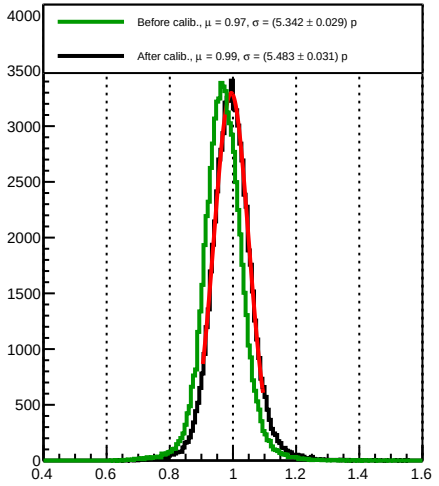
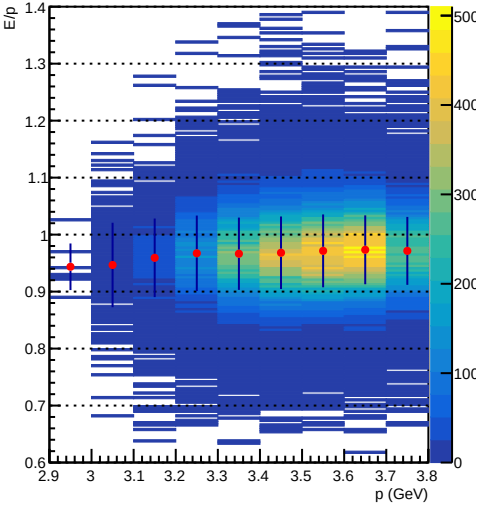
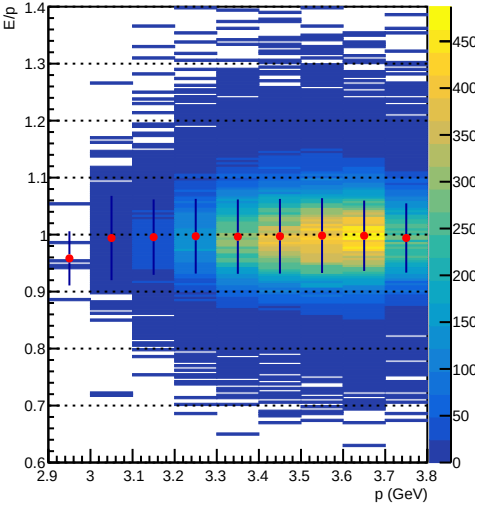
E/p (el. cut)



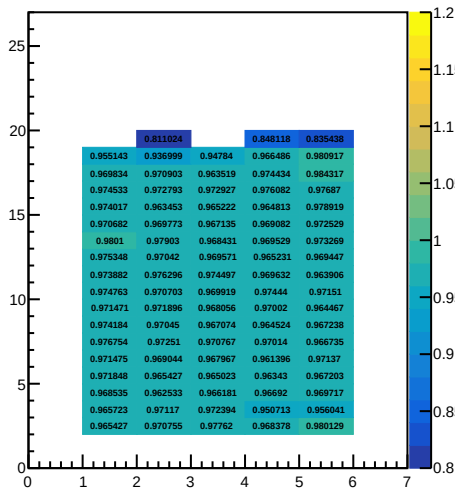
E/p vs p (el. cut)



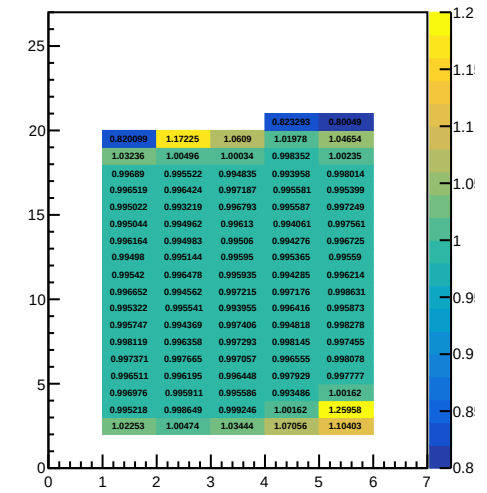
E/p vs p | After Calib. (el. cut)



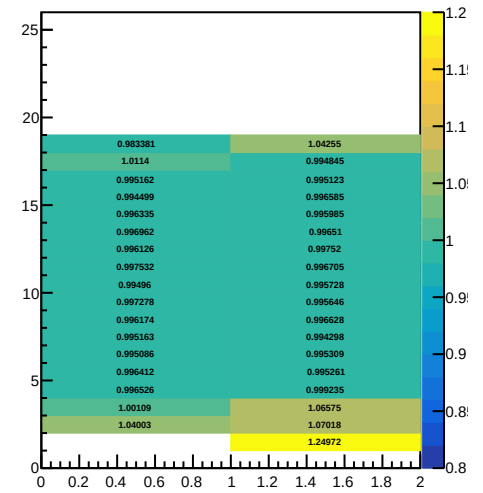
E/p per SH block (el. cut)



