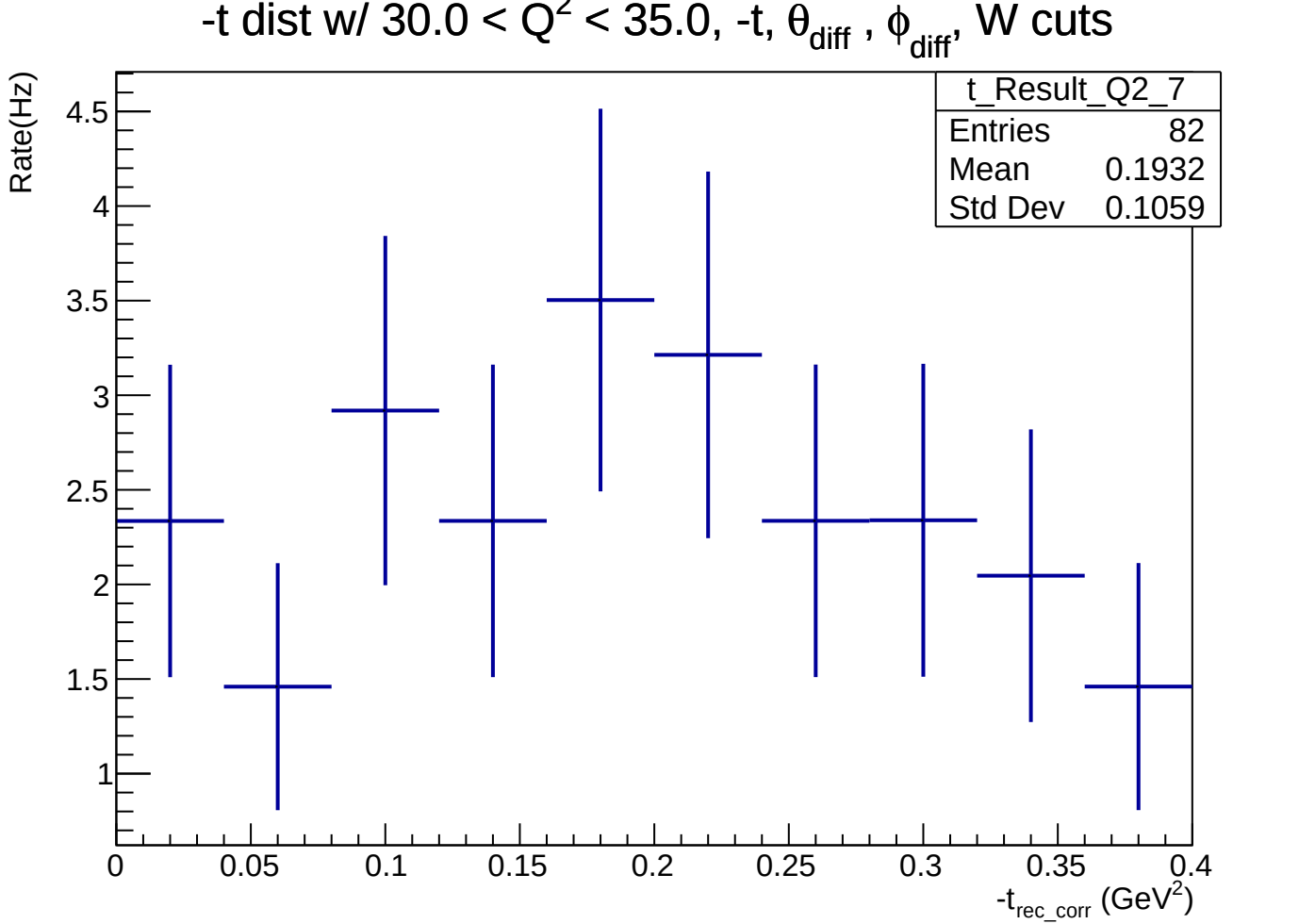

-t dist w/ 7.5 < Q2 < 10.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_2
Entries 183
Mean 0.2043
Std Dev 0.1072
Rate(Hz)
10
9
8
7
6
5
4
3
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

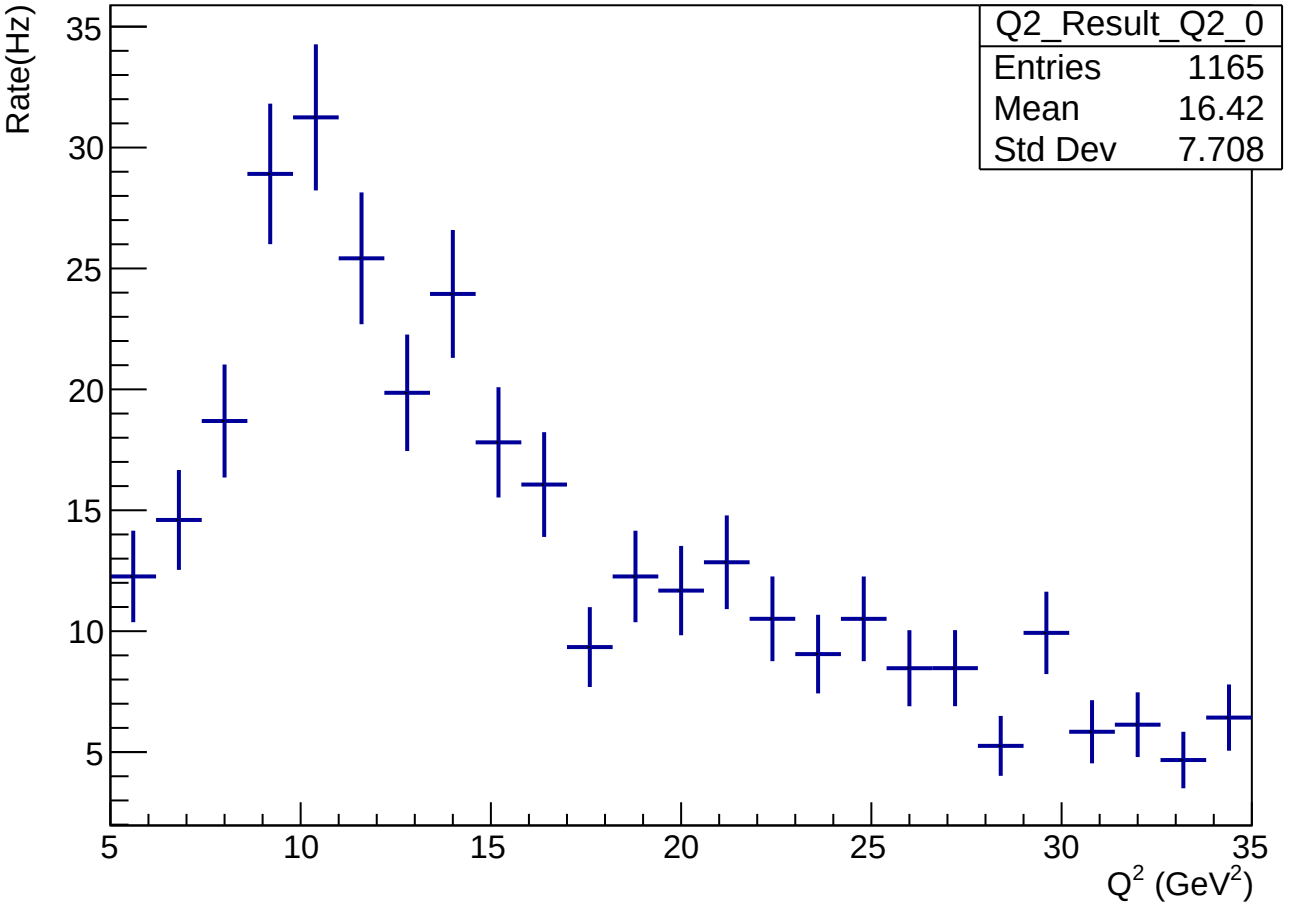

-t dist w/ 10.0 < Q2 < 15.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_3
Entries 346
Mean 0.2029
Std Dev 0.1105
Rate(Hz)
13
12
11
10
9
8
7
6
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

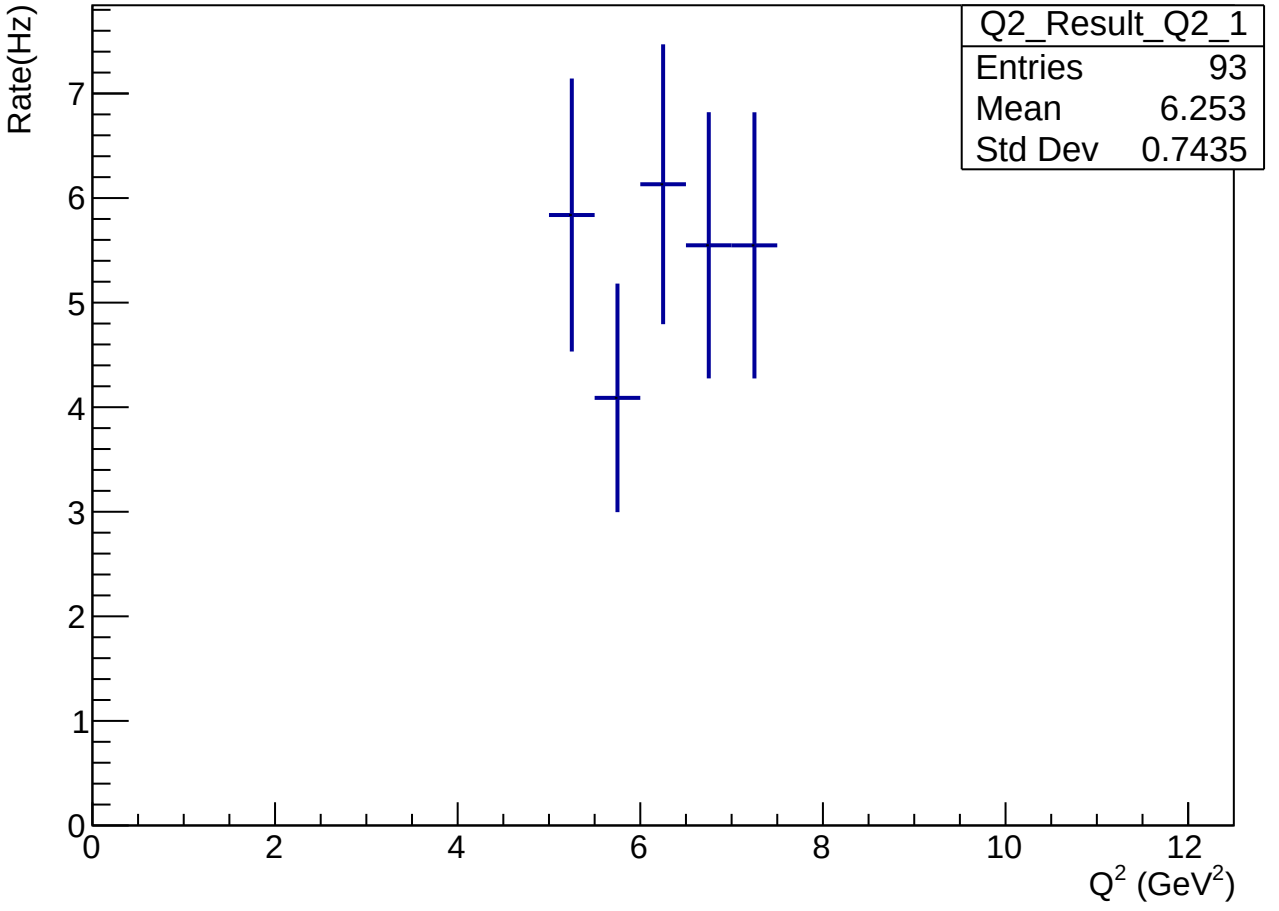

-t dist w/ 15.0 < Q2 < 20.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_4
Entries 183
Mean 0.2233
Std Dev 0.109
Rate(Hz)
2
3
4
5
6
7
8
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

