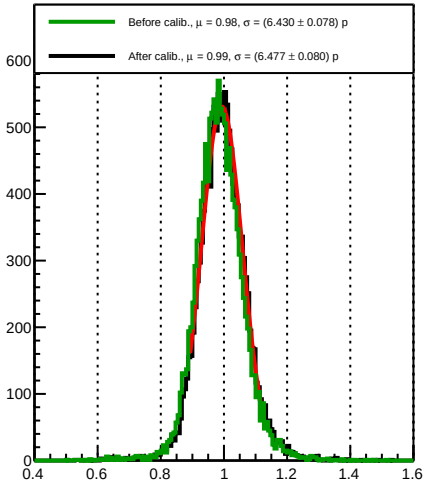
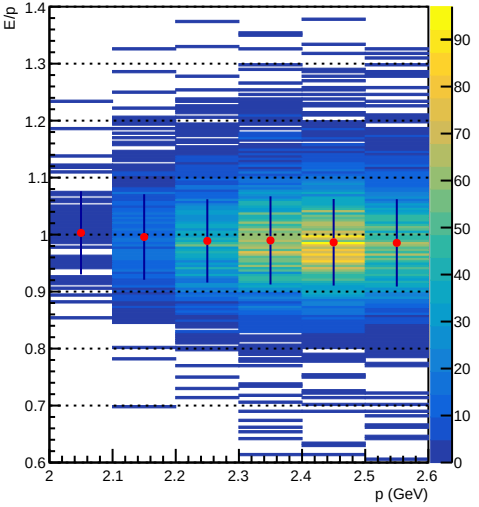
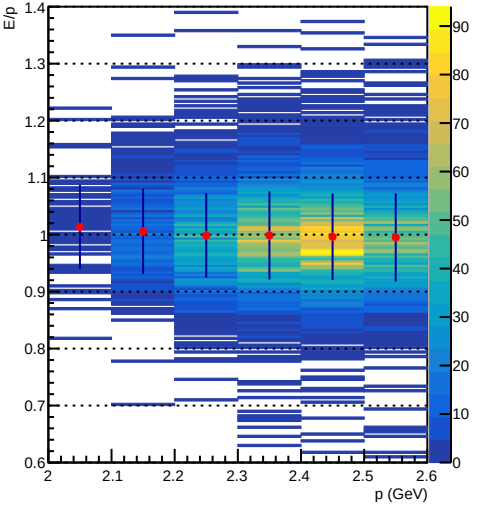
E/p (el. cut)



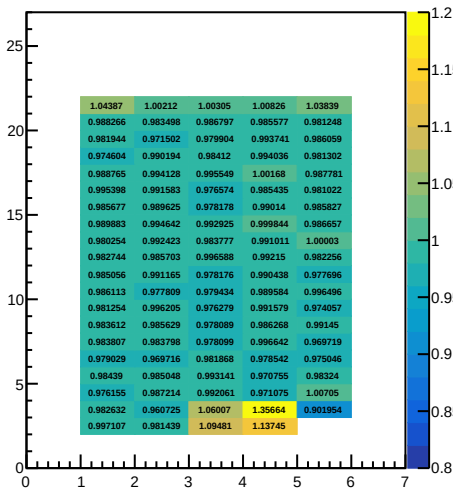
E/p vs p (el. cut)



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

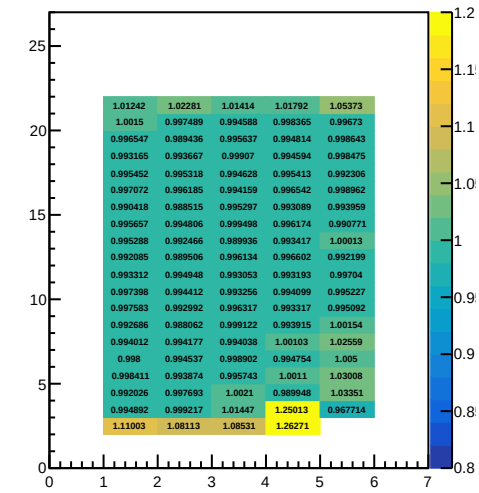


E/p per SH block (el. cut)



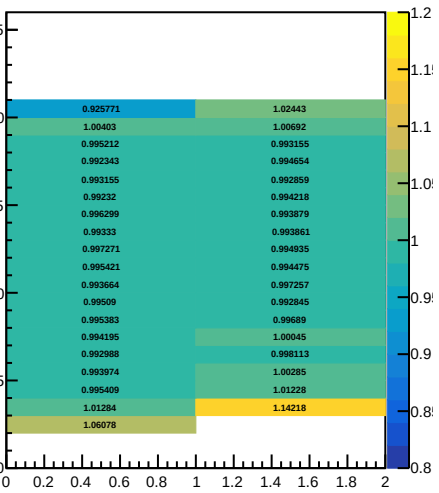
1.04387	1.00212	1.00305	1.00826	1.03839
0.988266	0.983498	0.986797	0.985577	0.981248
0.981944	0.971502	0.979904	0.993741	0.986059
0.974604	0.990194	0.98412	0.994036	0.981302
0.988765	0.994128	0.995549	1.00168	0.987781
0.995398	0.991583	0.976574	0.985435	0.981022
0.985677	0.989625	0.978178	0.99014	0.985827
0.989883	0.994642	0.992925	0.999844	0.986657
0.980254	0.992423	0.983777	0.991011	1.00003
0.982744	0.985703	0.996588	0.99215	0.982256
0.985056	0.991165	0.978176	0.990438	0.977696
0.986113	0.977809	0.979434	0.989584	0.996496
0.981254	0.996205	0.976279	0.991579	0.974057
0.983612	0.985629	0.978089	0.986268	0.99145
0.983807	0.983798	0.978099	0.996642	0.969719
0.979029	0.969716	0.981868	0.978542	0.975046
0.98439	0.985048	0.993141	0.970755	0.98324
0.976155	0.987214	0.992061	0.971075	1.00705
0.982632	0.960725	1.06007	1.35664	0.901954
0.997107	0.981439	1.09481	1.13745	