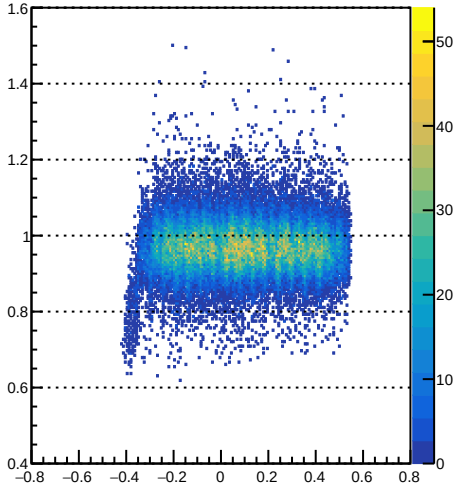
E/p per SH block | After Calib. (el. cut)



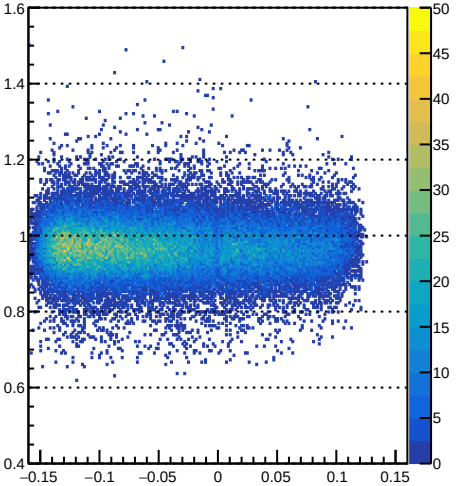
E/p per PS block | After Calib. (el. cut)



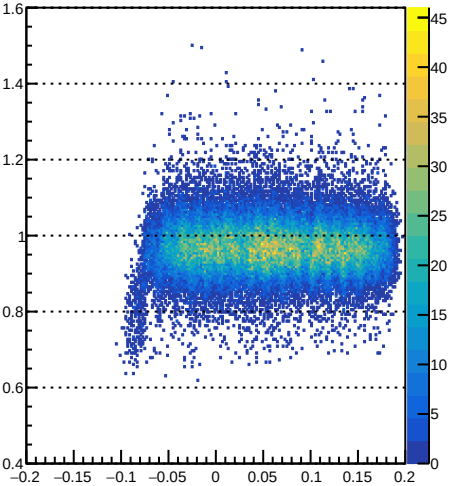
E/p vs Track x (el. cut)



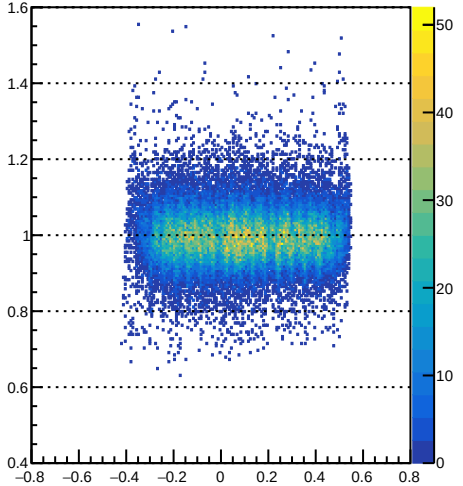
E/p vs Track y (el. cut)



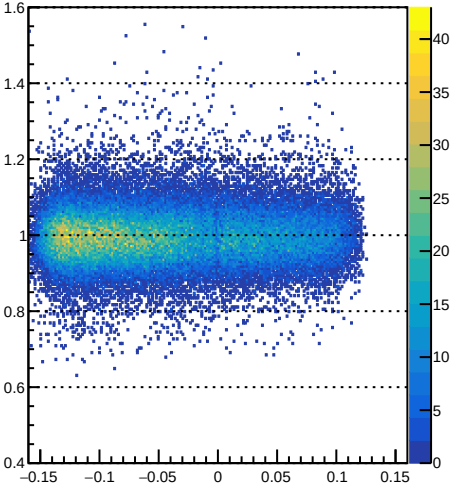
E/p vs Track theta (el. cut)



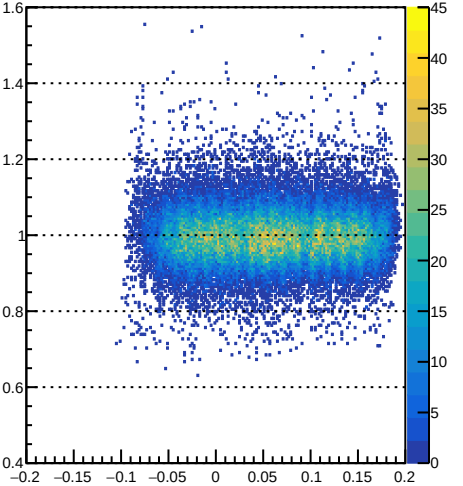
E/p vs Track x | After Calib. (el. cut)



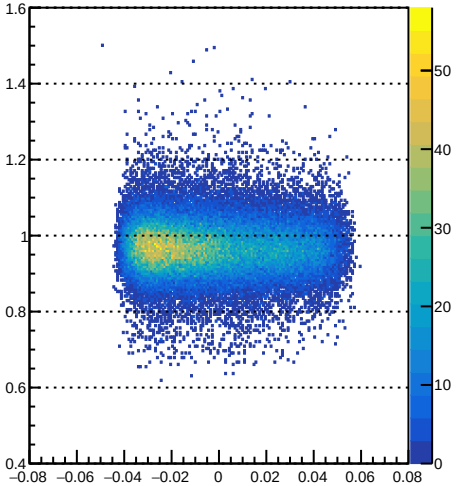
E/p vs Track y | After Calib. (el. cut)



