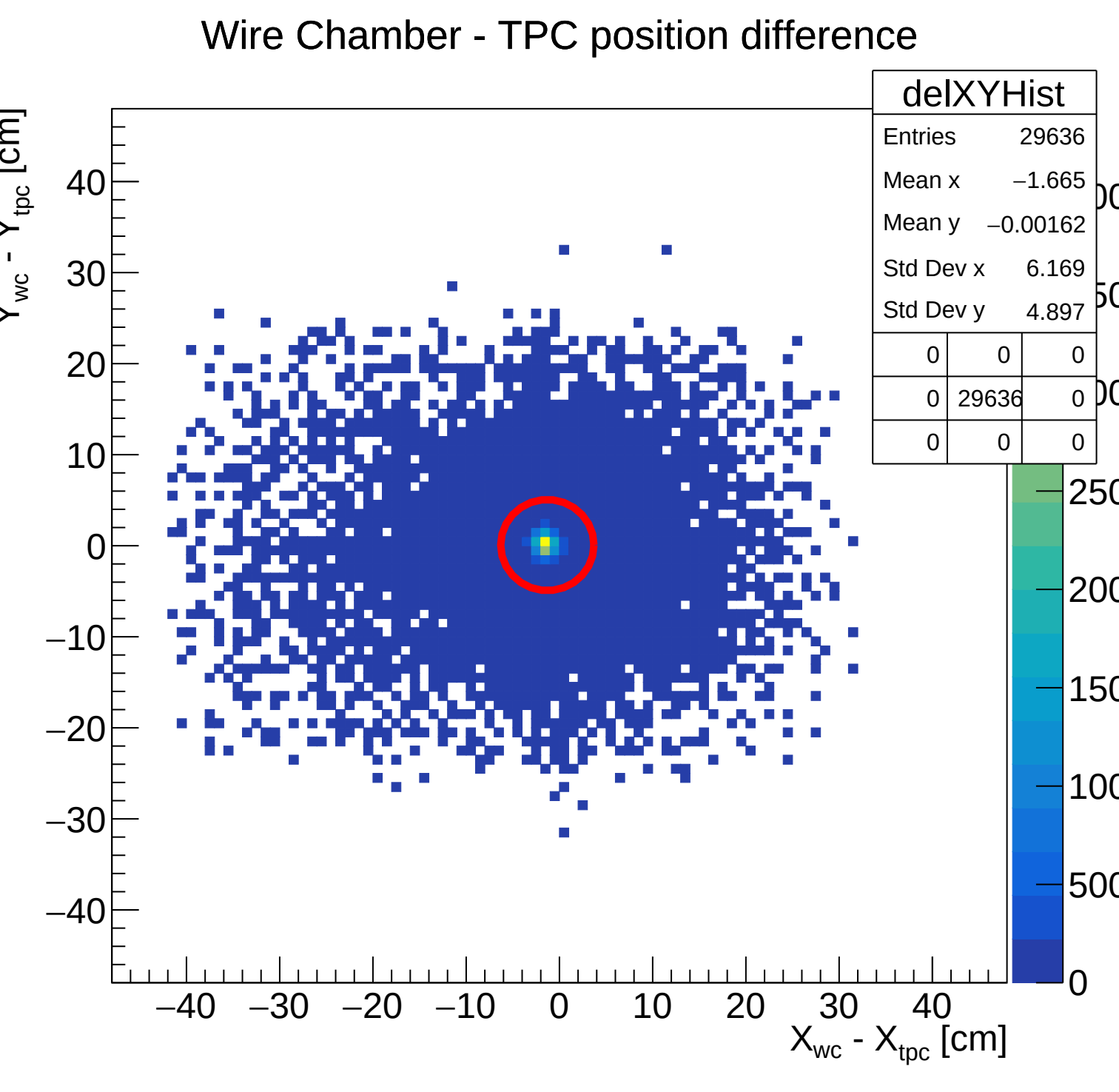
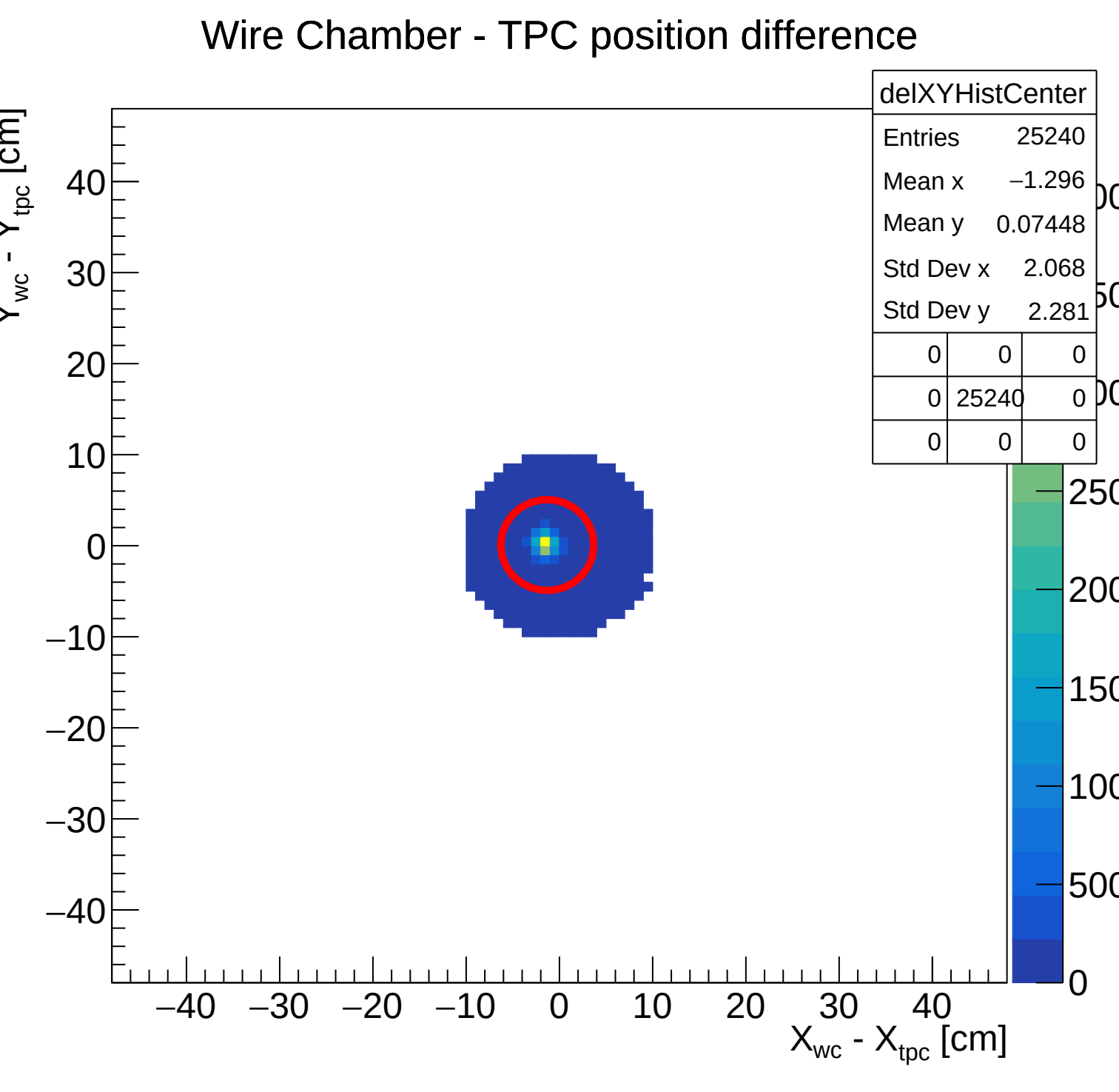
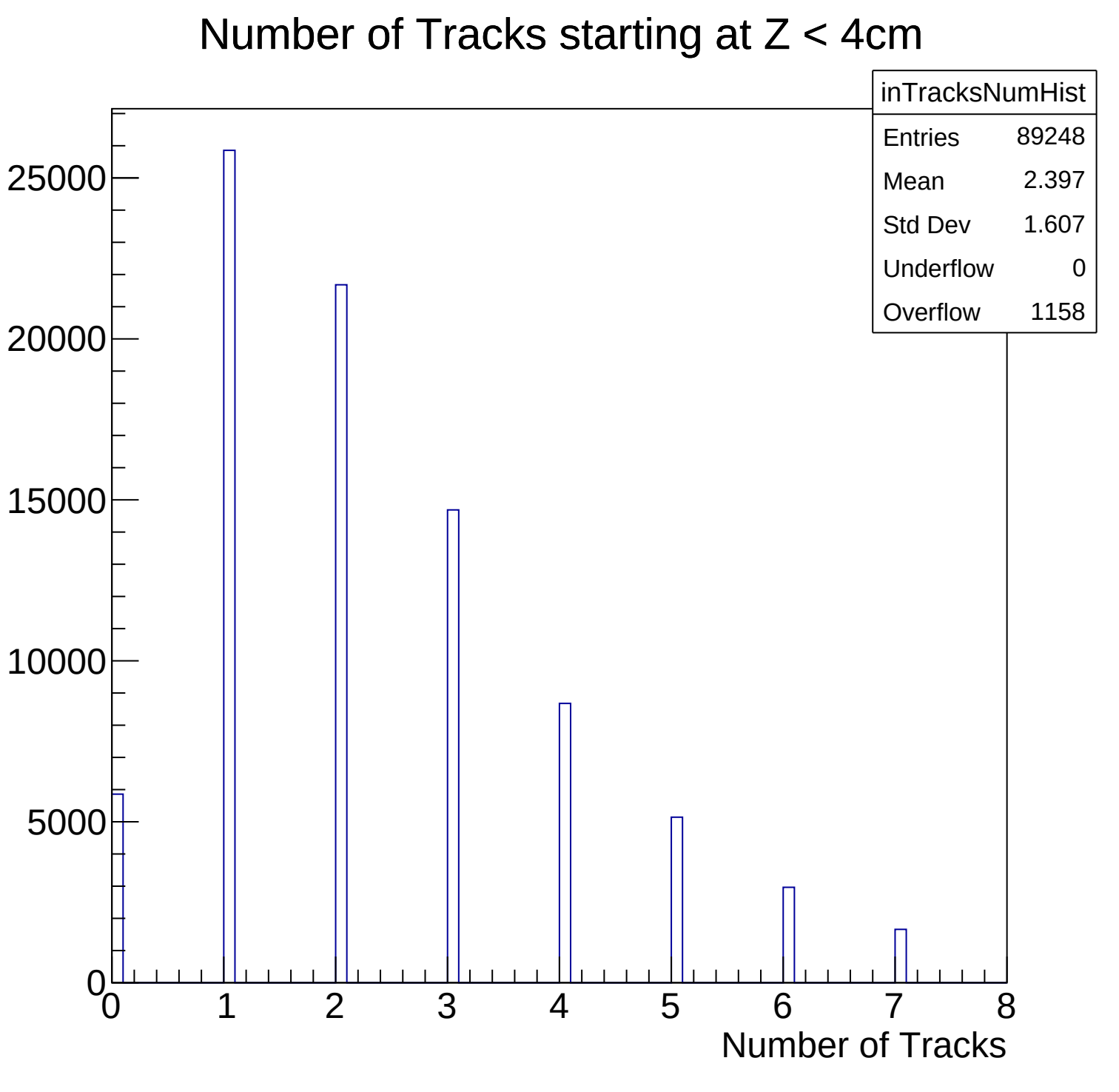
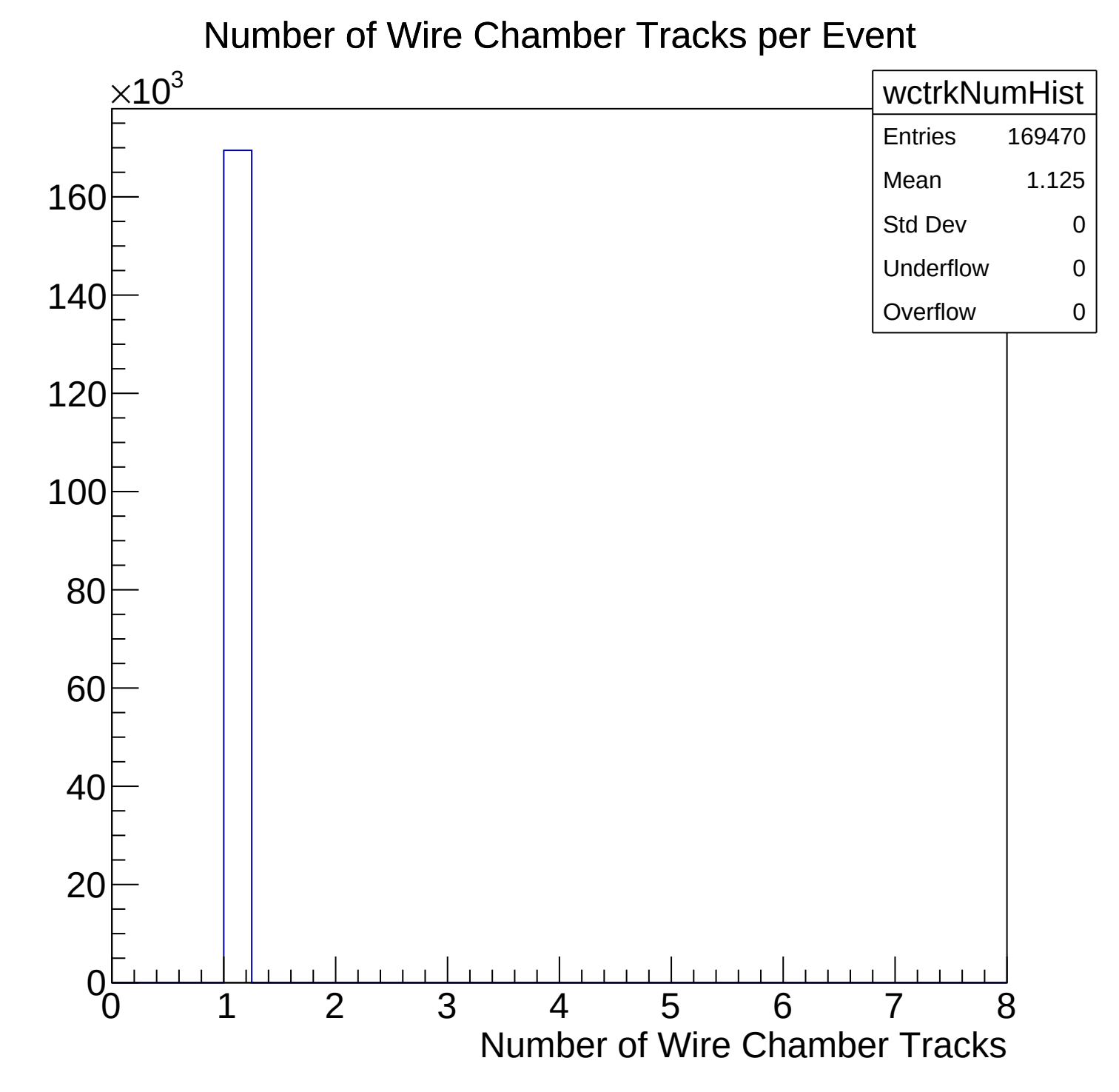
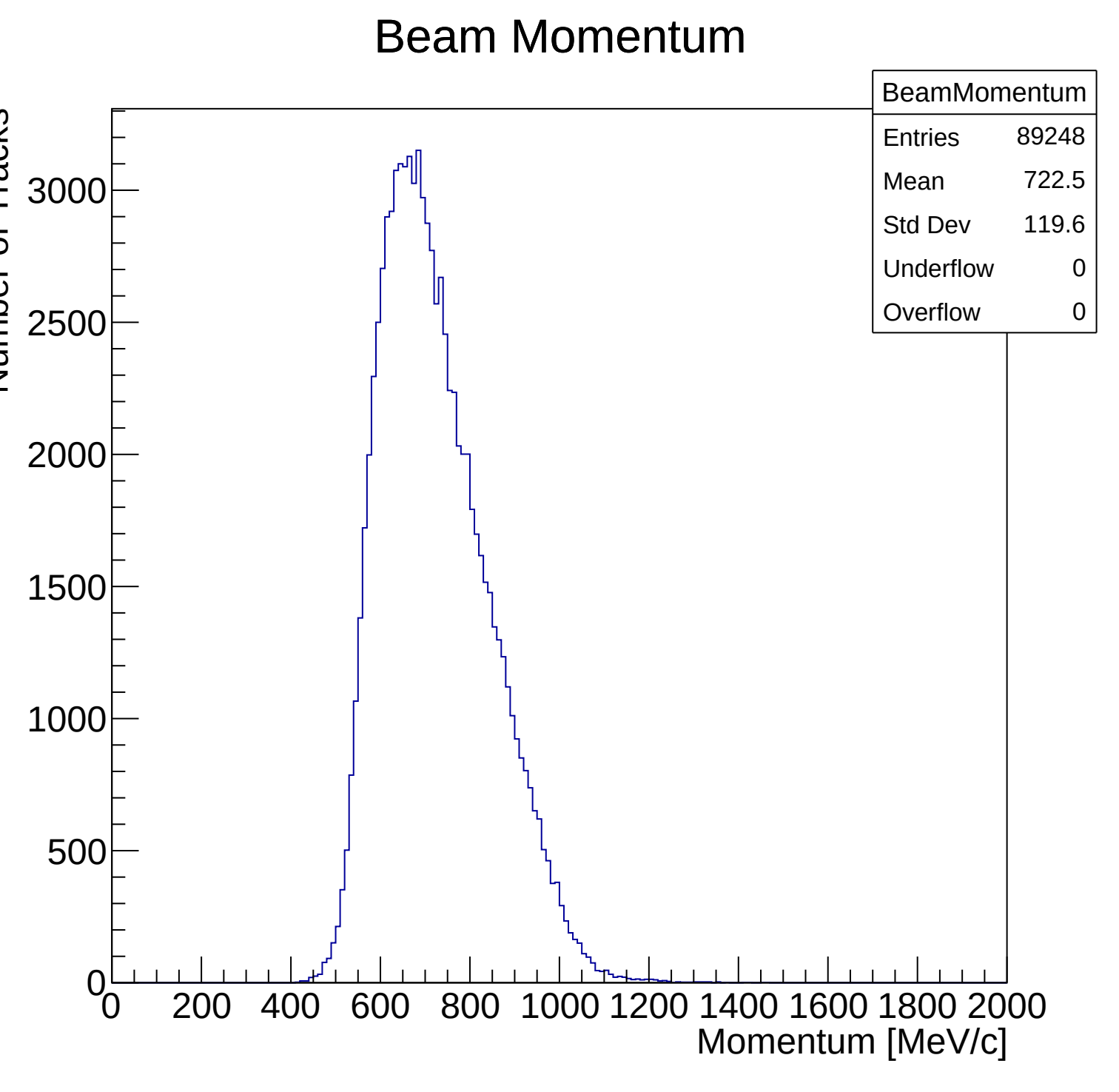
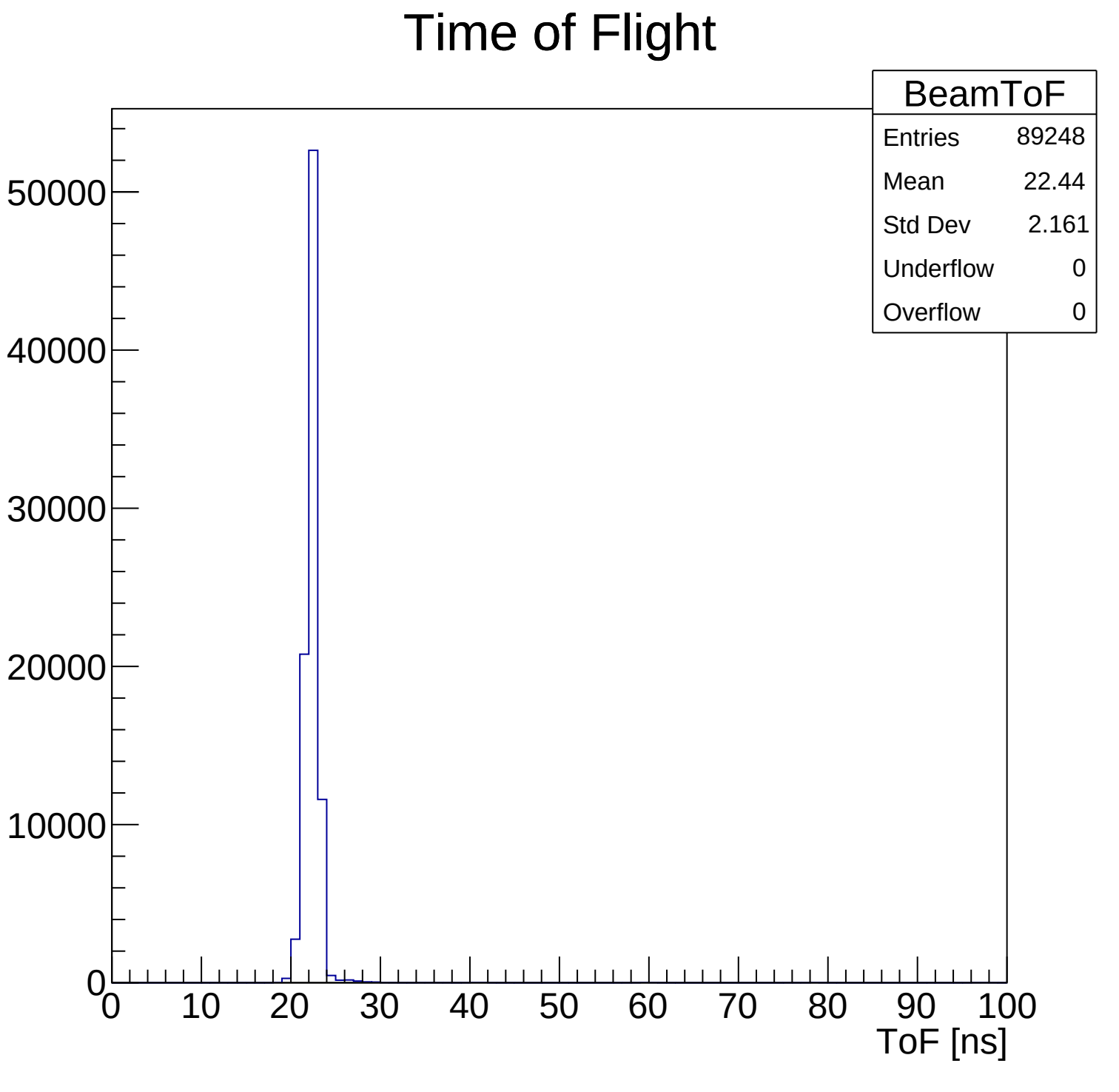

