Problem of S2 right tail

Campaign V
Oleynikov Vladislav
23 Nov 2018

Algorithm:

11713f949ea5bffcc2f0ceb22d1267b5f314a5af

Merge branch 'barycenter' into 'master'

Cut list:

```
bool cls0_is_S1 = clusters.at(0)->f90 > 0.2;
bool cls0_is_full = clusters.at(0)->rep == 1;

bool S1_Am_peak = (clusters.at(0)->charge > 440) &&
(clusters.at(0)->charge < 630); // mean +- 1.5sigma using run 537

//bool S1_Am_peak = (clusters.at(0)->charge > 419) &&
(clusters.at(0)->charge < 587); // mean +- 1.5sigma using run 542

//bool S1_Am_peak = (clusters.at(0)->charge > 342) &&
(clusters.at(0)->charge < 482); // mean +- 1.5sigma using run 544

bool cls0 = nc_i == 0;//cluster 0
bool cls1 = nc_i == 1;//cluster 1

bool is_S1 =  nc == 2 && cls0 && cls0_is_full && cls0_is_S1;
bool is_S2 =  nc == 2 && cls1 && cls0_is_full && cls0_is_S1;
bool is_S2_v2 = is_S2 && clusters.at(0)->f90 < 0.2;

bool is_S1_only = nc == 1 && cls0_is_full && cls0_is_S1;
bool is_S1_S2 = nc == 2 && cls0_is_full && cls0_is_S1;
```

Ph2, Am241, run 537

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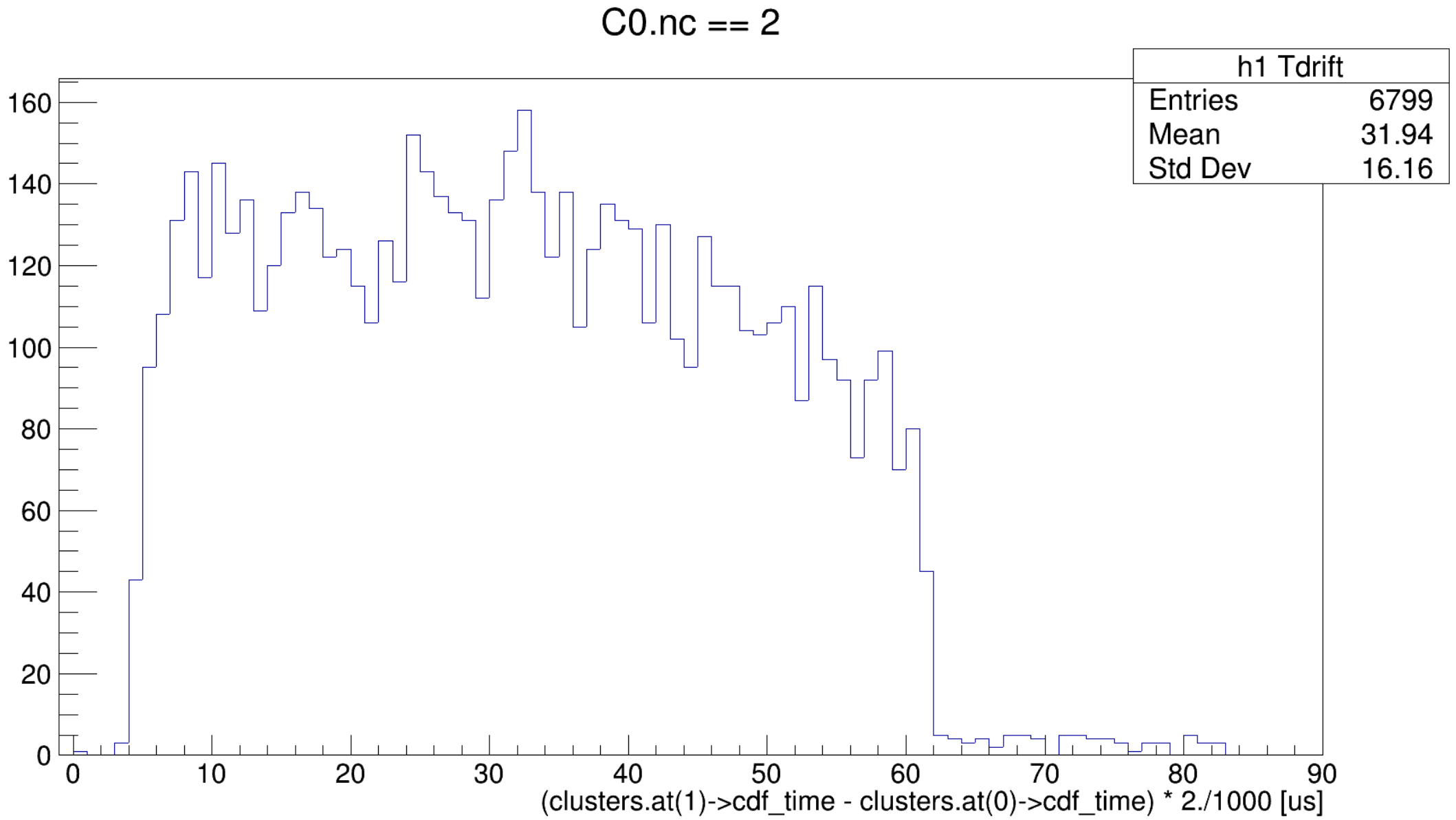
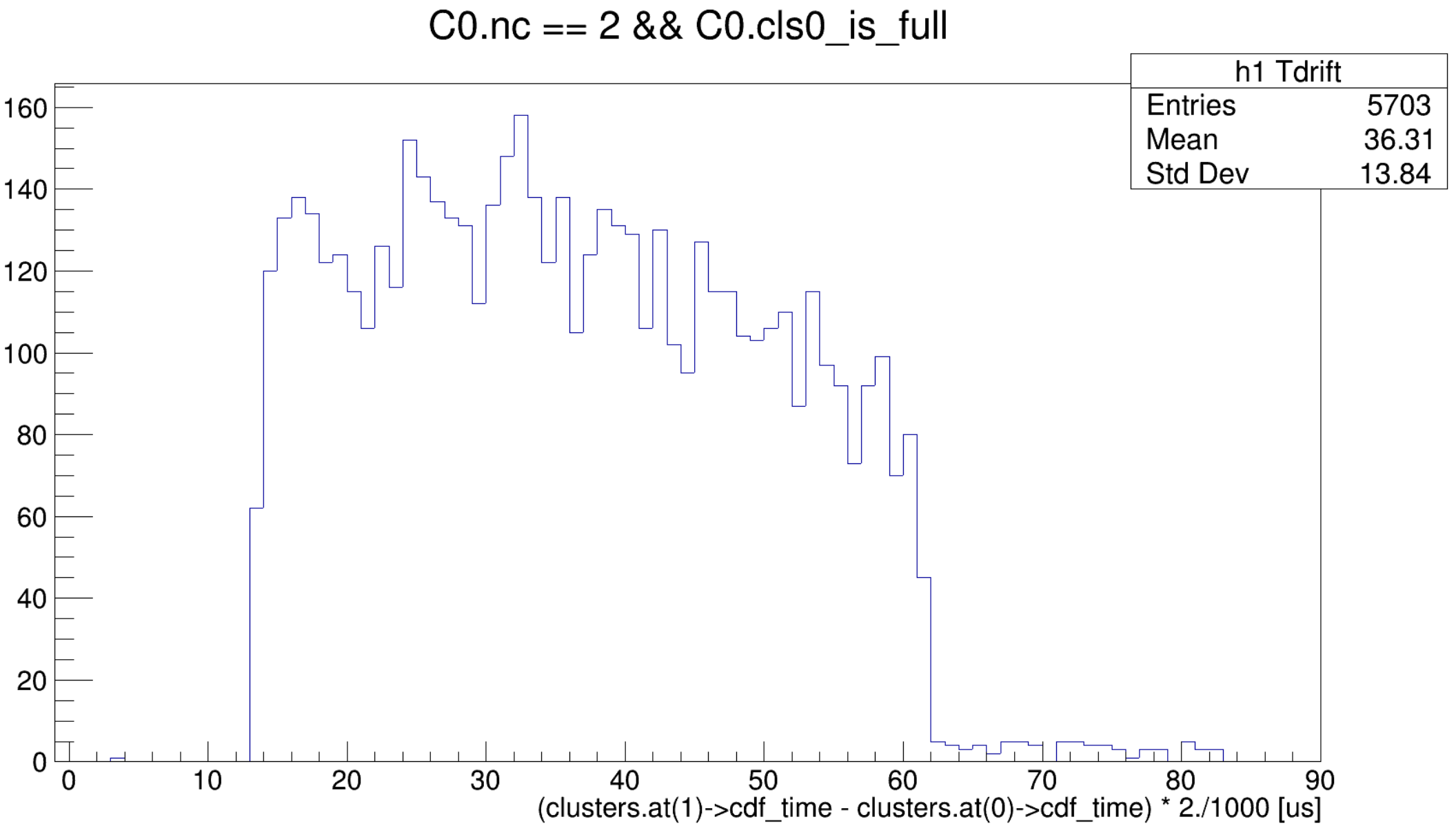
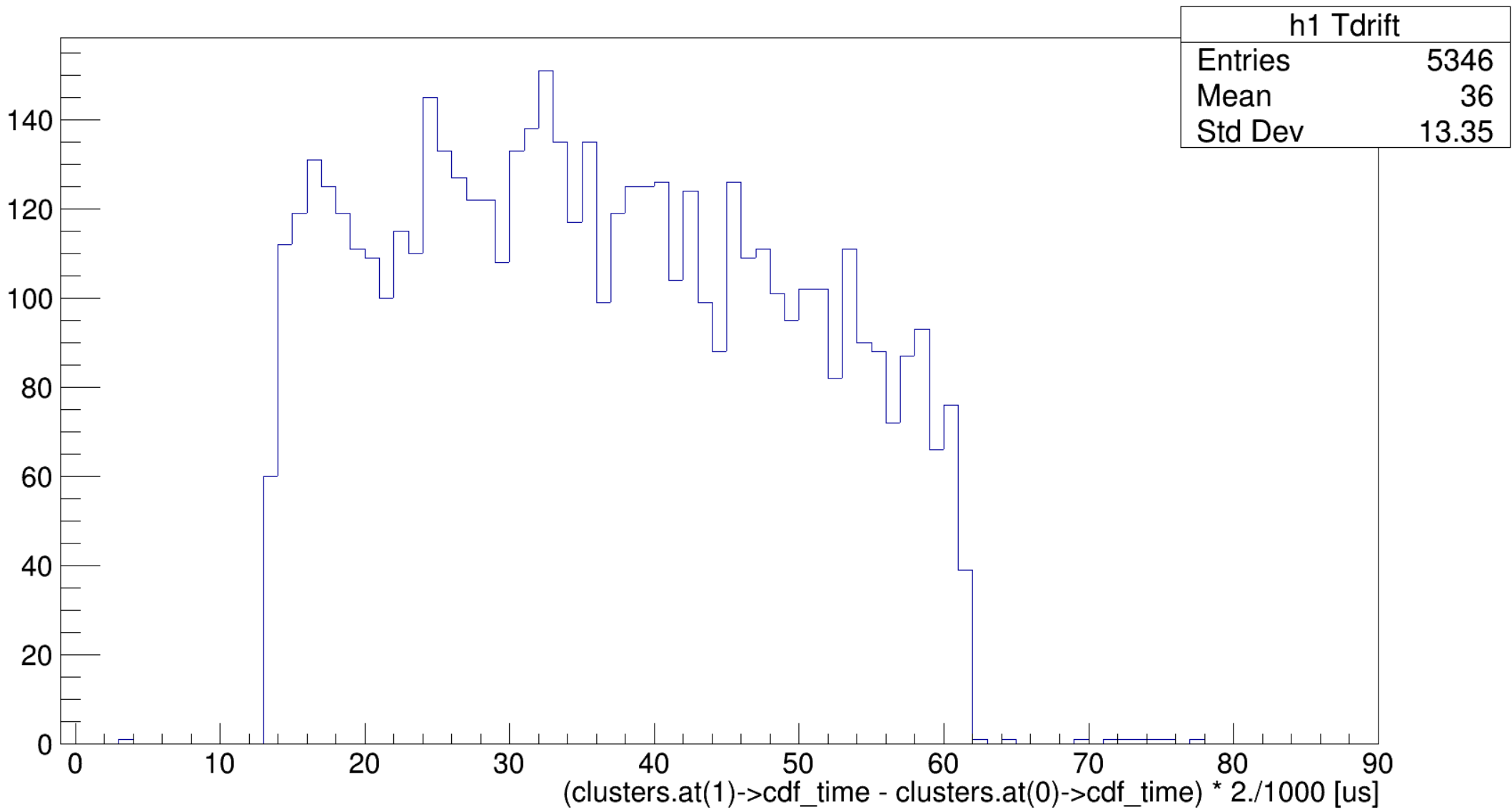


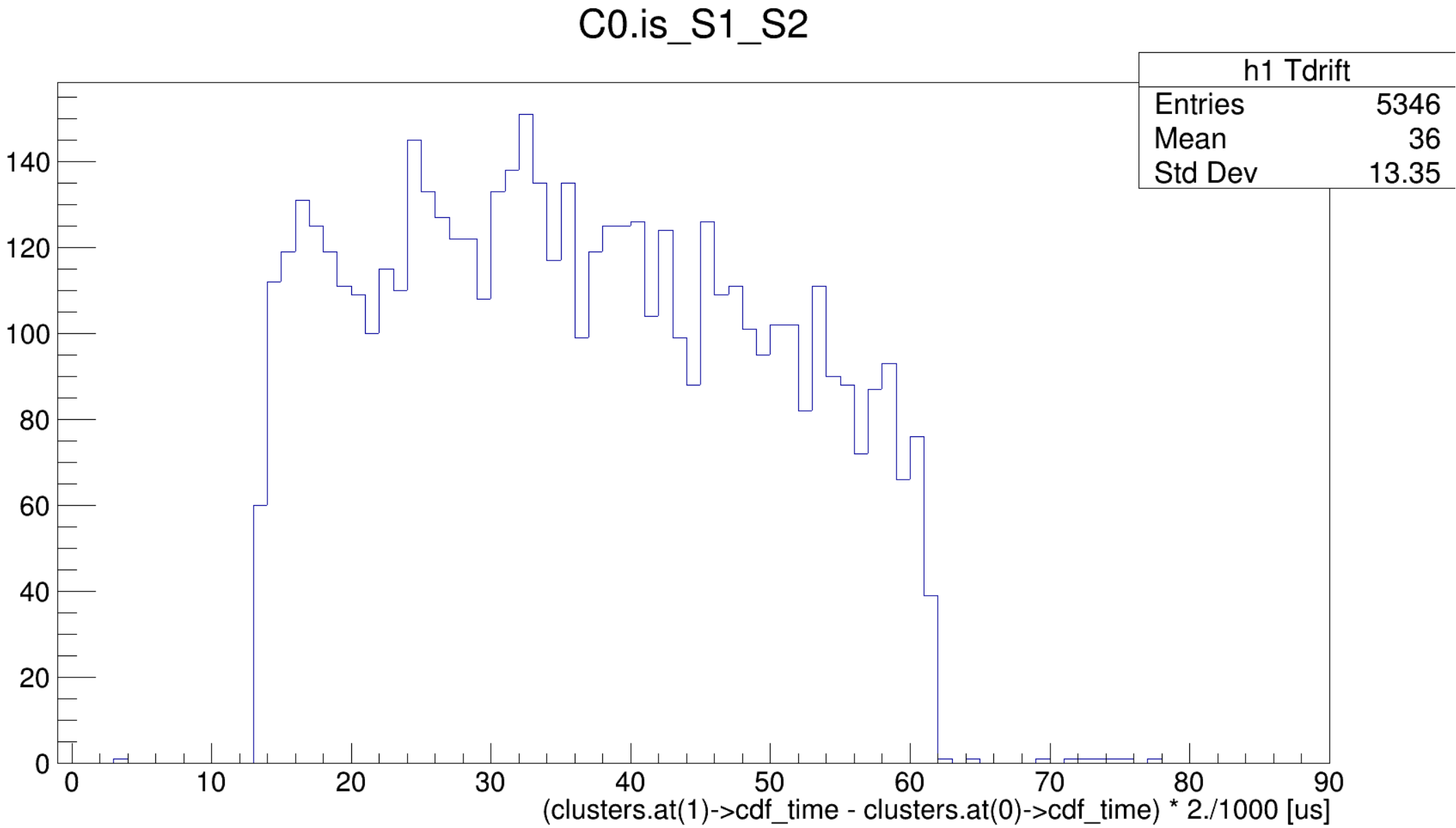
Ph2, Am241, run 537



Ph2, Am241, run 537

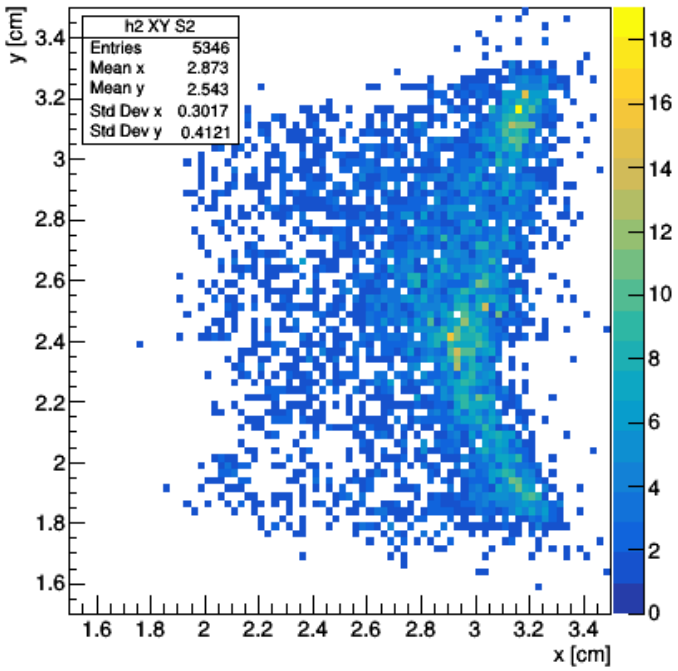


Ph2, Am241, run 537

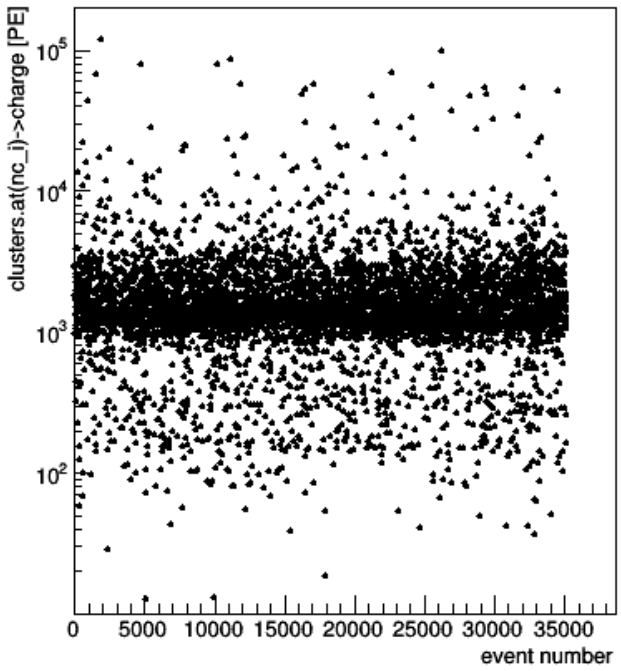


master cut

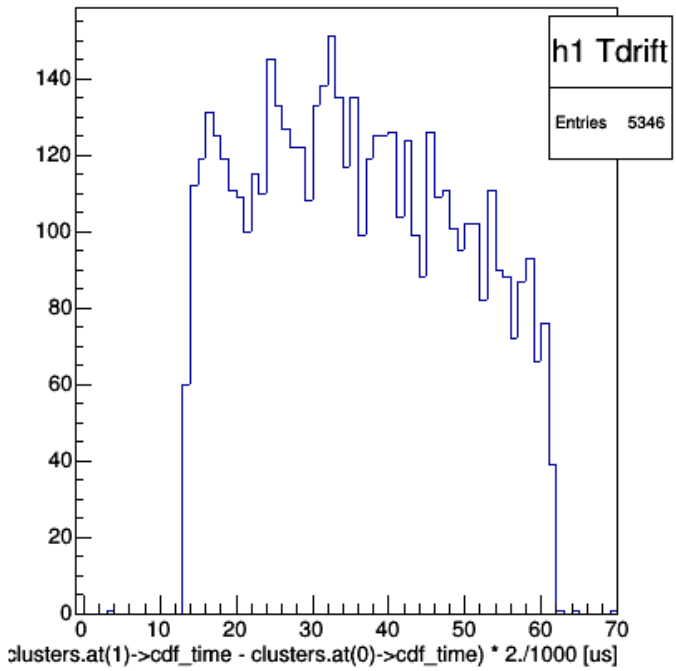
C1.is_S2



C1.is_S2

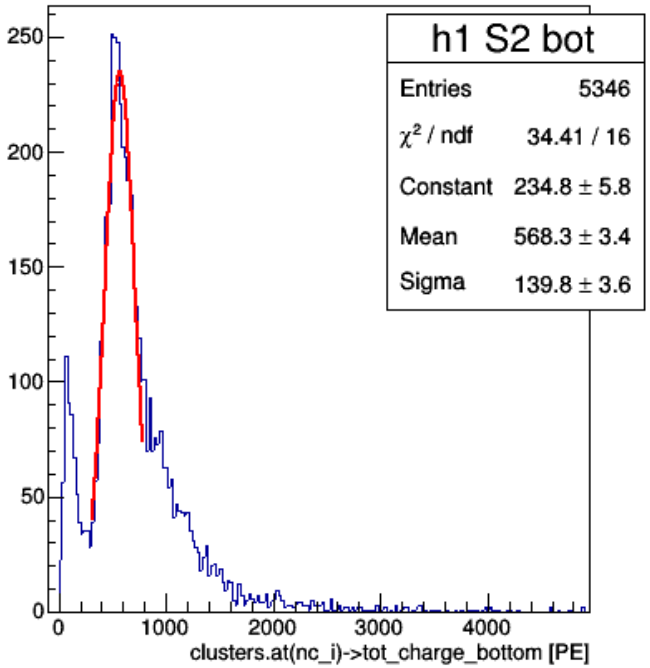


C0.is_S1_S2

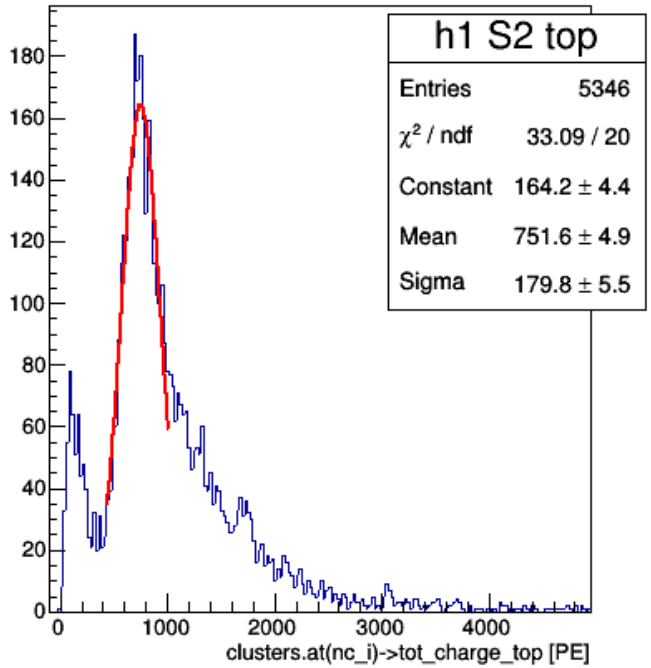


Ph2, Am241, run 537

C1.is_S2



C1.is_S2



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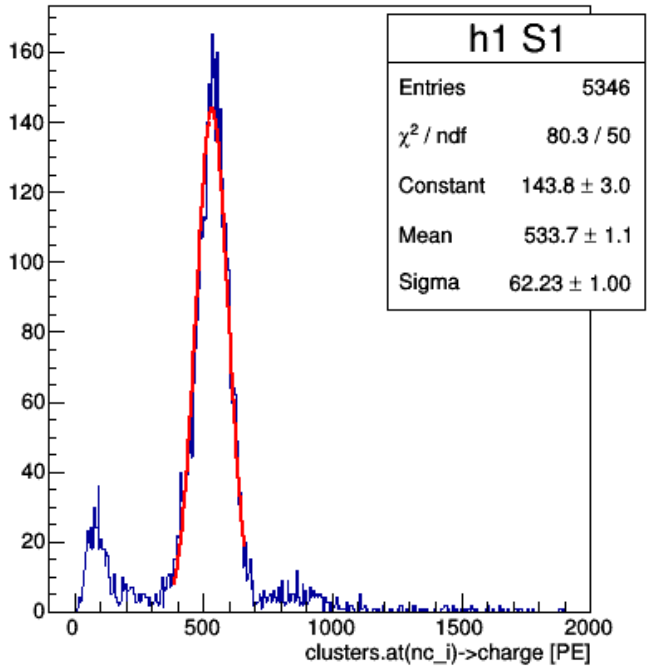
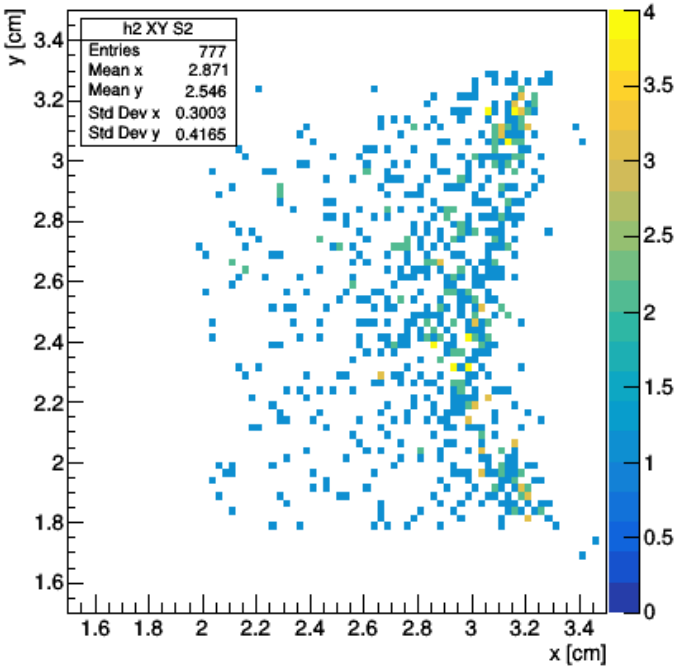


