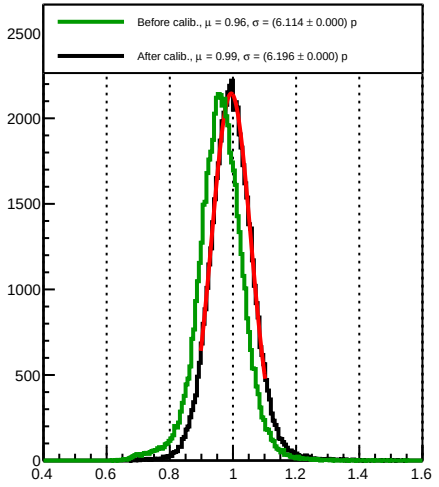
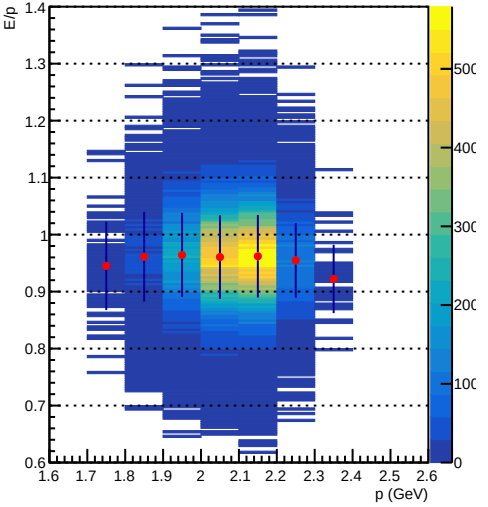
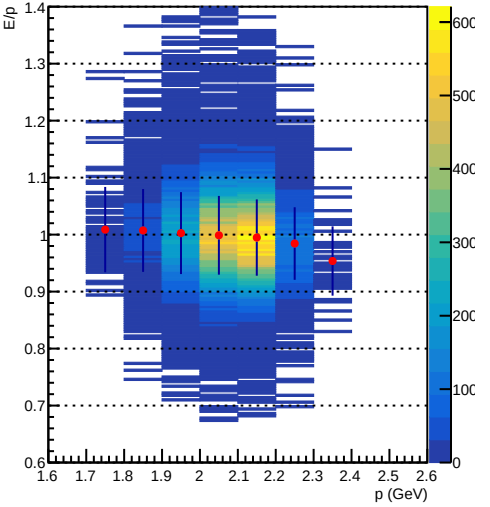
E/p (el. cut)



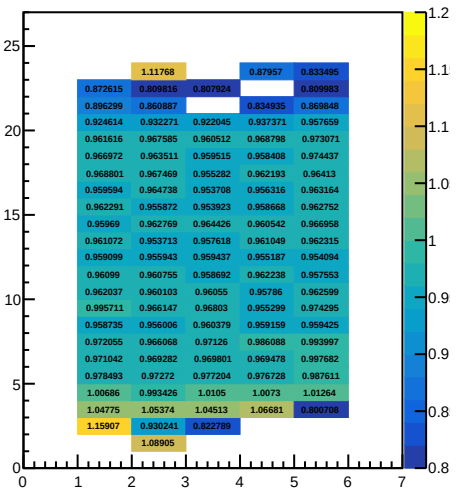
E/p vs p (el. cut)



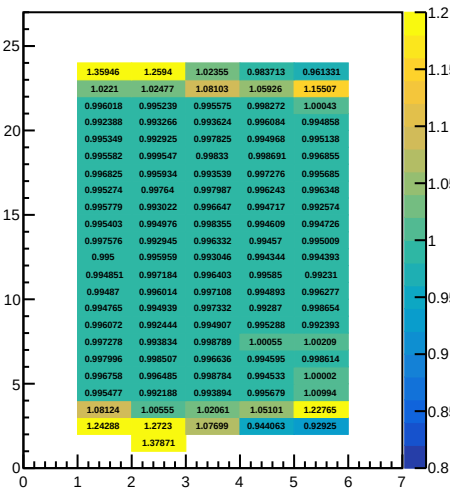
E/p vs p | After Calib. (el. cut)



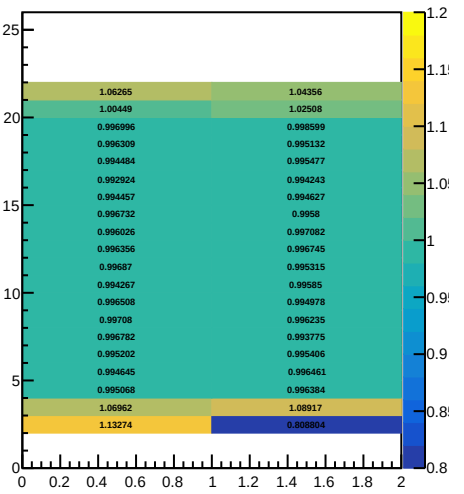
E/p per SH block (el. cut)



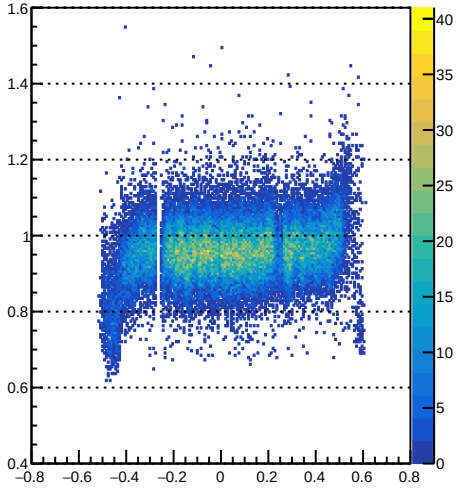
E/p per SH block | After Calib. (el. cut)



