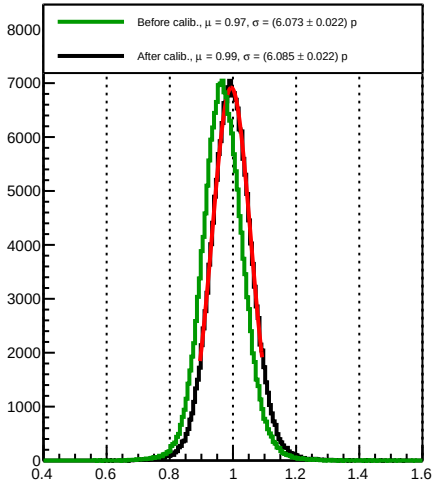
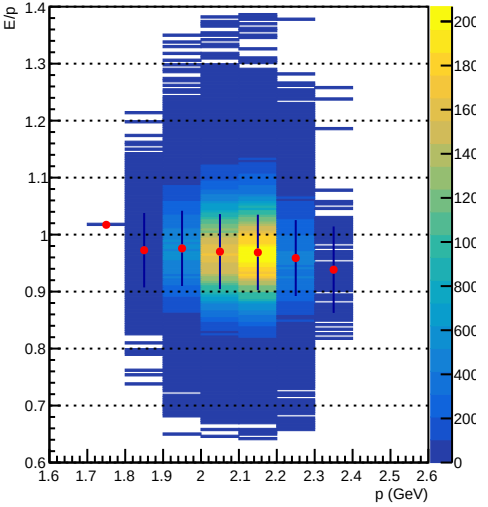
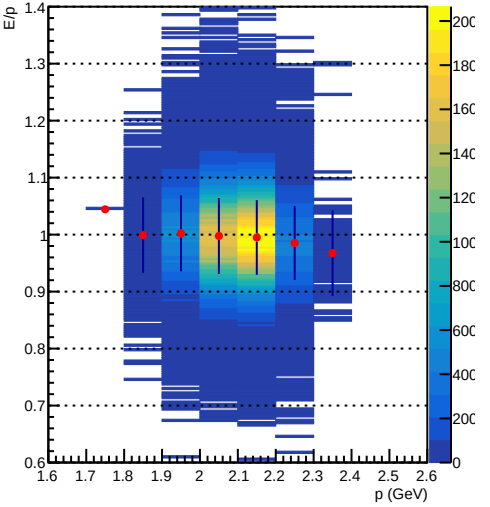
E/p (el. cut)



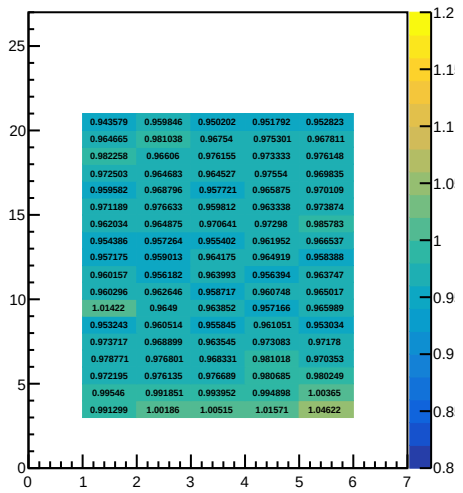
E/p vs p (el. cut)



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

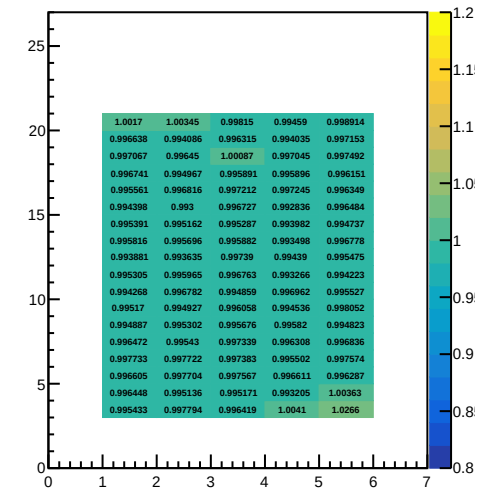


E/p per SH block (el. cut)



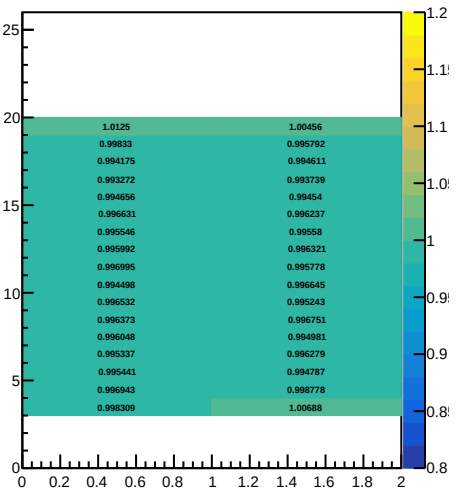
0.943579	0.959846	0.950202	0.951792	0.952823
0.964665	0.981038	0.96754	0.975301	0.967811
0.982258	0.96606	0.976155	0.973333	0.976148
0.972503	0.964683	0.964527	0.97554	0.969835
0.959582	0.968796	0.957721	0.965875	0.970109
0.971189	0.976633	0.959812	0.963338	0.973874
0.962034	0.964875	0.970641	0.97298	0.985783
0.954386	0.957264	0.955402	0.961952	0.966537
0.957175	0.959013	0.964175	0.964919	0.958388
0.960157	0.956182	0.963993	0.956394	0.963747
0.960296	0.962646	0.958717	0.960748	0.965017
1.01422	0.9649	0.963852	0.957166	0.965989
0.953243	0.960514	0.955845	0.961051	0.953034
0.973717	0.968899	0.963545	0.973083	0.97178
0.978771	0.976801	0.968331	0.981018	0.970353
0.972195	0.976135	0.976689	0.980685	0.980249
0.99546	0.991851	0.993952	0.994898	1.00365
0.991299	1.00186	1.00515	1.01571	1.04622