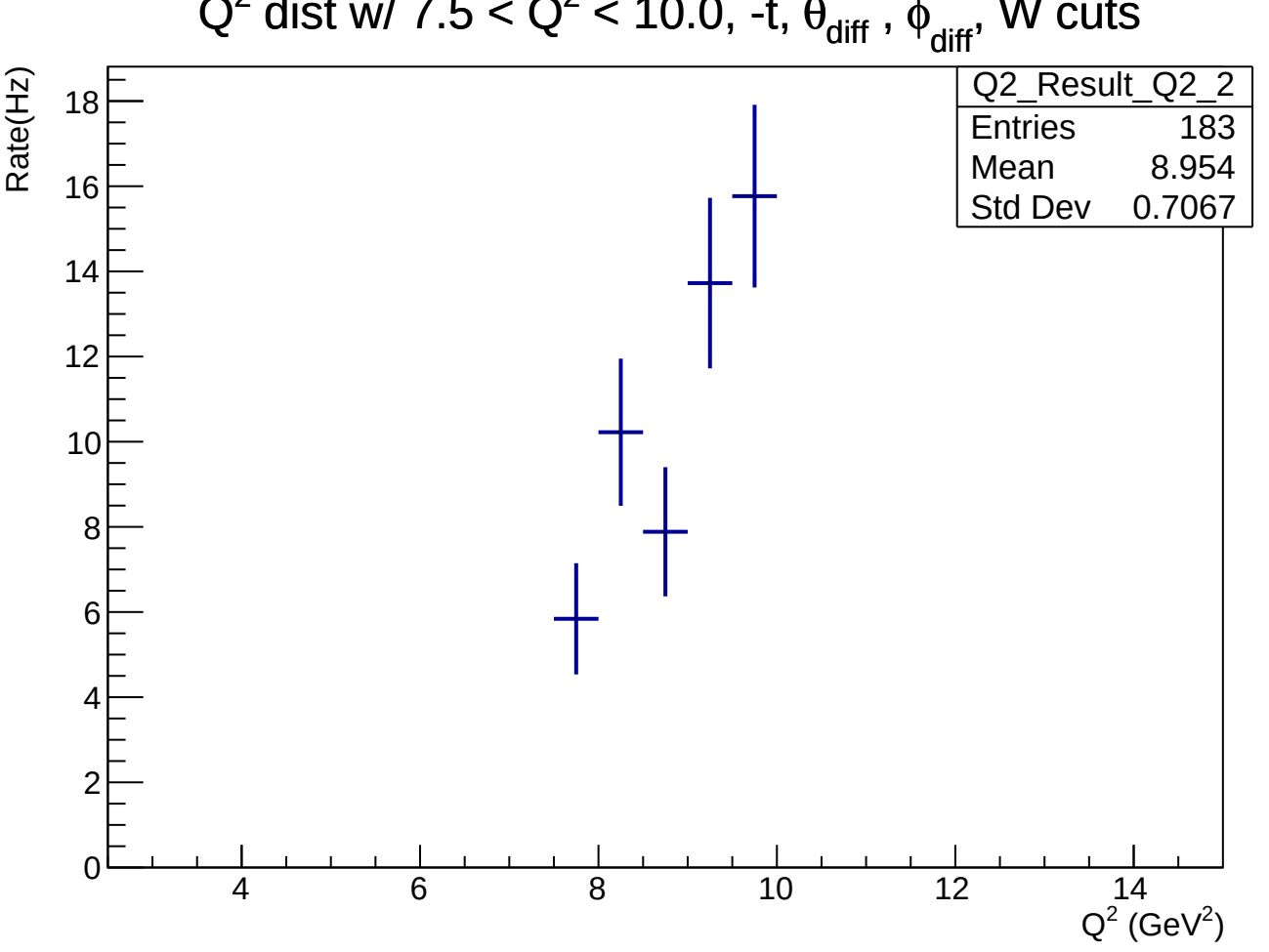

-t dist w/ 20.0 < Q2 < 25.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_5
Entries 157
Mean 0.22
Std Dev 0.1081
Rate(Hz)
1
2
3
4
5
6
7
8
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

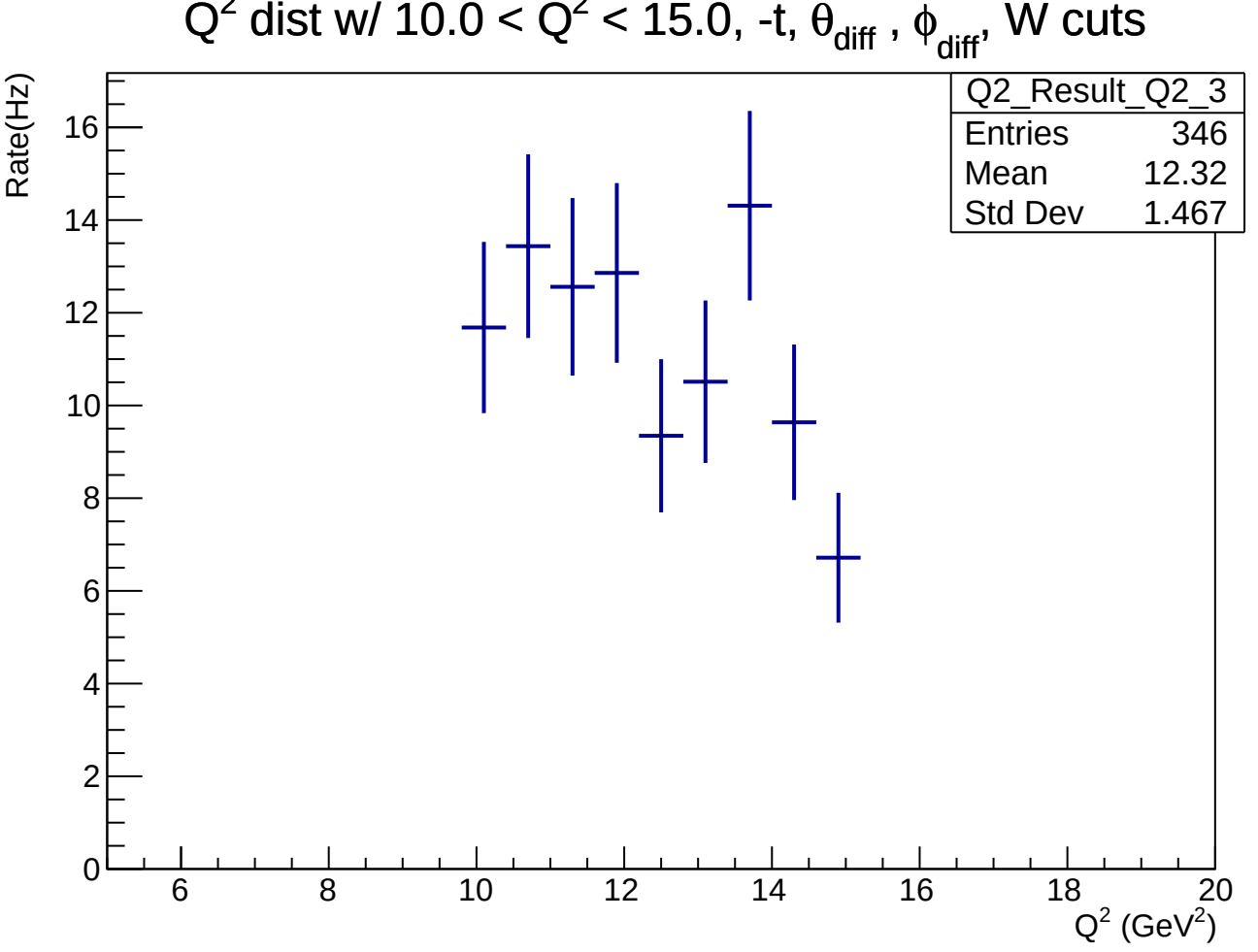

-t dist w/ 25.0 < Q2 < 30.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_6
Entries 121
Mean 0.2117
Std Dev 0.1124
Rate(Hz)
5.5
5
4.5
4
3.5
3
2.5
2
1.5
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

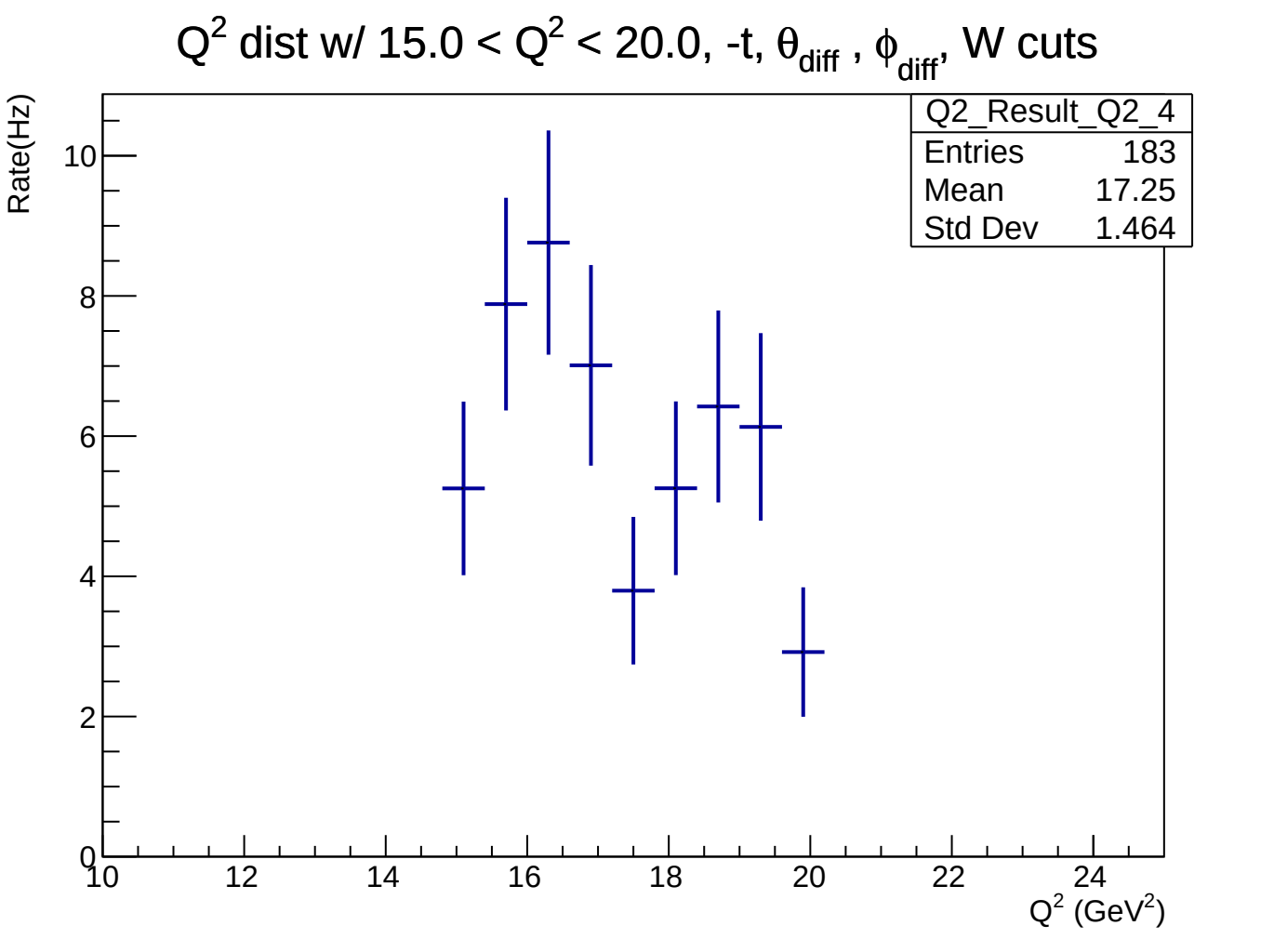

-t dist w/ 30.0 < Q2 < 35.0, -t, θdiff , ϕdiff, W cuts
t_Result_Q2_7
Entries 82
Mean 0.1932
Std Dev 0.1059
Rate(Hz)
4.5
4
3.5
3
2.5
2
1.5
1
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
-trec_corr (GeV2)

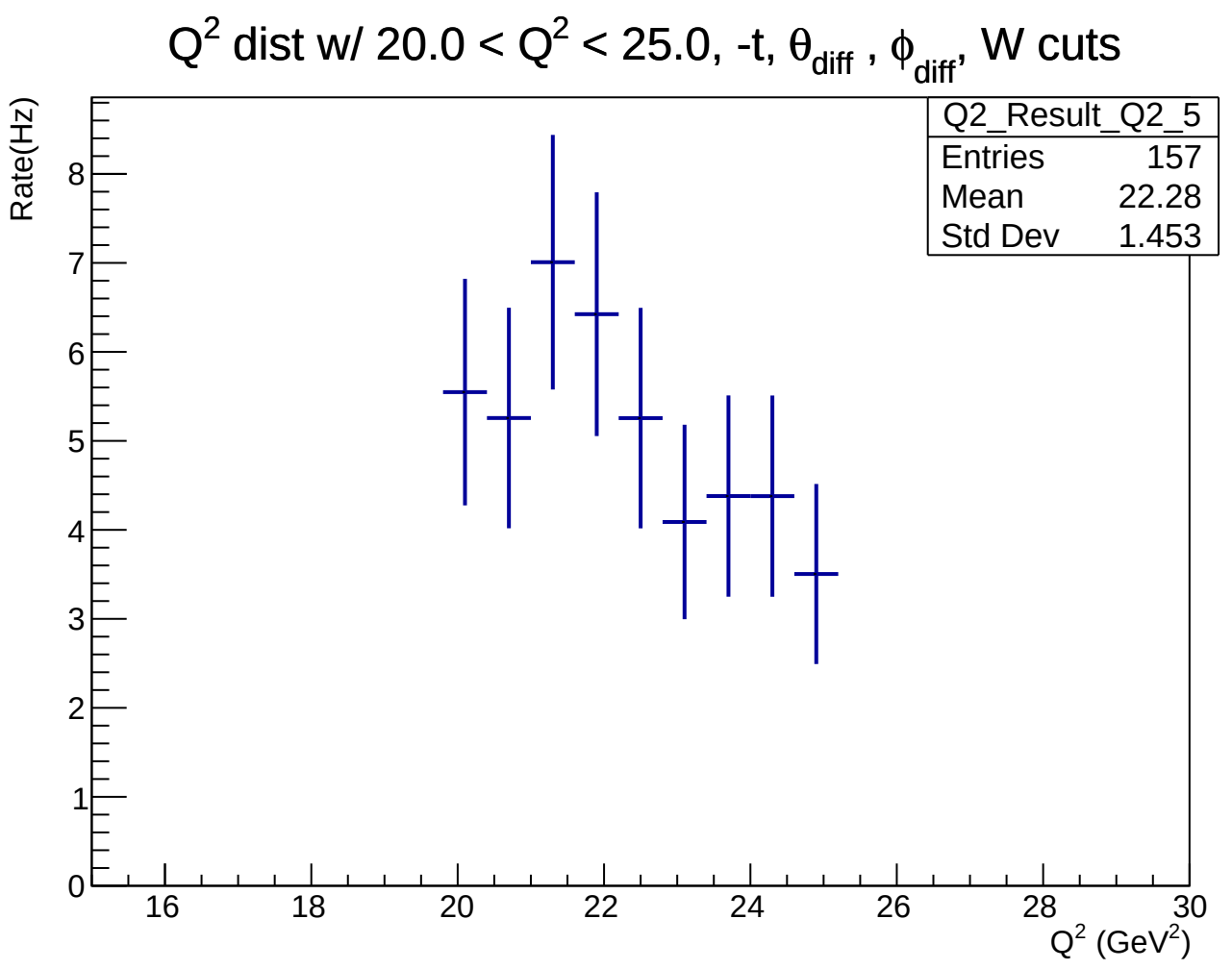

Q^2 dist w/ 5.0 < Q^2 < 35.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_0
Entries 1165
Mean 16.42
Std Dev 7.708
Rate(Hz)
Q^2 (GeV^2)
5
10
15
20
25
30
35