Wire Chamber - TPC position difference
delXYHist
Entries 29636
Mean x −1.665
Mean y −0.00162
Std Dev x 6.169
Std Dev y 4.897
0 0 0
0 29636 0
0 0 0
Y_wc - Y_tpc [cm]
X_wc - X_tpc [cm]
40
30
20
10
0
−10
−20
−30
−40
250
200
150
100
500
0

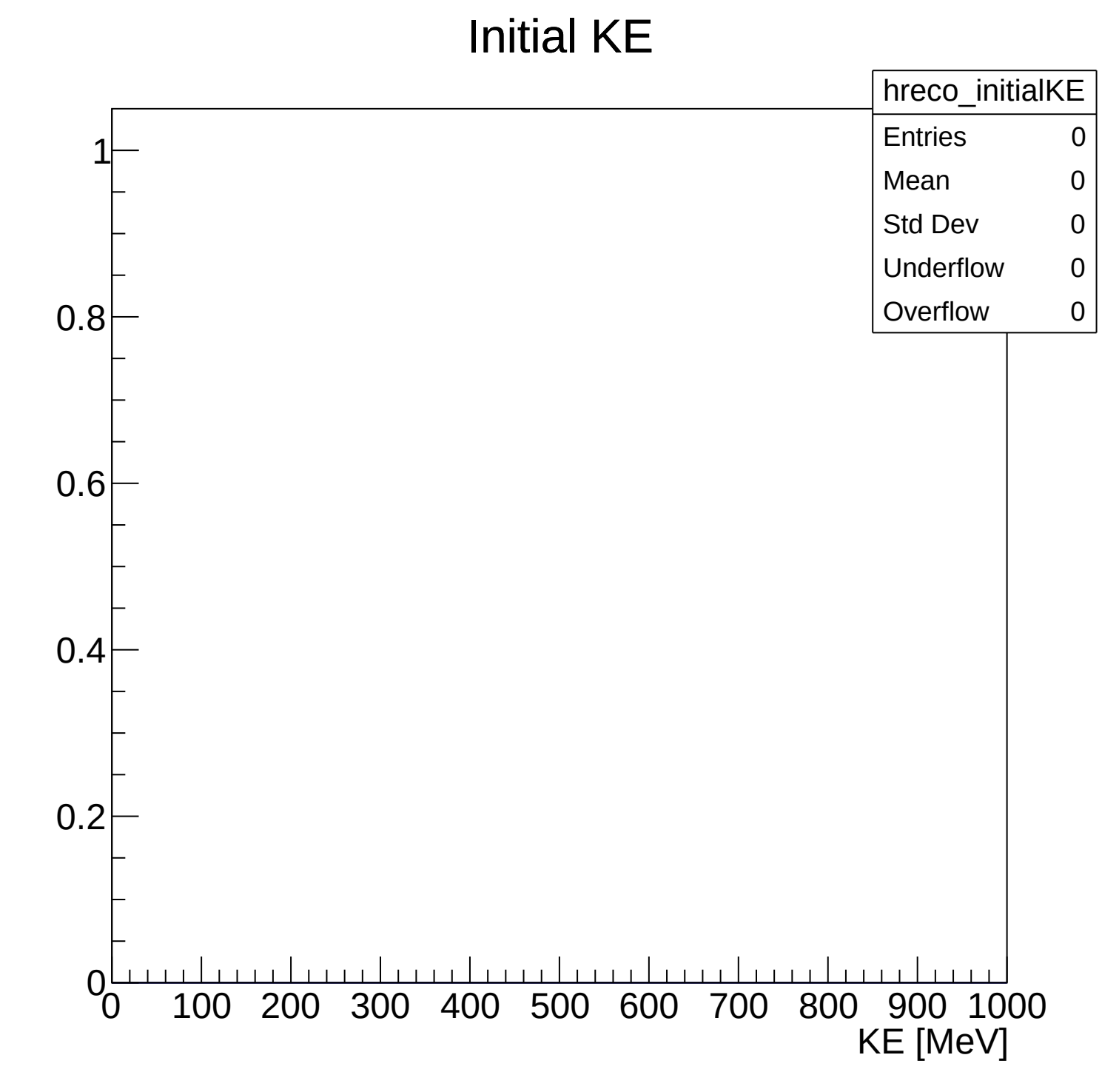

Wire Chamber - TPC position difference
delXYHistCenter
Entries 25240
Mean x −1.296
Mean y 0.07448
Std Dev x 2.068
Std Dev y 2.281
0 0 0
0 25240 0
0 0 0
Y_wc - Y_tpc [cm]
X_wc - X_tpc [cm]
40
30
20
10
0
−10
−20
−30
−40
250
200
150
100
500
0

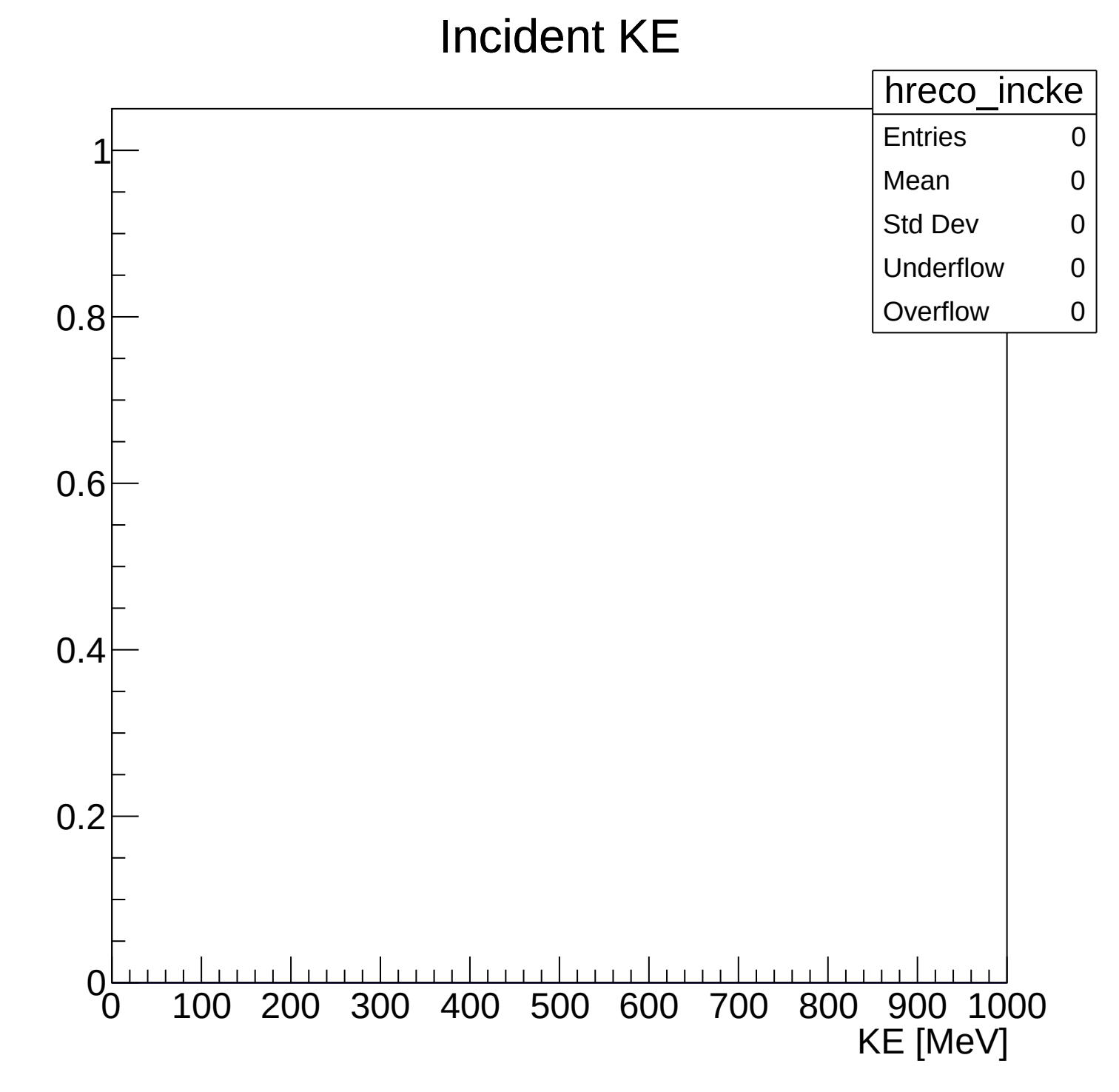

Number of Tracks starting at Z < 4cm
inTracksNumHist
Entries 89248
Mean 2.397
Std Dev 1.607
Underflow 0
Overflow 1158
25000
20000
15000
10000
5000
0
0
1
2
3
4
5
6
7
8
Number of Tracks

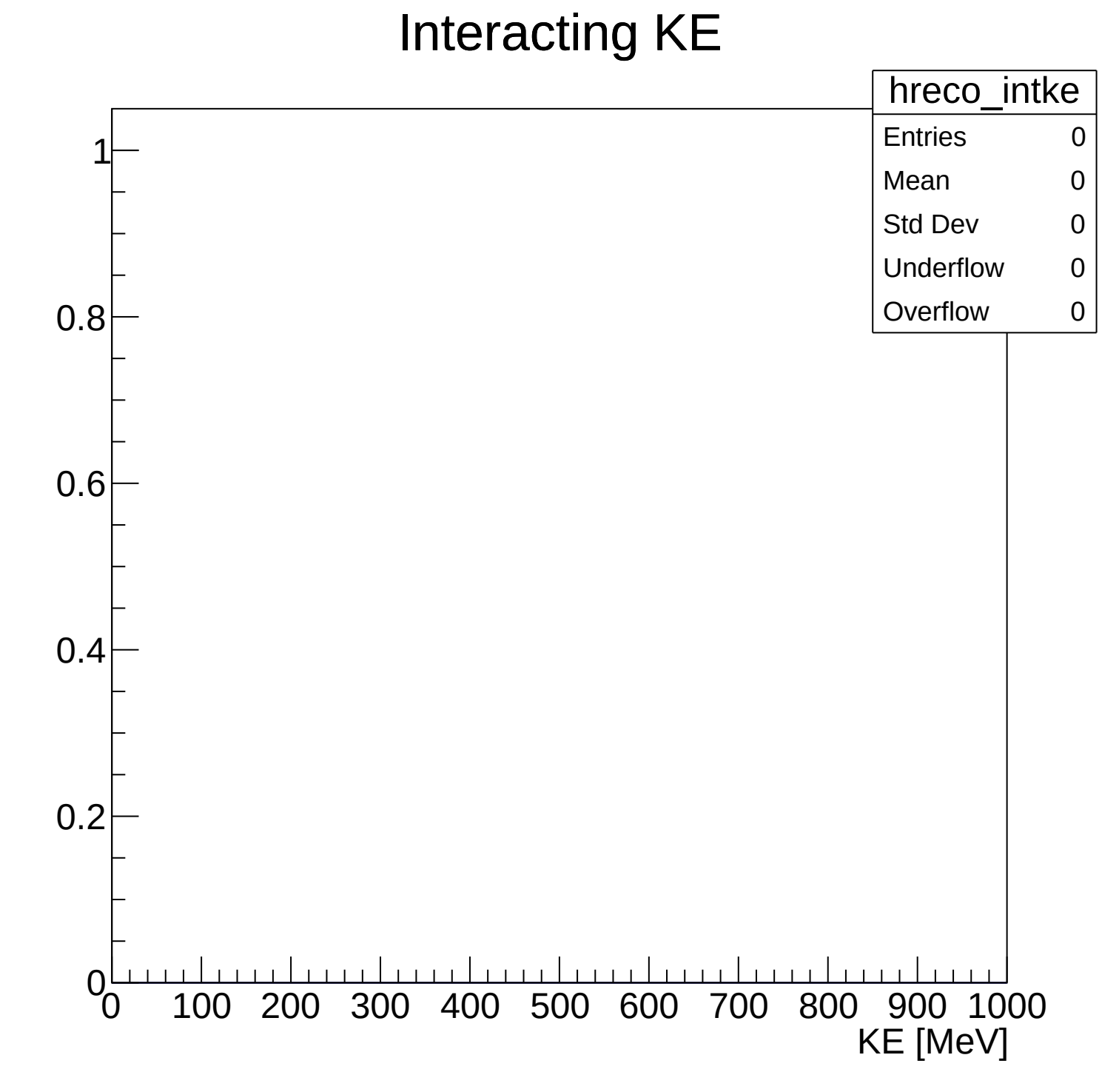

Number of Wire Chamber Tracks per Event
×10^3
wctrkNumHist
Entries 169470
Mean 1.125
Std Dev 0
Underflow 0
Overflow 0
160
140
120
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8
Number of Wire Chamber Tracks

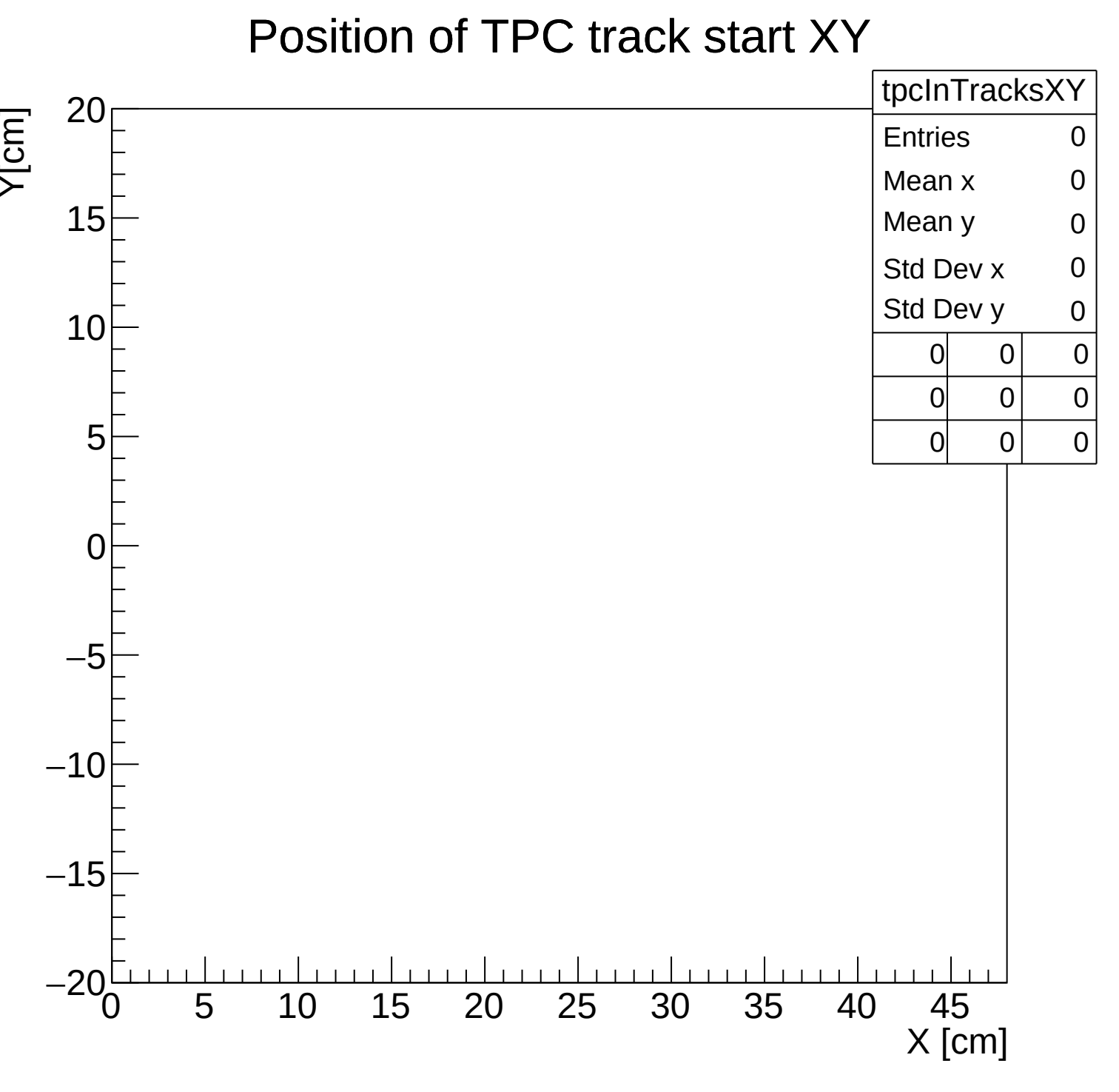

Beam Momentum
BeamMomentum
Entries 89248
Mean 722.5
Std Dev 119.6
Underflow 0
Overflow 0
Number of Tracks
3000
2500
2000
1500
1000
500
0
0 200 400 600 800 1000 1200 1400 1600 1800 2000
Momentum [MeV/c]

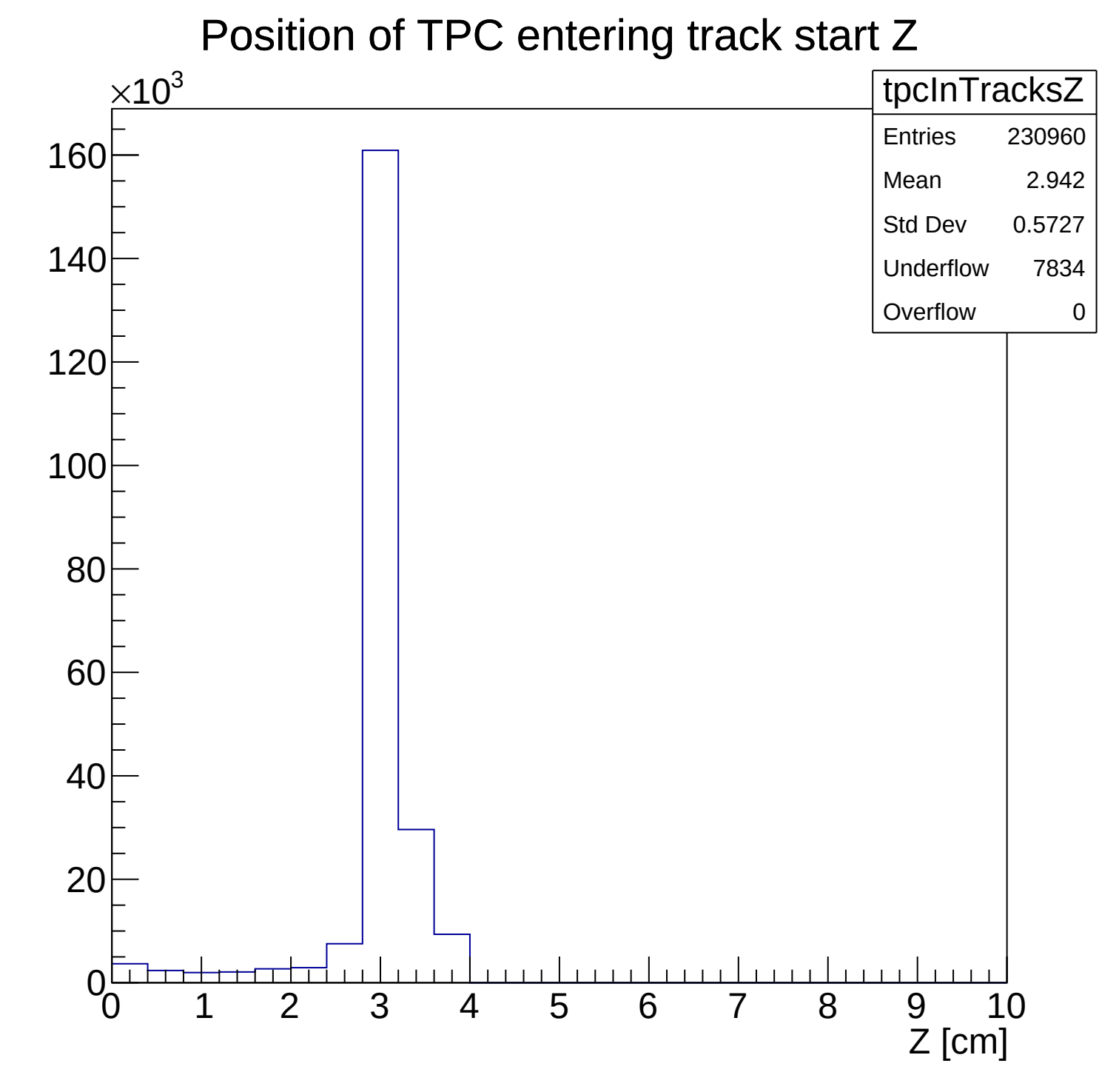

Time of Flight
BeamToF
Entries 89248
Mean 22.44
Std Dev 2.161
Underflow 0
Overflow 0
50000
40000
30000
20000
10000
0
0 10 20 30 40 50 60 70 80 90 100
ToF [ns]