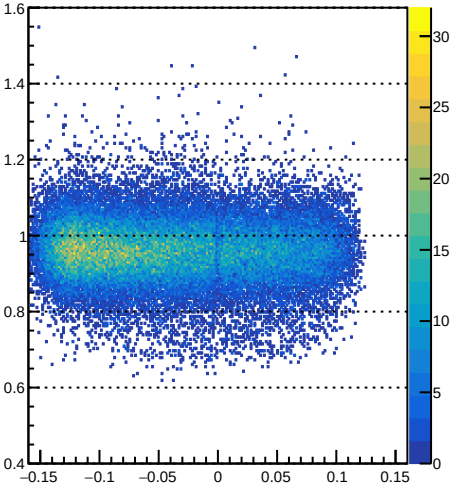
E/p per PS block | After Calib. (el. cut)



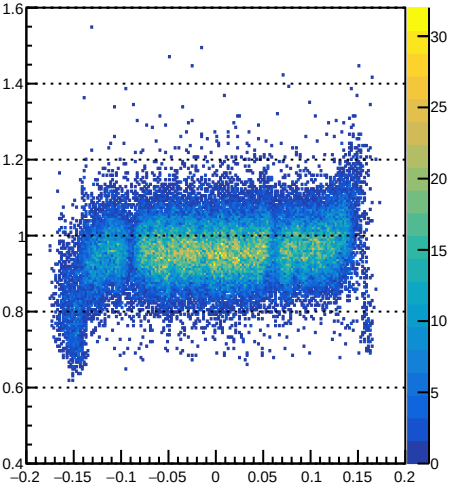
E/p vs Track x (el. cut)



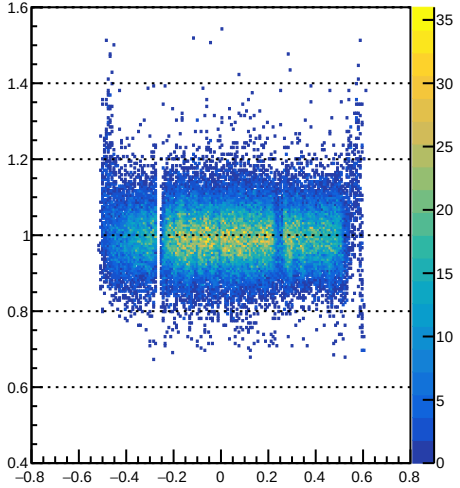
E/p vs Track y (el. cut)



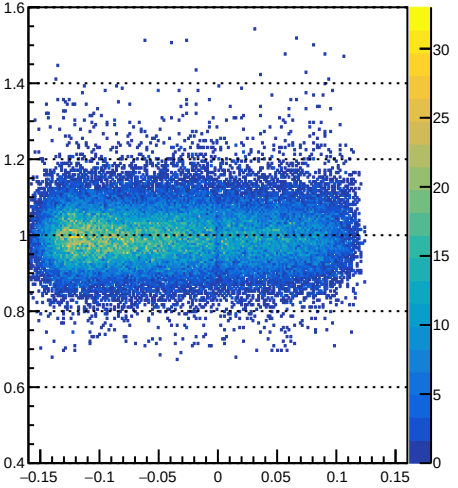
E/p vs Track theta (el. cut)



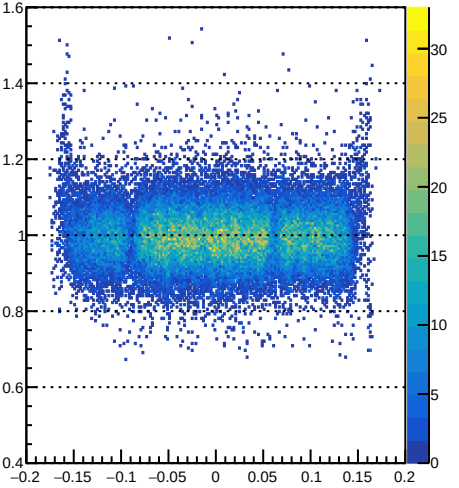
E/p vs Track x | After Calib. (el. cut)



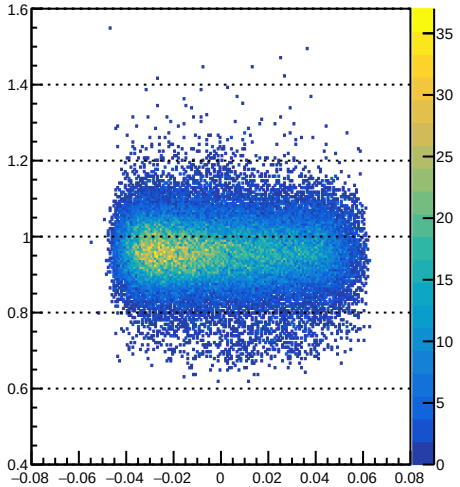
E/p vs Track y | After Calib. (el. cut)