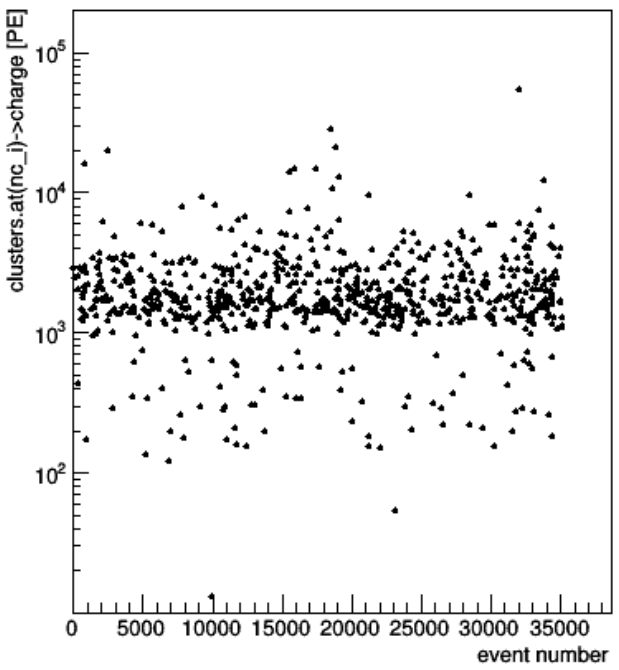
master cut

Ph2, Am241, run 537

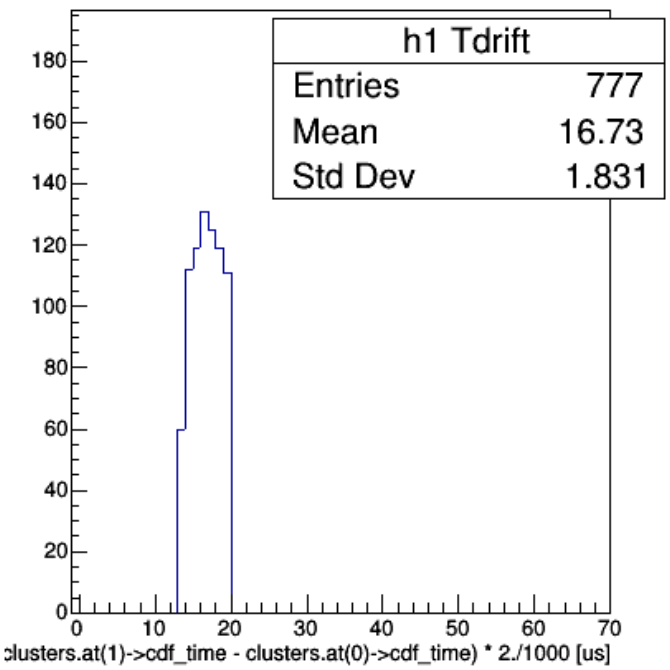
C1.is_S2 && Tdrift > 10 && Tdrift < 20



C1.is_S2 && Tdrift > 10 && Tdrift < 20



C0.is_S1_S2



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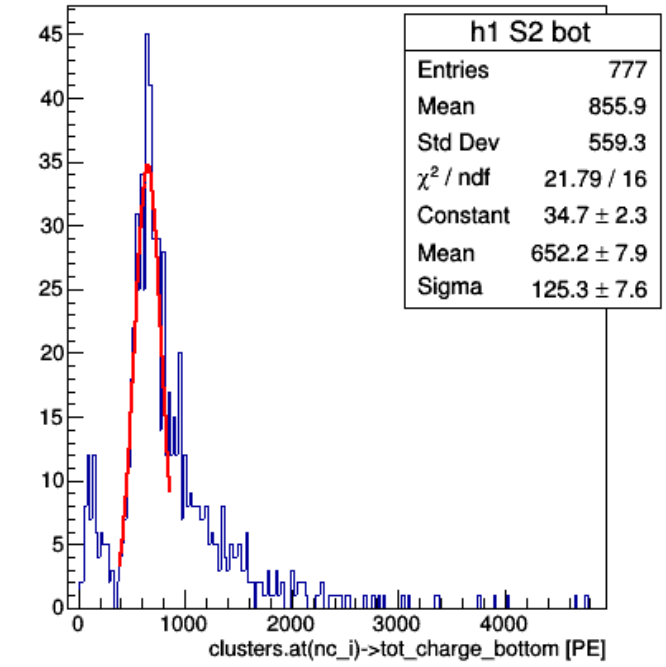
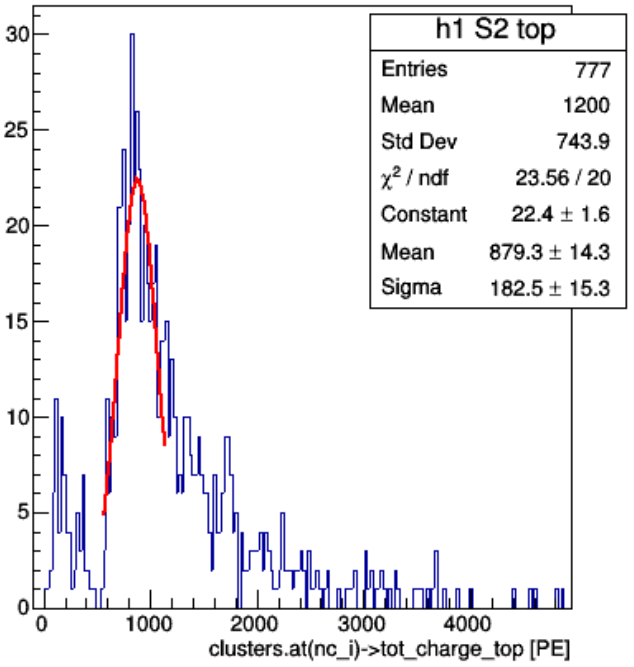
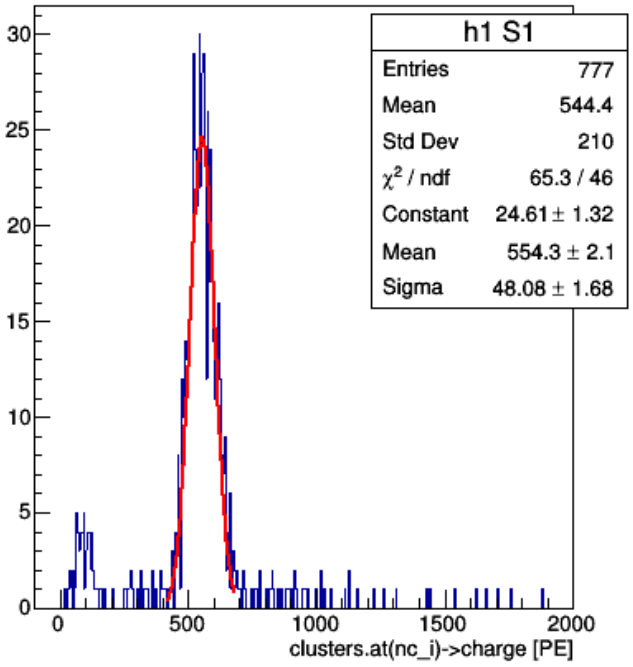


C1.is_S2 && Tdrift > 10 && Tdrift < 20



C2.is_S1



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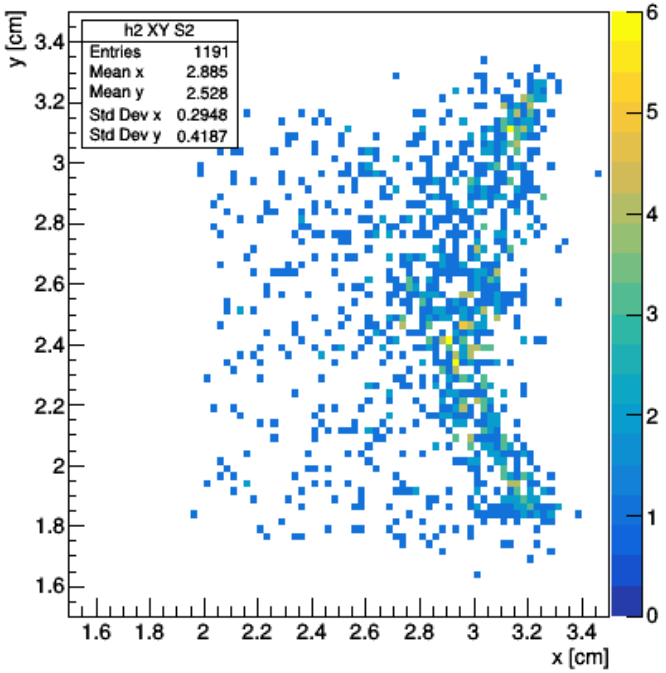
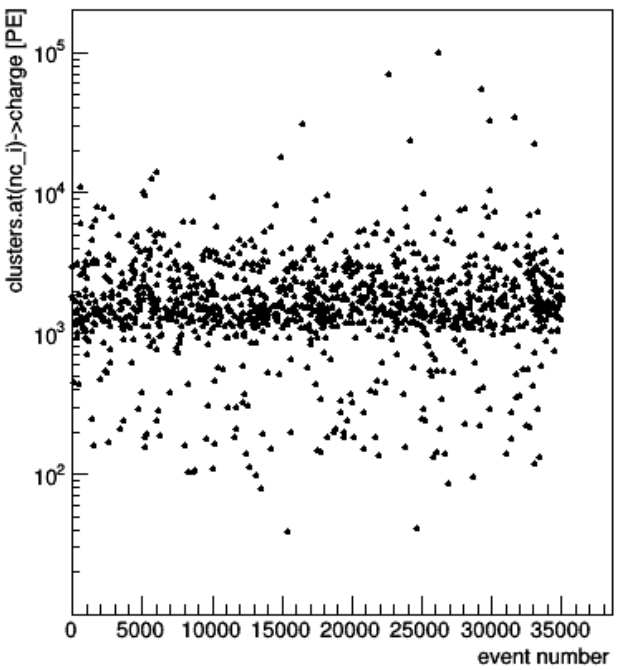
C1.is_S2 && Tdrift > 20 && Tdrift < 30



C1.is_S2 && Tdrift > 20 && Tdrift < 30



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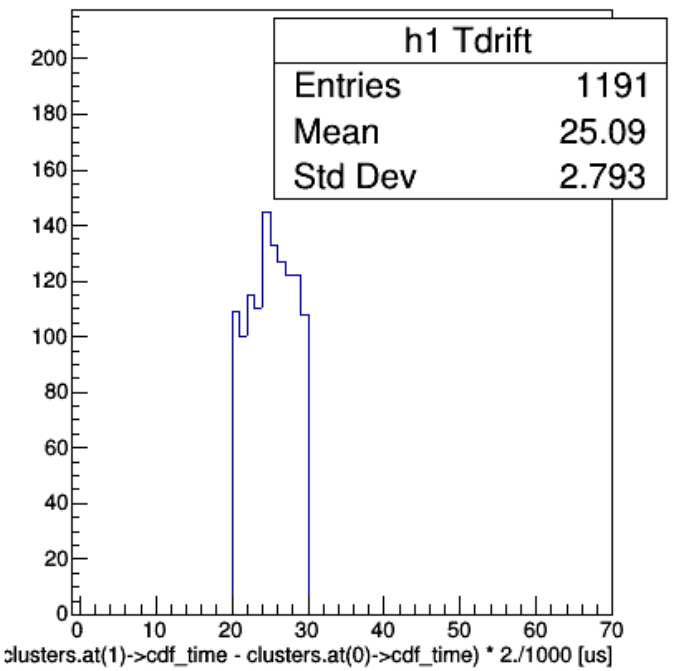

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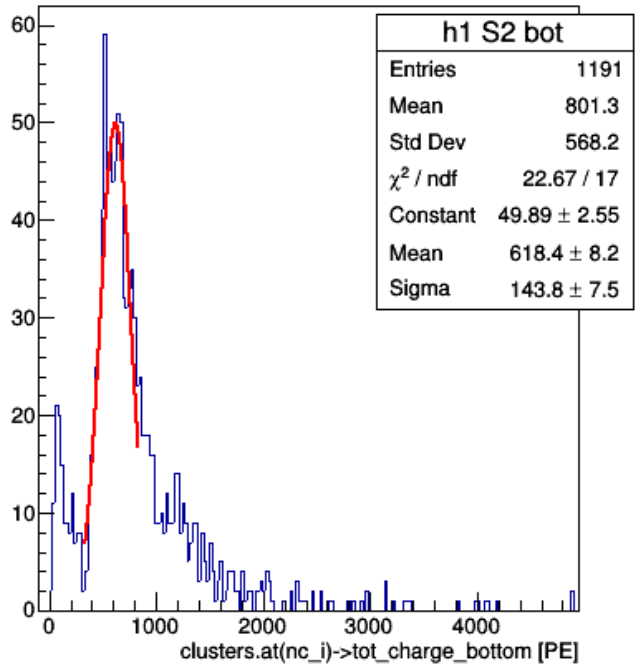
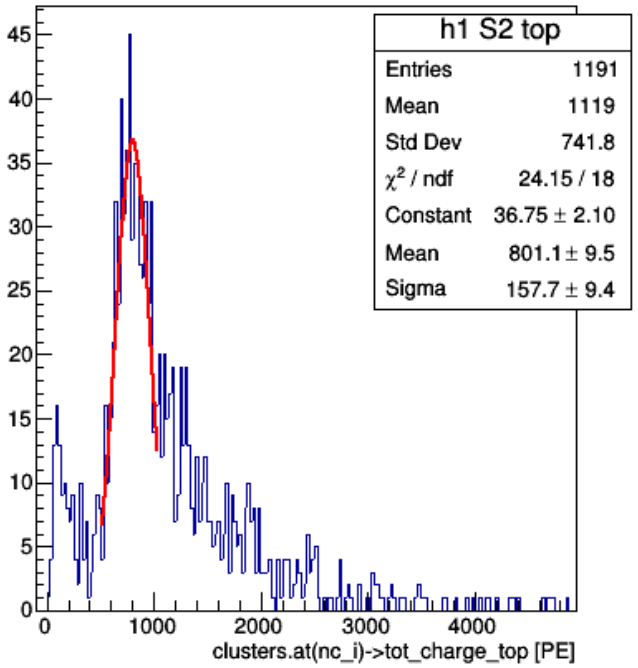
C1.is_S2 && Tdrift > 20 && Tdrift < 30



C1.is_S2 && Tdrift > 20 && Tdrift < 30



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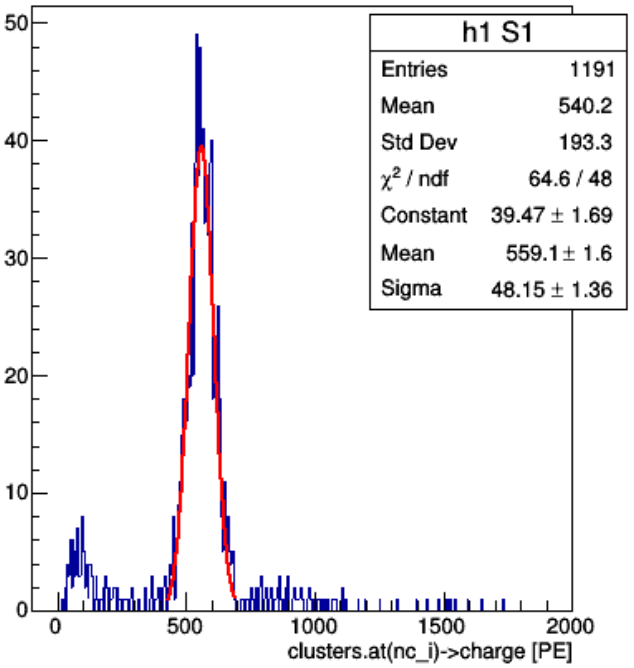

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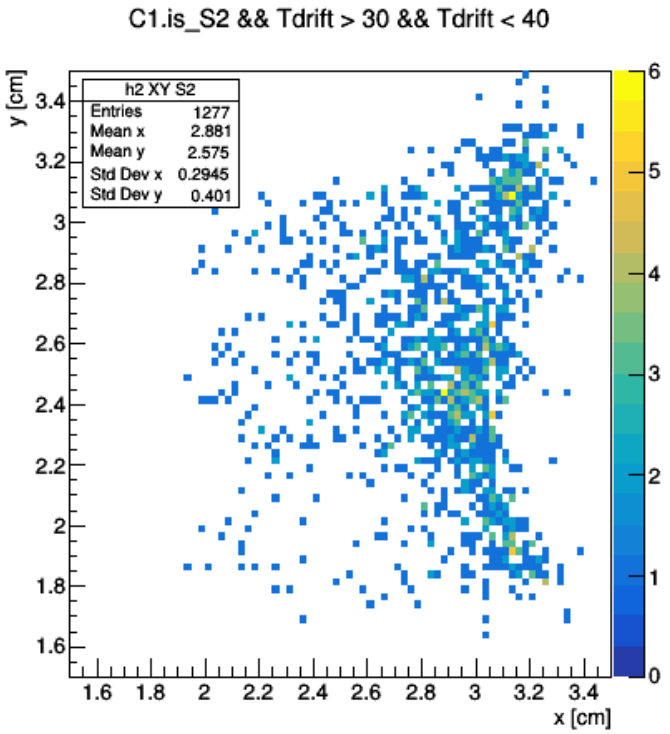
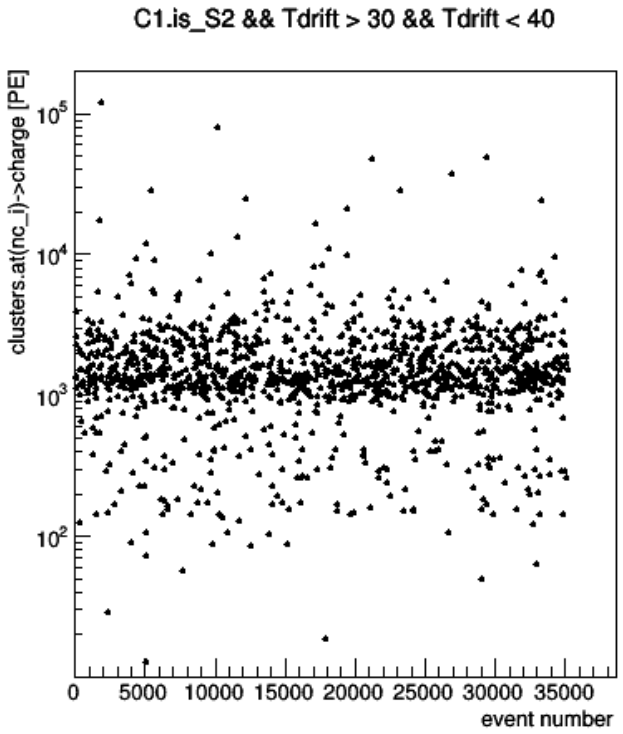
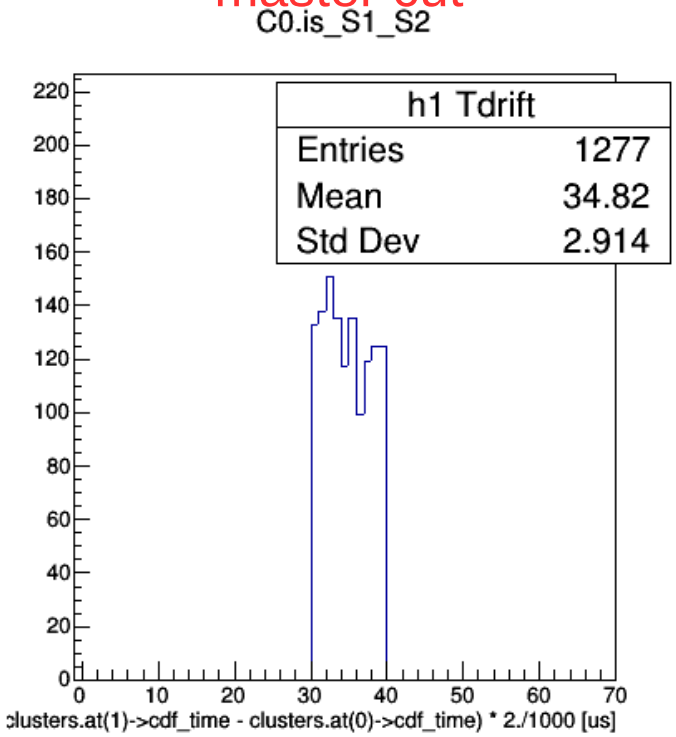
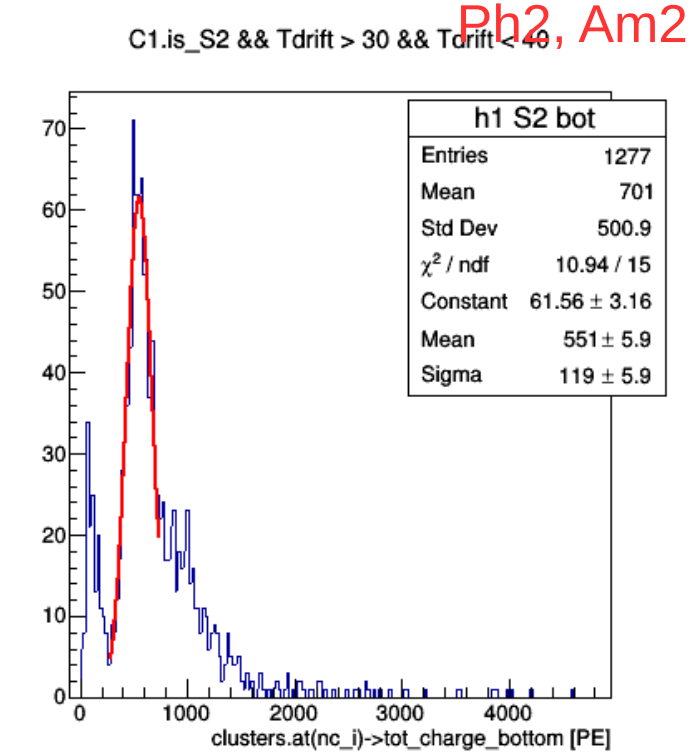
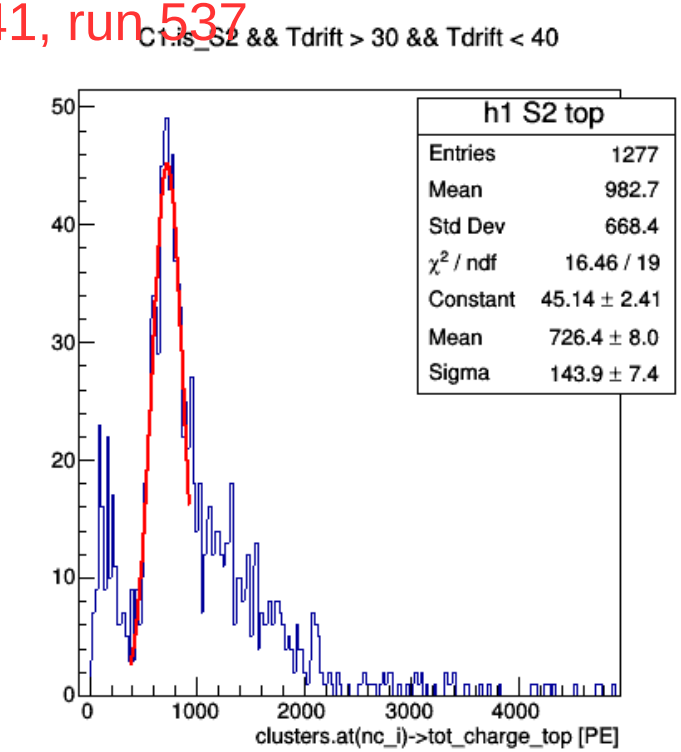
Pb2, Am241, run 537