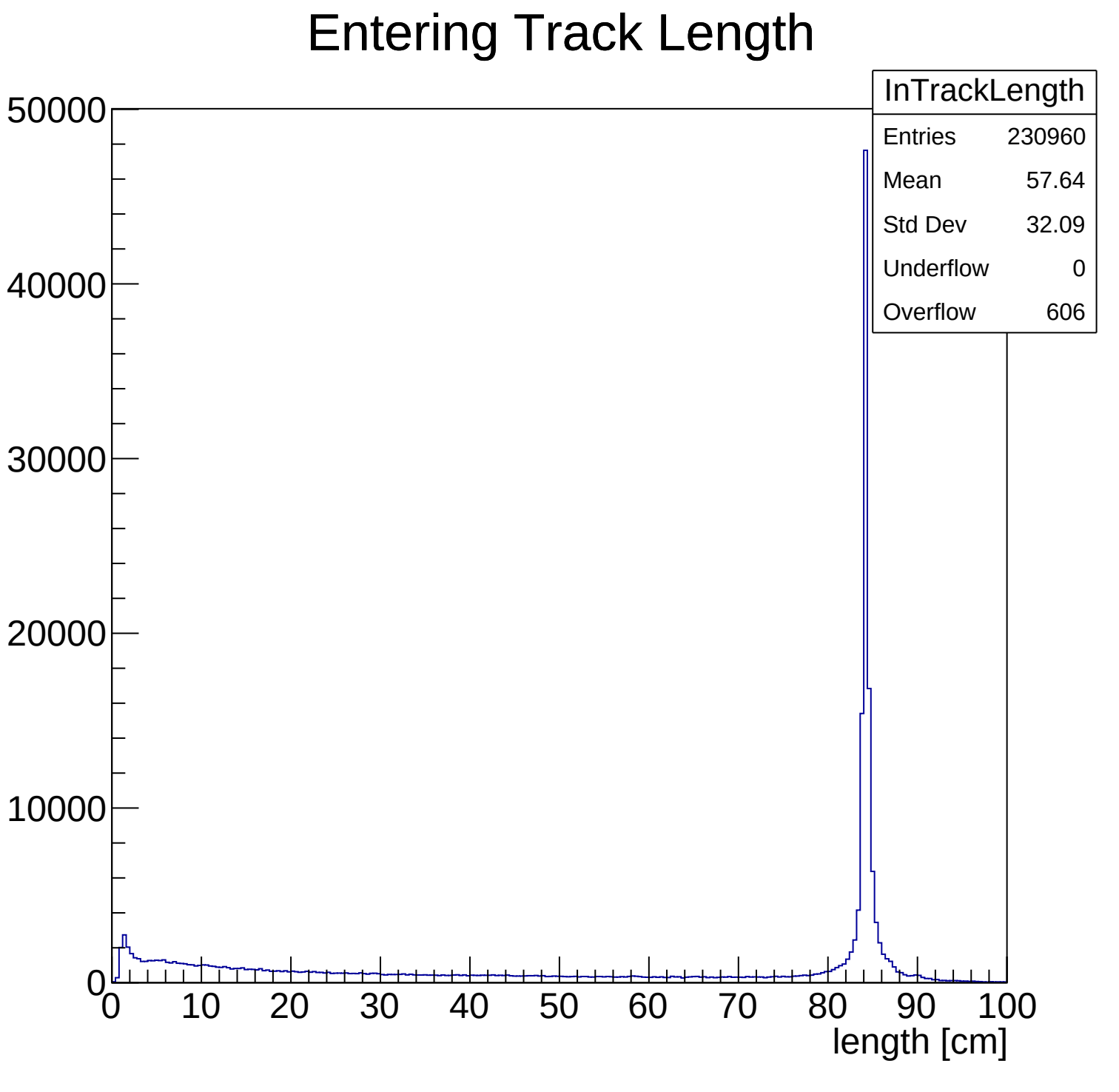

Initial KE
hreco_initialKE
Entries 0
Mean 0
Std Dev 0
Underflow 0
Overflow 0
1
0.8
0.6
0.4
0.2
0
0 100 200 300 400 500 600 700 800 900 1000
KE [MeV]

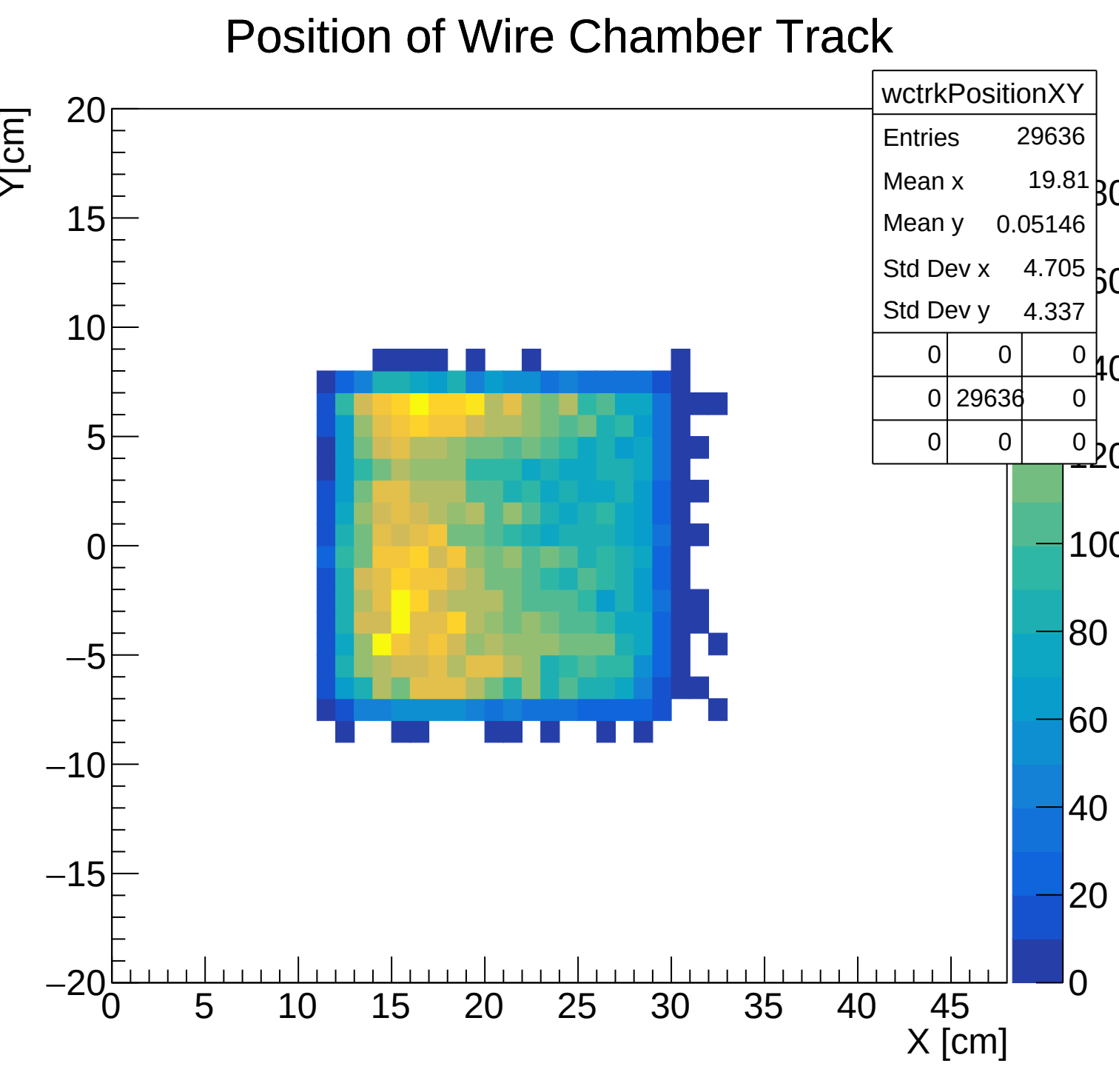

Incident KE
hreco_incke
Entries 0
Mean 0
Std Dev 0
Underflow 0
Overflow 0
1
0.8
0.6
0.4
0.2
0
0 100 200 300 400 500 600 700 800 900 1000
KE [MeV]

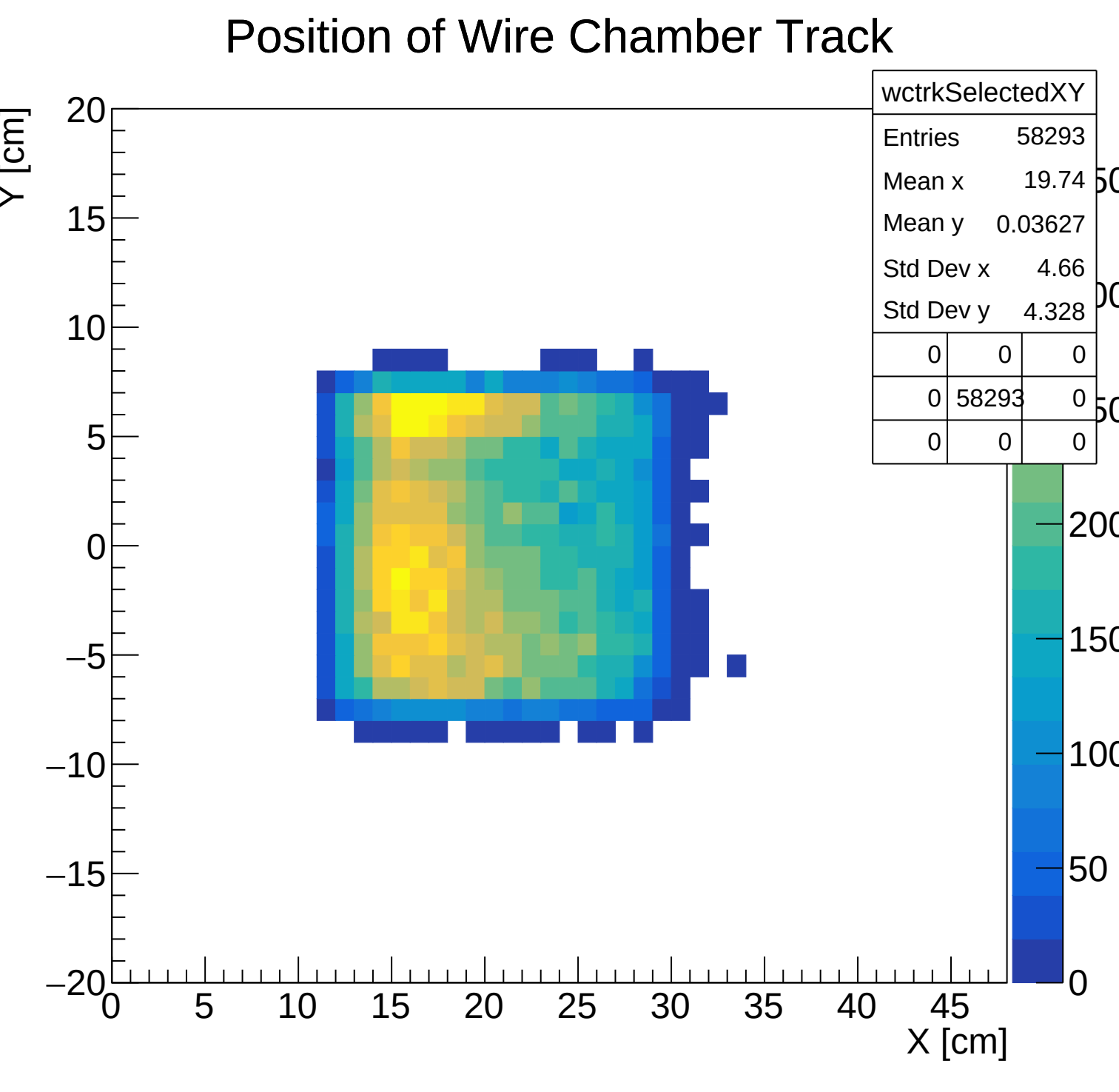

Interacting KE
hreco_intke
Entries 0
Mean 0
Std Dev 0
Underflow 0
Overflow 0
1
0.8
0.6
0.4
0.2
0
0 100 200 300 400 500 600 700 800 900 1000
KE [MeV]

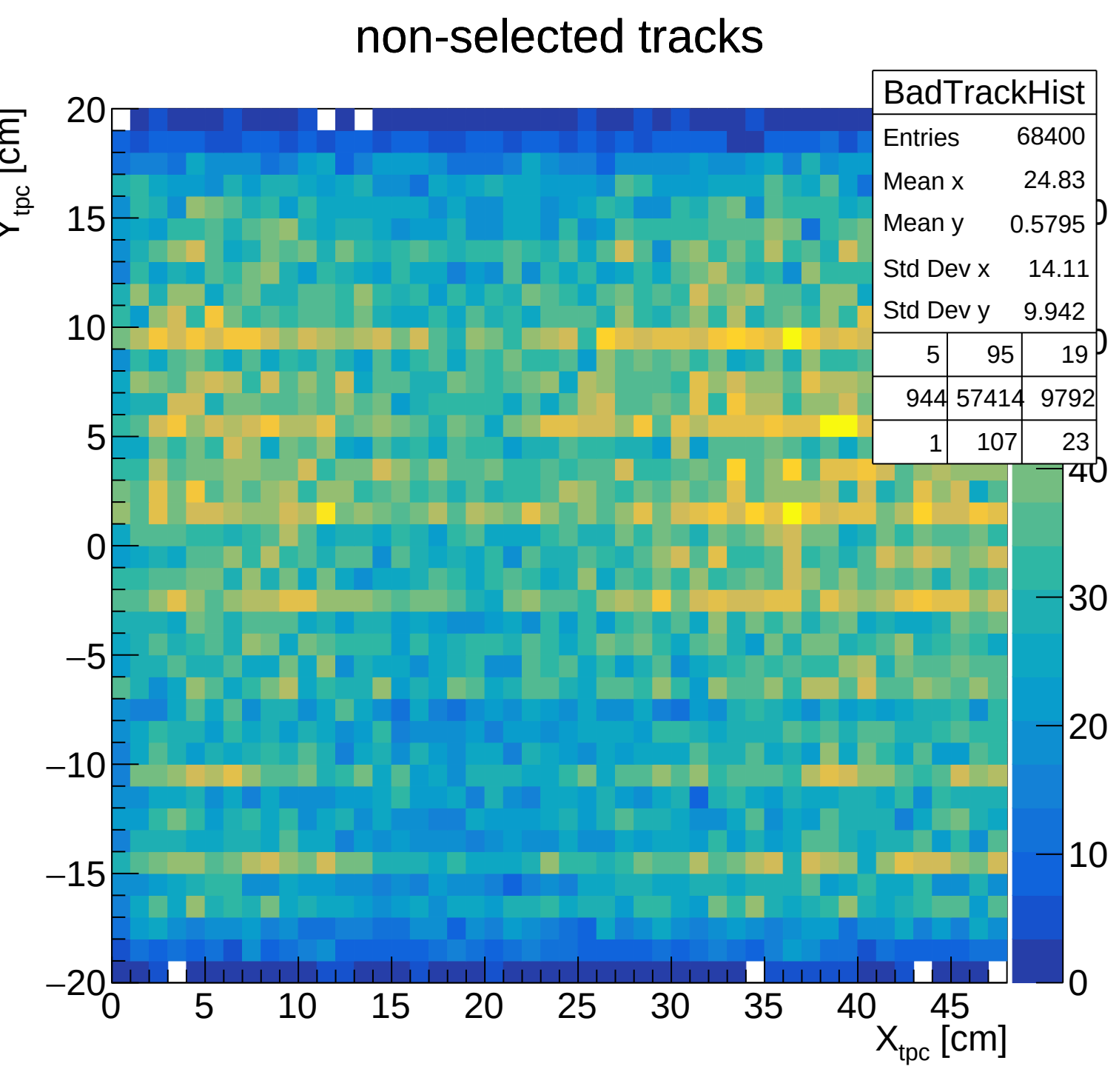

Position of TPC track start XY
tpcInTracksXY
Entries 0
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
0 0 0
0 0 0
0 0 0
Y[cm]
20
15
10
5
0
−5
−10
−15
−20
0
5
10
15
20
25
30
35
40
45
X [cm]

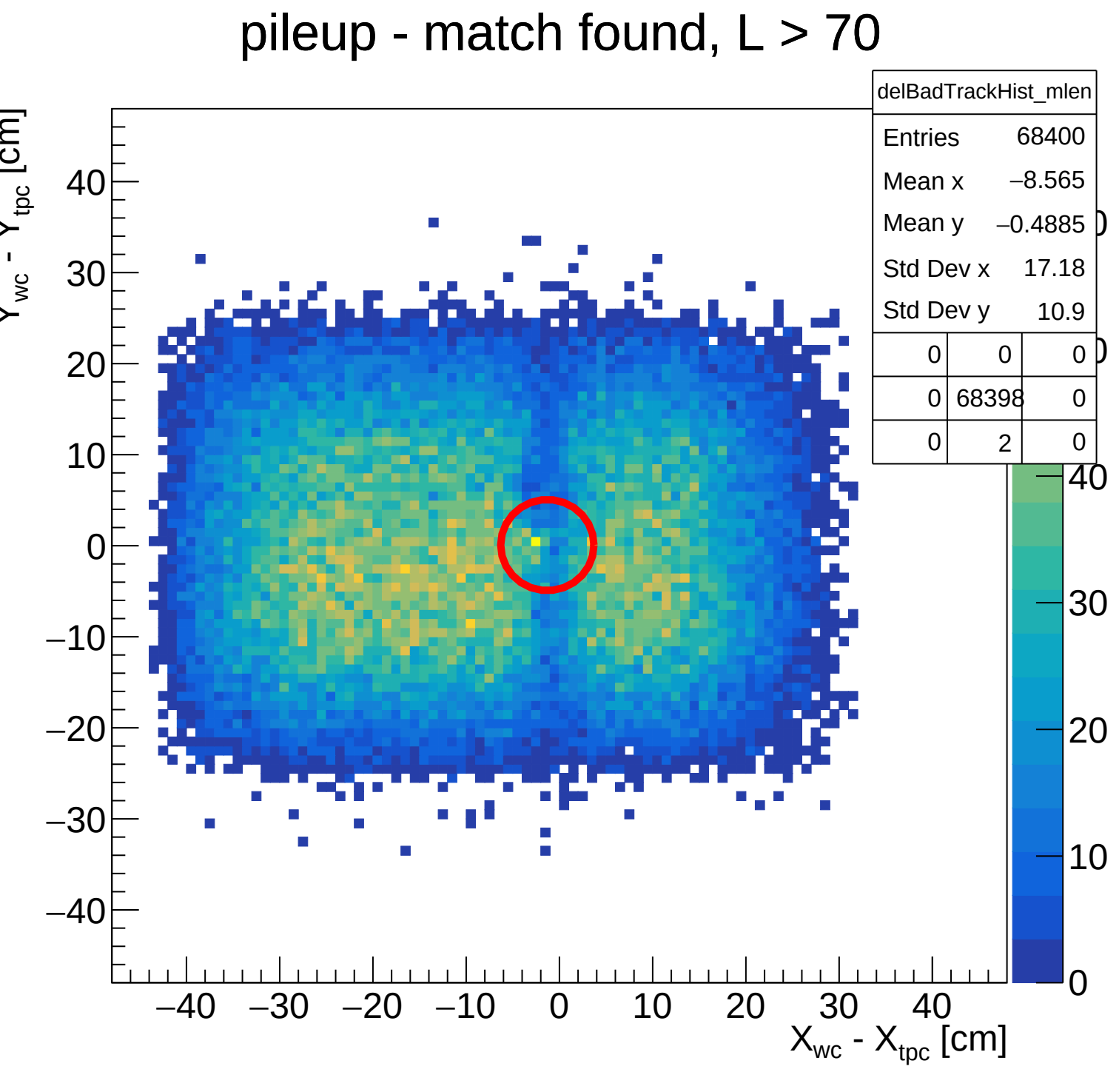

Position of TPC entering track start Z
×10^3
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10
Z [cm]
tpcInTracksZ
Entries 230960
Mean 2.942
Std Dev 0.5727
Underflow 7834
Overflow 0

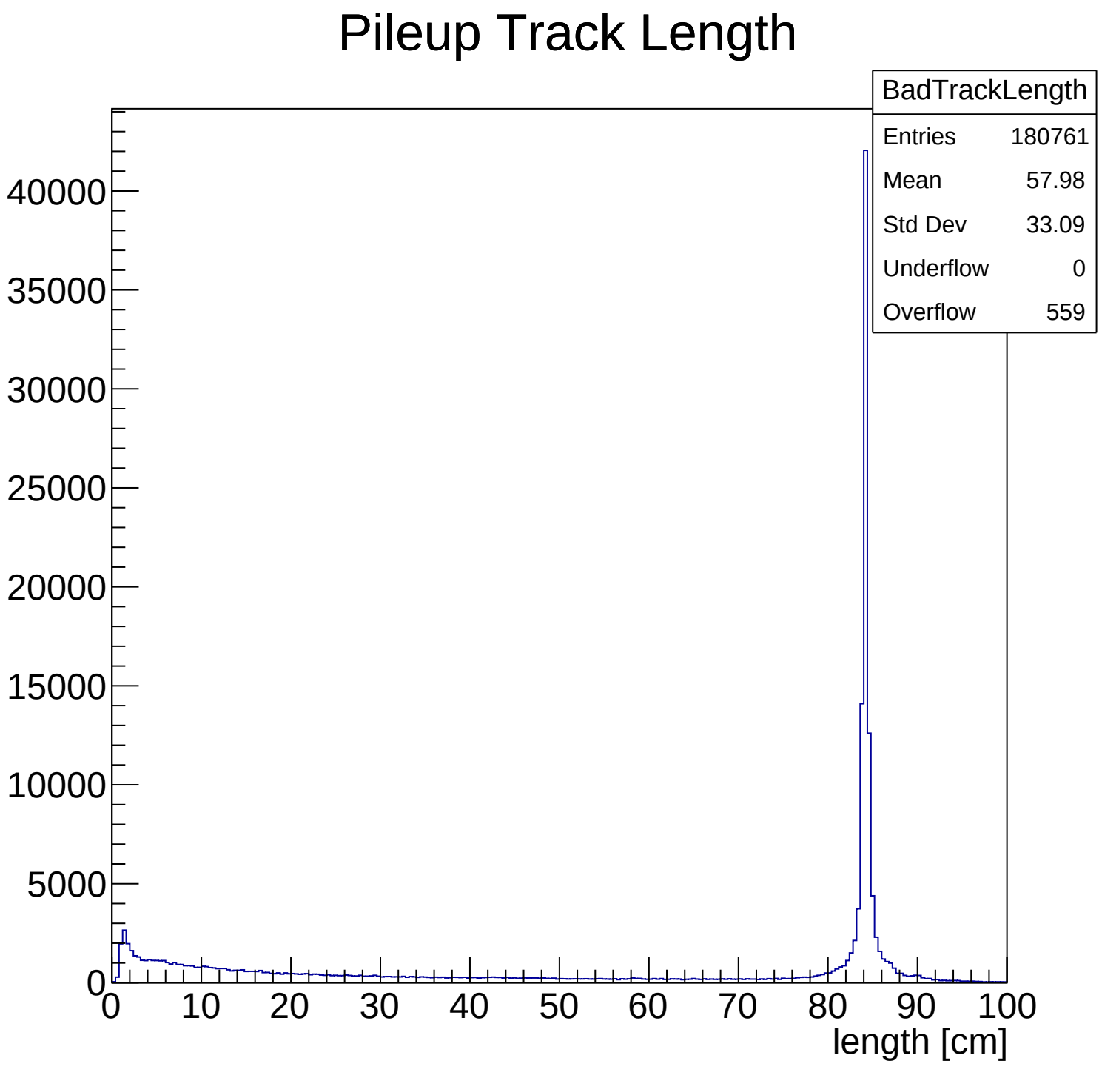

Entering Track Length
InTrackLength
Entries 230960
Mean 57.64
Std Dev 32.09
Underflow 0
Overflow 606
50000
40000
30000
20000
10000
0
0 10 20 30 40 50 60 70 80 90 100
length [cm]

