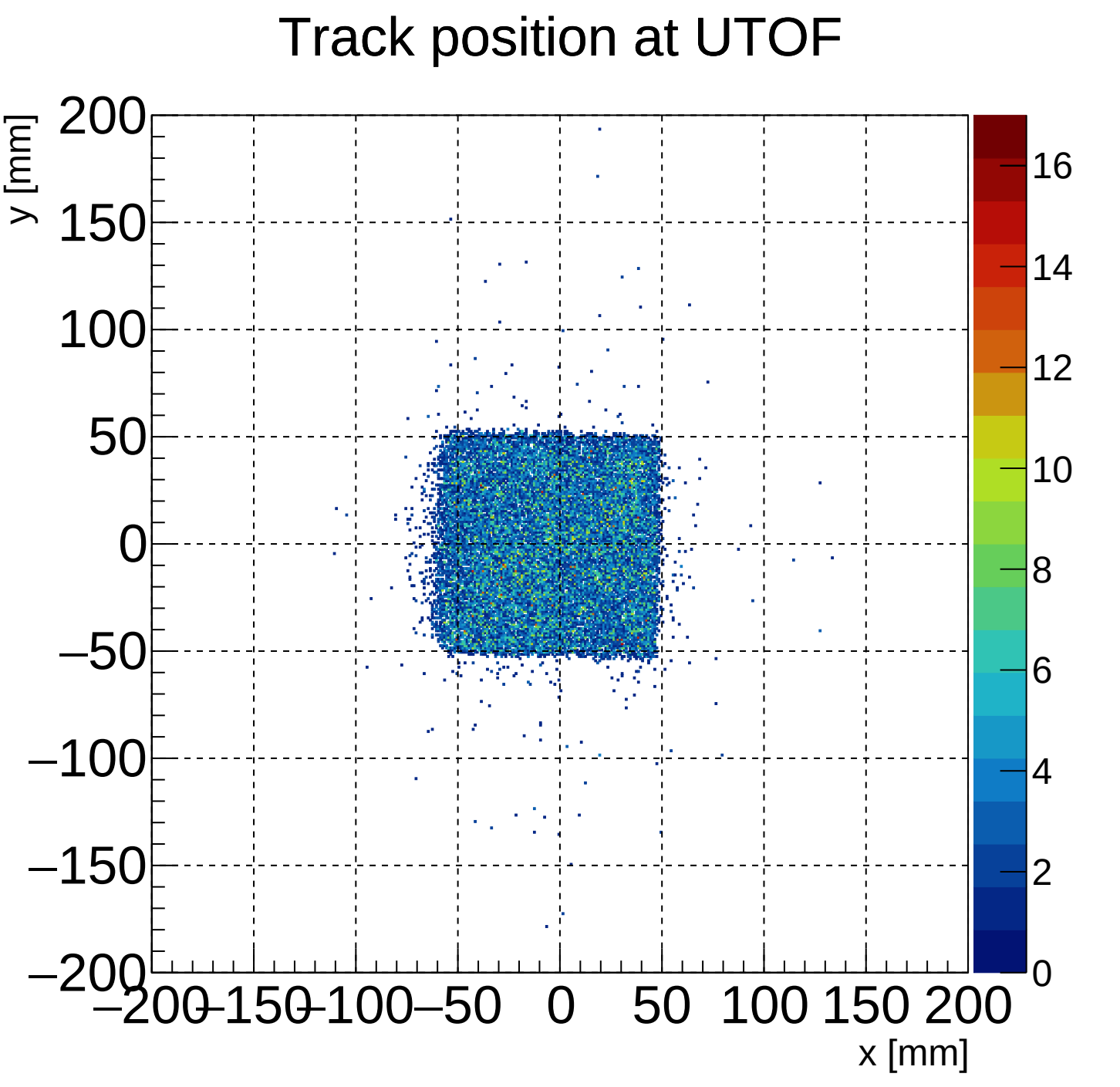
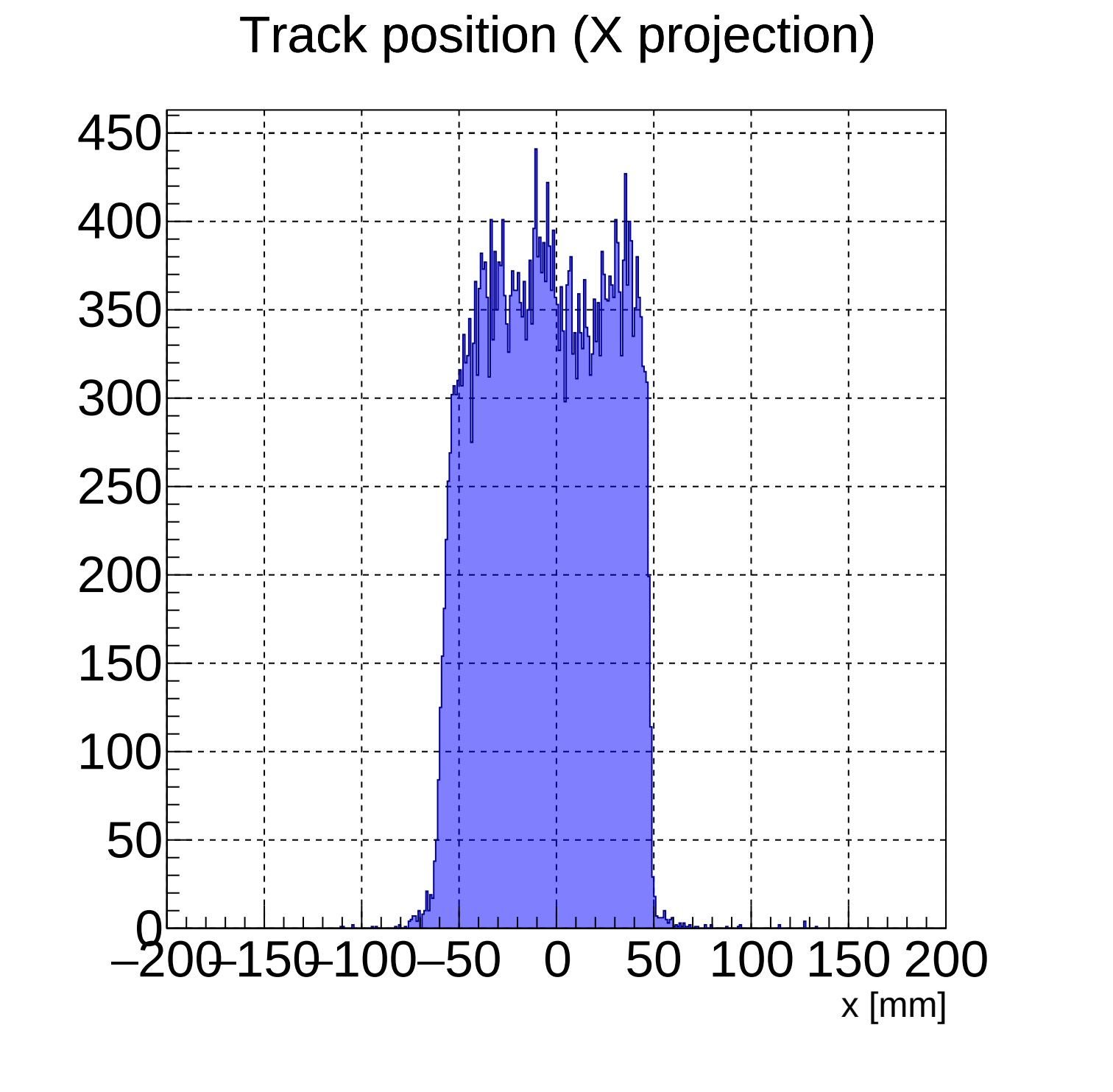
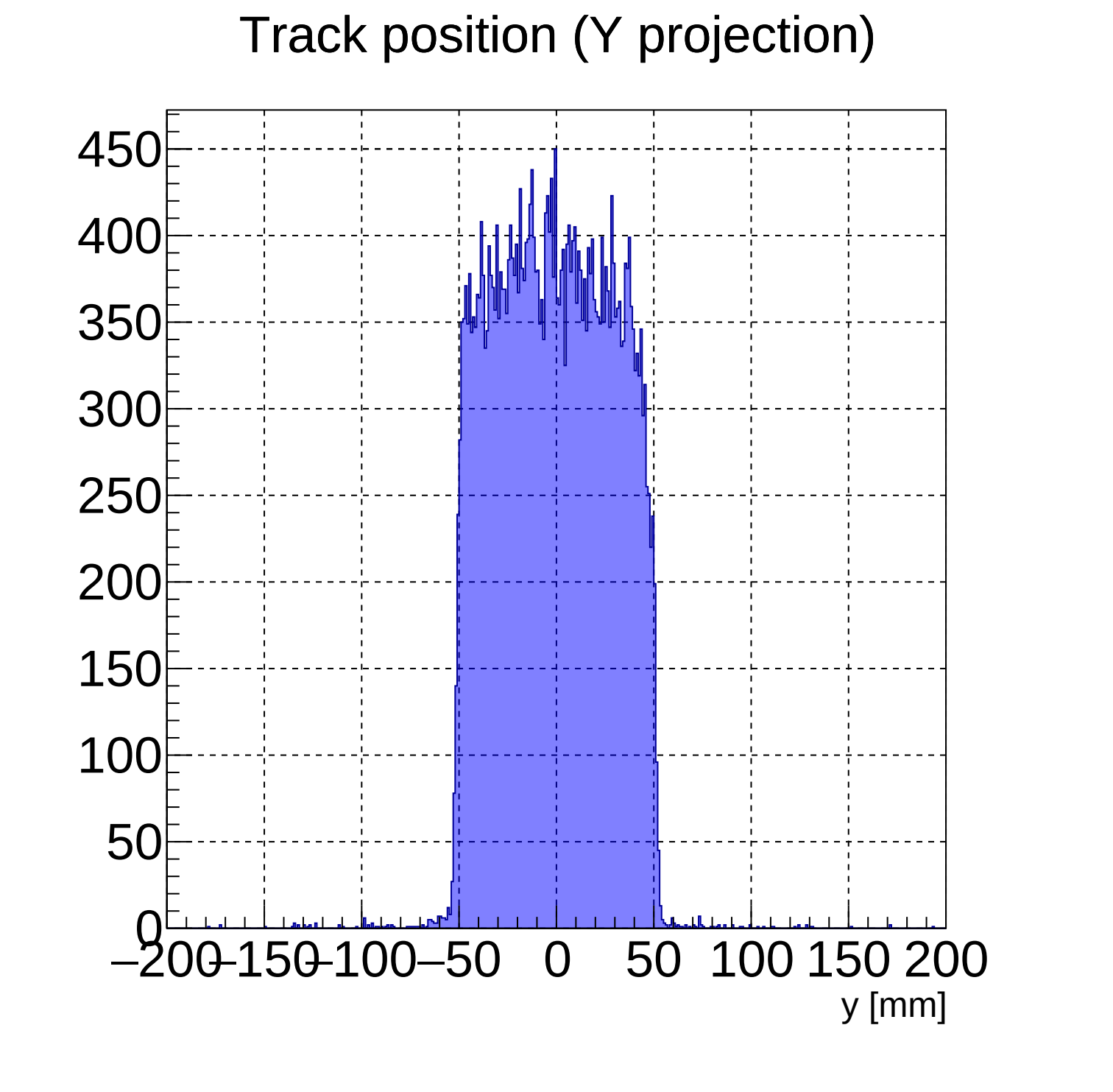
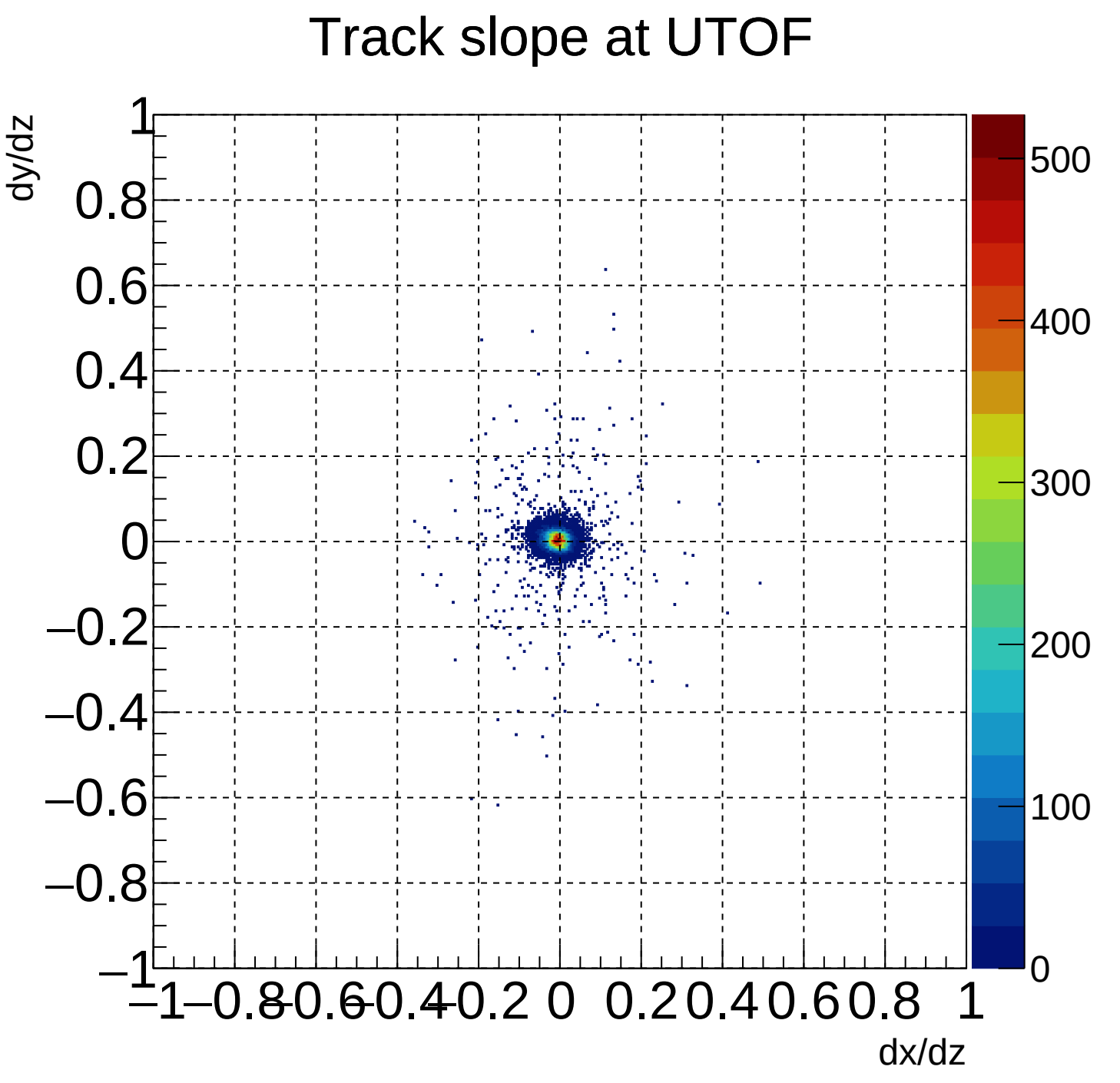
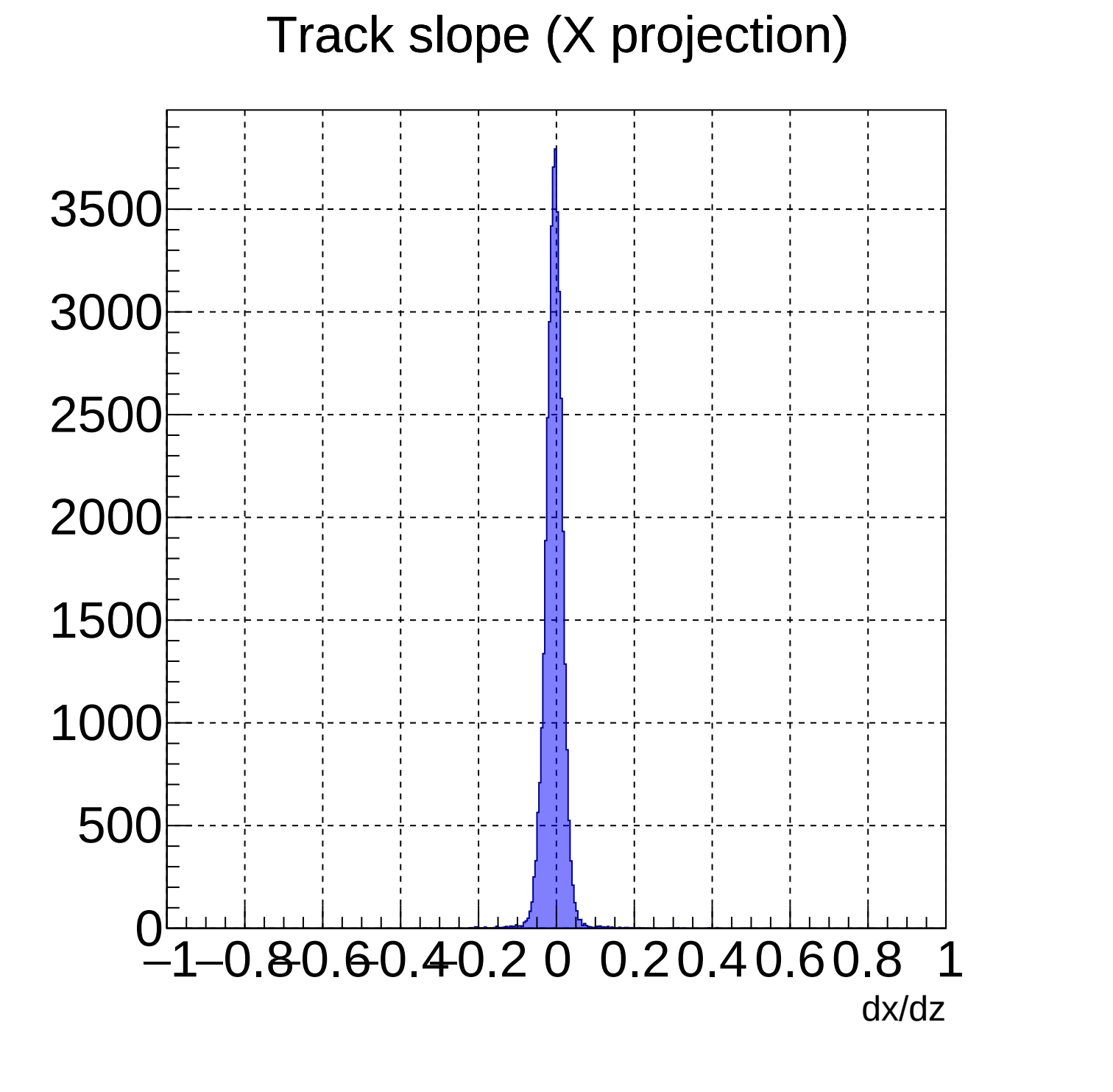
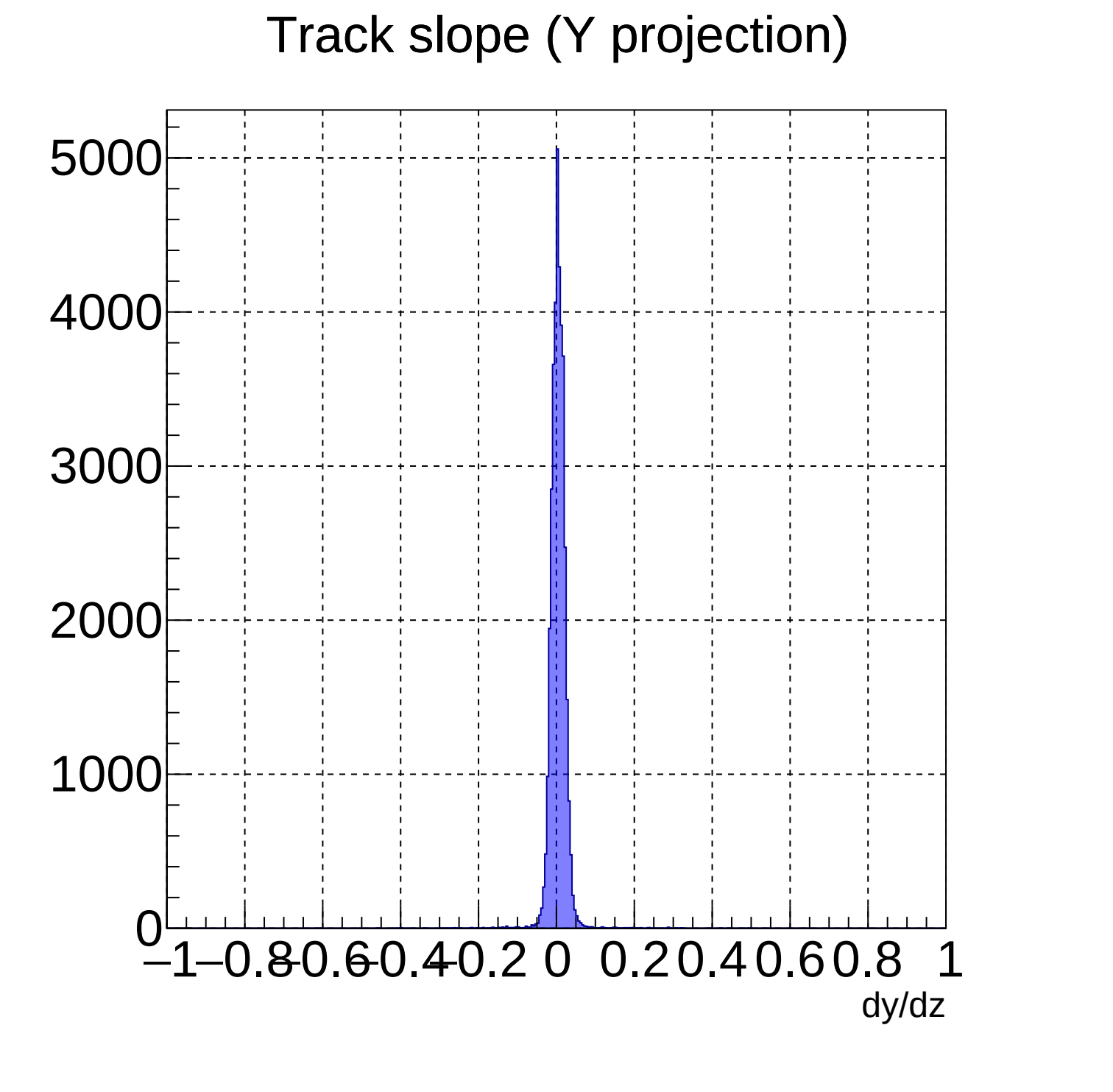

Track position at UTOF
y [mm]
200
150
100
50
0
–50
–100
–150
–200
–200
–150
–100
–50
0
50
100
150
200
x [mm]
16
14
12
10
8
6
4
2
0

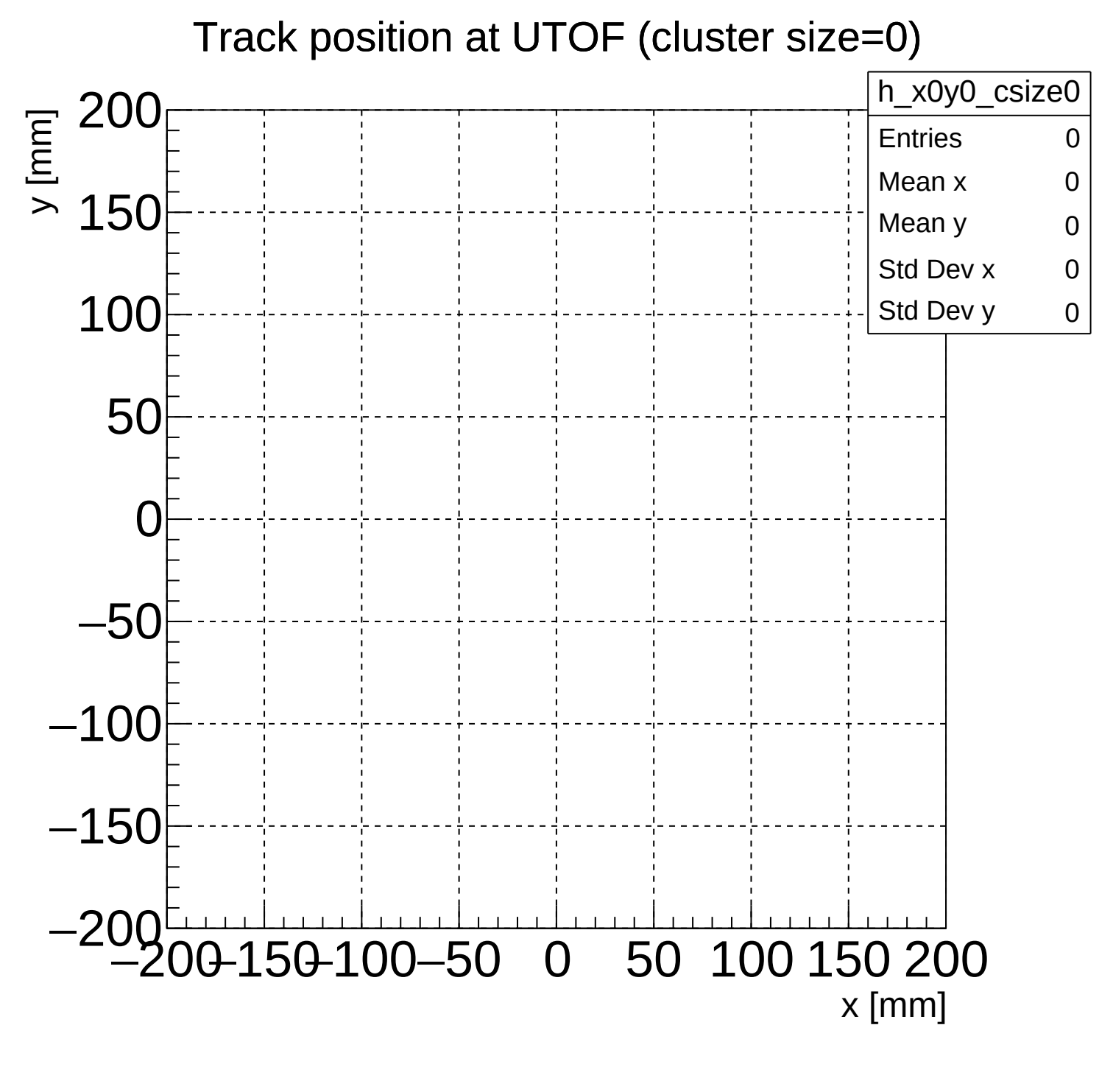

Track position (X projection)
450
400
350
300
250
200
150
100
50
0
–200
–150
–100
–50
0
50
100
150
200
x [mm]

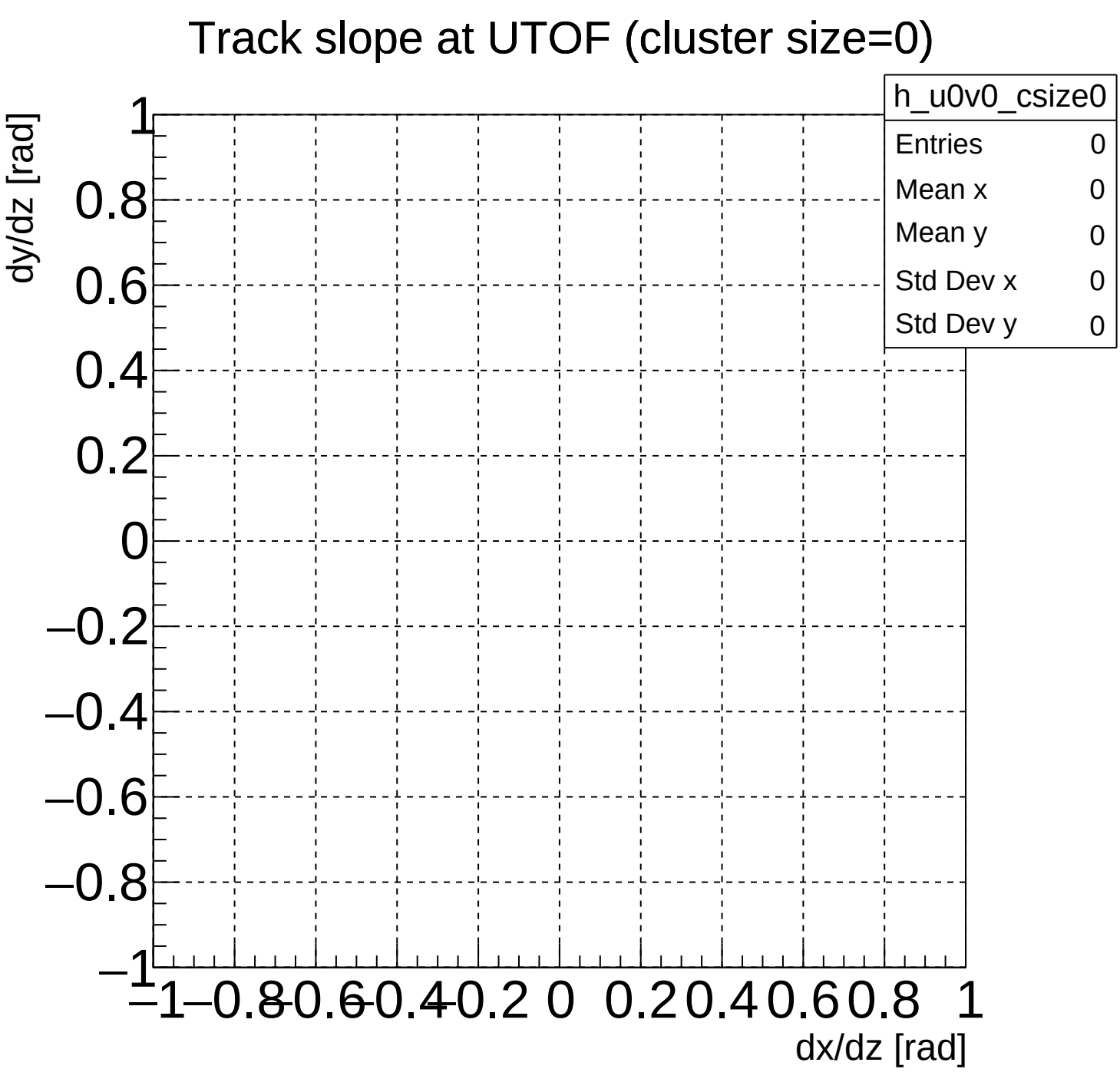

Track position (Y projection)
450
400
350
300
250
200
150
100
50
0
–200
–150
–100
–50
0
50
100
150
200
y [mm]

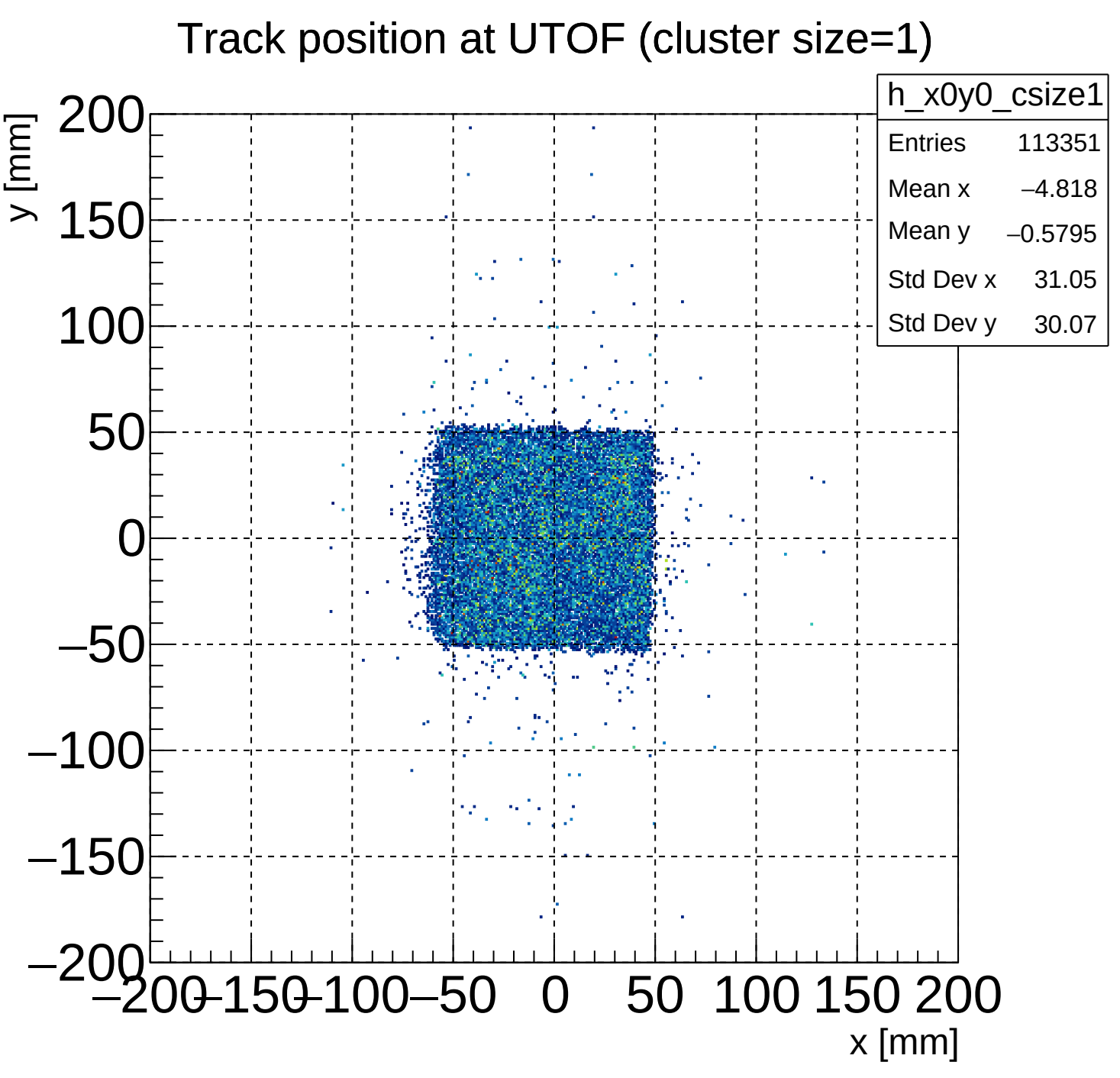

Track slope at UTOF
dy/dz
dx/dz
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1
–0.8
–0.6
–0.4
–0.2
0
0.2
0.4
0.6
0.8
1
500
400
300
200
100
0