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



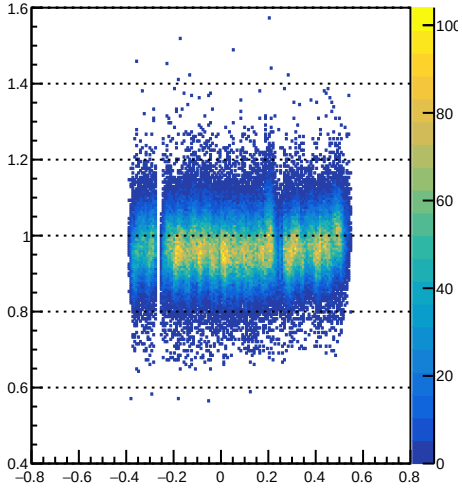
1.0017	1.00345	0.99815	0.99459	0.998914
0.996638	0.994086	0.996315	0.994035	0.997153
0.997067	0.99645	1.00087	0.997045	0.997492
0.996741	0.994967	0.995891	0.995896	0.996151
0.995561	0.996816	0.997212	0.997245	0.996349
0.994398	0.993	0.996727	0.992836	0.996484
0.995391	0.995162	0.995287	0.993982	0.994737
0.995816	0.995696	0.995882	0.993498	0.996778
0.993881	0.993635	0.99739	0.99439	0.995475
0.995305	0.995965	0.996763	0.993266	0.994223
0.994268	0.996782	0.994859	0.996962	0.995527
0.99517	0.994927	0.996058	0.994536	0.998052
0.994887	0.995302	0.995676	0.99582	0.994823
0.996472	0.99543	0.997339	0.996308	0.996836
0.997733	0.997722	0.997383	0.995502	0.997574
0.996605	0.997704	0.997567	0.996611	0.996287
0.996448	0.995136	0.995171	0.993205	1.00363
0.995433	0.997794	0.996419	1.0041	1.0266

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

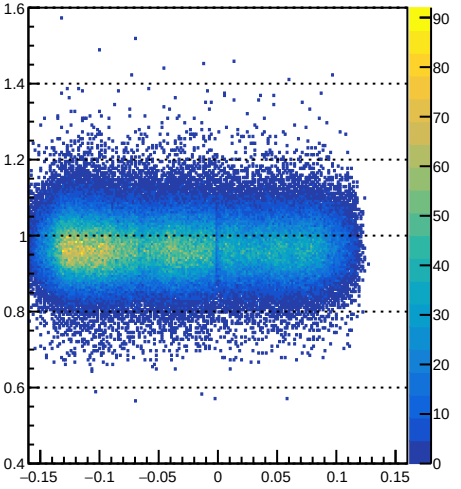


1.0125	1.00456
0.99833	0.995792
0.994175	0.994611
0.993272	0.993739
0.994656	0.99454
0.996631	0.996237
0.995546	0.99558
0.995992	0.996321
0.996995	0.995778
0.994498	0.996645
0.996532	0.995243
0.996373	0.996751
0.996048	0.994981
0.995337	0.996279
0.995441	0.994787
0.996943	0.998778
0.998309	1.00688

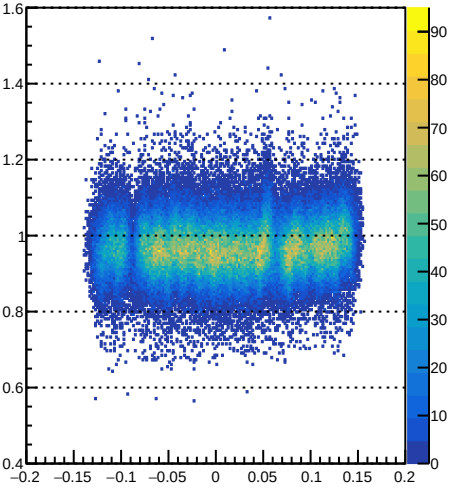
E/p vs Track x (el. cut)



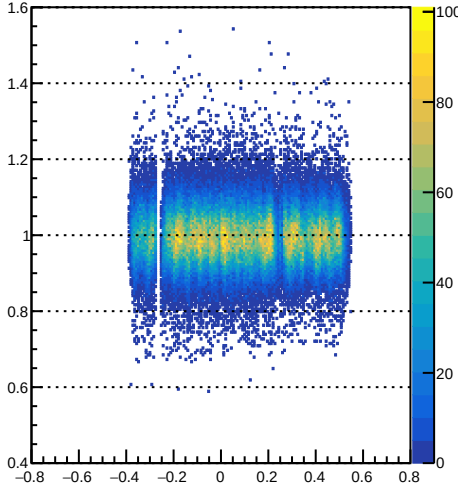
E/p vs Track y (el. cut)



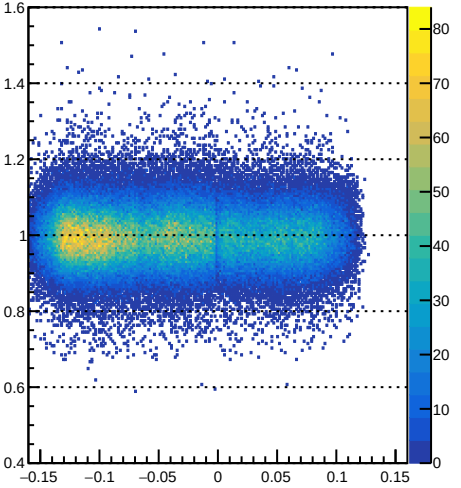
E/p vs Track theta (el. cut)