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



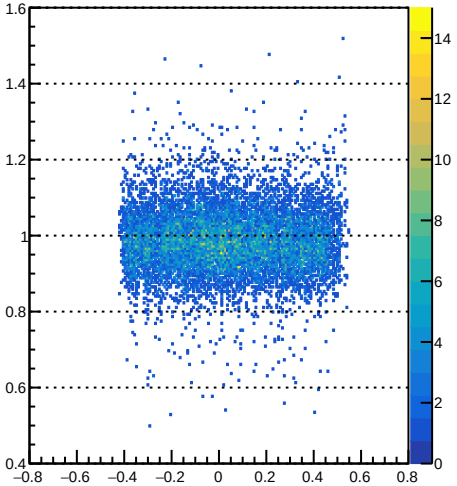
1.01242	1.02281	1.01414	1.01792	1.05373
1.0015	0.997489	0.994588	0.998365	0.99673
0.996547	0.989436	0.995637	0.994814	0.998643
0.993165	0.993667	0.99907	0.994594	0.998475
0.995452	0.995318	0.994628	0.995413	0.992306
0.997072	0.996185	0.994159	0.996542	0.998962
0.990418	0.988515	0.995297	0.993089	0.993959
0.995657	0.994806	0.999498	0.996174	0.990771
0.995288	0.992466	0.989936	0.993417	1.00013
0.992085	0.989506	0.996134	0.996602	0.992199
0.993312	0.994948	0.993053	0.993193	0.99704
0.997398	0.994412	0.993256	0.994099	0.995227
0.997583	0.992992	0.996317	0.993317	0.995092
0.992686	0.988062	0.999122	0.993915	1.00154
0.994012	0.994177	0.994038	1.00103	1.02559
0.998	0.994537	0.998902	0.994754	1.005
0.998411	0.993874	0.995743	1.0011	1.03008
0.992026	0.997693	1.0021	0.989948	1.03351
0.994892	0.999217	1.01447	1.25013	0.967714
1.11003	1.08113	1.08531	1.26271	

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

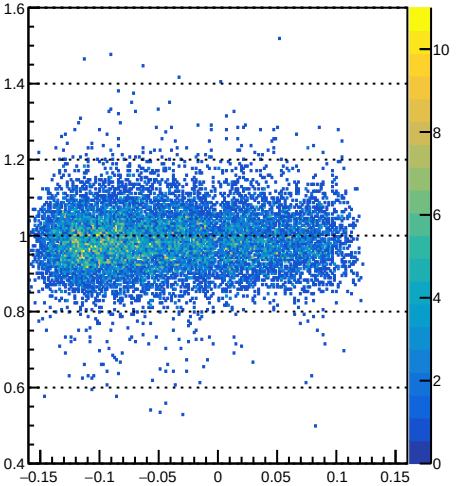


0.925771	1.02443
1.00403	1.00692
0.995212	0.993155
0.992343	0.994654
0.993155	0.992859
0.99232	0.994218
0.996299	0.993879
0.99333	0.993861
0.997271	0.994935
0.995421	0.994475
0.993664	0.997257
0.99509	0.992845
0.995383	0.99689
0.994195	1.00045
0.992988	0.998113
0.993974	1.00285
0.995409	1.01228
1.01284	1.14218
1.06078	

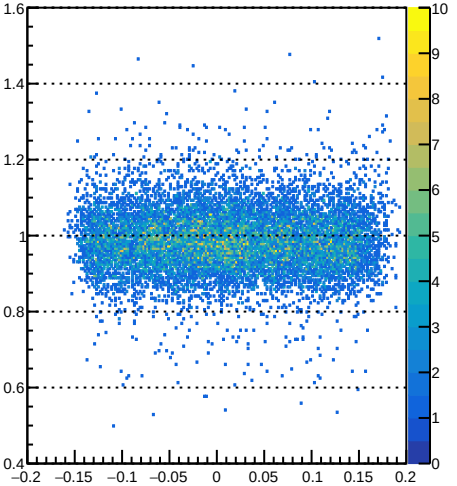
E/p vs Track x (el. cut)



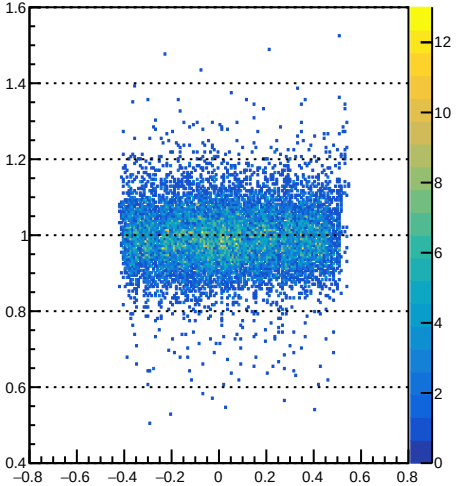
E/p vs Track y (el. cut)



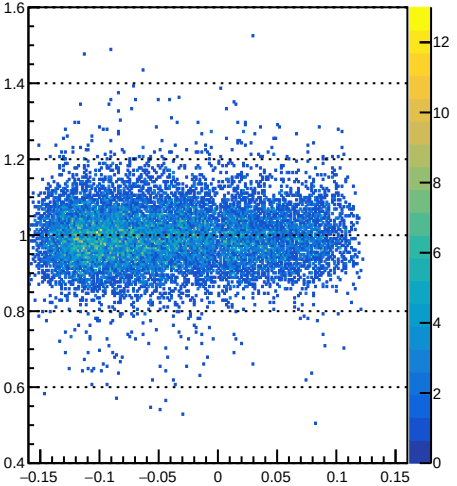
E/p vs Track theta (el. cut)



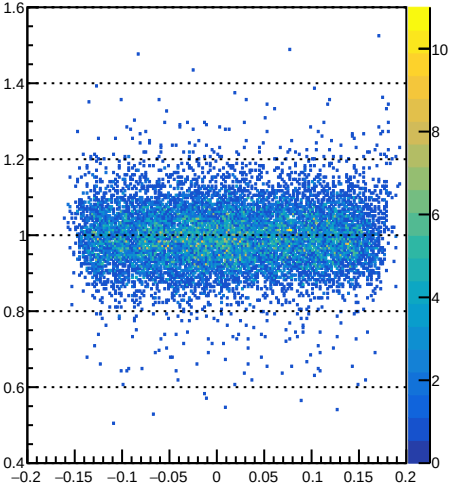
E/p vs Track x | After Calib. (el. cut)