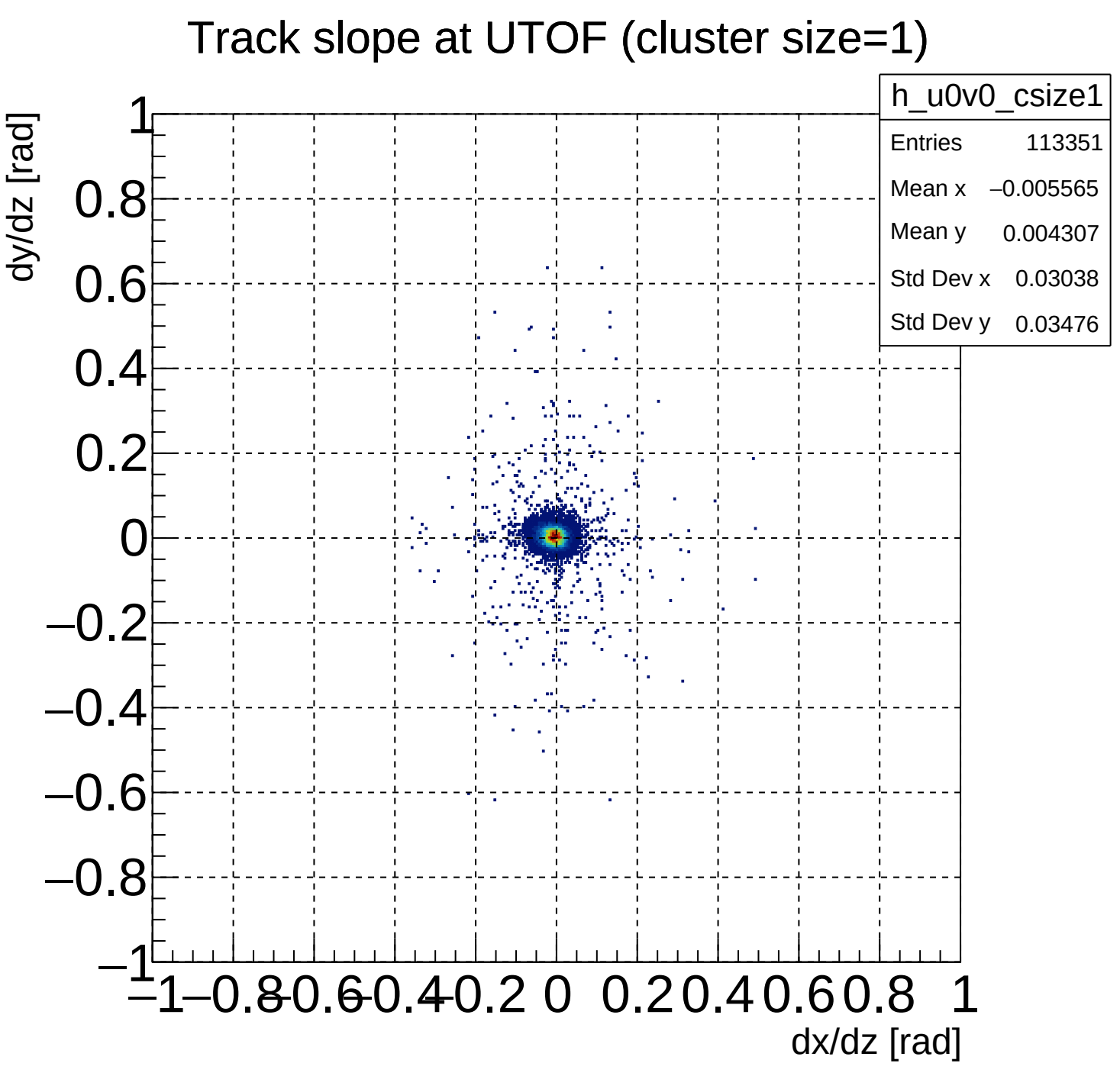

Track slope (X projection)
3500
3000
2500
2000
1500
1000
500
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
dx/dz

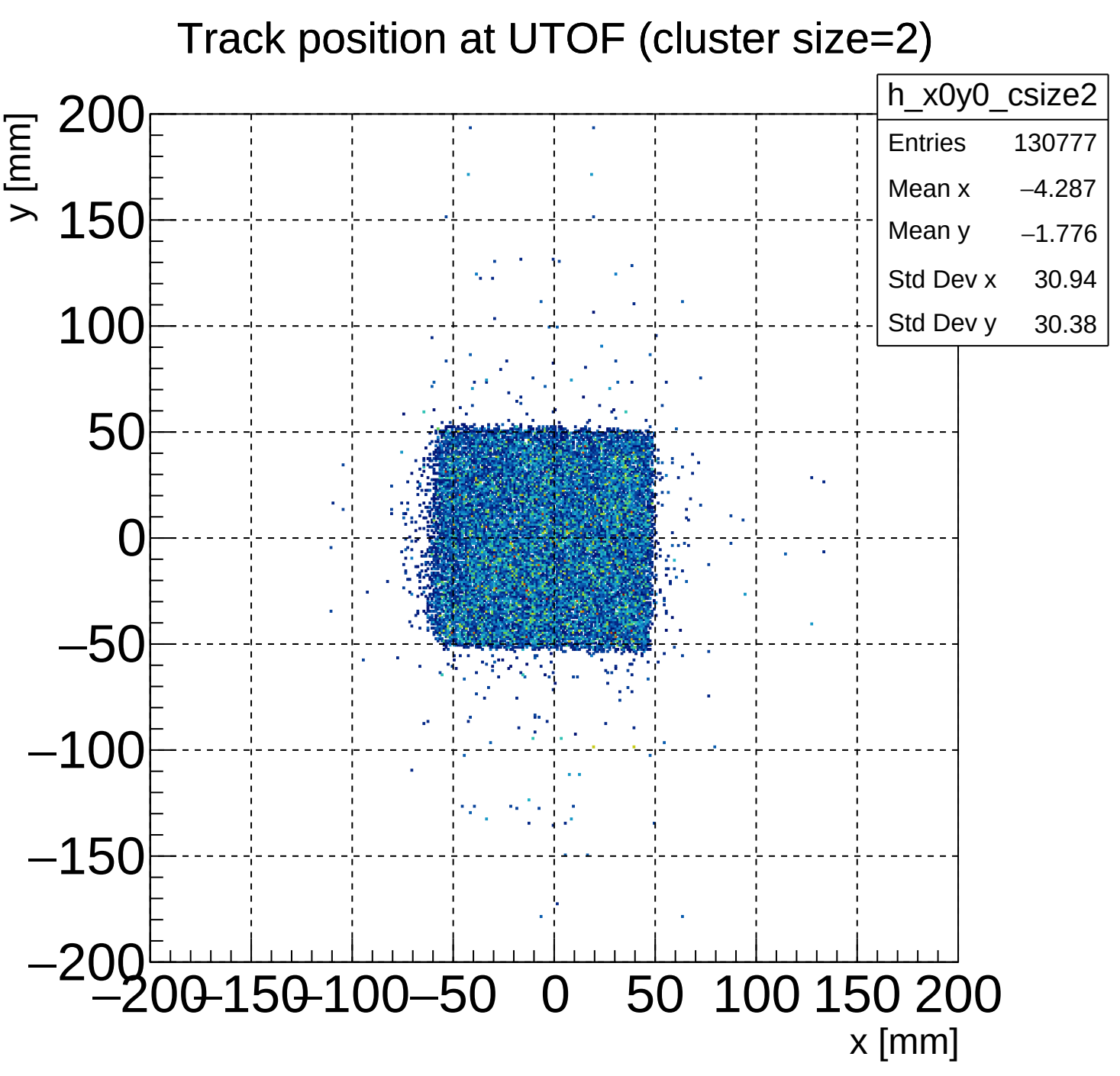

Track slope (Y projection)
5000
4000
3000
2000
1000
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
dy/dz

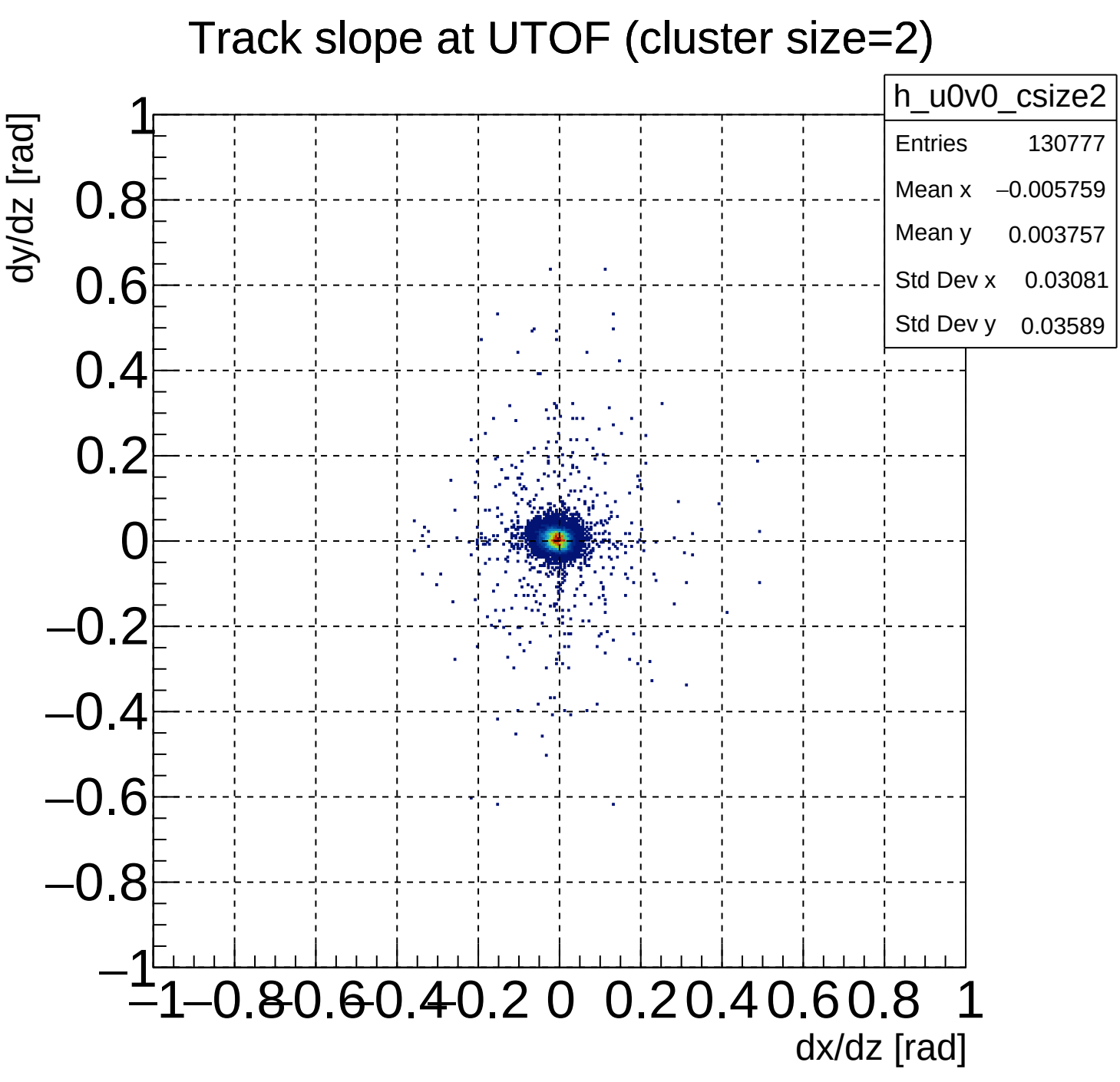

Track position at UTOF (cluster size=0)
h_x0y0_csize0
Entries 0
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
y [mm]
200
150
100
50
0
–50
–100
–150
–200
–200 –150 –100 –50 0 50 100 150 200
x [mm]

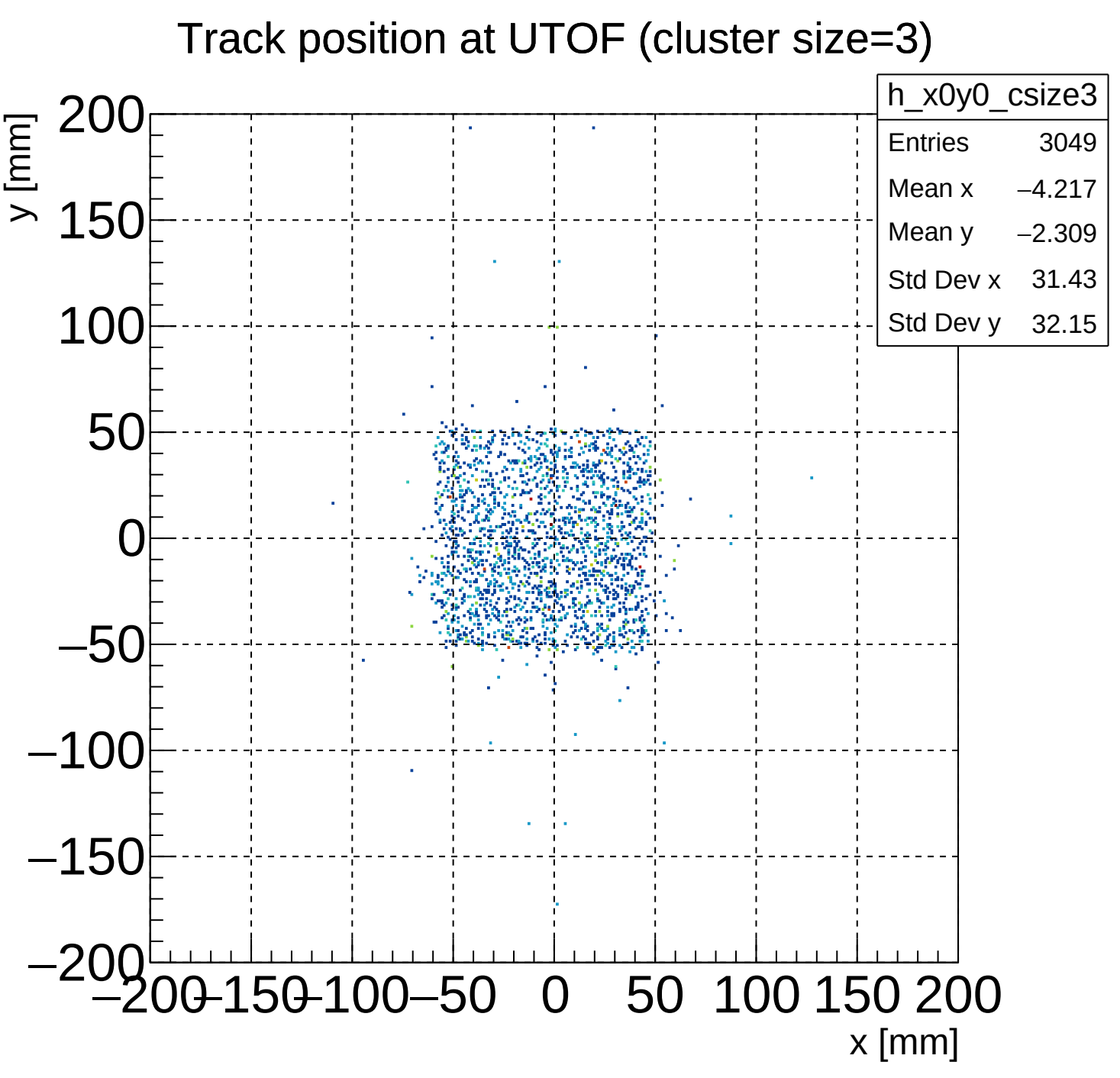

Track slope at UTOF (cluster size=0)
h_u0v0_csize0
Entries 0
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1
–0.8
–0.6
–0.4
–0.2
0
0.2
0.4
0.6
0.8
1

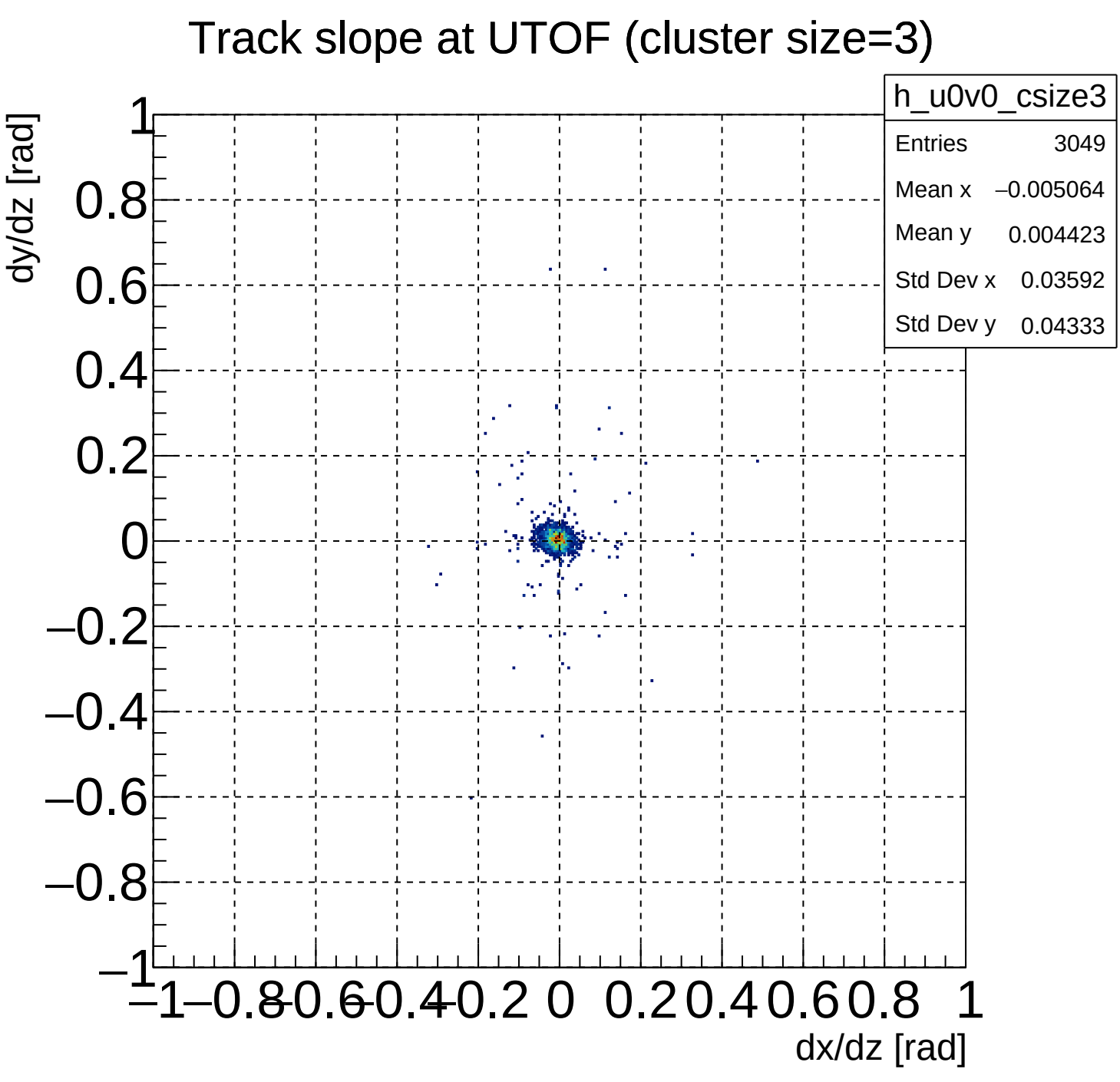

Track position at UTOF (cluster size=1)
h_x0y0_csize1
Entries 113351
Mean x –4.818
Mean y –0.5795
Std Dev x 31.05
Std Dev y 30.07
y [mm]
200
150
100
50
0
–50
–100
–150
–200
–200 –150 –100 –50 0 50 100 150 200
x [mm]

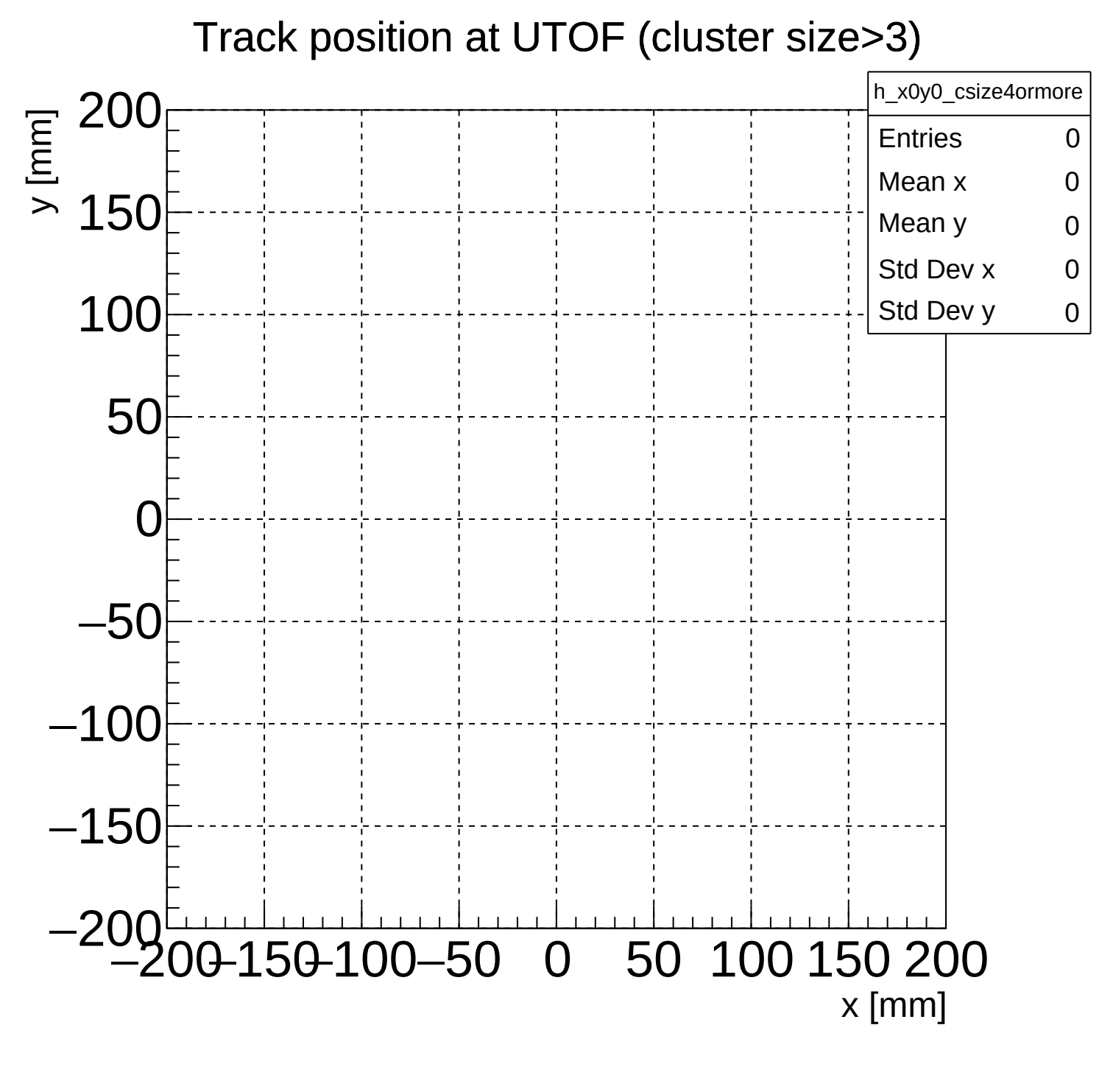

Track slope at UTOF (cluster size=1)
h_u0v0_csize1
Entries 113351
Mean x –0.005565
Mean y 0.004307
Std Dev x 0.03038
Std Dev y 0.03476
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1 –0.8 –0.6 –0.4 –0.2 0 0.2 0.4 0.6 0.8 1

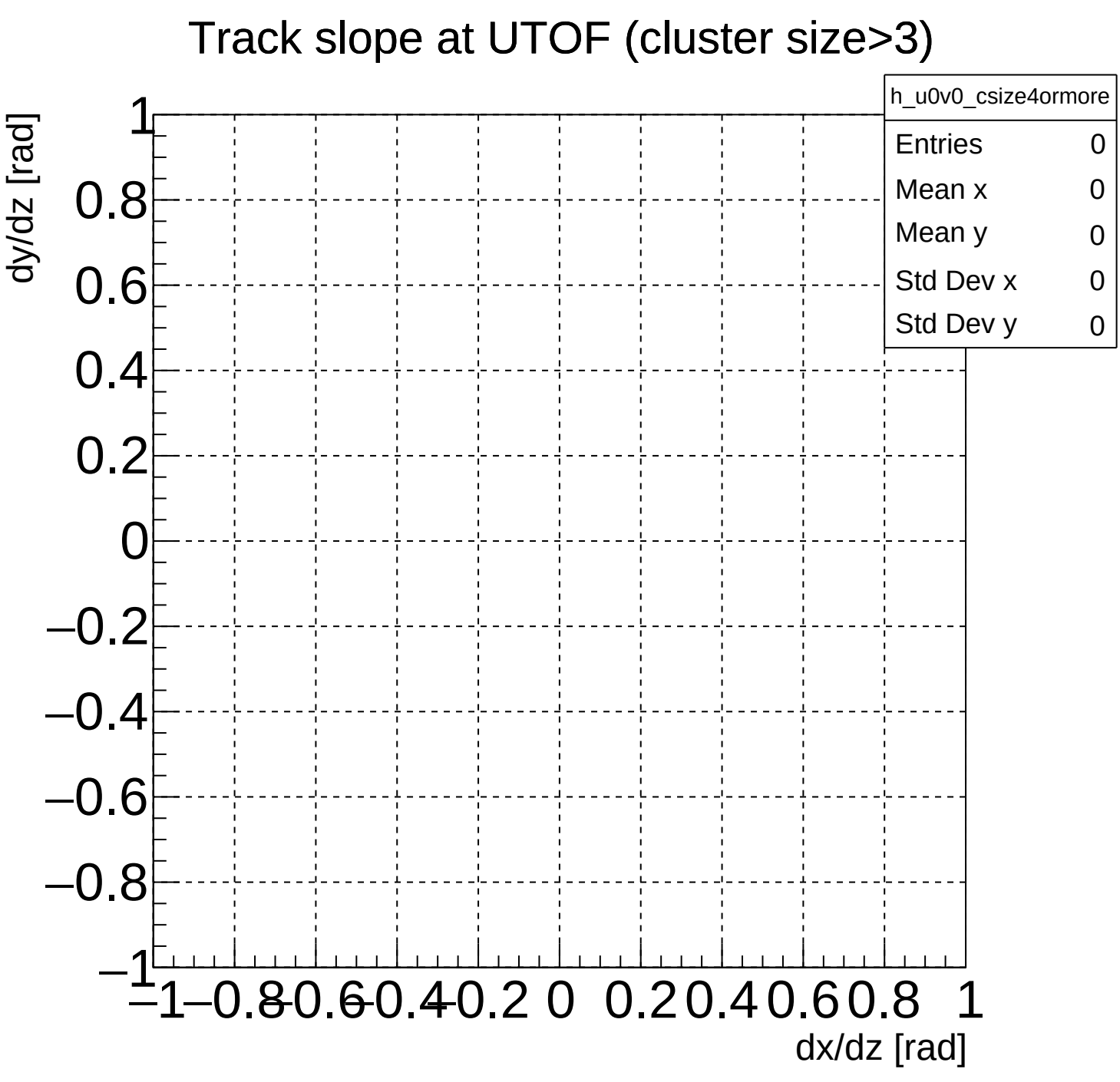

Track position at UTOF (cluster size=2)
h_x0y0_csize2
Entries 130777
Mean x −4.287
Mean y −1.776
Std Dev x 30.94
Std Dev y 30.38
y [mm]
200
150
100
50
0
−50
−100
−150
−200
−200 −150 −100 −50 0 50 100 150 200
x [mm]

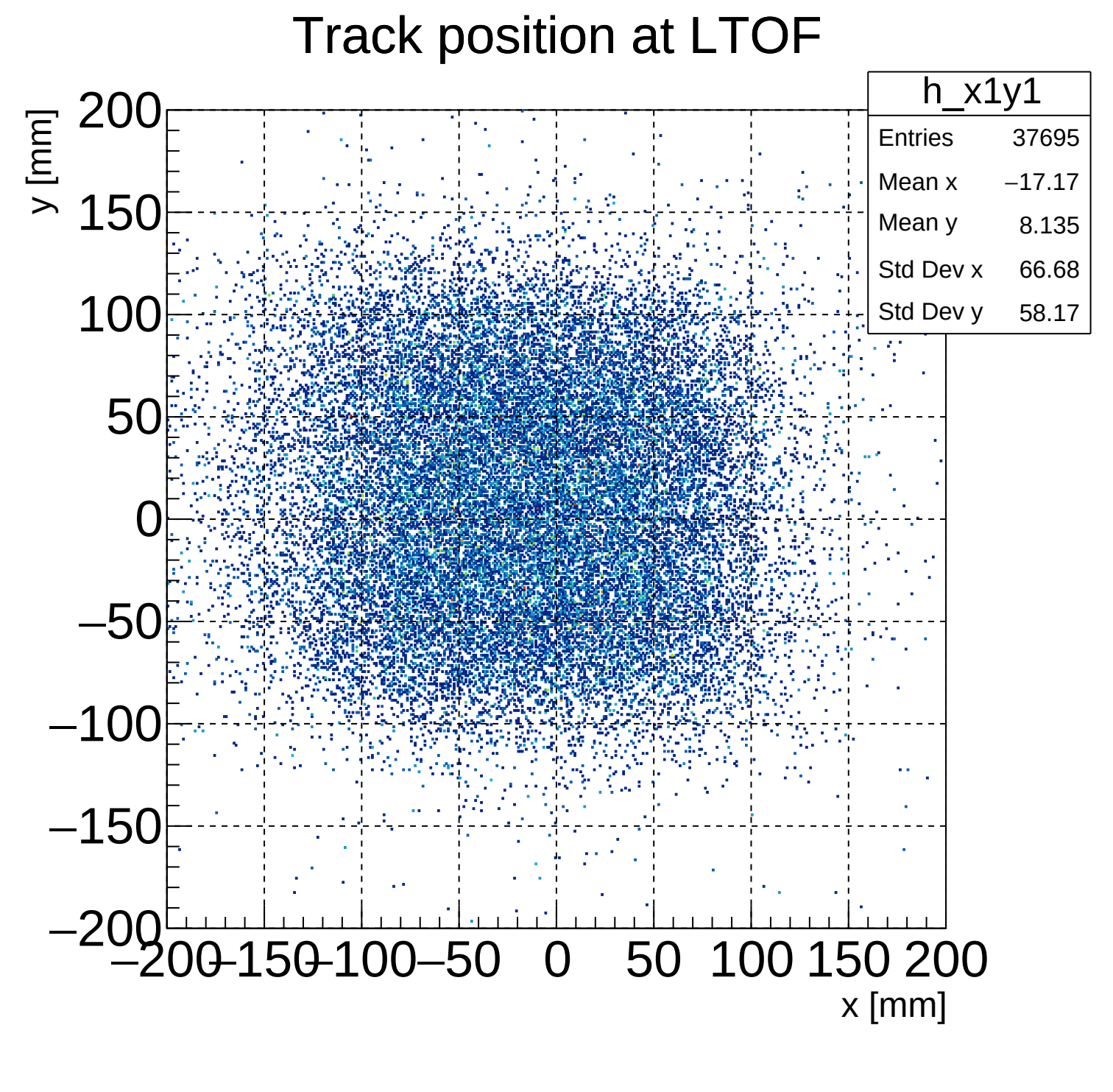

Track slope at UTOF (cluster size=2)
h_u0v0_csize2
Entries 130777
Mean x –0.005759
Mean y 0.003757
Std Dev x 0.03081
Std Dev y 0.03589
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1 –0.8 –0.6 –0.4 –0.2 0 0.2 0.4 0.6 0.8 1