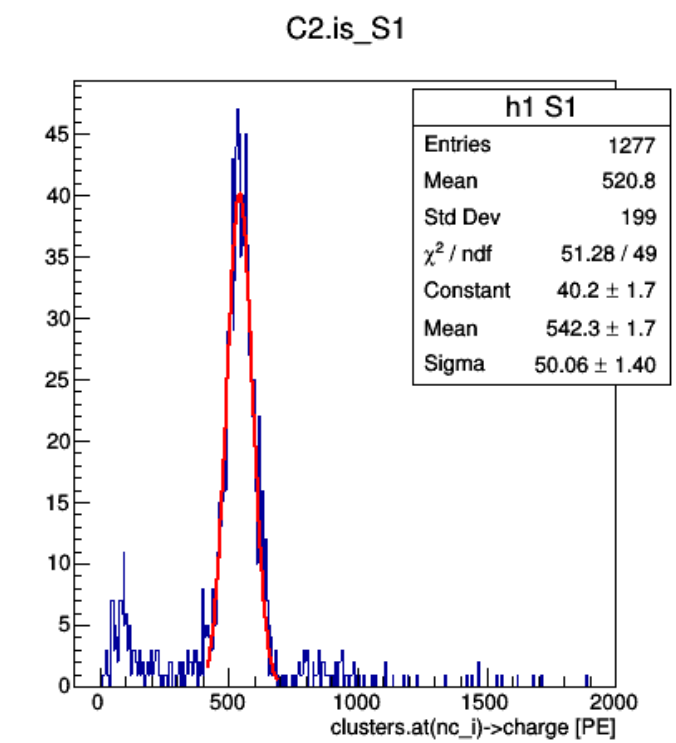












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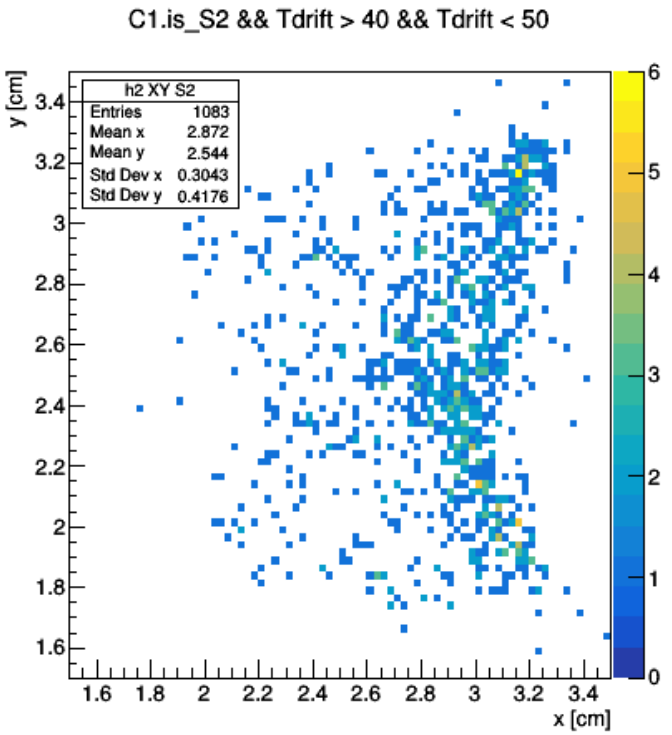

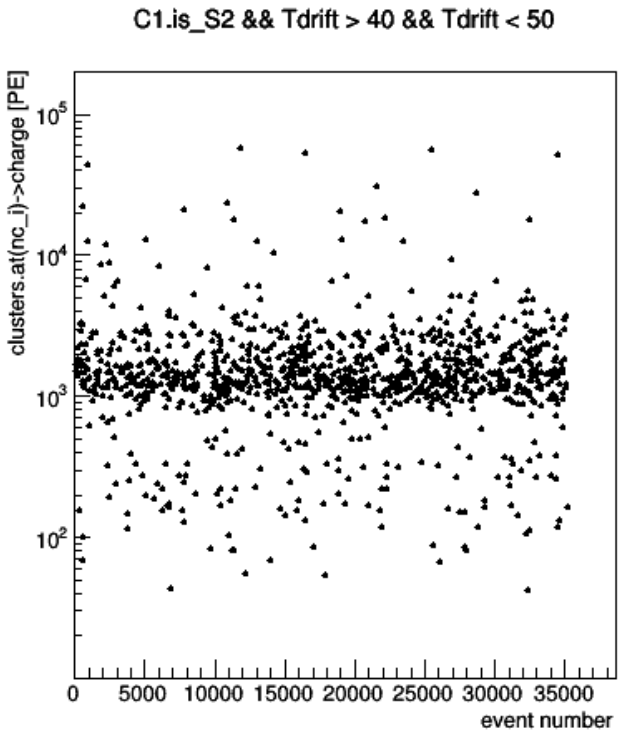

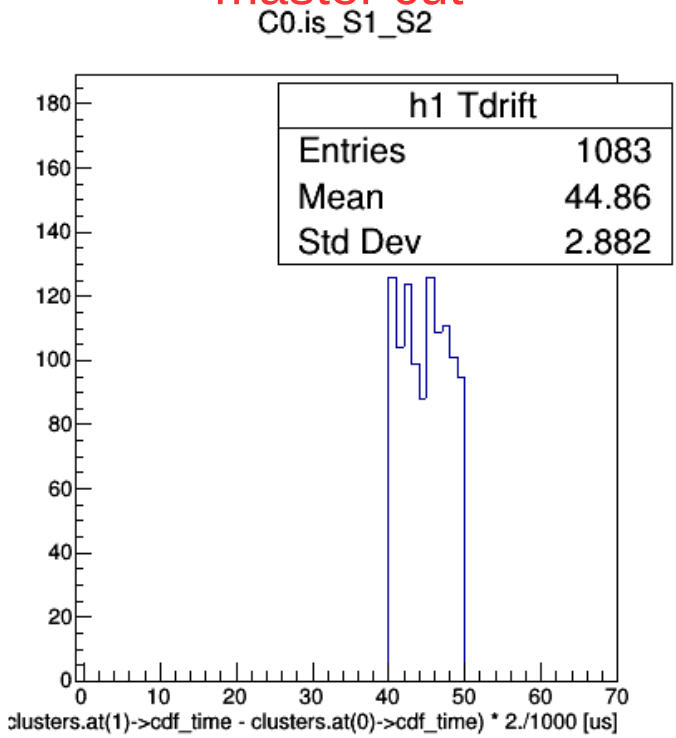

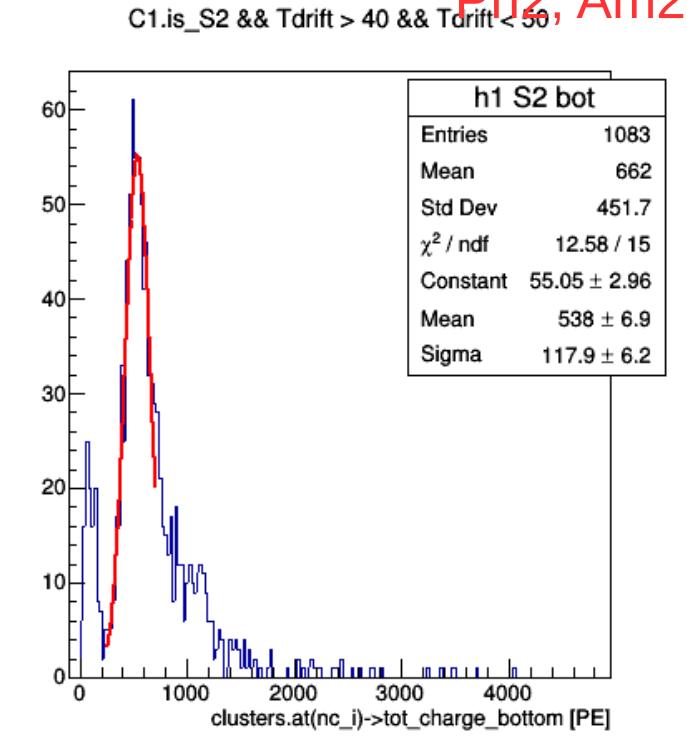

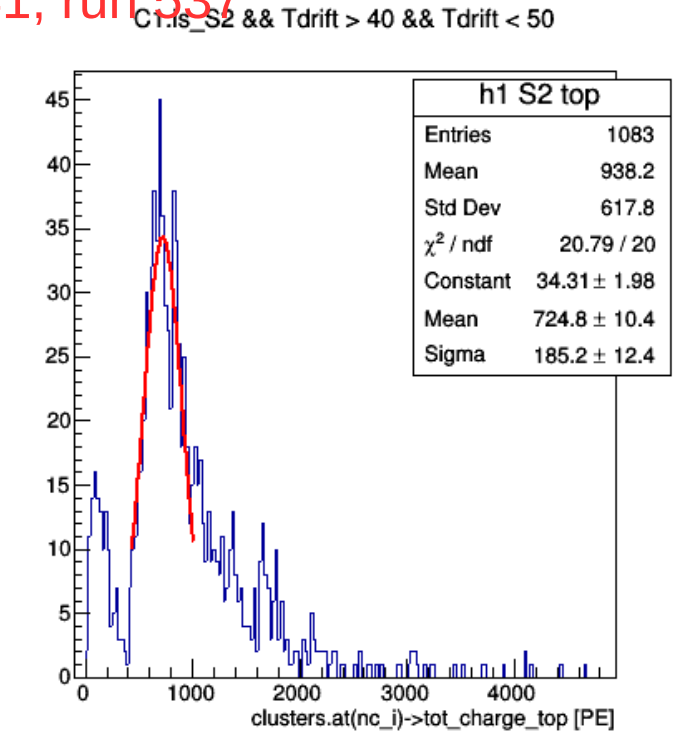

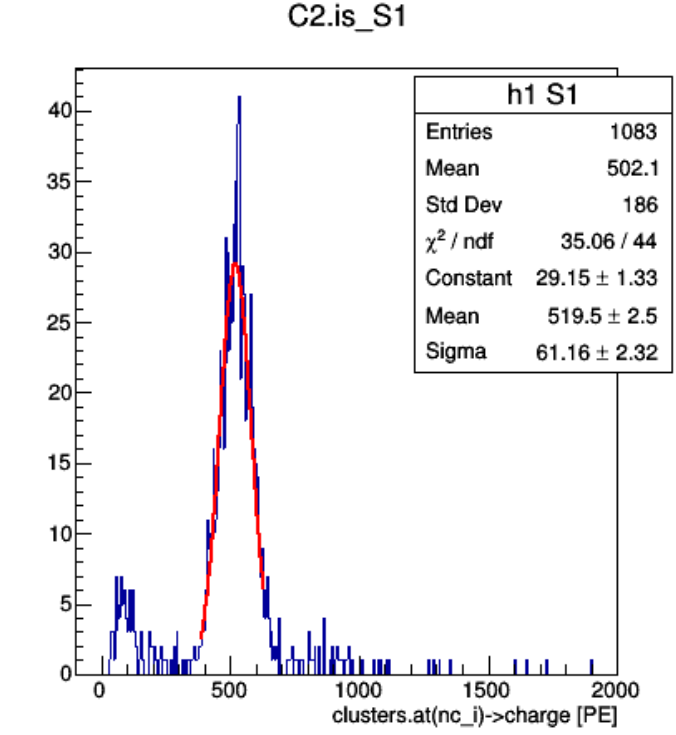

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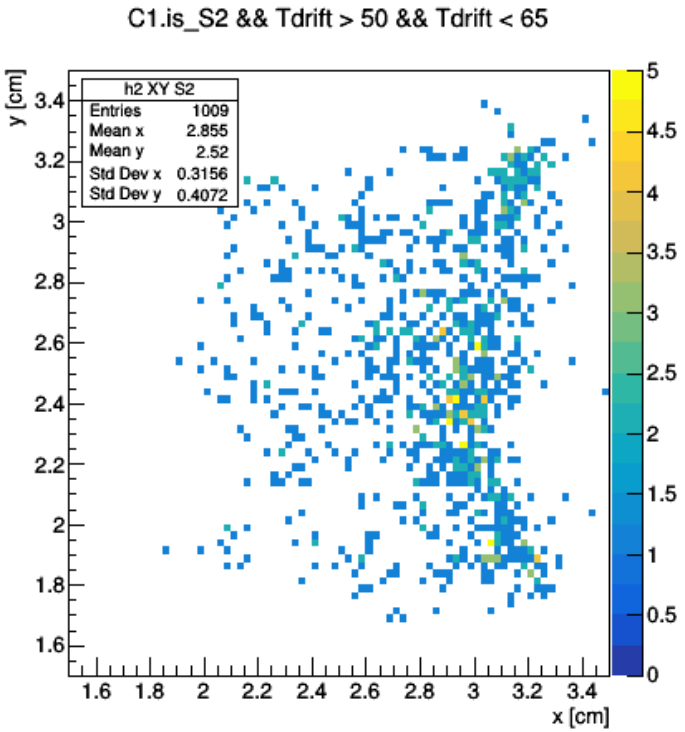