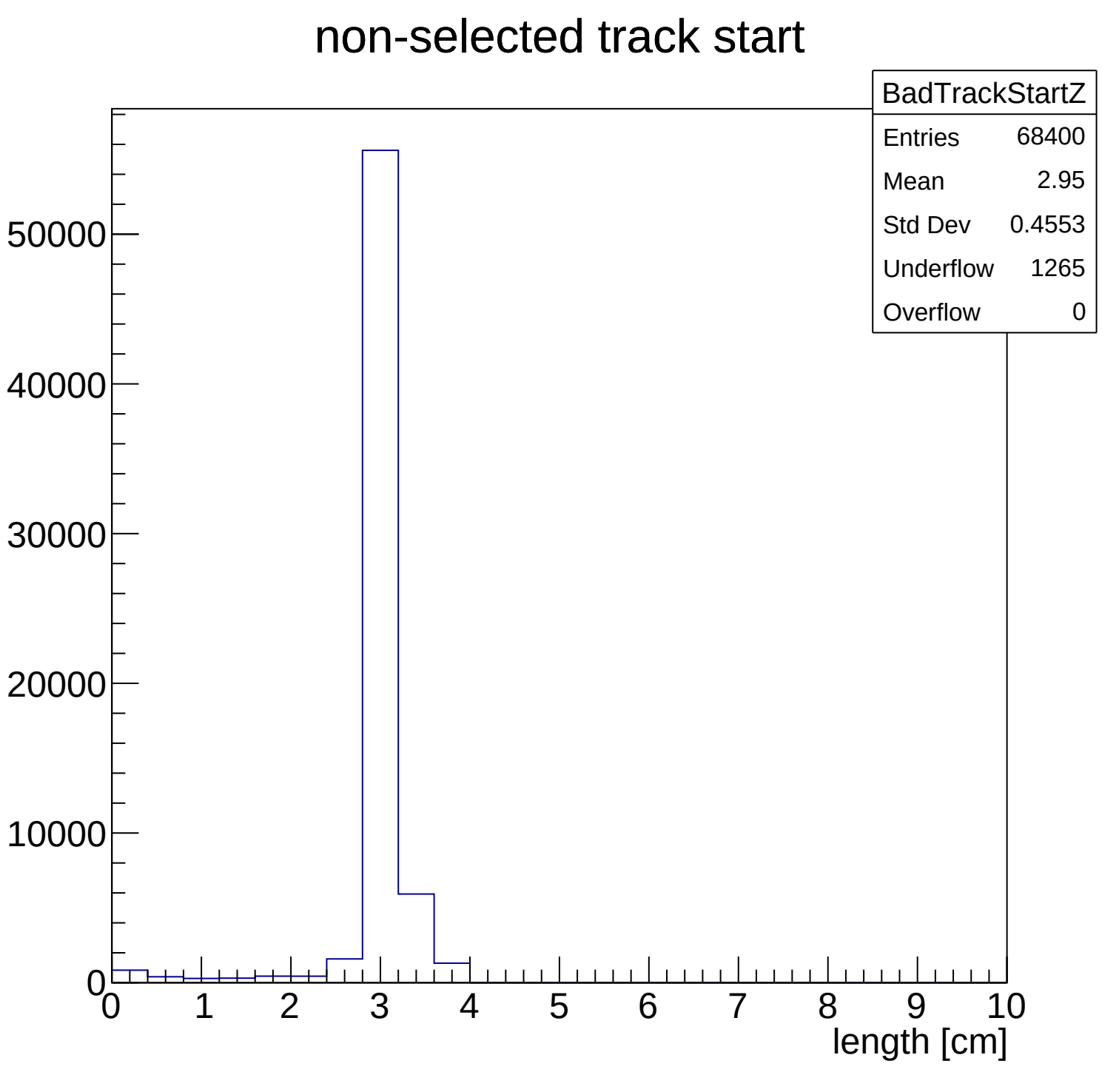

Position of Wire Chamber Track
wctrkPositionXY
Entries 29636
Mean x 19.81
Mean y 0.05146
Std Dev x 4.705
Std Dev y 4.337
0 0 0
0 29636 0
0 0 0
Y[cm]
X [cm]
20
15
10
5
0
−5
−10
−15
−20
0
5
10
15
20
25
30
35
40
45
100
80
60
40
20
0

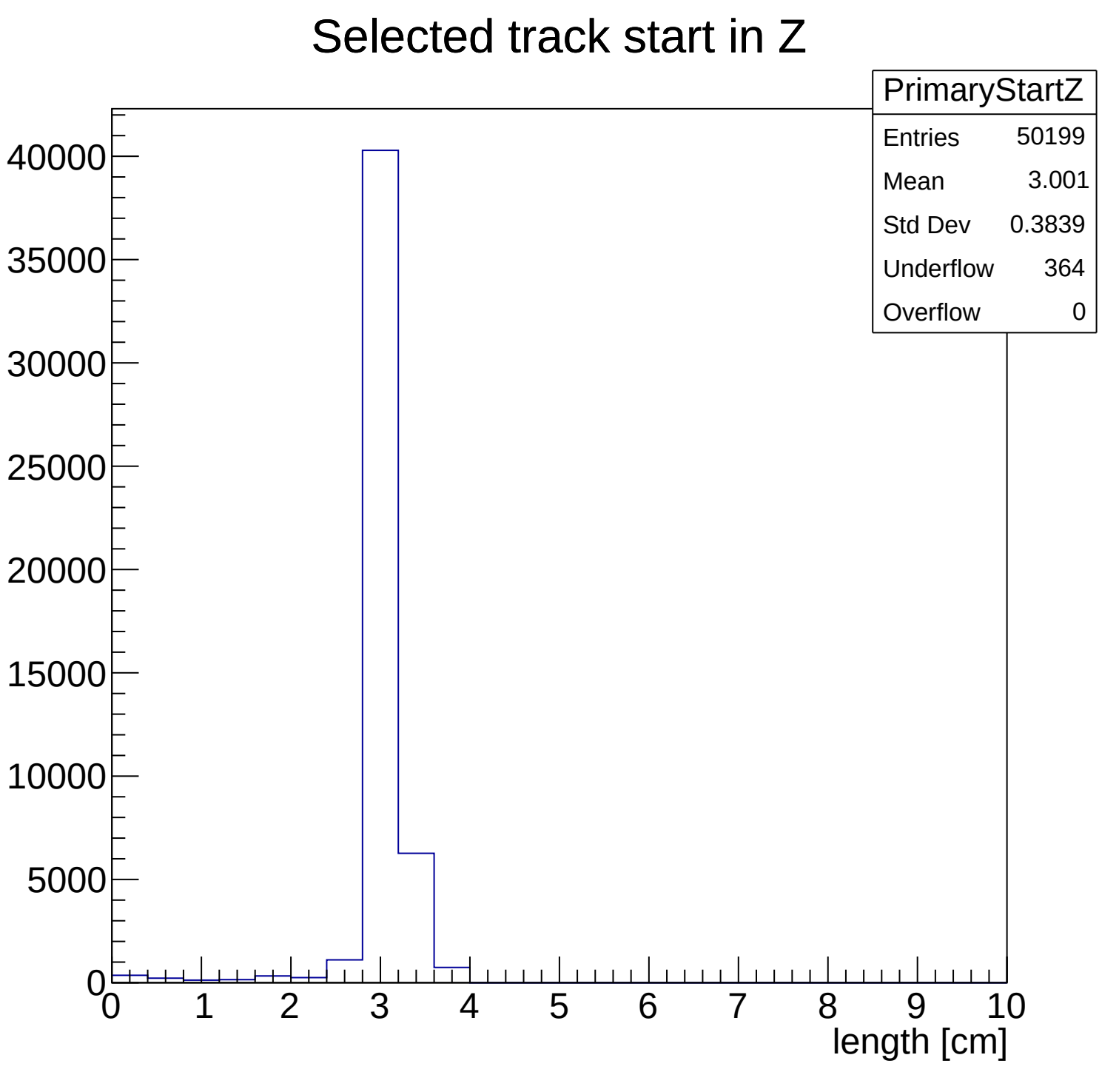

Position of Wire Chamber Track
wctrkSelectedXY
Entries 58293
Mean x 19.74
Mean y 0.03627
Std Dev x 4.66
Std Dev y 4.328
0 0 0
0 58293 0
0 0 0
Y [cm]
X [cm]
20
15
10
5
0
−5
−10
−15
−20
0
5
10
15
20
25
30
35
40
45
200
150
100
50
0

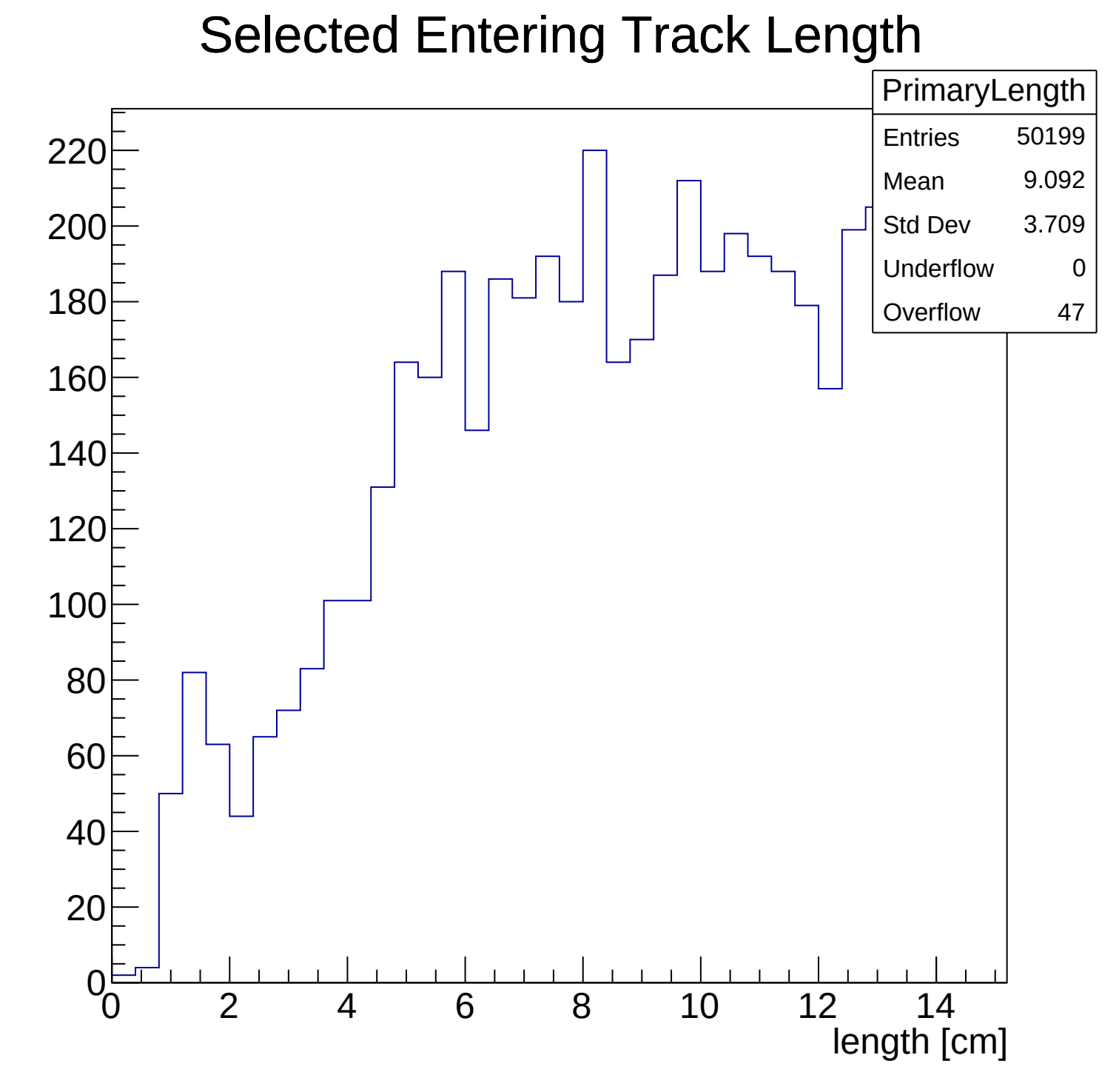

non-selected tracks
BadTrackHist
Entries 68400
Mean x 24.83
Mean y 0.5795
Std Dev x 14.11
Std Dev y 9.942
5 95 19
944 57414 9792
1 107 23
Y_tpc [cm]
X_tpc [cm]
20
15
10
5
0
−5
−10
−15
−20
0
5
10
15
20
25
30
35
40
45
40
30
20
10
0

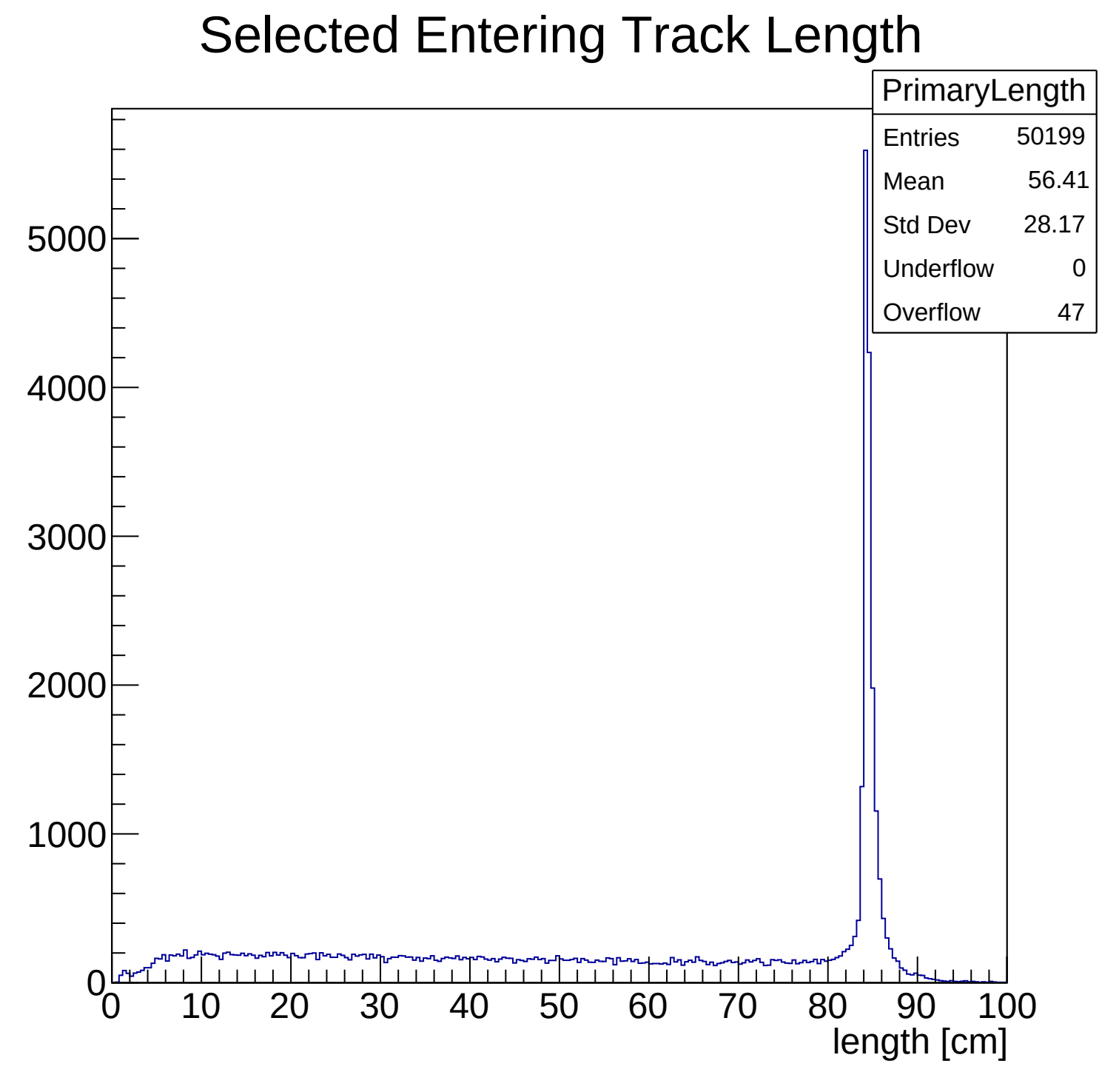

pileup - match found, L > 70
delBadTrackHist_mlen
Entries 68400
Mean x −8.565
Mean y −0.4885
Std Dev x 17.18
Std Dev y 10.9
0 0 0
0 68398 0
0 2 0
Y_wc - Y_tpc [cm]
X_wc - X_tpc [cm]
40
30
20
10
0
−10
−20
−30
−40

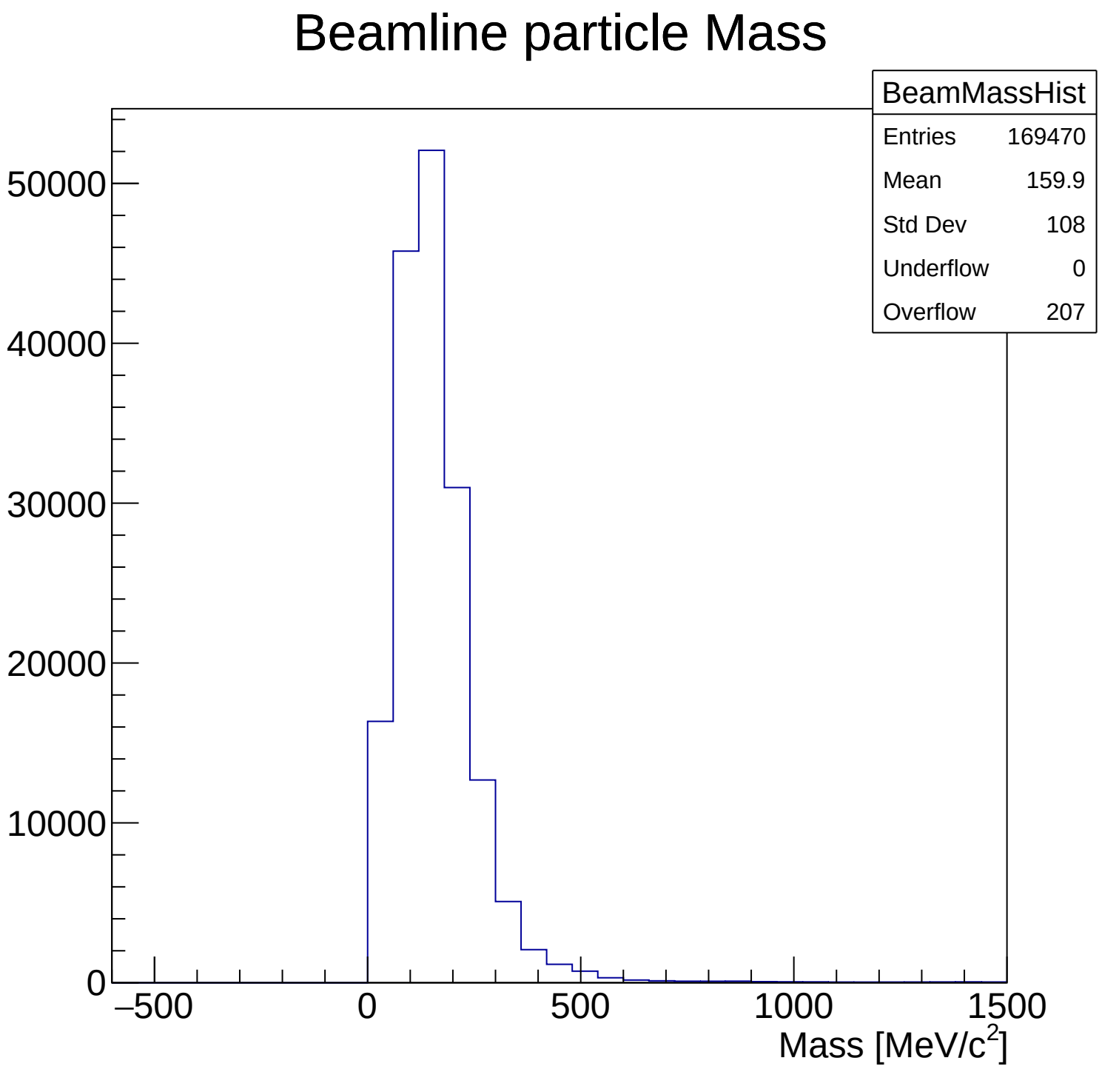

Pileup Track Length
BadTrackLength
Entries 180761
Mean 57.98
Std Dev 33.09
Underflow 0
Overflow 559
40000
35000
30000
25000
20000
15000
10000
5000
0
0 10 20 30 40 50 60 70 80 90 100
length [cm]