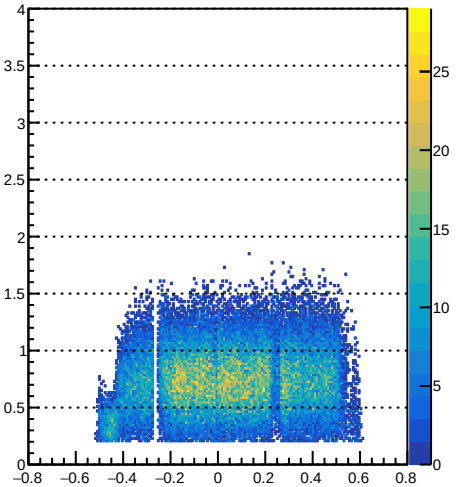
E/p vs Track theta | After Calib. (el. cut)



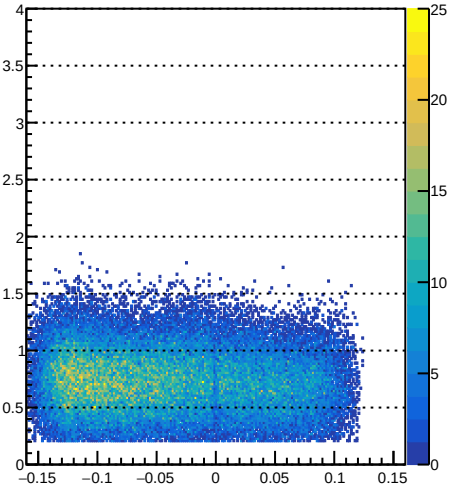
E/p vs Track phi (el. cut)



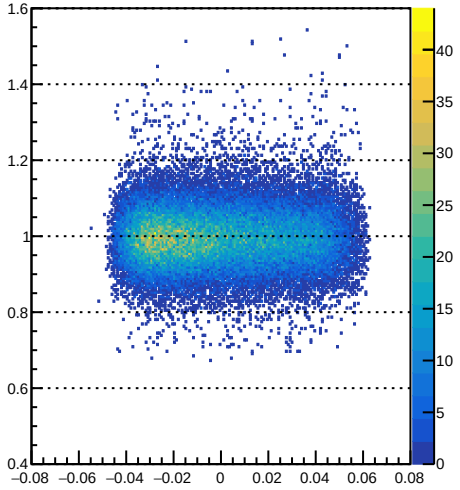
PS energy vs Track x (el. cut)



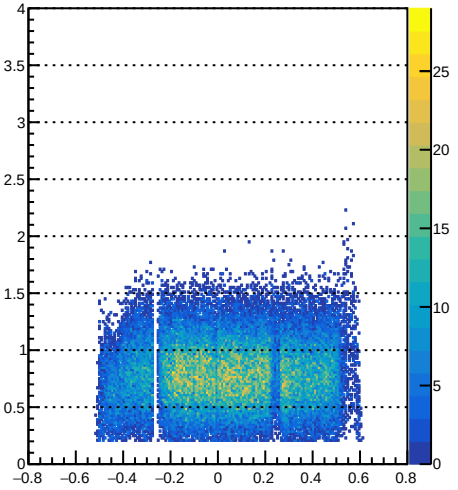
PS energy vs Track y (el. cut)



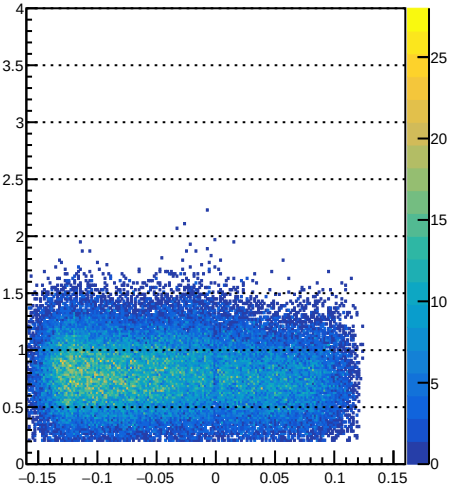
E/p vs Track phi | After Calib. (el. cut)