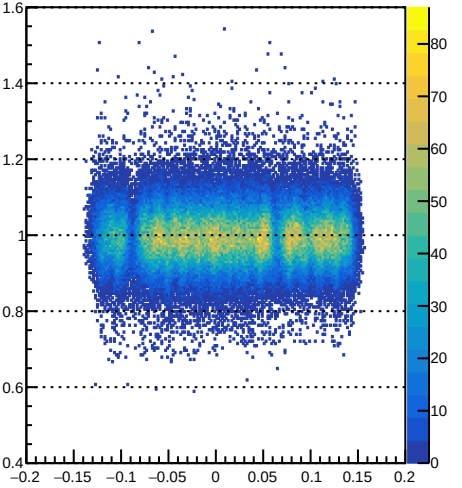
E/p vs Track x | After Calib. (el. cut)



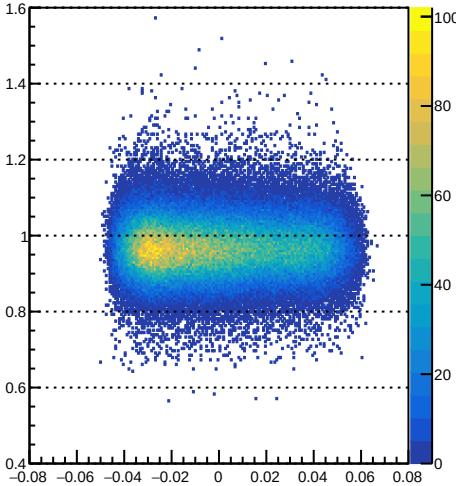
E/p vs Track y | After Calib. (el. cut)



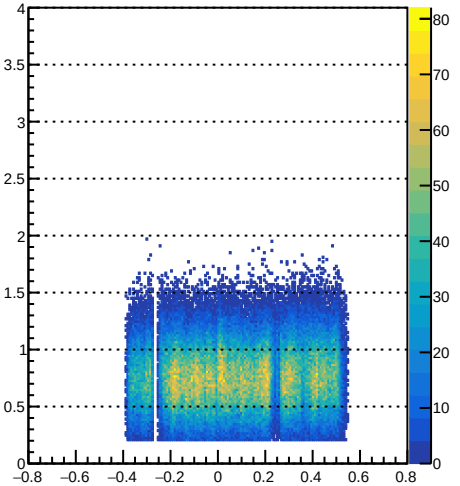
E/p vs Track theta | After Calib. (el. cut)



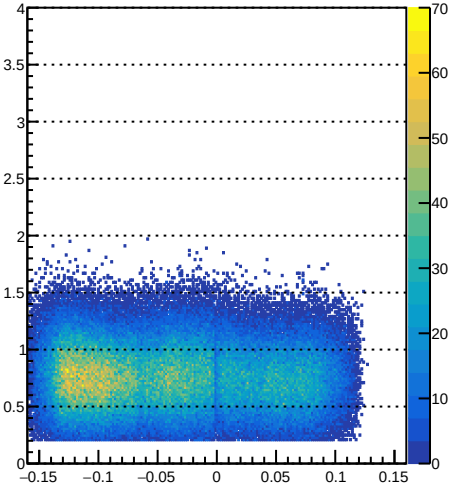
E/p vs Track phi (el. cut)



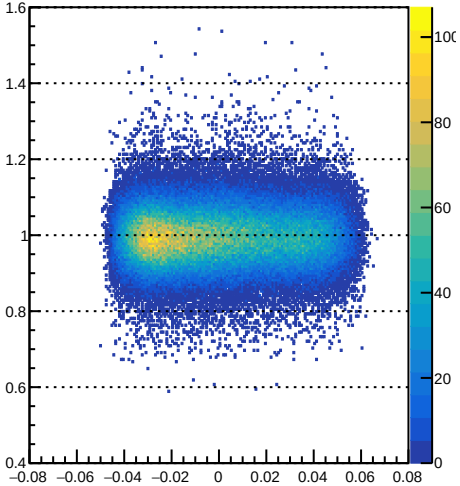
PS energy vs Track x (el. cut)



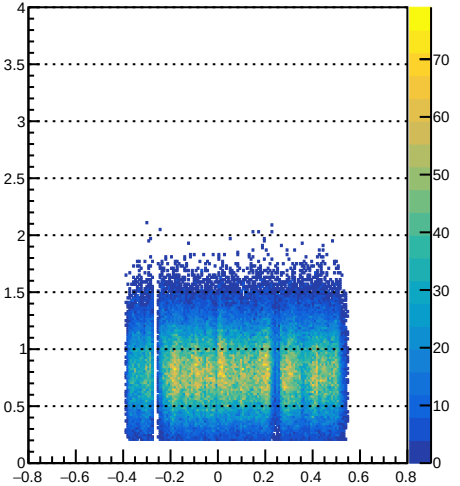
PS energy vs Track y (el. cut)



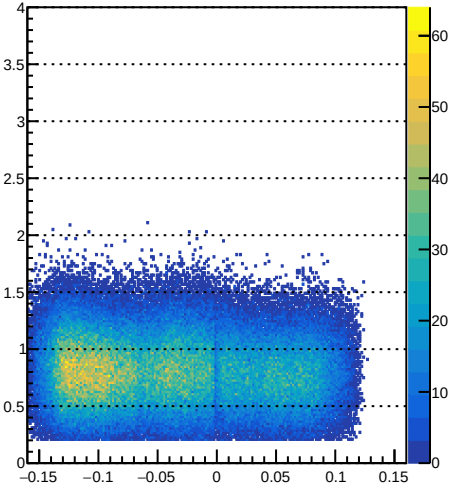
E/p vs Track phi | After Calib. (el. cut)