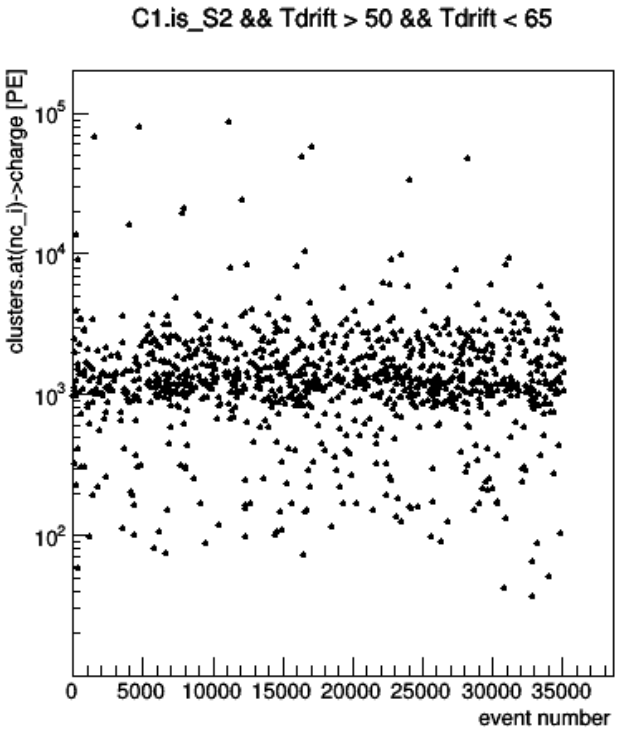

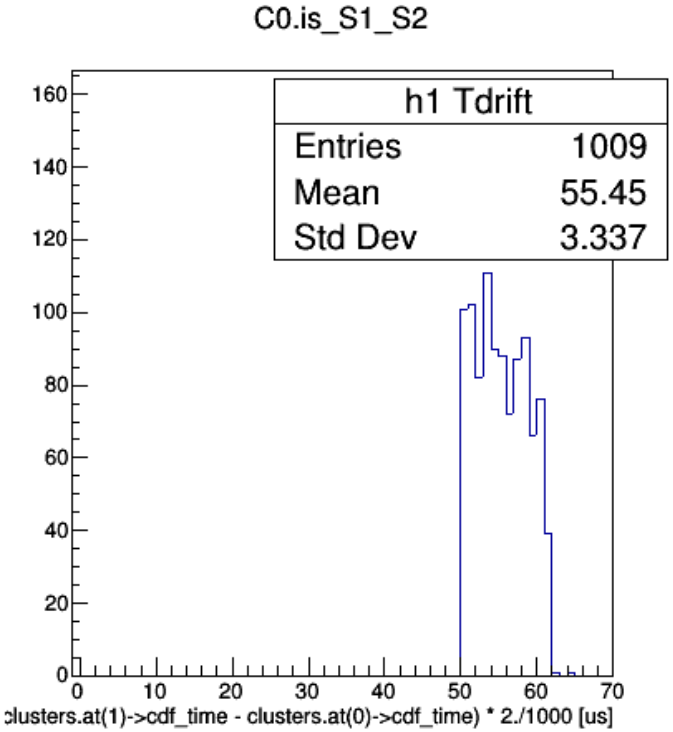

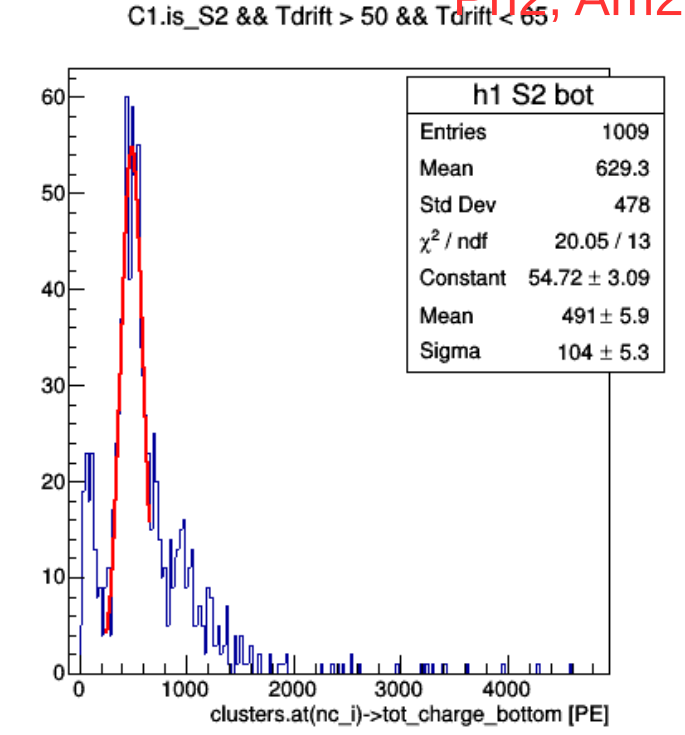

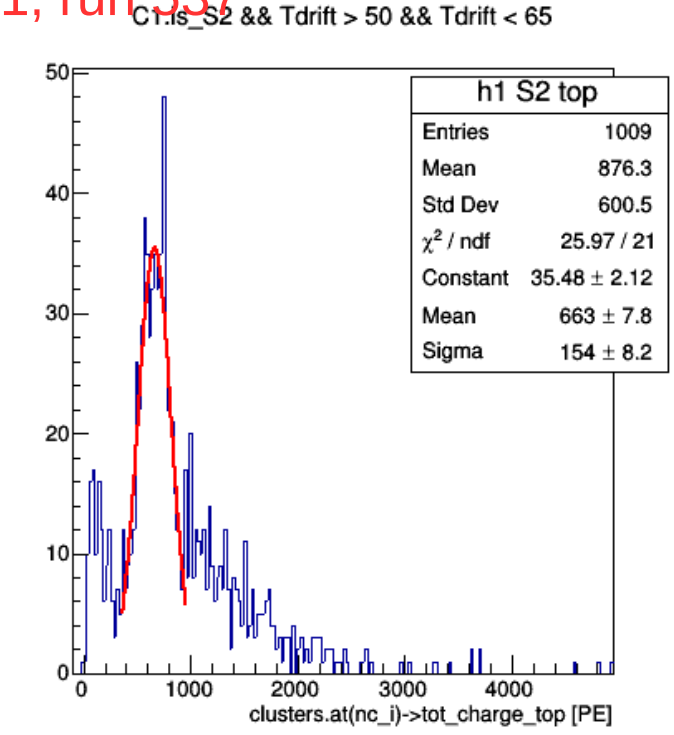

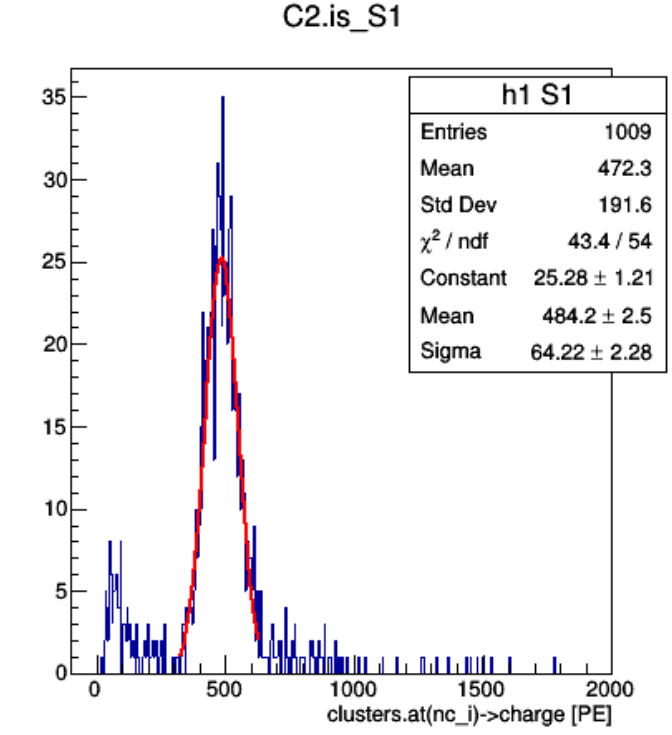

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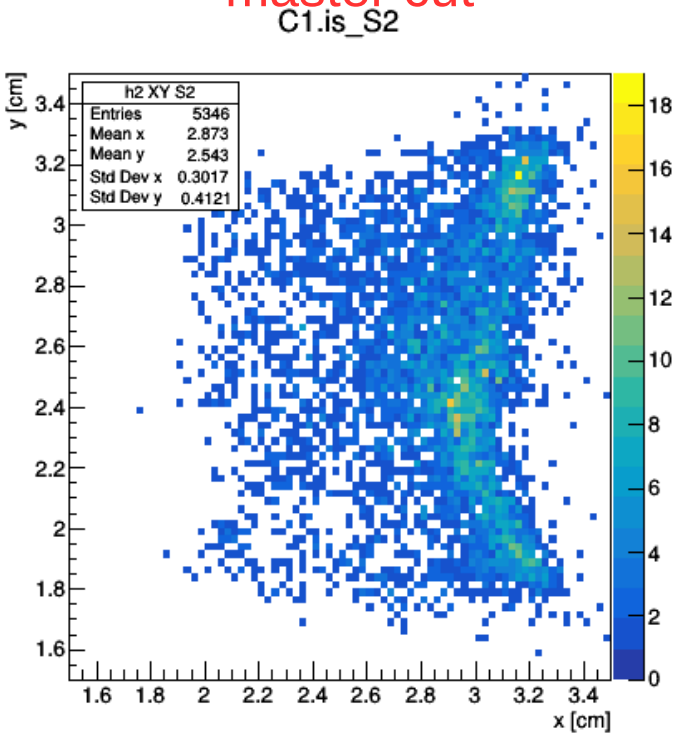
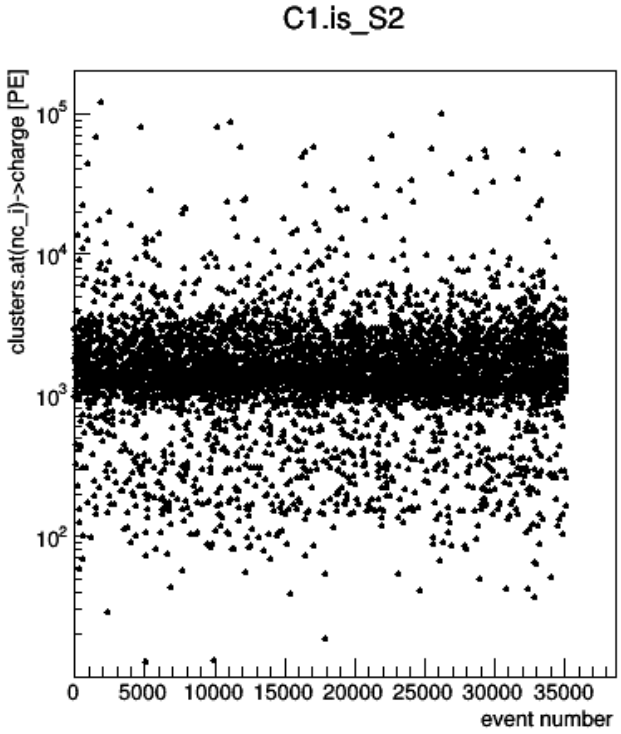
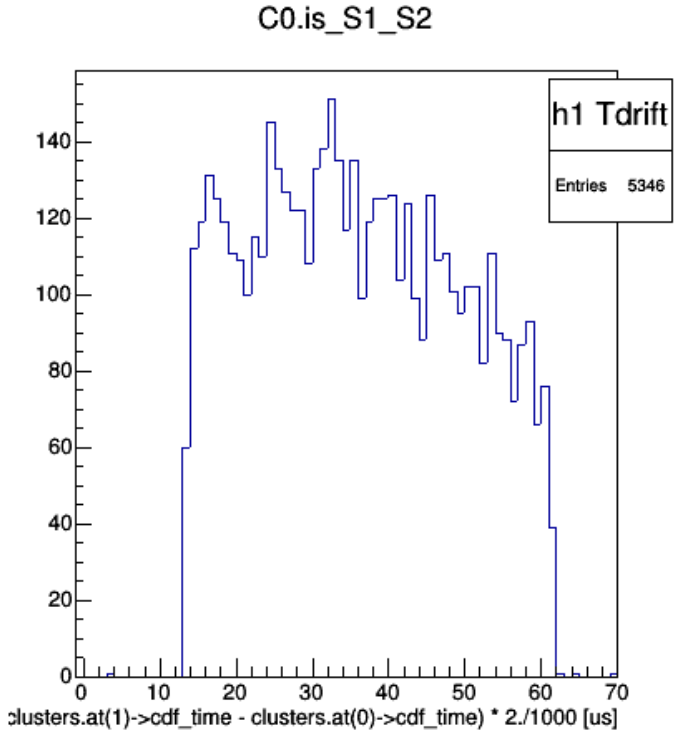
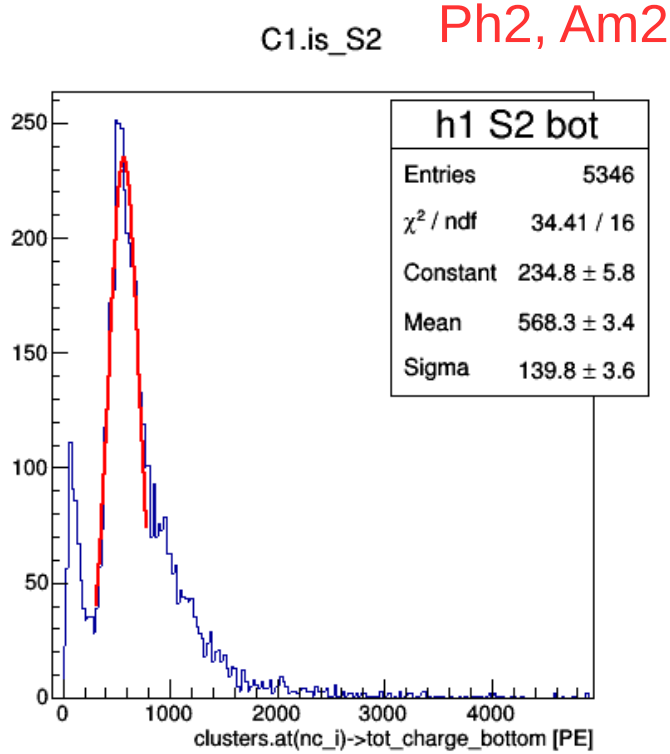
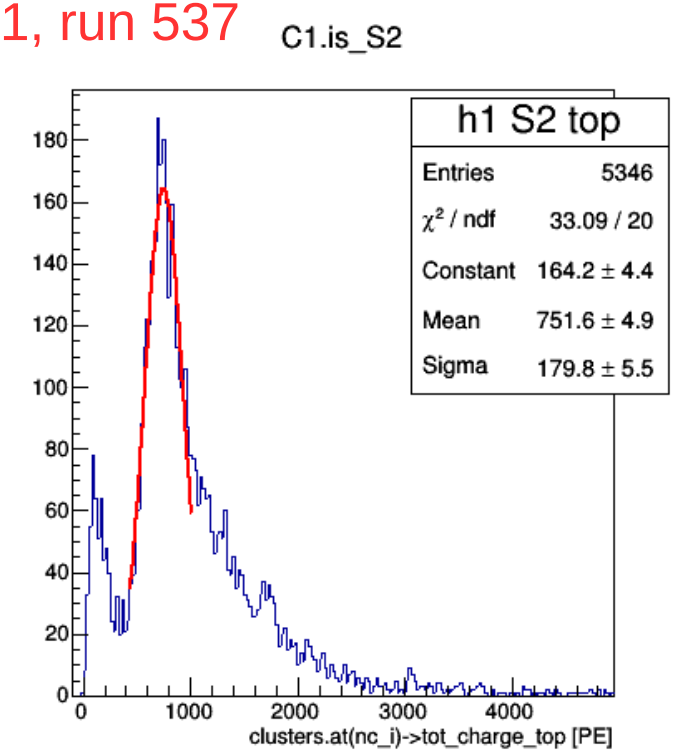


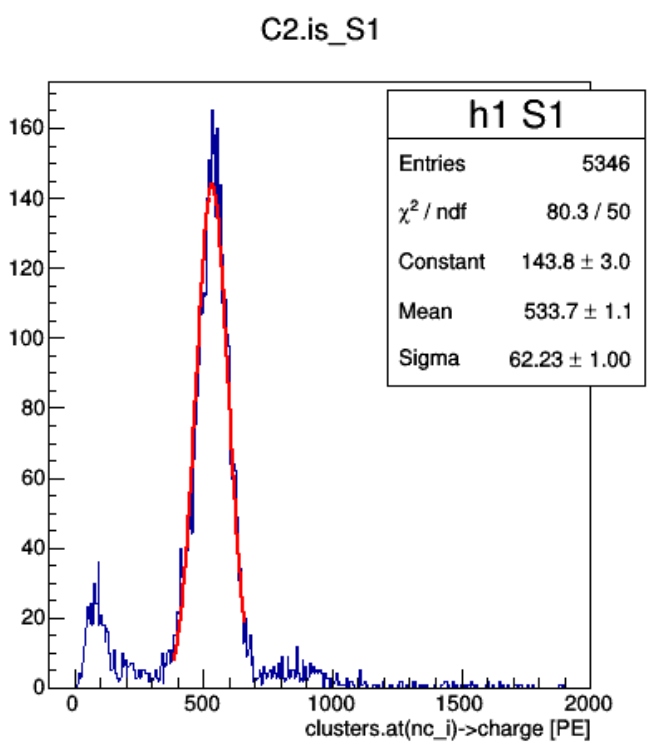




Ph2, Am241, run 537







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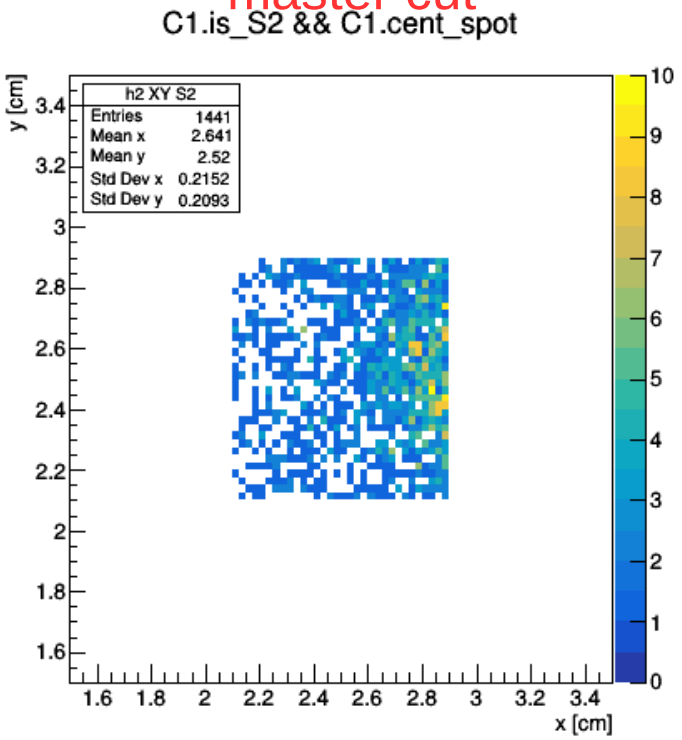

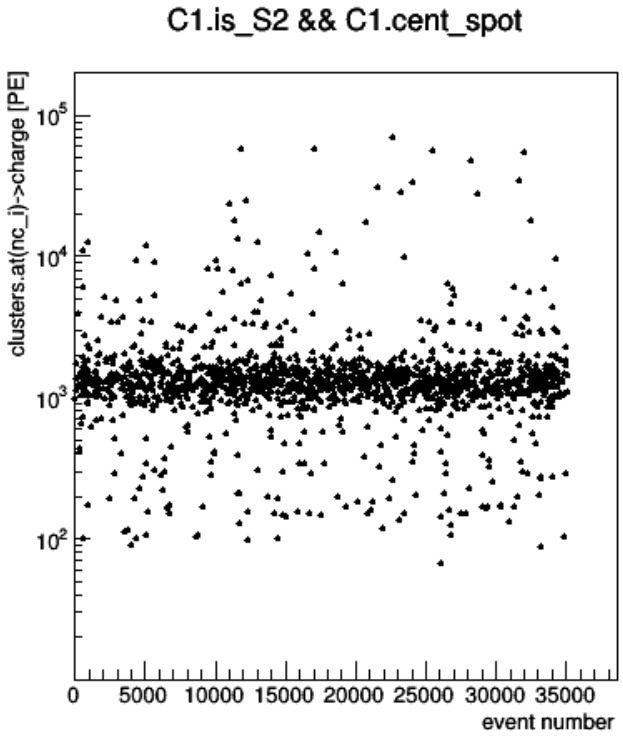

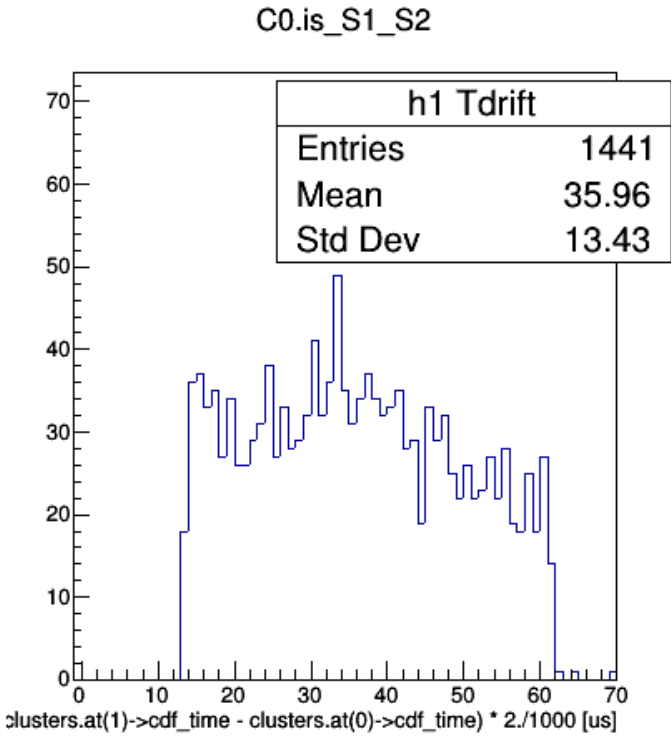

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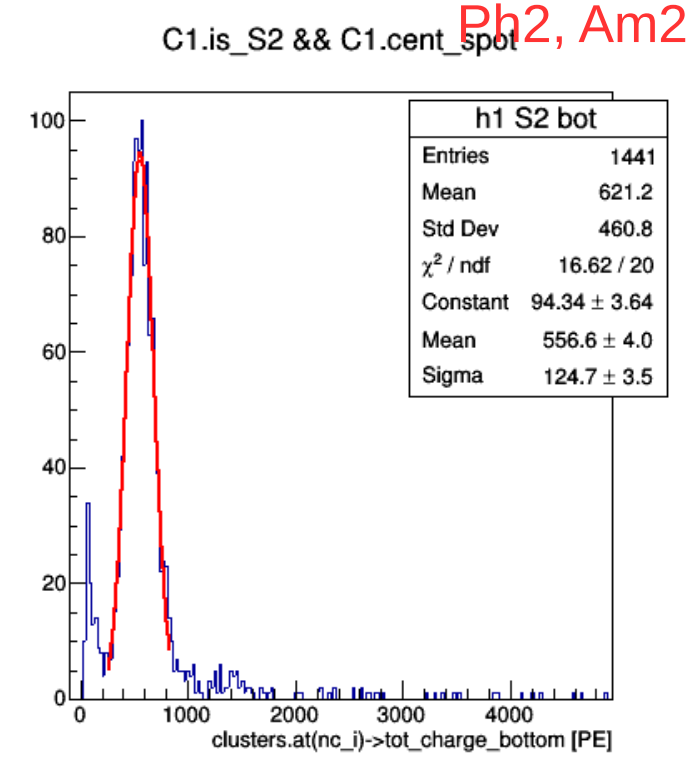
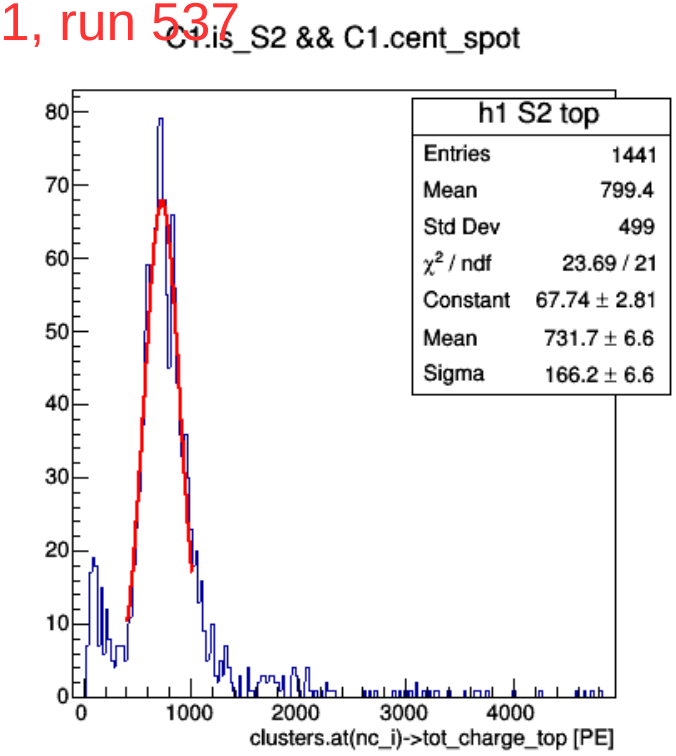
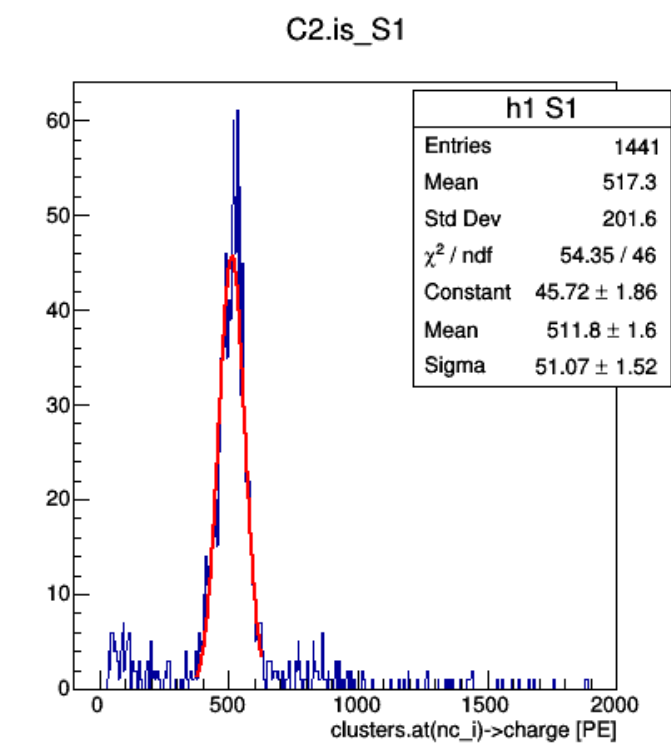
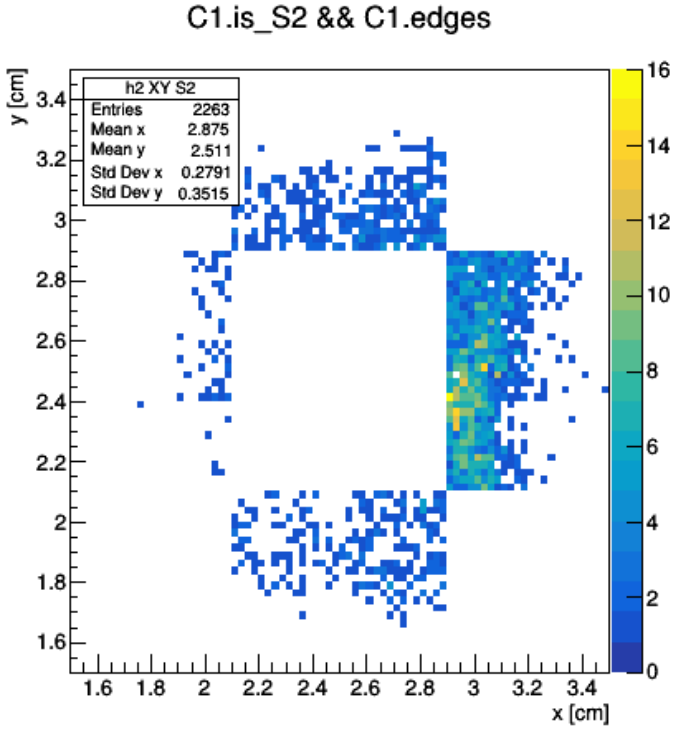
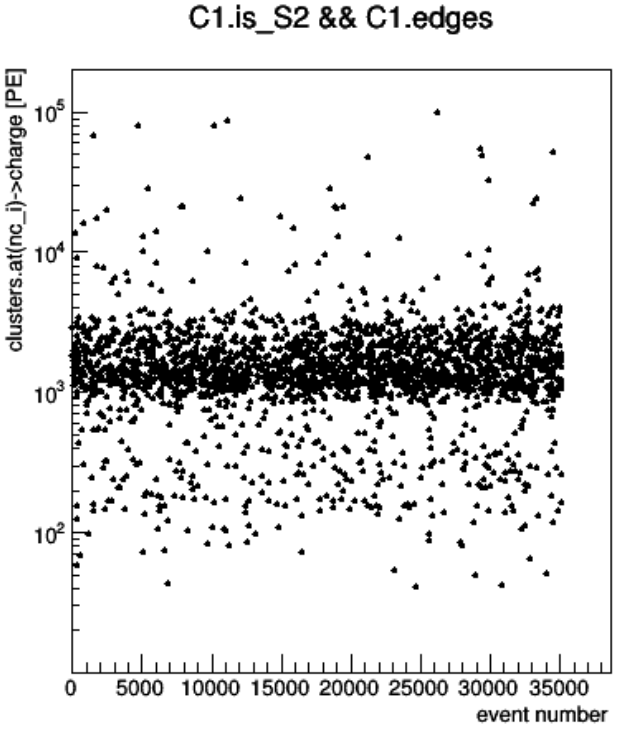