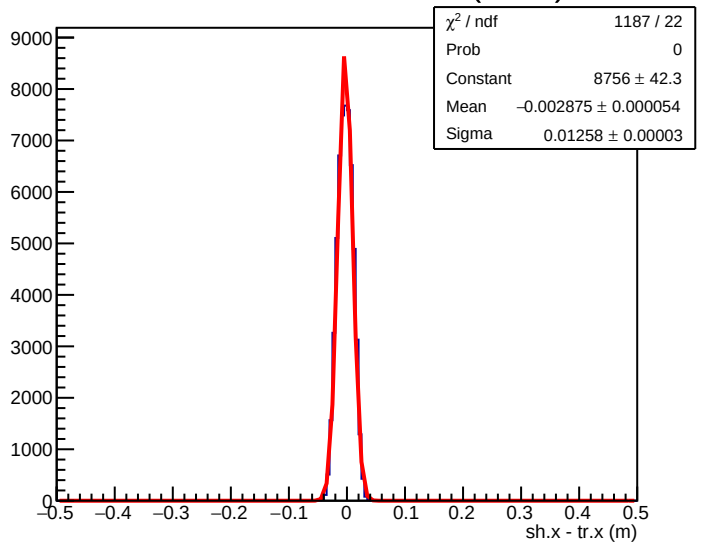


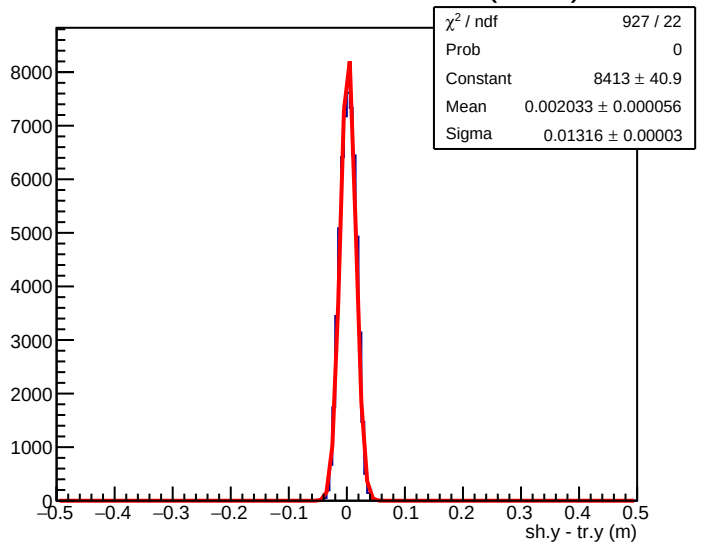
PS energy vs Track x | After Calib. (el. cut)

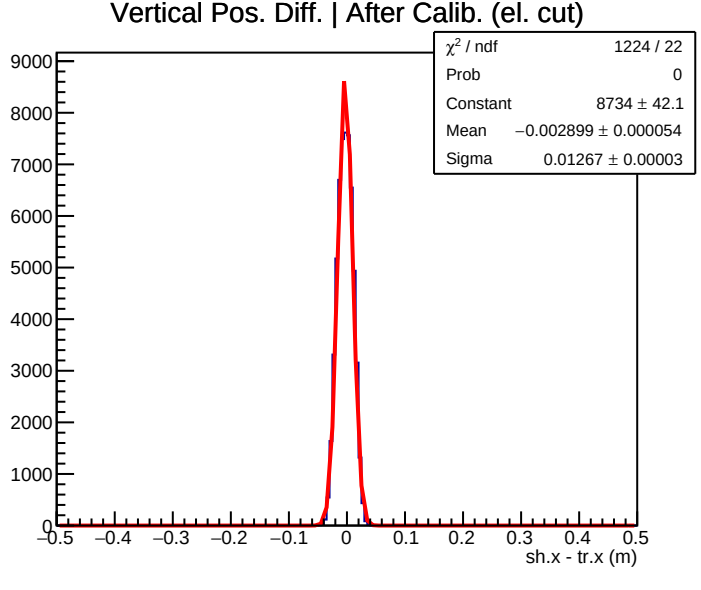


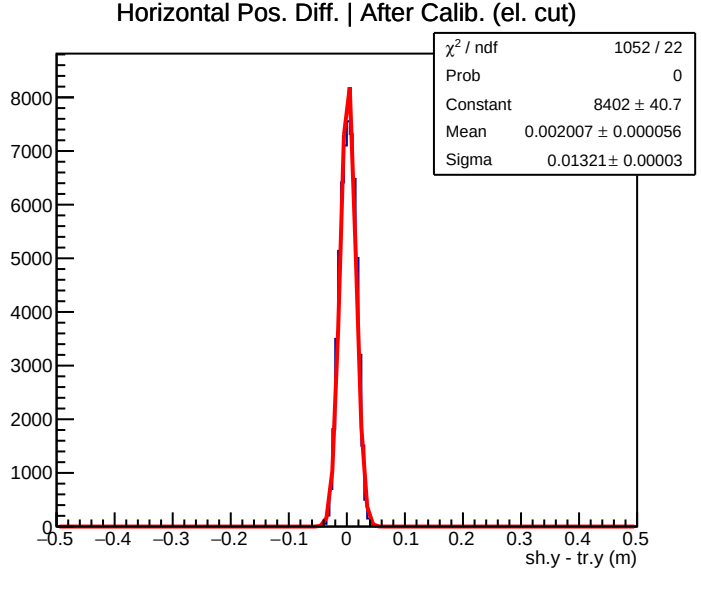
PS energy vs Track y | After Calib. (el. cut)