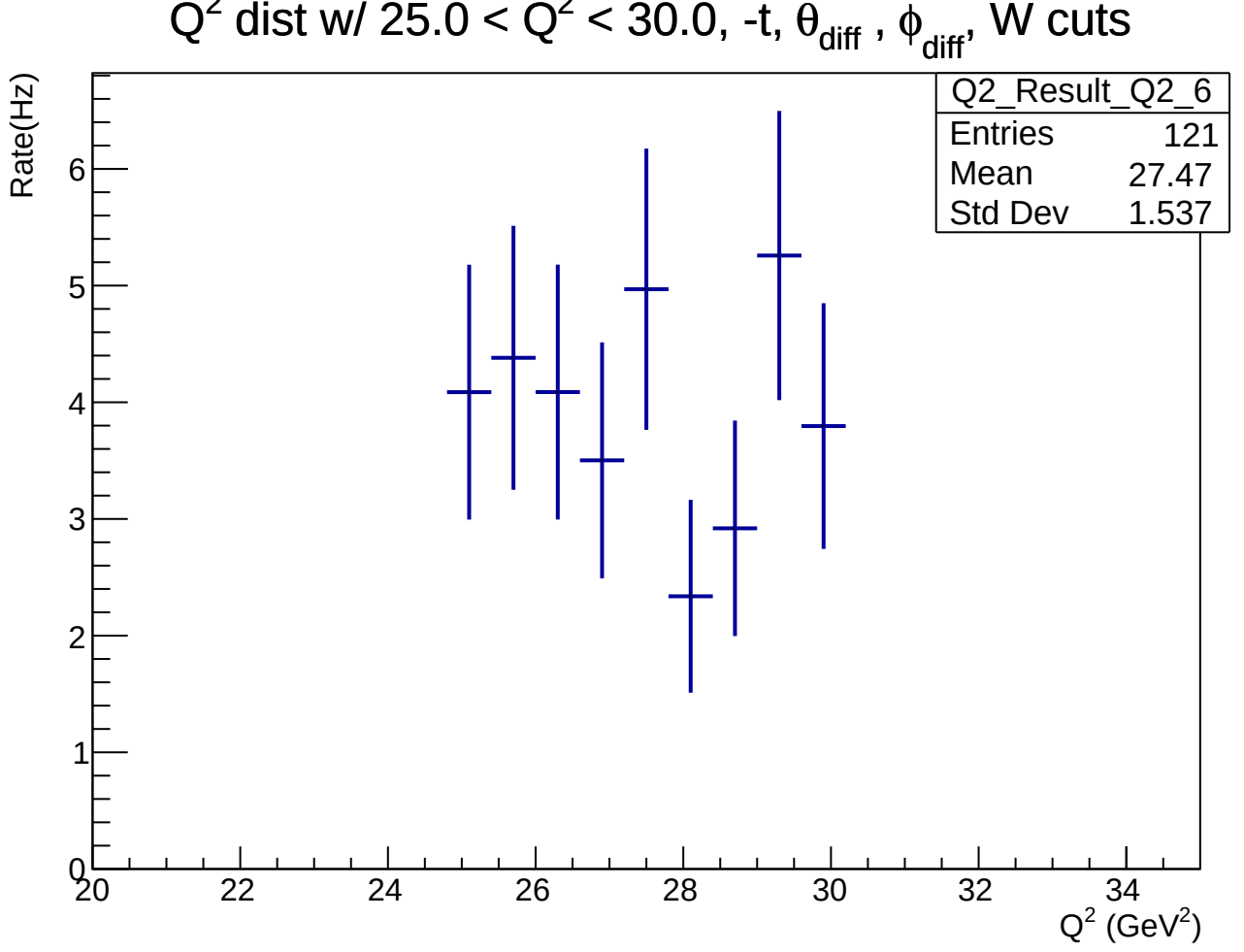

Q^2 dist w/ 5.0 < Q^2 < 7.5, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_1
Entries 93
Mean 6.253
Std Dev 0.7435
Rate(Hz)
0
1
2
3
4
5
6
7
0
2
4
6
8
10
12
Q^2 (GeV^2)

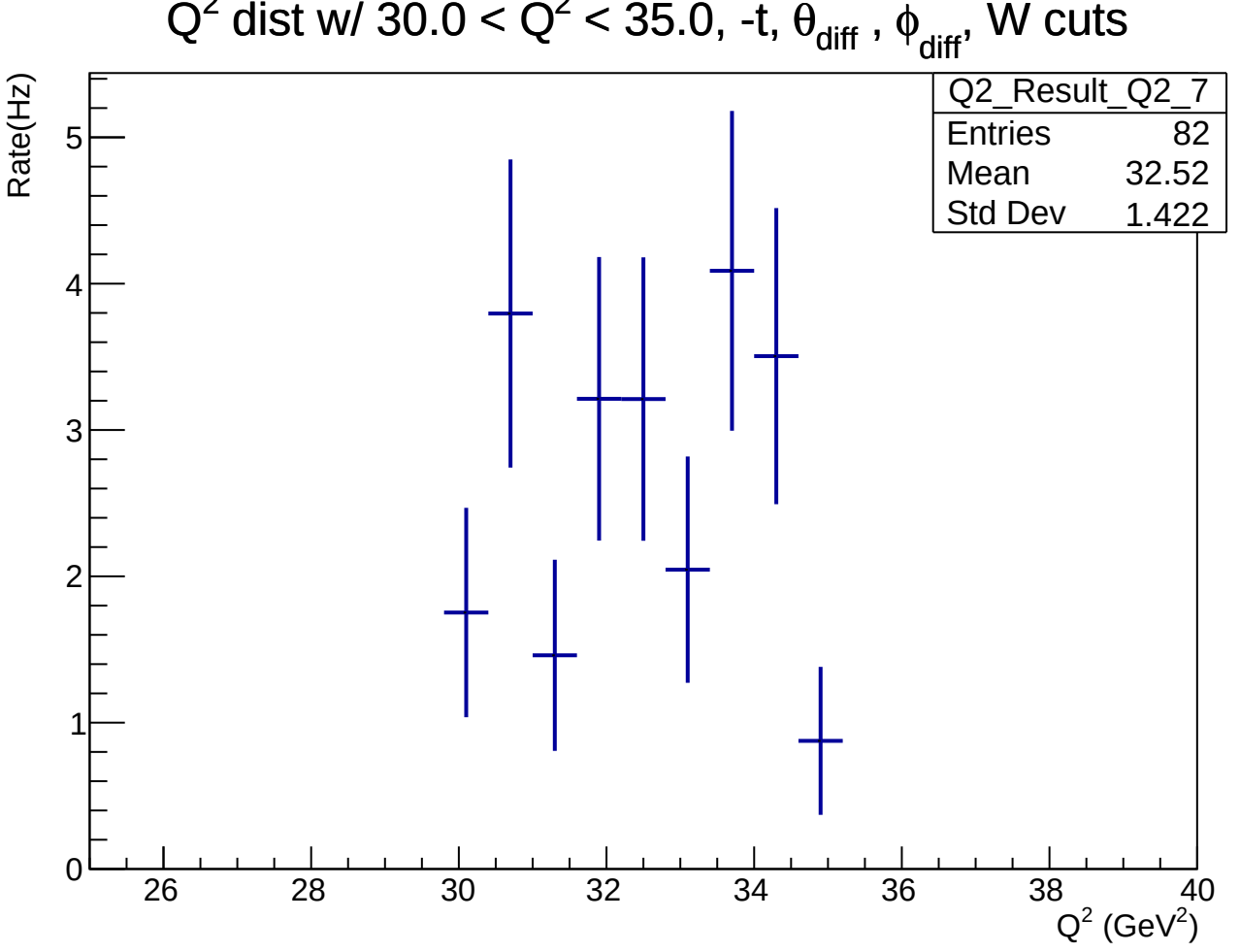

Q^2 dist w/ 7.5 < Q^2 < 10.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_2
Entries 183
Mean 8.954
Std Dev 0.7067
Rate(Hz)
0
2
4
6
8
10
12
14
16
18
4
6
8
10
12
14
Q^2 (GeV^2)

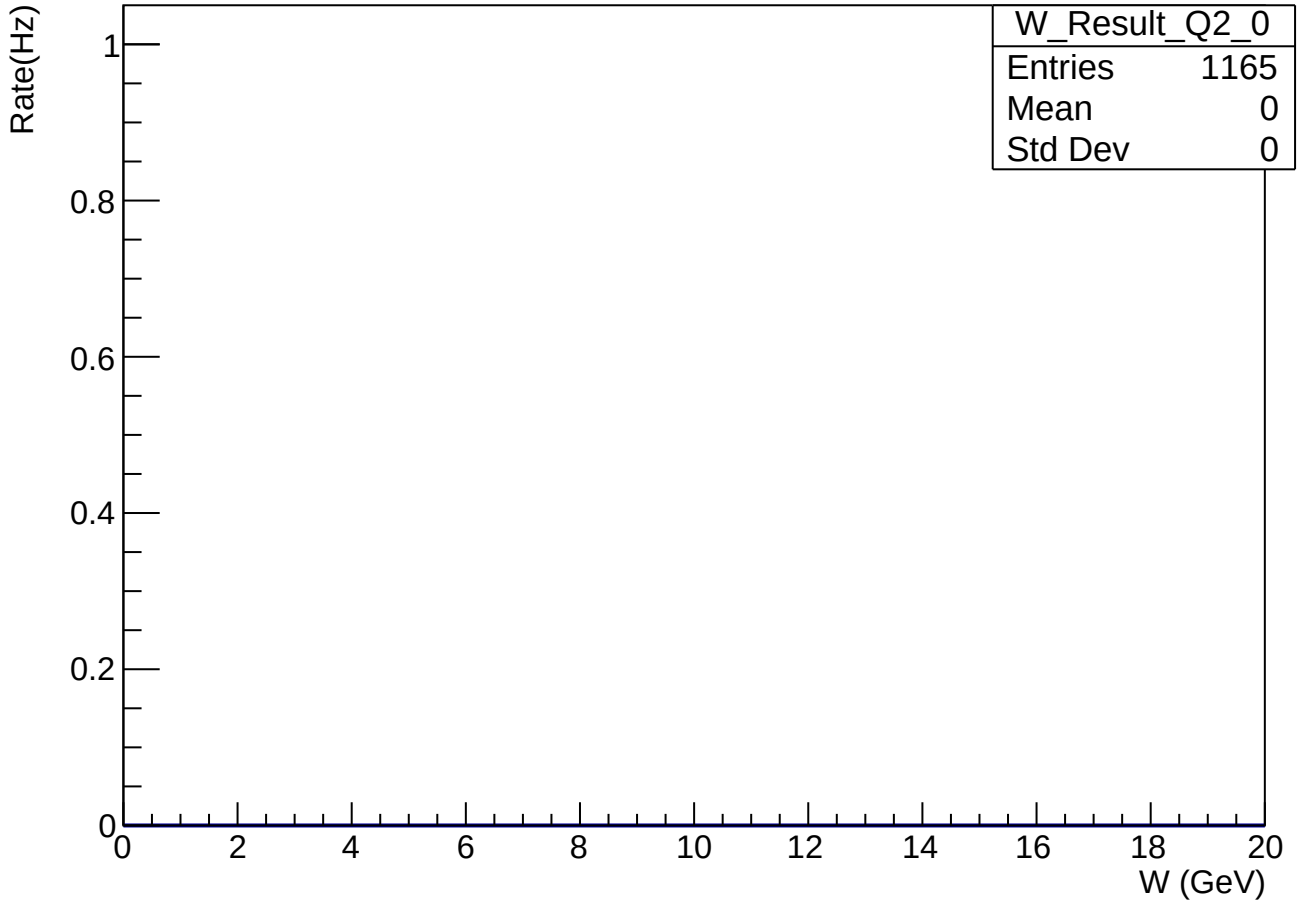

Q^2 dist w/ 10.0 < Q^2 < 15.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_3
Entries 346
Mean 12.32
Std Dev 1.467
Rate(Hz)
0
2
4
6
8
10
12
14
16
6
8
10
12
14
16
18
20
Q^2 (GeV^2)