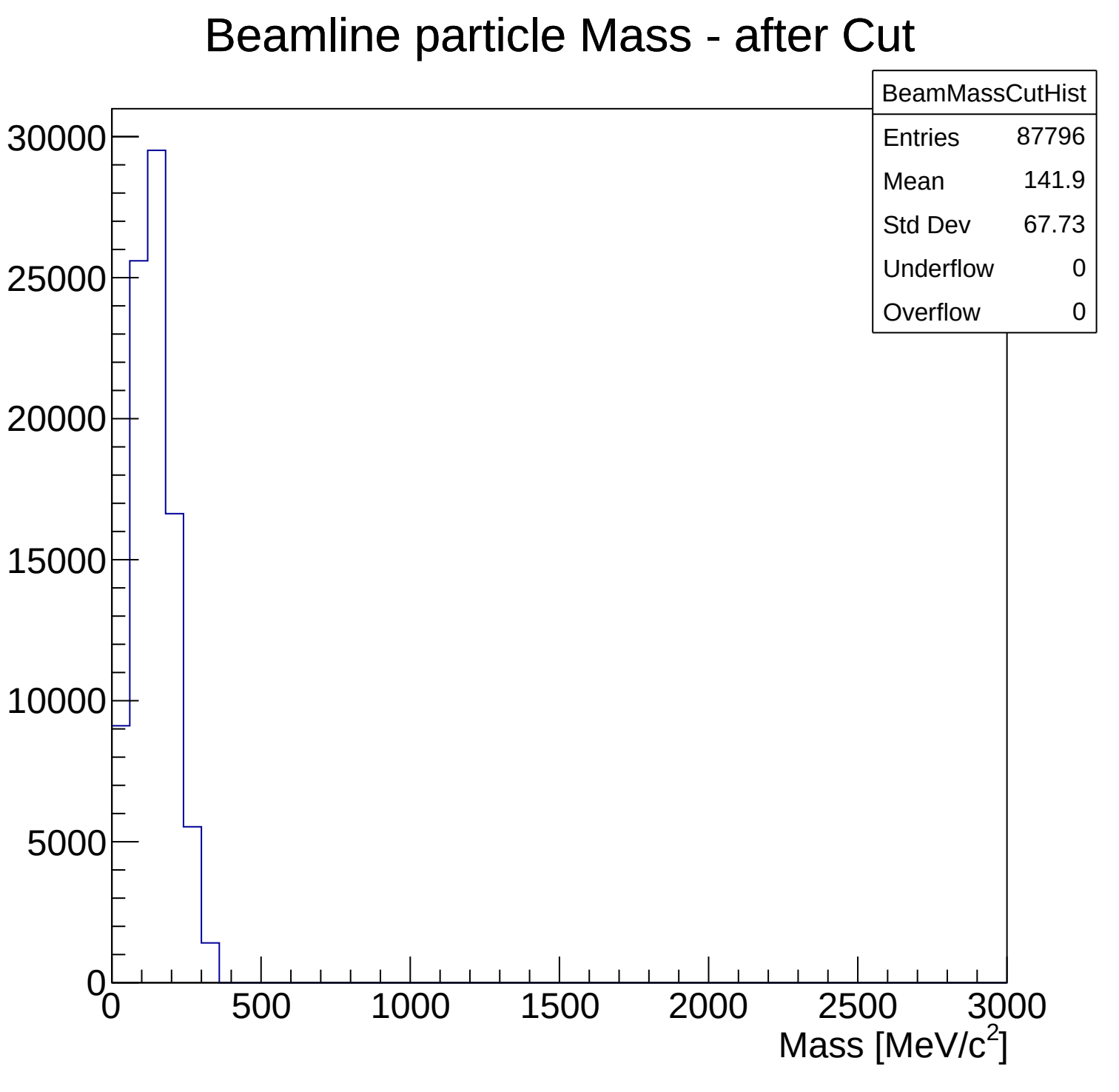

non-selected track start
BadTrackStartZ
Entries 68400
Mean 2.95
Std Dev 0.4553
Underflow 1265
Overflow 0
50000
40000
30000
20000
10000
0
0 1 2 3 4 5 6 7 8 9 10
length [cm]

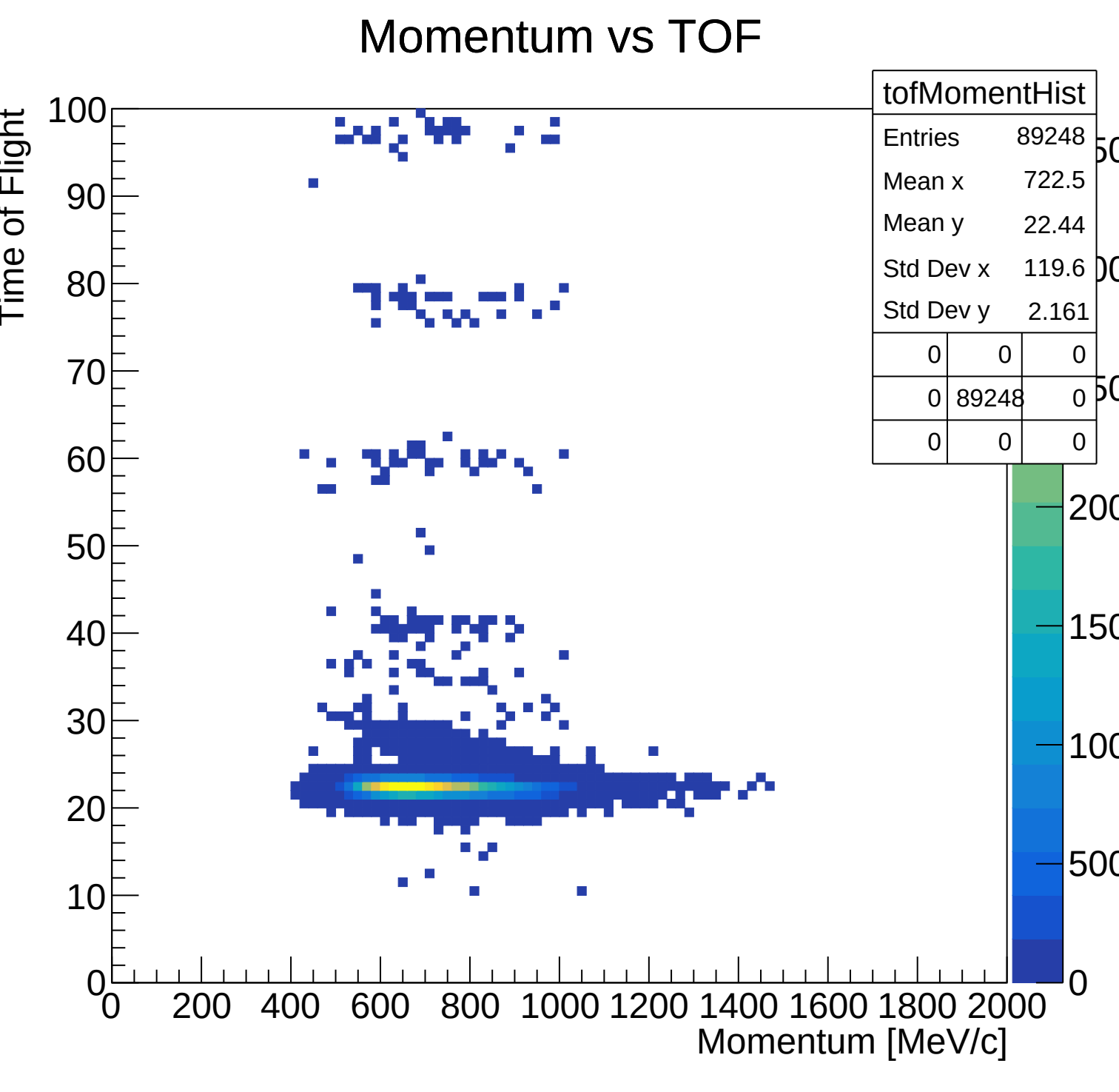

Selected track start in Z
PrimaryStartZ
Entries 50199
Mean 3.001
Std Dev 0.3839
Underflow 364
Overflow 0
40000
35000
30000
25000
20000
15000
10000
5000
0
0 1 2 3 4 5 6 7 8 9 10
length [cm]

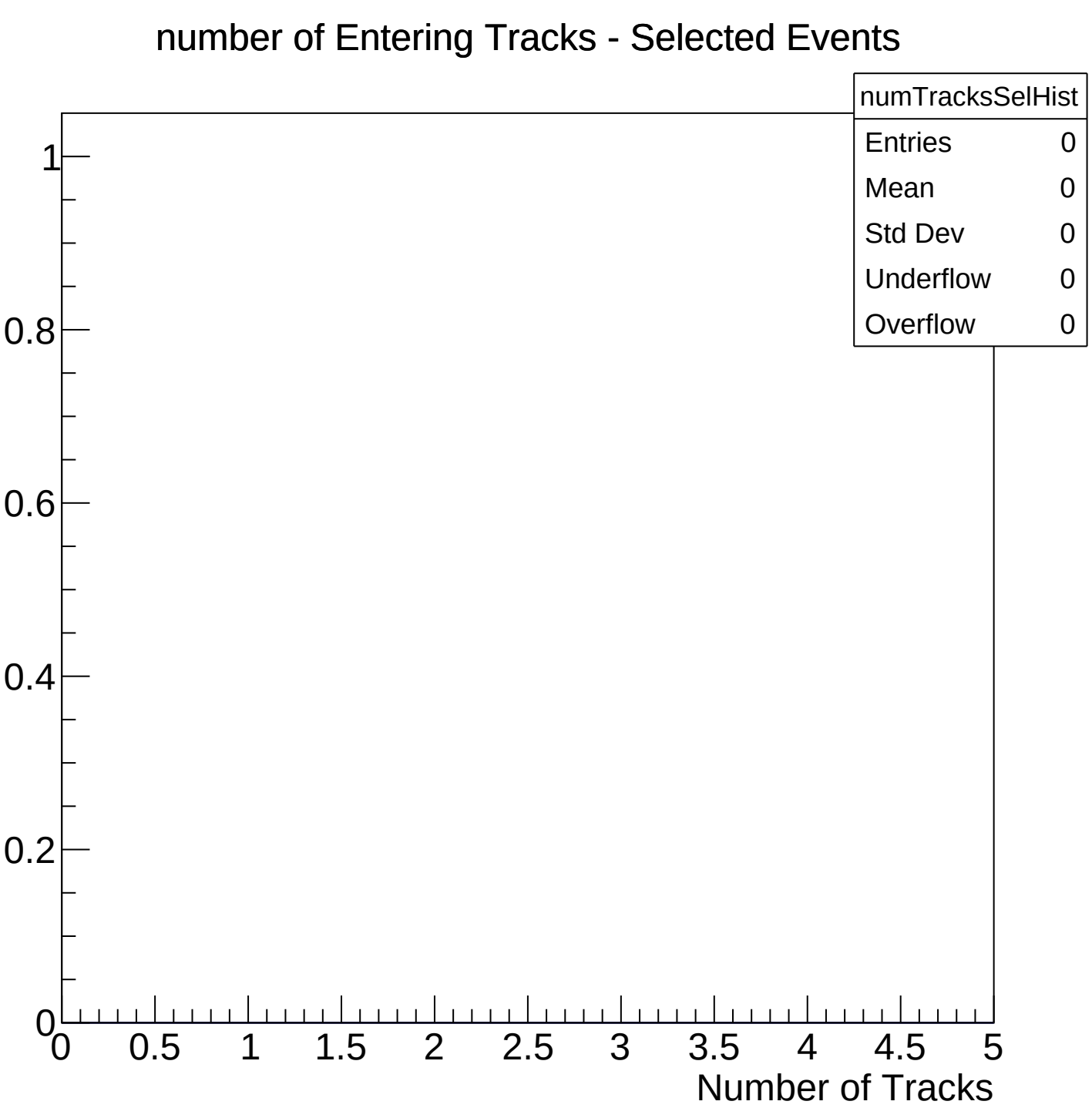

Selected Entering Track Length
PrimaryLength
Entries 50199
Mean 9.092
Std Dev 3.709
Underflow 0
Overflow 47
220
200
180
160
140
120
100
80
60
40
20
0
0
2
4
6
8
10
12
14
length [cm]

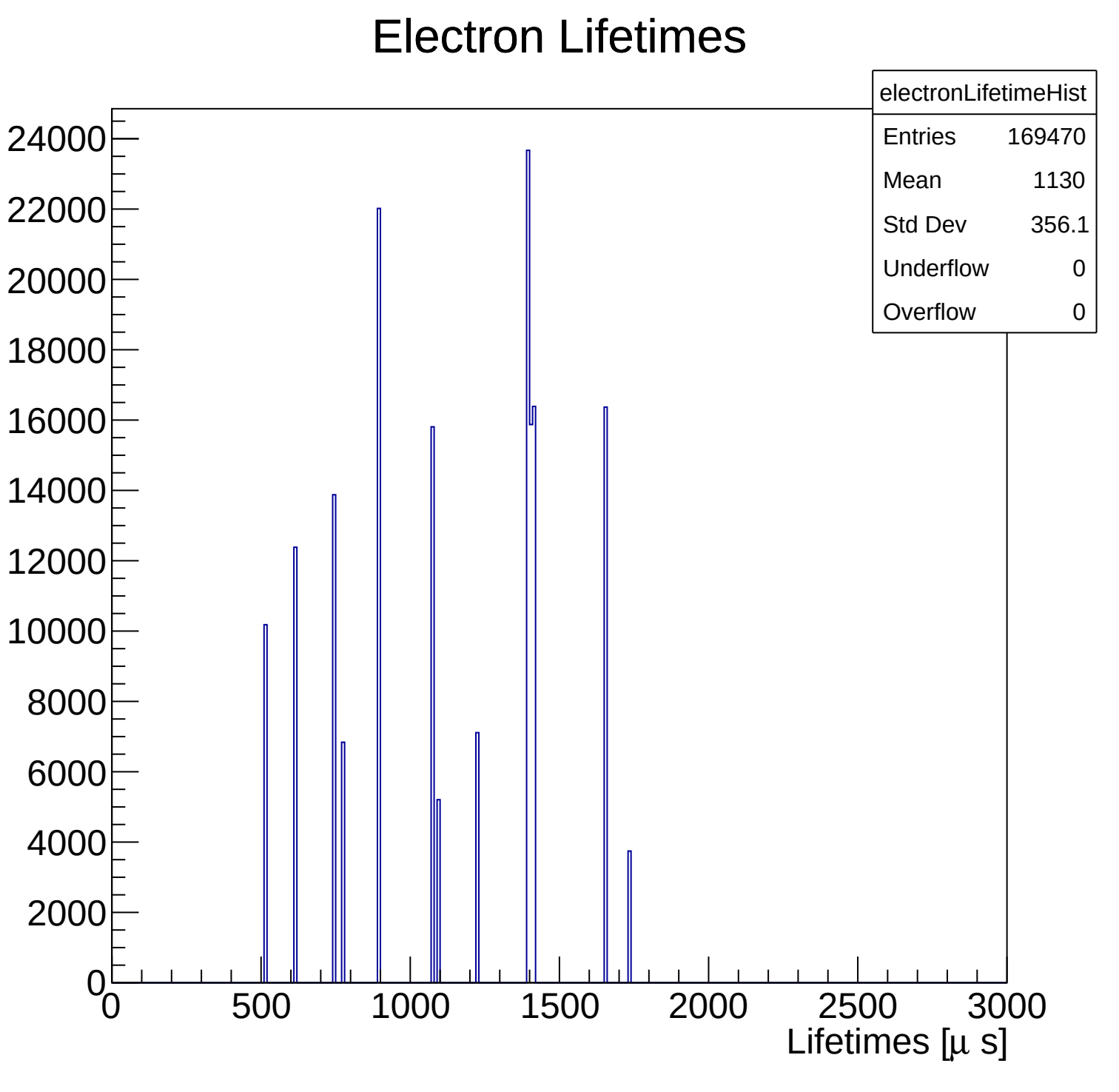

Selected Entering Track Length
PrimaryLength
Entries 50199
Mean 56.41
Std Dev 28.17
Underflow 0
Overflow 47
5000
4000
3000
2000
1000
0
0 10 20 30 40 50 60 70 80 90 100
length [cm]


Beamline particle Mass
BeamMassHist
Entries 169470
Mean 159.9
Std Dev 108
Underflow 0
Overflow 207
50000
40000
30000
20000
10000
0
–500
0
500
1000
1500
Mass [MeV/c²]

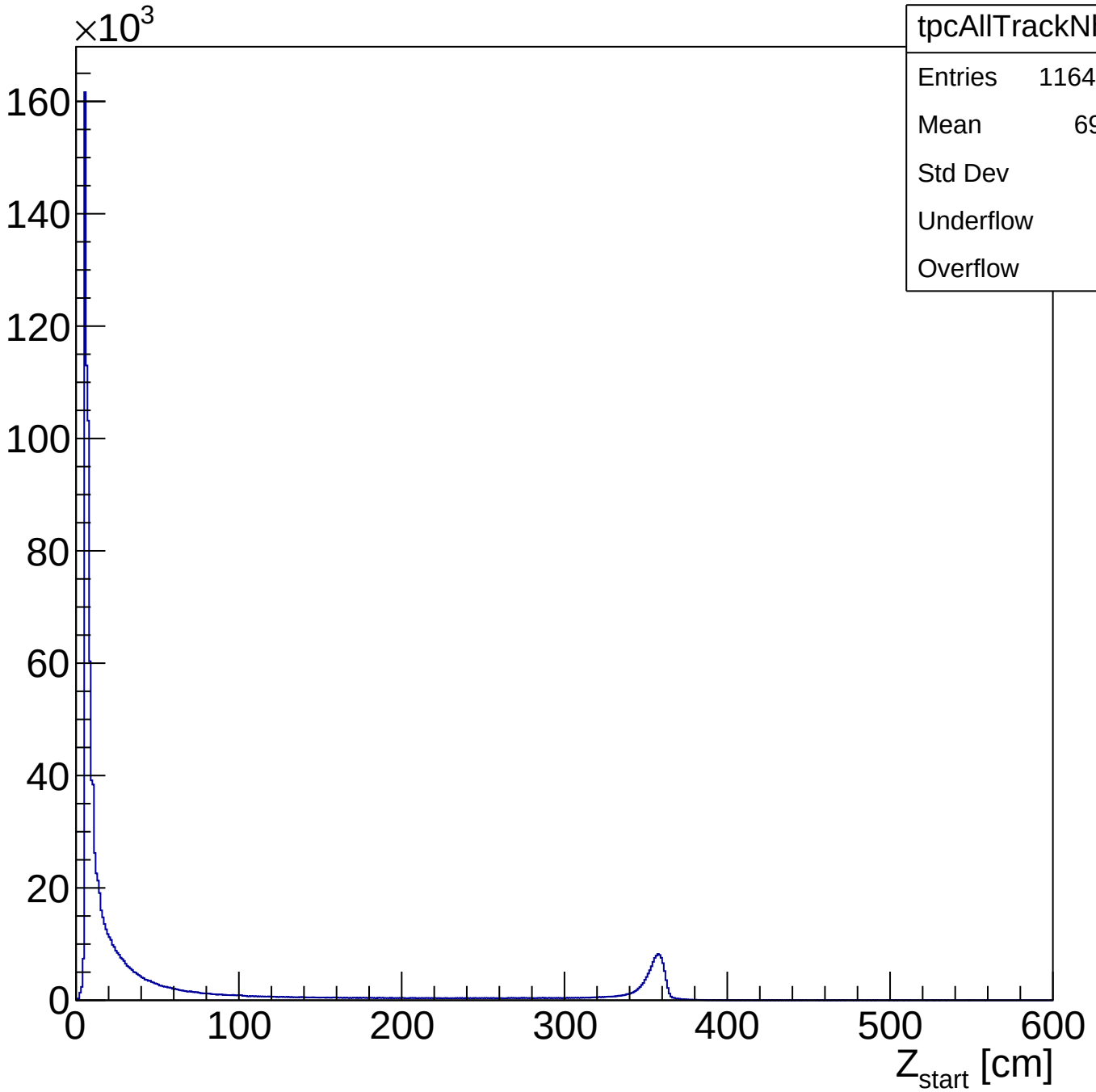

Beamline particle Mass - after Cut
BeamMassCutHist
Entries 87796
Mean 141.9
Std Dev 67.73
Underflow 0
Overflow 0
30000
25000
20000
15000
10000
5000
0
0
500
1000
1500
2000
2500
3000
Mass [MeV/c^2]


Momentum vs TOF
tofMomentHist
Entries 89248
Mean x 722.5
Mean y 22.44
Std Dev x 119.6
Std Dev y 2.161
0 0 0
0 89248 0
0 0 0
Time of Flight
100
90
80
70
60
50
40
30
20
10
0
0 200 400 600 800 1000 1200 1400 1600 1800 2000
Momentum [MeV/c]
200
150
100
500
0

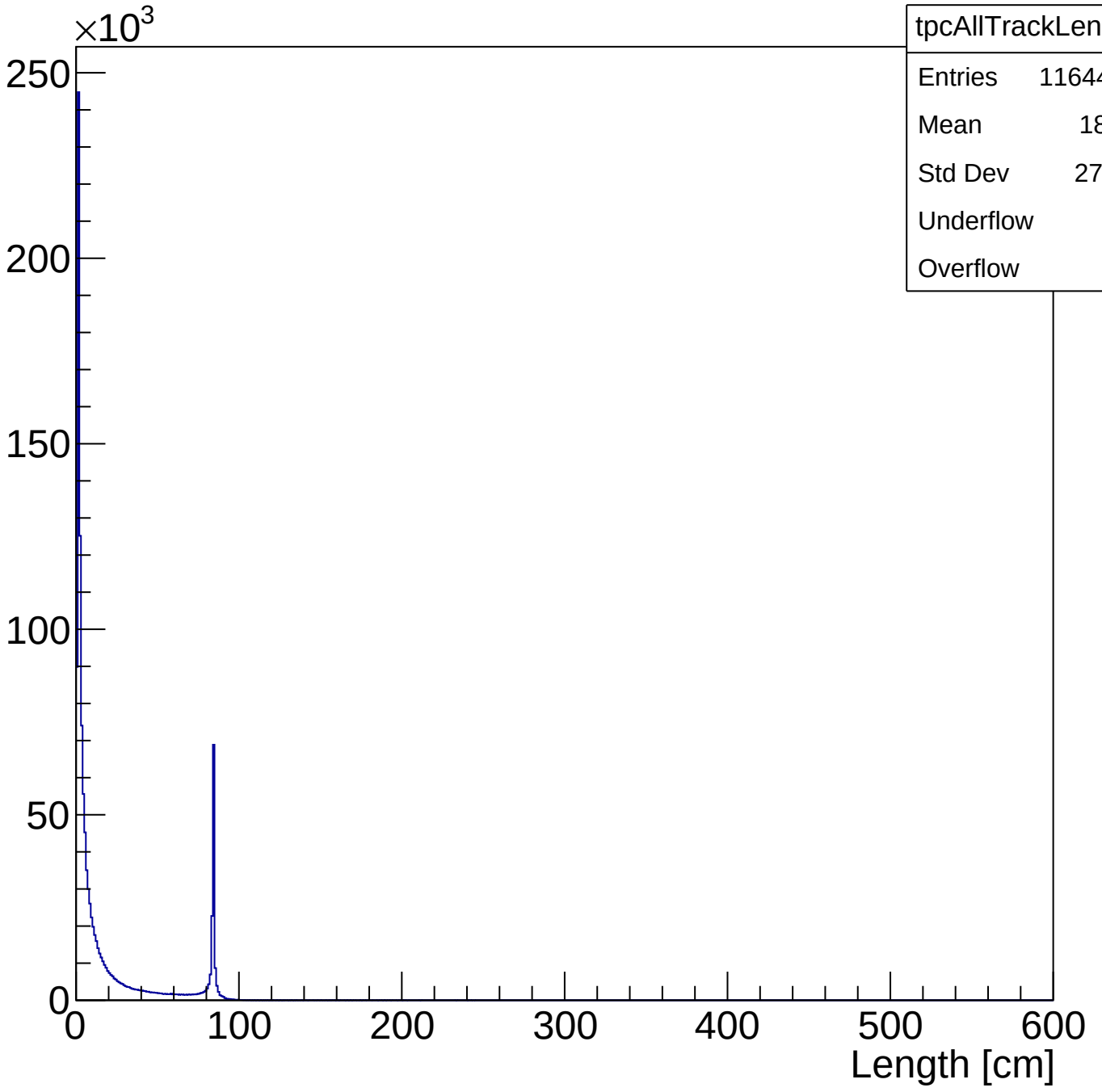

number of Entering Tracks - Selected Events
numTracksSelHist
Entries 0
Mean 0
Std Dev 0
Underflow 0
Overflow 0
1
0.8
0.6
0.4
0.2
0
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
Number of Tracks