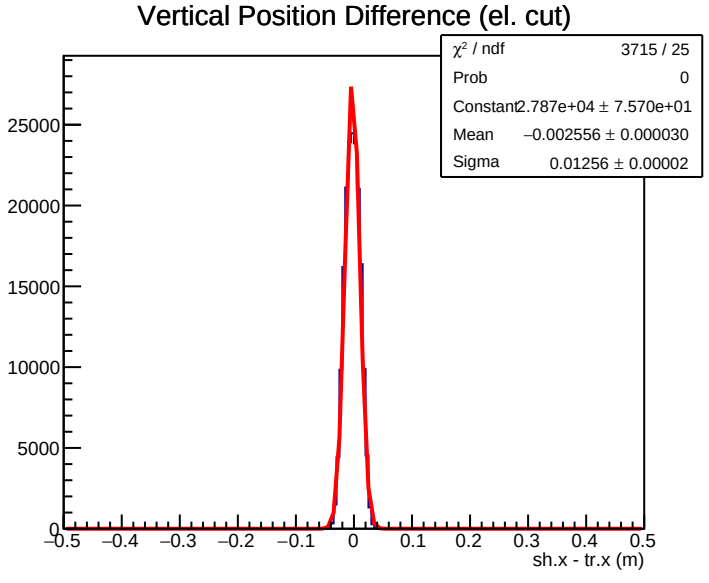


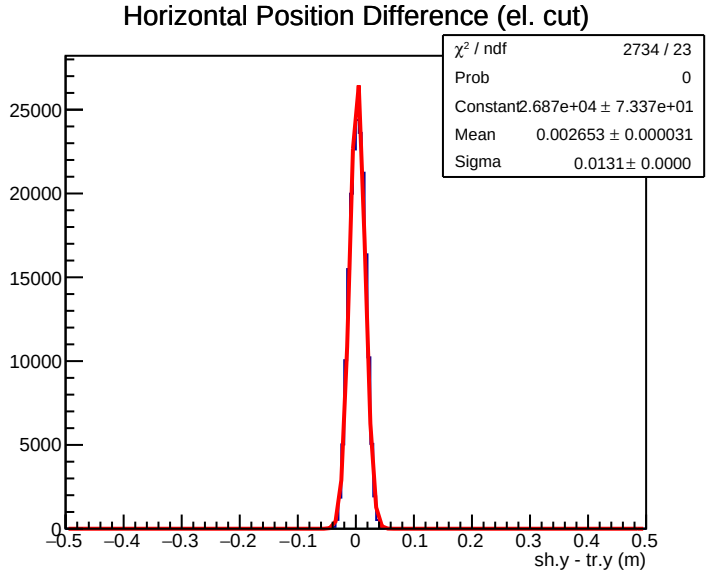
PS energy vs Track x | After Calib. (el. cut)

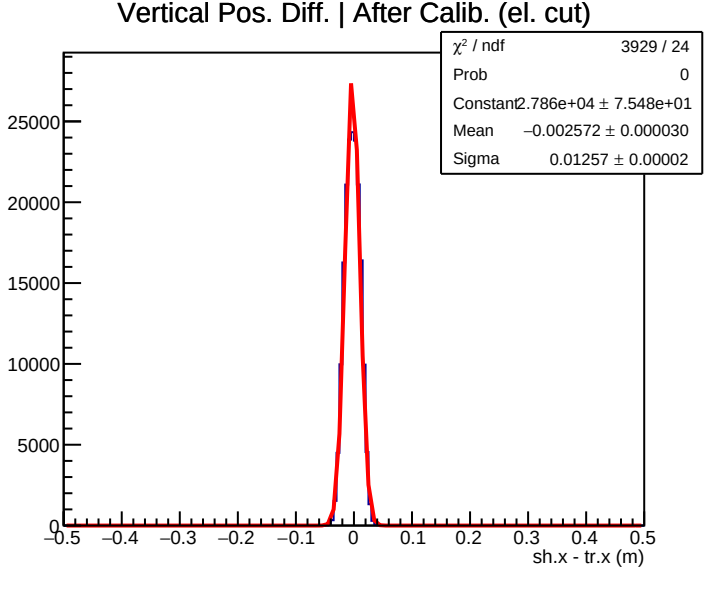


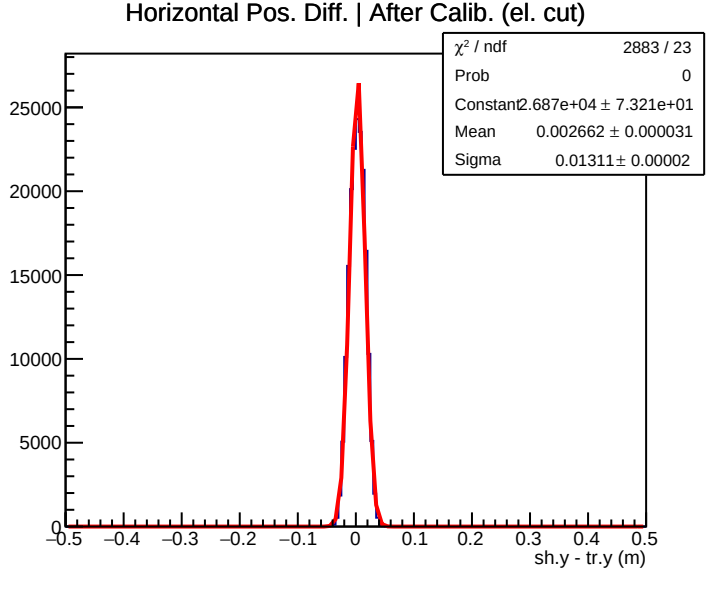
PS energy vs Track y | After Calib. (el. cut)