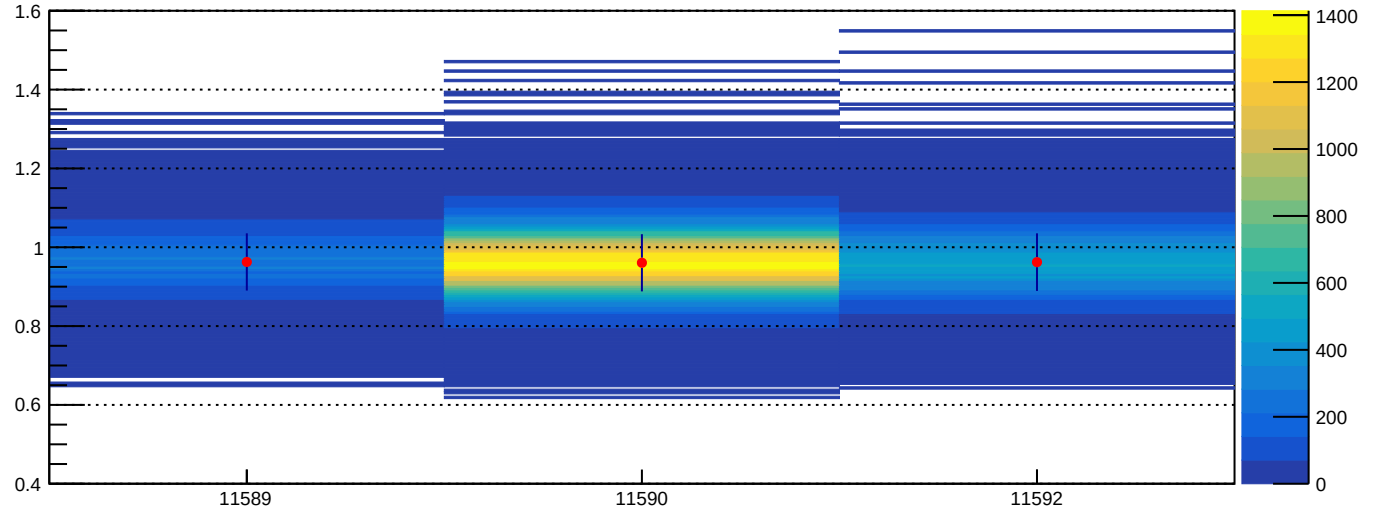


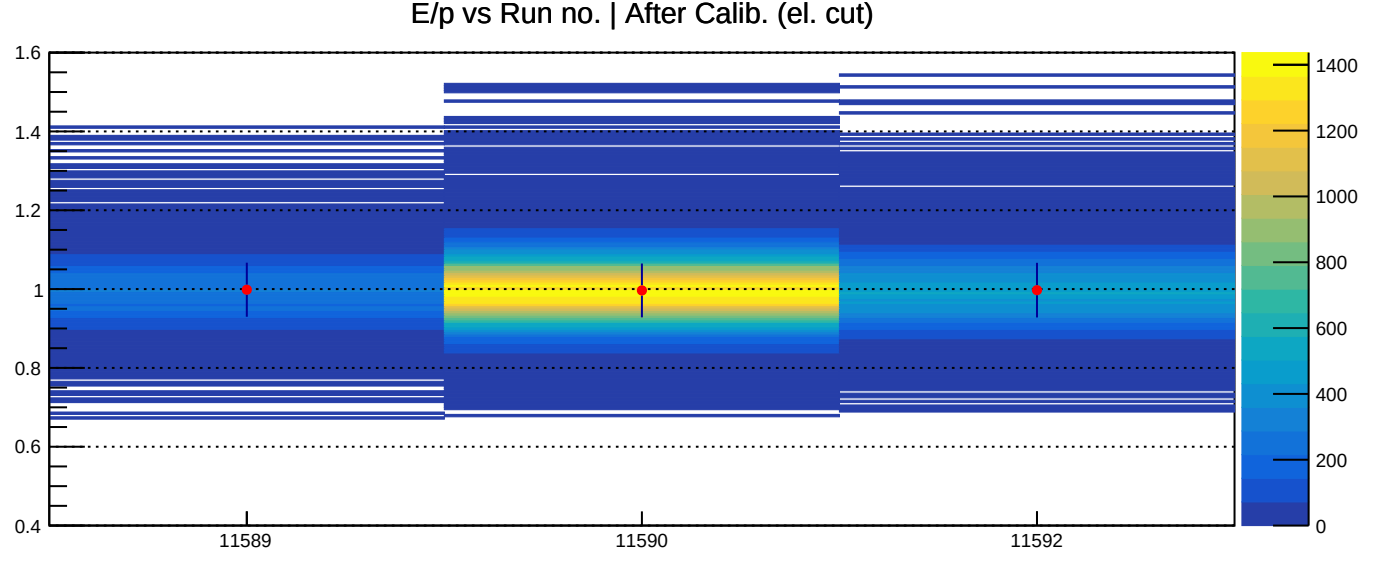

Vertical Position Difference (el. cut)
χ² / ndf 1187 / 22
Prob 0
Constant 8756 ± 42.3
Mean −0.002875 ± 0.000054
Sigma 0.01258 ± 0.00003
sh.x - tr.x (m)


Horizontal Position Difference (el. cut)
χ² / ndf 927 / 22
Prob 0
Constant 8413 ± 40.9
Mean 0.002033 ± 0.000056
Sigma 0.01316 ± 0.00003
sh.y - tr.y (m)

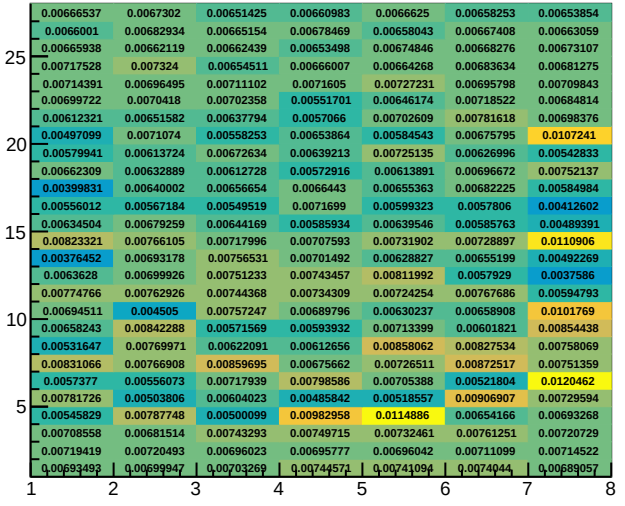

Vertical Pos. Diff. | After Calib. (el. cut)
χ² / ndf 1224 / 22
Prob 0
Constant 8734 ± 42.1
Mean −0.002899 ± 0.000054
Sigma 0.01267 ± 0.00003
sh.x - tr.x (m)