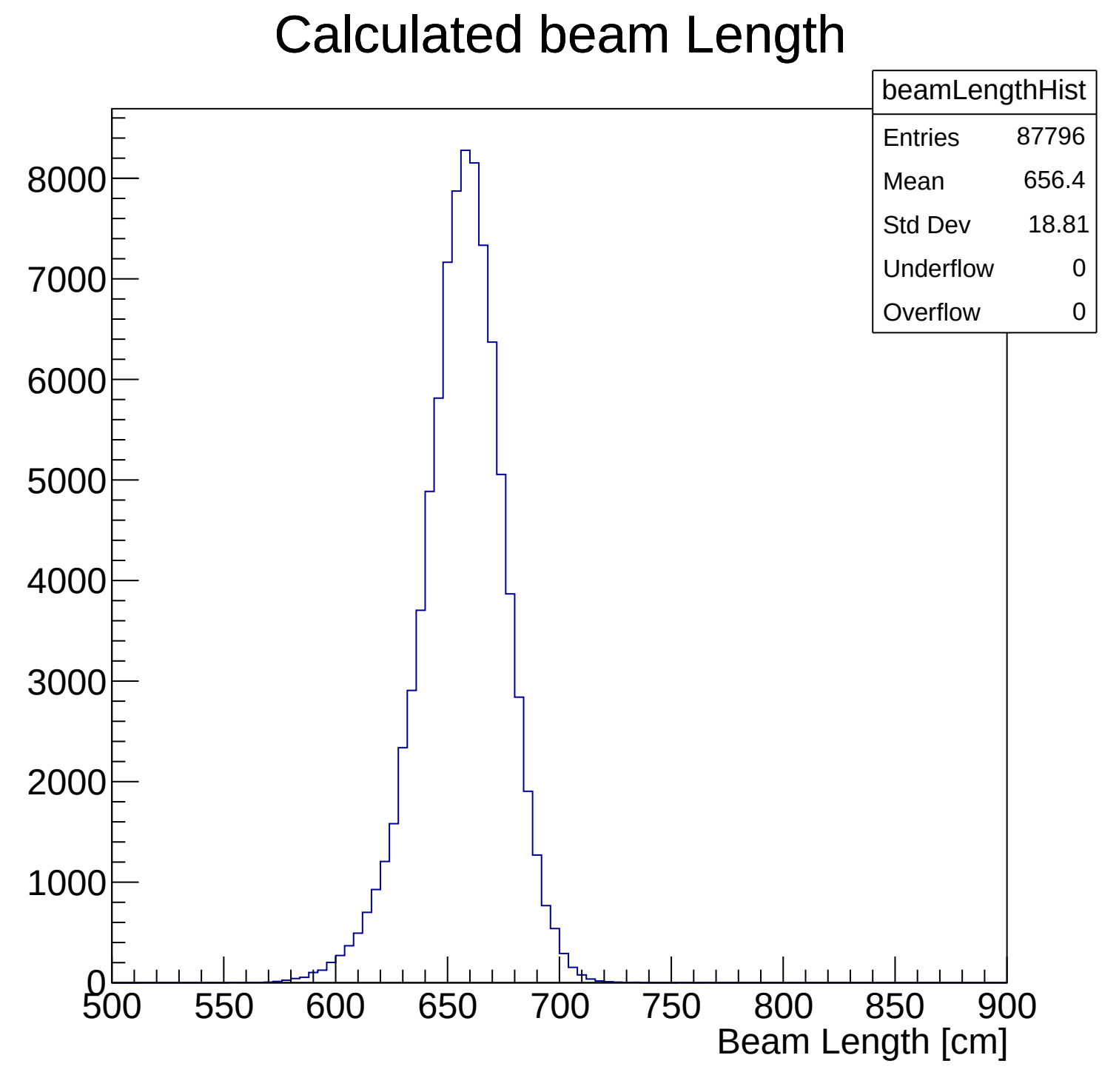

Electron Lifetimes
electronLifetimeHist
Entries 169470
Mean 1130
Std Dev 356.1
Underflow 0
Overflow 0
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
500
1000
1500
2000
2500
3000
Lifetimes [μ s]

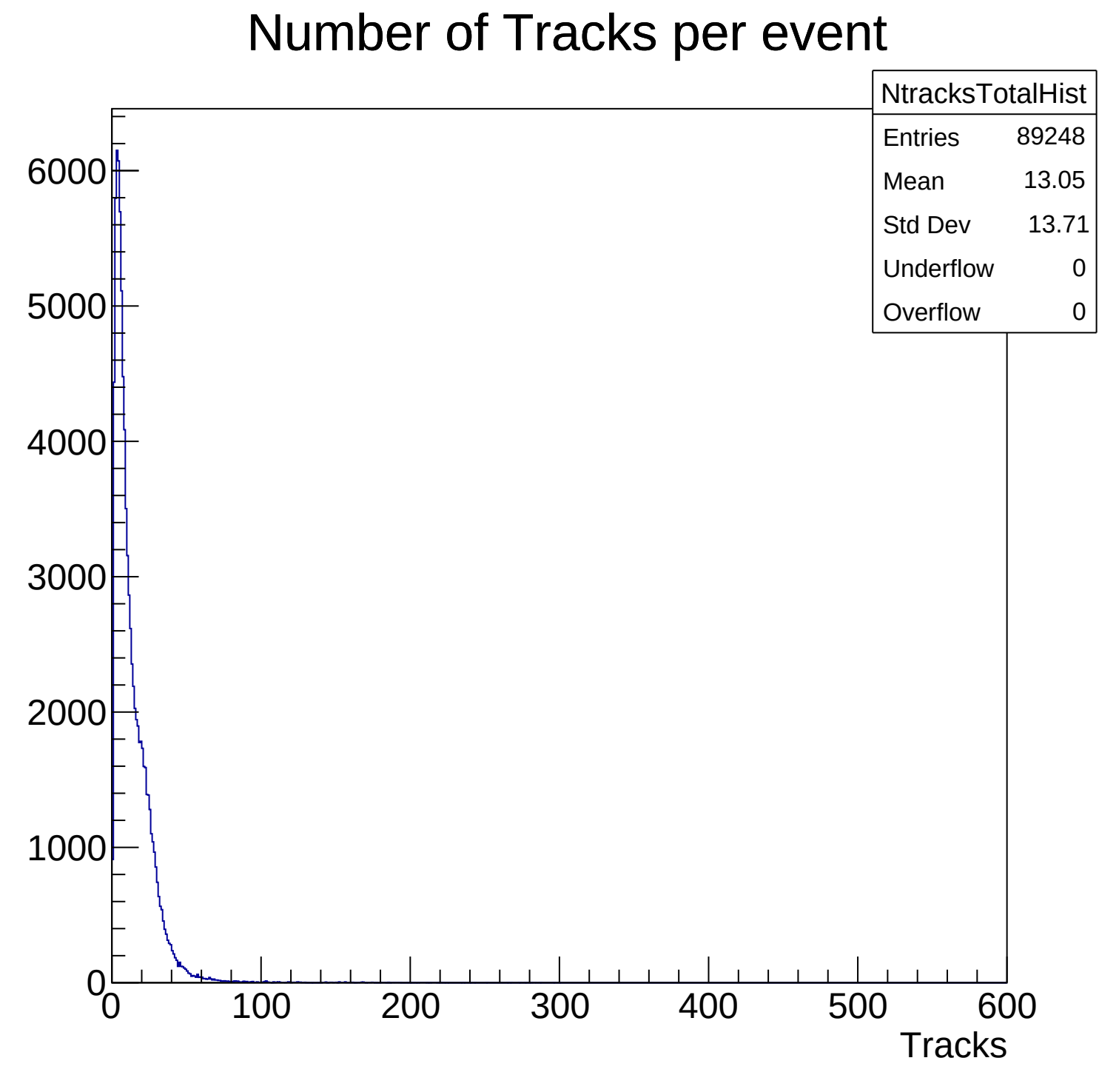
Number of Hits per Track

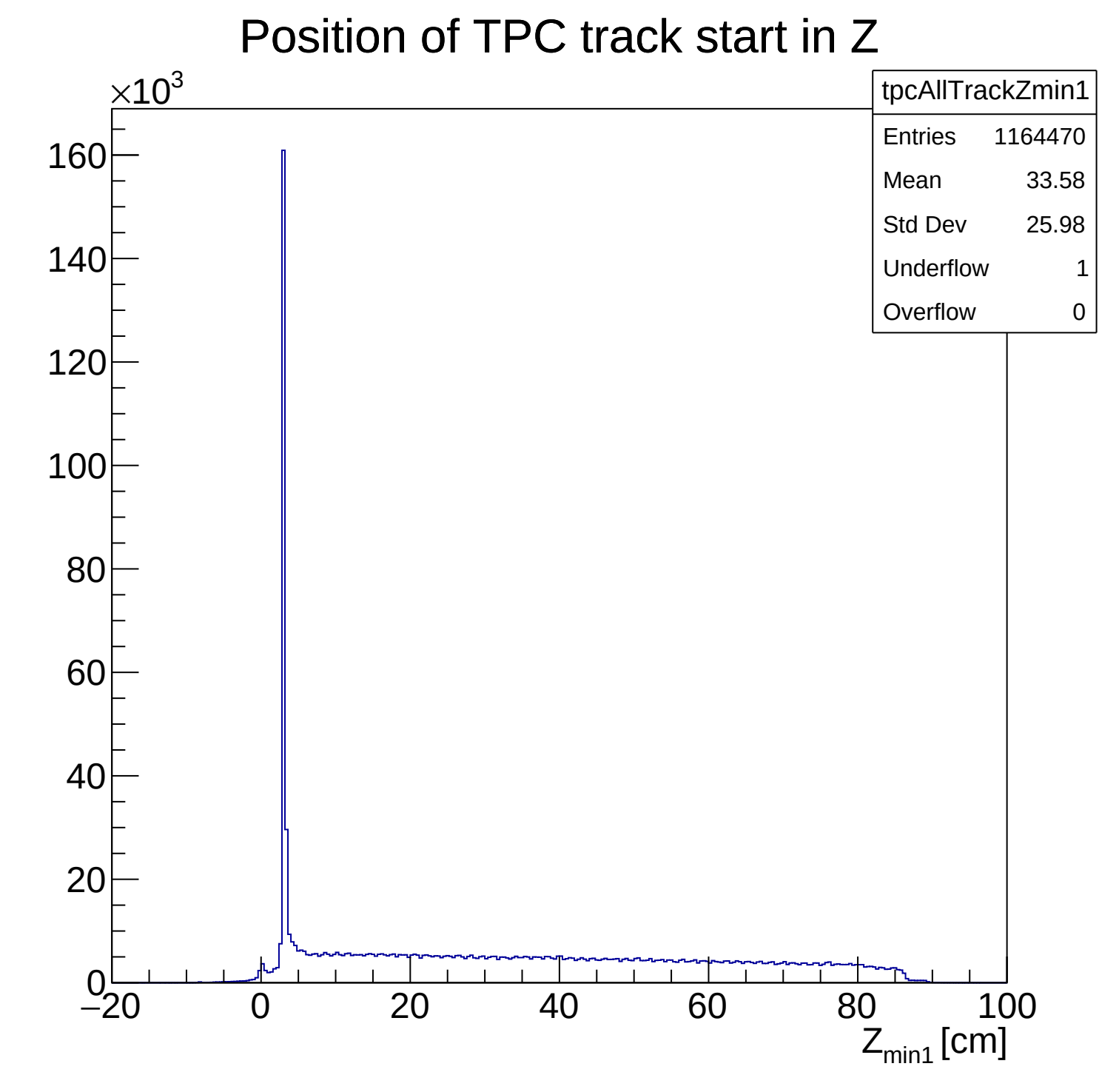


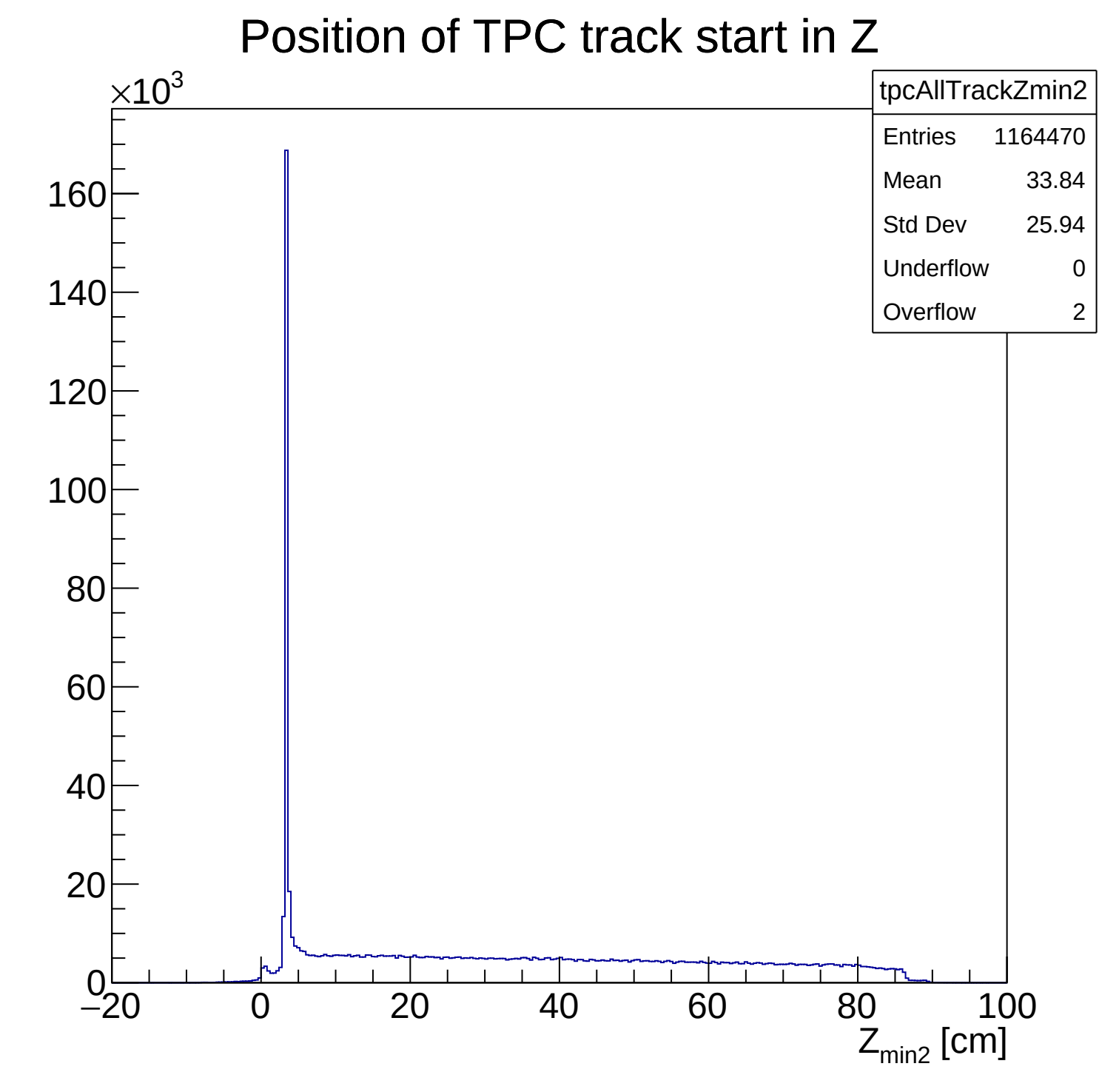
Length of All Tracks

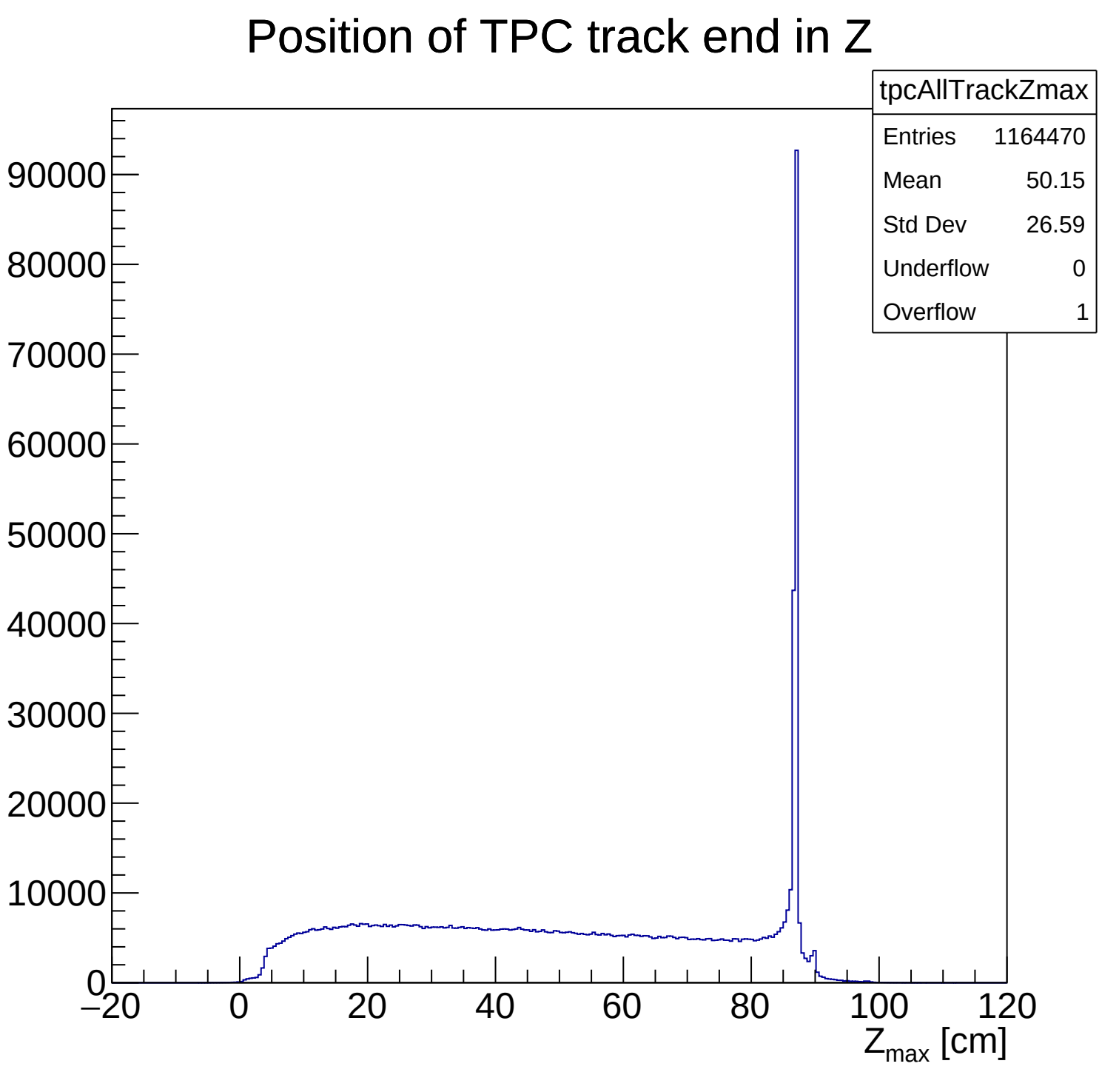


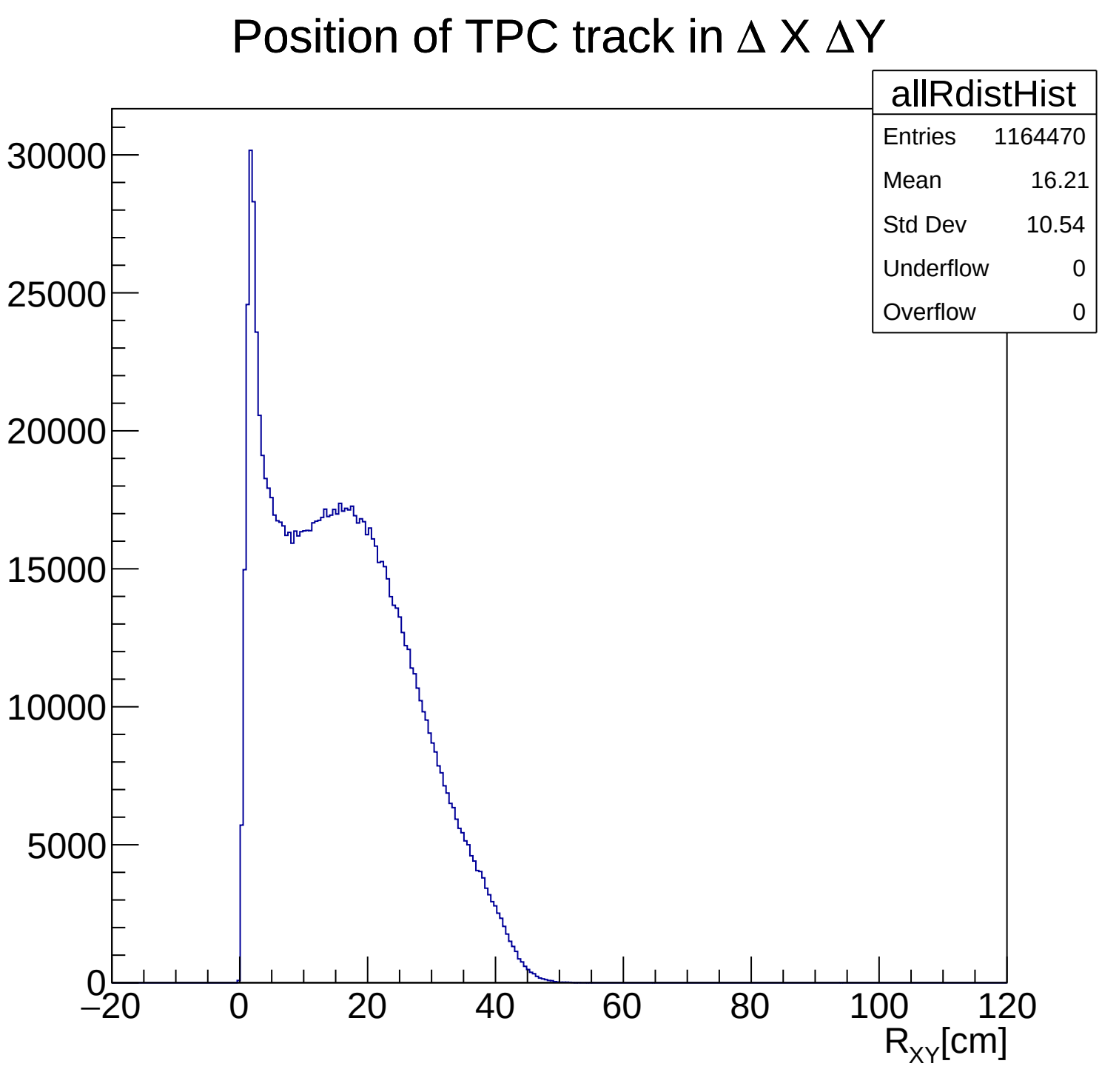

Calculated beam Length
beamLengthHist
Entries 87796
Mean 656.4
Std Dev 18.81
Underflow 0
Overflow 0
8000
7000
6000
5000
4000
3000
2000
1000
0
500
550
600
650
700
750
800
850
900
Beam Length [cm]