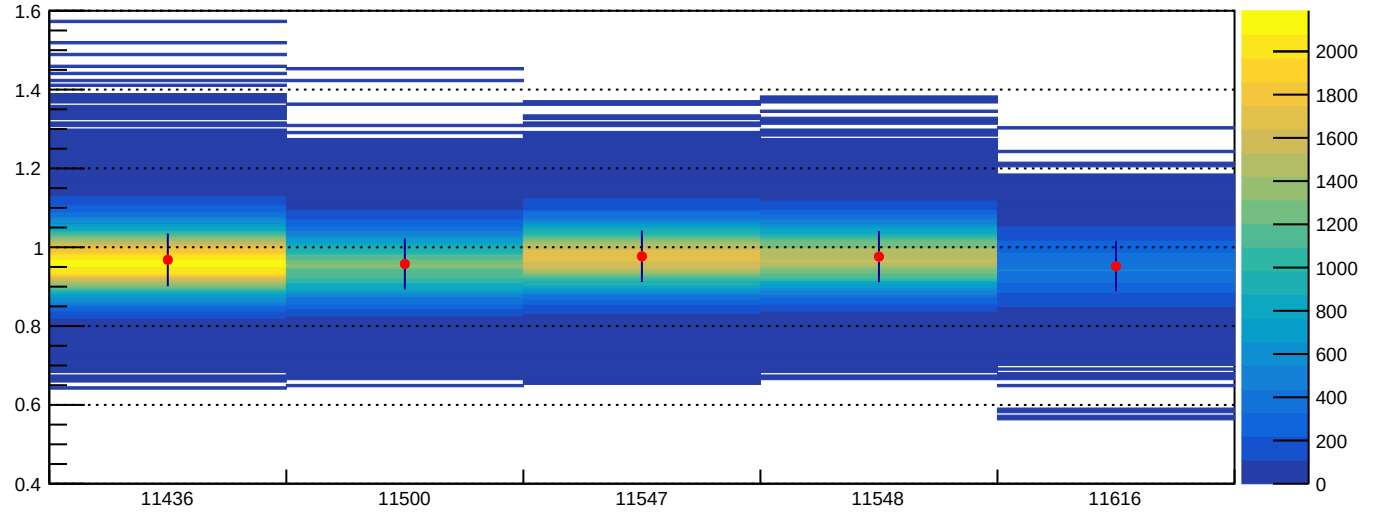


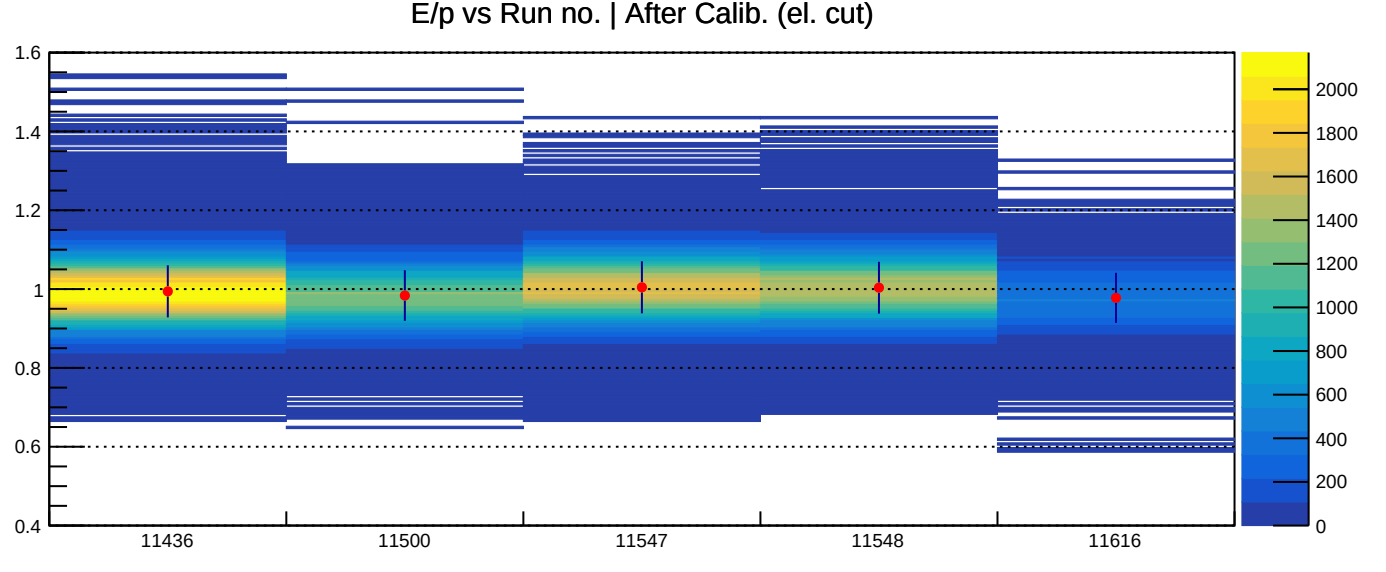

Vertical Position Difference (el. cut)
χ² / ndf 3715 / 25
Prob 0
Constant 2.787e+04 ± 7.570e+01
Mean −0.002556 ± 0.000030
Sigma 0.01256 ± 0.00002
sh.x - tr.x (m)


Horizontal Position Difference (el. cut)
χ² / ndf 2734 / 23
Prob 0
Constant 2.687e+04 ± 7.337e+01
Mean 0.002653 ± 0.000031
Sigma 0.0131 ± 0.0000
sh.y - tr.y (m)