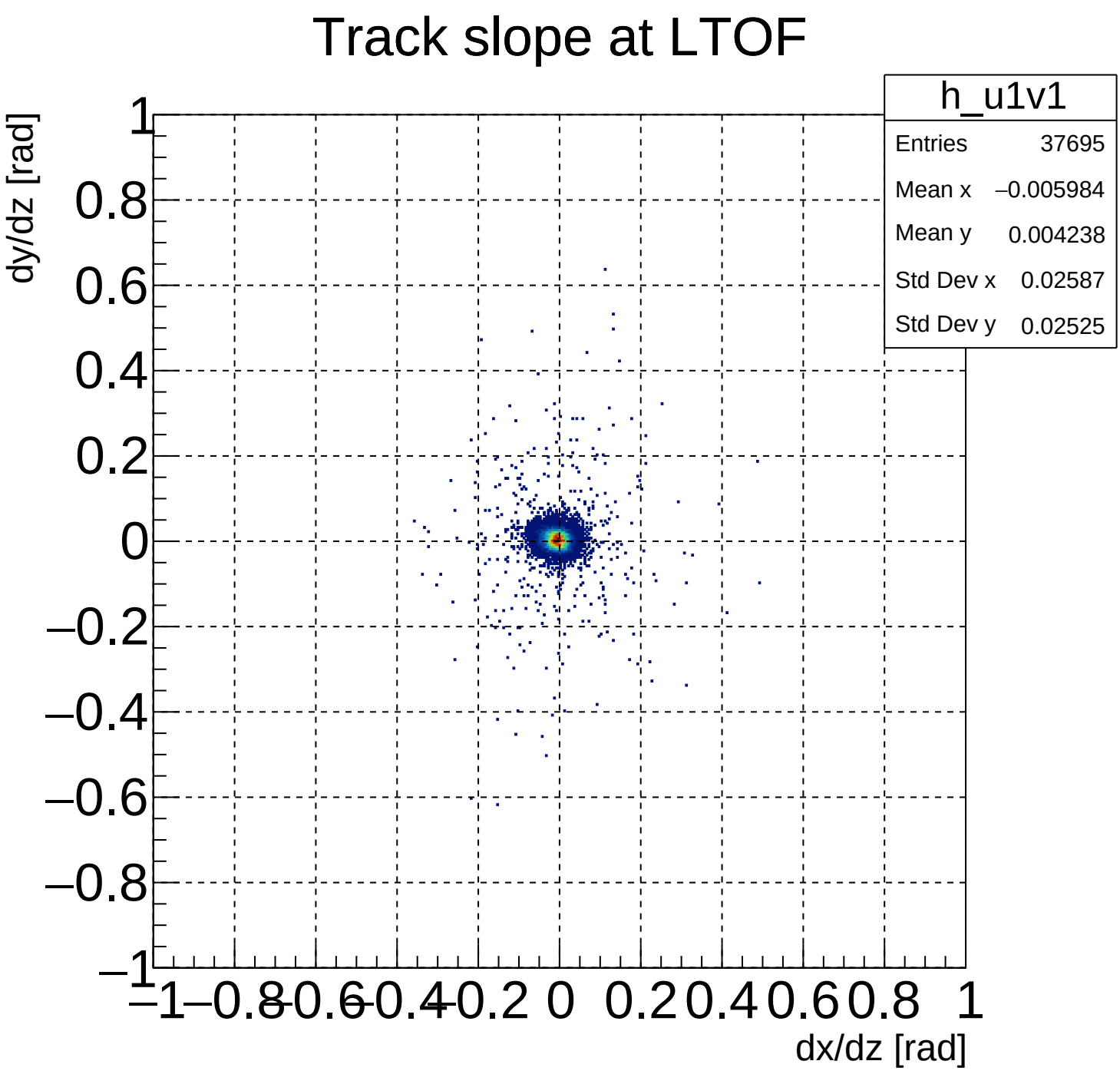

Track position at UTOF (cluster size=3)
h_x0y0_csize3
Entries 3049
Mean x –4.217
Mean y –2.309
Std Dev x 31.43
Std Dev y 32.15
y [mm]
200
150
100
50
0
–50
–100
–150
–200
–200 –150 –100 –50 0 50 100 150 200
x [mm]

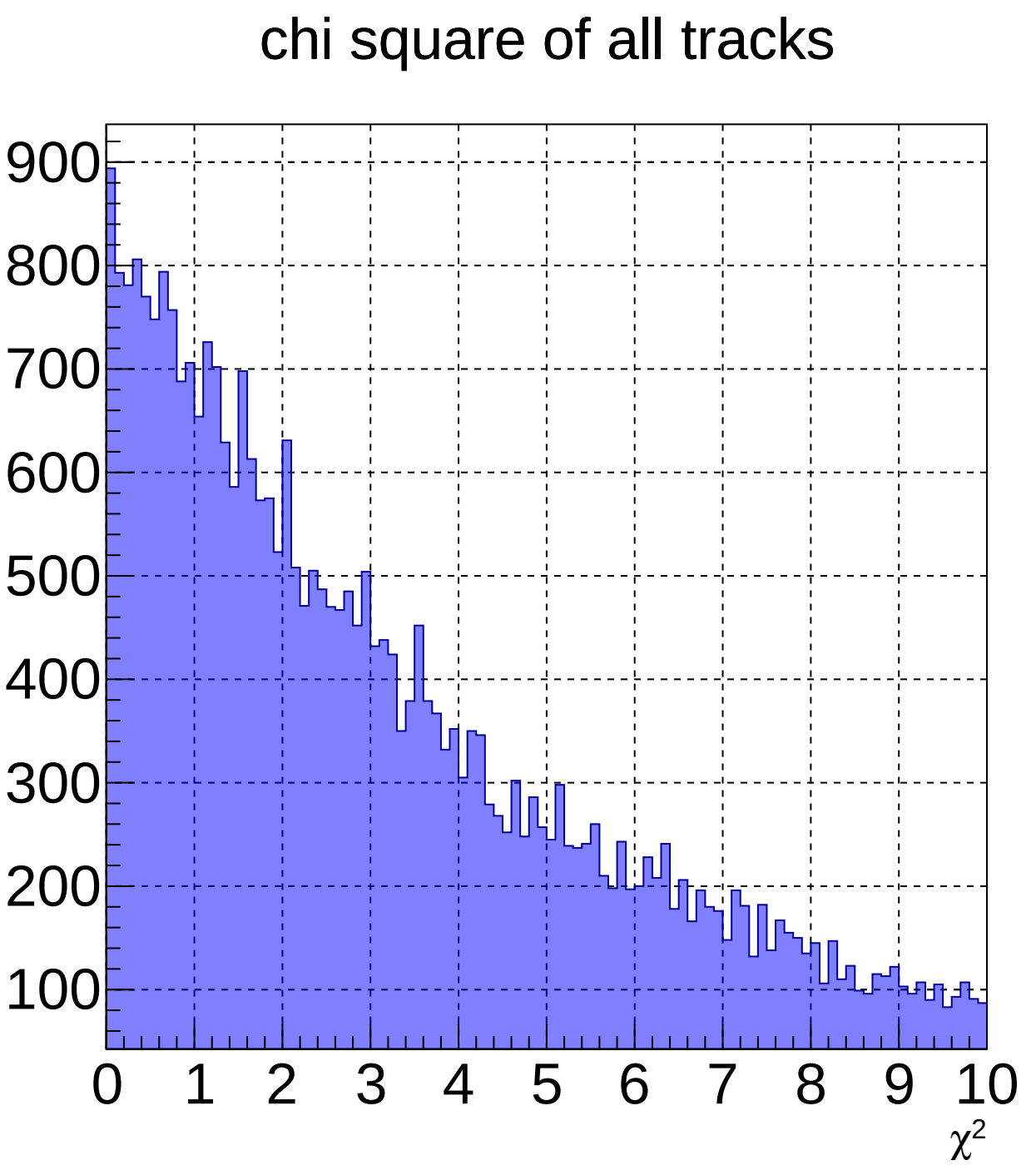

Track slope at UTOF (cluster size=3)
h_u0v0_csize3
Entries 3049
Mean x –0.005064
Mean y 0.004423
Std Dev x 0.03592
Std Dev y 0.04333
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1 –0.8 –0.6 –0.4 –0.2 0 0.2 0.4 0.6 0.8 1

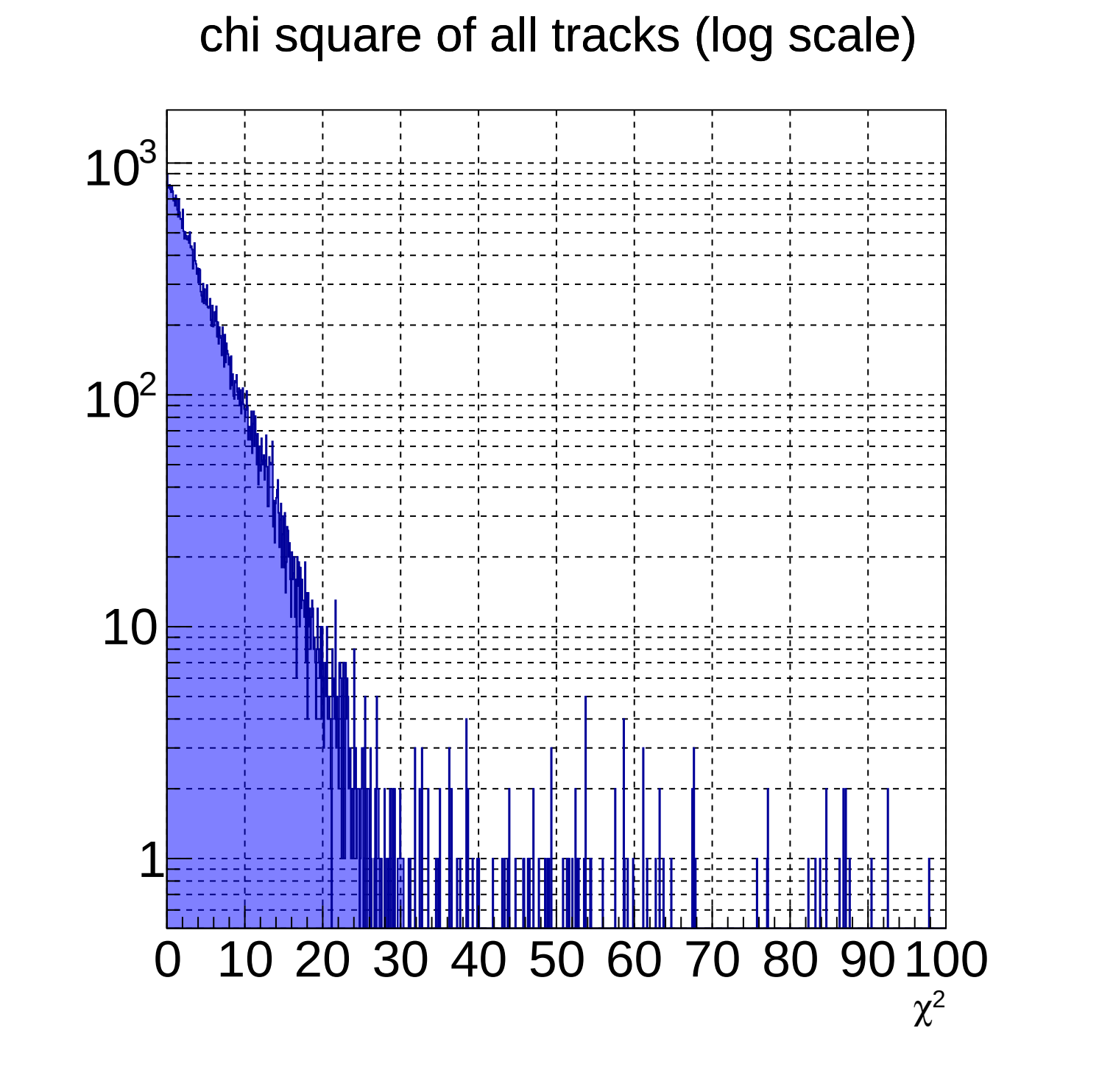

Track position at UTOF (cluster size>3)
h_x0y0_csize4ormore
Entries 0
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
y [mm]
200
150
100
50
0
–50
–100
–150
–200
–200 –150 –100 –50 0 50 100 150 200
x [mm]

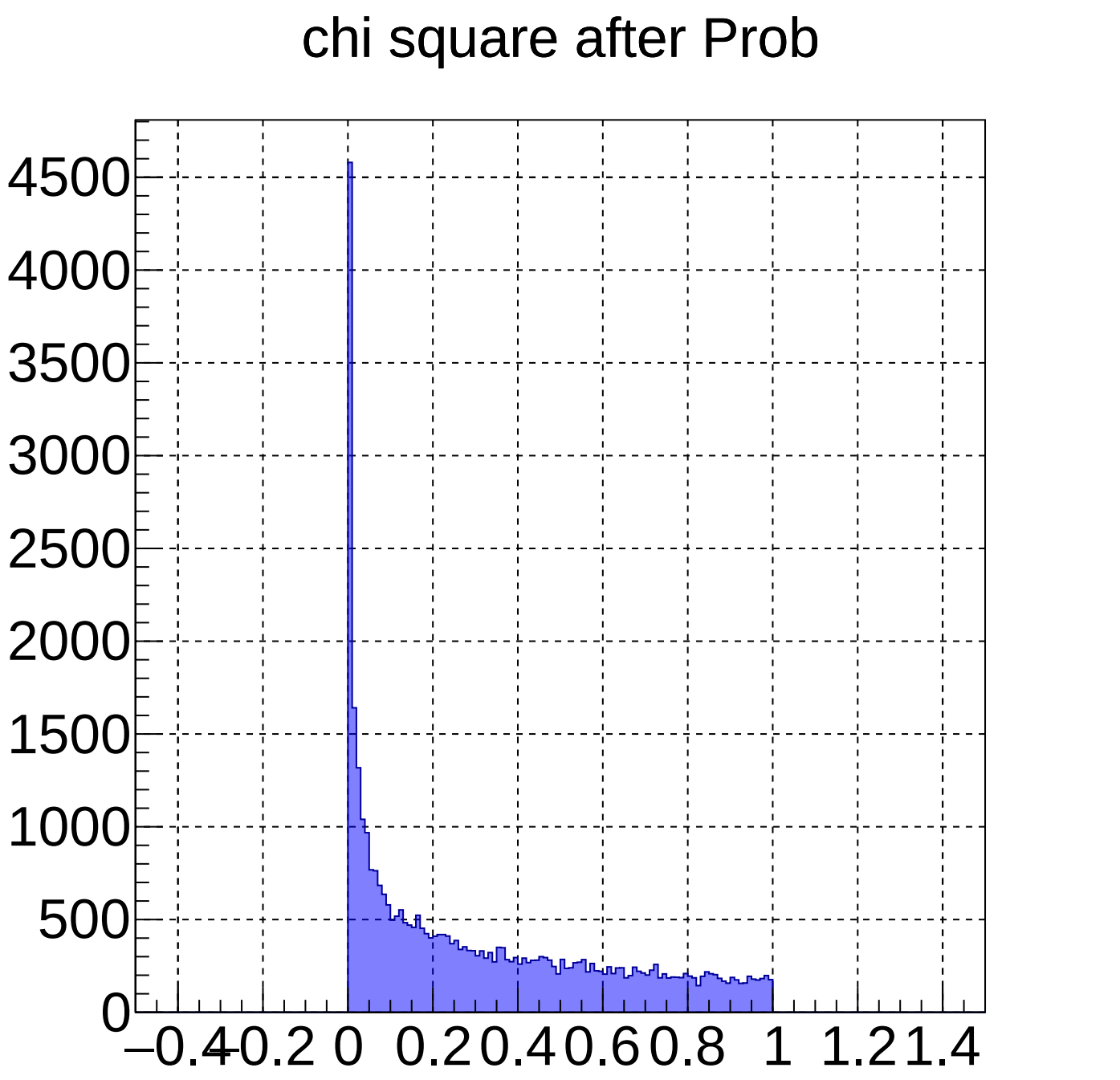

Track slope at UTOF (cluster size>3)
h_u0v0_csize4ormore
Entries 0
Mean x 0
Mean y 0
Std Dev x 0
Std Dev y 0
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1 –0.8 –0.6 –0.4 –0.2 0 0.2 0.4 0.6 0.8 1

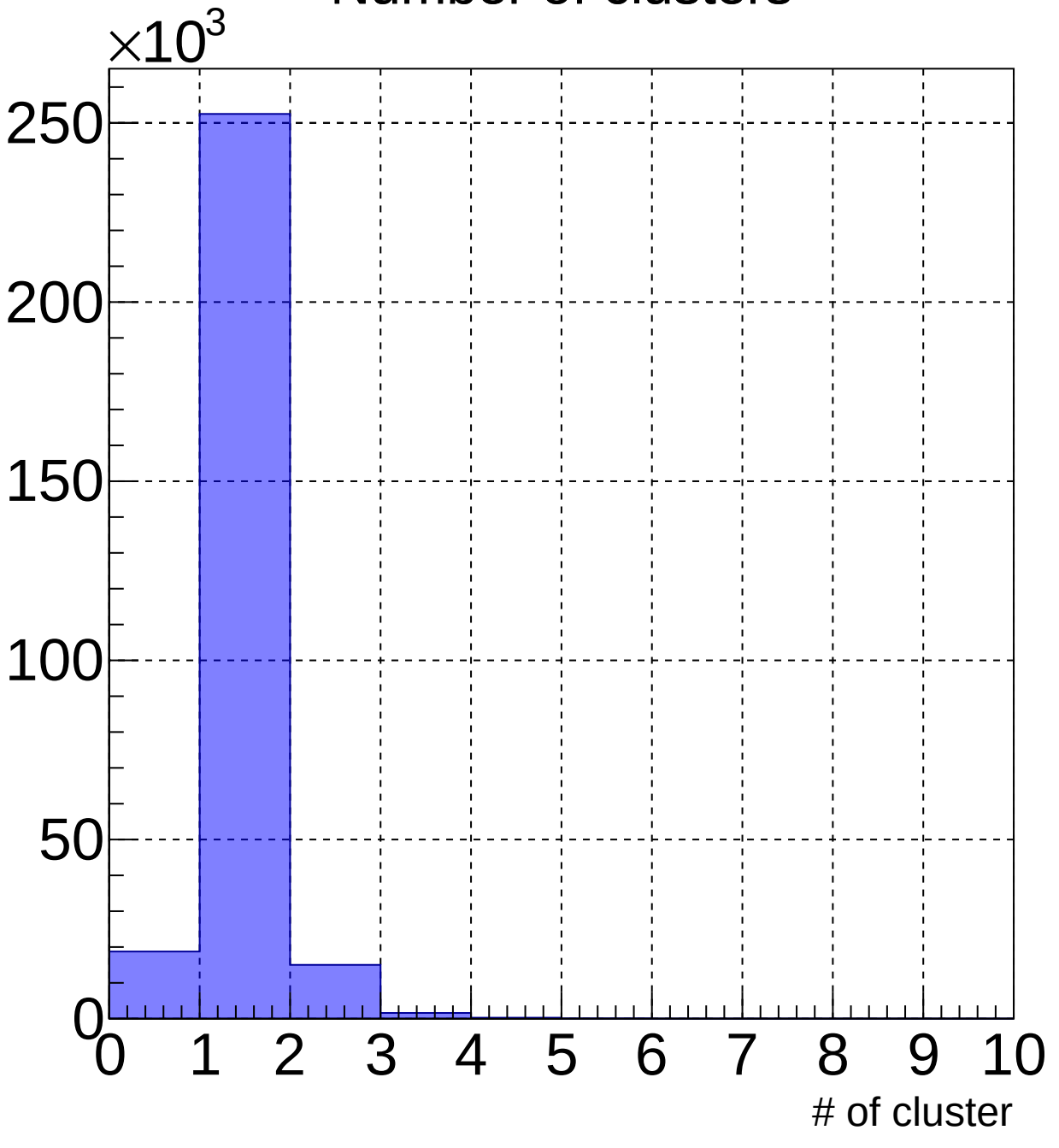

Track position at LTOF
h_x1y1
Entries 37695
Mean x −17.17
Mean y 8.135
Std Dev x 66.68
Std Dev y 58.17
y [mm]
200
150
100
50
0
−50
−100
−150
−200
−200 −150 −100 −50 0 50 100 150 200
x [mm]

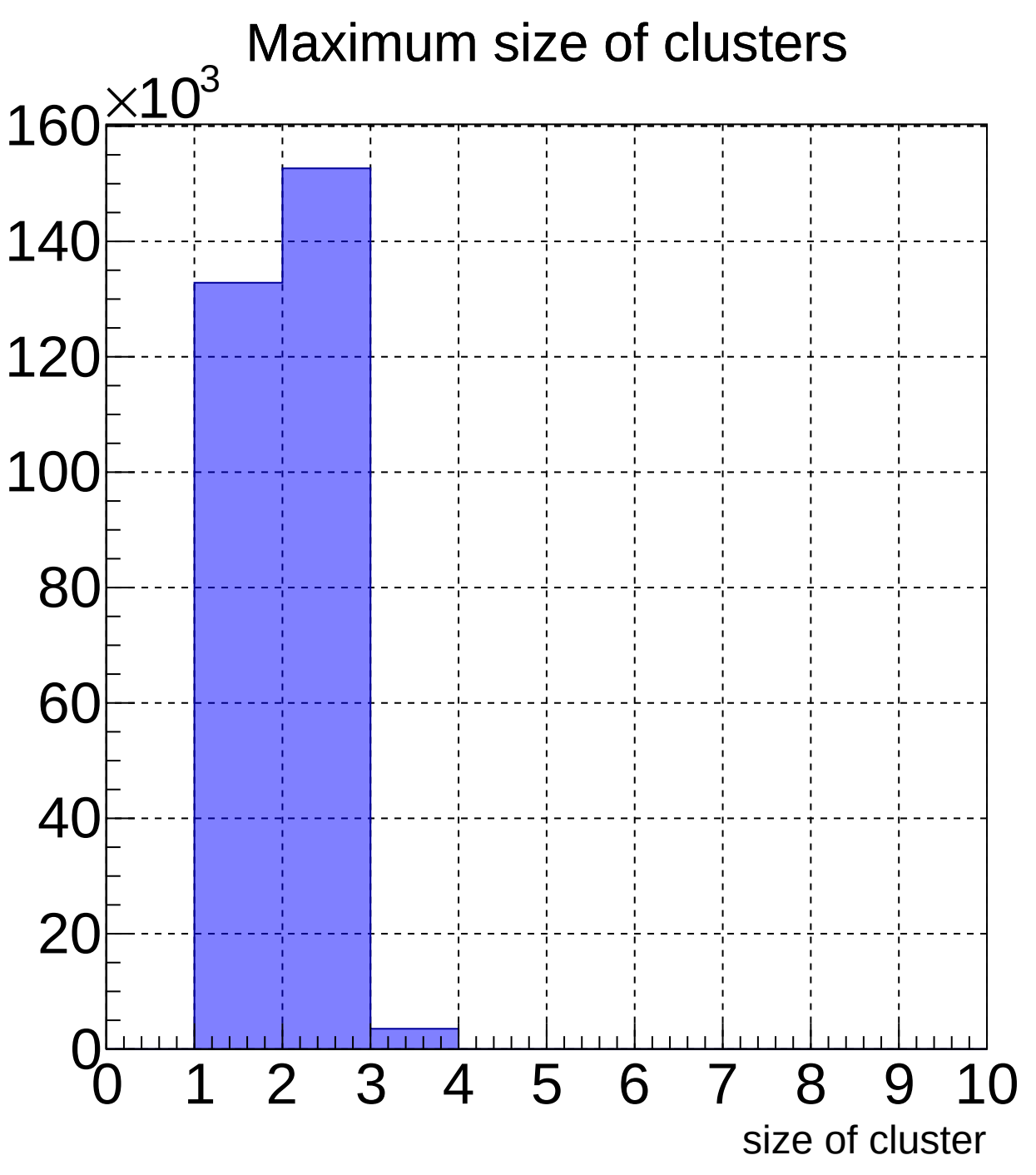

Track slope at LTOF
h_u1v1
Entries 37695
Mean x –0.005984
Mean y 0.004238
Std Dev x 0.02587
Std Dev y 0.02525
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
–0.2
–0.4
–0.6
–0.8
–1
–1 –0.8 –0.6 –0.4 –0.2 0 0.2 0.4 0.6 0.8 1

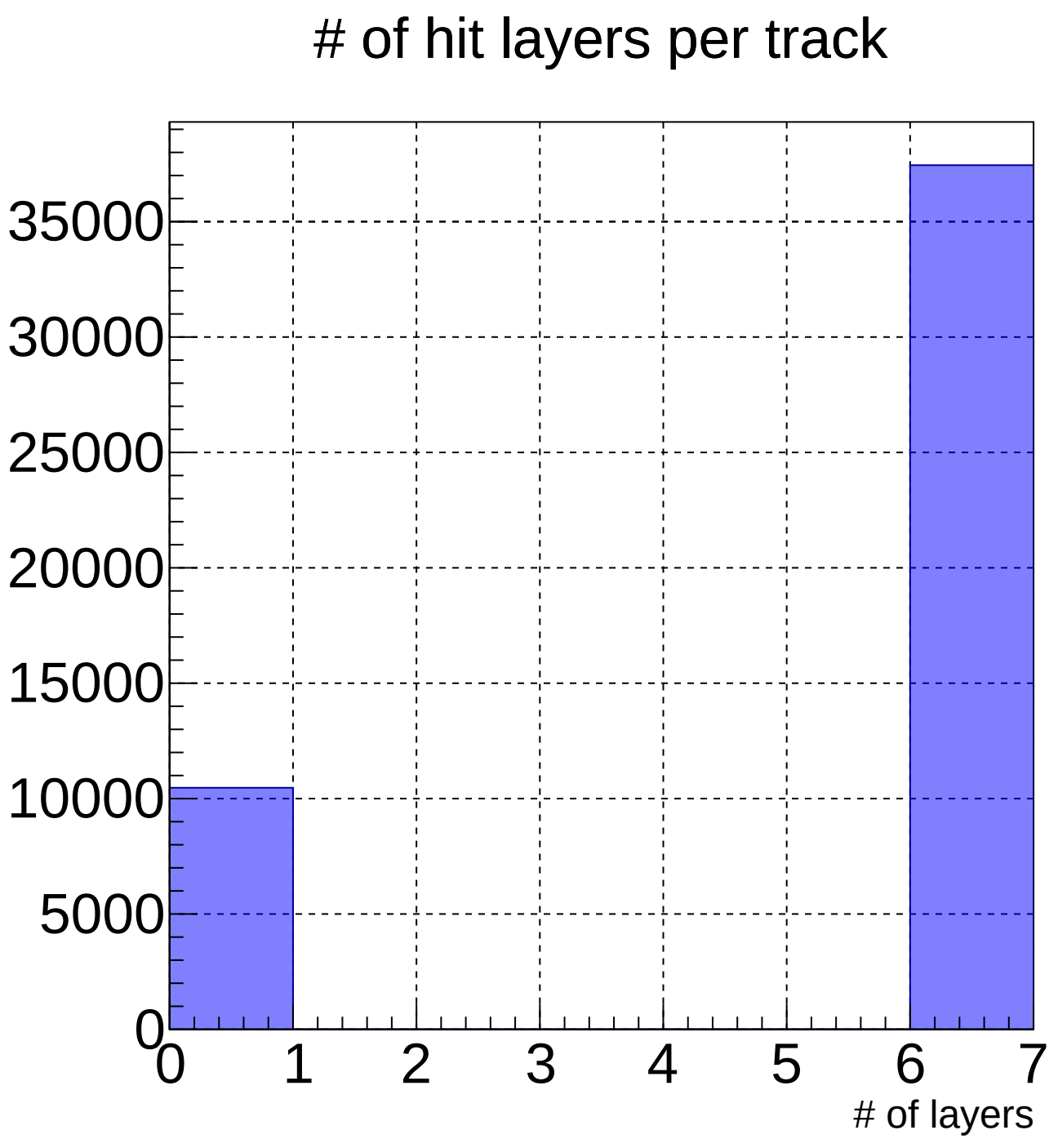

chi square of all tracks
900
800
700
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
χ2

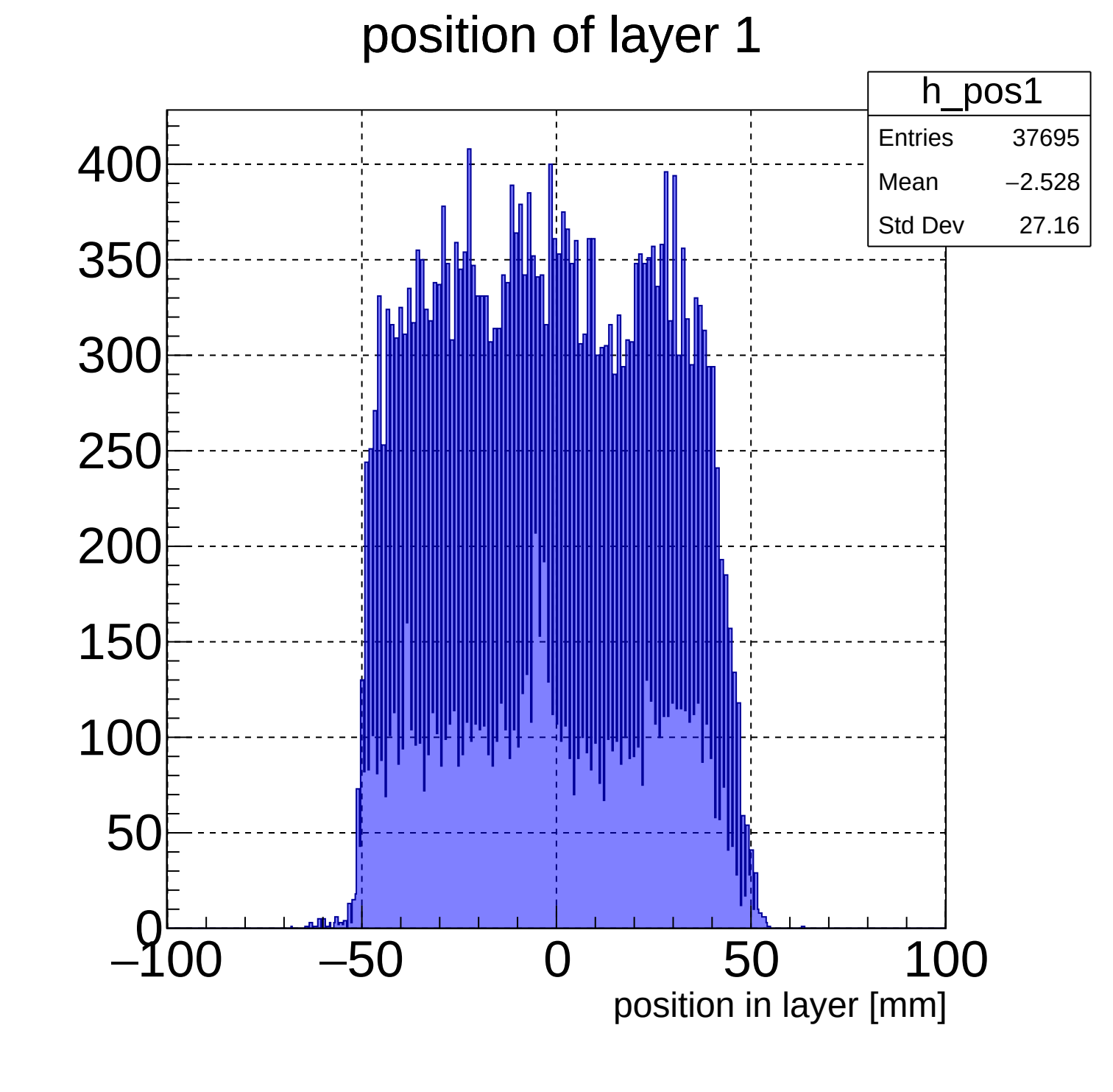

chi square of all tracks (log scale)
10^3
10^2
10
1
0
10
20
30
40
50
60
70
80
90
100
χ^2