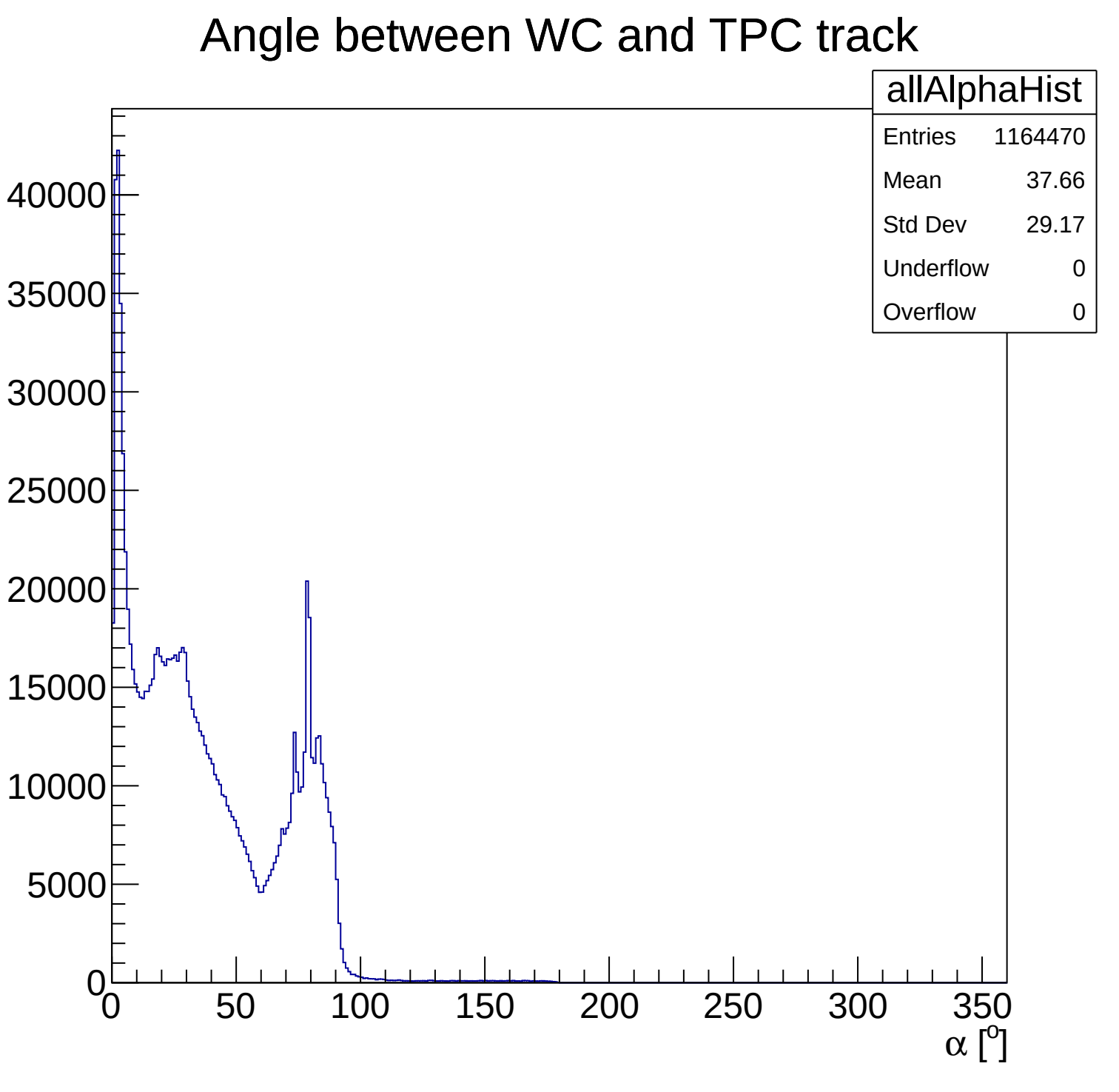

Number of Tracks per event
NtracksTotalHist
Entries 89248
Mean 13.05
Std Dev 13.71
Underflow 0
Overflow 0
6000
5000
4000
3000
2000
1000
0
0
100
200
300
400
500
600
Tracks

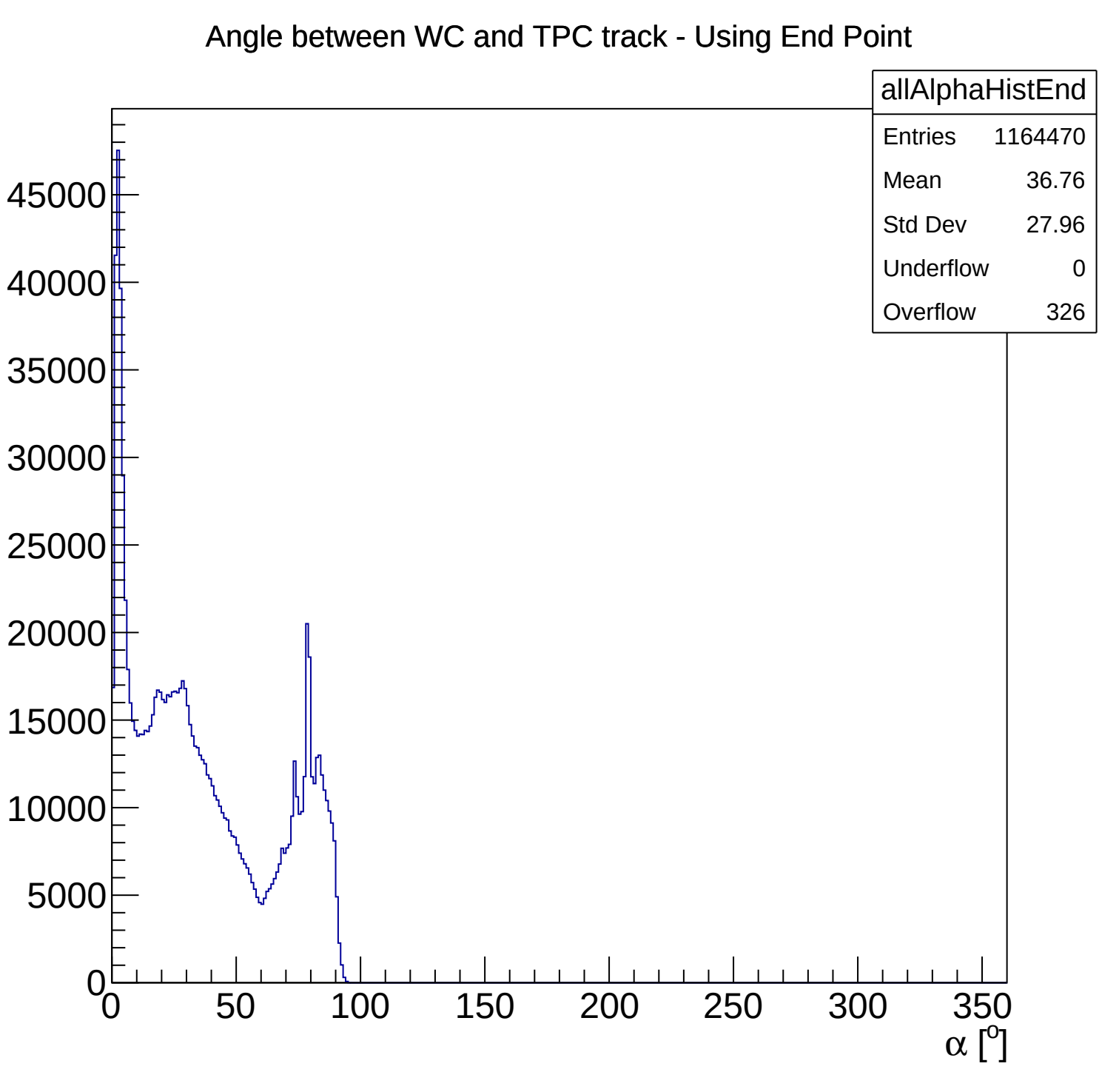

Position of TPC track start in Z
×10^3
160
140
120
100
80
60
40
20
0
−20
0
20
40
60
80
100
Z_min1 [cm]
tpcAllTrackZmin1
Entries 1164470
Mean 33.58
Std Dev 25.98
Underflow 1
Overflow 0

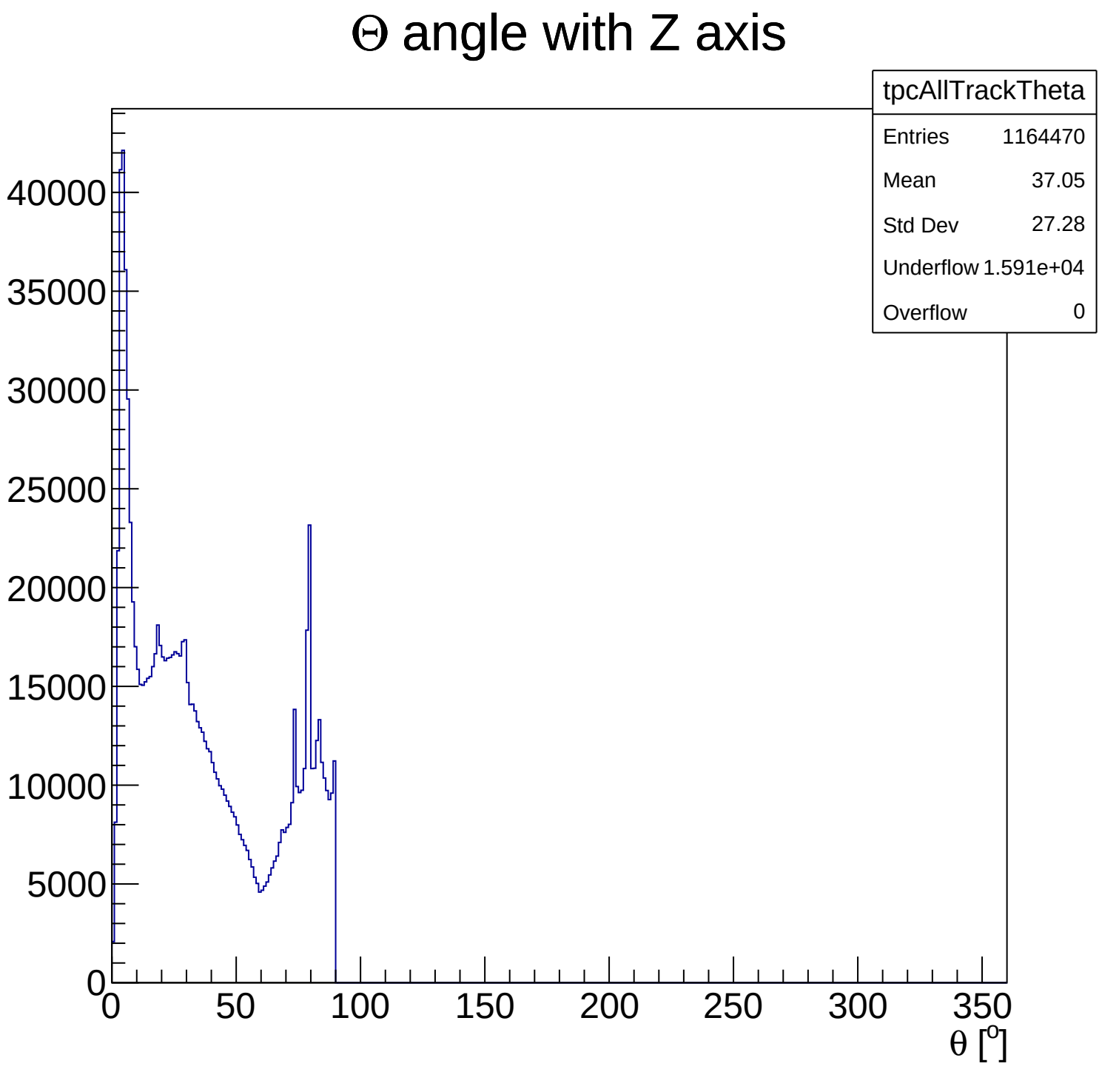

Position of TPC track start in Z
×10^3
tpcAllTrackZmin2
Entries 1164470
Mean 33.84
Std Dev 25.94
Underflow 0
Overflow 2
160
140
120
100
80
60
40
20
0
−20
0
20
40
60
80
100
Z_min2 [cm]

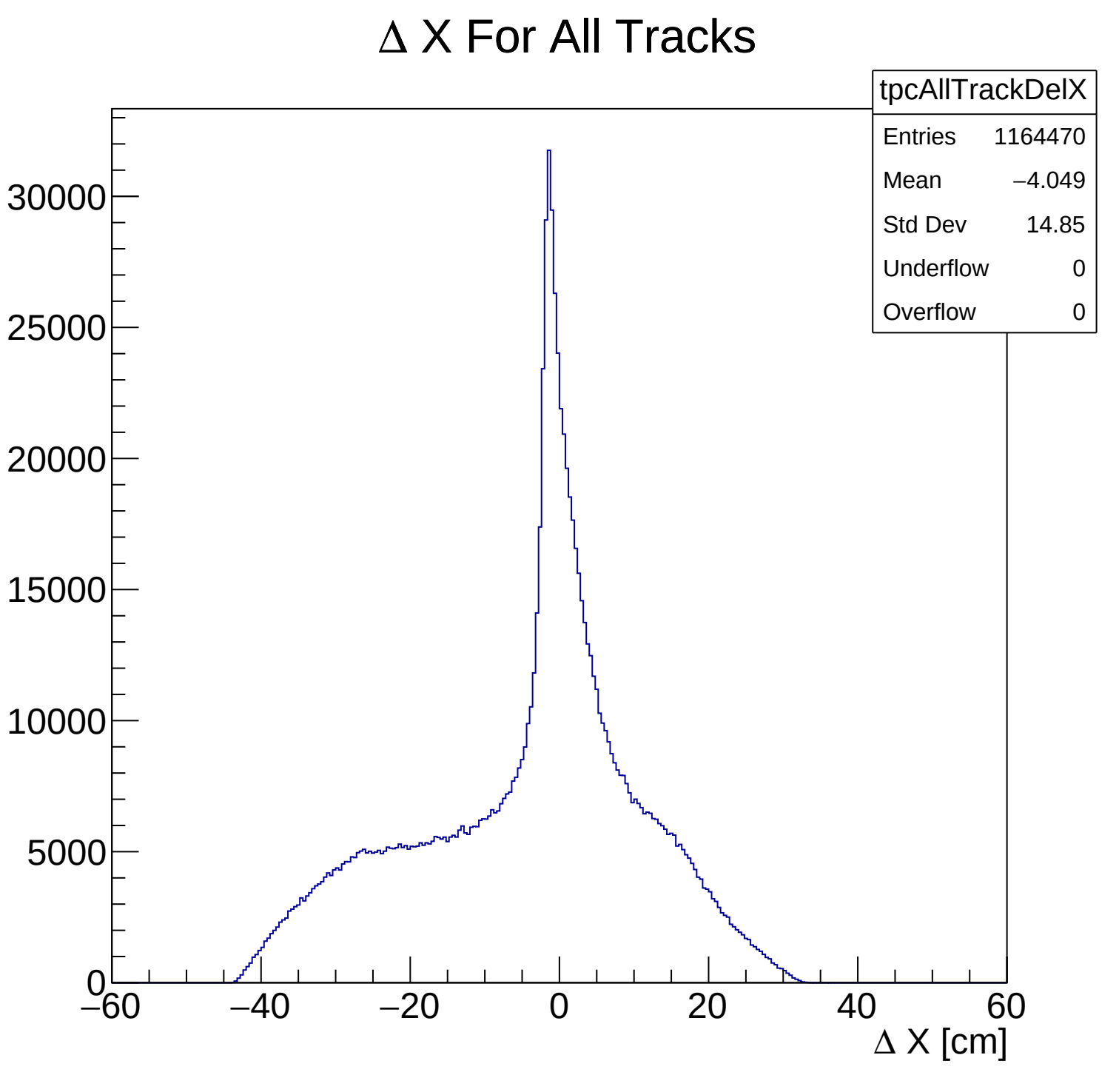

Position of TPC track end in Z
tpcAllTrackZmax
Entries 1164470
Mean 50.15
Std Dev 26.59
Underflow 0
Overflow 1
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
−20
0
20
40
60
80
100
120
Z_{max} [cm]

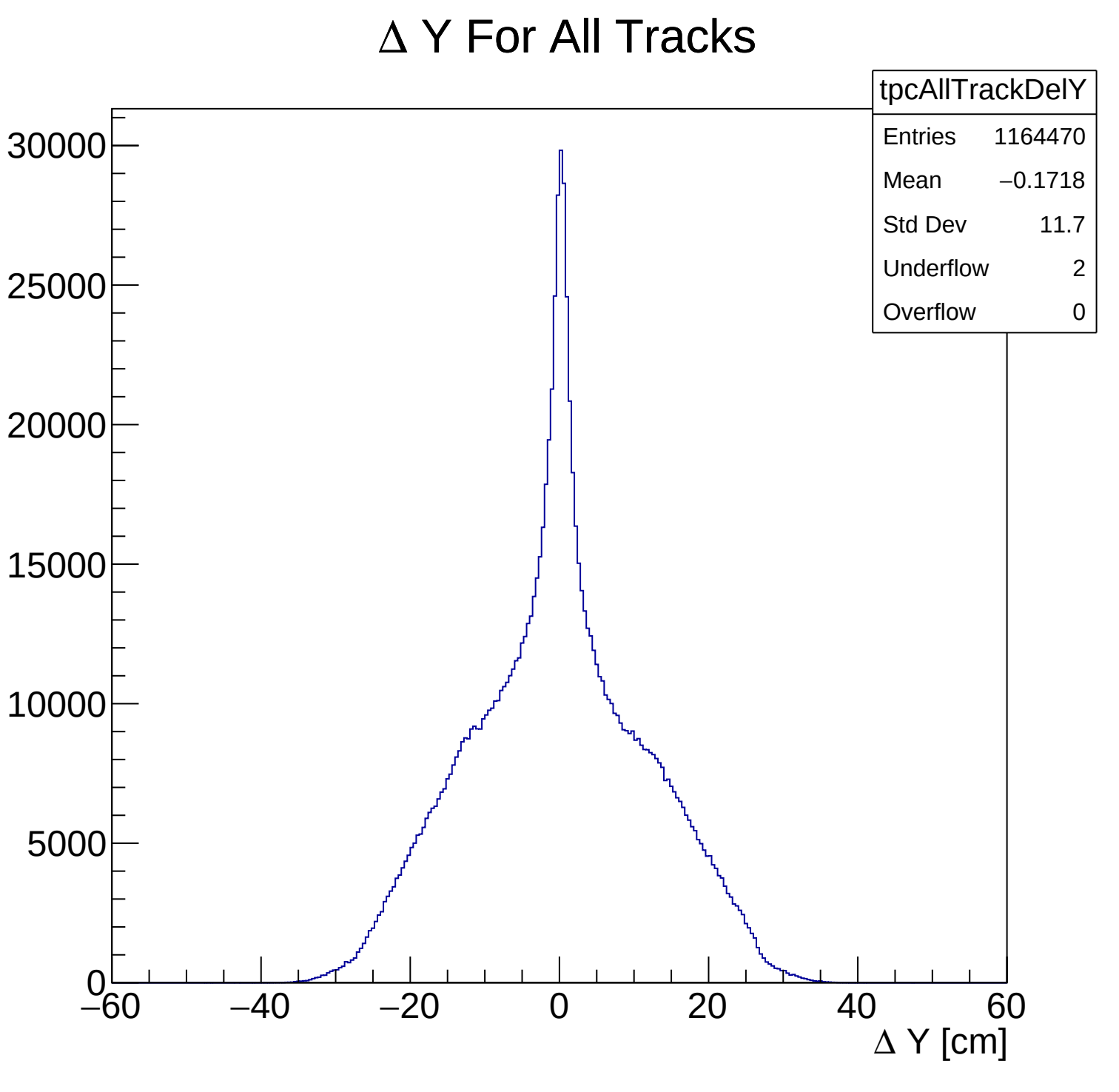

Position of TPC track in Δ X ΔY
allRdistHist
Entries 1164470
Mean 16.21
Std Dev 10.54
Underflow 0
Overflow 0
30000
25000
20000
15000
10000
5000
0
−20
0
20
40
60
80
100
120
R_XY[cm]