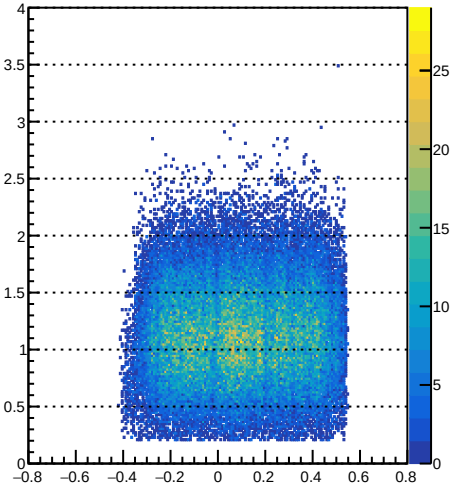
E/p vs Track theta | After Calib. (el. cut)



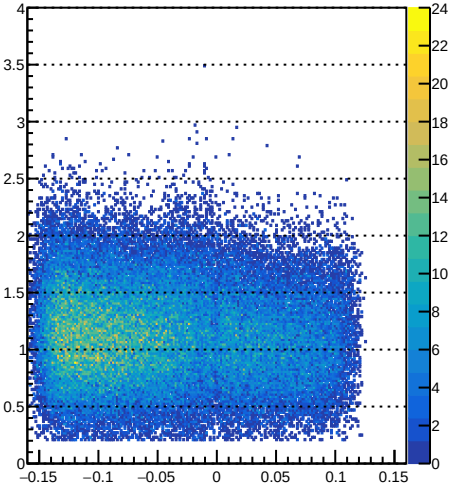
E/p vs Track phi (el. cut)



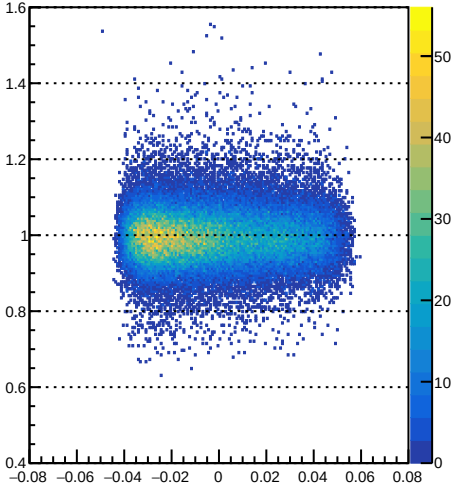
PS energy vs Track x (el. cut)



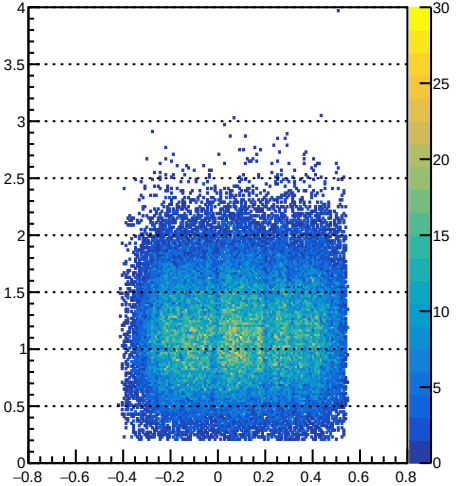
PS energy vs Track y (el. cut)



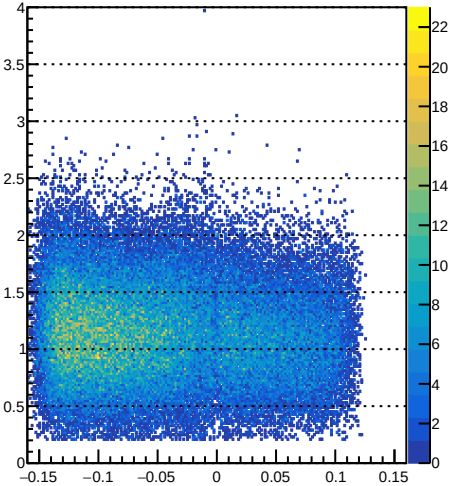
E/p vs Track phi | After Calib. (el. cut)