Horizontal Pos. Diff. | After Calib. (el. cut)
χ² / ndf 1052 / 22
Prob 0
Constant 8402 ± 40.7
Mean 0.002007 ± 0.000056
Sigma 0.01321± 0.00003
sh.y - tr.y (m)

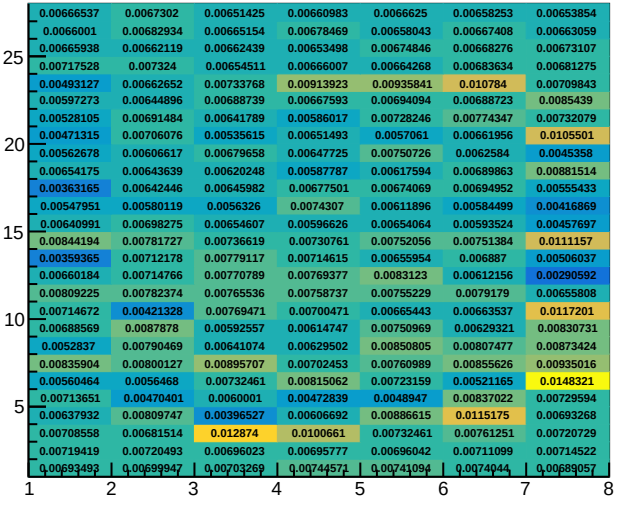

E/p vs Run no. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
11589
11590
11592
1400
1200
1000
800
600
400
200
0


E/p vs Run no. | After Calib. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
11589
11590
11592
1400
1200
1000
800
600
400
200
0