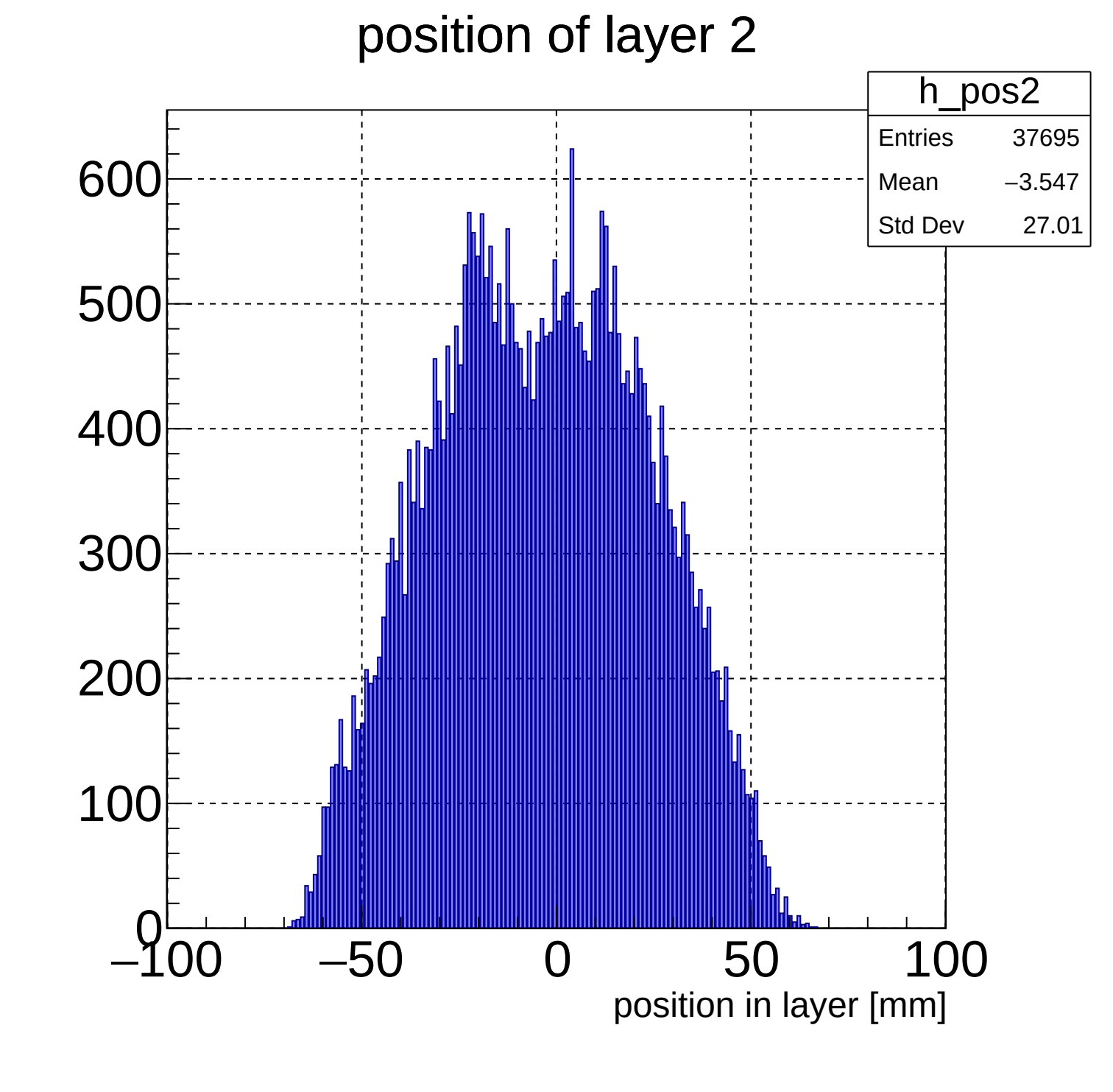

chi square after Prob
4500
4000
3500
3000
2500
2000
1500
1000
500
0
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4

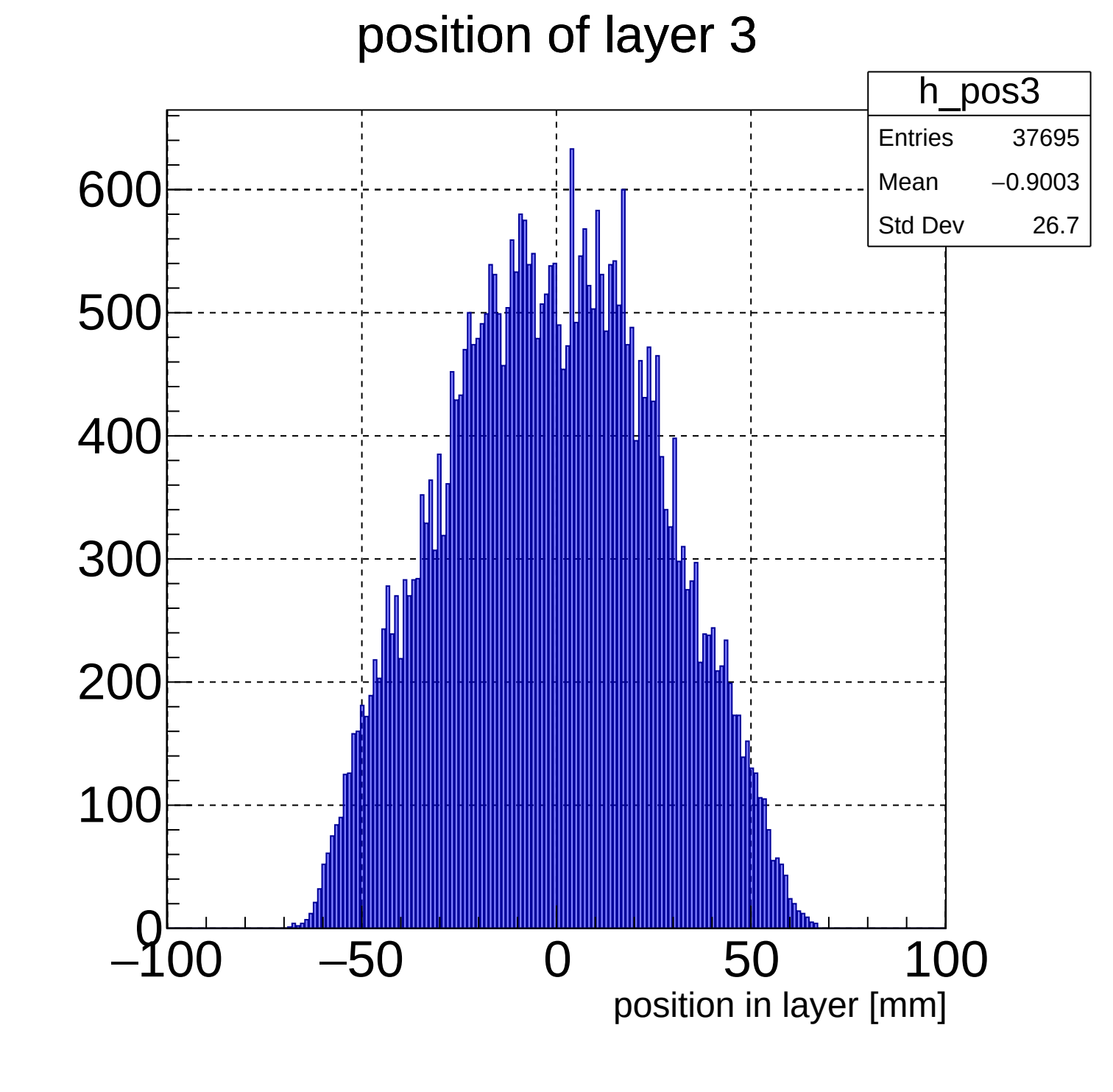

Number of clusters
×10^3
250
200
150
100
50
0
0 1 2 3 4 5 6 7 8 9 10
# of cluster

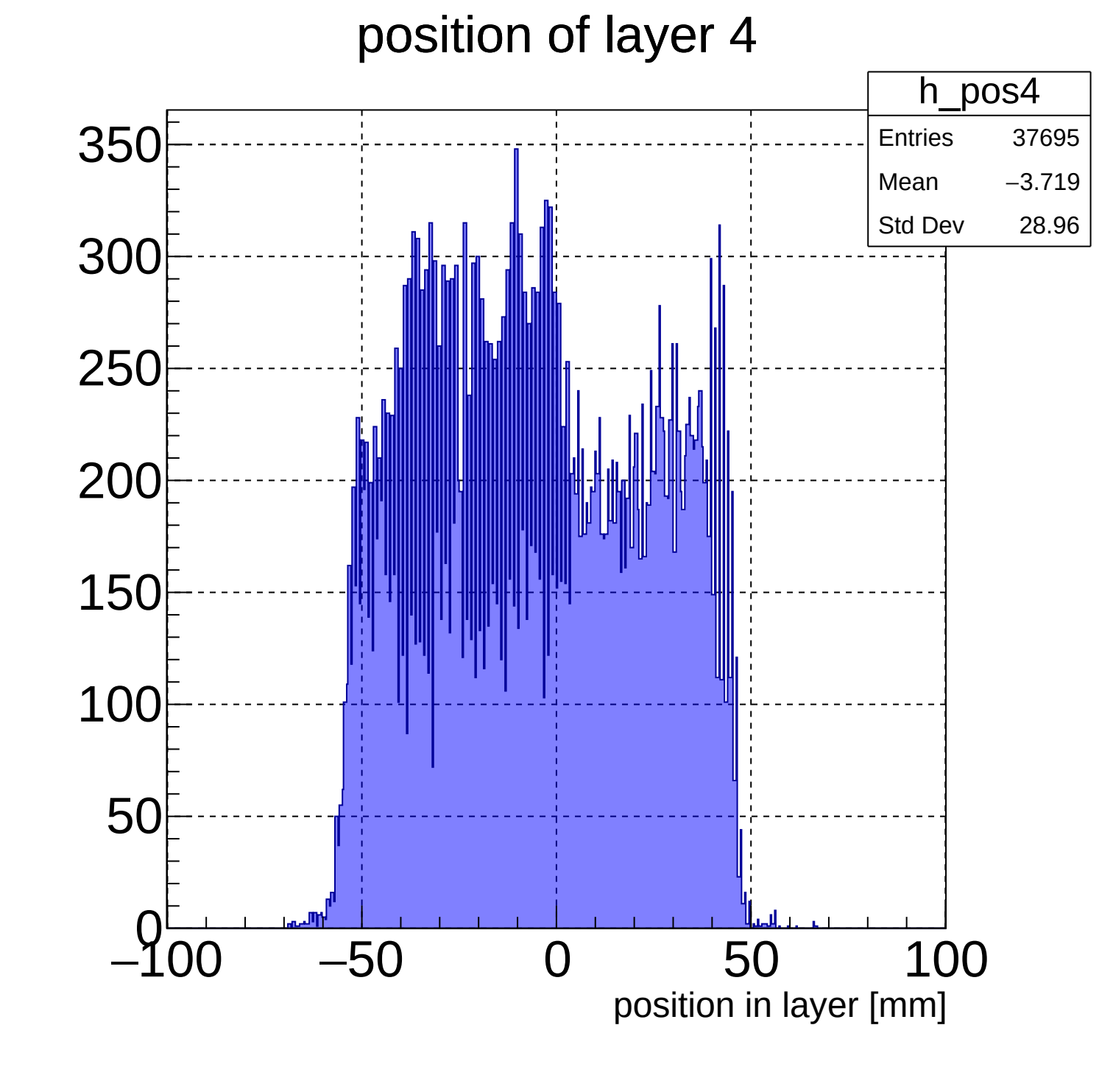

Maximum size of clusters
×10^3
160
140
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10
size of cluster

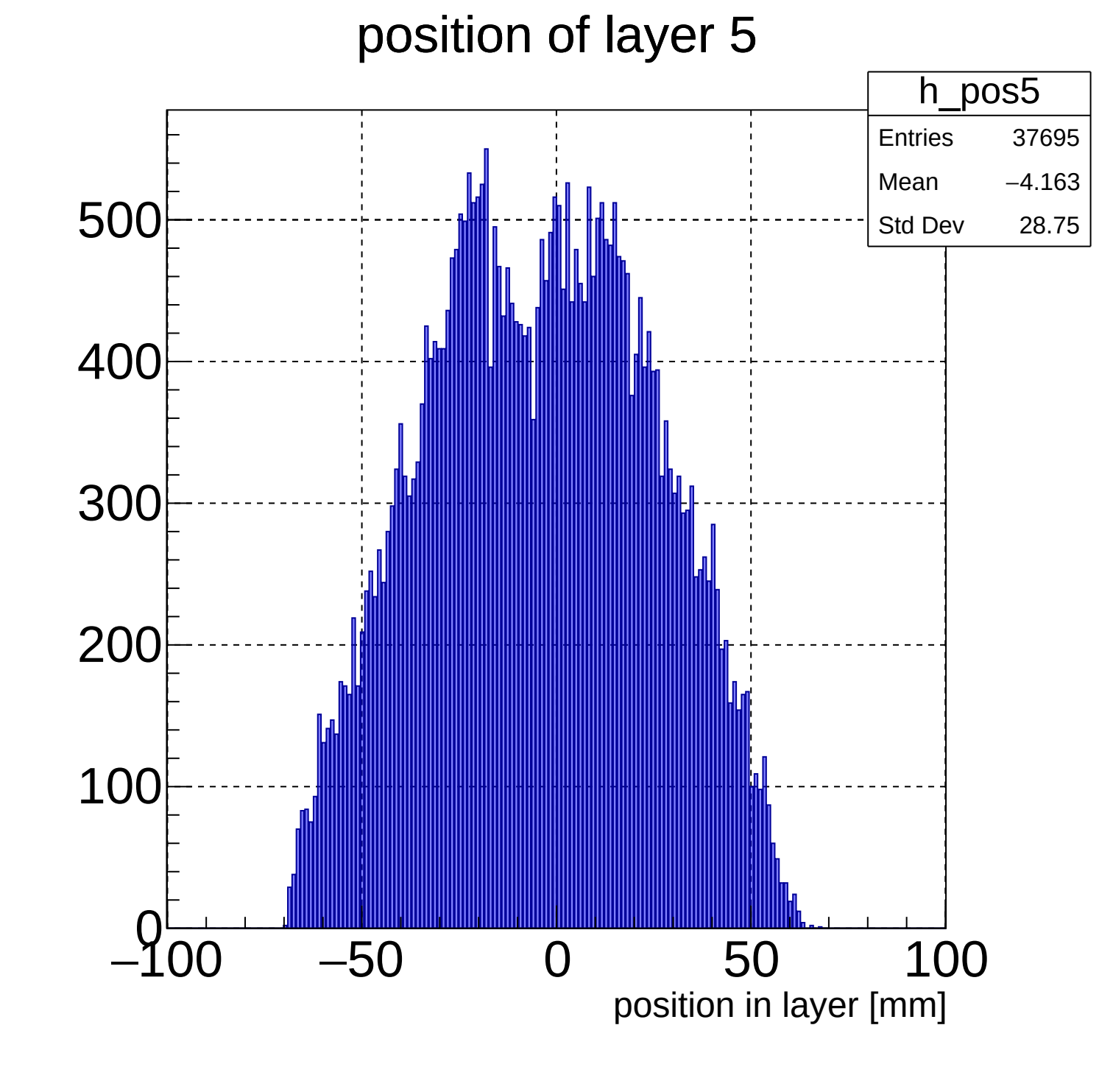

# of hit layers per track
35000
30000
25000
20000
15000
10000
5000
0
0
1
2
3
4
5
6
7
# of layers

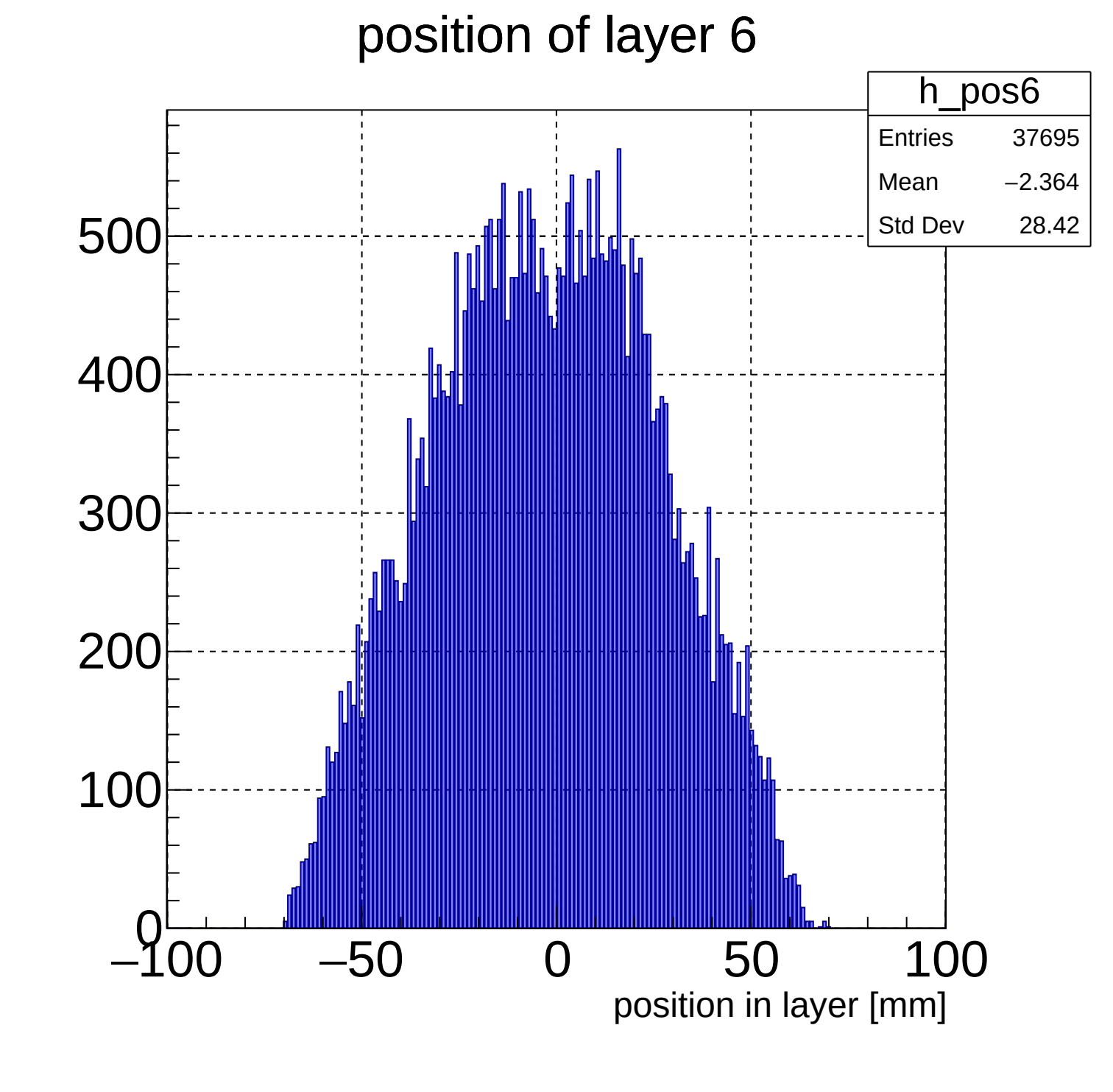

position of layer 1
h_pos1
Entries 37695
Mean −2.528
Std Dev 27.16
400
350
300
250
200
150
100
50
0
−100
−50
0
50
100
position in layer [mm]

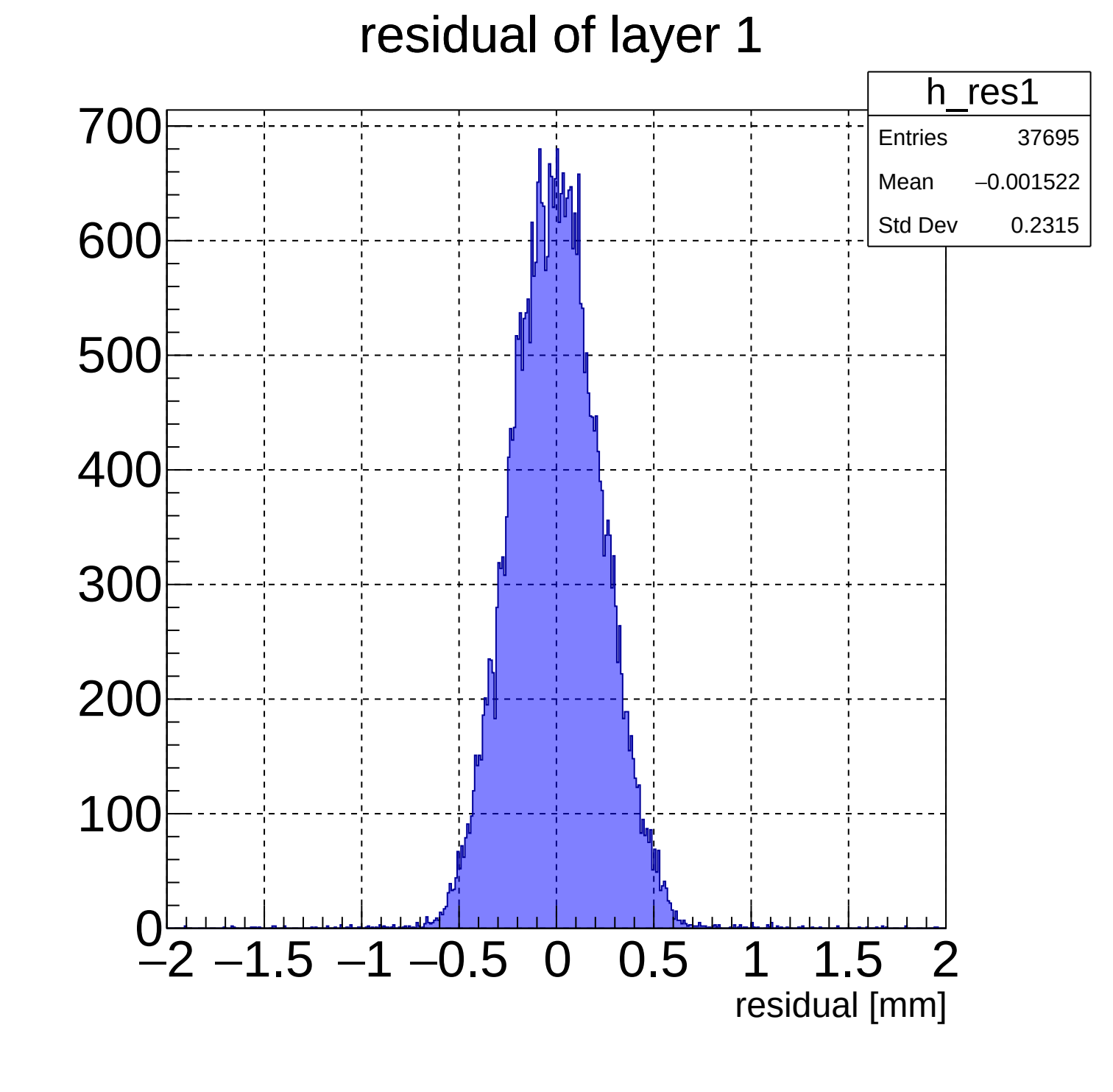

position of layer 2
h_pos2
Entries 37695
Mean −3.547
Std Dev 27.01
600
500
400
300
200
100
0
−100
−50
0
50
100
position in layer [mm]

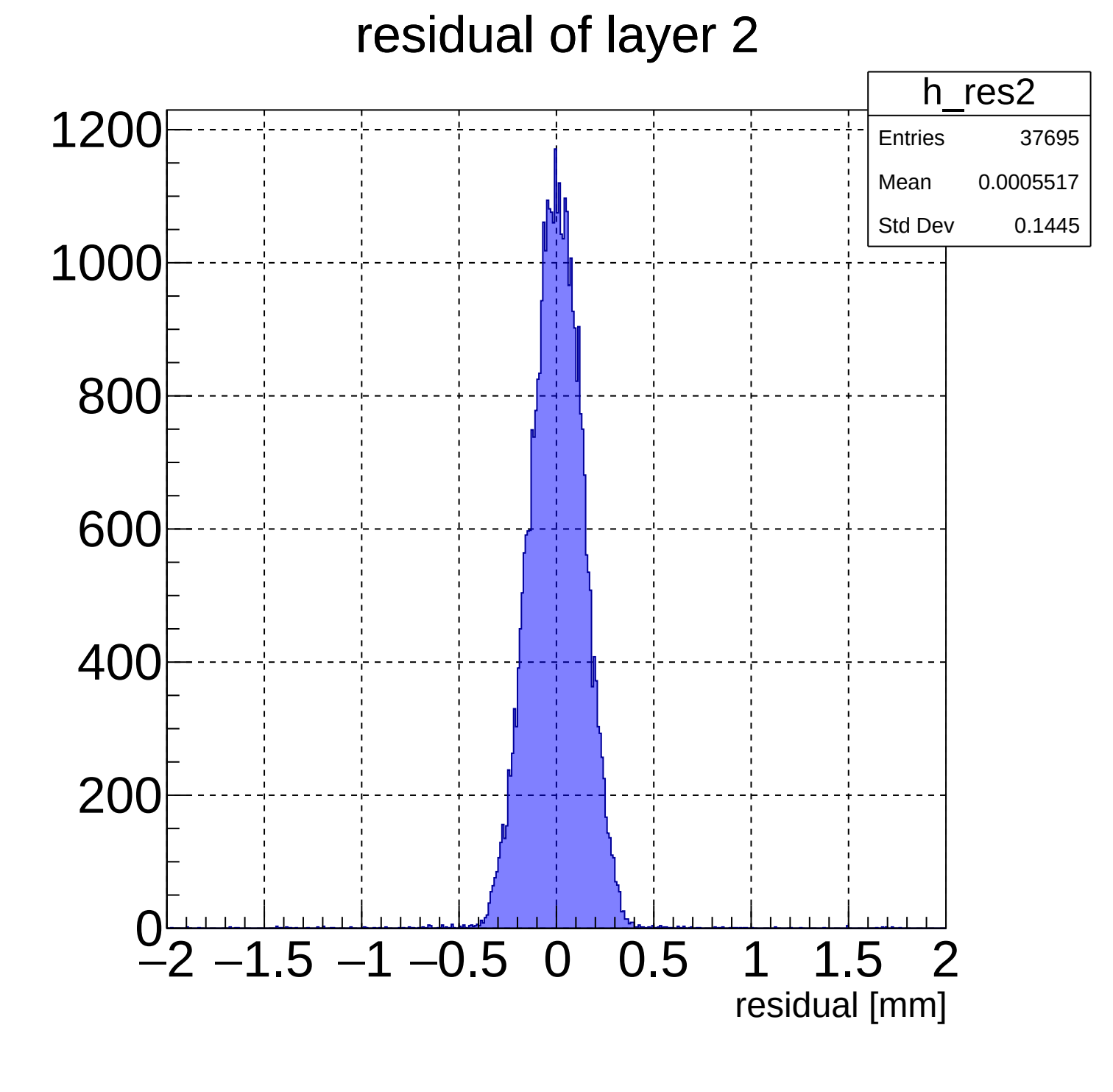

position of layer 3
h_pos3
Entries 37695
Mean −0.9003
Std Dev 26.7
600
500
400
300
200
100
0
−100
−50
0
50
100
position in layer [mm]

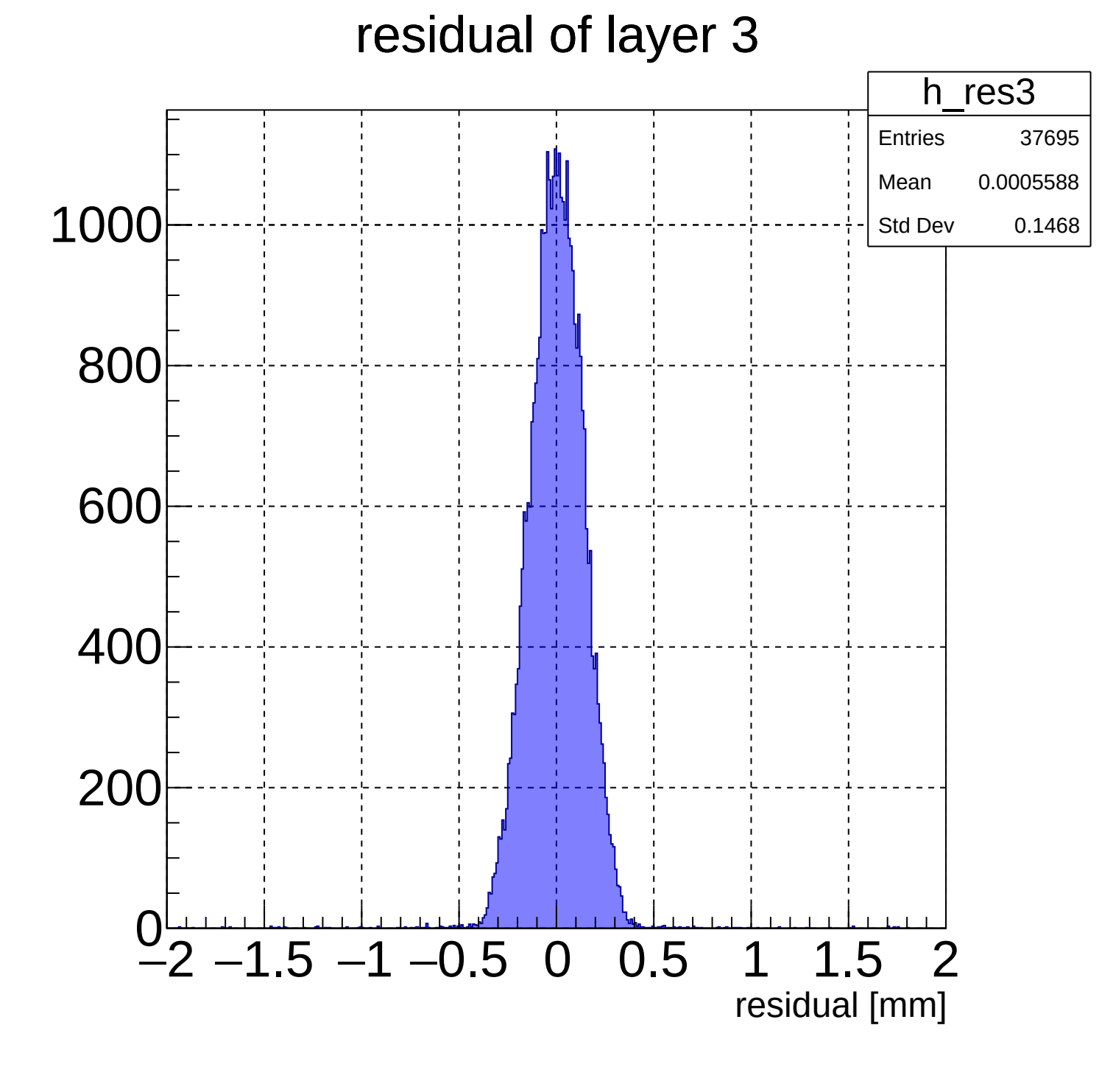

position of layer 4
h_pos4
Entries 37695
Mean −3.719
Std Dev 28.96
350
300
250
200
150
100
50
0
−100
−50
0
50
100
position in layer [mm]