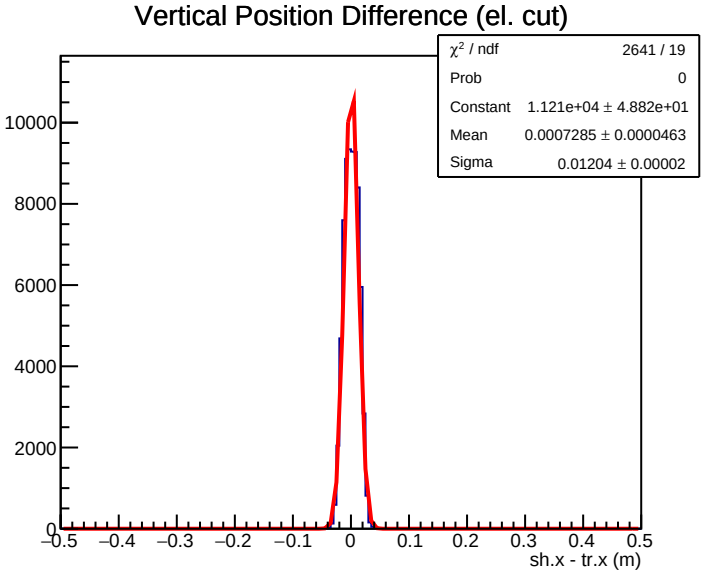


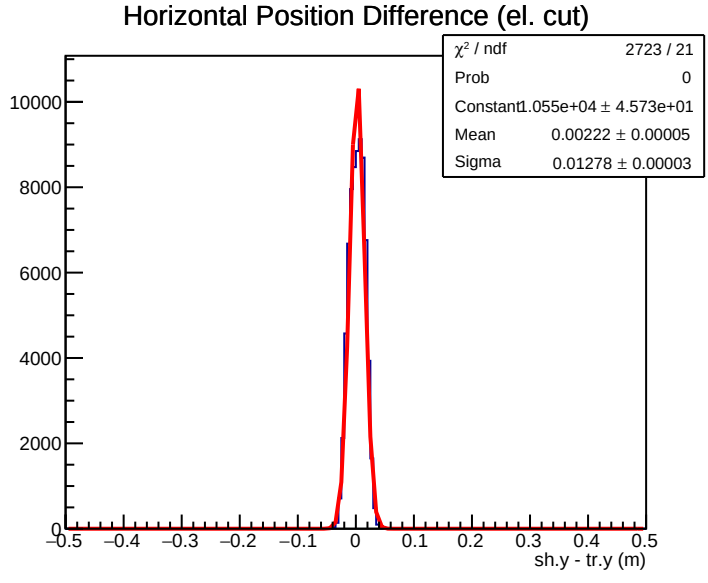
PS energy vs Track x | After Calib. (el. cut)

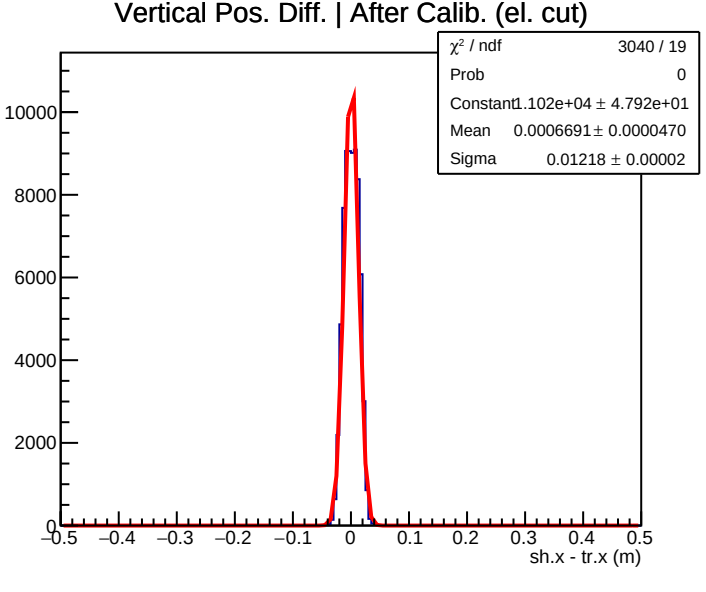


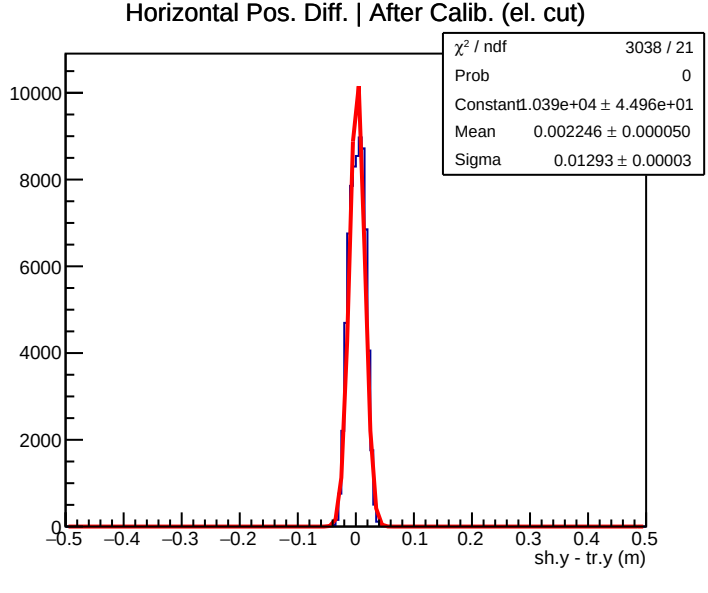
PS energy vs Track y | After Calib. (el. cut)