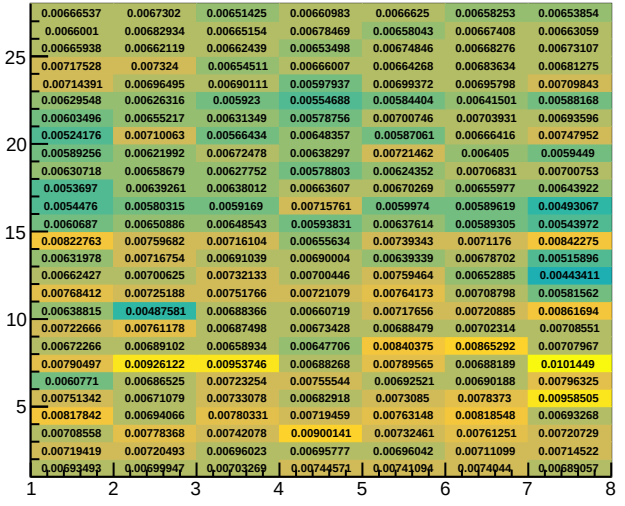

Vertical Pos. Diff. | After Calib. (el. cut)
χ² / ndf 3929 / 24
Prob 0
Constant 2.786e+04 ± 7.548e+01
Mean −0.002572 ± 0.000030
Sigma 0.01257 ± 0.00002
sh.x - tr.x (m)


Horizontal Pos. Diff. | After Calib. (el. cut)
χ² / ndf 2883 / 23
Prob 0
Constant 2.687e+04 ± 7.321e+01
Mean 0.002662 ± 0.000031
Sigma 0.01311 ± 0.00002
sh.y - tr.y (m)

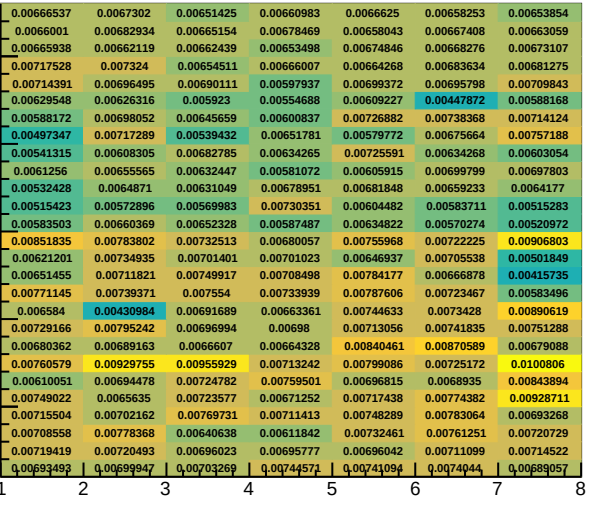

E/p vs Run no. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
11436
11500
11547
11548
11616
2000
1800
1600
1400
1200
1000
800
600
400
200
0


E/p vs Run no. | After Calib. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
11436
11500
11547
11548
11616
2000
1800
1600
1400
1200
1000
800
600
400
200
0