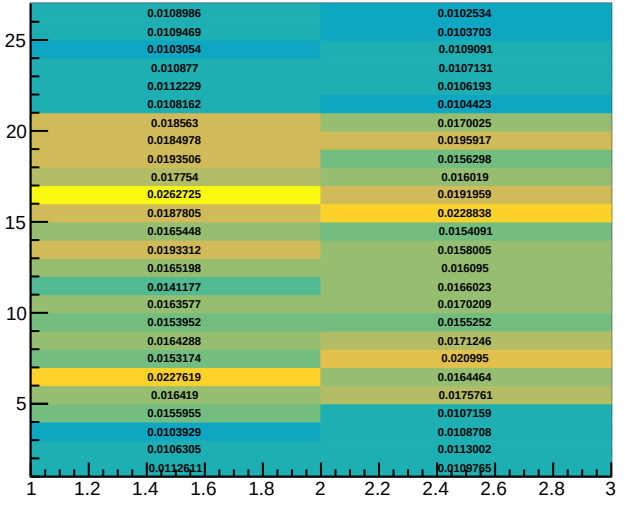
Old ADC Gain Coefficients | SH



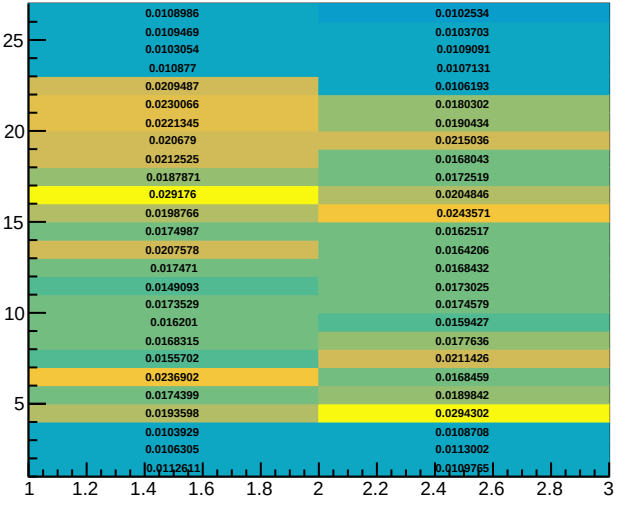
New ADC Gain Coefficients | SH

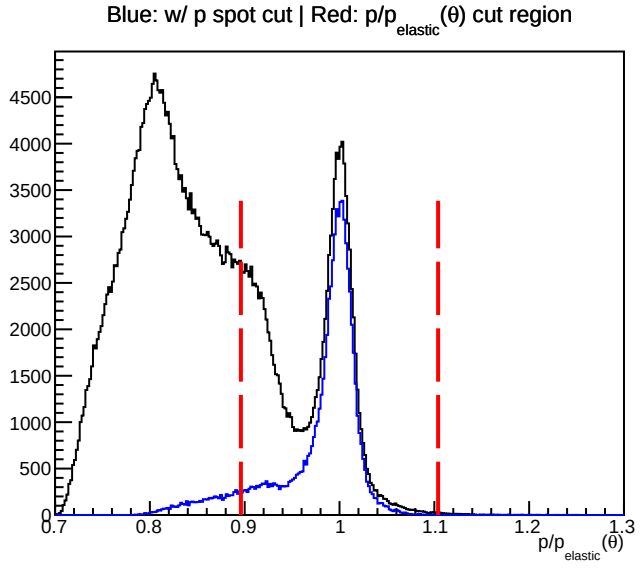


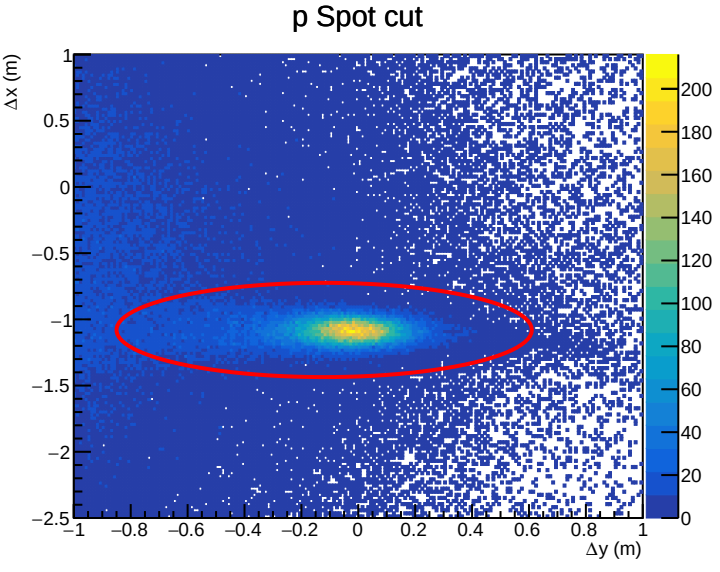
Old ADC Gain Coefficients | PS

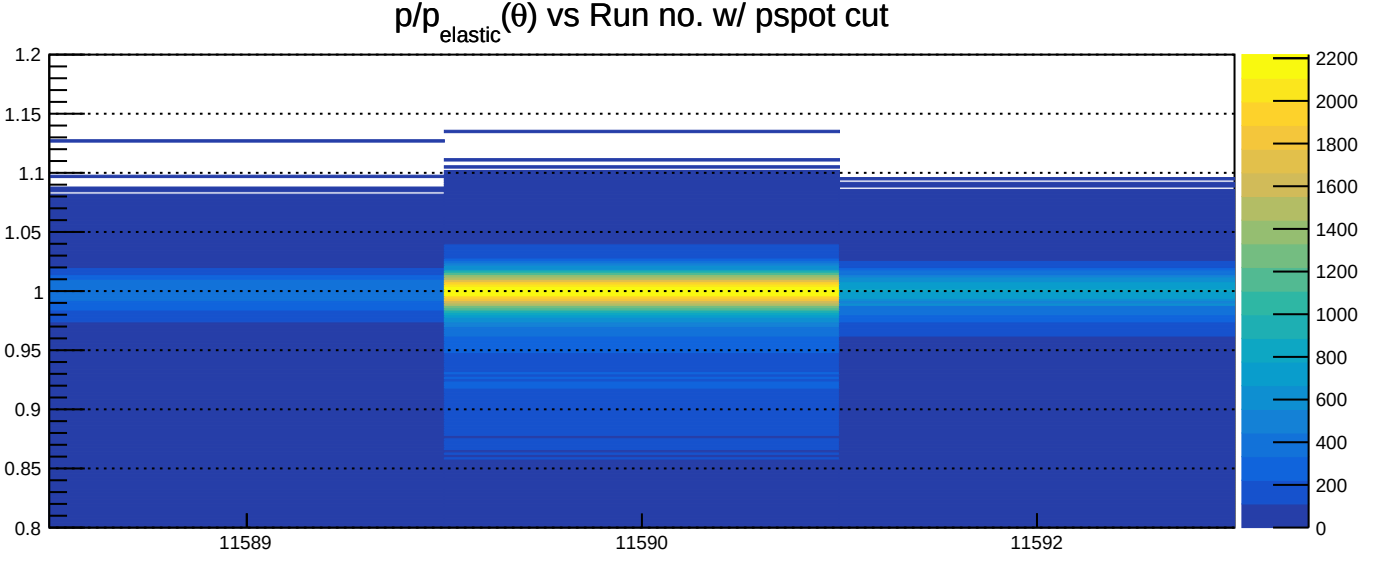


New ADC Gain Coefficients | PS

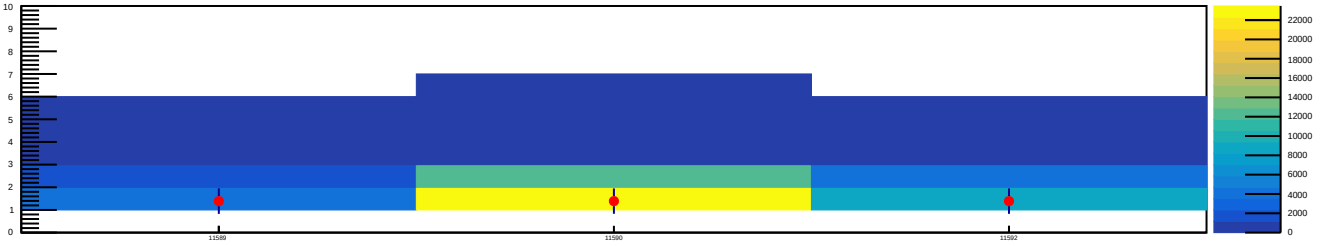



Blue: w/ p spot cut | Red: p/p_elastic(θ) cut region
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0.7
0.8
0.9
1
1.1
1.2
1.3
p/p_elastic(θ)