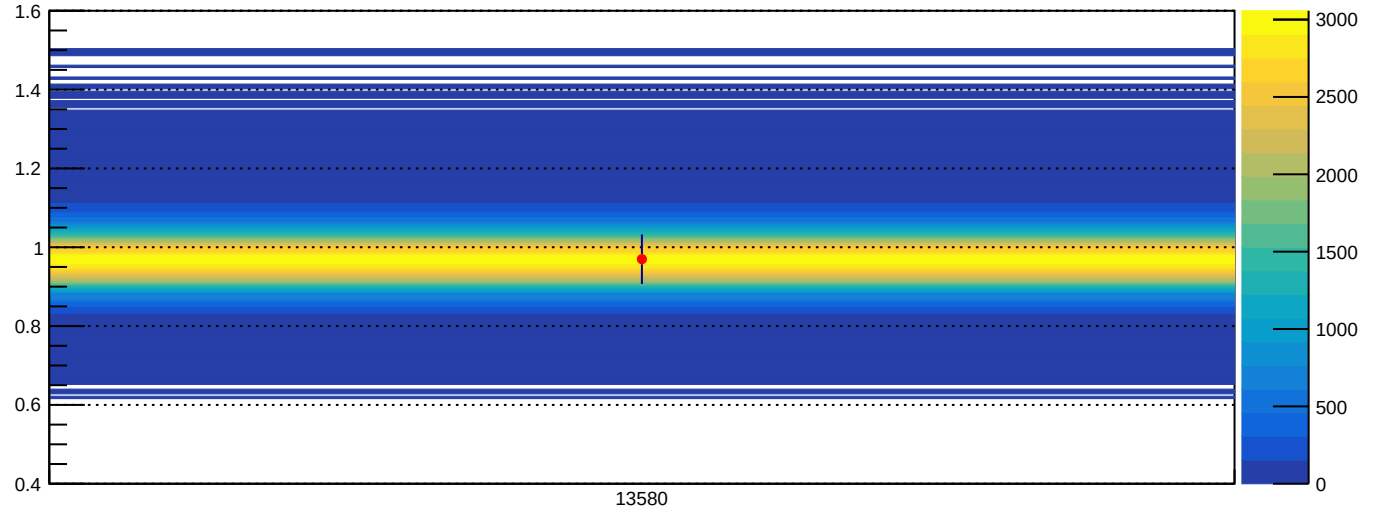


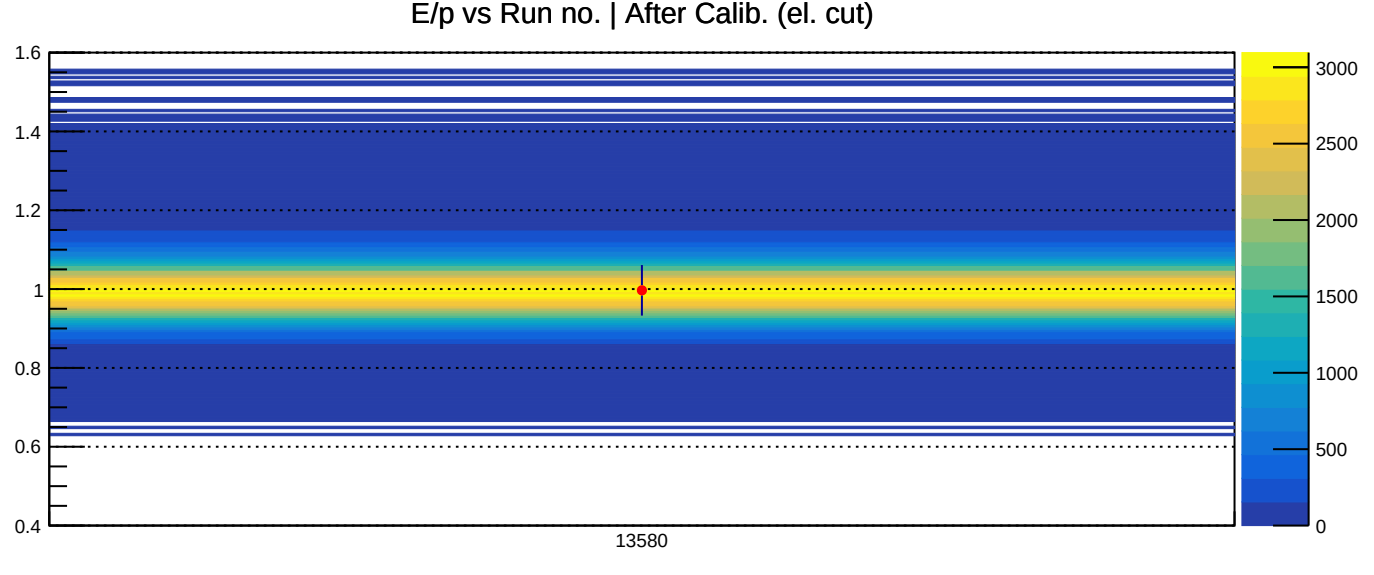

Vertical Position Difference (el. cut)
χ² / ndf 2641 / 19
Prob 0
Constant 1.121e+04 ± 4.882e+01
Mean 0.0007285 ± 0.0000463
Sigma 0.01204 ± 0.00002
sh.x - tr.x (m)


Horizontal Position Difference (el. cut)
χ² / ndf 2723 / 21
Prob 0
Constant 1.055e+04 ± 4.573e+01
Mean 0.00222 ± 0.00005
Sigma 0.01278 ± 0.00003
sh.y - tr.y (m)

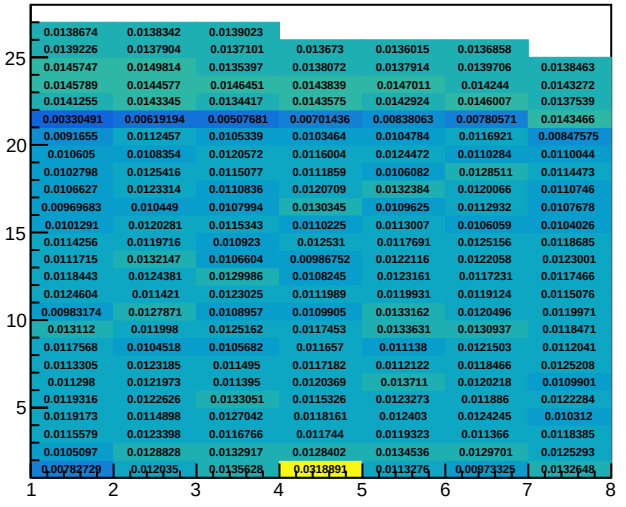

Vertical Pos. Diff. | After Calib. (el. cut)
χ² / ndf 3040 / 19
Prob 0
Constant 1.102e+04 ± 4.792e+01
Mean 0.0006691 ± 0.0000470
Sigma 0.01218 ± 0.00002
sh.x - tr.x (m)