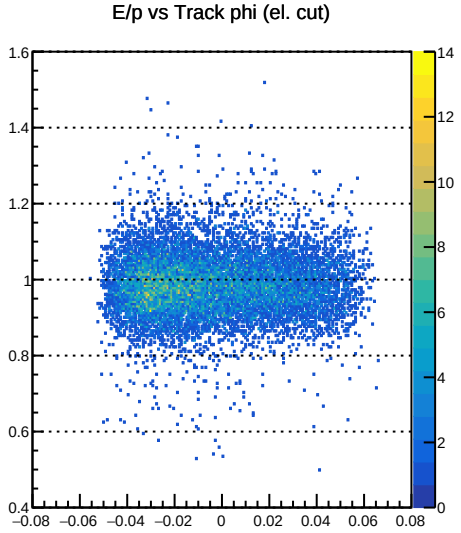


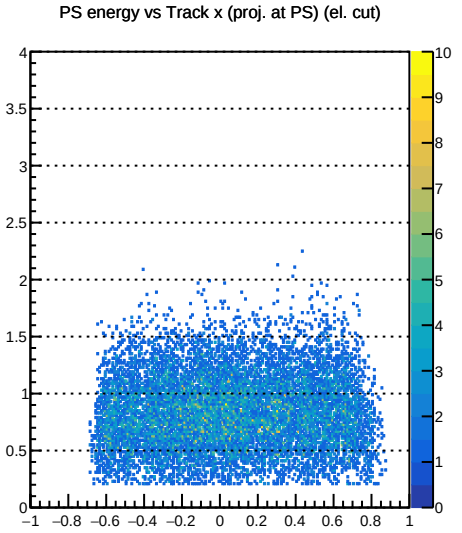
E/p vs Track y | After Calib. (el. cut)

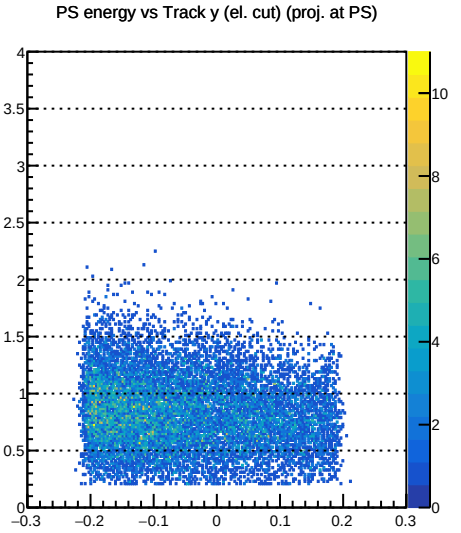


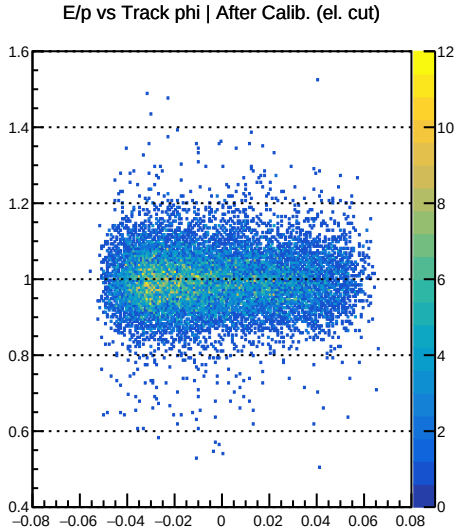
E/p vs Track theta | After Calib. (el. cut)

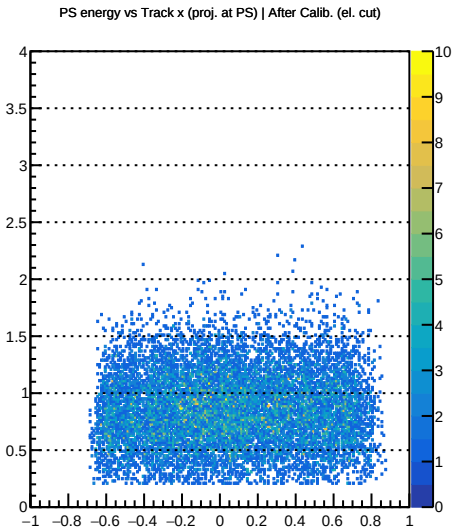


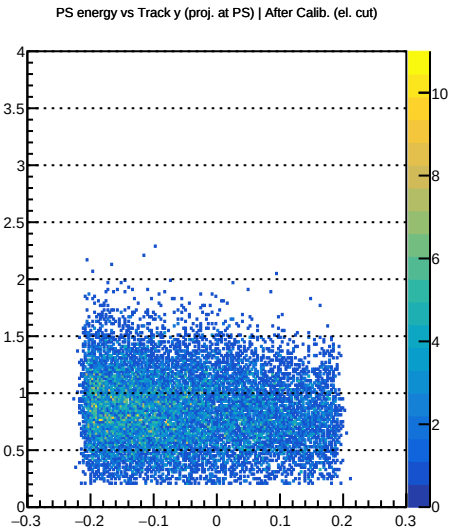

E/p vs Track phi (el. cut)

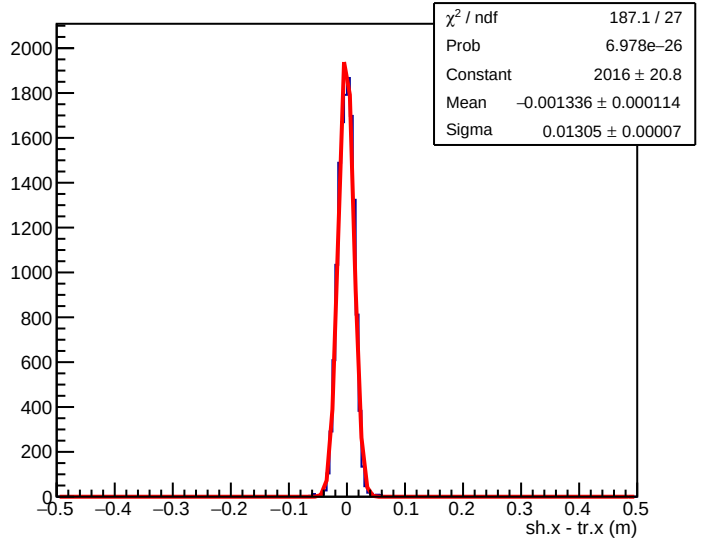

PS energy vs Track x (proj. at PS) (el. cut)