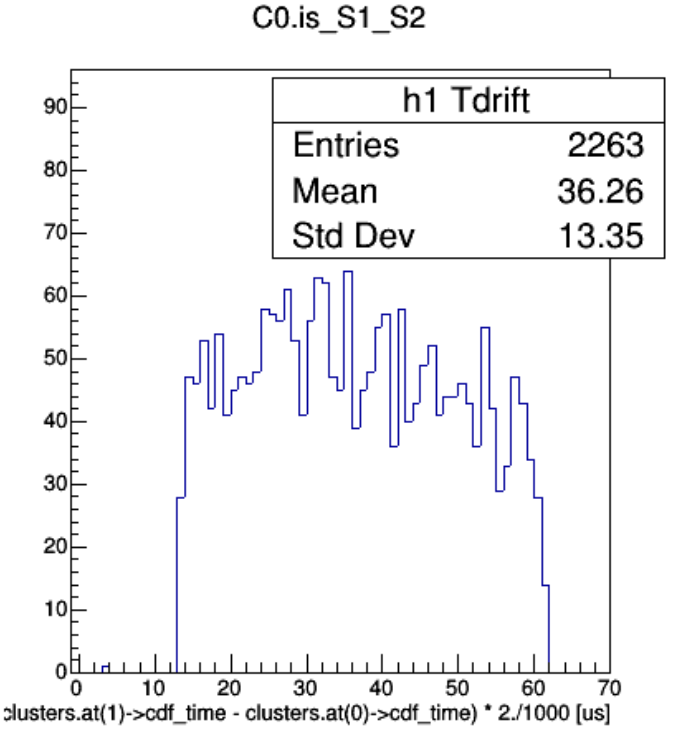




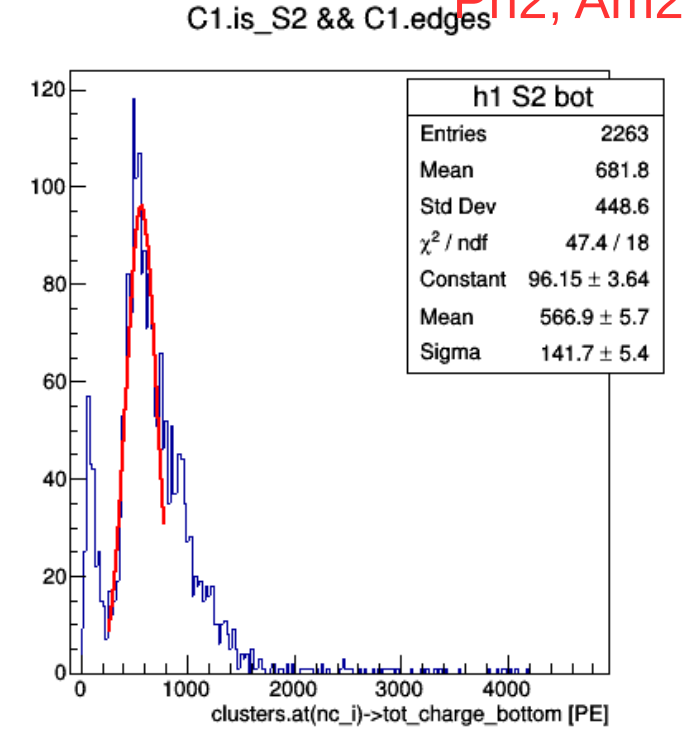
master cut

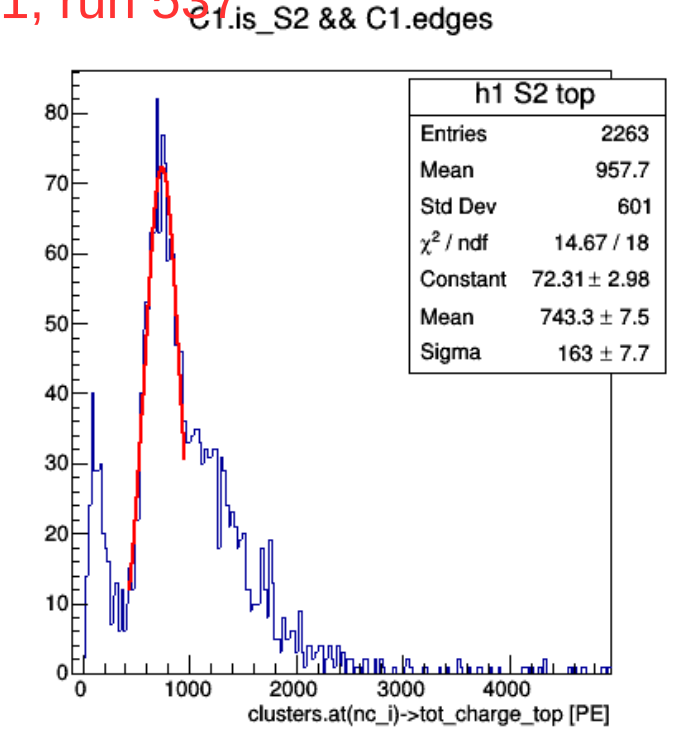


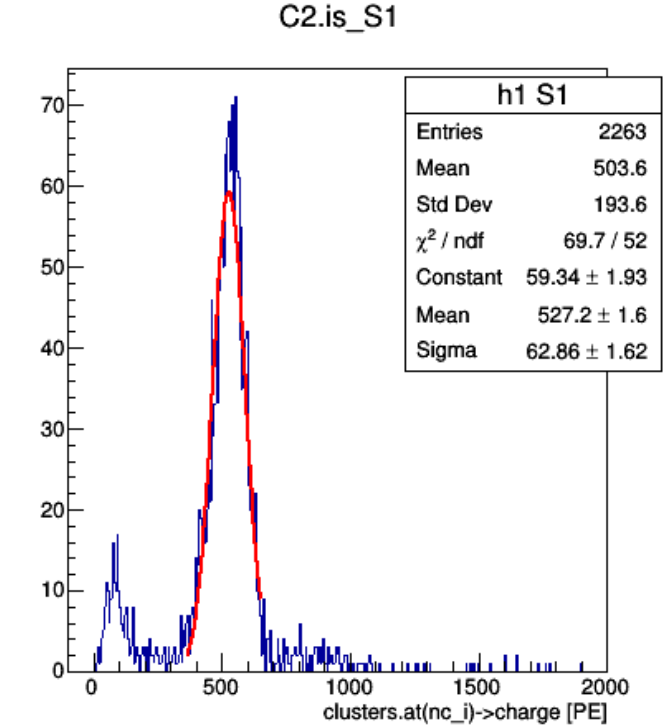




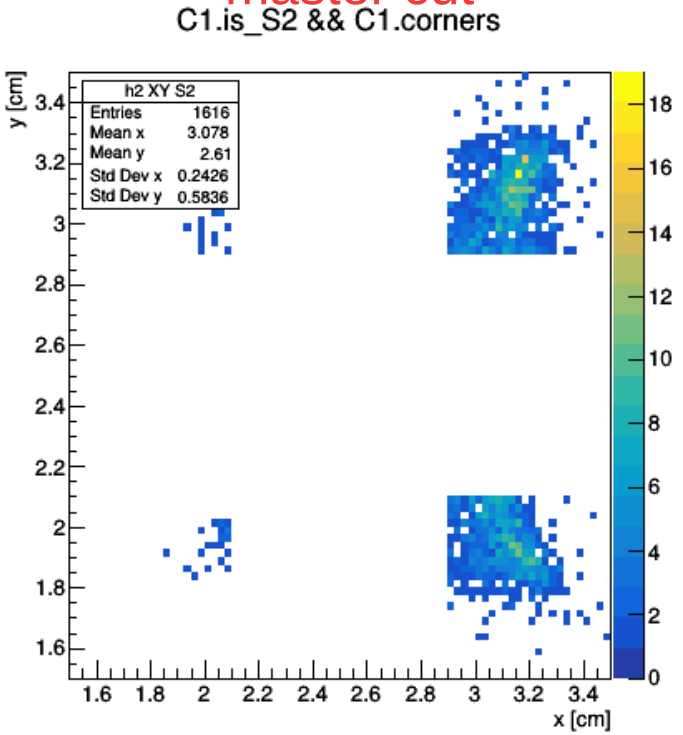
Ph2, Am241, run 537

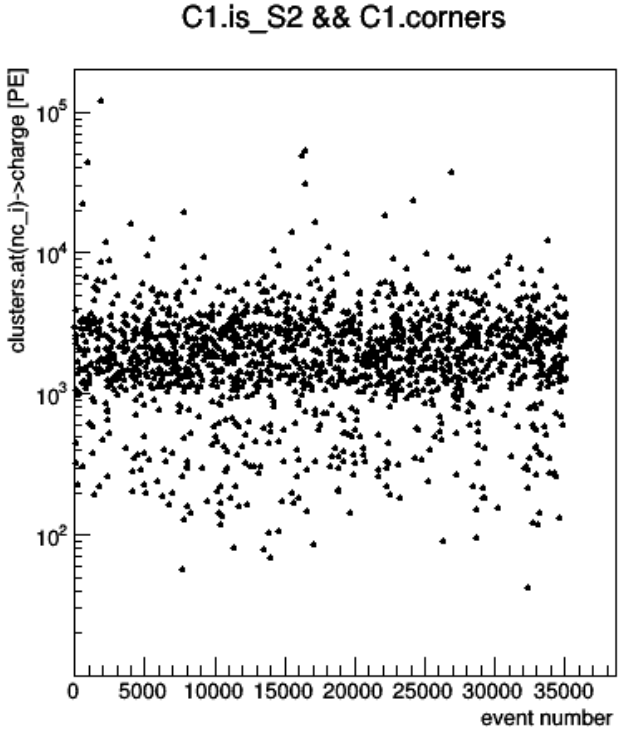


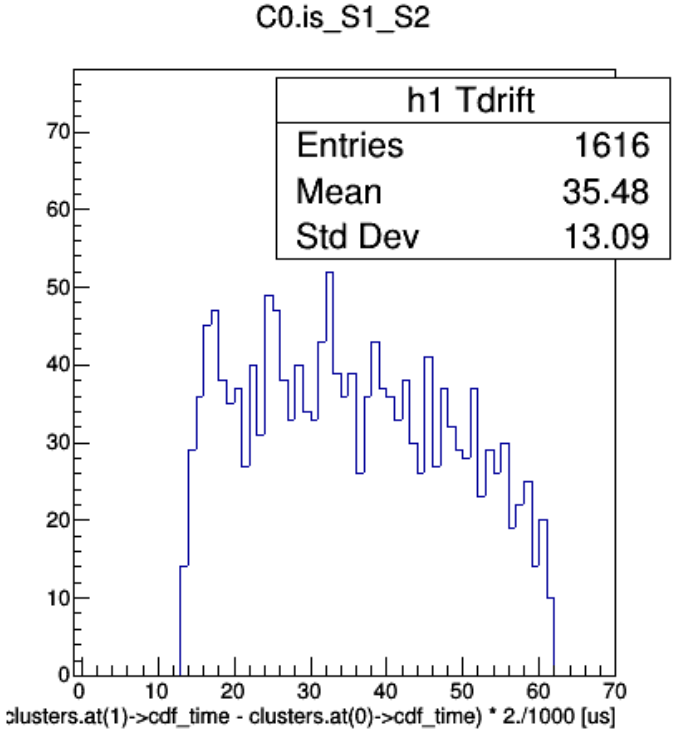




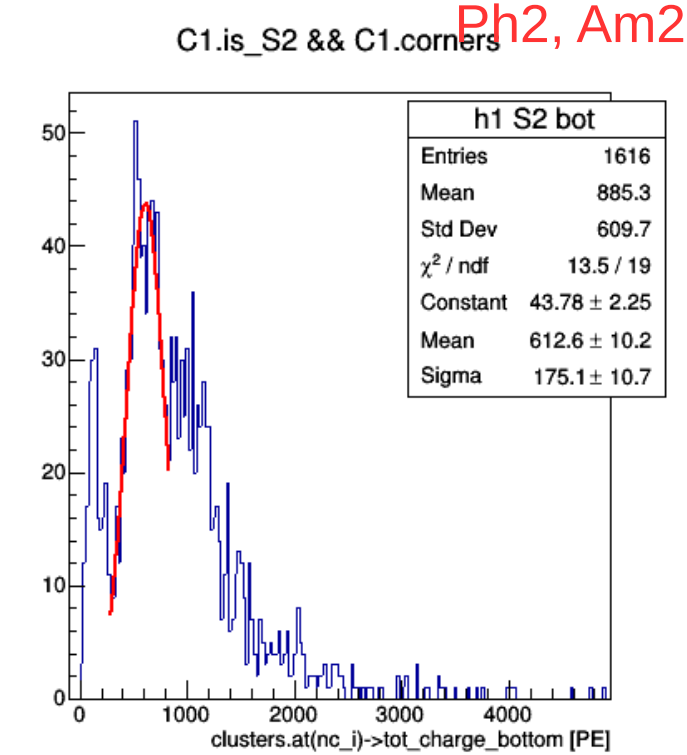
master cut

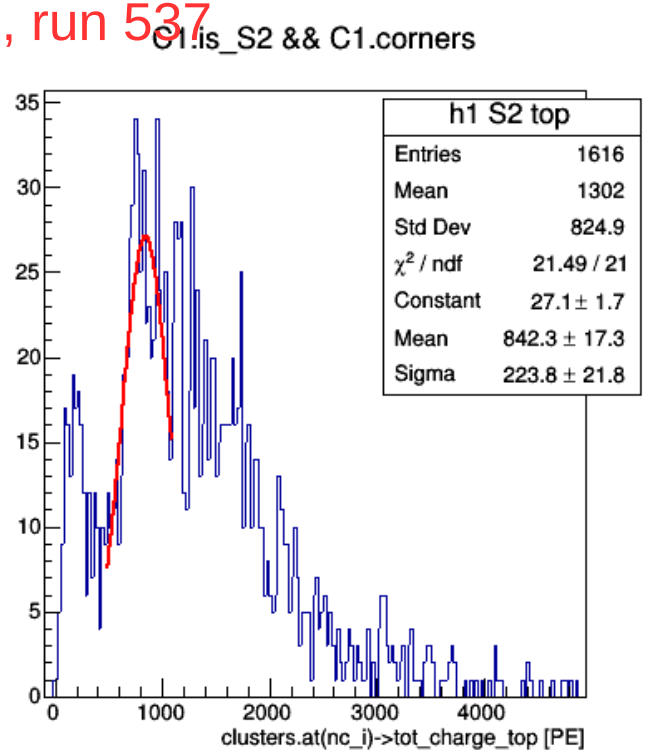


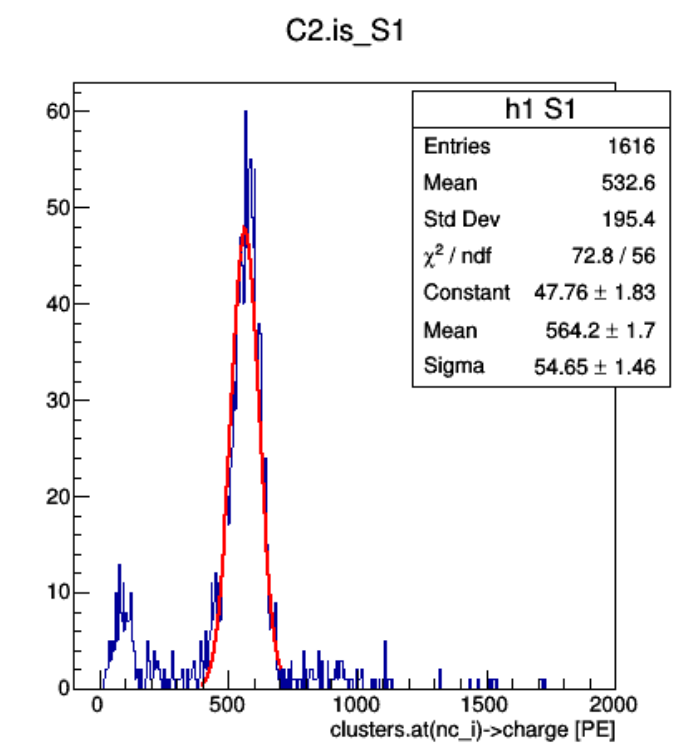




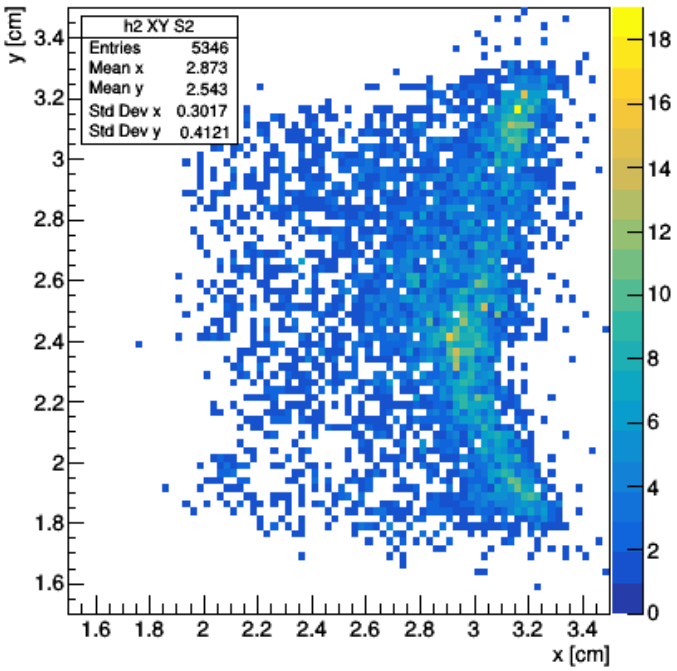
Ph2, Am241, run 537



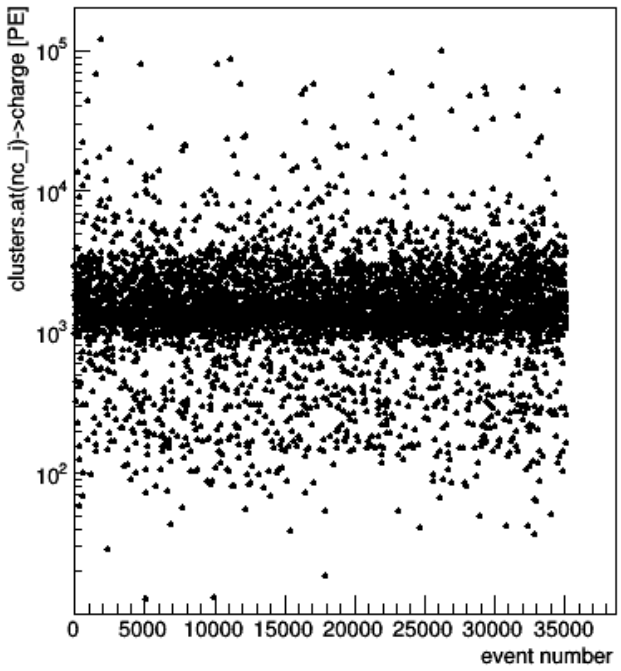




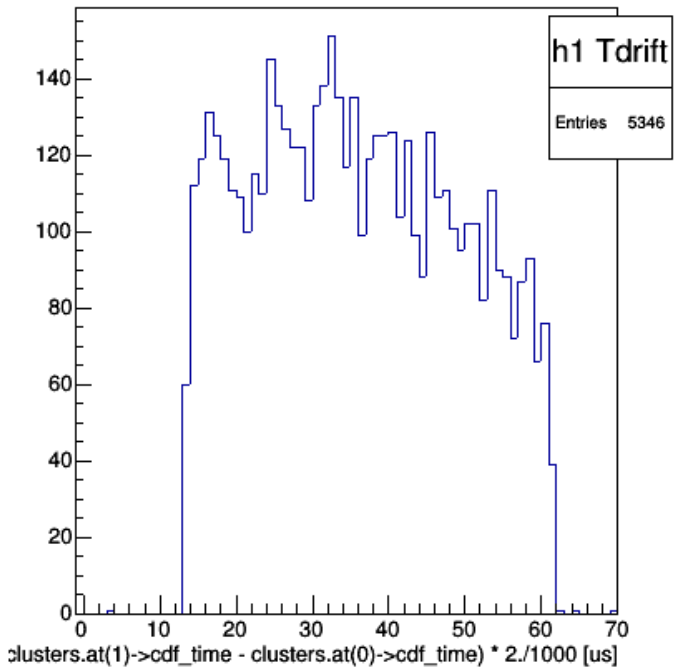
C1.is_S2



C1.is_S2

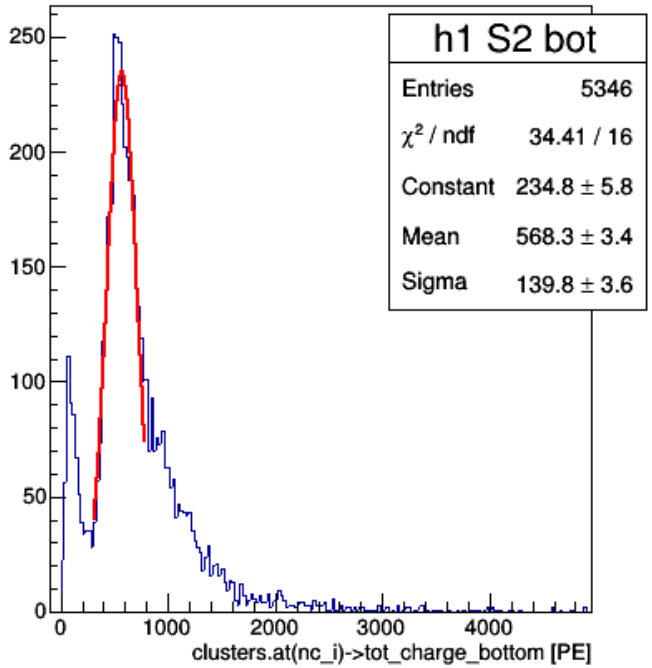


C0.is_S1_S2

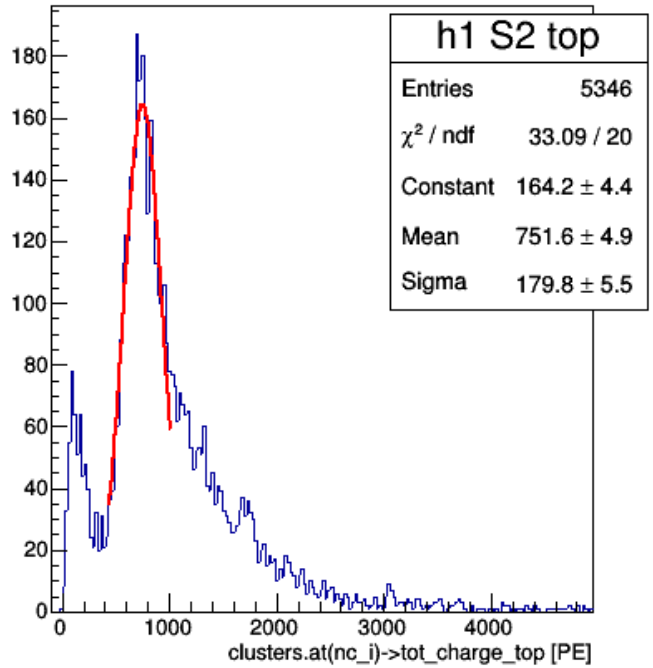


Ph2, Am241, run 537