Horizontal Pos. Diff. | After Calib. (el. cut)
χ² / ndf 3038 / 21
Prob 0
Constant 1.039e+04 ± 4.496e+01
Mean 0.002246 ± 0.000050
Sigma 0.01293 ± 0.00003
sh.y - tr.y (m)

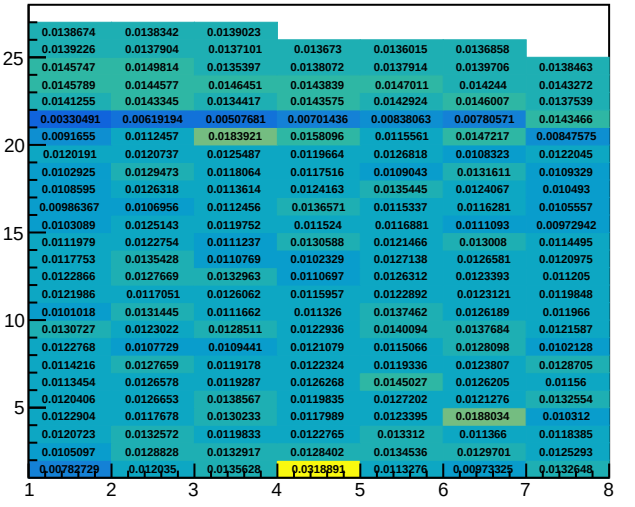

E/p vs Run no. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
13580
3000
2500
2000
1500
1000
500
0


E/p vs Run no. | After Calib. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
13580
3000
2500
2000
1500
1000
500
0