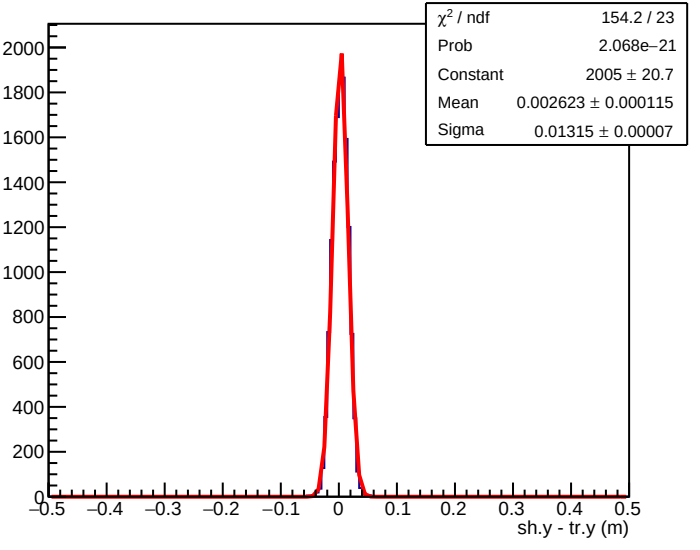

PS energy vs Track y (el. cut) (proj. at PS)

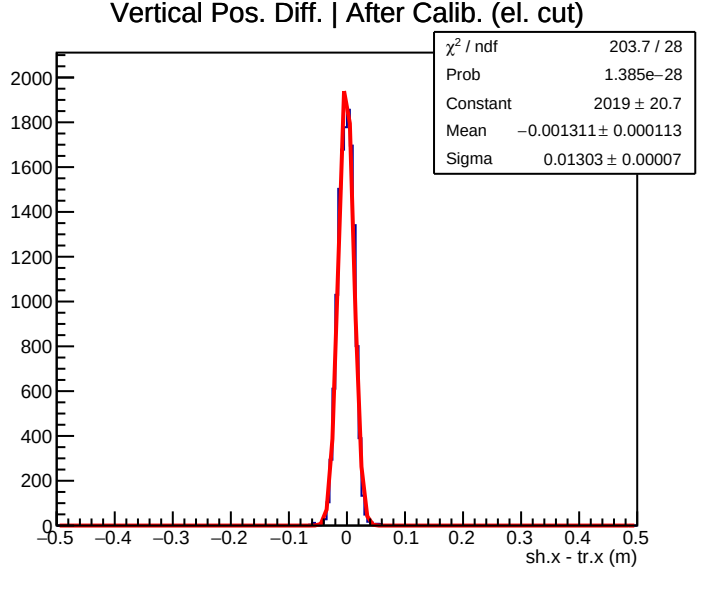

E/p vs Track phi | After Calib. (el. cut)

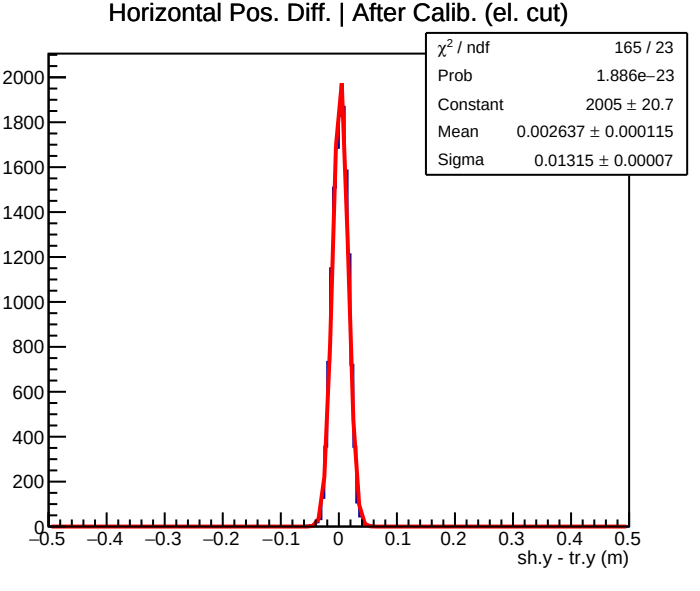

PS energy vs Track x (proj. at PS) | After Calib. (el. cut)

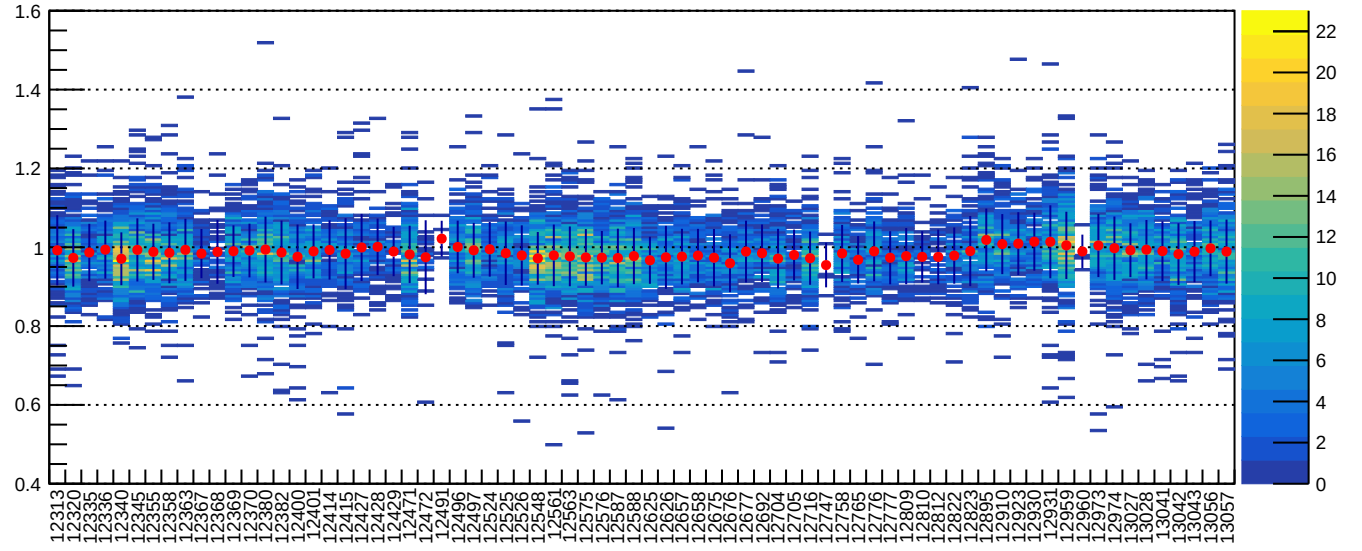

PS energy vs Track y (proj. at PS) | After Calib. (el. cut)