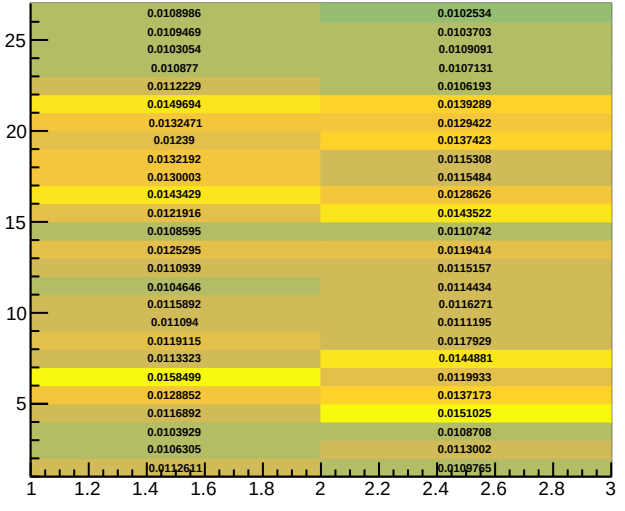
Old ADC Gain Coefficients | SH



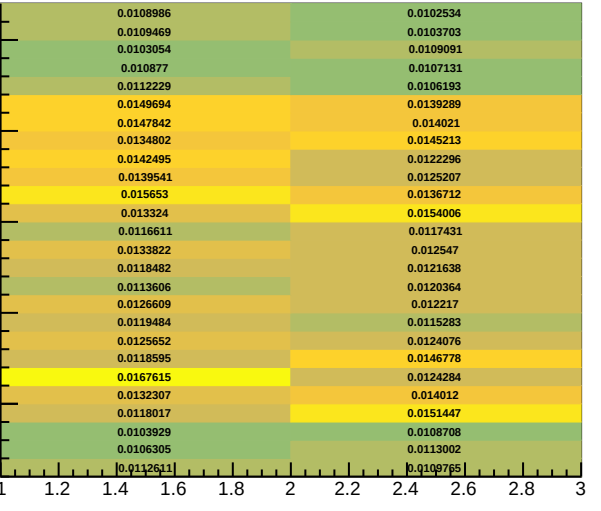
New ADC Gain Coefficients | SH

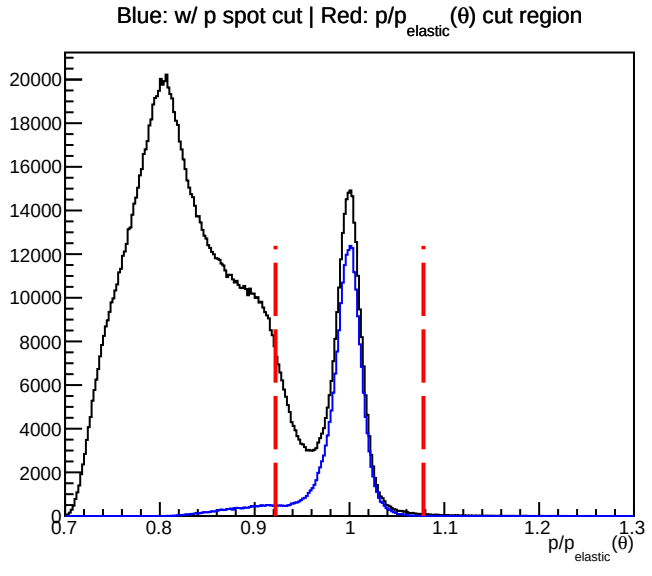


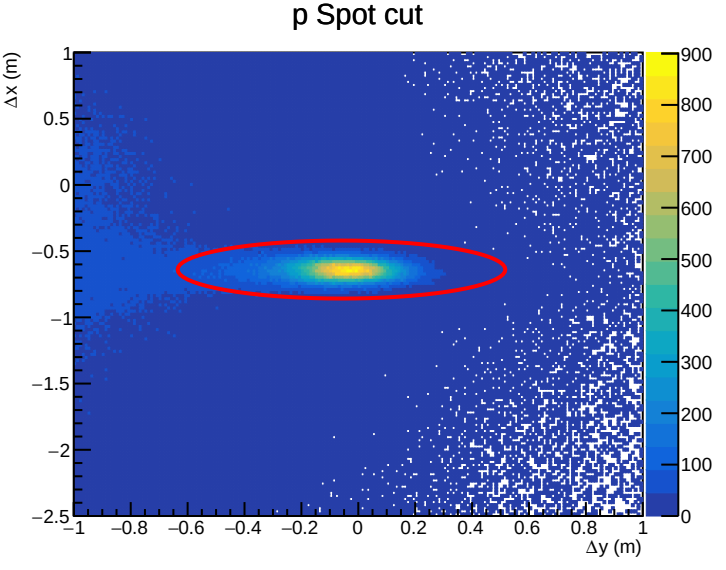
Old ADC Gain Coefficients | PS

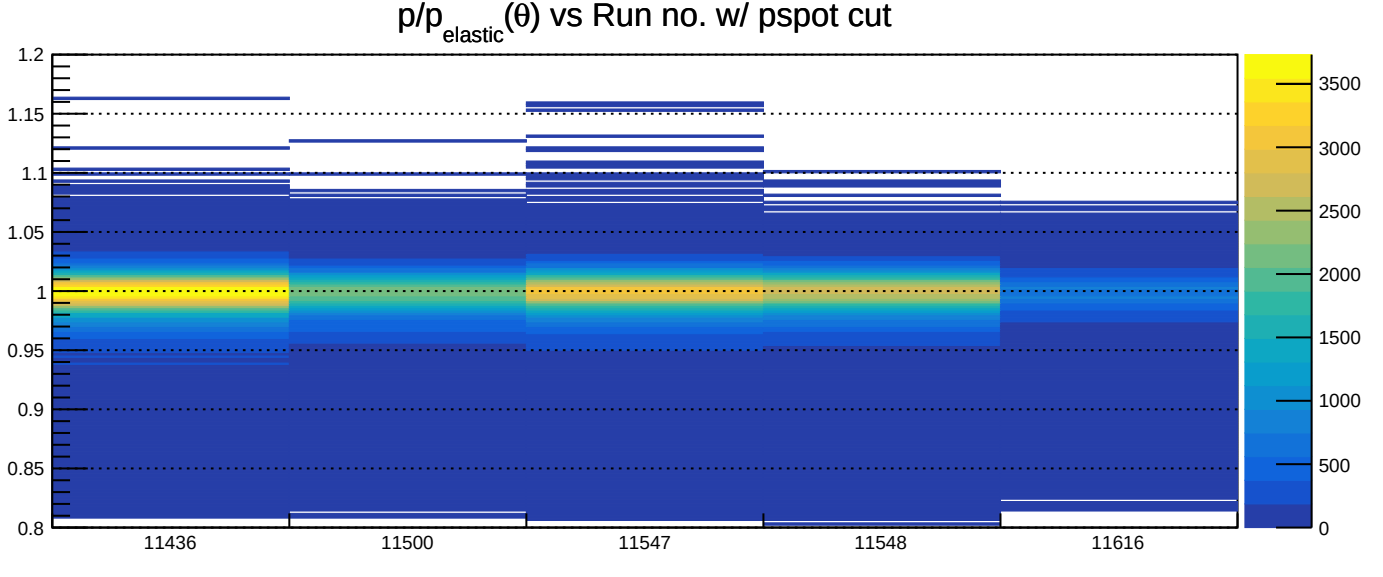


New ADC Gain Coefficients | PS

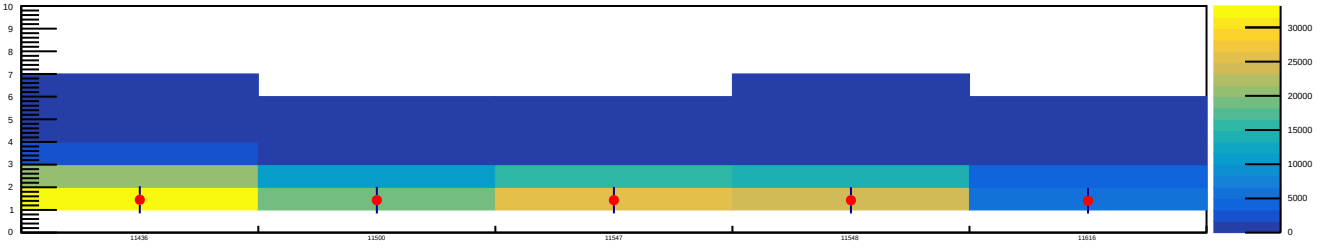



Blue: w/ p spot cut | Red: p/p_elastic(θ) cut region
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0.7
0.8
0.9
1
1.1
1.2
1.3
p/p_elastic(θ)