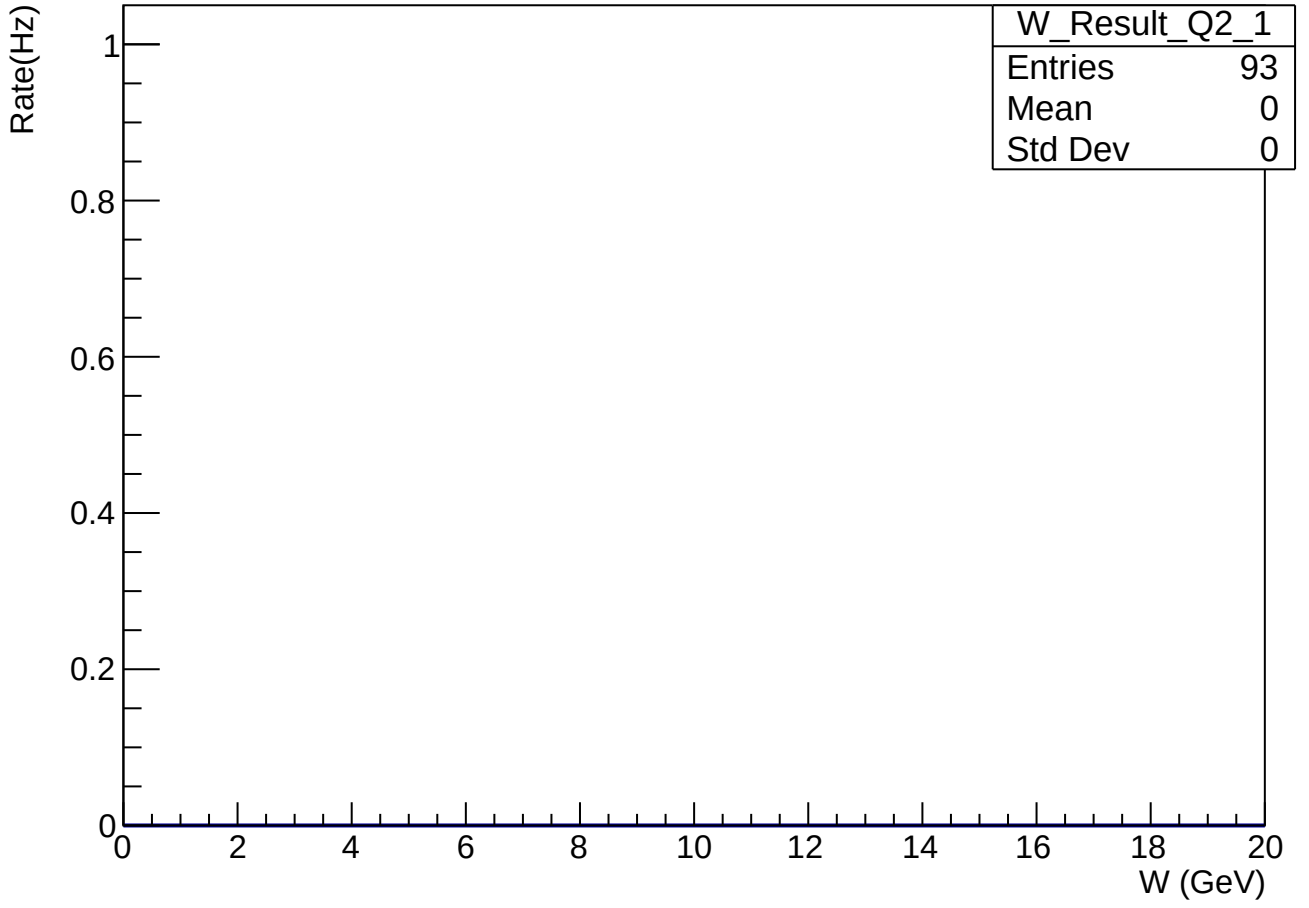

Q^2 dist w/ 15.0 < Q^2 < 20.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_4
Entries 183
Mean 17.25
Std Dev 1.464
Rate(Hz)
0
2
4
6
8
10
10
12
14
16
18
20
22
24
Q^2 (GeV^2)

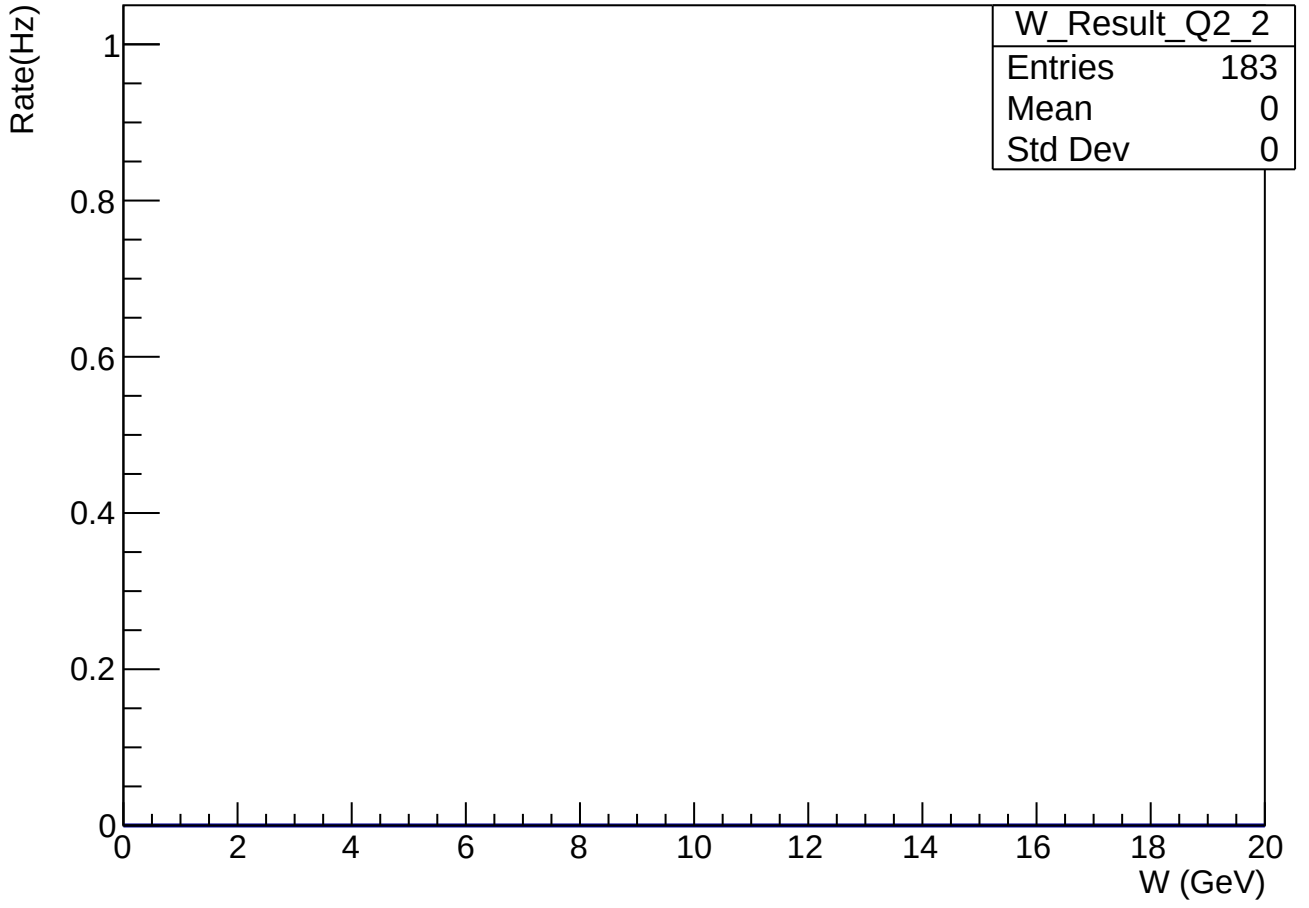

Q^2 dist w/ 20.0 < Q^2 < 25.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_5
Entries 157
Mean 22.28
Std Dev 1.453
Rate(Hz)
0
1
2
3
4
5
6
7
8
16
18
20
22
24
26
28
30
Q^2 (GeV^2)

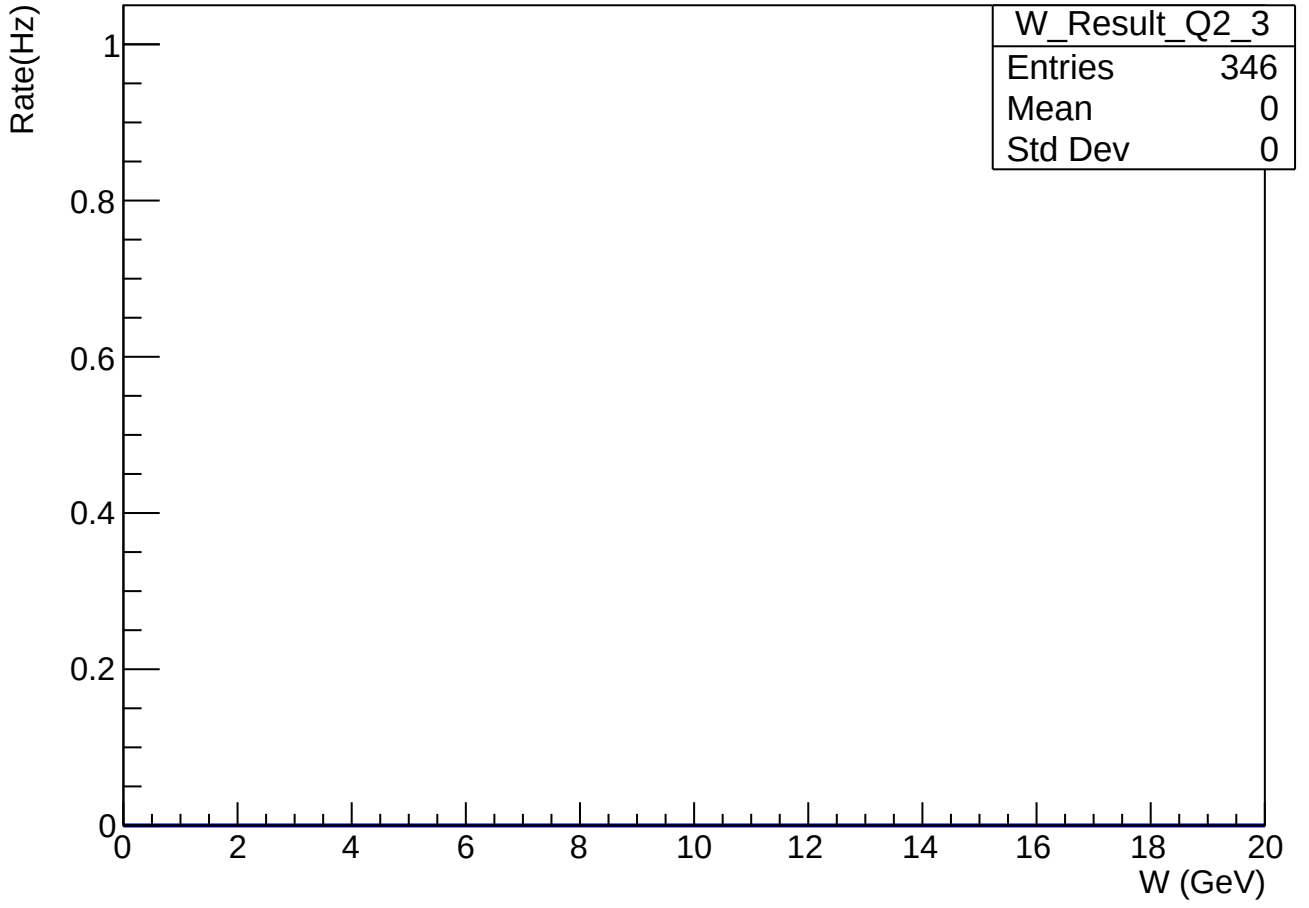

Q^2 dist w/ 25.0 < Q^2 < 30.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_6
Entries 121
Mean 27.47
Std Dev 1.537
Rate(Hz)
0
1
2
3
4
5
6
20
22
24
26
28
30
32
34
Q^2 (GeV^2)