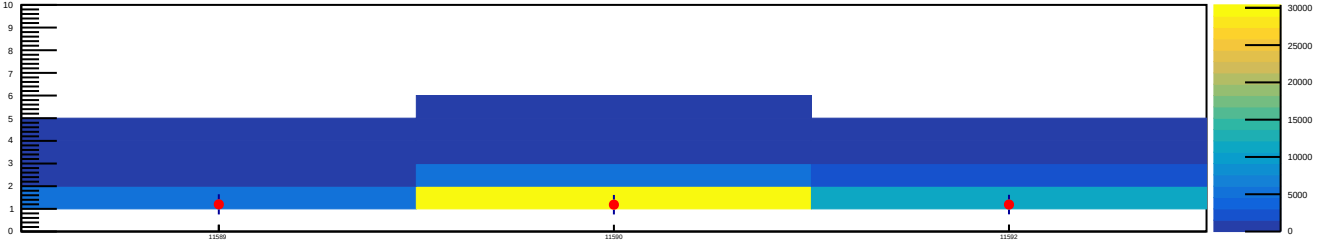

p Spot cut
Δx (m)
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Δy (m)
200
180
160
140
120
100
80
60
40
20
0


p/p_elastic(θ) vs Run no. w/ pspot cut
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
11589
11590
11592
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0

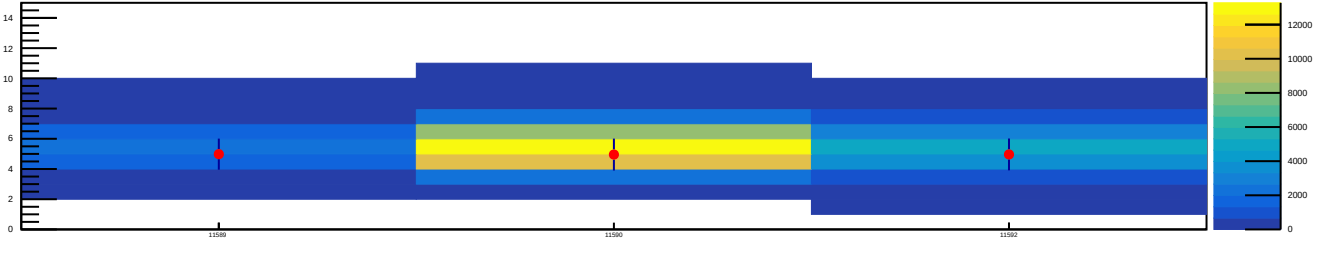
PS (best) cluster size vs Run no. (el. cut)



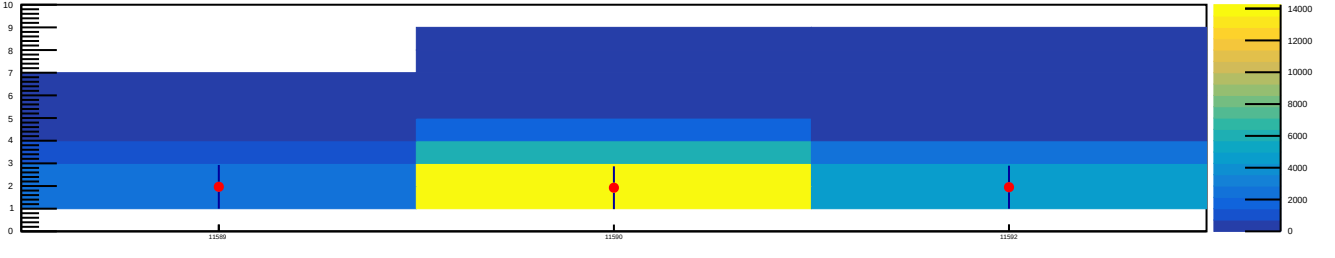
PS cluster multiplicity vs Run no. (el. cut)



SH (best) cluster size vs Run no. (el. cut)



SH cluster multiplicity vs Run no. (el. cut)



Date of creation: 6/21/2023

Configfile: BBCal_replay/macros/Combined_macros/cfg/sbs4-sbs50p.cfg

Total # events analyzed: 1194686, Preparing for replay pass: 2

E/p (before calib.) | μ = 0.96, σ = (6.114 $\pm$ 0.000) p

E/p (after calib.) | μ = 0.99, σ = (6.196 $\pm$ 0.000) p

Global cuts:

bb.tr.n==1, abs(bb.tr.vz[0])<0.08, bb.gem.track.nhits>3,
abs(bb.tr.r_x-0.9*bb.tr.r_th)<0.4,
PS cluster energy > 0.2 GeV
p_recon > 1.6 GeV/c

events passed global cuts: 404769

Elastic cuts:

$|p/p_{el}(\theta) - 1.000| \leq 8.0*0.013$

proton spot cut ranges:

Δx (m): Mean = -1.0800, 4.0σ = 0.0890

Δy (m): Mean = -0.1200, 5.0σ = 0.1460

events passed global & elastic cuts: 71120

Other cuts:

Minimum # events per block: 200, (Cluster) hit threshold: 0.02 GeV

Various offsets:

Momentum fudge factor: 1.00, BBCAL cluster energy scale factor: 1.00

Momentum calibration factors: A = 0.274307350, B = 1.014258780, C = 0.0, θ_{pitch}^{GEM} = 10.0^{o}, d_{BB} = 1.7988 m

Macro processing time: CPU 93.3s | Real 112.2s