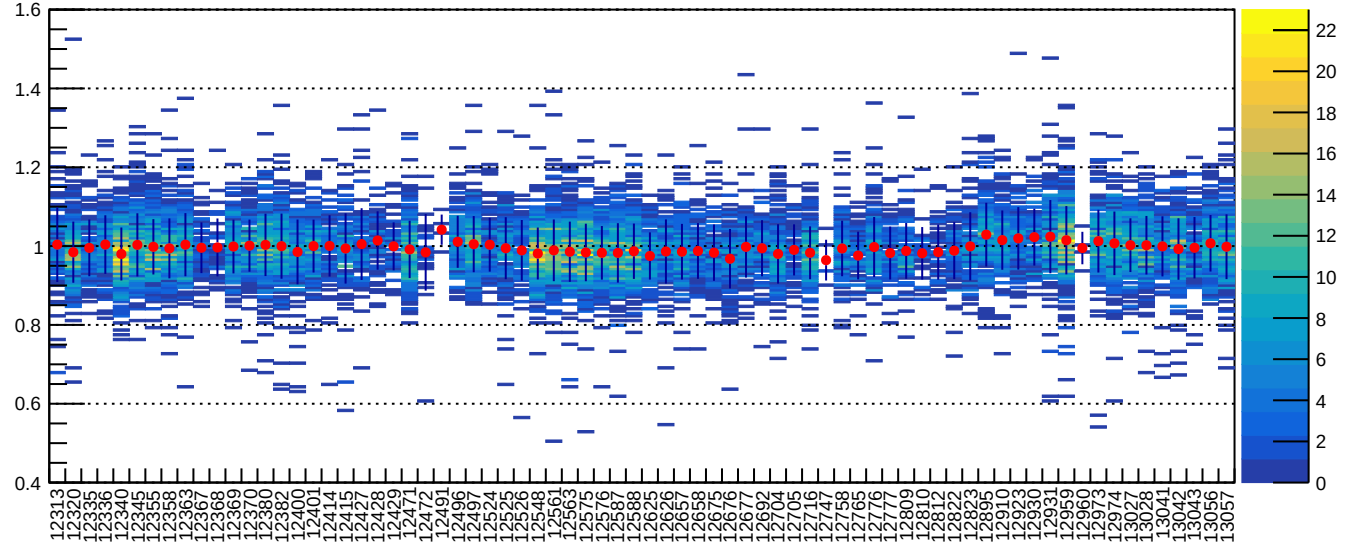

Vertical Position Difference (el. cut)
χ² / ndf 187.1 / 27
Prob 6.978e−26
Constant 2016 ± 20.8
Mean −0.001336 ± 0.000114
Sigma 0.01305 ± 0.00007
sh.x - tr.x (m)


Horizontal Position Difference (el. cut)
χ² / ndf 154.2 / 23
Prob 2.068e−21
Constant 2005 ± 20.7
Mean 0.002623 ± 0.000115
Sigma 0.01315 ± 0.00007
sh.y - tr.y (m)

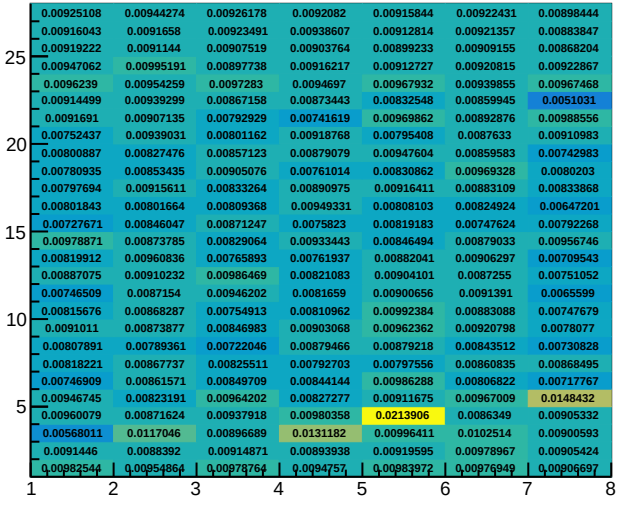

Vertical Pos. Diff. | After Calib. (el. cut)
χ² / ndf 203.7 / 28
Prob 1.385e−28
Constant 2019 ± 20.7
Mean −0.001311 ± 0.000113
Sigma 0.01303 ± 0.00007
sh.x - tr.x (m)


Horizontal Pos. Diff. | After Calib. (el. cut)
χ² / ndf 165 / 23
Prob 1.886e−23
Constant 2005 ± 20.7
Mean 0.002637 ± 0.000115
Sigma 0.01315 ± 0.00007
sh.y - tr.y (m)

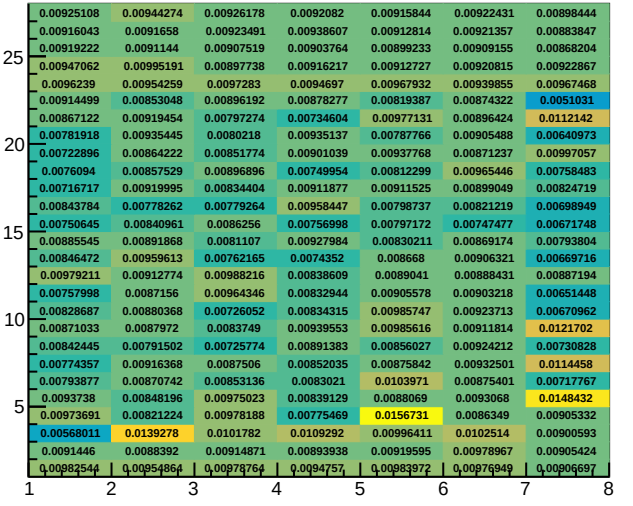

E/p vs Run no. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
22
20
18
16
14
12
10
8
6
4
2
0
12313 12320 12335 12336 12340 12345 12355 12358 12363 12367 12368 12369 12370 12380 12382 12400 12401 12414 12415 12427 12428 12429 12471 12472 12491 12496 12497 12524 12525 12526 12548 12561 12563 12575 12576 12587 12588 12625 12626 12657 12658 12675 12676 12677 12692 12704 12705 12716 12747 12758 12765 12776 12777 12809 12810 12812 12822 12823 12895 12910 12923 12930 12931 12959 12960 12973 12974 13027 13028 13041 13042 13043 13056 13057