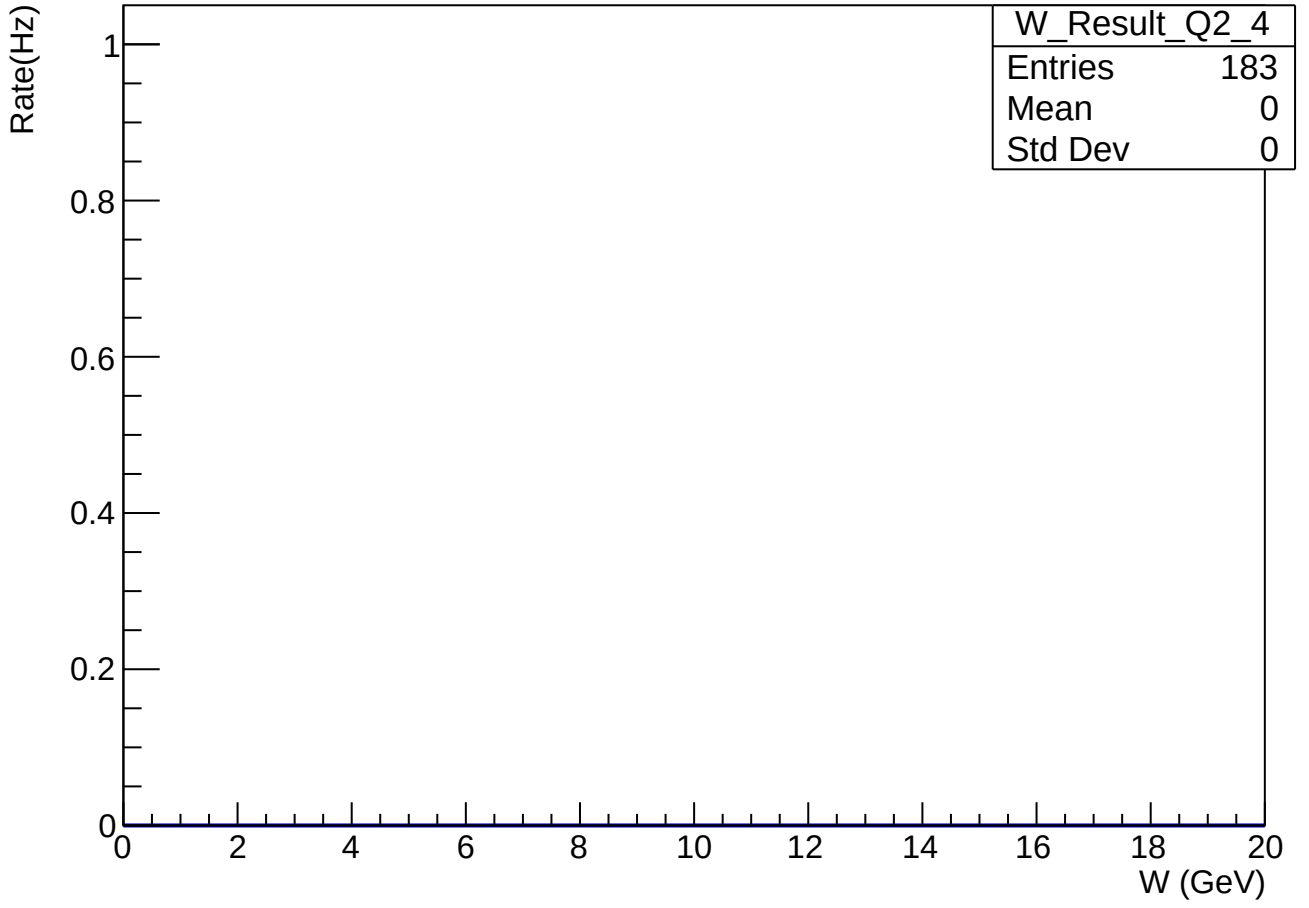

Q^2 dist w/ 30.0 < Q^2 < 35.0, -t, θ_{diff} , ϕ_{diff}, W cuts
Q2_Result_Q2_7
Entries 82
Mean 32.52
Std Dev 1.422
Rate(Hz)
0
1
2
3
4
5
26
28
30
32
34
36
38
40
Q^2 (GeV^2)

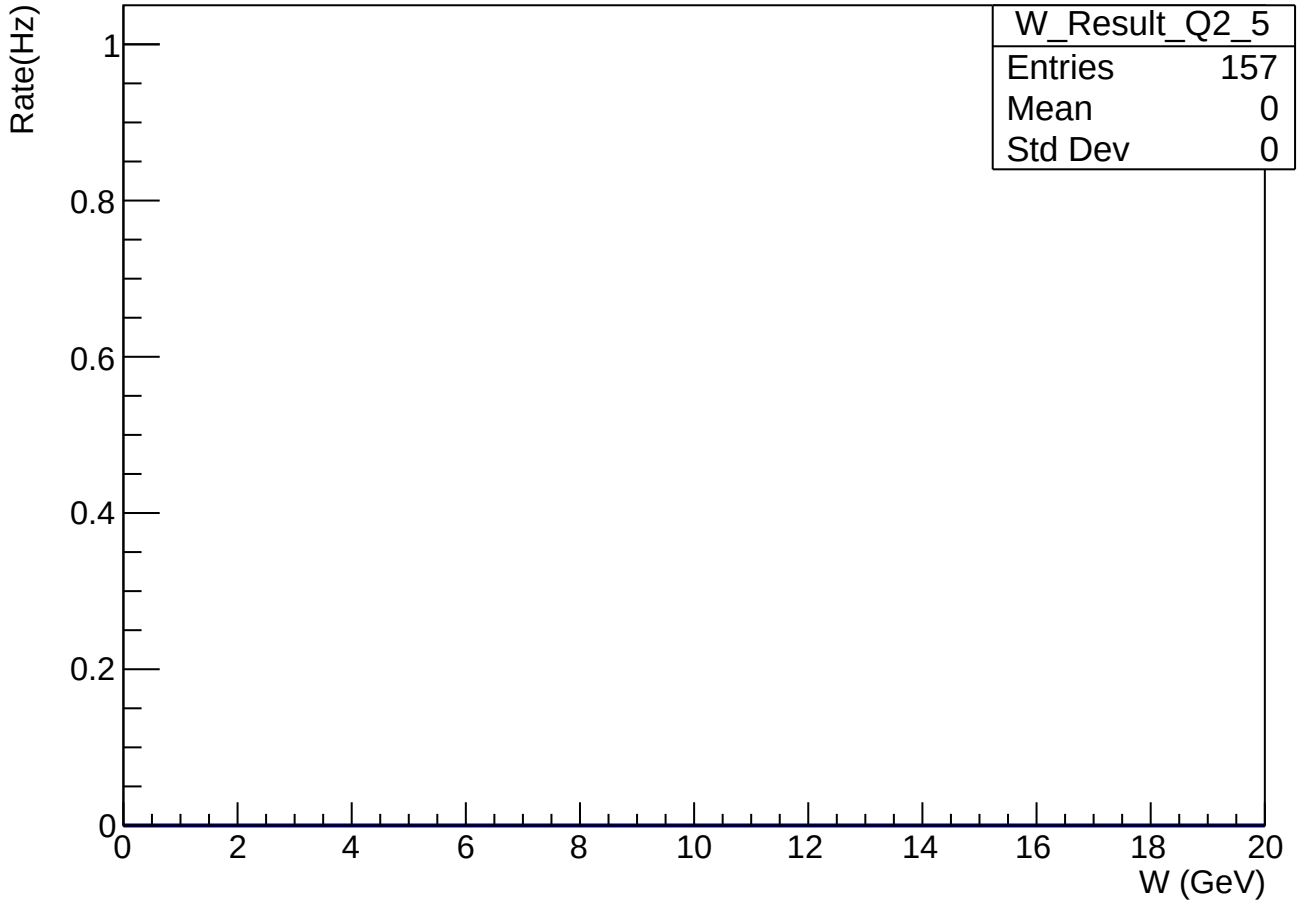

W dist w/ 5.0 < Q2 < 35.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_0
Entries 1165
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

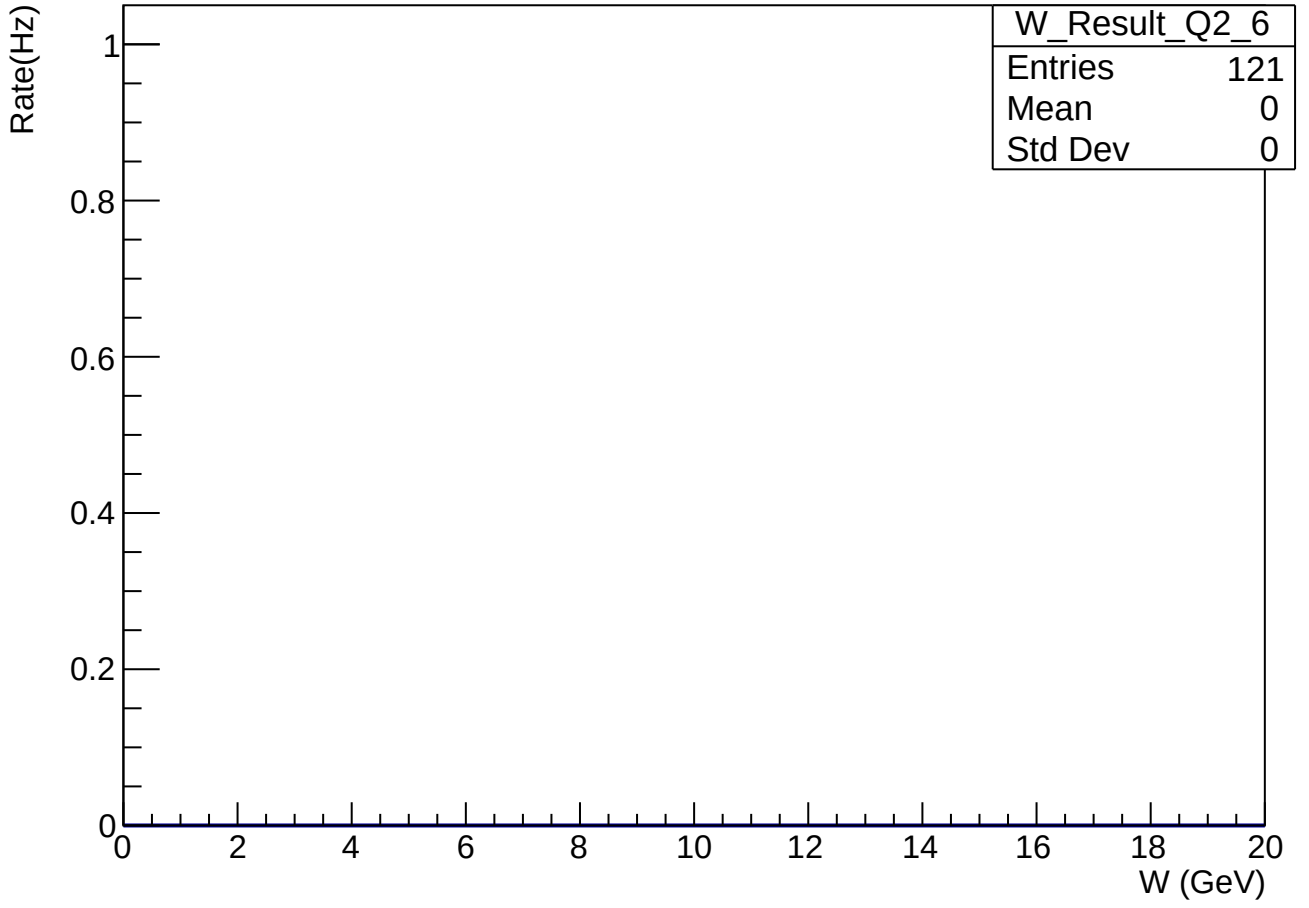

W dist w/ 5.0 < Q2 < 7.5, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_1
Entries 93
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0 2 4 6 8 10 12 14 16 18 20
W (GeV)