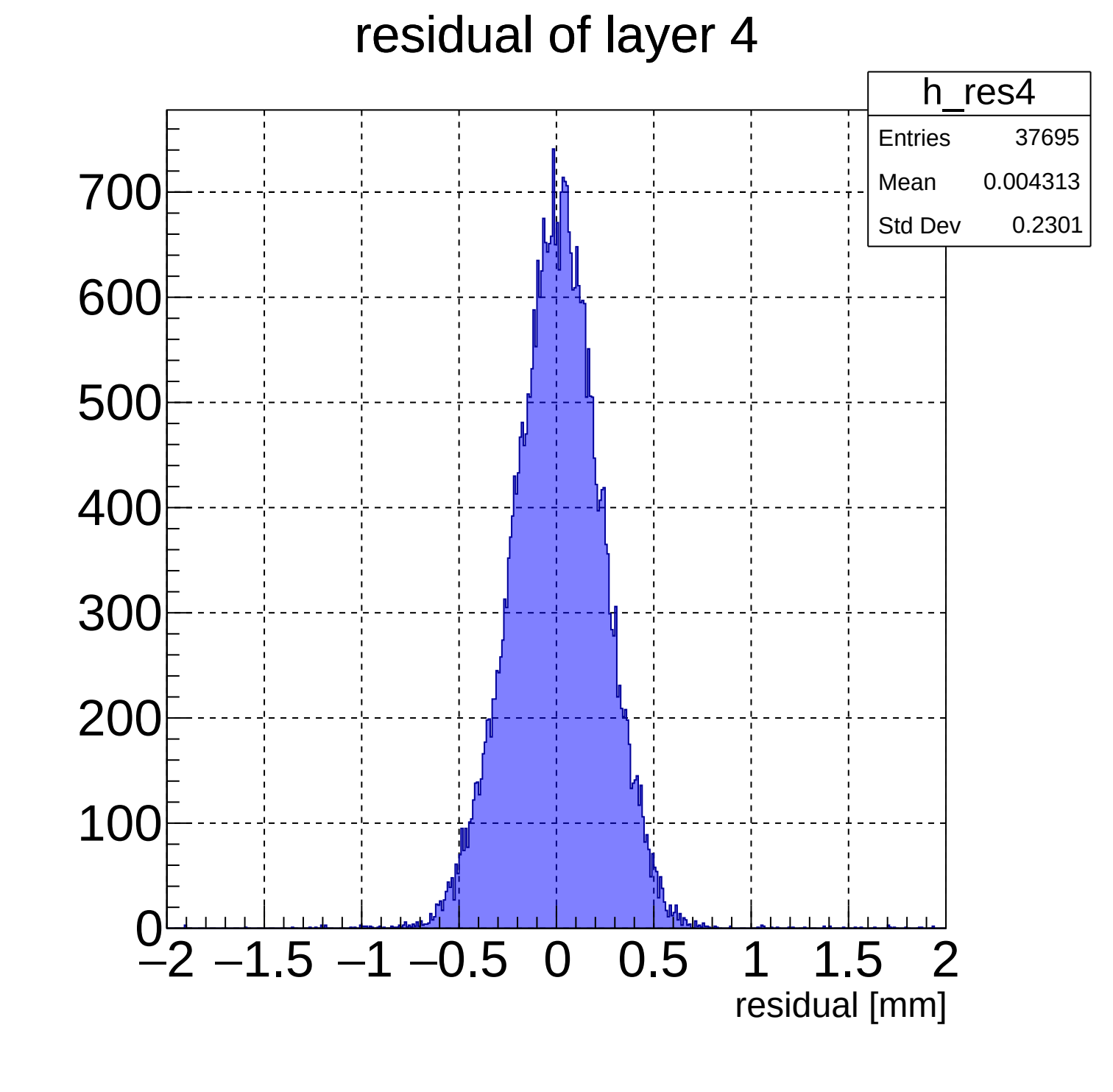

position of layer 5
h_pos5
Entries 37695
Mean −4.163
Std Dev 28.75
500
400
300
200
100
0
−100
−50
0
50
100
position in layer [mm]

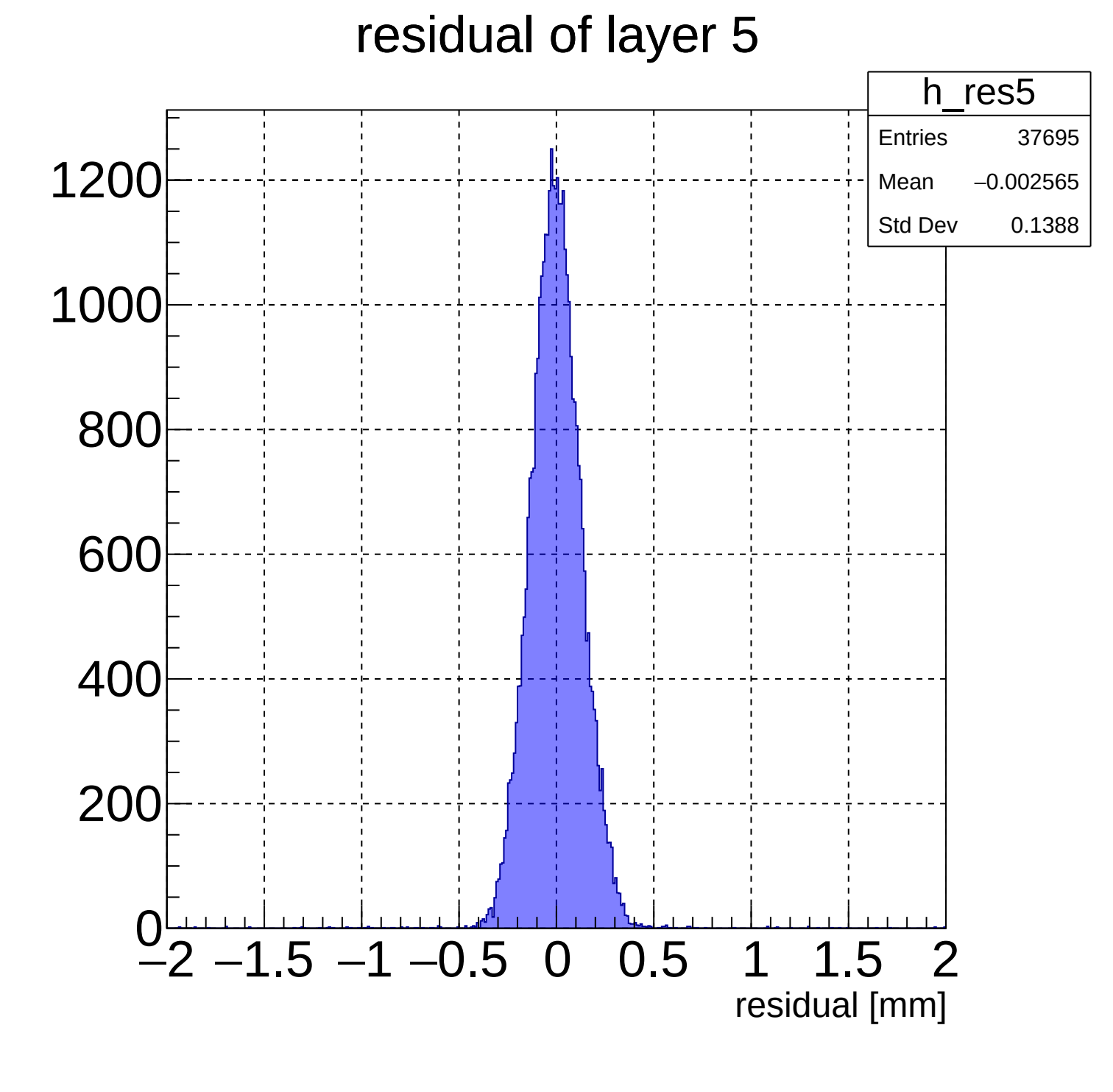

position of layer 6
h_pos6
Entries 37695
Mean −2.364
Std Dev 28.42
500
400
300
200
100
0
−100
−50
0
50
100
position in layer [mm]

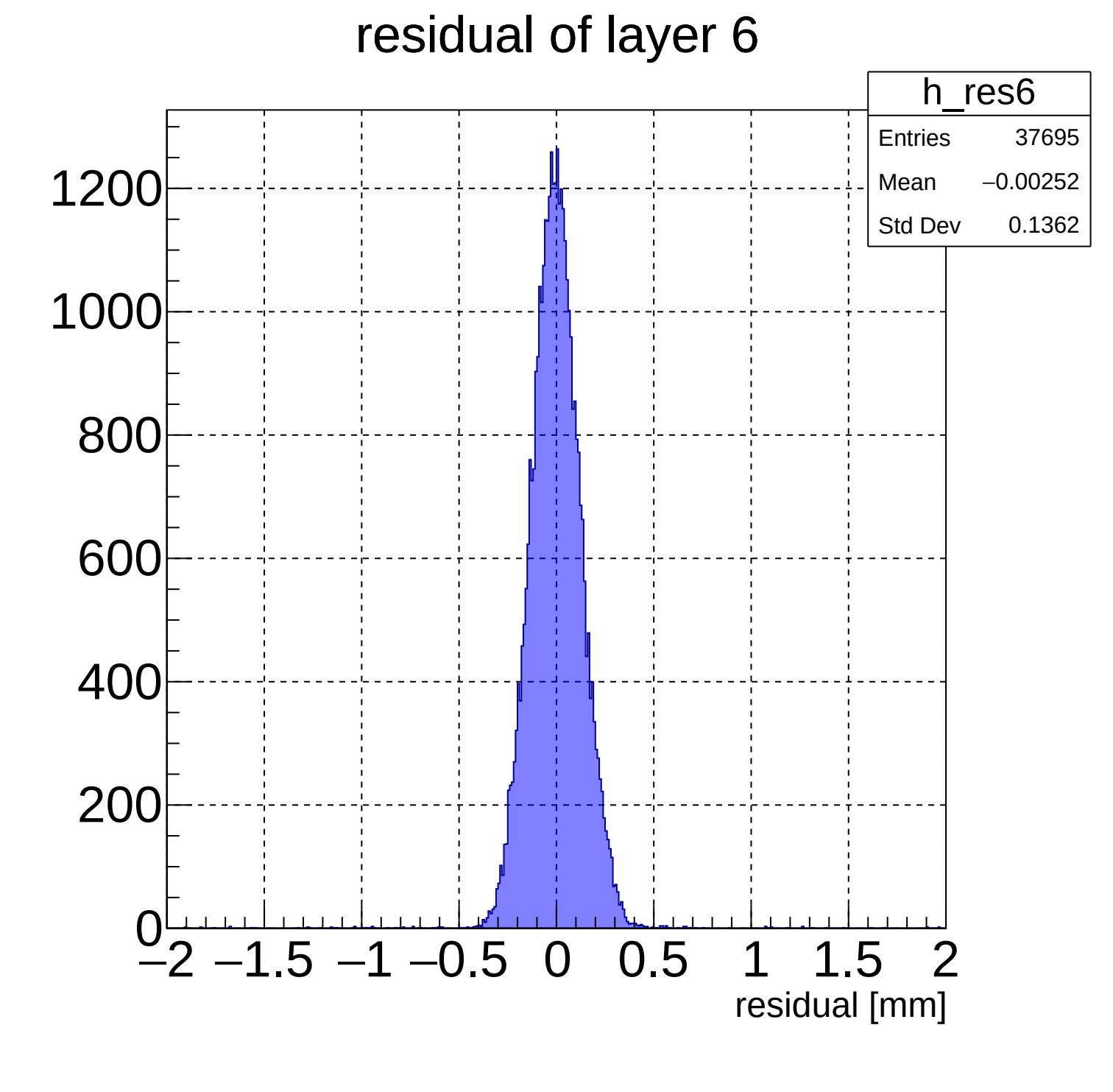

residual of layer 1
h_res1
Entries 37695
Mean –0.001522
Std Dev 0.2315
700
600
500
400
300
200
100
0
–2
–1.5
–1
–0.5
0
0.5
1
1.5
2
residual [mm]

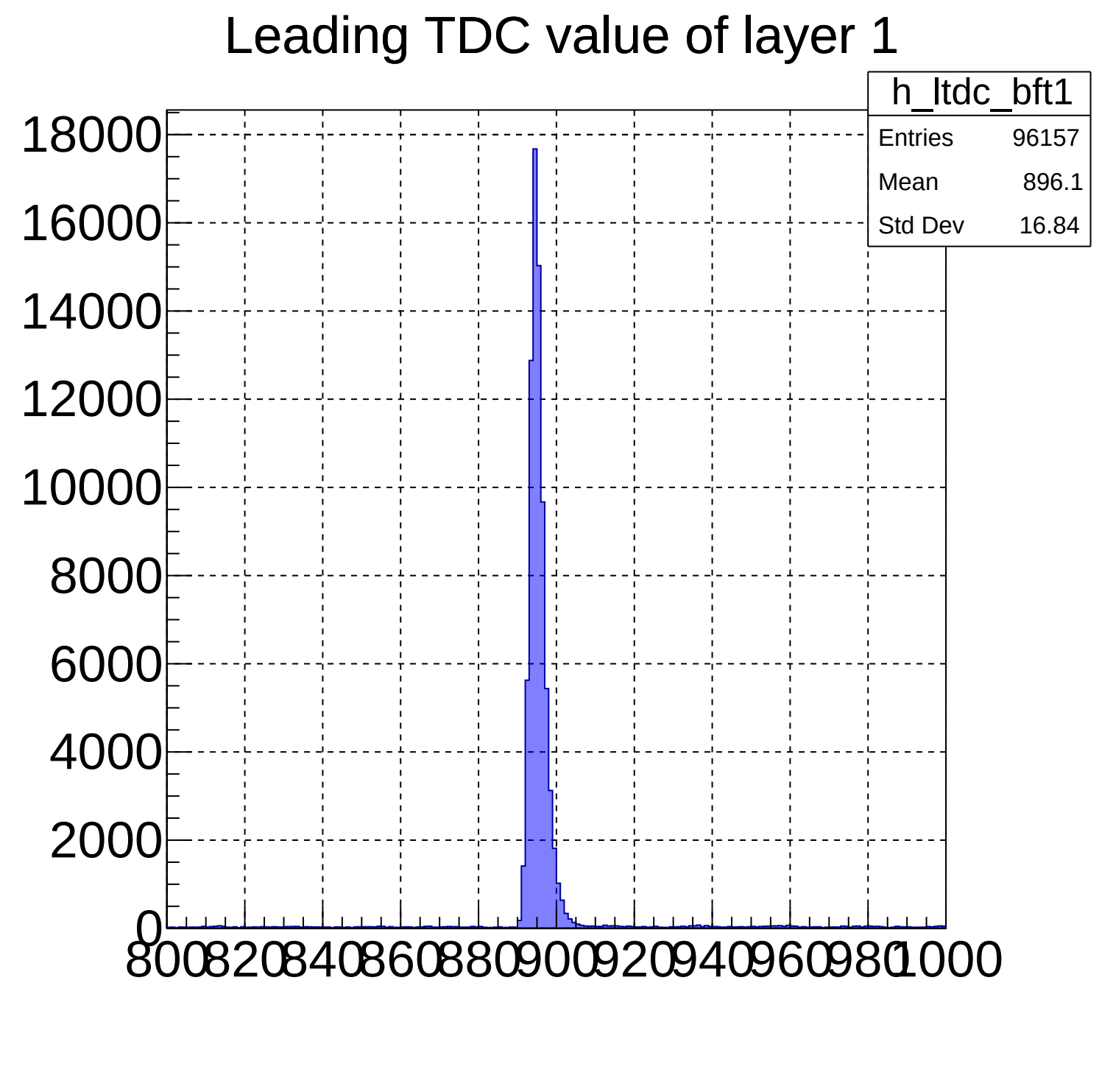

residual of layer 2
h_res2
Entries 37695
Mean 0.0005517
Std Dev 0.1445
1200
1000
800
600
400
200
0
−2 −1.5 −1 −0.5 0 0.5 1 1.5 2
residual [mm]

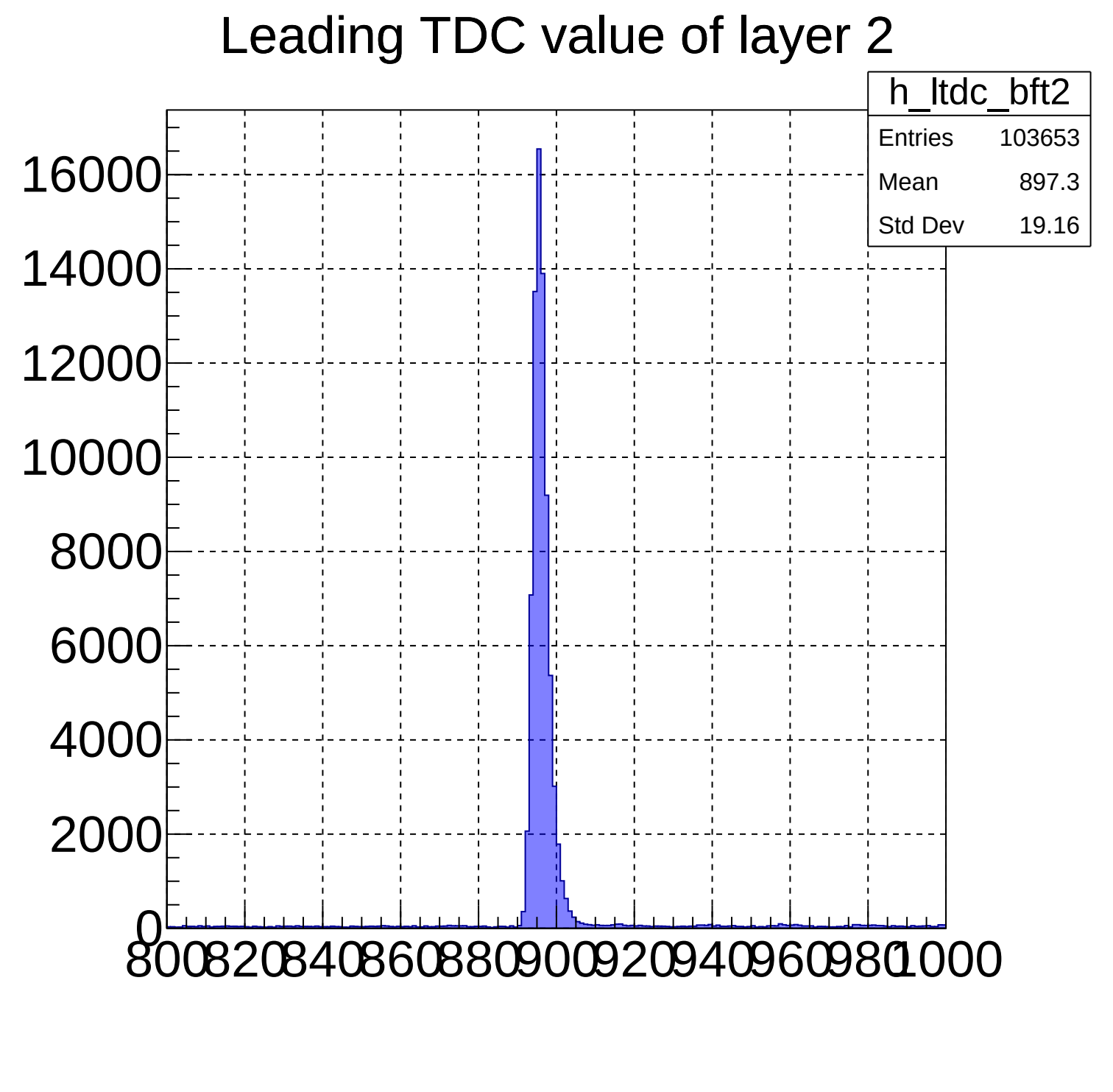

residual of layer 3
h_res3
Entries 37695
Mean 0.0005588
Std Dev 0.1468
1000
800
600
400
200
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
residual [mm]

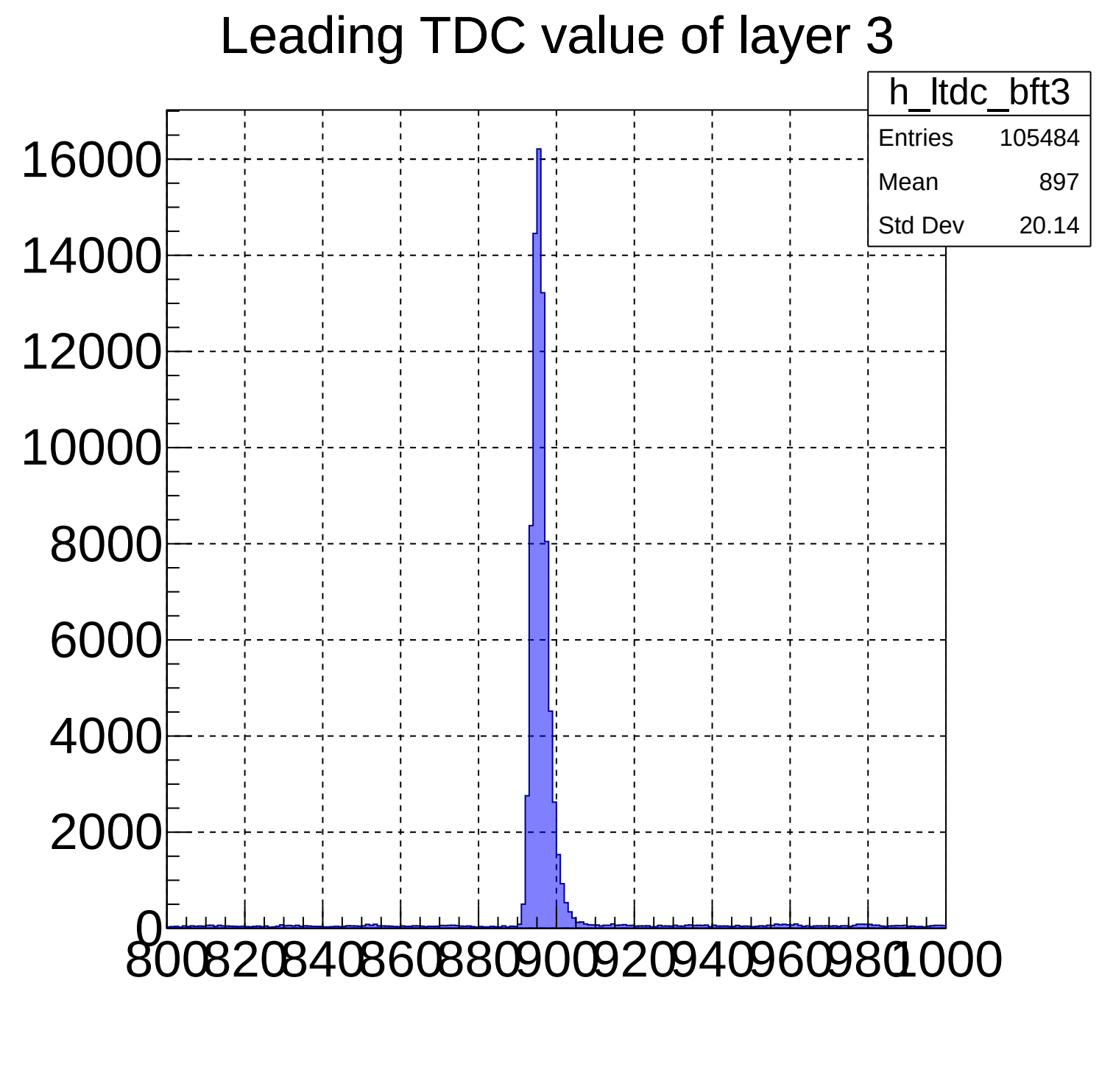

residual of layer 4
h_res4
Entries 37695
Mean 0.004313
Std Dev 0.2301
700
600
500
400
300
200
100
0
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
residual [mm]

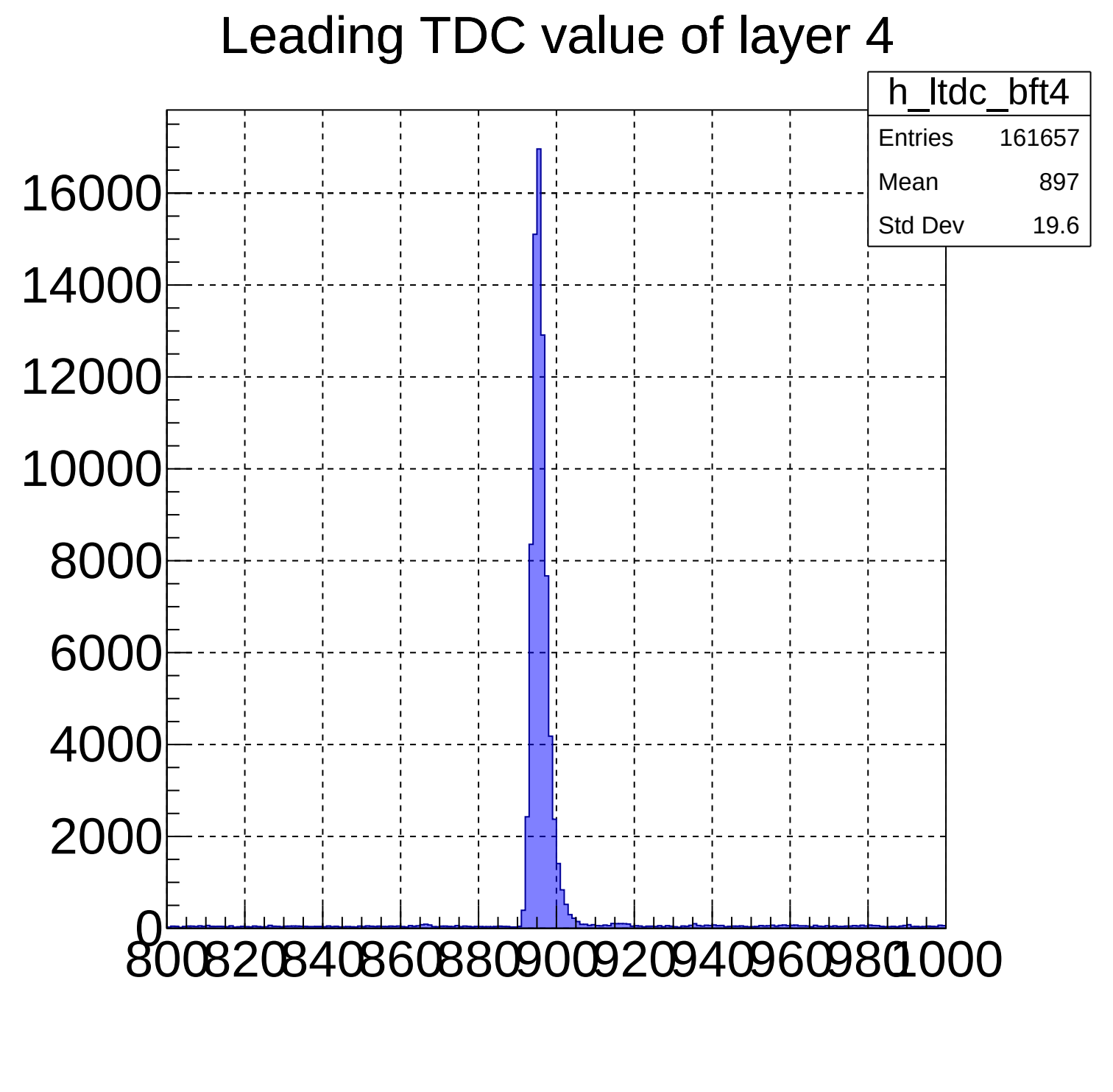

residual of layer 5
h_res5
Entries 37695
Mean –0.002565
Std Dev 0.1388
1200
1000
800
600
400
200
0
–2 –1.5 –1 –0.5 0 0.5 1 1.5 2
residual [mm]

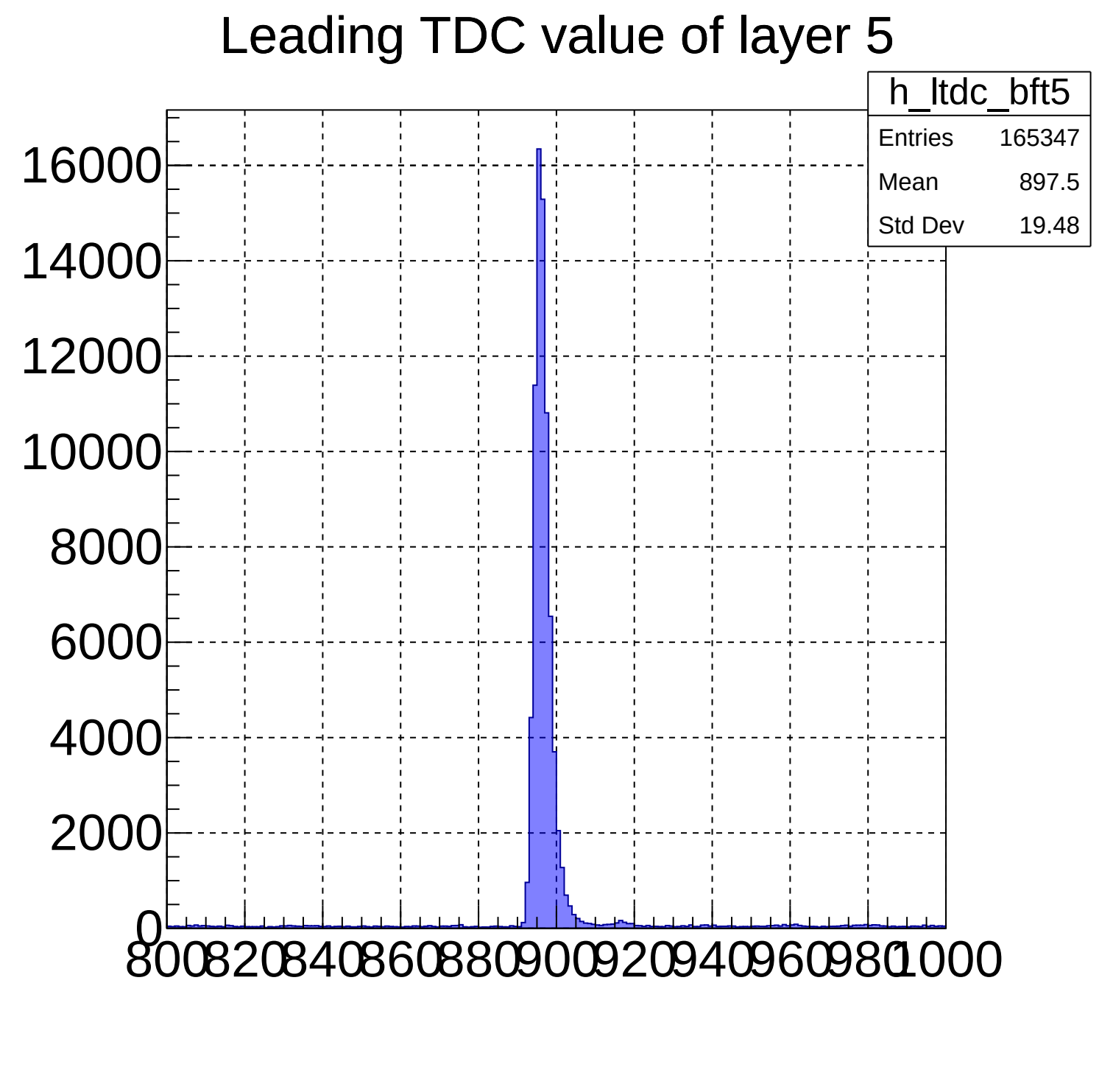

residual of layer 6
h_res6
Entries 37695
Mean −0.00252
Std Dev 0.1362
1200
1000
800
600
400
200
0
−2 −1.5 −1 −0.5 0 0.5 1 1.5 2
residual [mm]

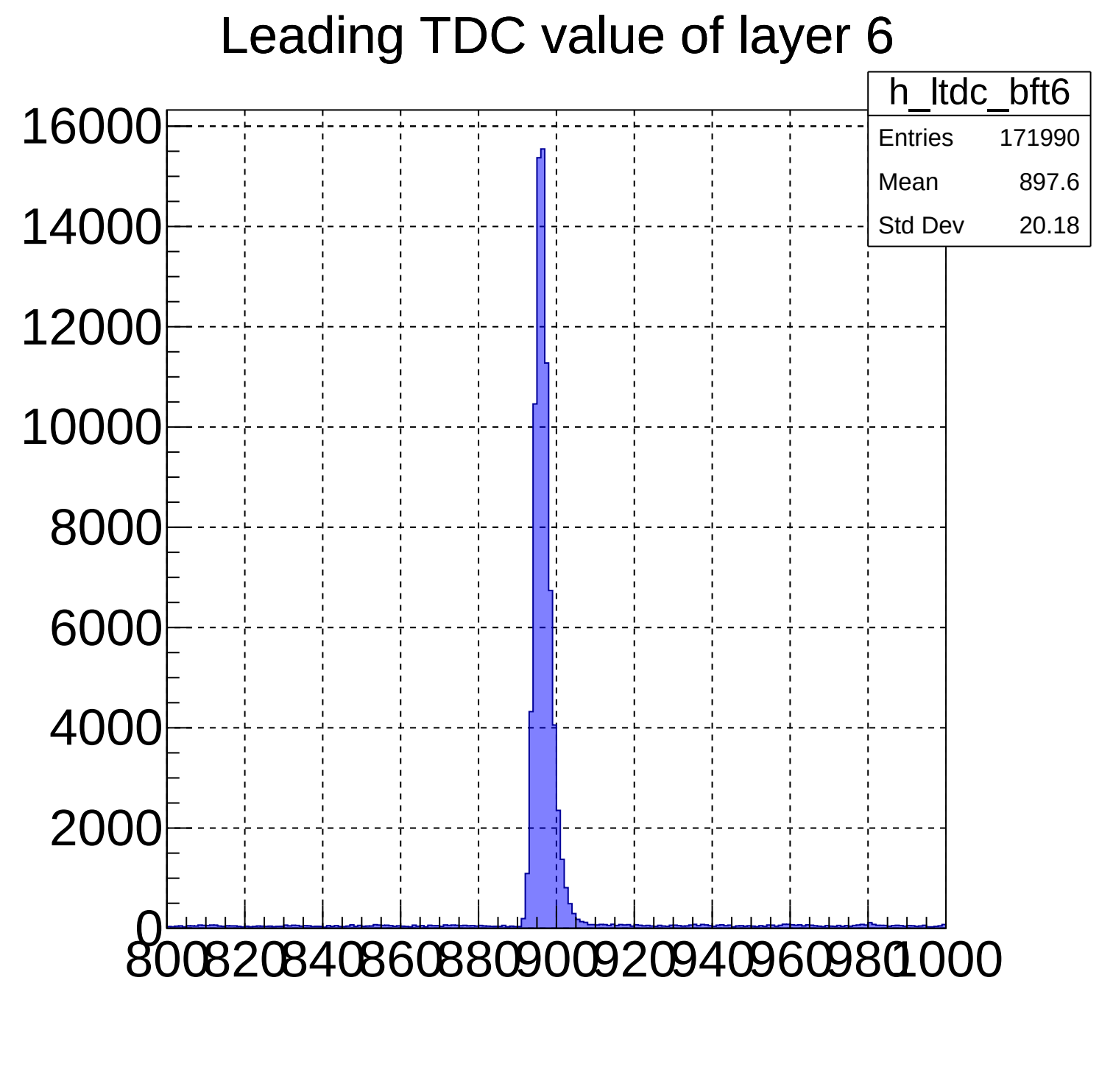

Leading TDC value of layer 1
h_ltdc_bft1
Entries 96157
Mean 896.1
Std Dev 16.84
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