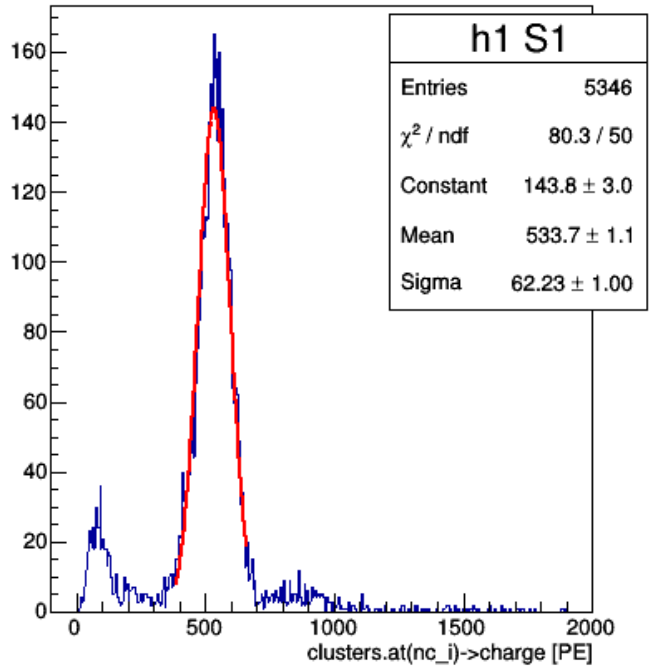
C1.is_S2

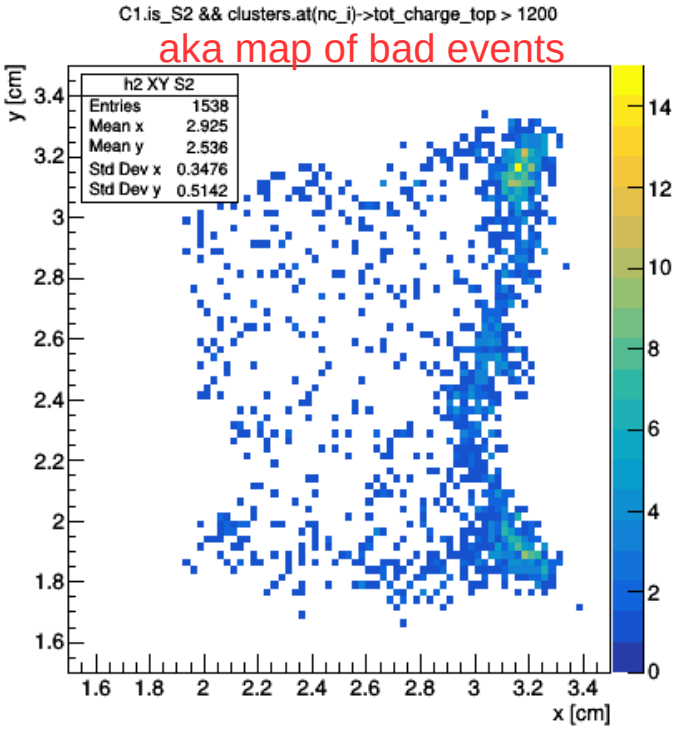


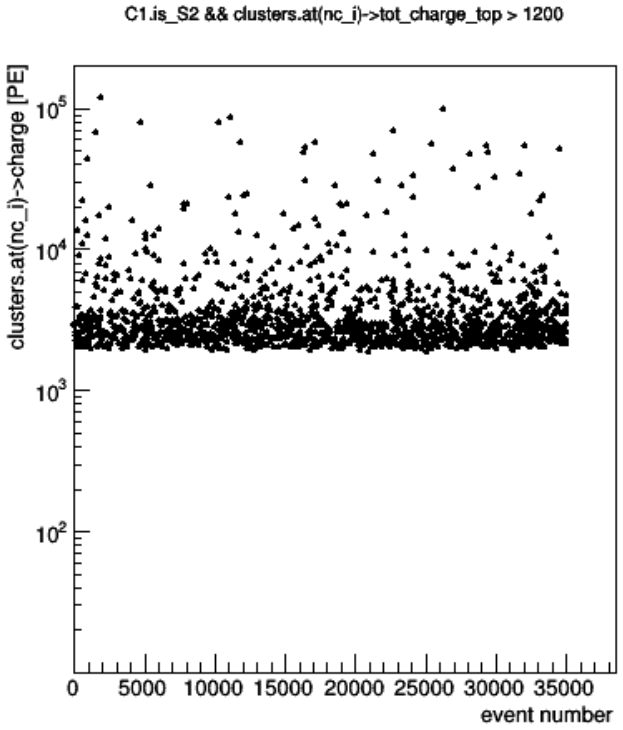
C1.is_S2 master cut

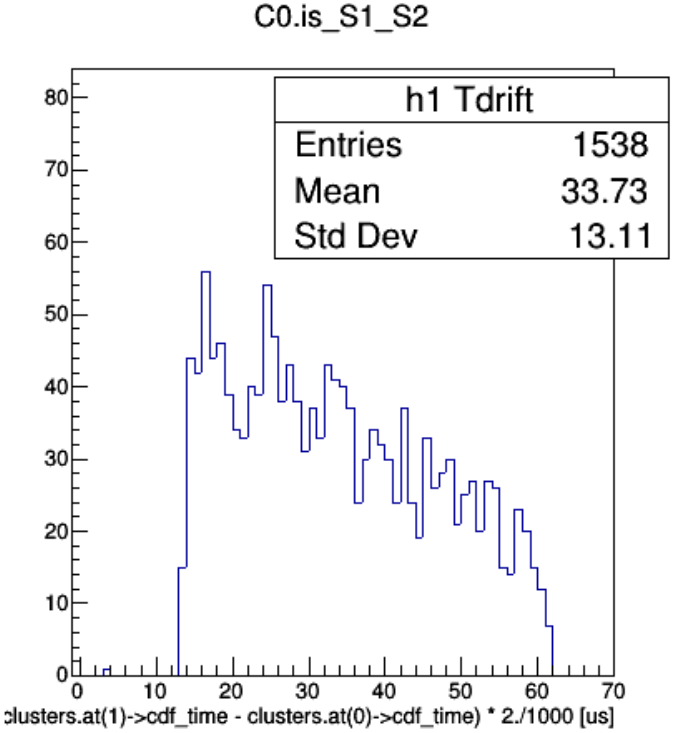


C2.is_S1



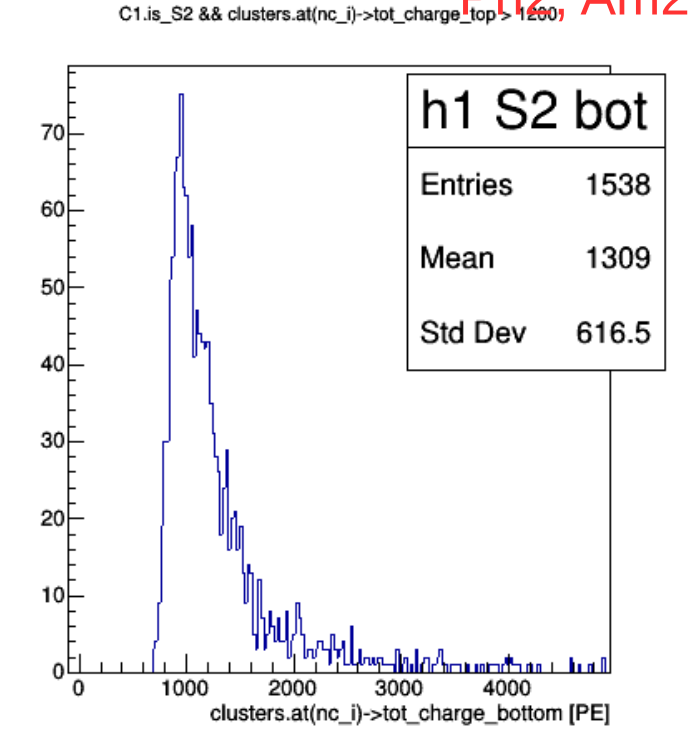


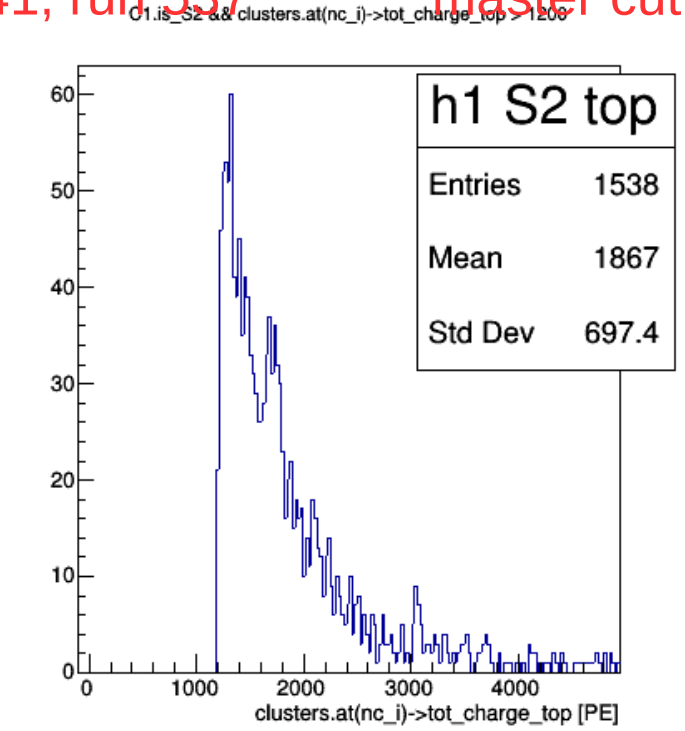


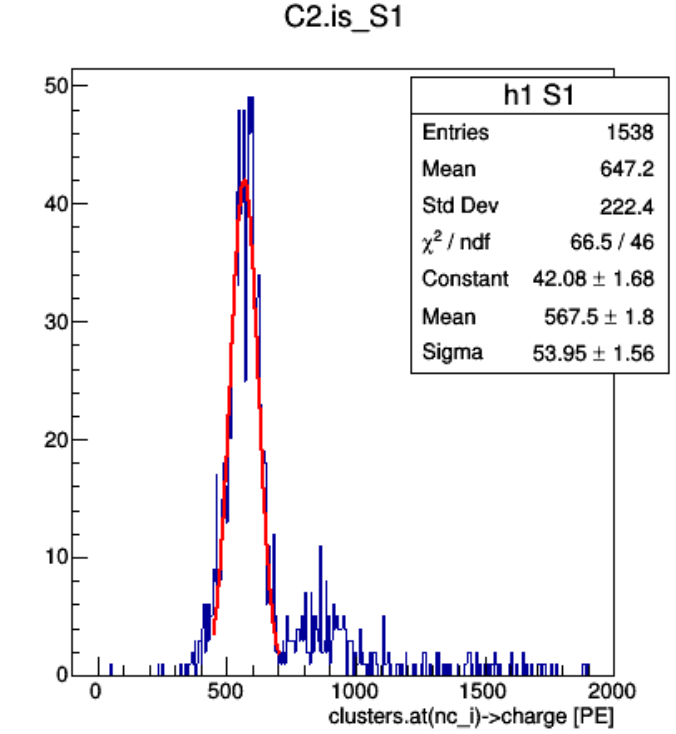


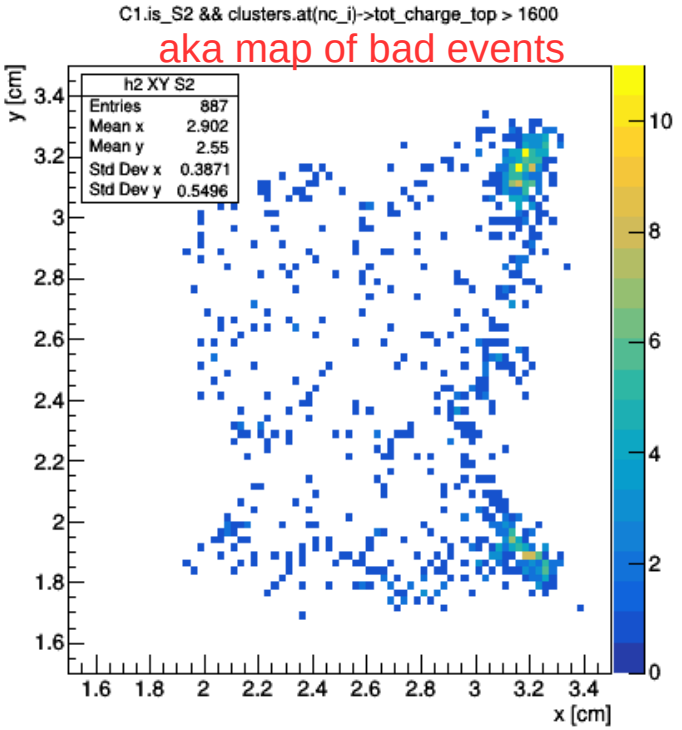
Ph2, Am241, run 537 master cut

tot_charge_top > 1200 [PE]

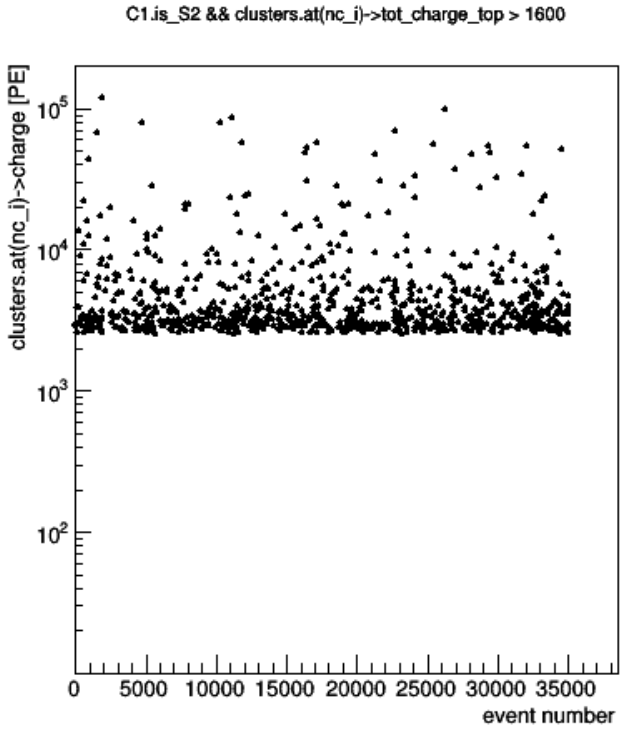


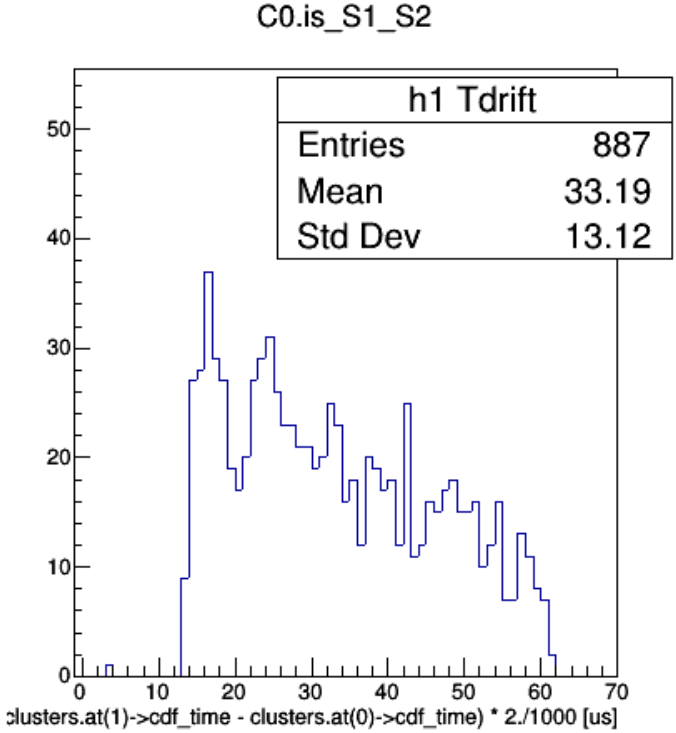






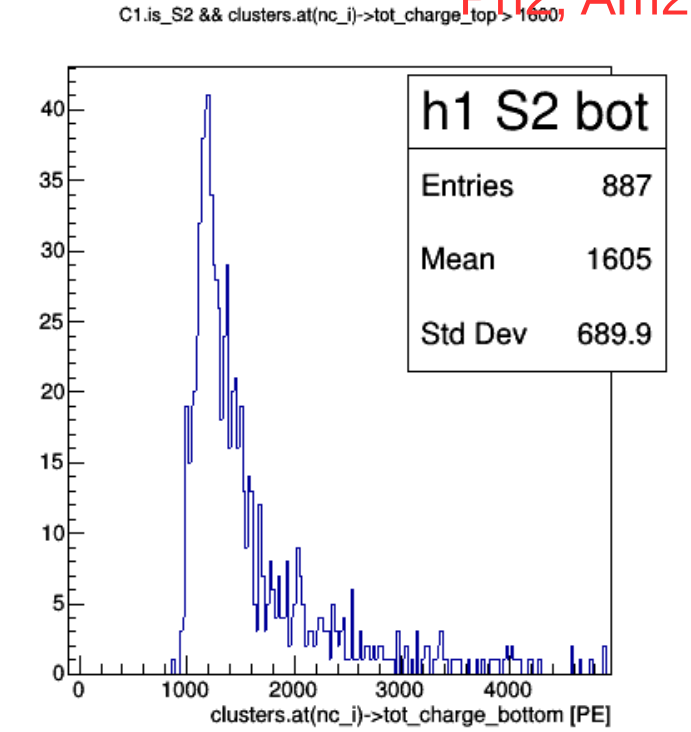
aka map of bad events

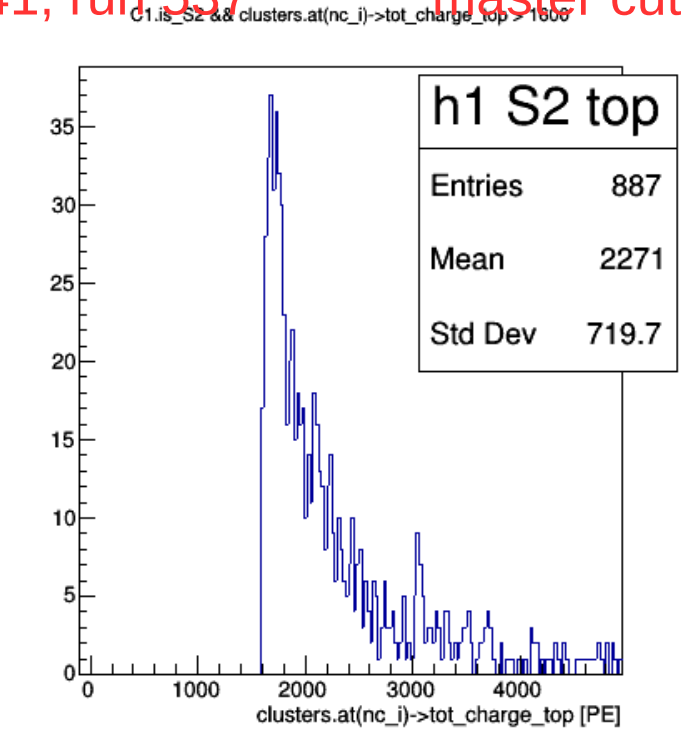


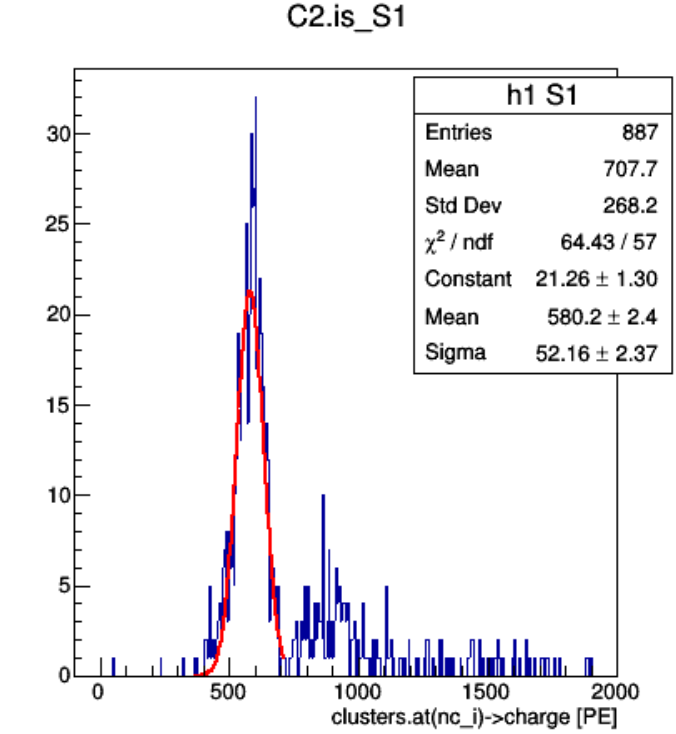


Ph2, Am241, run 537 master cut

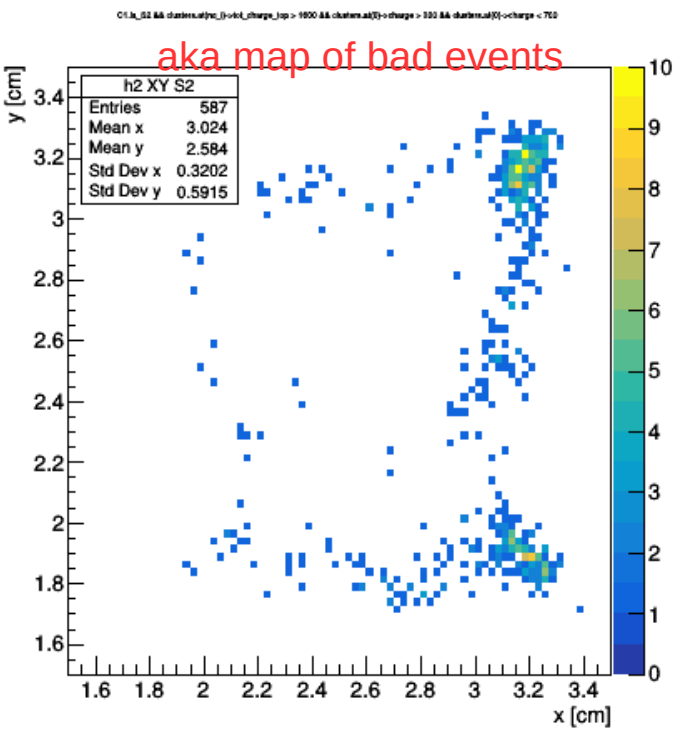
tot_charge_top > 1600 [PE]