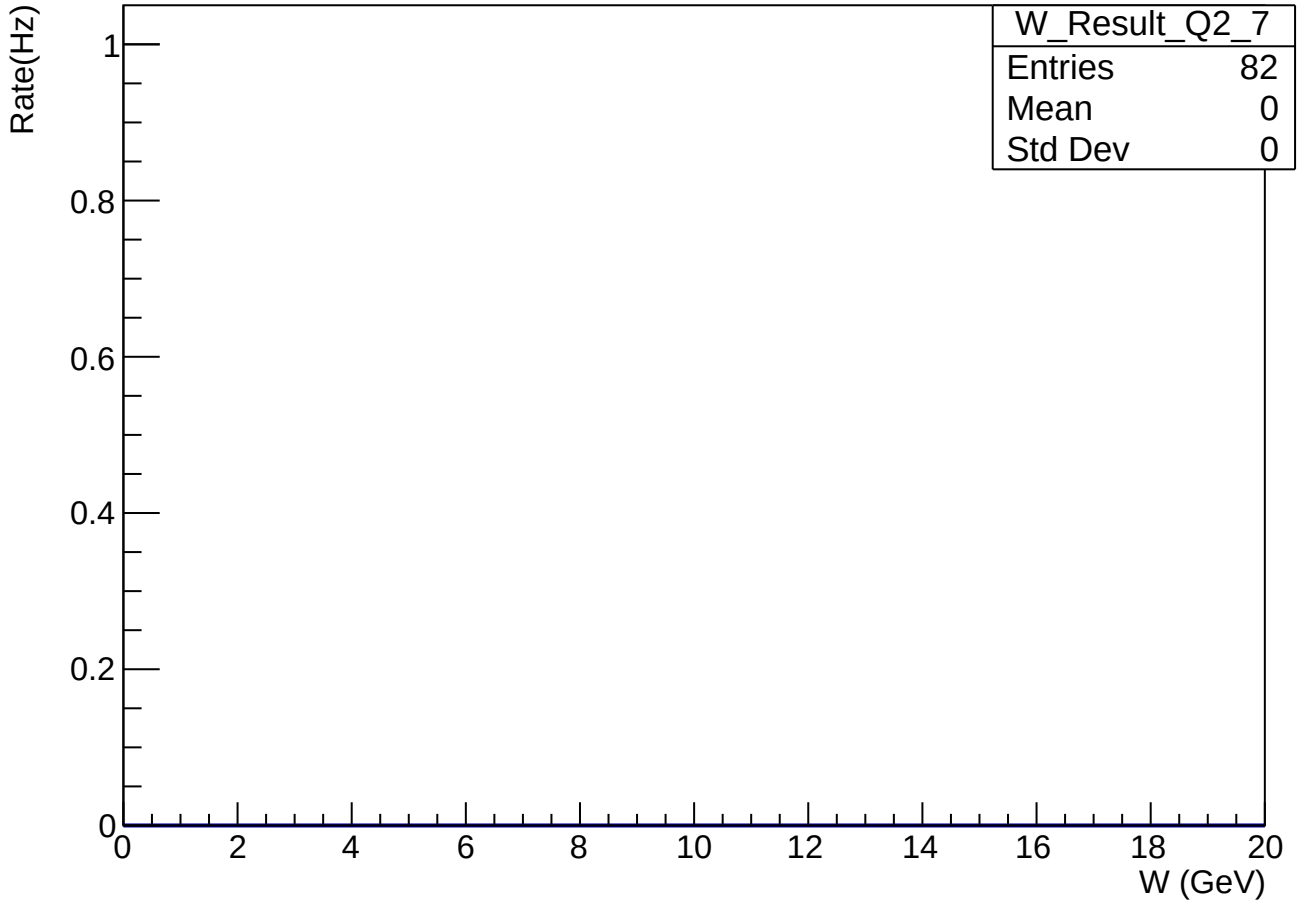

W dist w/ 7.5 < Q2 < 10.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_2
Entries 183
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0 2 4 6 8 10 12 14 16 18 20
W (GeV)

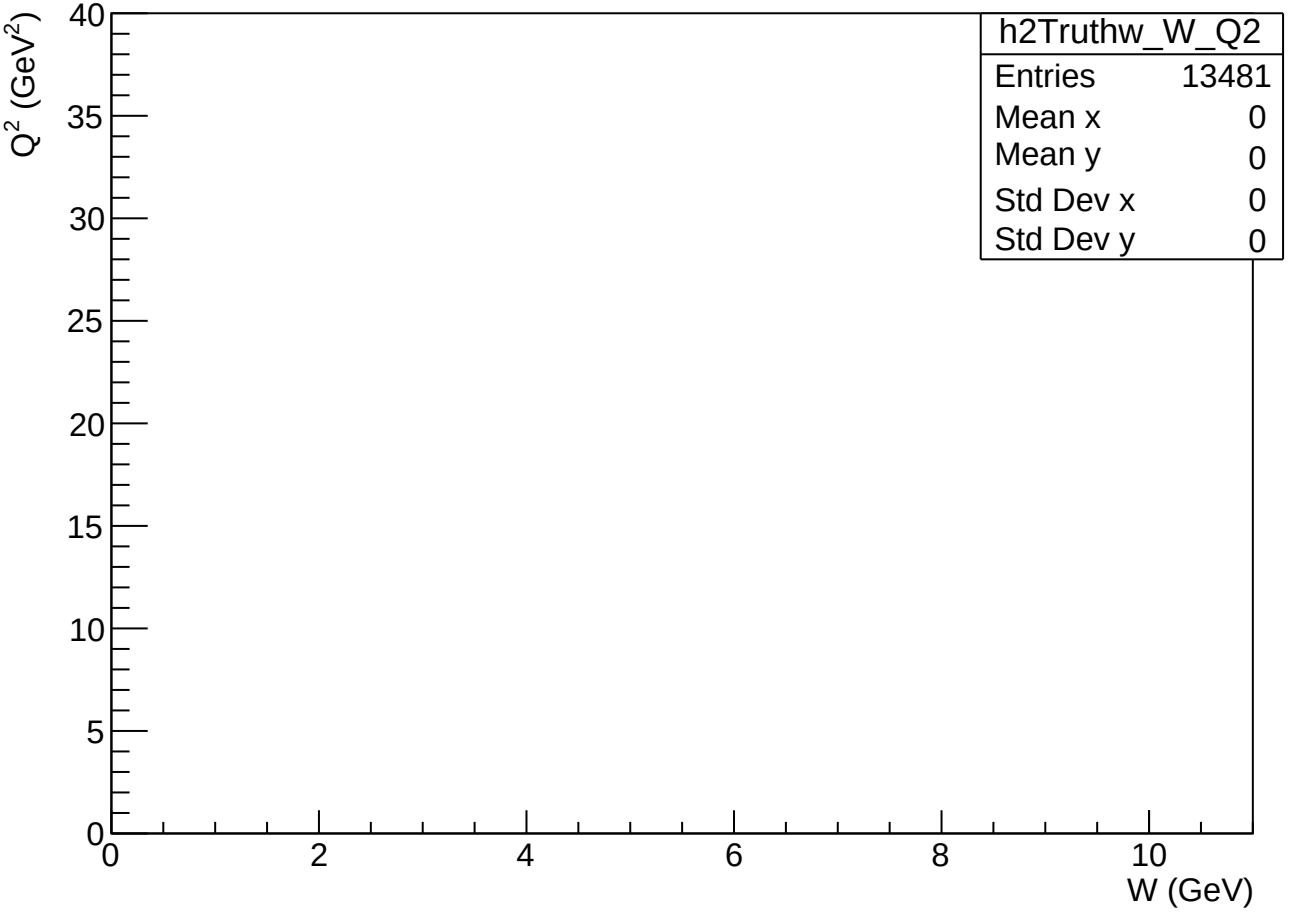

W dist w/ 10.0 < Q2 < 15.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_3
Entries 346
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

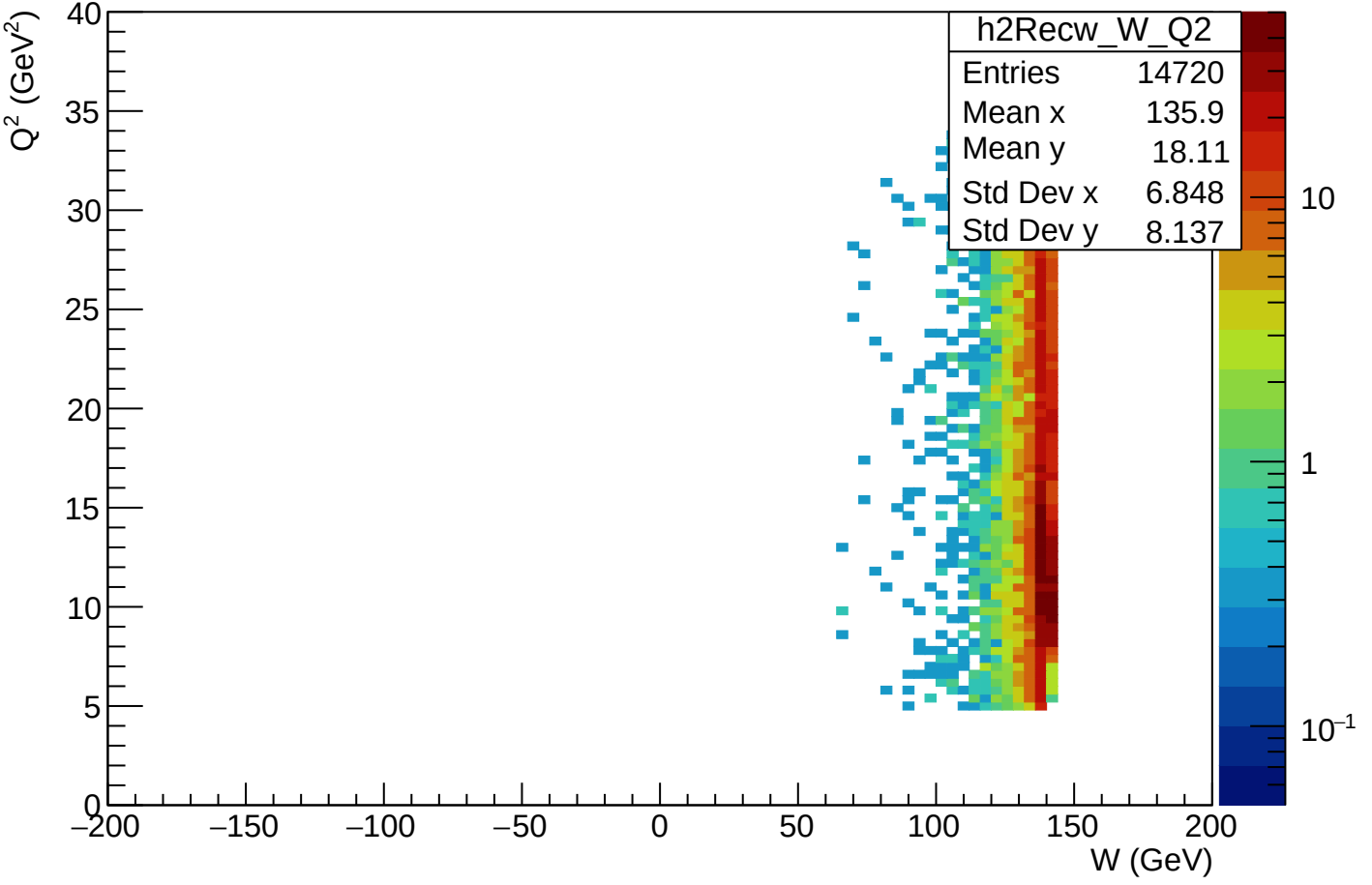

W dist w/ 15.0 < Q2 < 20.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_4
Entries 183
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

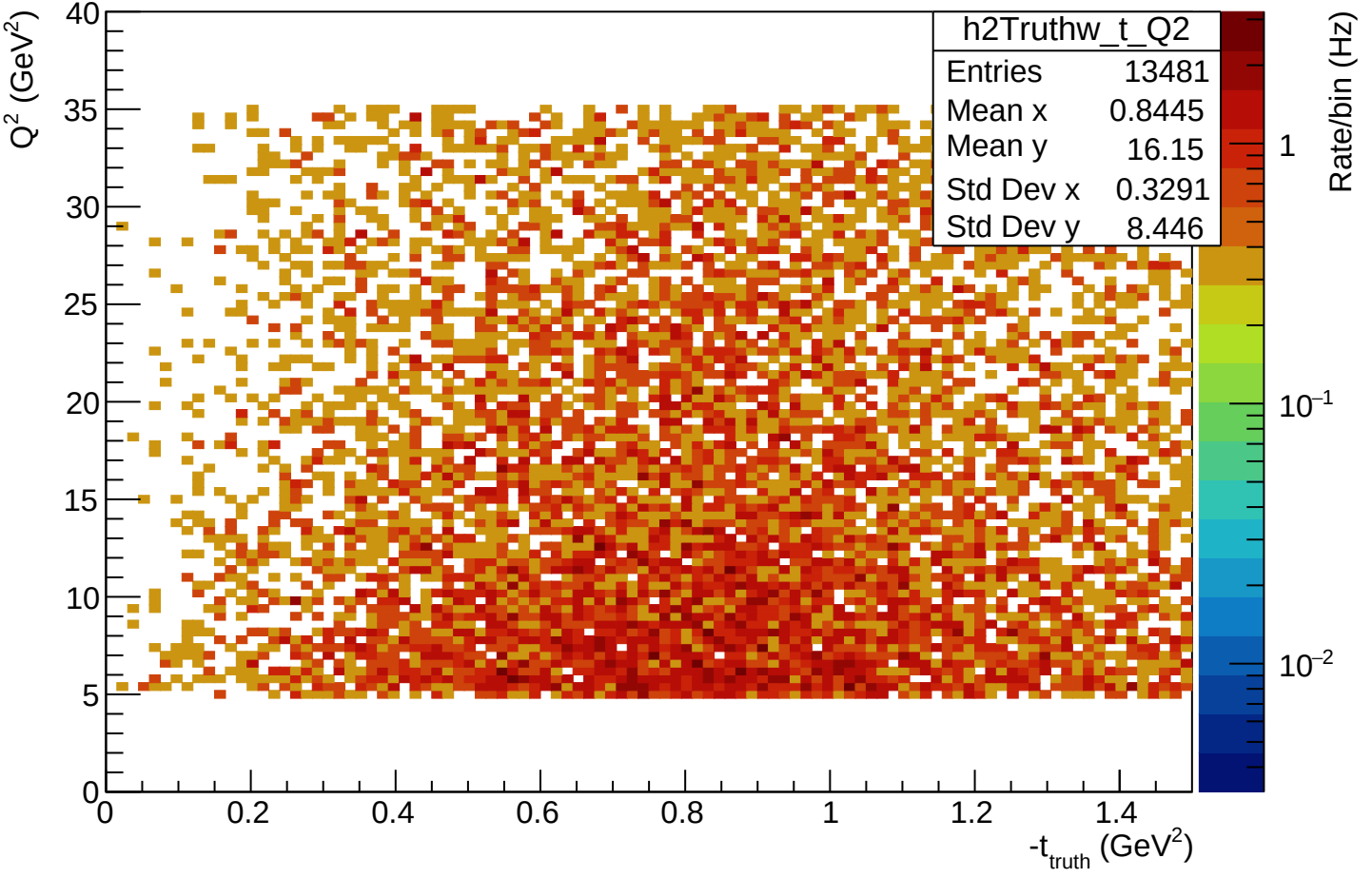

W dist w/ 20.0 < Q2 < 25.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_5
Entries 157
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