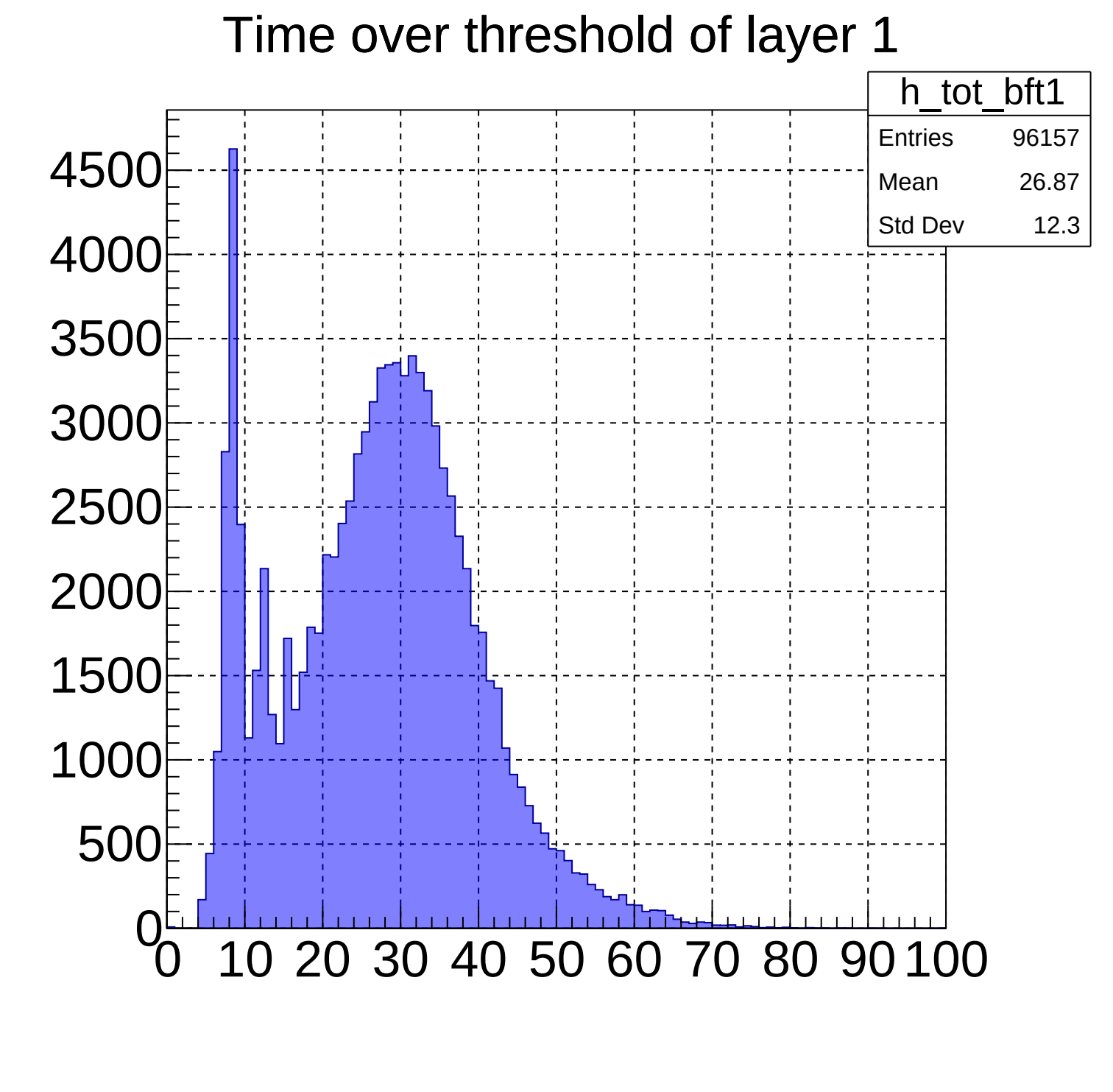

Leading TDC value of layer 2
h_ltdc_bft2
Entries 103653
Mean 897.3
Std Dev 19.16
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

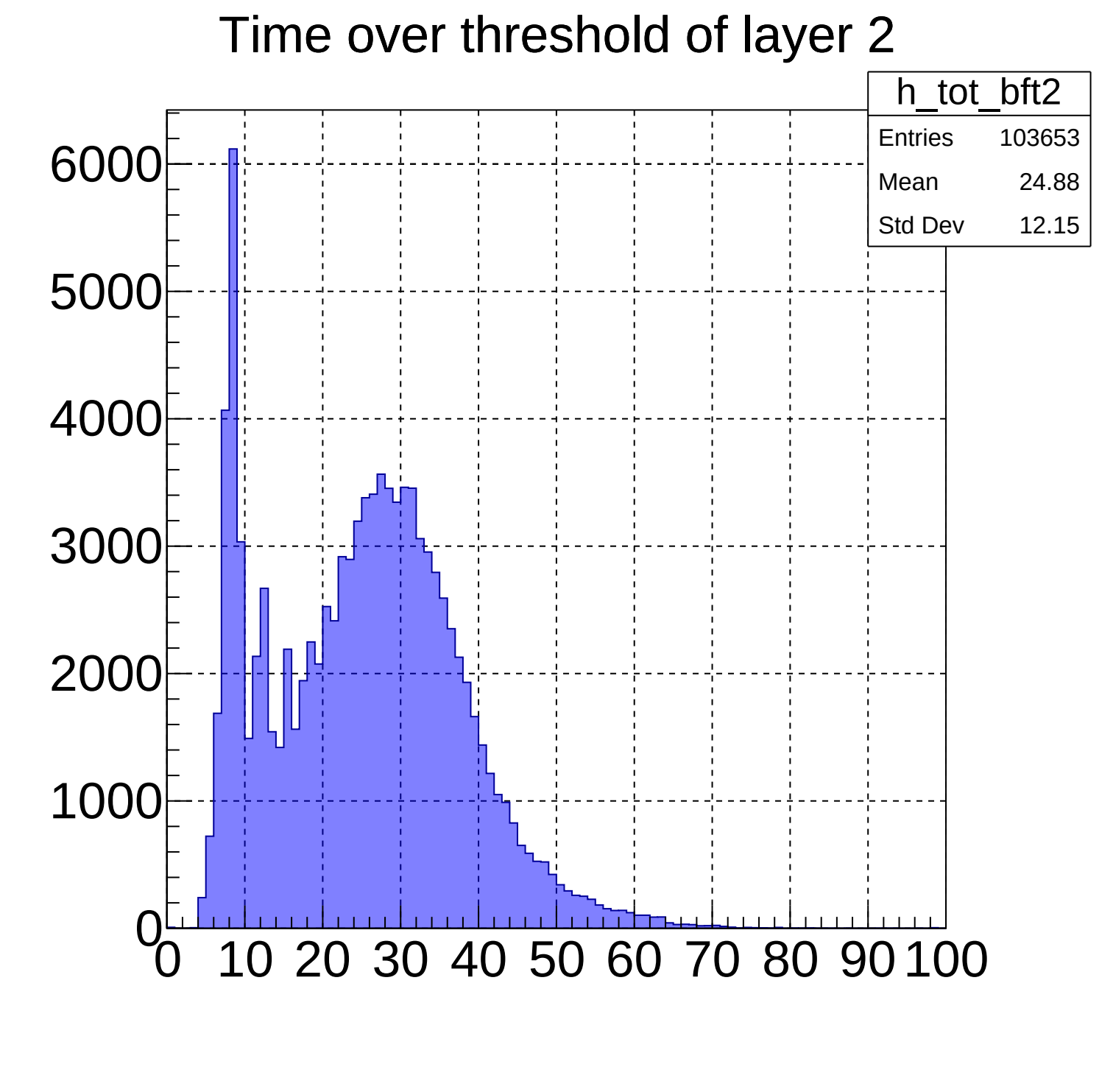

Leading TDC value of layer 3
h_ltdc_bft3
Entries 105484
Mean 897
Std Dev 20.14
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

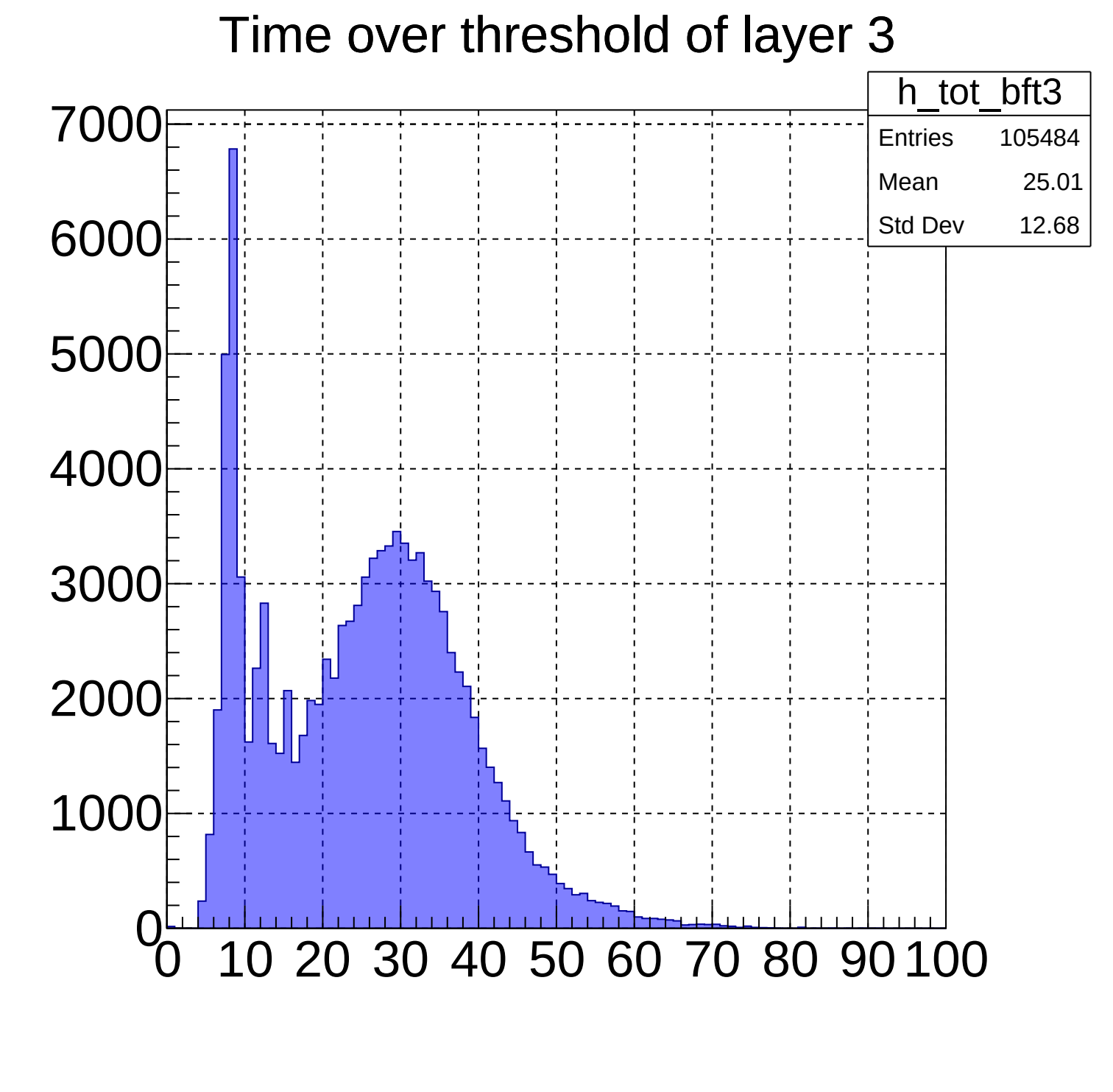

Leading TDC value of layer 4
h_ltdc_bft4
Entries 161657
Mean 897
Std Dev 19.6
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

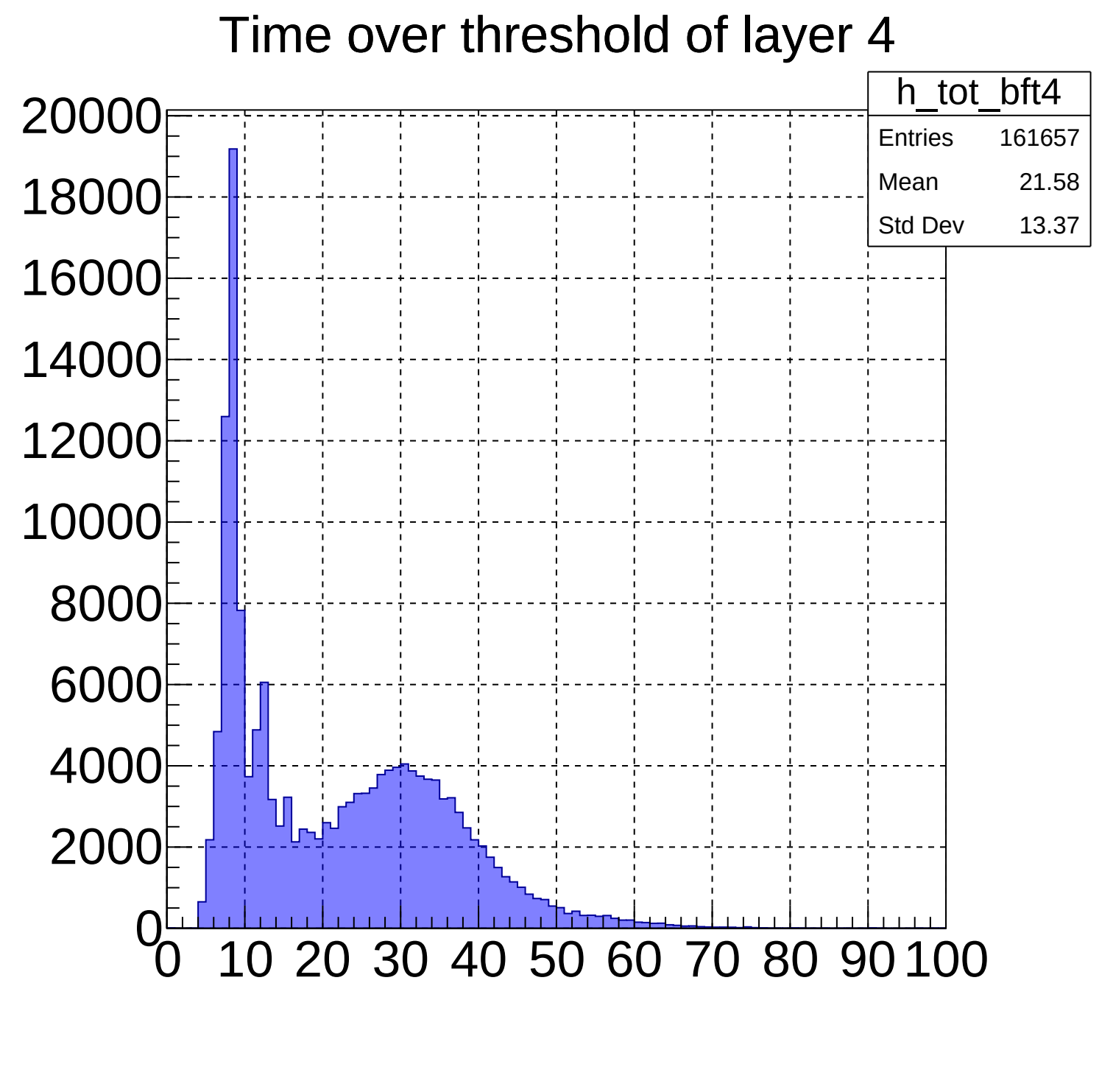

Leading TDC value of layer 5
h_ltdc_bft5
Entries 165347
Mean 897.5
Std Dev 19.48
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

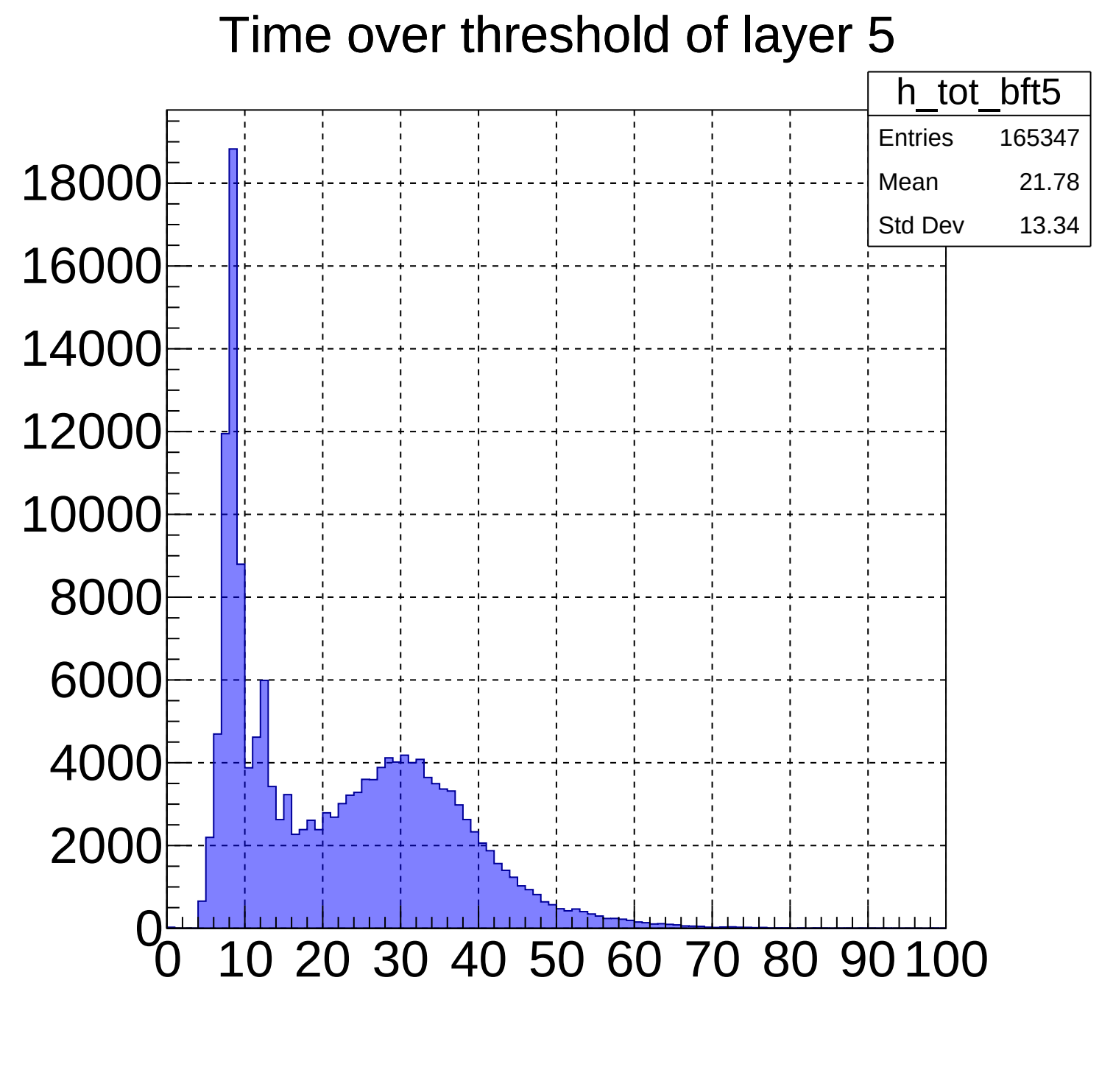

Leading TDC value of layer 6
h_ltdc_bft6
Entries 171990
Mean 897.6
Std Dev 20.18
16000
14000
12000
10000
8000
6000
4000
2000
0
800
820
840
860
880
900
920
940
960
980
1000

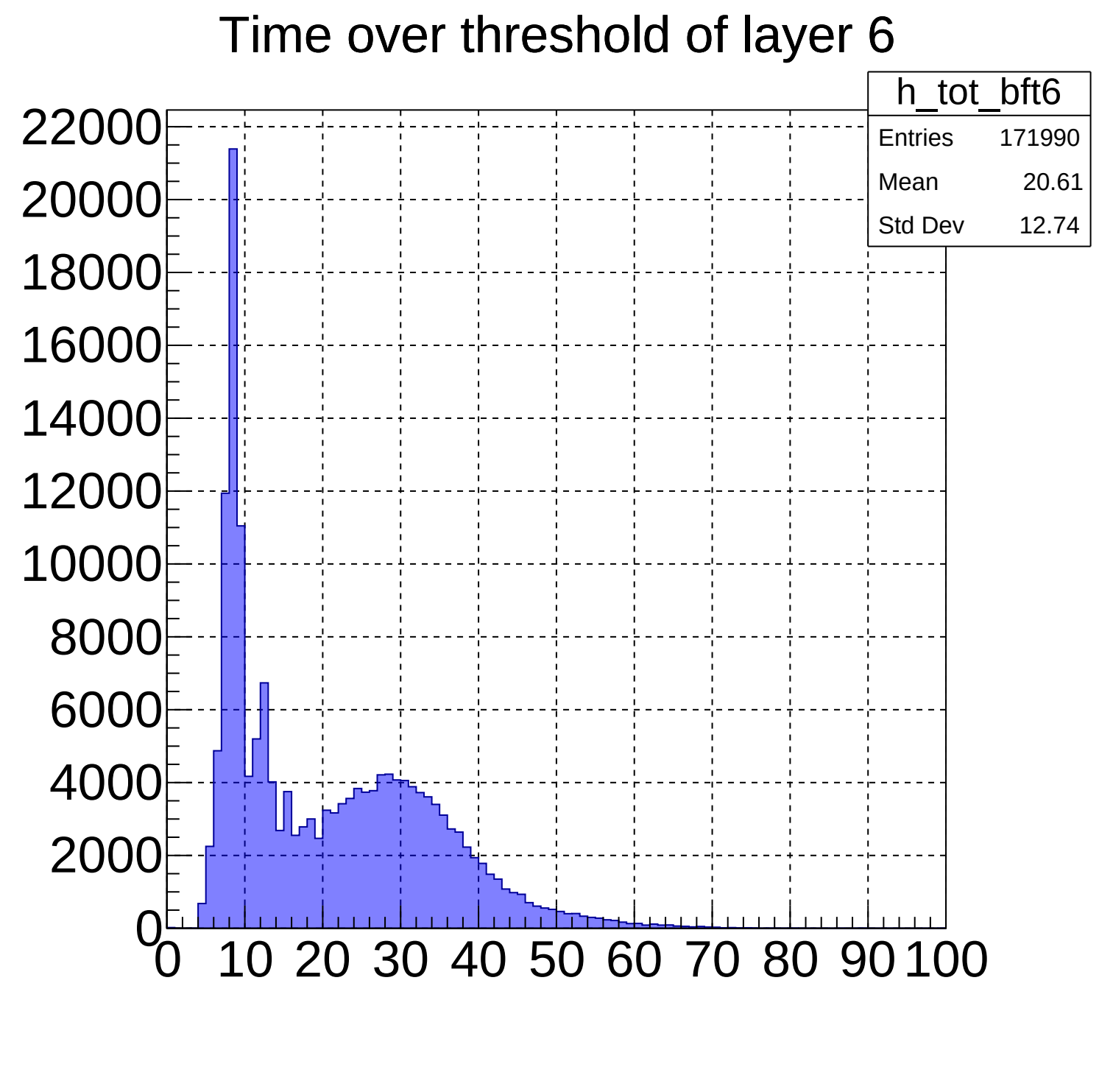

Time over threshold of layer 1
h_tot_bft1
Entries 96157
Mean 26.87
Std Dev 12.3
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0 10 20 30 40 50 60 70 80 90 100

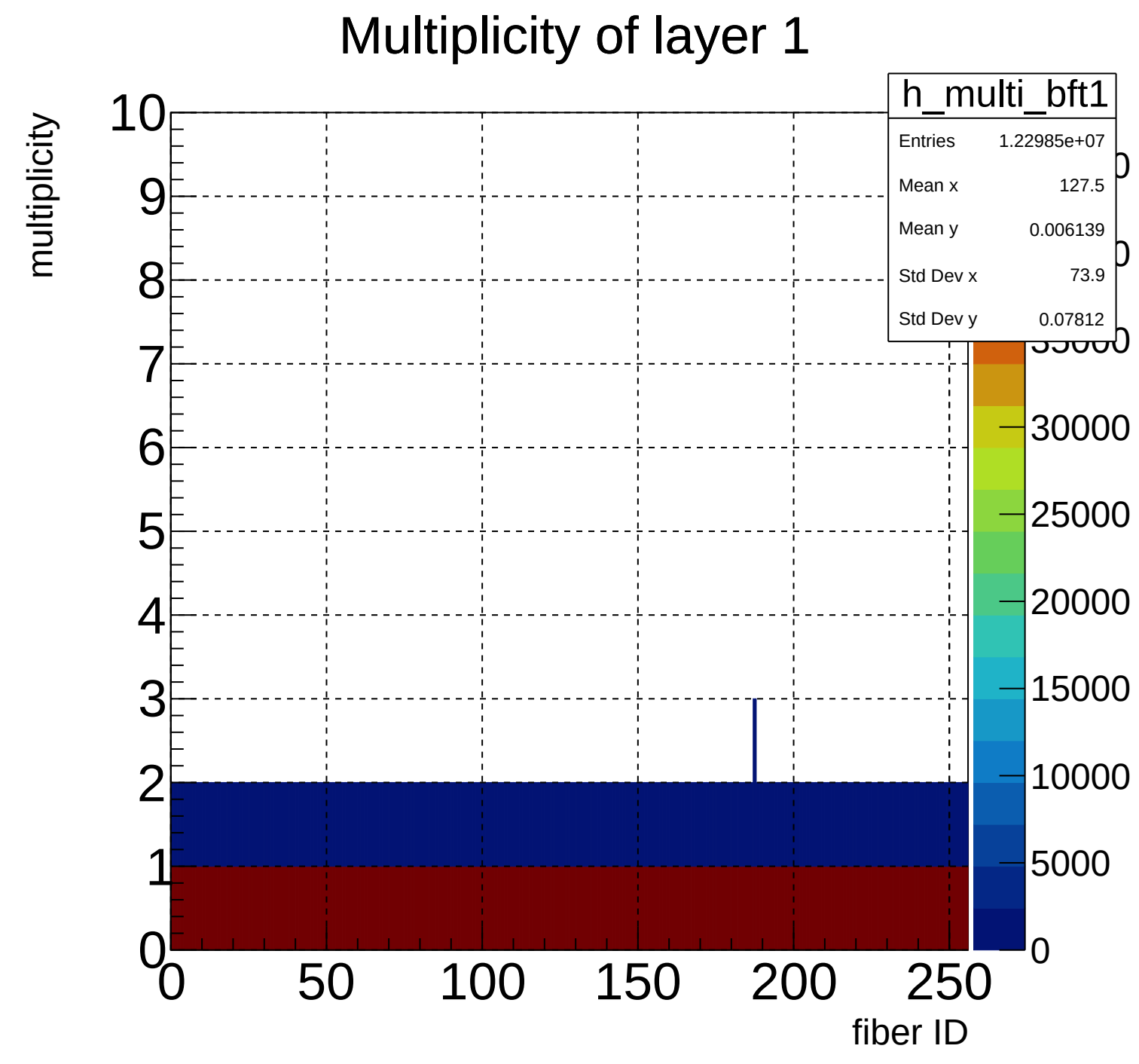

Time over threshold of layer 2
h_tot_bft2
Entries 103653
Mean 24.88
Std Dev 12.15
6000
5000
4000
3000
2000
1000
0
0 10 20 30 40 50 60 70 80 90 100

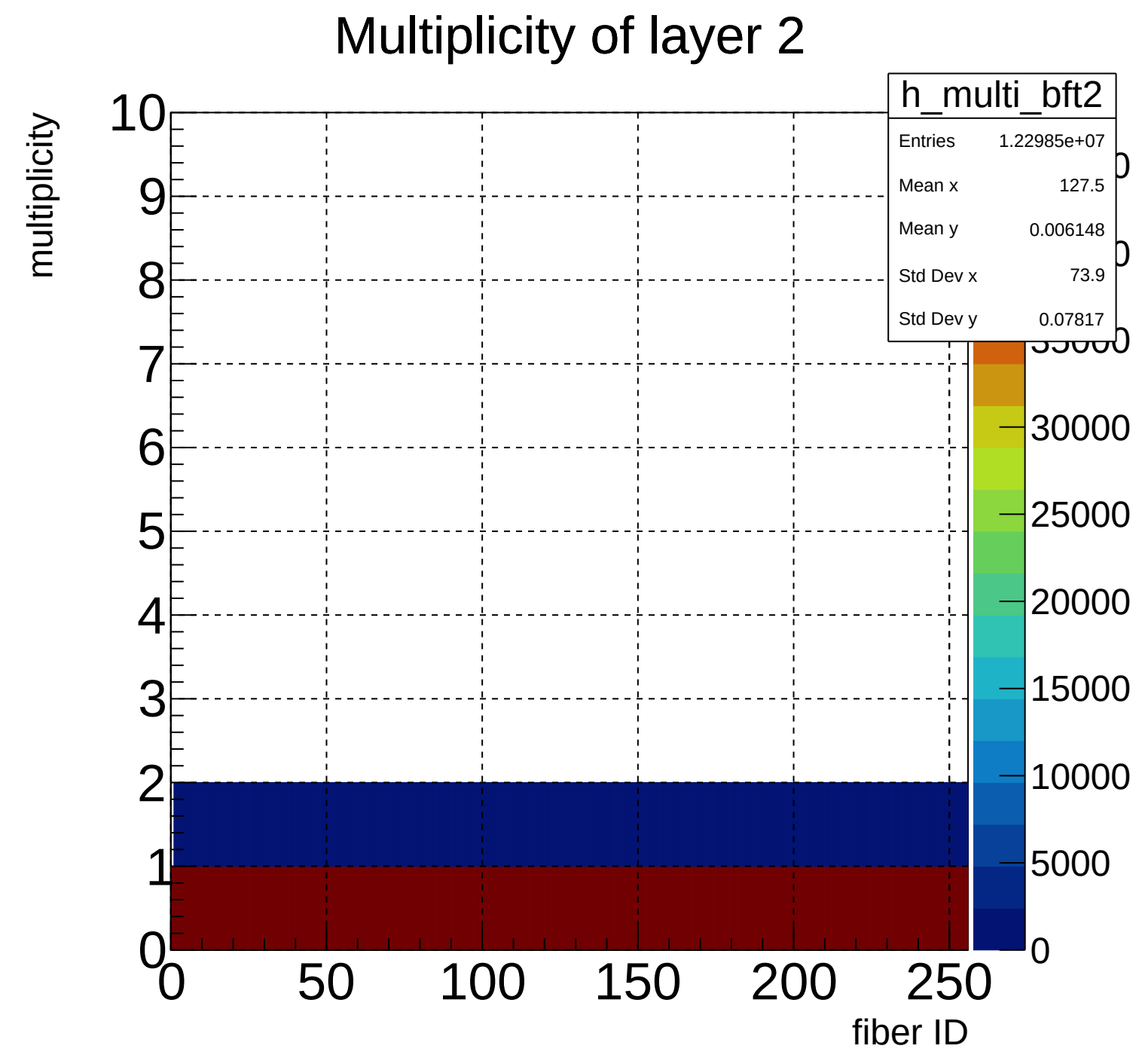

Time over threshold of layer 3
h_tot_bft3
Entries 105484
Mean 25.01
Std Dev 12.68
7000
6000
5000
4000
3000
2000
1000
0
0 10 20 30 40 50 60 70 80 90 100