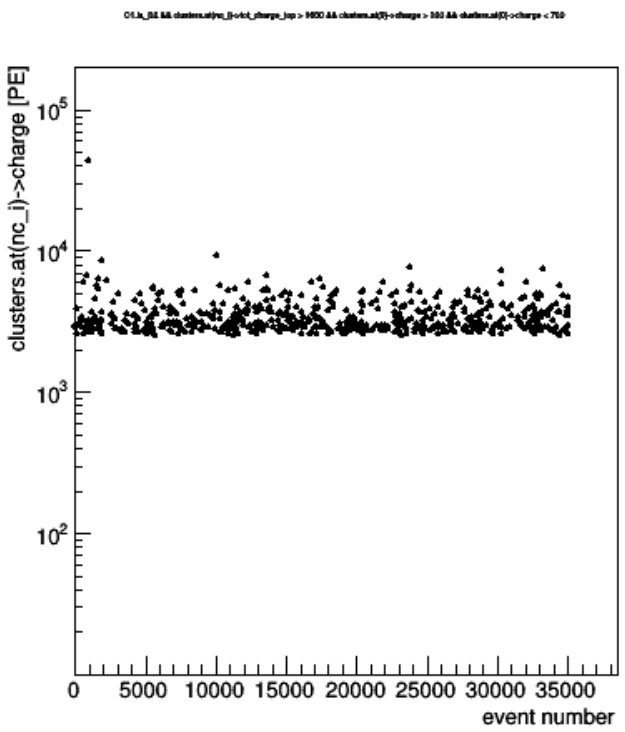


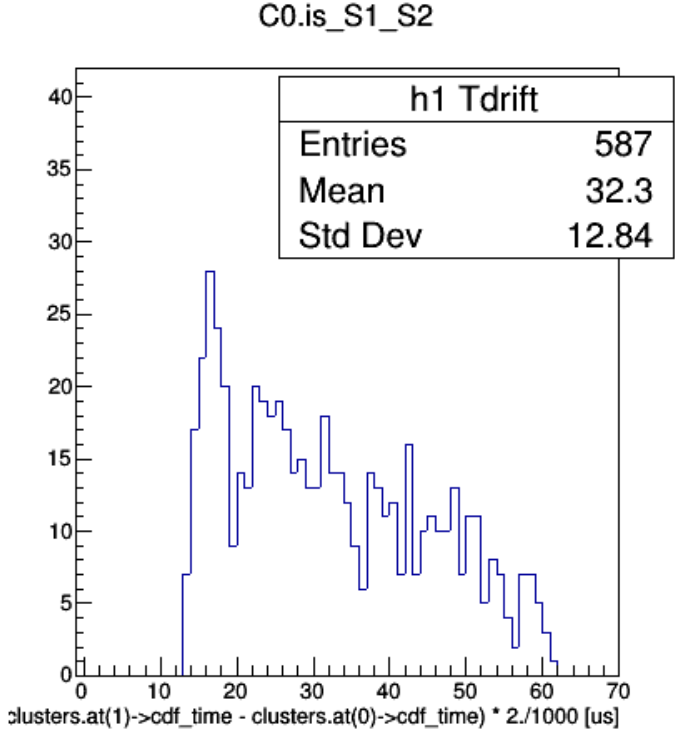




aka map of bad events



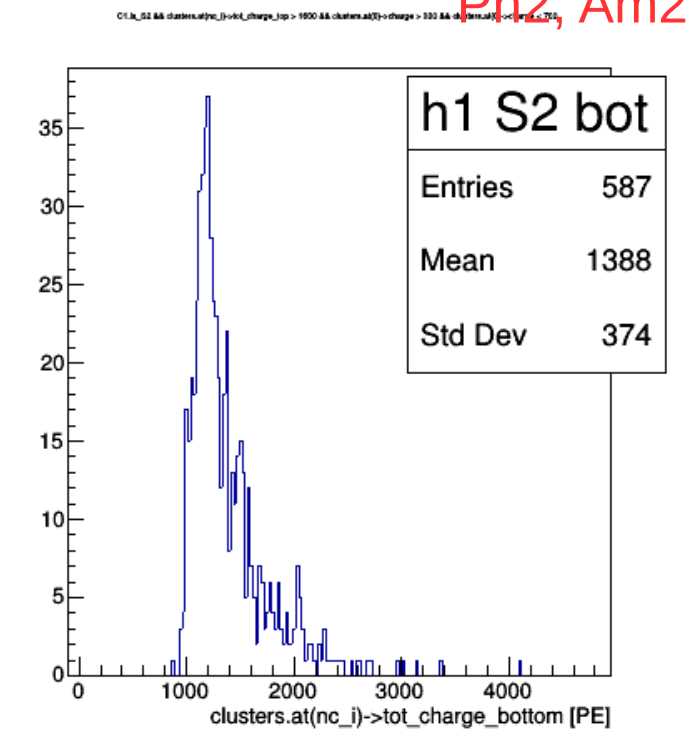


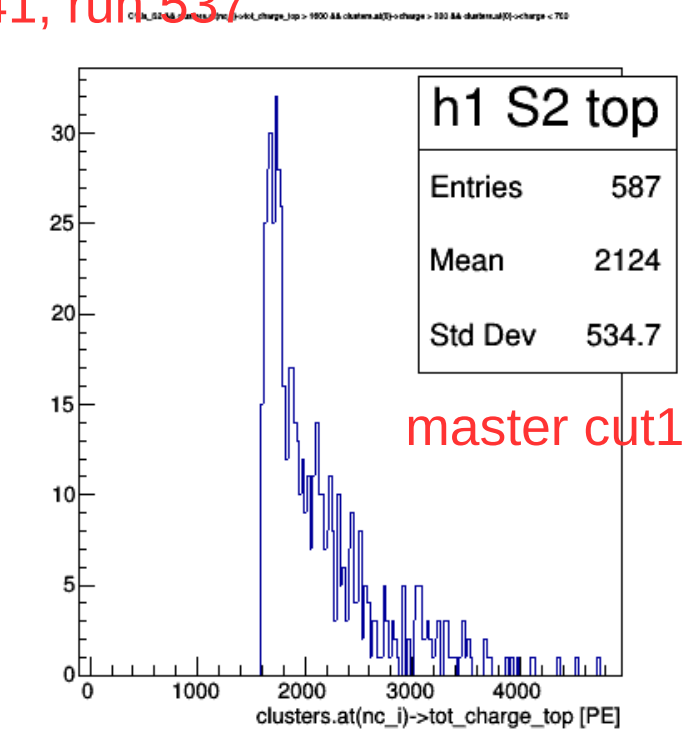


Ph2, Am241, run 537

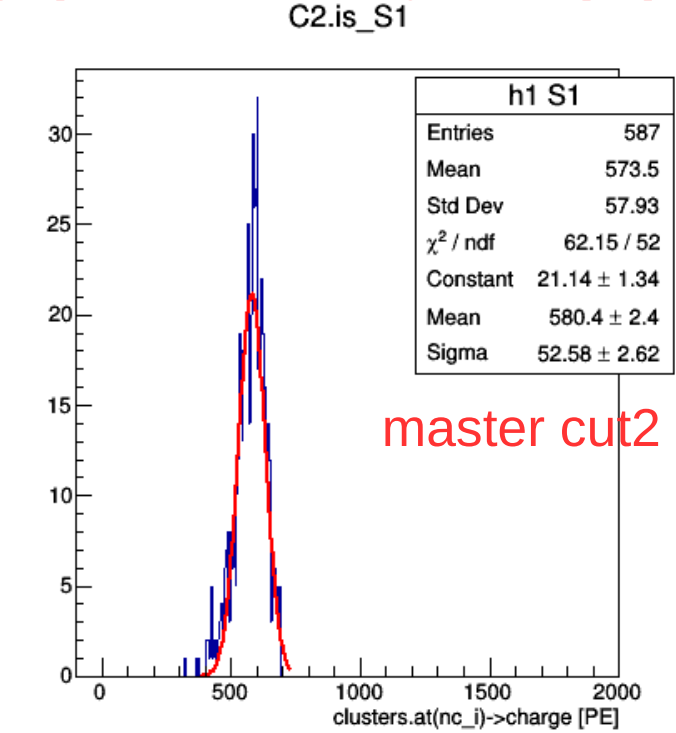
tot_charge_top > 1600 [PE]

300 < S1 charge < 700 [PE]



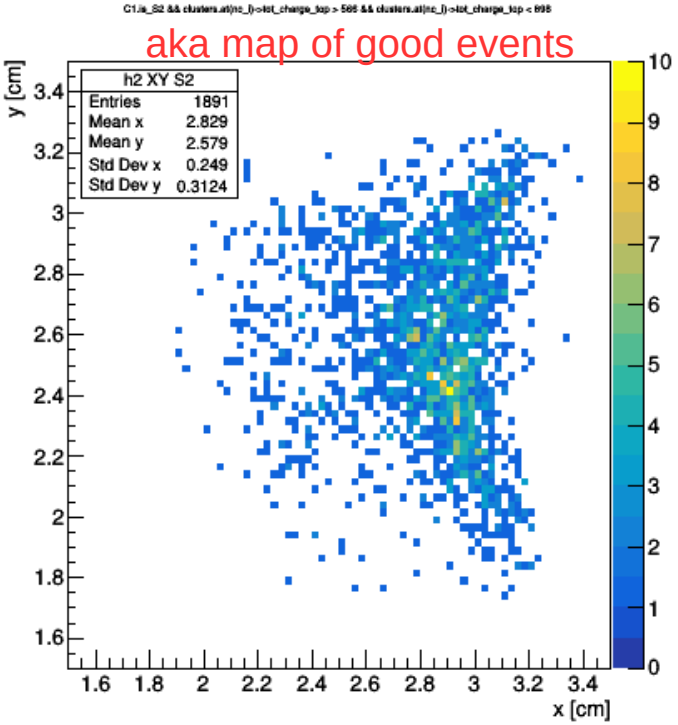


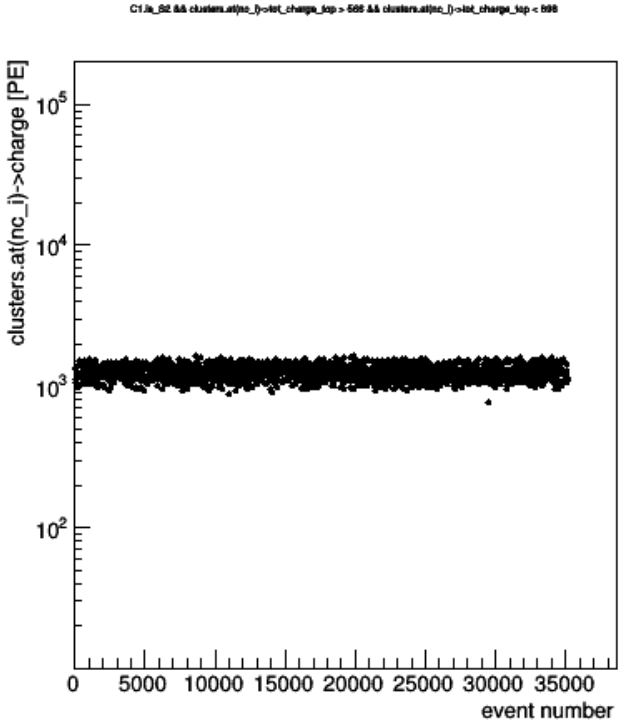
master cut1



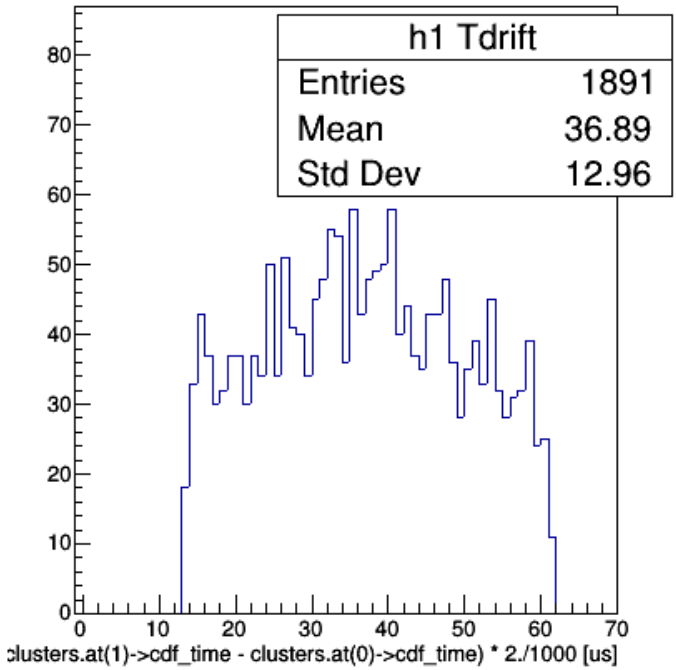
master cut2

aka map of good events



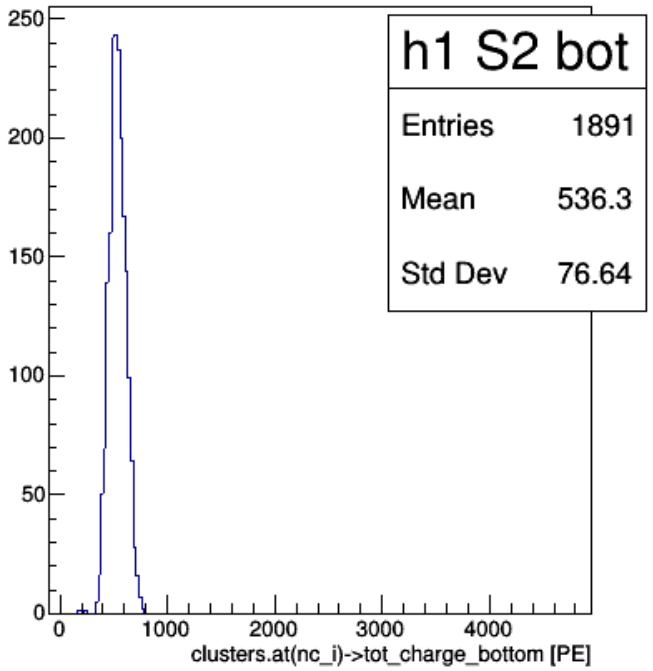


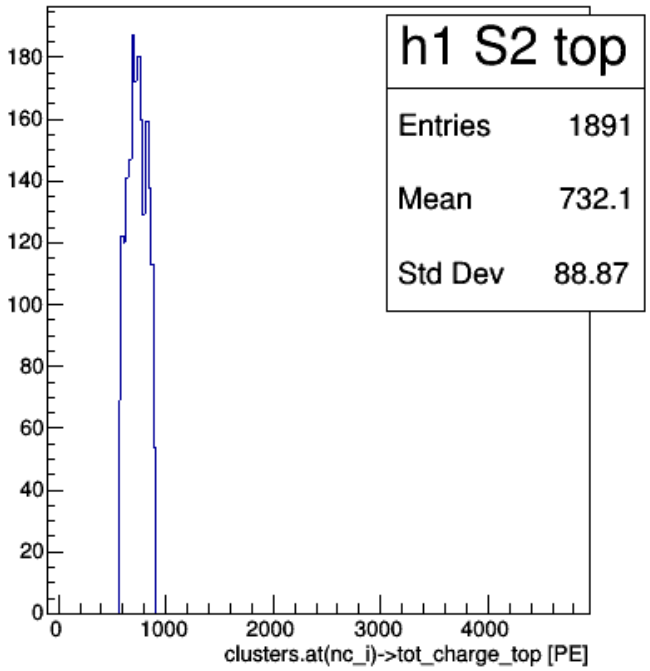
C0.is_S1_S2



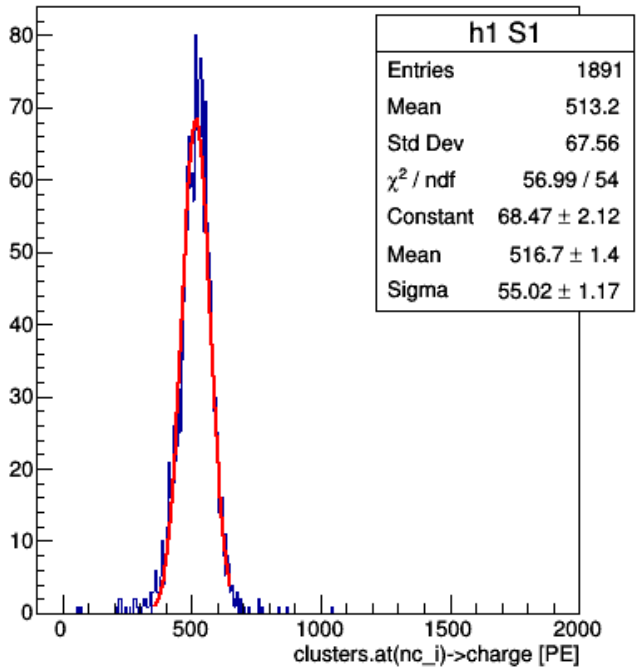
Ph2, Am241, run 537 master cut

566 < tot_charge_top > 898 [PE]

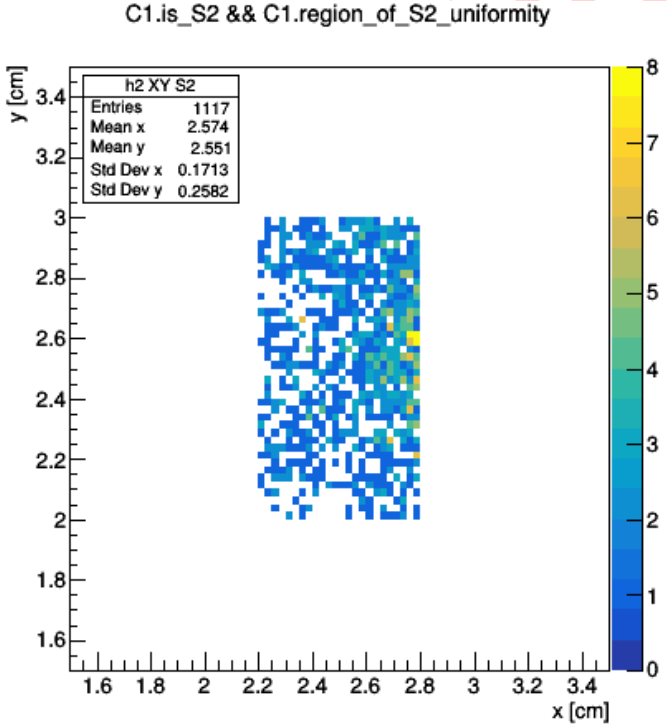


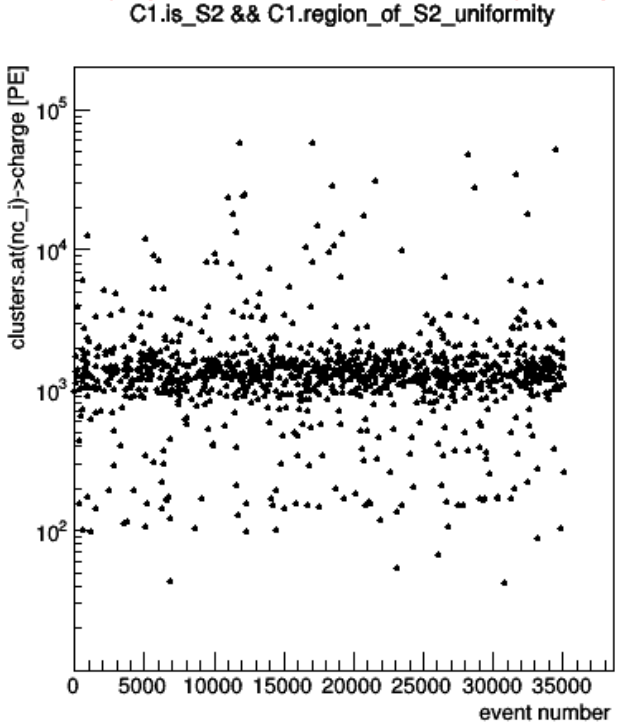


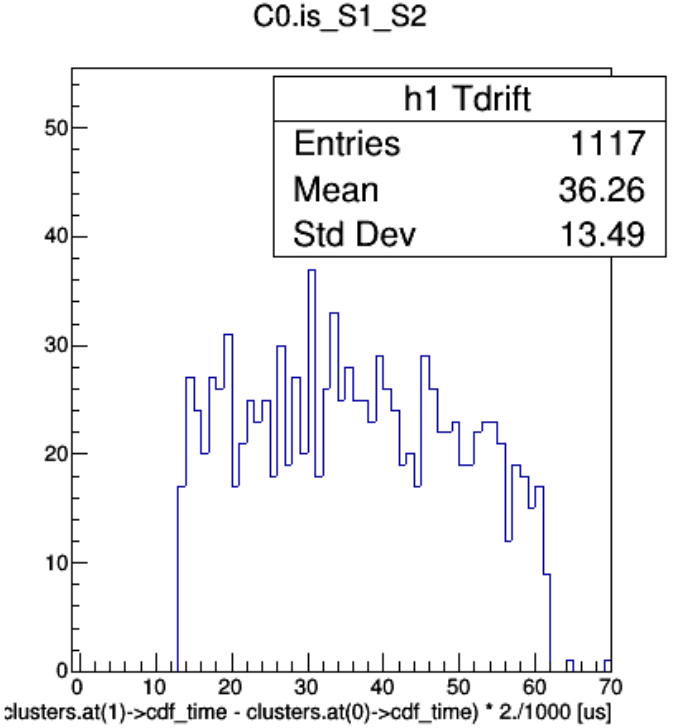
C2.is_S1



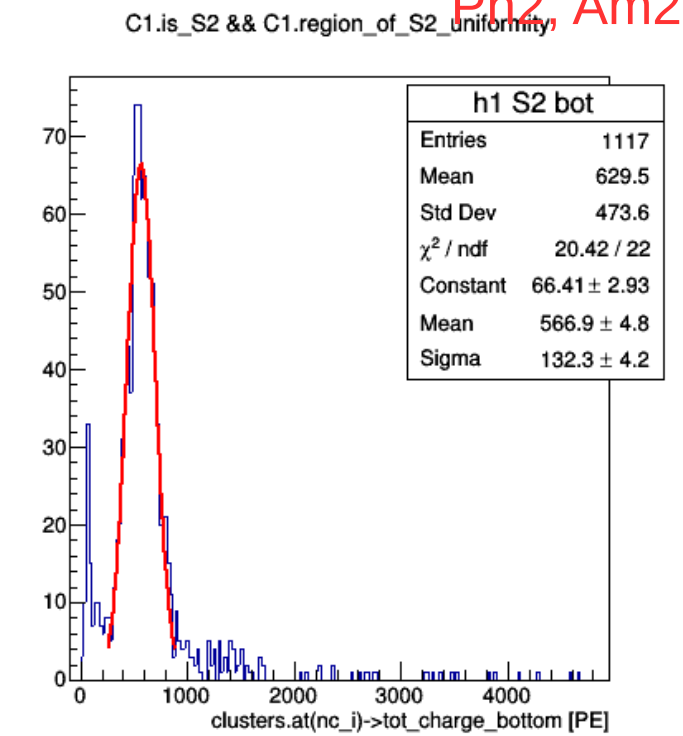
So, I created new cut: region_of_S2_uniformity (2.2 < x < 2.8; 2 < y < 3)