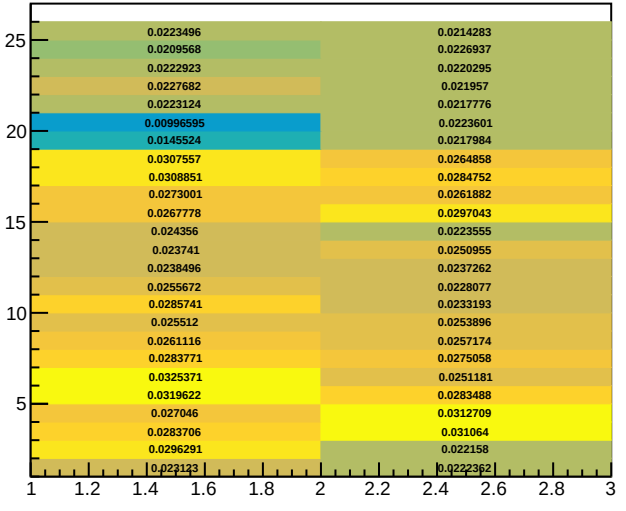
Old ADC Gain Coefficients | SH



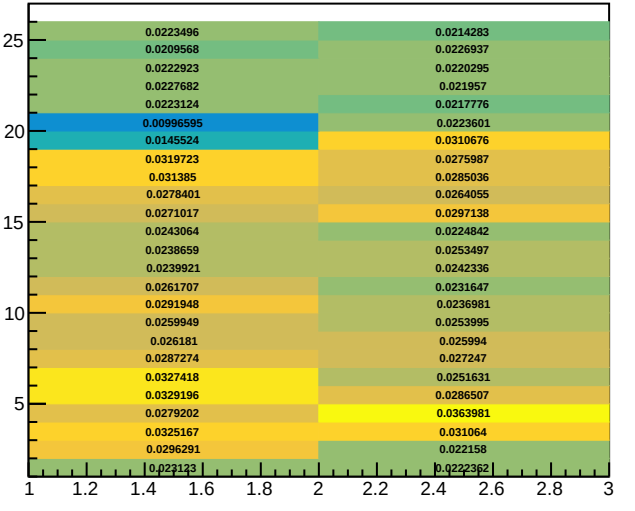
New ADC Gain Coefficients | SH

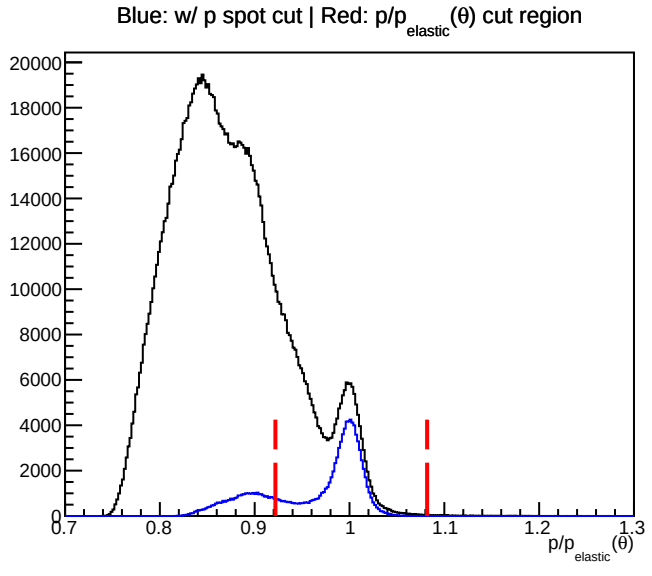


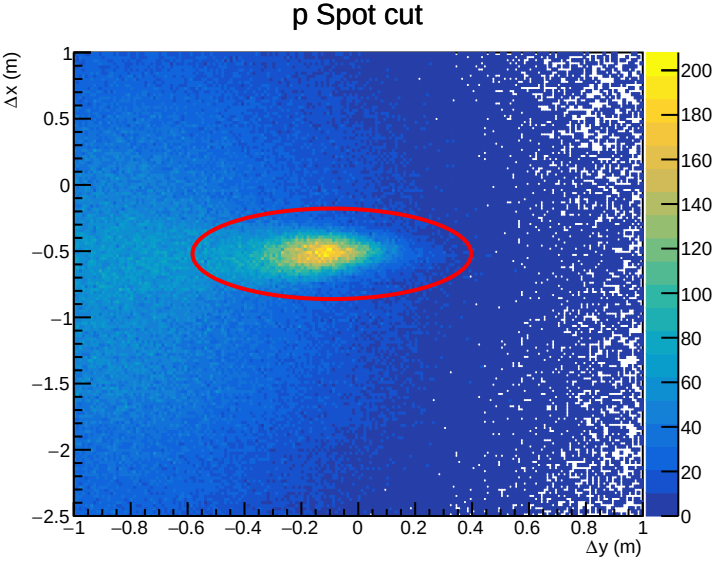
Old ADC Gain Coefficients | PS

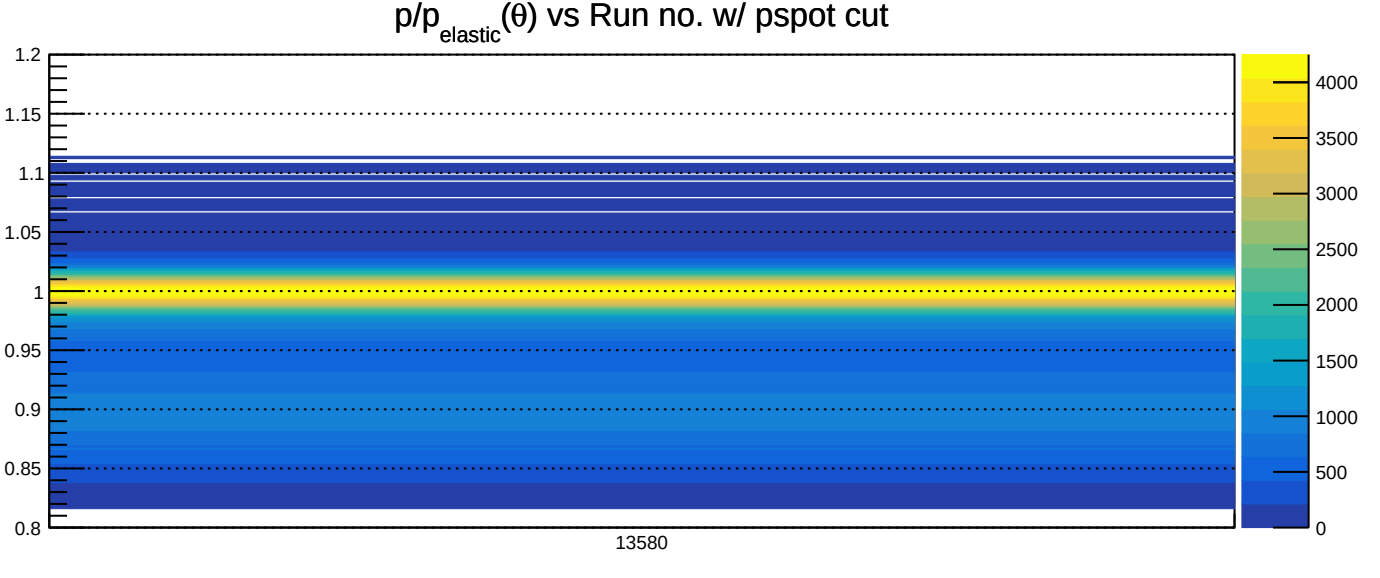


New ADC Gain Coefficients | PS

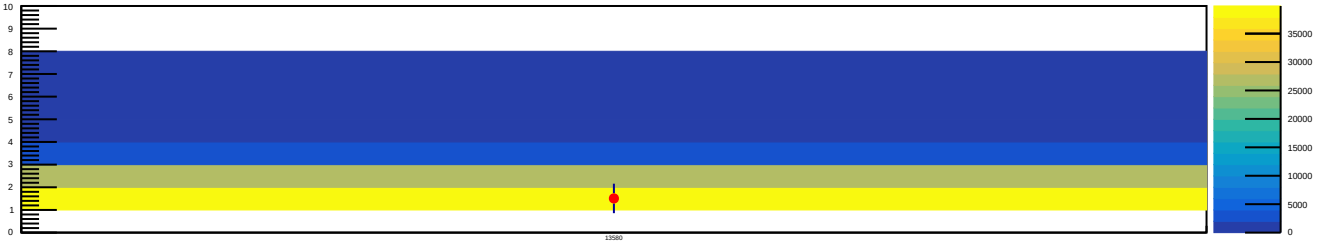



Blue: w/ p spot cut | Red: p/p_elastic(θ) cut region
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0.7
0.8
0.9
1
1.1
1.2
1.3
p/p_elastic(θ)