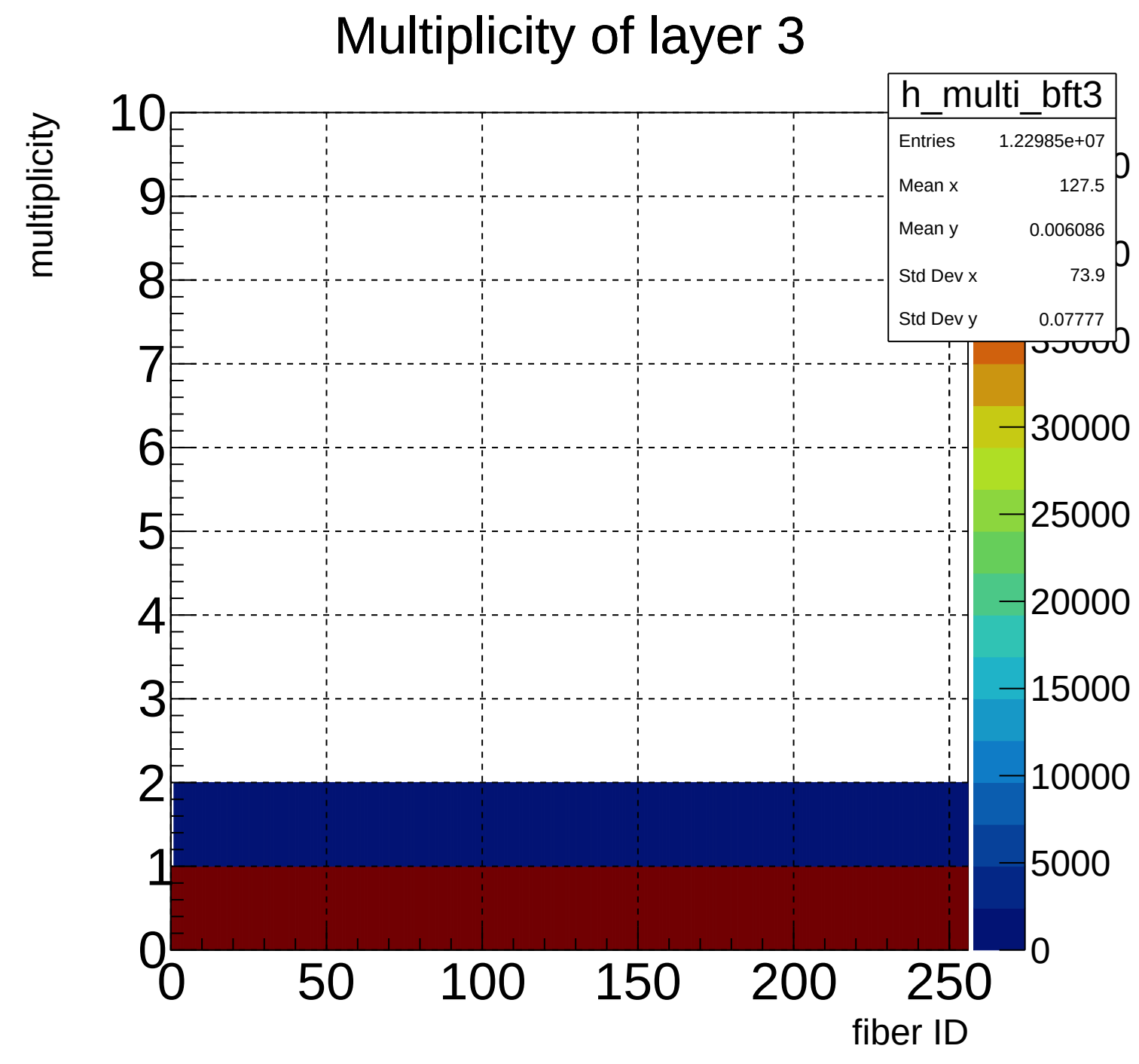

Time over threshold of layer 4
h_tot_bft4
Entries 161657
Mean 21.58
Std Dev 13.37
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0 10 20 30 40 50 60 70 80 90 100

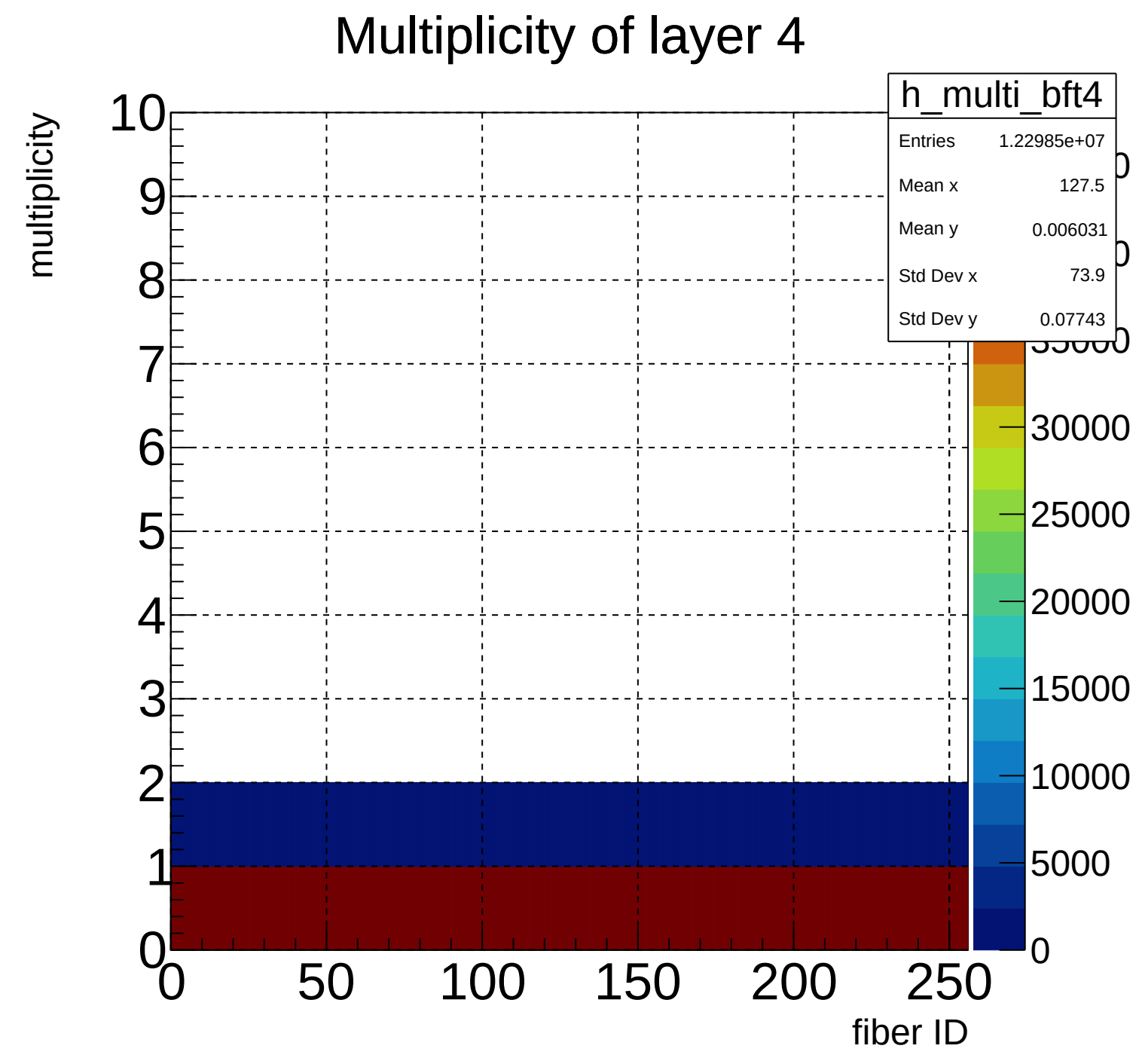

Time over threshold of layer 5
h_tot_bft5
Entries 165347
Mean 21.78
Std Dev 13.34
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0 10 20 30 40 50 60 70 80 90 100

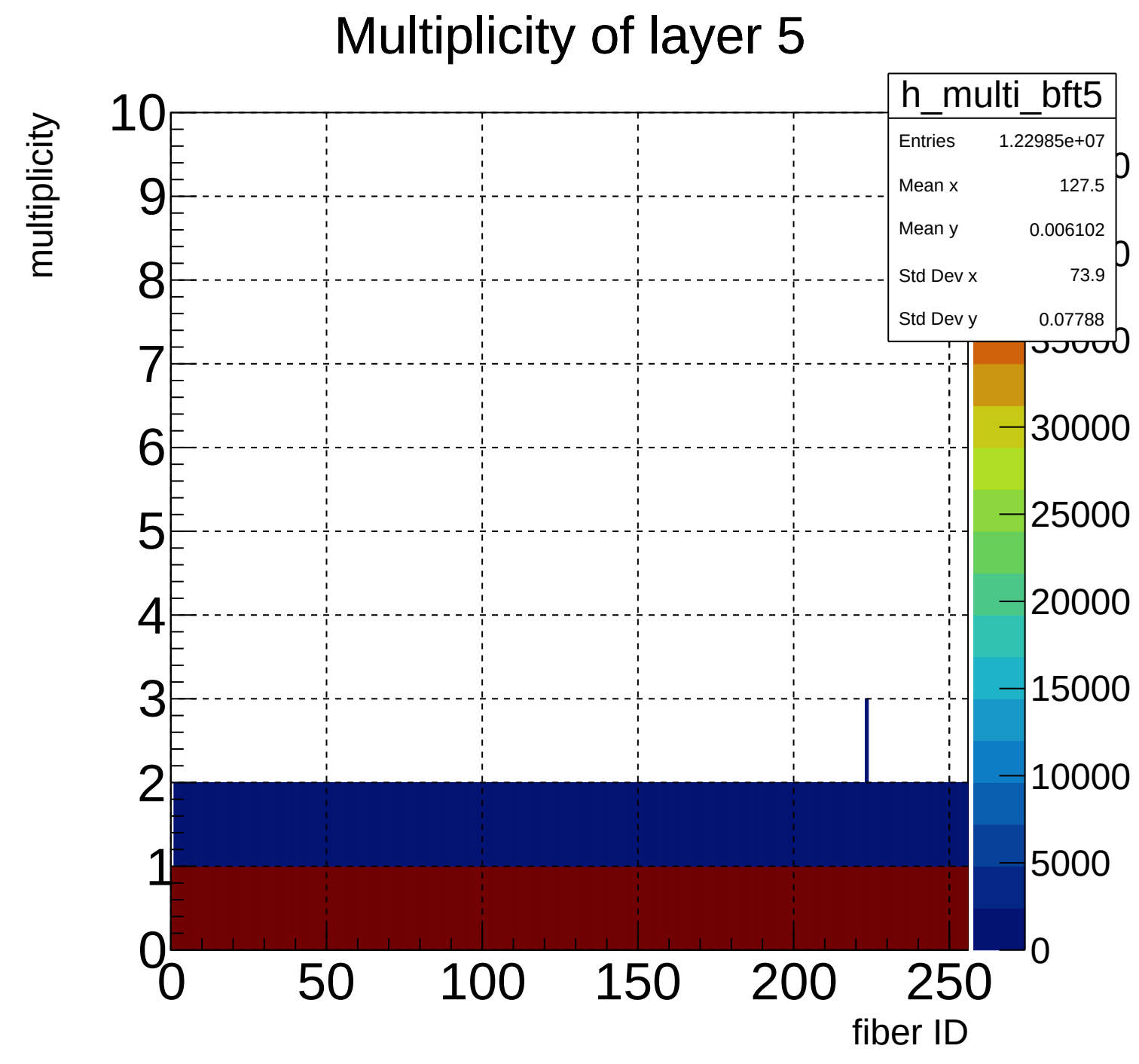

Time over threshold of layer 6
h_tot_bft6
Entries 171990
Mean 20.61
Std Dev 12.74
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0 10 20 30 40 50 60 70 80 90 100

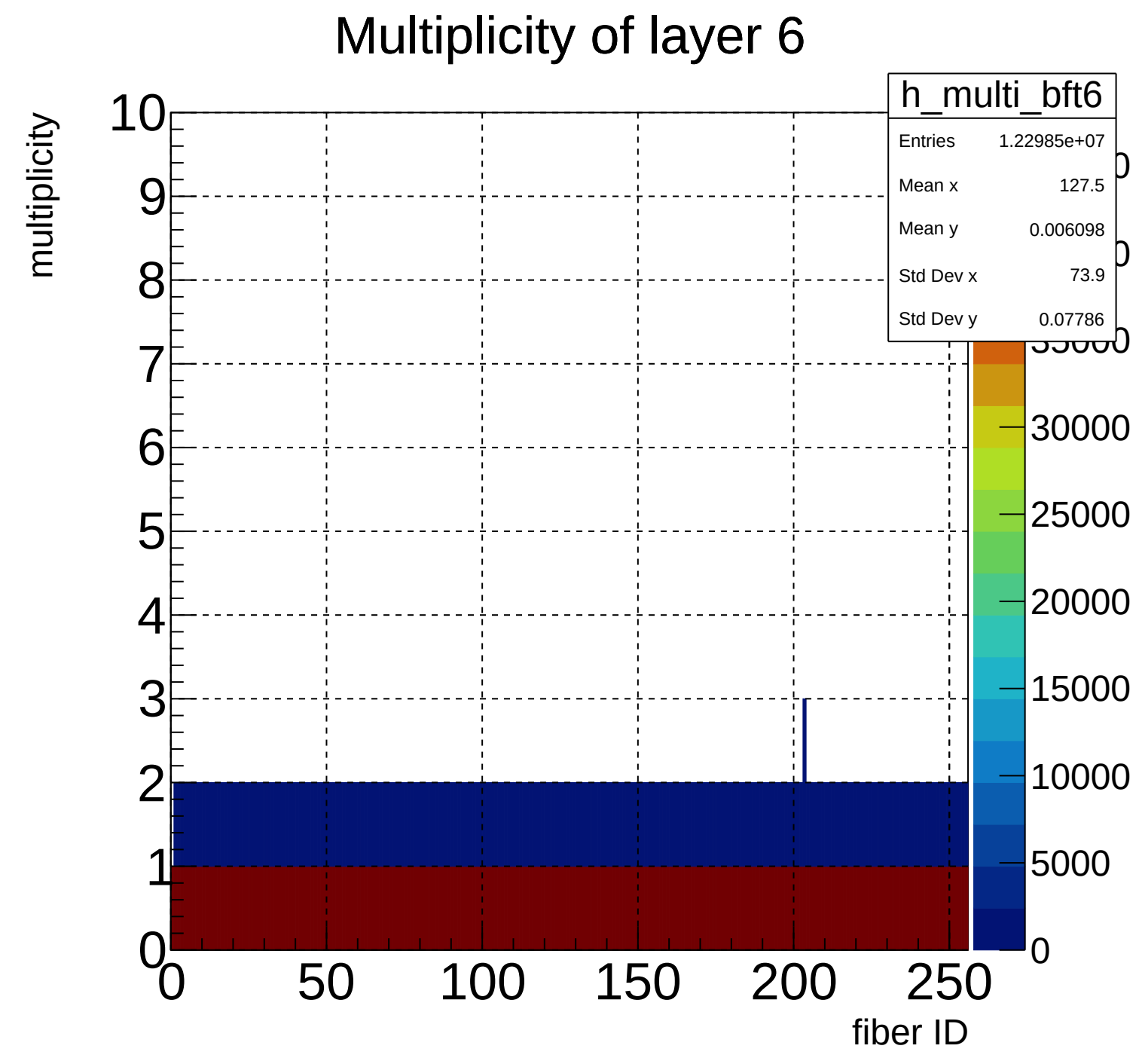

Multiplicity of layer 1
h_multi_bft1
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006139
Std Dev x 73.9
Std Dev y 0.07812
multiplicity
fiber ID
0
50
100
150
200
250
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000
0

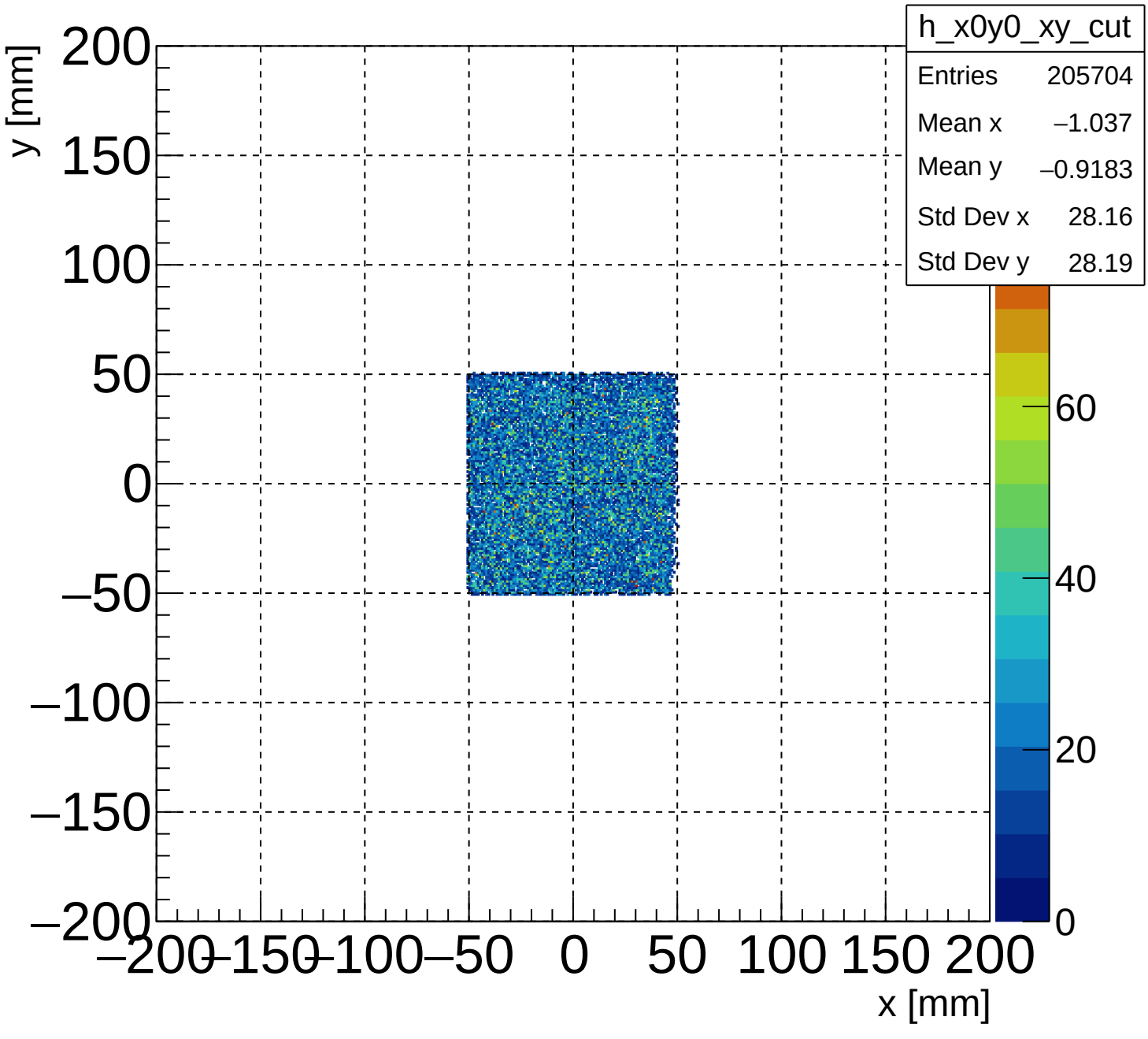

Multiplicity of layer 2
h_multi_bft2
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006148
Std Dev x 73.9
Std Dev y 0.07817
multiplicity
fiber ID
0
50
100
150
200
250
0
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000
0

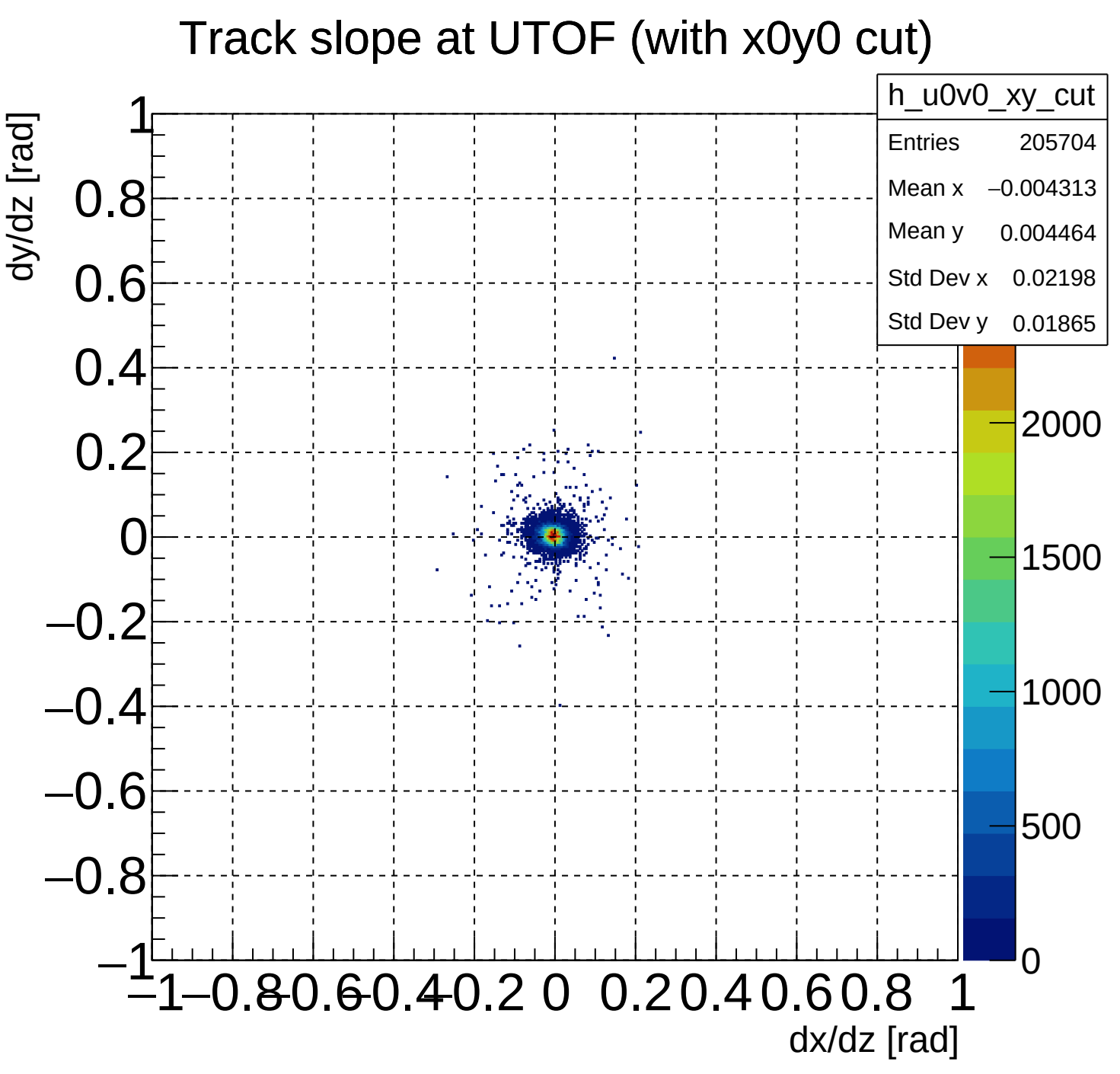

Multiplicity of layer 3
h_multi_bft3
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006086
Std Dev x 73.9
Std Dev y 0.07777
multiplicity
fiber ID
0
50
100
150
200
250
0
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000
0

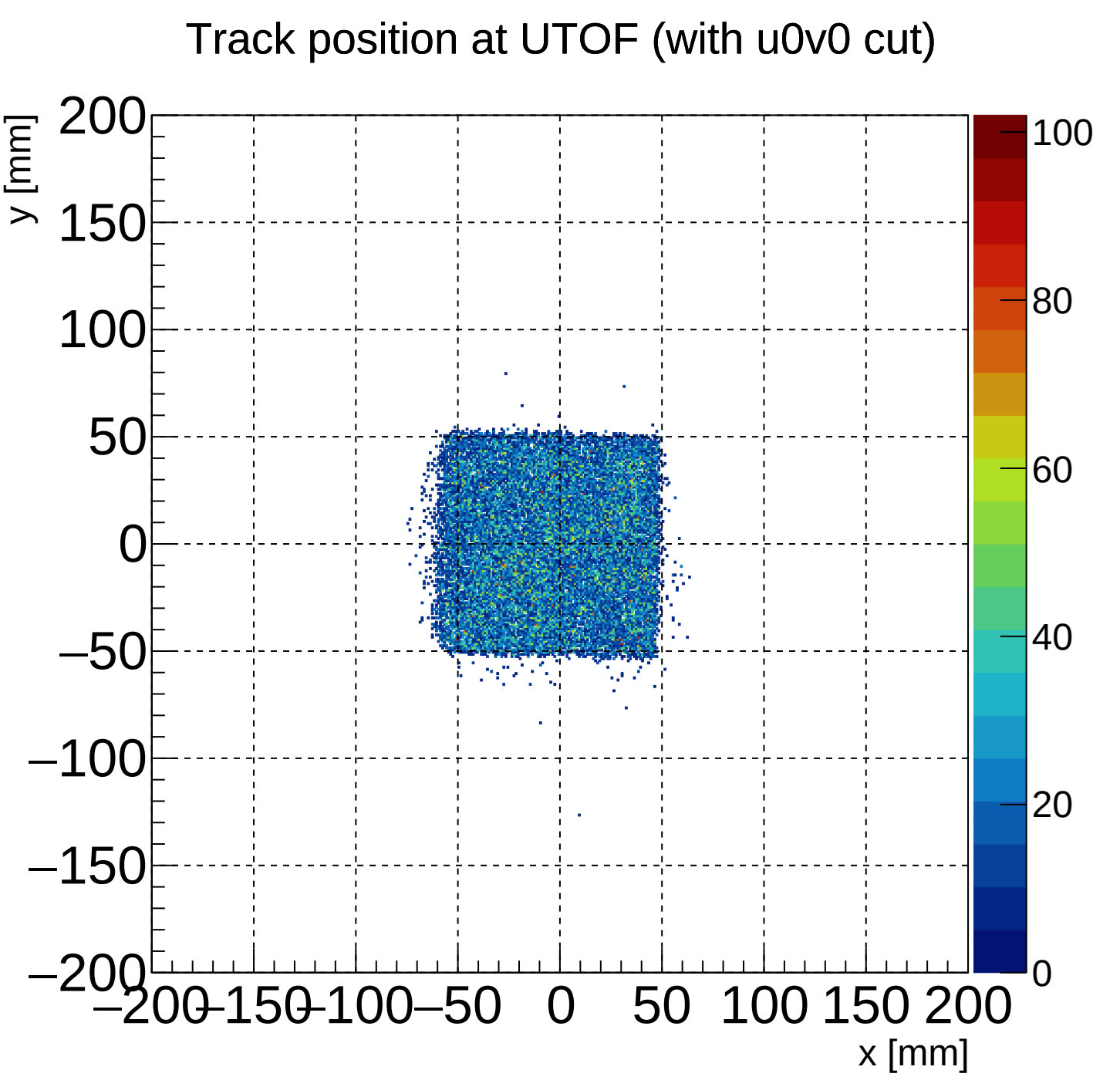

Multiplicity of layer 4
h_multi_bft4
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006031
Std Dev x 73.9
Std Dev y 0.07743
multiplicity
fiber ID
0
50
100
150
200
250
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000

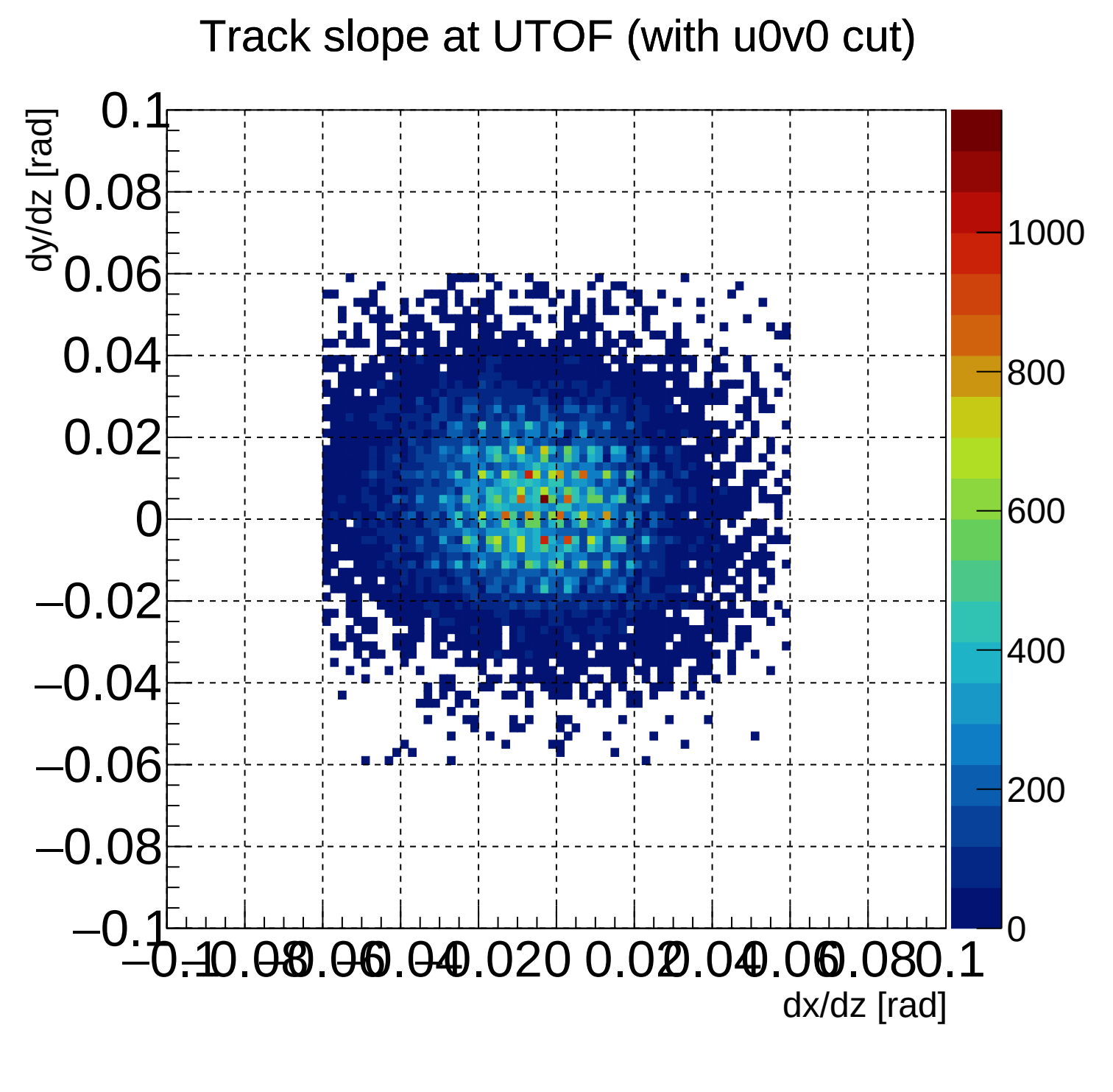

Multiplicity of layer 5
h_multi_bft5
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006102
Std Dev x 73.9
Std Dev y 0.07788
multiplicity
fiber ID
0
50
100
150
200
250
0
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000
0