E/p vs Run no. | After Calib. (el. cut)
1.6
1.4
1.2
1
0.8
0.6
0.4
22
20
18
16
14
12
10
8
6
4
2
0
12313 12320 12335 12336 12340 12345 12355 12358 12363 12367 12368 12369 12370 12380 12382 12400 12401 12414 12415 12427 12428 12429 12471 12472 12491 12496 12497 12524 12525 12526 12548 12561 12563 12575 12576 12587 12588 12625 12626 12657 12658 12675 12676 12677 12692 12704 12705 12716 12747 12758 12765 12776 12777 12809 12810 12812 12822 12823 12895 12910 12923 12930 12931 12959 12960 12973 12974 13027 13028 13041 13042 13043 13056 13057

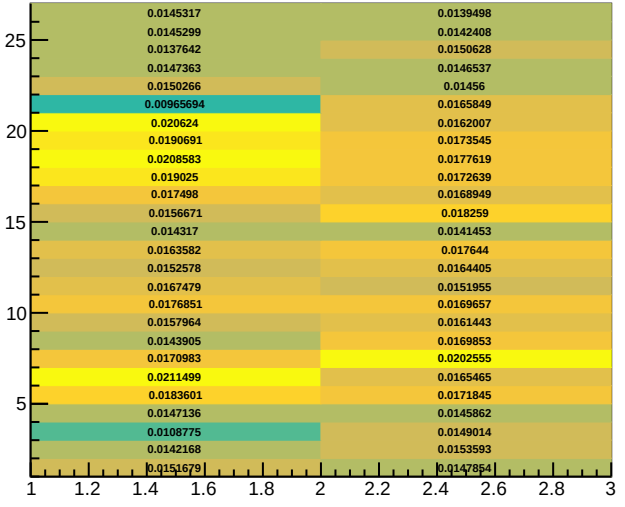
Old ADC Gain Coefficients | SH



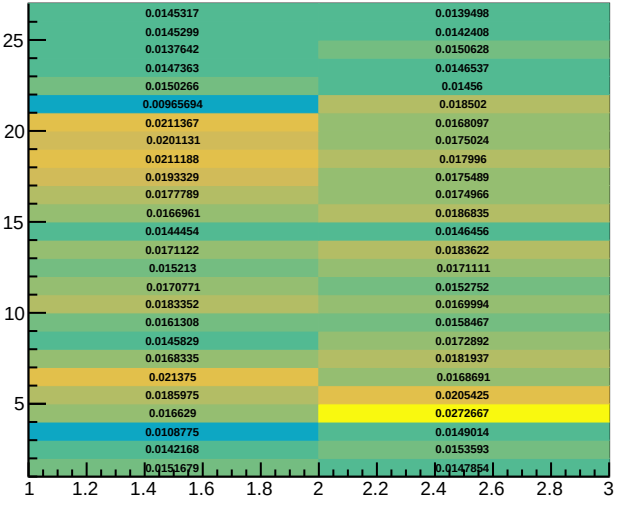
New ADC Gain Coefficients | SH

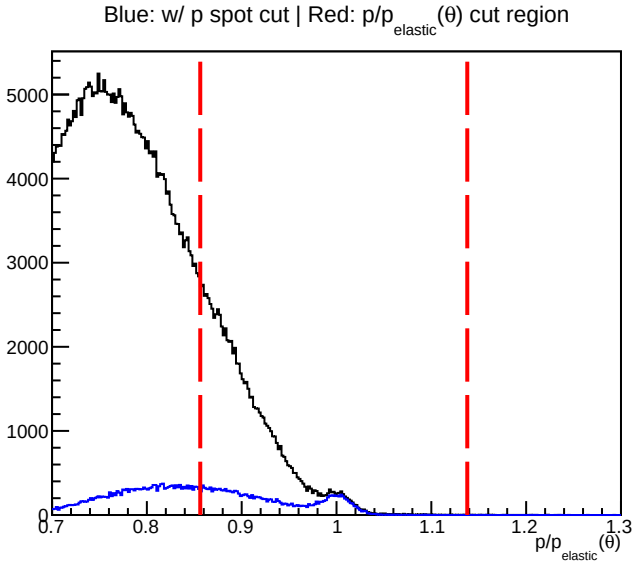


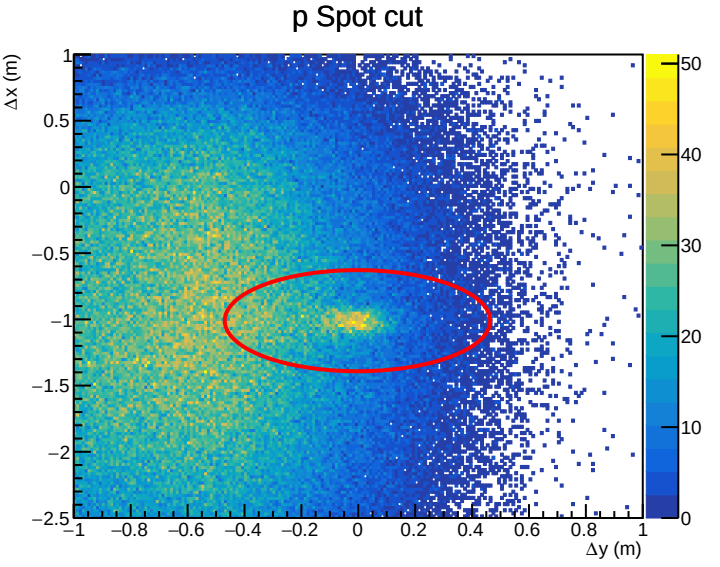
Old ADC Gain Coefficients | PS

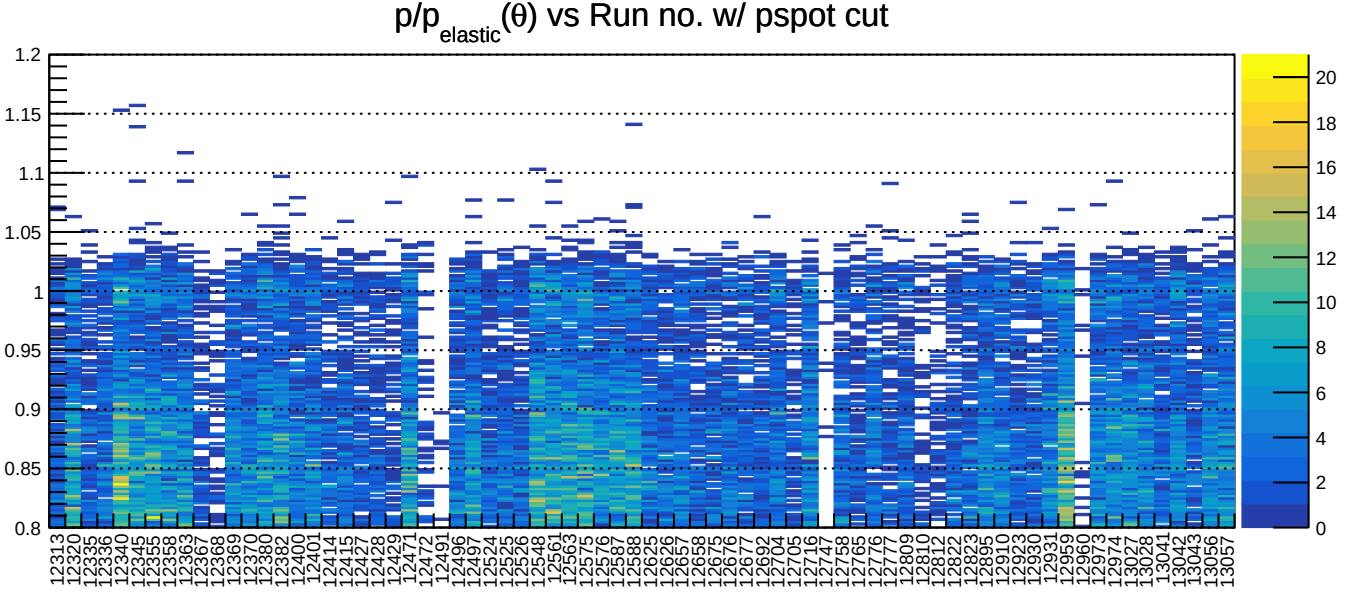


New ADC Gain Coefficients | PS




Blue: w/ p spot cut | Red: p/p_elastic(θ) cut region