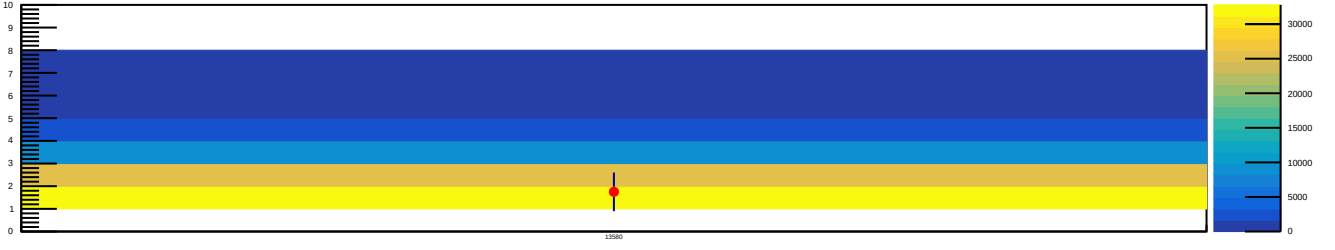

p Spot cut
Δx (m)
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Δy (m)
200
180
160
140
120
100
80
60
40
20
0


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
13580
4000
3500
3000
2500
2000
1500
1000
500
0

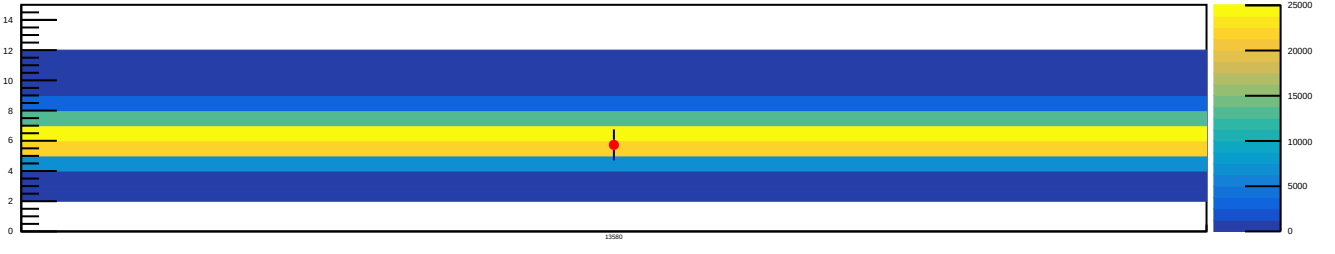
PS (best) cluster size vs Run no. (el. cut)



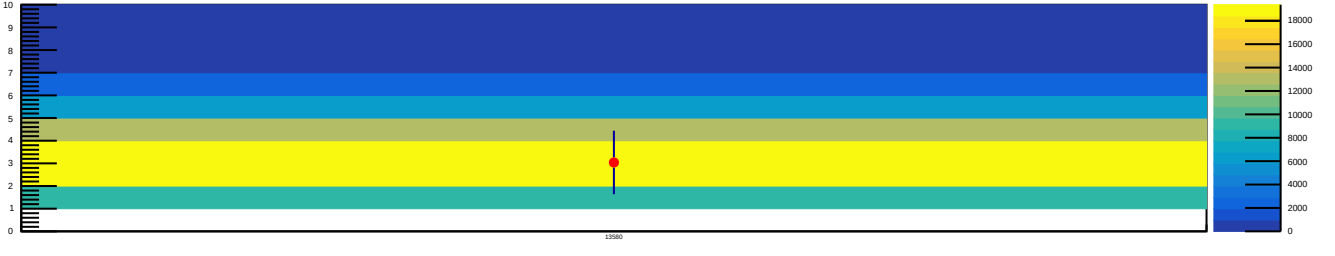
PS cluster multiplicity vs Run no. (el. cut)



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



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



Date of creation: 8/18/2023

Configfile: BBCal_replay/macros/Combined_macros/cfg/sbs8-sbs50p.cfg

Total # events analyzed: 3676896, Preparing for replay pass: 2

E/p (before calib.) | μ = 0.97, σ = (5.342 $\pm$ 0.029) p

E/p (after calib.) | μ = 0.99, σ = (5.483 $\pm$ 0.031) 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]-0.9*bb.tr.r_th[0]+0.035)<0.345,
PS cluster energy > 0.2 GeV
p_recon > 2.9 GeV/c

events passed global cuts: 1390087

Elastic cuts:

$|p/p_{el}(\theta) - 1.002| \leq 5.0*0.016$

proton spot cut ranges:

Δx (m): Mean = -0.5200, 3.0σ = 0.1140

Δy (m): Mean = -0.0930, 2.5σ = 0.1960

events passed global & elastic cuts: 86722

Other cuts:

Minimum # events per block: 300, (Cluster) hit threshold: 0.02 GeV

Various offsets:

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

Momentum calibration factors: A = 0.291513950, B = 1.036900100, C = 0.0, $\theta_{pitch}^{GEM} = 10.0^{o}$, $d_{BB} = 1.9747$ m

Macro processing time: CPU 250.0s | Real 305.8s