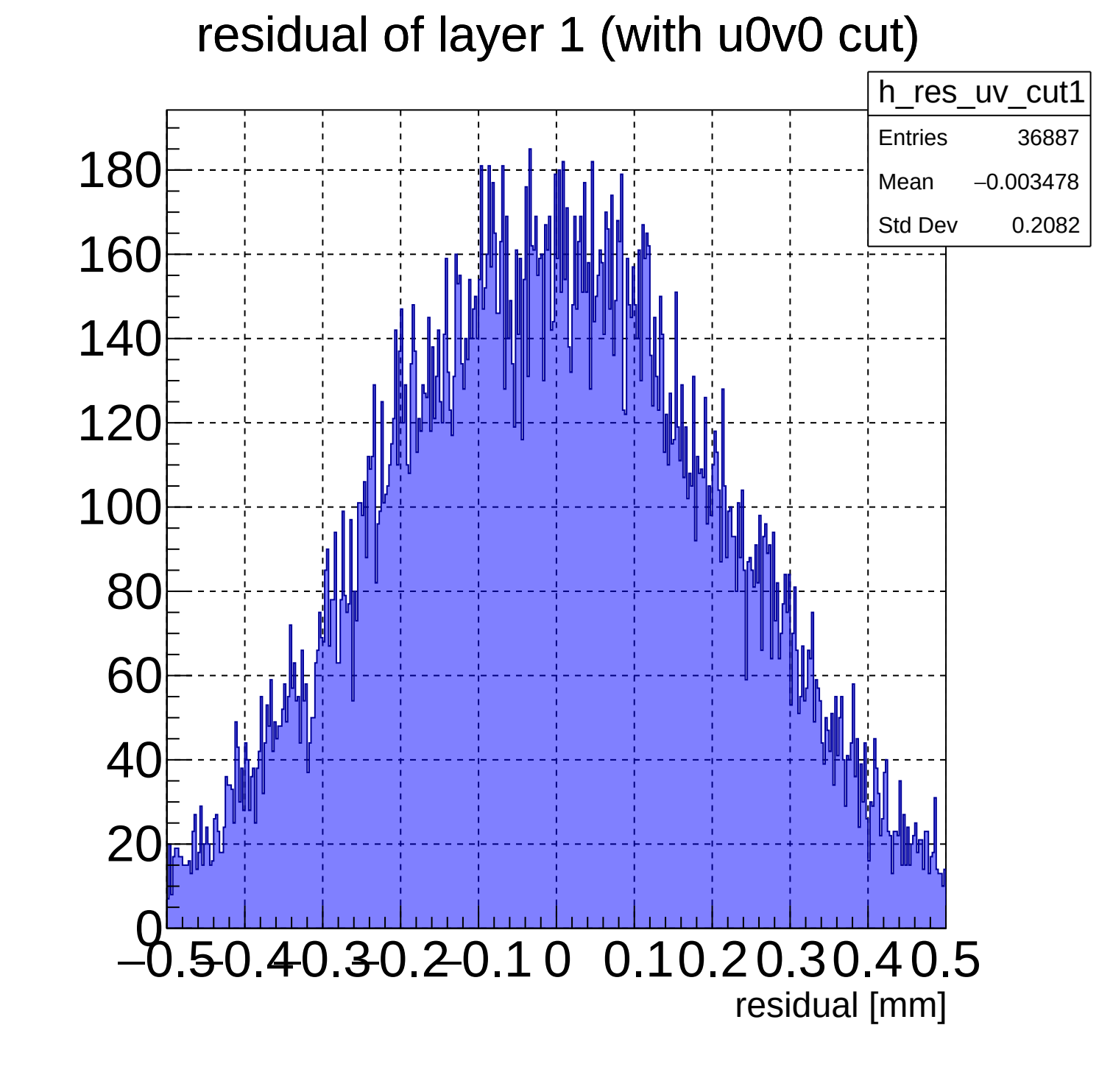

Multiplicity of layer 6
h_multi_bft6
Entries 1.22985e+07
Mean x 127.5
Mean y 0.006098
Std Dev x 73.9
Std Dev y 0.07786
multiplicity
fiber ID
0
50
100
150
200
250
1
2
3
4
5
6
7
8
9
10
30000
25000
20000
15000
10000
5000
0

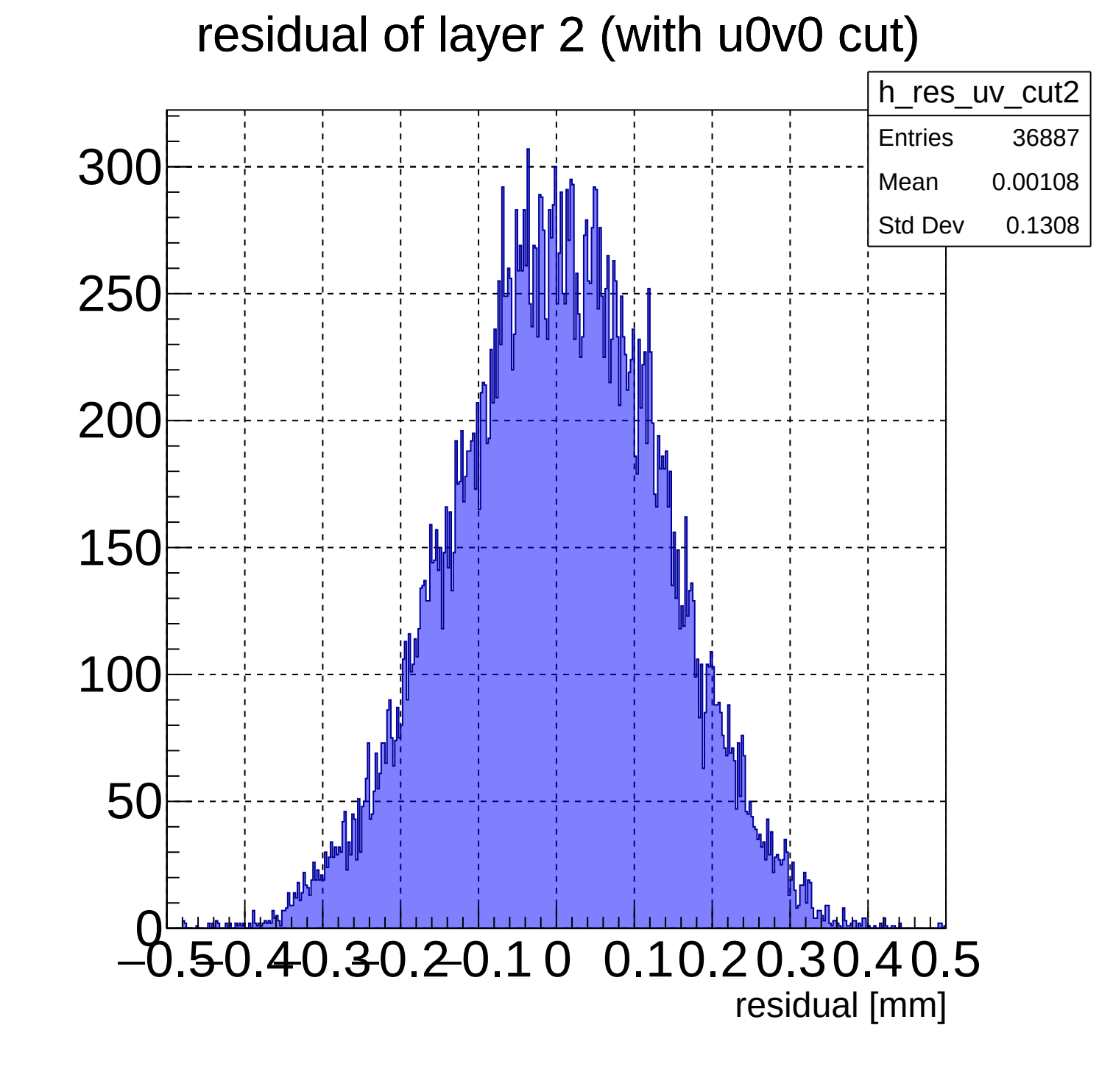

Track position at UTOF (with x0y0 cut)
h_x0y0_xy_cut
Entries 205704
Mean x −1.037
Mean y −0.9183
Std Dev x 28.16
Std Dev y 28.19
y [mm]
x [mm]
200
150
100
50
0
−50
−100
−150
−200
60
40
20
0

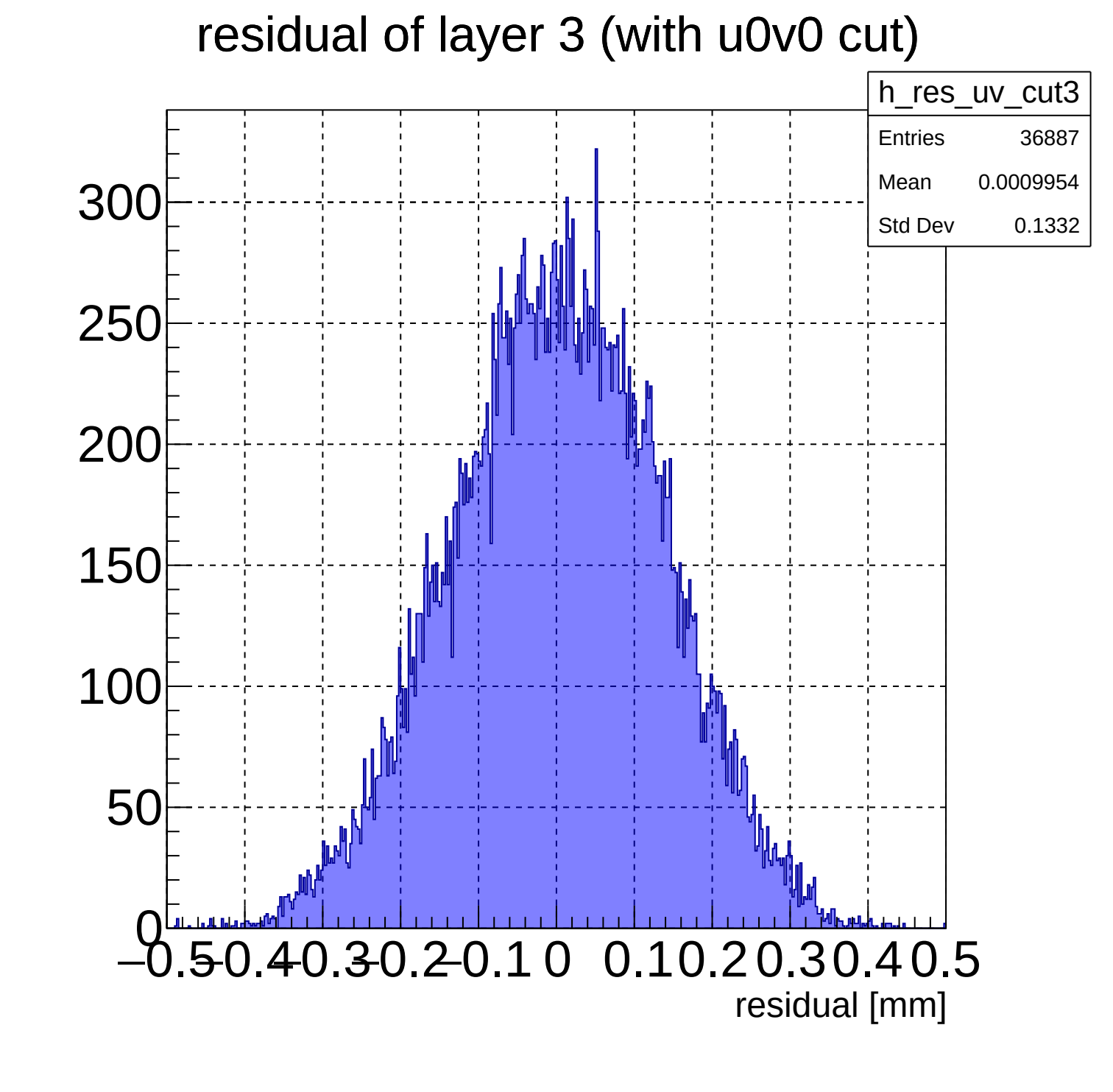

Track slope at UTOF (with x0y0 cut)
h_u0v0_xy_cut
Entries 205704
Mean x −0.004313
Mean y 0.004464
Std Dev x 0.02198
Std Dev y 0.01865
dy/dz [rad]
dx/dz [rad]
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
−1 −0.8 −0.6 −0.4 −0.2 0 0.2 0.4 0.6 0.8 1
2000
1500
1000
500
0

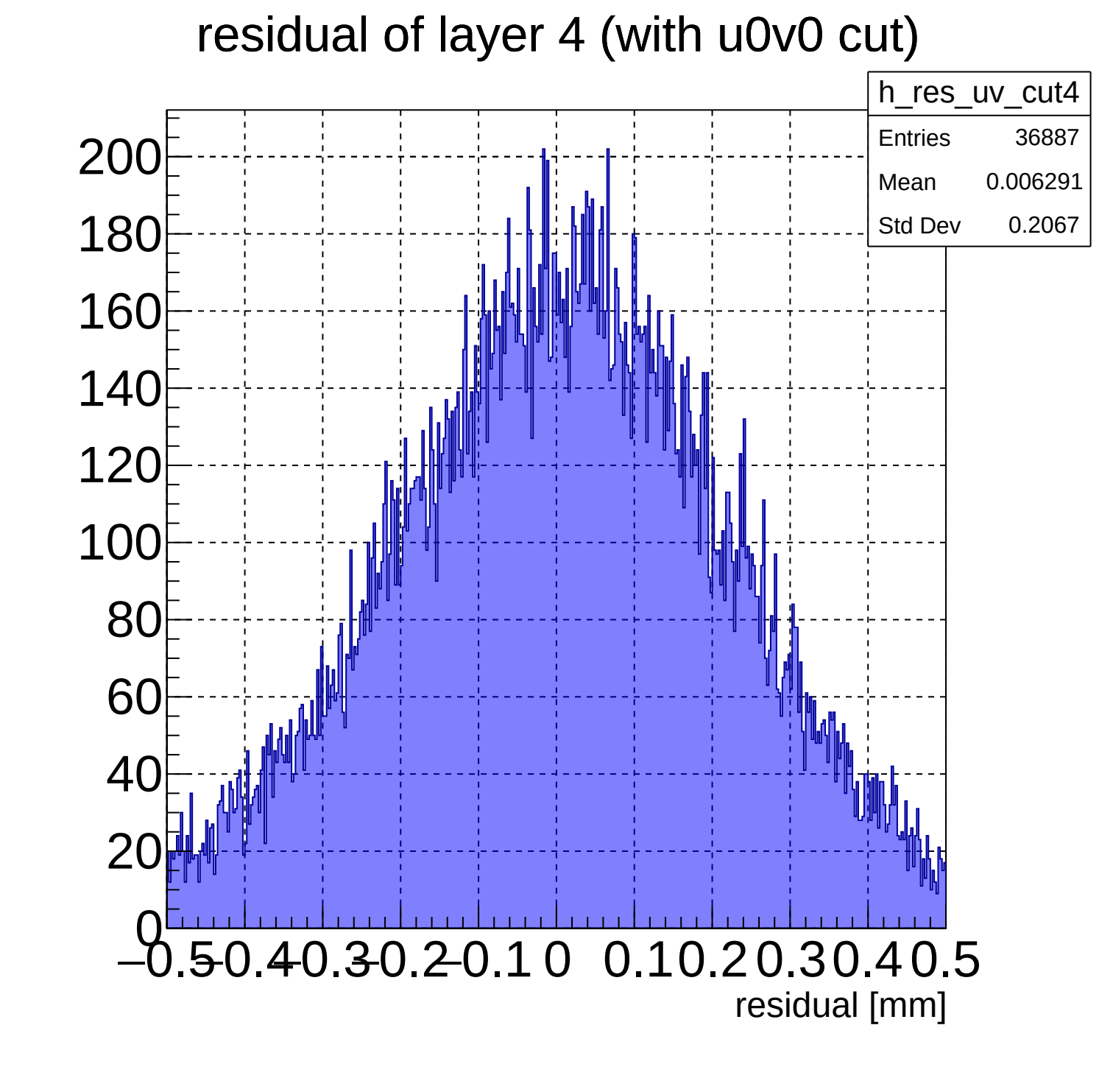

Track position at UTOF (with u0v0 cut)
y [mm]
200
150
100
50
0
−50
−100
−150
−200
−200
−150
−100
−50
0
50
100
150
200
x [mm]
100
80
60
40
20
0

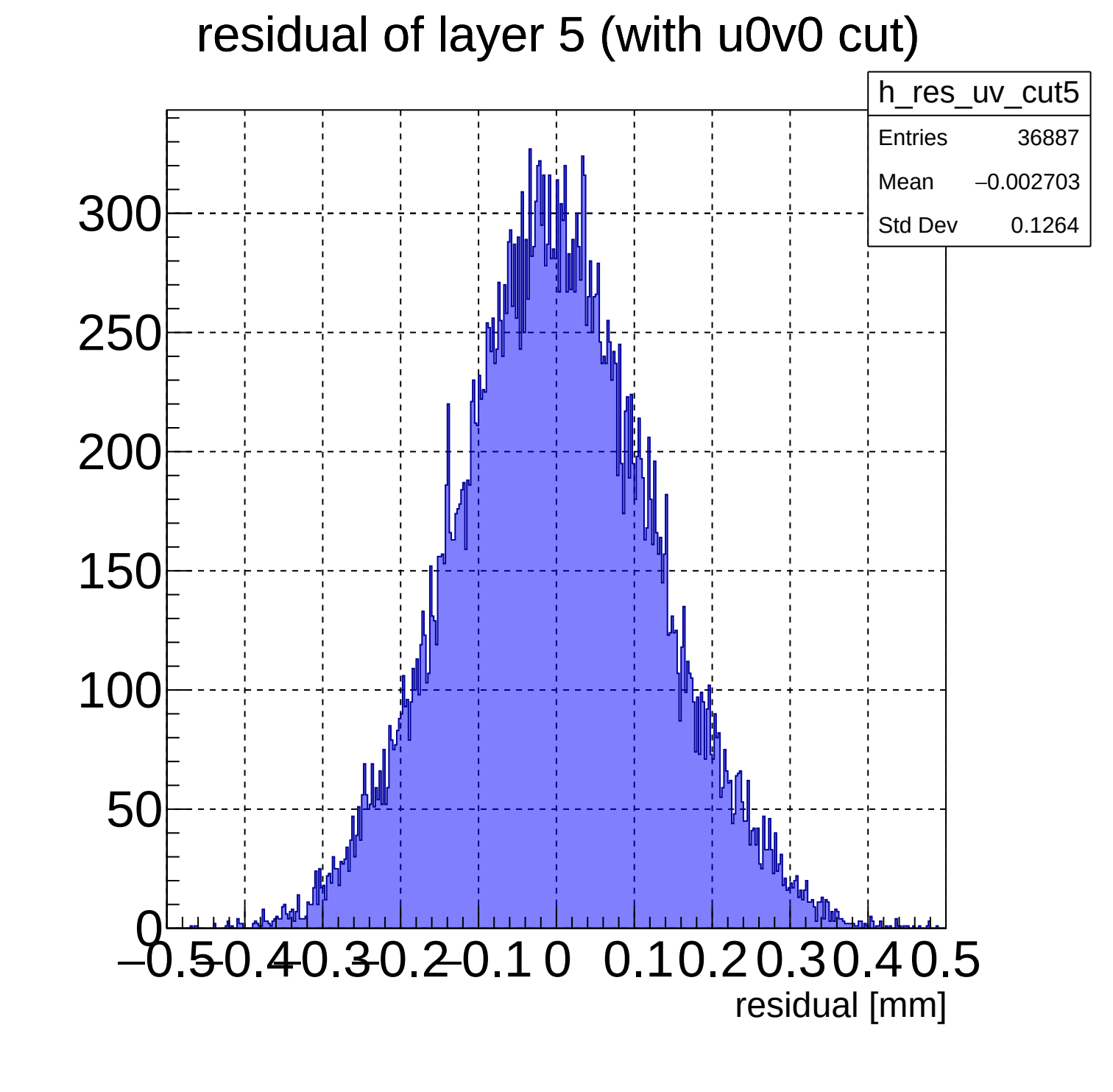

Track slope at UTOF (with u0v0 cut)
dy/dz [rad]
0.1
0.08
0.06
0.04
0.02
0
−0.02
−0.04
−0.06
−0.08
−0.1
−0.1
−0.08
−0.06
−0.04
−0.02
0
0.02
0.04
0.06
0.08
0.1
dx/dz [rad]
1000
800
600
400
200
0

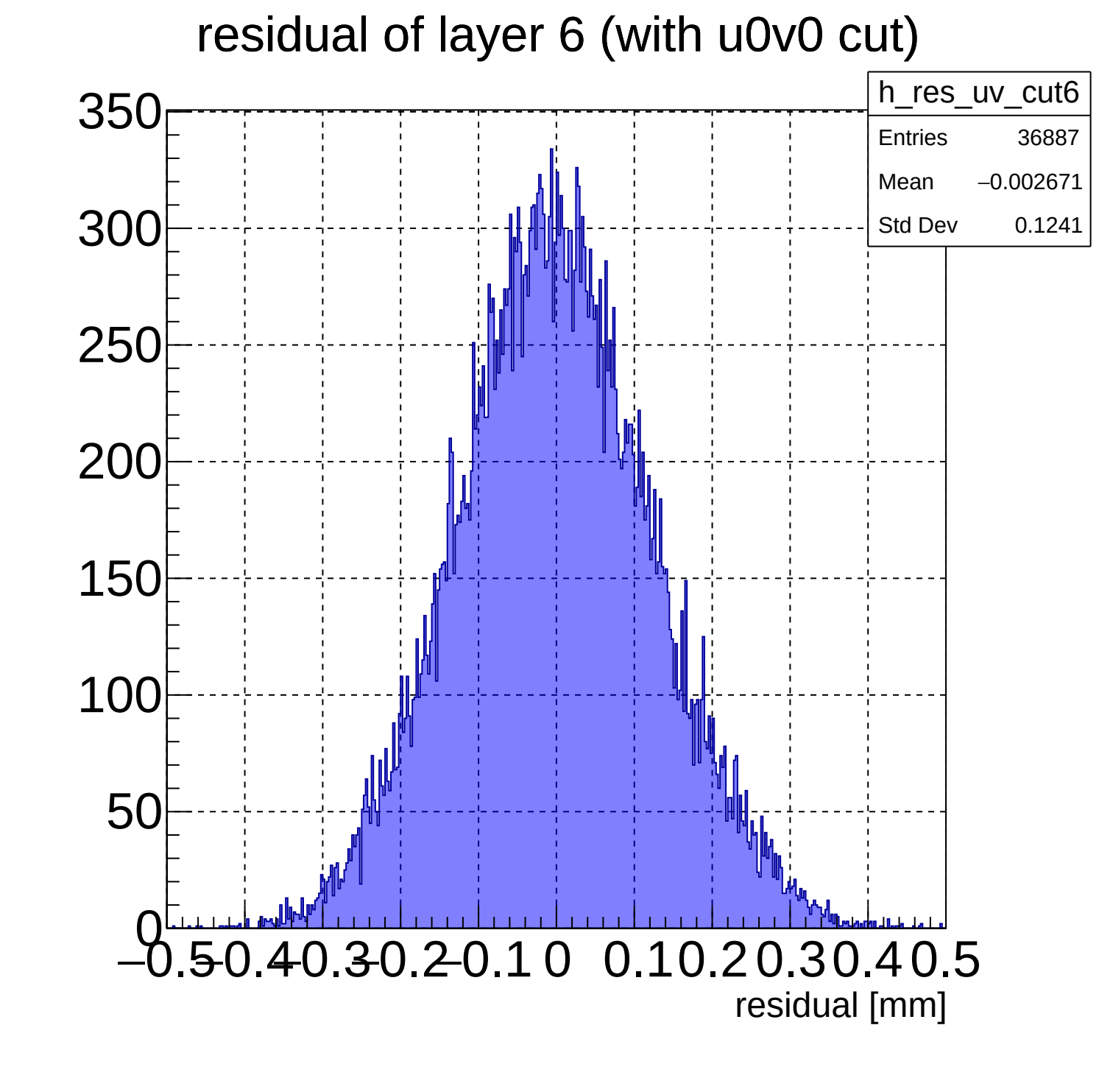

residual of layer 1 (with u0v0 cut)
h_res_uv_cut1
Entries 36887
Mean −0.003478
Std Dev 0.2082
180
160
140
120
100
80
60
40
20
0
−0.5
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
0.5
residual [mm]

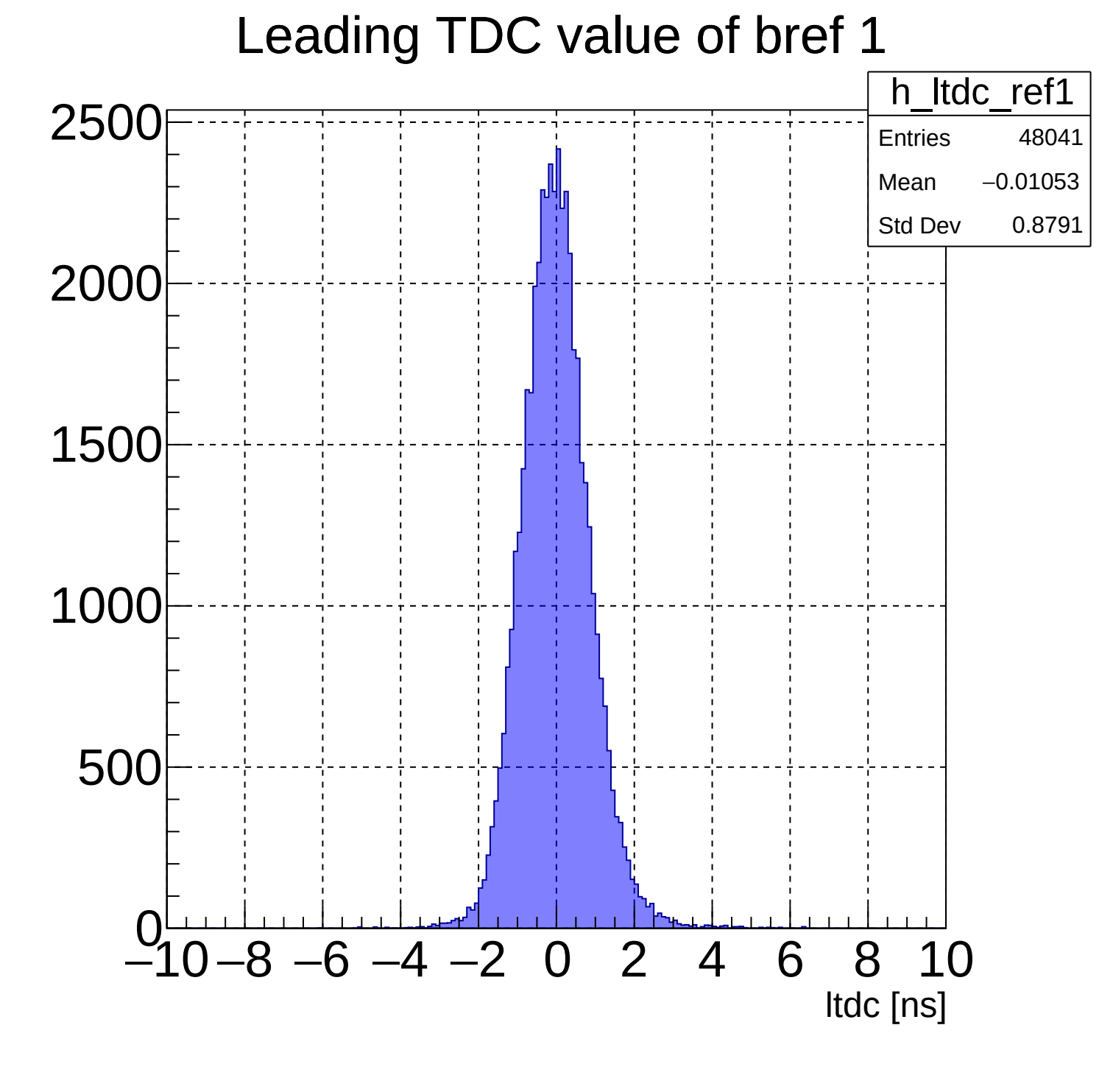

residual of layer 2 (with u0v0 cut)
h_res_uv_cut2
Entries 36887
Mean 0.00108
Std Dev 0.1308
300
250
200
150
100
50
0
−0.5 −0.4 −0.3 −0.2 −0.1 0 0.1 0.2 0.3 0.4 0.5
residual [mm]

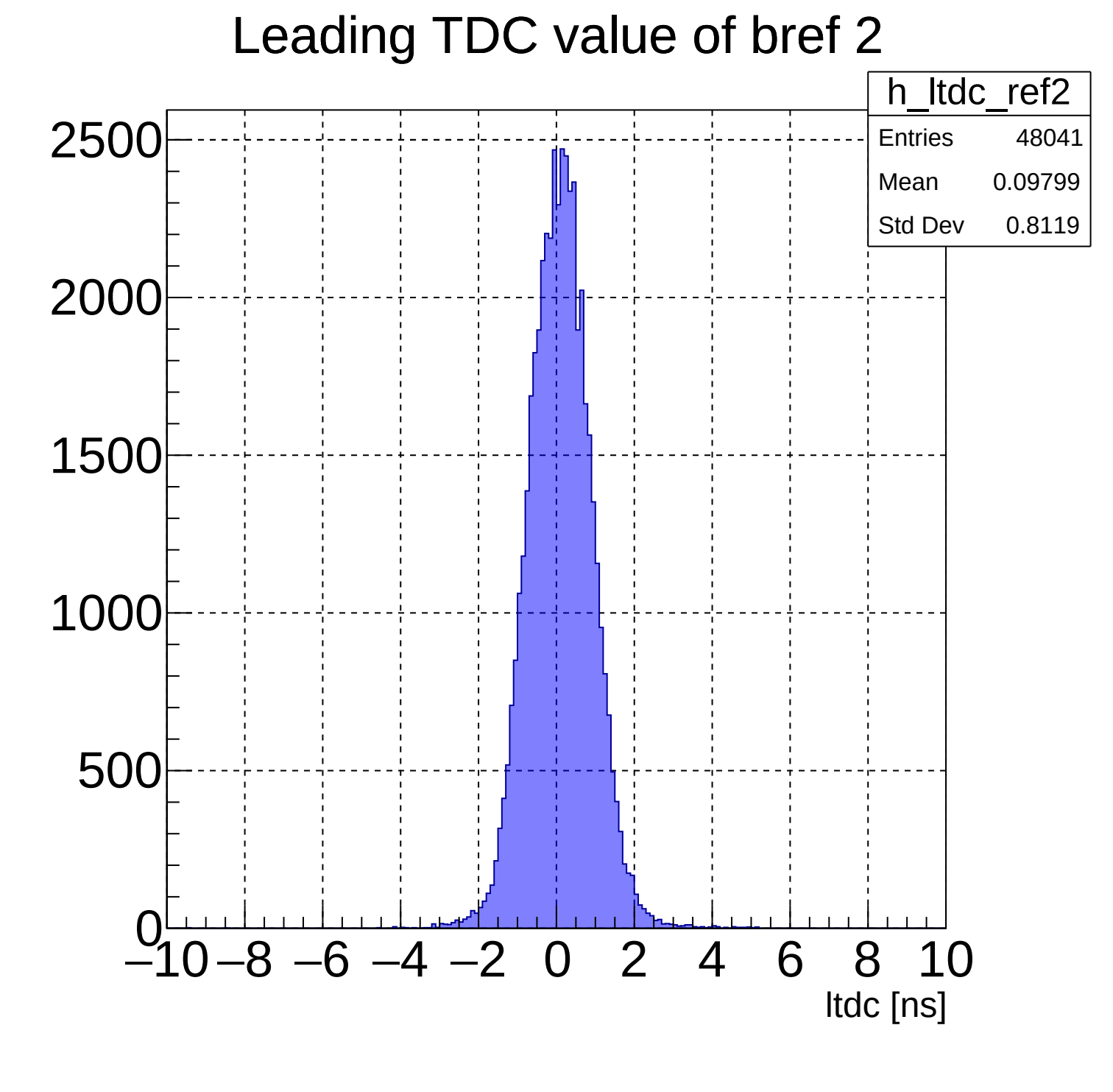

residual of layer 3 (with u0v0 cut)
h_res_uv_cut3
Entries 36887
Mean 0.0009954
Std Dev 0.1332
300
250
200
150
100
50
0
−0.5 −0.4 −0.3 −0.2 −0.1 0 0.1 0.2 0.3 0.4 0.5
residual [mm]


residual of layer 4 (with u0v0 cut)
h_res_uv_cut4
Entries 36887
Mean 0.006291
Std Dev 0.2067
200
180
160
140
120
100
80
60
40
20
0
−0.5
−0.4
−0.3
−0.2
−0.1
0
0.1
0.2
0.3
0.4
0.5
residual [mm]


residual of layer 5 (with u0v0 cut)
h_res_uv_cut5
Entries 36887
Mean −0.002703
Std Dev 0.1264
300
250
200
150
100
50
0
−0.5 −0.4 −0.3 −0.2 −0.1 0 0.1 0.2 0.3 0.4 0.5
residual [mm]


residual of layer 6 (with u0v0 cut)
h_res_uv_cut6
Entries 36887
Mean −0.002671
Std Dev 0.1241
350
300
250
200
150
100
50
0
−0.5 −0.4 −0.3 −0.2 −0.1 0 0.1 0.2 0.3 0.4 0.5
residual [mm]


Leading TDC value of bref 1
h_ltdc_ref1
Entries 48041
Mean –0.01053
Std Dev 0.8791
2500
2000
1500
1000
500
0
–10 –8 –6 –4 –2 0 2 4 6 8 10
ltdc [ns]


Leading TDC value of bref 2
h_ltdc_ref2
Entries 48041
Mean 0.09799
Std Dev 0.8119
2500
2000
1500
1000
500
0
–10 –8 –6 –4 –2 0 2 4 6 8 10
ltdc [ns]