5000
4000
3000
2000
1000
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)
50
40
30
20
10
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
20
18
16
14
12
10
8
6
4
2
0
12313
12320
12335
12336
12340
12345
12355
12358
12363
12367
12368
12369
12370
12380
12382
12400
12401
12414
12415
12427
12428
12429
12471
12472
12491
12496
12497
12524
12525
12526
12548
12561
12563
12575
12576
12587
12588
12625
12626
12657
12658
12675
12676
12677
12692
12704
12705
12716
12747
12758
12765
12776
12777
12809
12810
12812
12822
12823
12895
12910
12923
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12931
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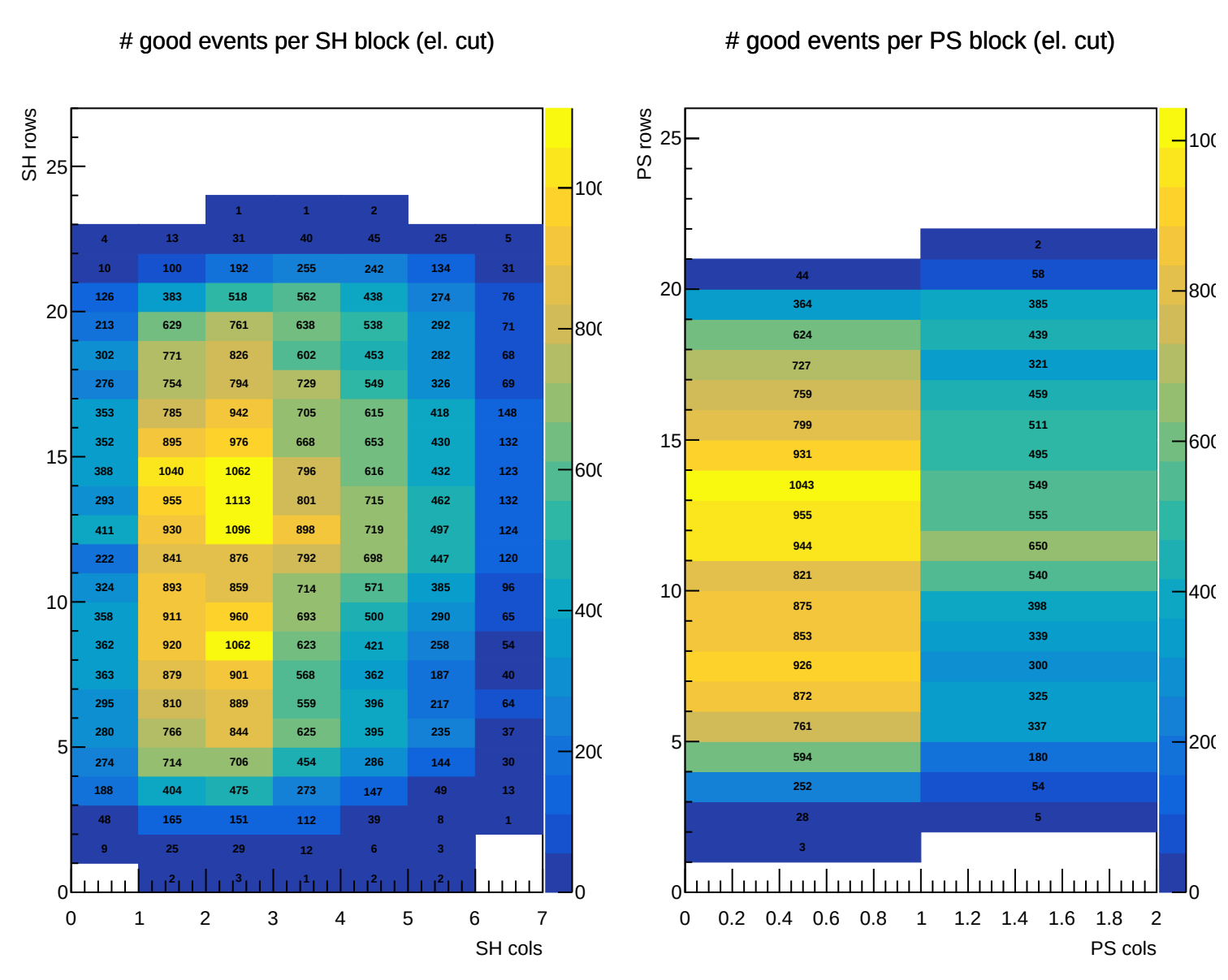
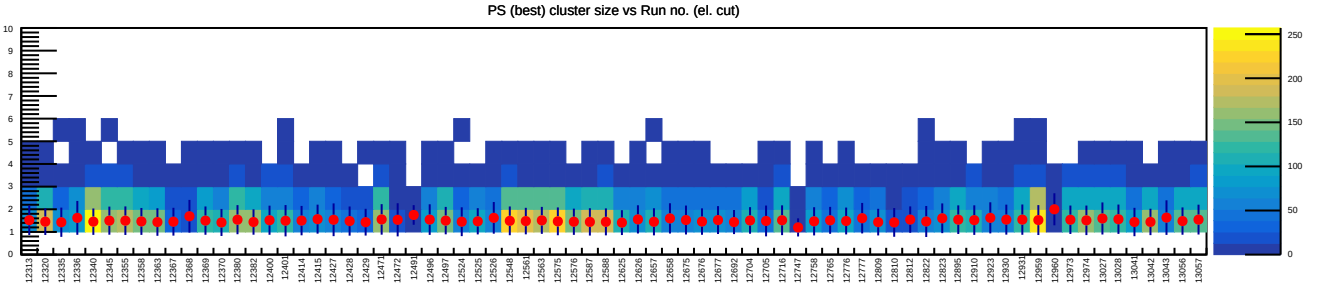
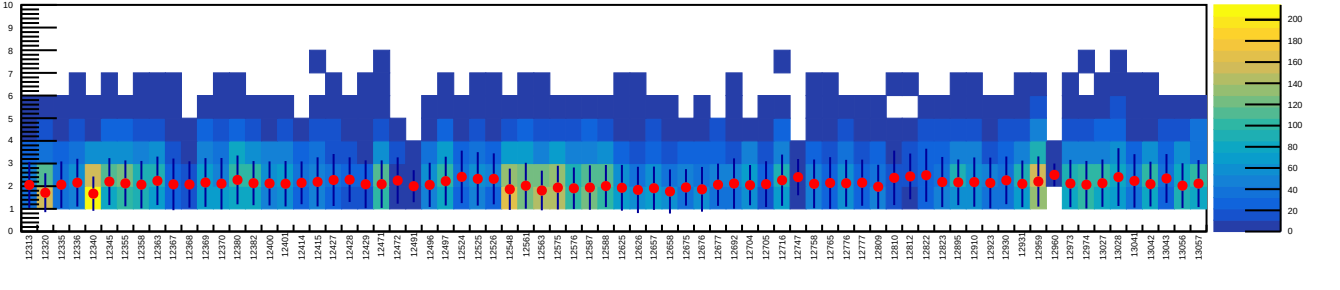
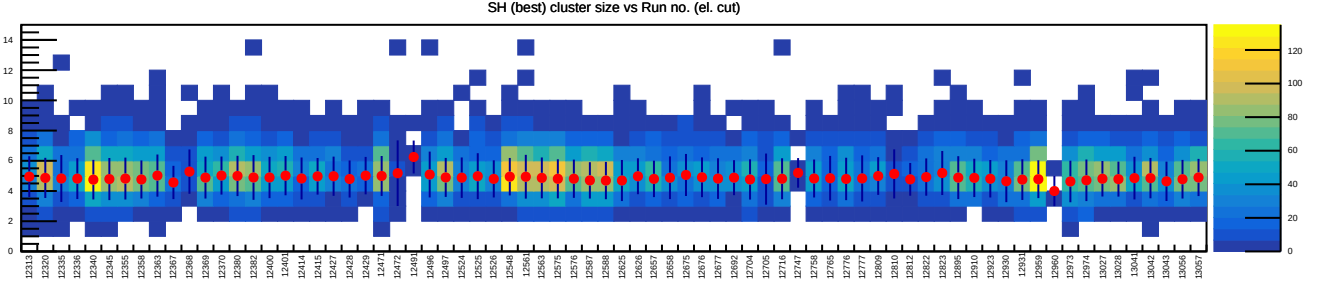
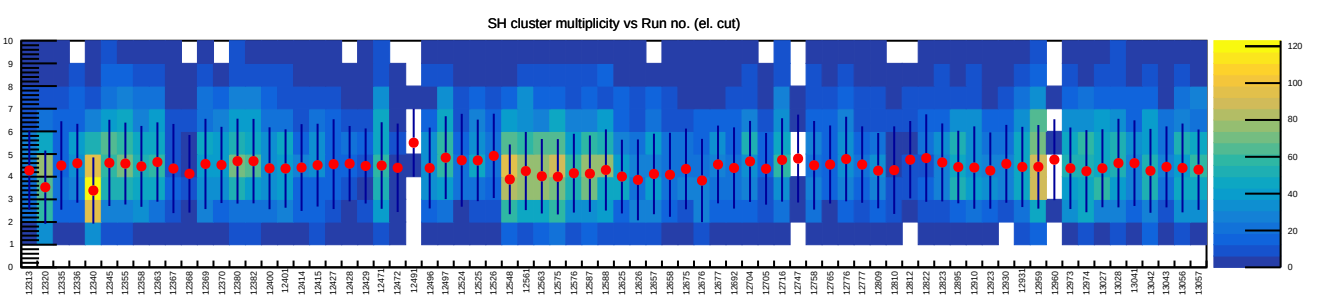
12960
12973
12974
13027
13028
13041
13042
13043
13056
13057