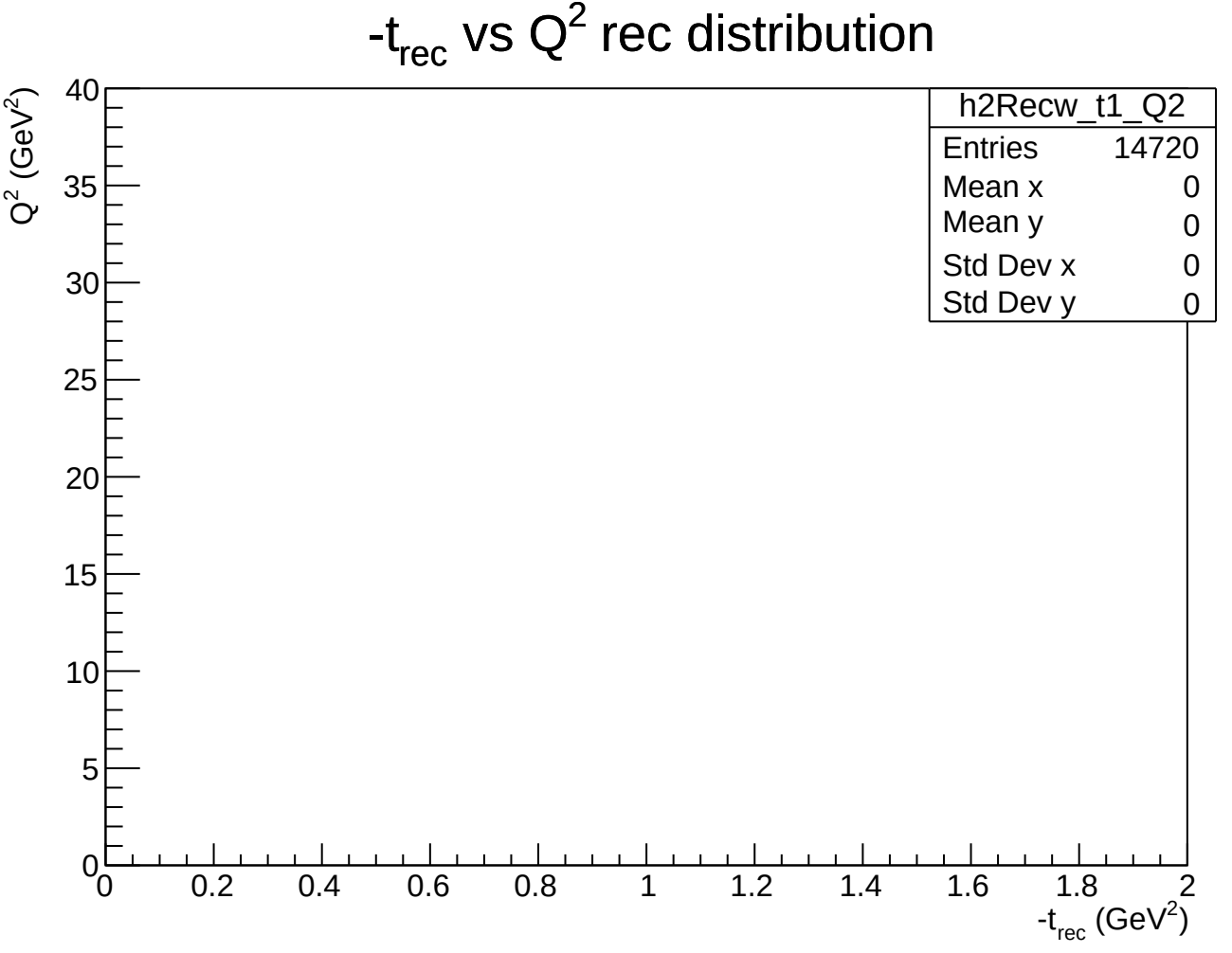

W dist w/ 25.0 < Q2 < 30.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_6
Entries 121
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

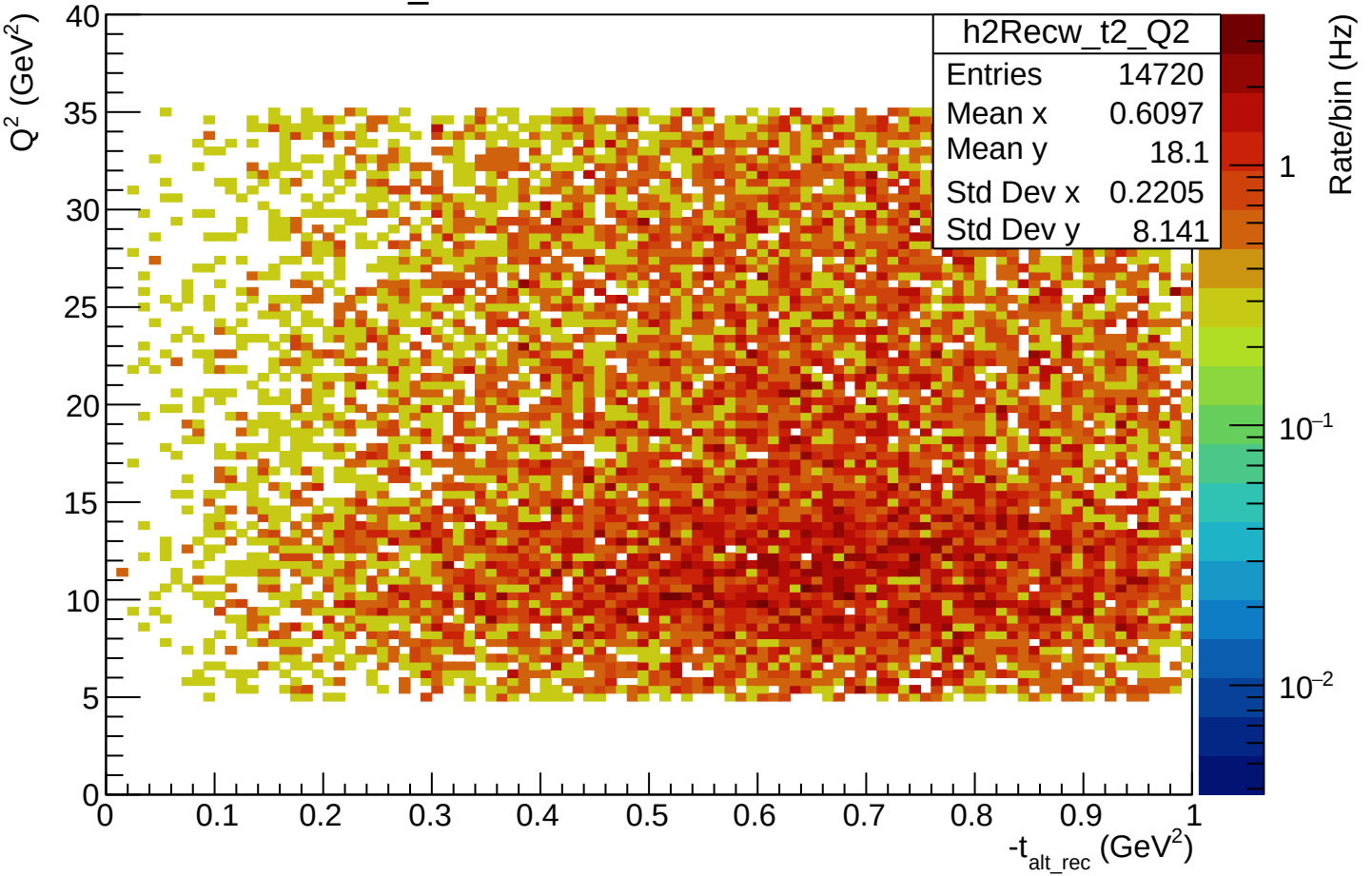

W dist w/ 30.0 < Q2 < 35.0, -t, θdiff , ϕdiff, W cuts
W_Result_Q2_7
Entries 82
Mean 0
Std Dev 0
Rate(Hz)
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
W (GeV)

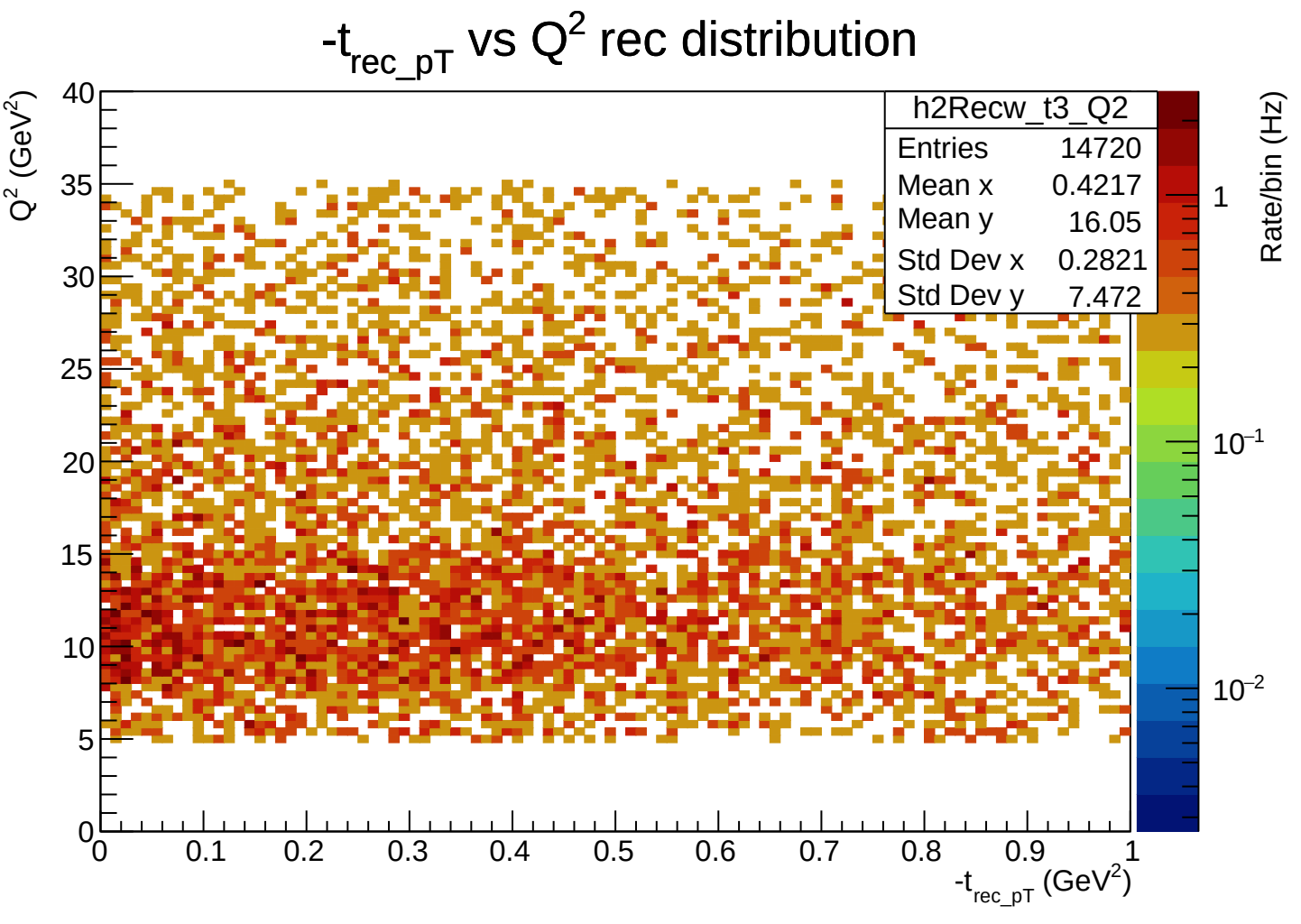

W vs Q² truth distribution
h2Truthw_W_Q2
Entries 13481
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
Q² (GeV²)
W (GeV)
0
5
10
15
20
25
30
35
40
0
2
4
6
8
10