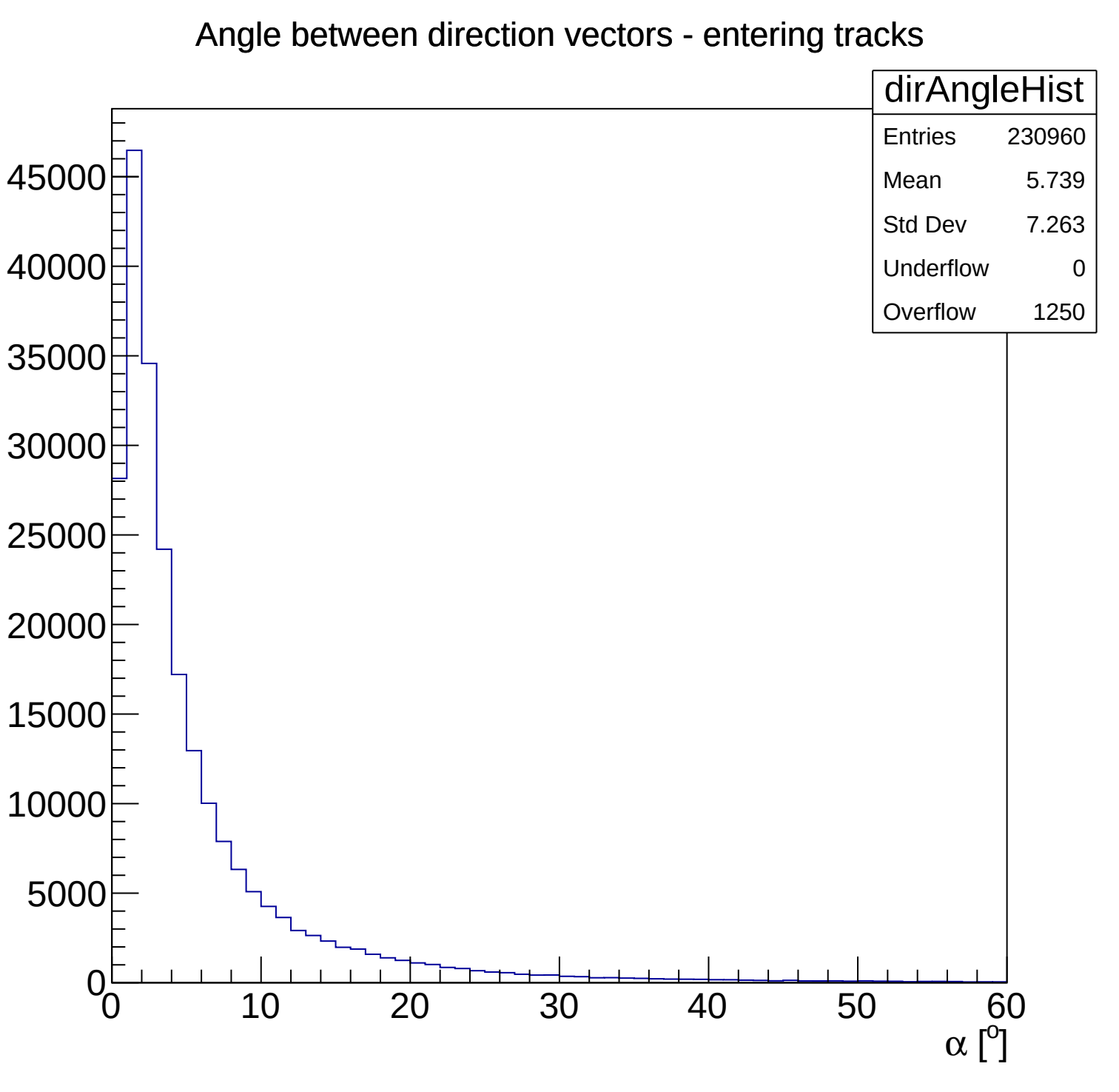

Angle between WC and TPC track
allAlphaHist
Entries 1164470
Mean 37.66
Std Dev 29.17
Underflow 0
Overflow 0
40000
35000
30000
25000
20000
15000
10000
5000
0
0
50
100
150
200
250
300
350
α [°]

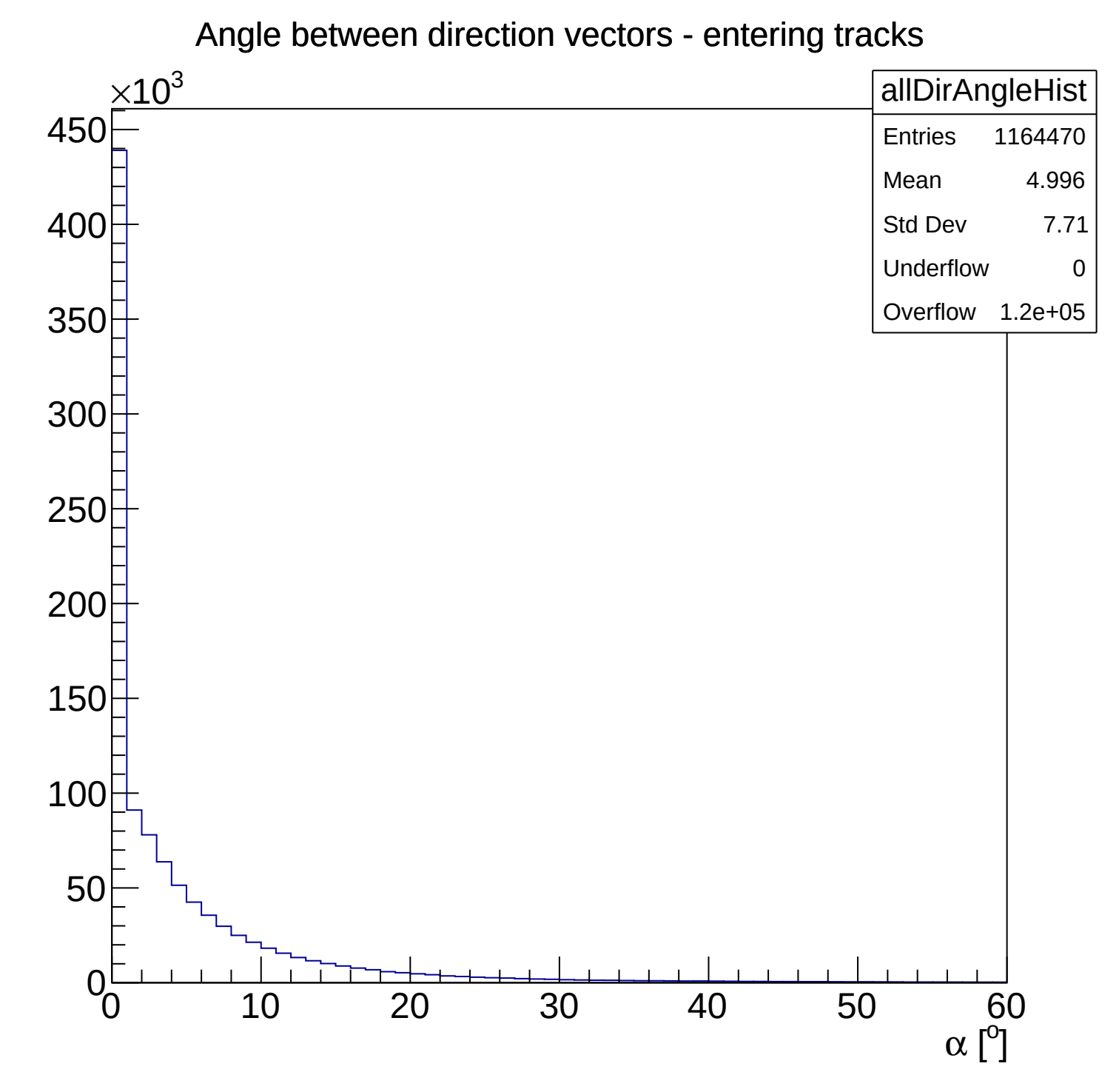

Angle between WC and TPC track - Using End Point
allAlphaHistEnd
Entries 1164470
Mean 36.76
Std Dev 27.96
Underflow 0
Overflow 326
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
0
50
100
150
200
250
300
350
α [°]

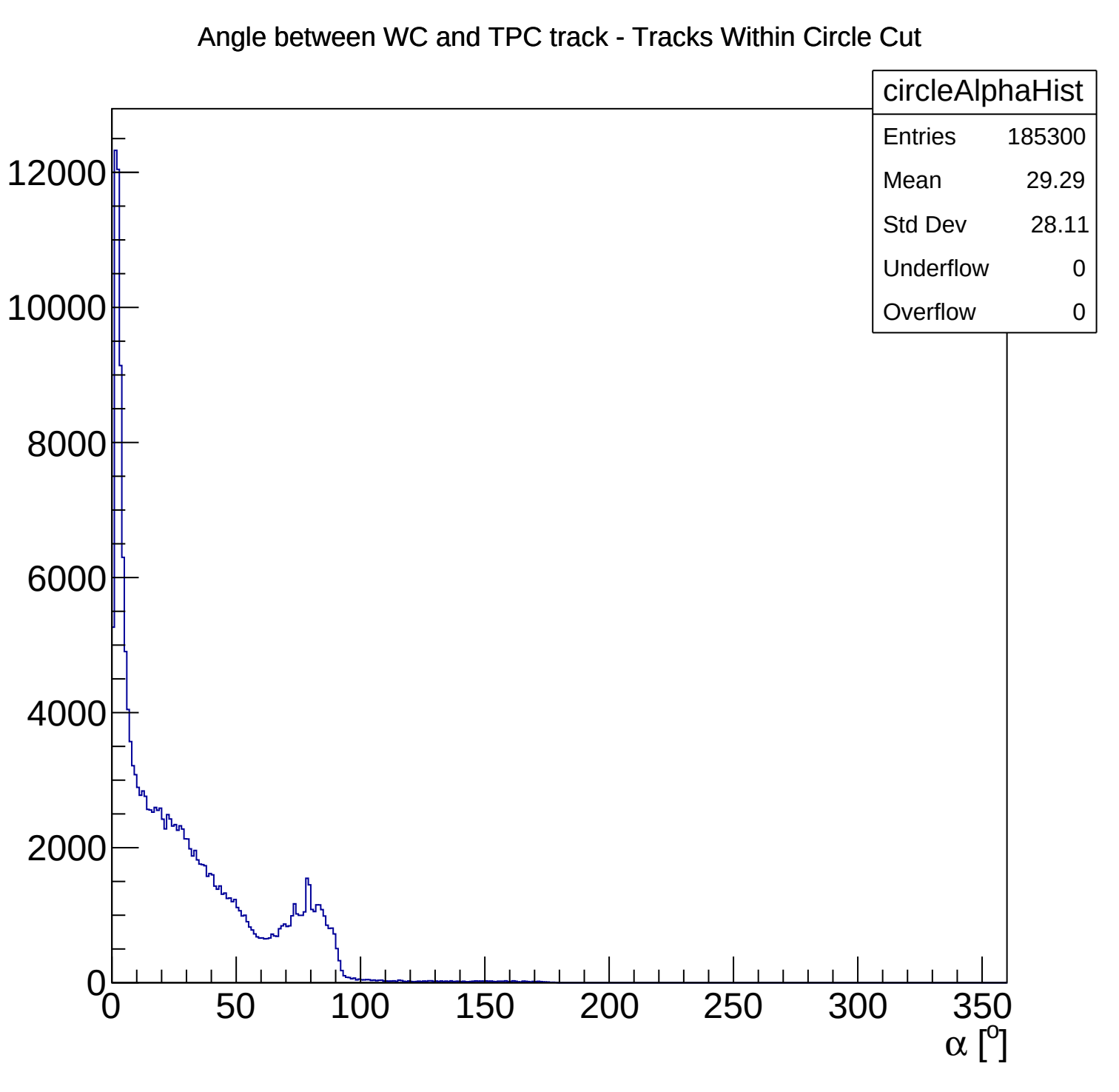

Θ angle with Z axis
tpcAllTrackTheta
Entries 1164470
Mean 37.05
Std Dev 27.28
Underflow 1.591e+04
Overflow 0
40000
35000
30000
25000
20000
15000
10000
5000
0
0
50
100
150
200
250
300
350
θ [°]

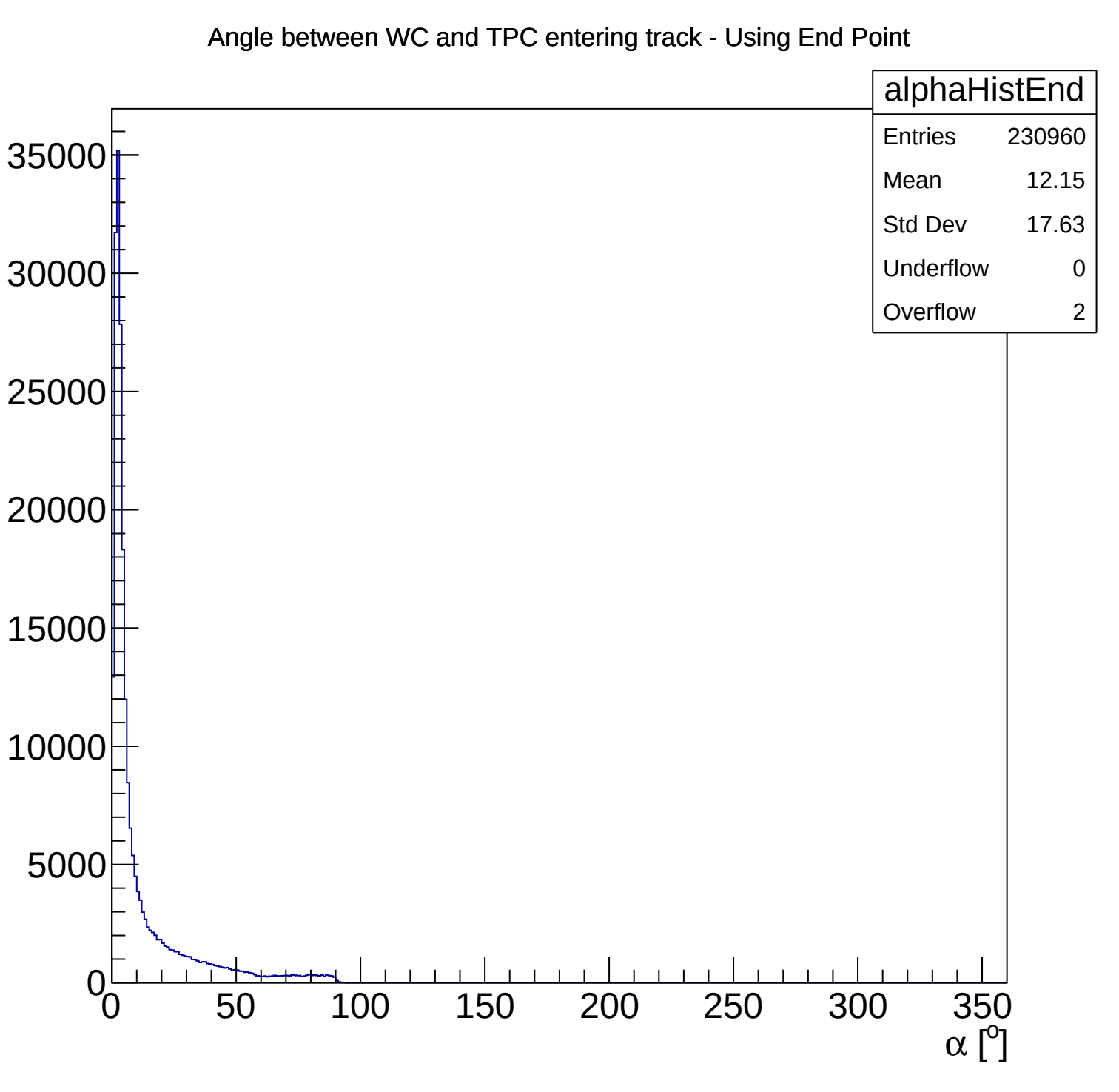

Δ X For All Tracks
tpcAllTrackDelX
Entries 1164470
Mean −4.049
Std Dev 14.85
Underflow 0
Overflow 0
30000
25000
20000
15000
10000
5000
0
−60
−40
−20
0
20
40
60
Δ X [cm]

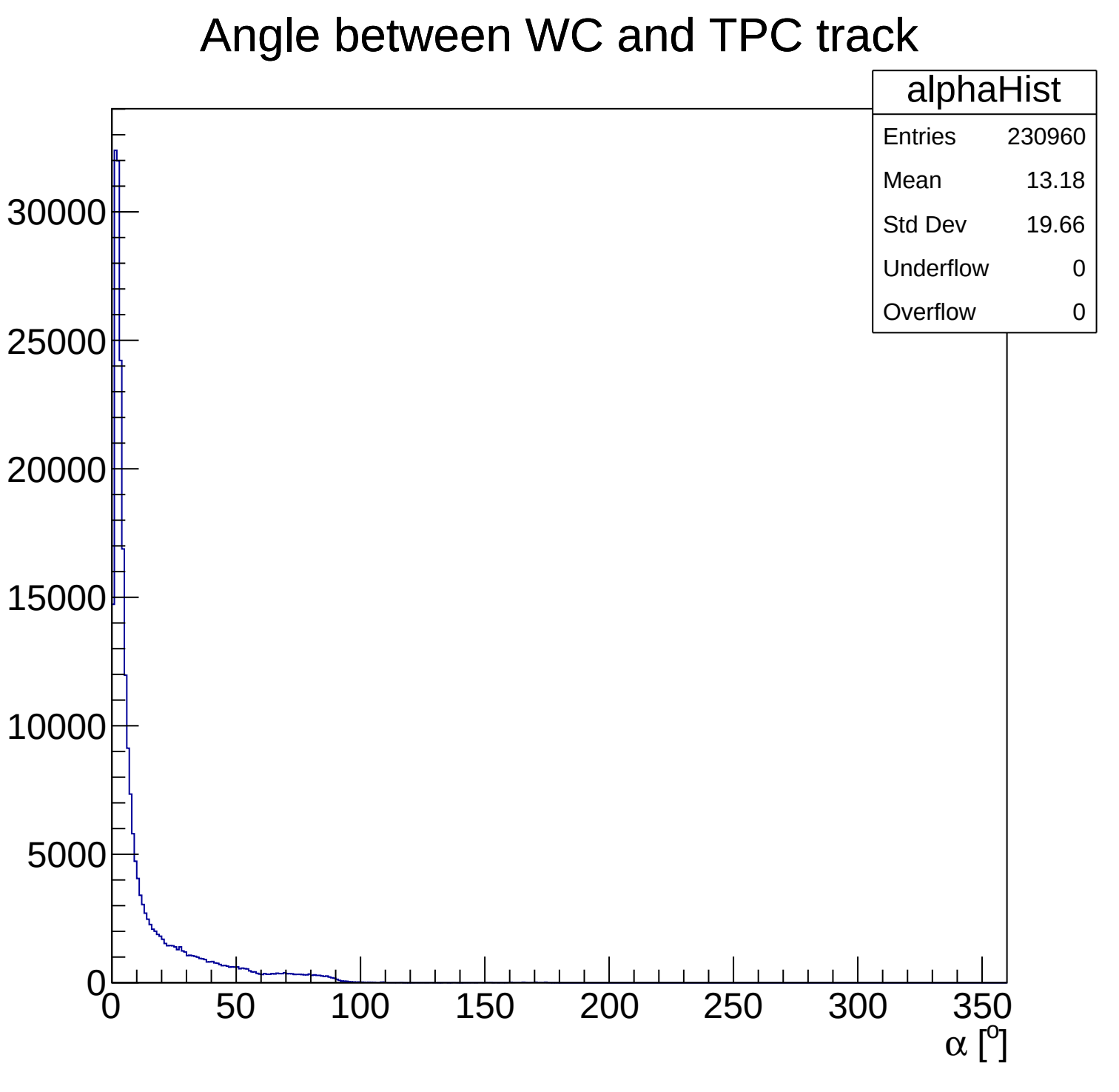

Δ Y For All Tracks
tpcAllTrackDelY
Entries 1164470
Mean −0.1718
Std Dev 11.7
Underflow 2
Overflow 0
30000
25000
20000
15000
10000
5000
0
−60
−40
−20
0
20
40
60
Δ Y [cm]


Angle between direction vectors - entering tracks
dirAngleHist
Entries 230960
Mean 5.739
Std Dev 7.263
Underflow 0
Overflow 1250
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
0
10
20
30
40
50
60
α [°]


Angle between direction vectors - entering tracks
×10^3
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
α [°]
allDirAngleHist
Entries 1164470
Mean 4.996
Std Dev 7.71
Underflow 0
Overflow 1.2e+05


Angle between WC and TPC track - Tracks Within Circle Cut
circleAlphaHist
Entries 185300
Mean 29.29
Std Dev 28.11
Underflow 0
Overflow 0
12000
10000
8000
6000
4000
2000
0
0
50
100
150
200
250
300
350
α [°]


Angle between WC and TPC entering track - Using End Point
alphaHistEnd
Entries 230960
Mean 12.15
Std Dev 17.63
Underflow 0
Overflow 2
35000
30000
25000
20000
15000
10000
5000
0
0
50
100
150
200
250
300
350
α [°]


Angle between WC and TPC track
alphaHist
Entries 230960
Mean 13.18
Std Dev 19.66
Underflow 0
Overflow 0
30000
25000
20000
15000
10000
5000
0
0
50
100
150
200
250
300
350
α [°]