good events per SH block (el. cut)
SH rows
SH cols
good events per PS block (el. cut)
PS rows
PS cols


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: 1/4/2024

Configfile: BBCal_replay/macros/Combined_macros/cfg/sbs11-sbs100p.cfg

Total # events analyzed: 91464410, Preparing for replay pass: 2

E/p (before calib.) | μ = 0.98, σ = (6.430 $\pm$ 0.078) p

E/p (after calib.) | μ = 0.99, σ = (6.477 $\pm$ 0.080) 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])<0.32, abs(sbs.hcal.atimeblk-bb.sh.atimeblk+0.4)<6.*1.6, bb.gem.track.ngoodhits[0]>2,
bb.gem.track.chi2ndf[0]<15, bb.sh.e>0.7,
PS cluster energy > 0.2 GeV
1.8 < p_recon < 3.2 GeV/c

events passed global cuts: 519821

Elastic cuts:

$|p/p_{el}(\theta) - 0.997| \leq 8.0*0.018$

proton spot cut ranges:

Δx (m): Mean = -1.0100, 5.0σ = 0.0764
Δy (m): Mean = -0.0029, 6.0σ = 0.0778

events passed global & elastic cuts: 17139

Other cuts:

Minimum # events per block: 50 | Cluster hit threshold: 0.02 GeV (SH), 0.01 GeV (PS)
Cluster tmax cut: 10.0 ns (SH), 10.0 ns (PS) | Cluster energy fraction cut: 0.0 GeV (SH), 0.0 GeV (PS)

Various offsets:

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

Macro processing time: CPU 5262.5s | Real 8291.2s