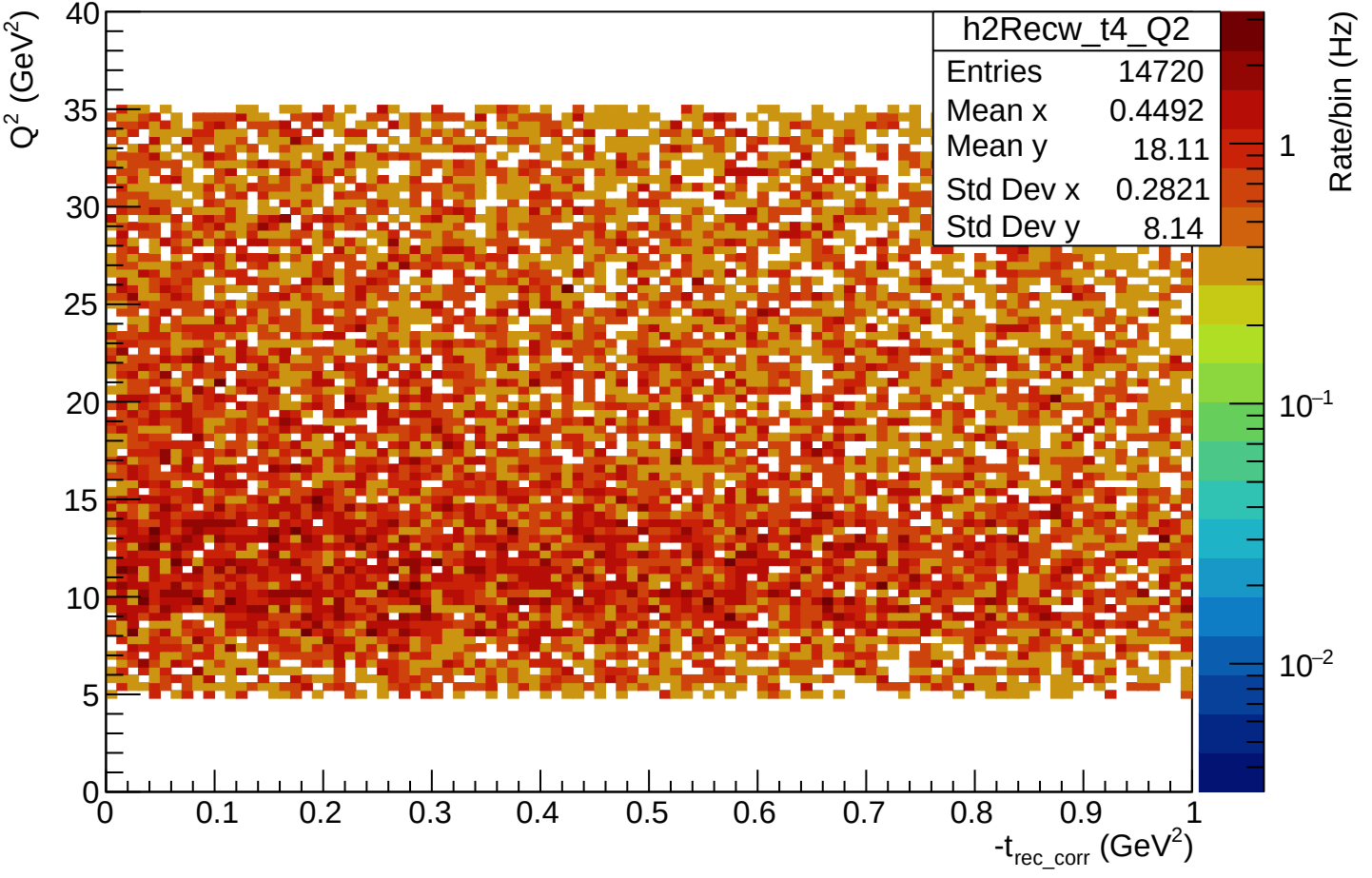

W vs Q2 rec distribution
h2Recw_W_Q2
Entries 14720
Mean x 135.9
Mean y 18.11
Std Dev x 6.848
Std Dev y 8.137
Q2 (GeV2)
W (GeV)
40
35
30
25
20
15
10
5
0
−200
−150
−100
−50
0
50
100
150
200
10
1
10−1

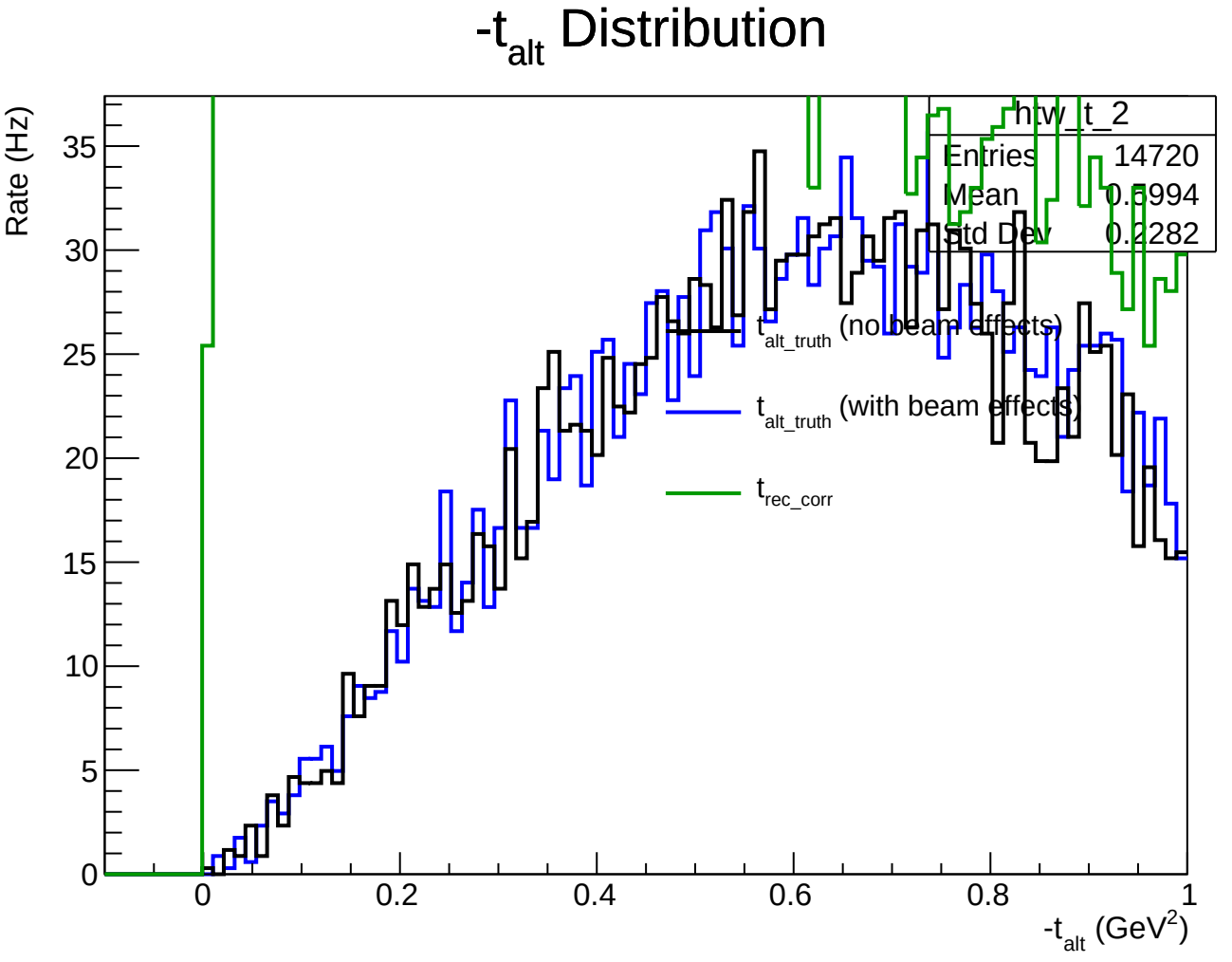

-t_truth vs Q^2 truth distribution
h2Truthw_t_Q2
Entries 13481
Mean x 0.8445
Mean y 16.15
Std Dev x 0.3291
Std Dev y 8.446
Q^2 (GeV^2)
-t_truth (GeV^2)
Rate/bin (Hz)
0
5
10
15
20
25
30
35
40
0.2
0.4
0.6
0.8
1
1.2
1.4
10^-1
10^-2

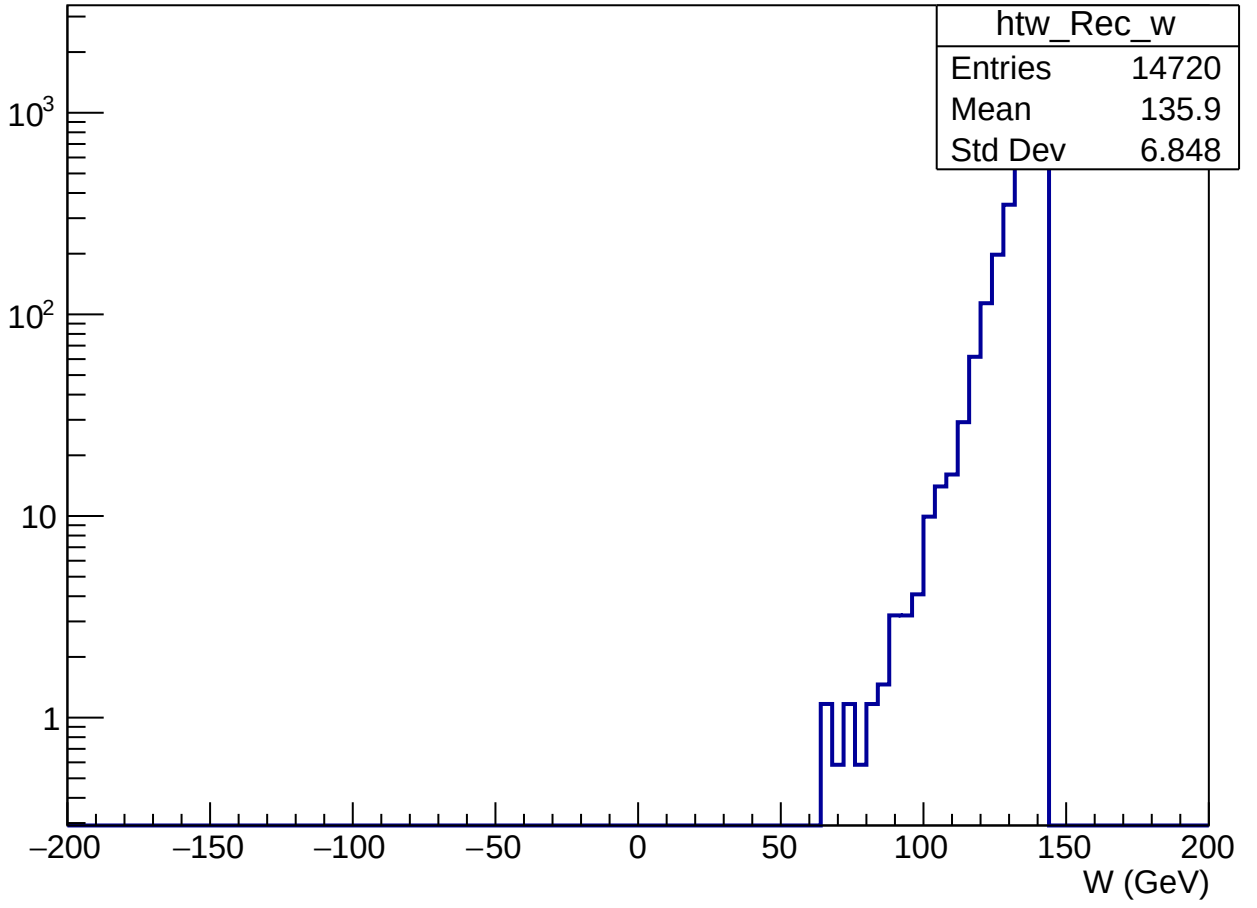

-t_rec vs Q^2 rec distribution
h2Recw_t1_Q2
Entries 14720
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
Q^2 (GeV^2)
-t_rec (GeV^2)
0
5
10
15
20
25
30
35
40
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2


-t_alt_rec vs Q^2 rec distribution
h2Recw_t2_Q2
Entries 14720
Mean x 0.6097
Mean y 18.1
Std Dev x 0.2205
Std Dev y 8.141
Q^2 (GeV^2)
-t_alt_rec (GeV^2)
Rate/bin (Hz)
0 5 10 15 20 25 30 35 40
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
1 10^-1 10^-2


-t_rec_pT vs Q^2 rec distribution
h2Recw_t3_Q2
Entries 14720
Mean x 0.4217
Mean y 16.05
Std Dev x 0.2821
Std Dev y 7.472
Q^2 (GeV^2)
-t_rec_pT (GeV^2)
Rate/bin (Hz)
0 5 10 15 20 25 30 35 40
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
1 10^-1 10^-2


-t_rec_corr vs Q^2 rec distribution
h2Recw_t4_Q2
Entries 14720
Mean x 0.4492
Mean y 18.11
Std Dev x 0.2821
Std Dev y 8.14
Q^2 (GeV^2)
-t_rec_corr (GeV^2)
Rate/bin (Hz)
0 5 10 15 20 25 30 35 40
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
1 10^-1 10^-2


-t_alt Distribution
Rate (Hz)
0
5
10
15
20
25
30
35
0
0.2
0.4
0.6
0.8
1
-t_alt (GeV^2)
htw_t_2
Entries 14720
Mean 0.5994
Std Dev 0.2282
t_alt_truth (no beam effects)
t_alt_truth (with beam effects)
t_rec_corr


w rec Distribution w/ 5 < Q² < 35
htw_Rec_w
Entries 14720
Mean 135.9
Std Dev 6.848
10³
10²
10
1
−200
−150
−100
−50
0
50
100
150
200
W (GeV)