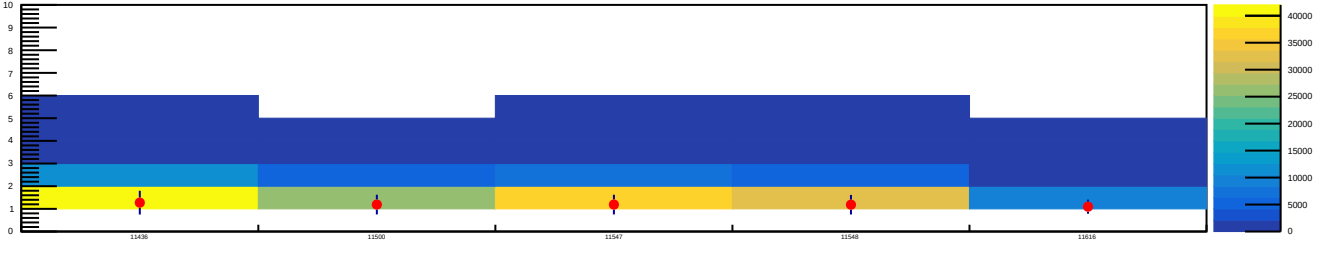

p Spot cut
Δx (m)
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Δy (m)
900
800
700
600
500
400
300
200
100
0


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
11436
11500
11547
11548
11616
3500
3000
2500
2000
1500
1000
500
0

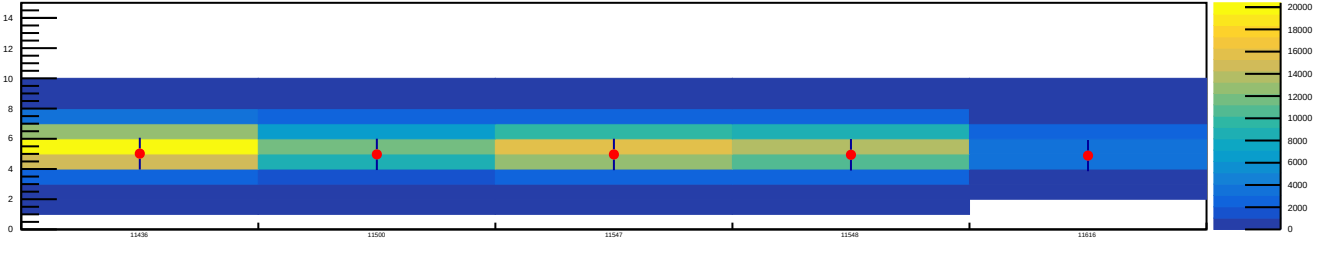
PS (best) cluster size vs Run no. (el. cut)



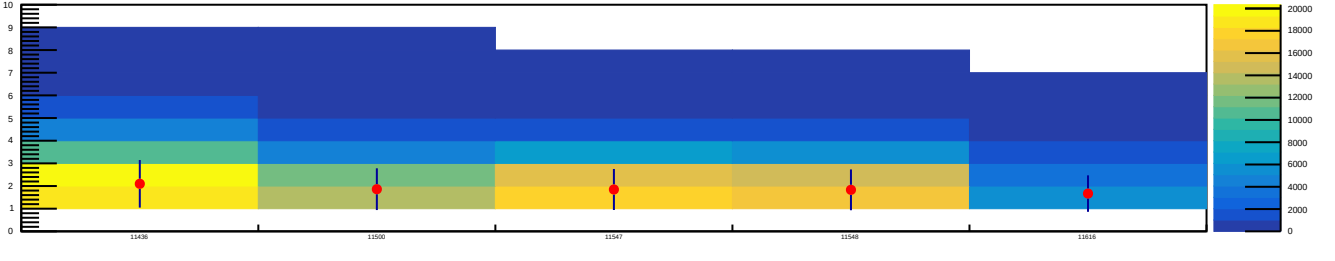
PS cluster multiplicity vs Run no. (el. cut)



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/sbs4-sbs30p.cfg

Total # events analyzed: 5862752, Preparing for replay pass: 2

E/p (before calib.) | μ = 0.97, σ = (6.073 $\pm$ 0.022) p

E/p (after calib.) | μ = 0.99, σ = (6.085 $\pm$ 0.022) 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]-0.02)<0.33,
PS cluster energy > 0.2 GeV
p_recon > 1.6 GeV/c

events passed global cuts: 1624550

Elastic cuts:

$|p/p_{el}(\theta) - 1.000| \leq 6.0*0.013$

proton spot cut ranges:

Δx (m): Mean = -0.6390, 3.0σ = 0.0730
Δy (m): Mean = -0.0590, 4.0σ = 0.1440

events passed global & elastic cuts: 224706

Other cuts:

Minimum # events per block: 400, (Cluster) hit threshold: 0.02 GeV

Various offsets:

Momentum fudge factor: 1.00, BBCAL cluster energy scale factor: 1.00
Momentum calibration factors: A = 0.272702433, B = 1.012984580, C = 0.0, $\theta_{pitch}^{GEM} = 10.0^{o}$, d_{BB} = 1.7988 m

Macro processing time: CPU 412.6s | Real 506.5s