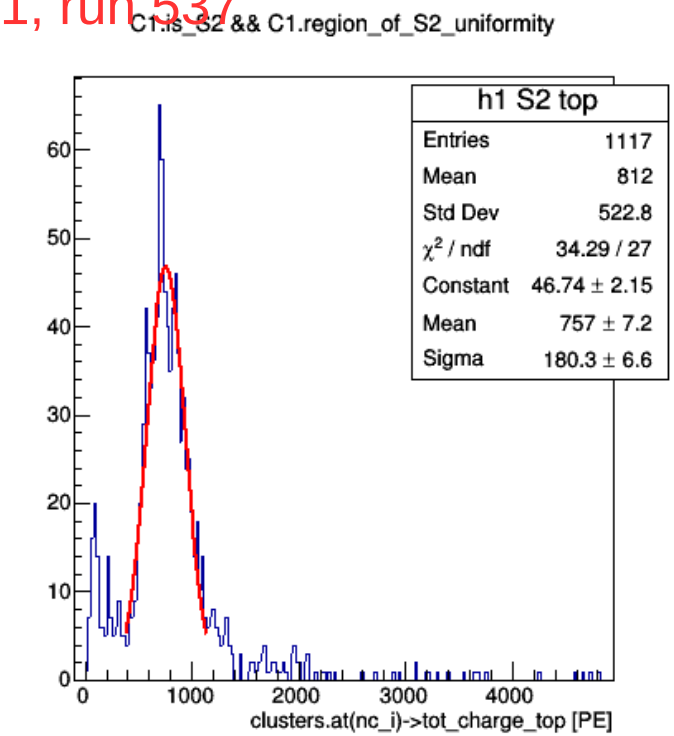


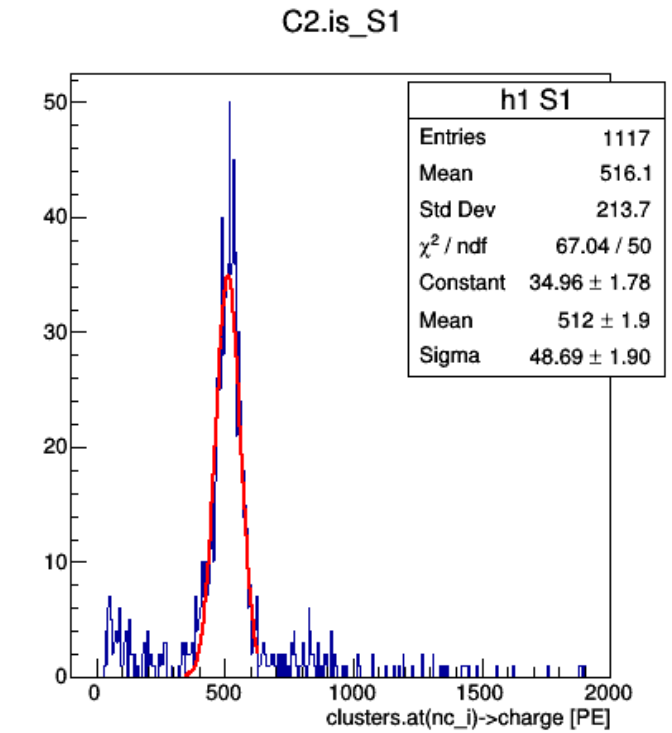


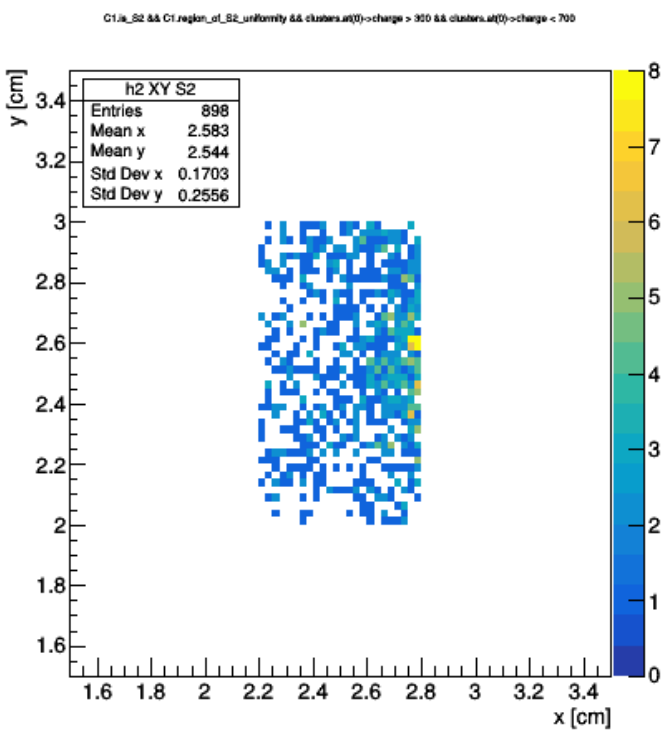


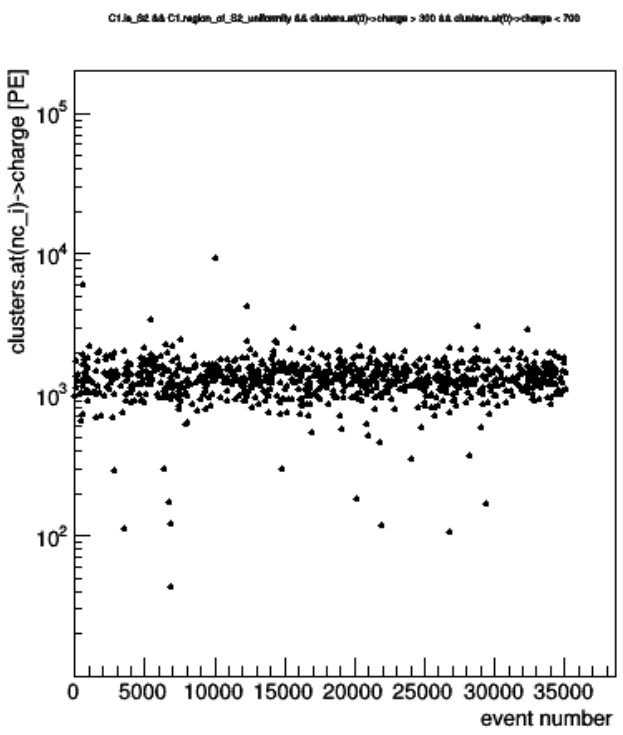
Ph2, Am241, run 537

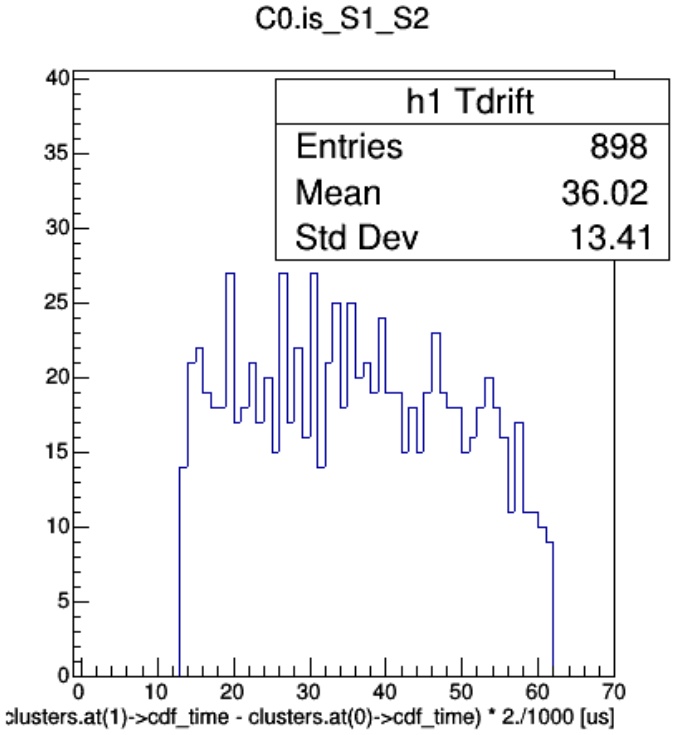




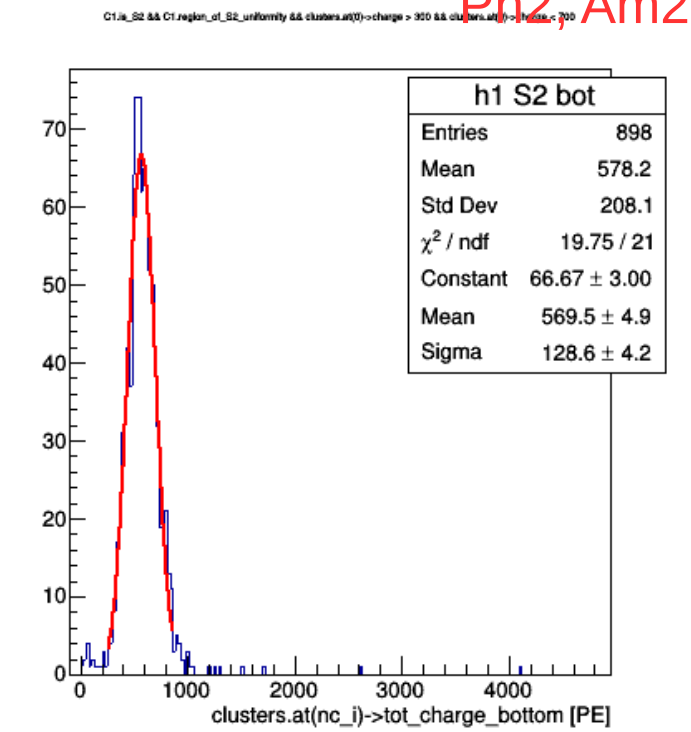


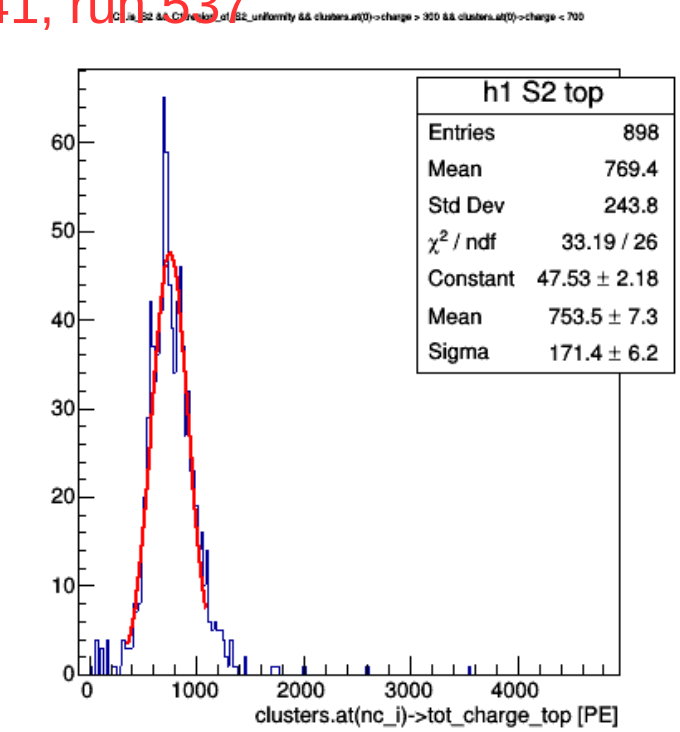


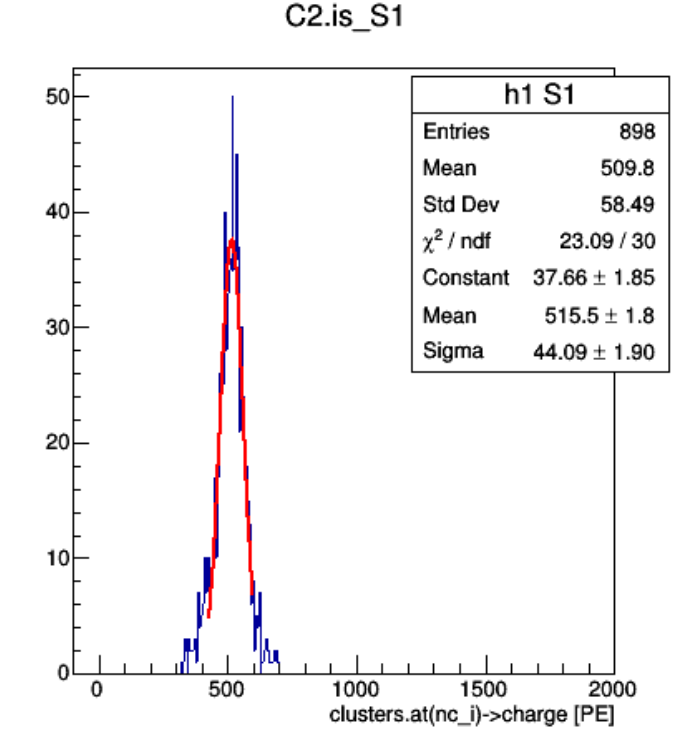


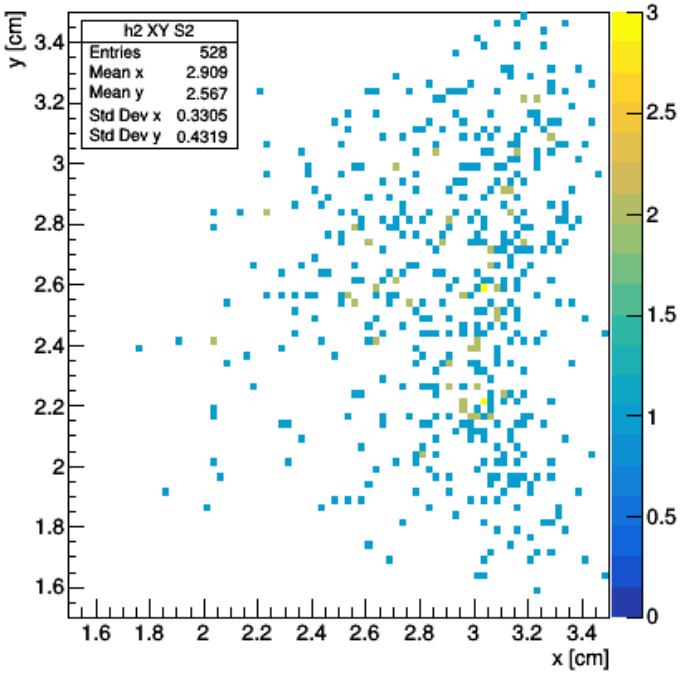


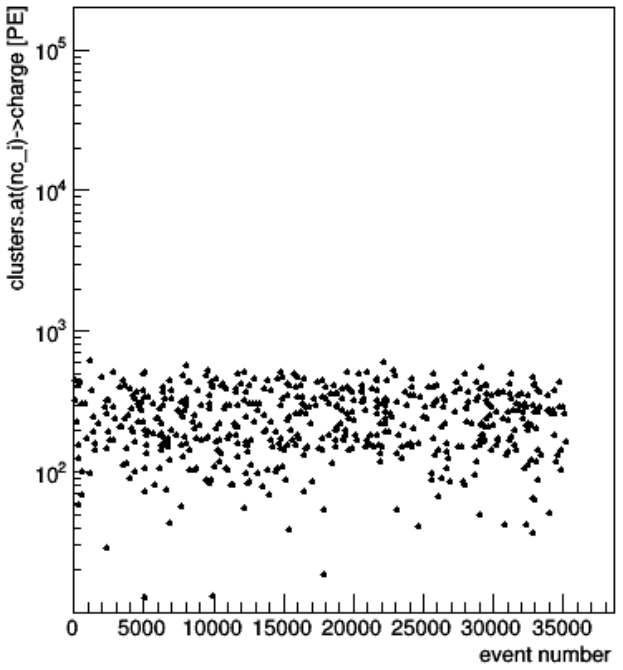
Ph2, Am241, run 537 && region_of_S2_uniformity && 300 < S1_charge < 700

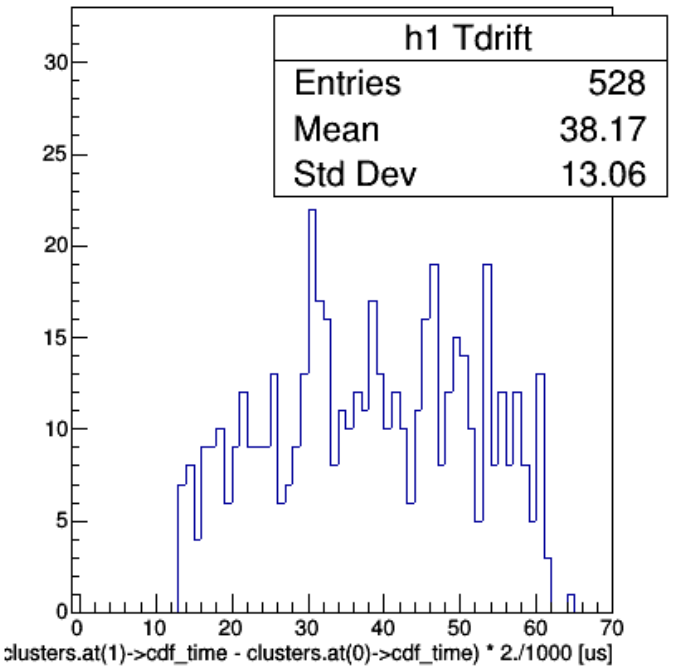






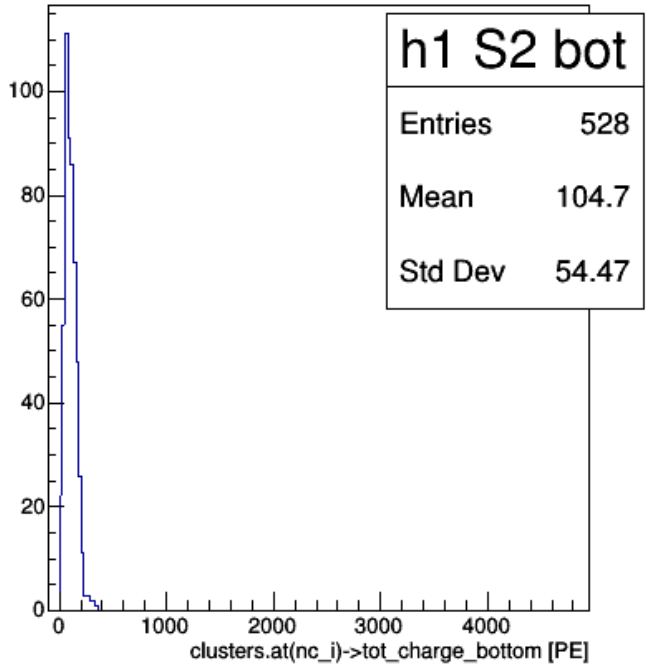


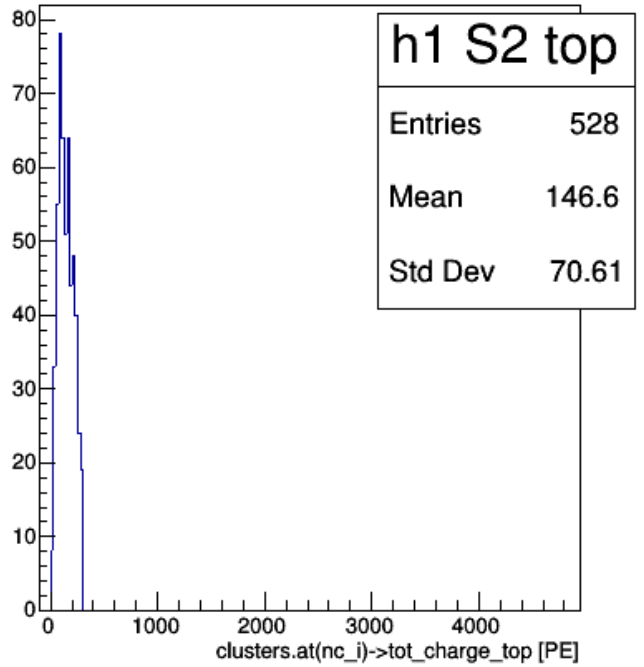


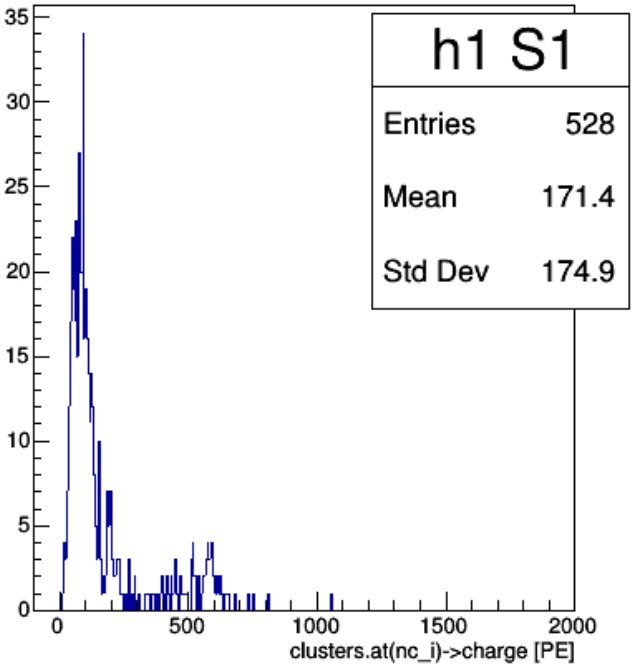


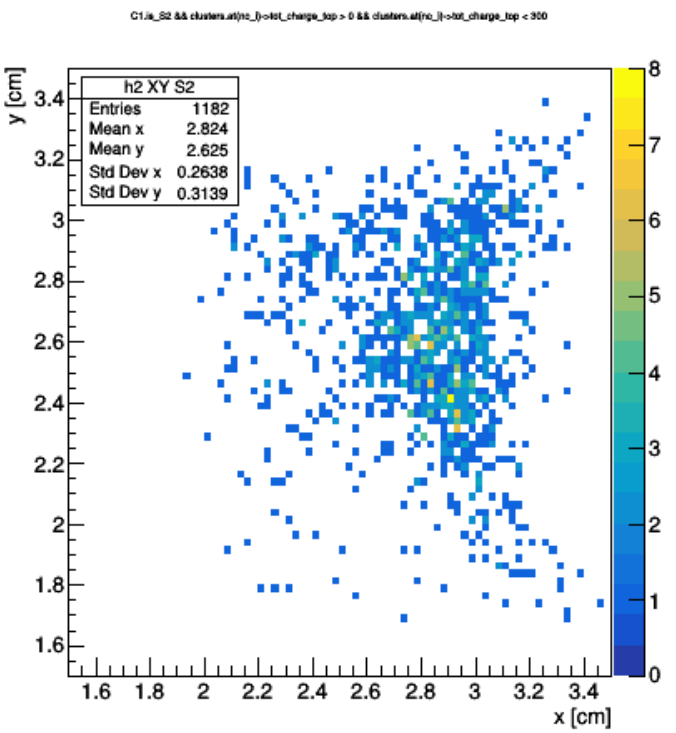
Ph2, Am241, run 537 master cut

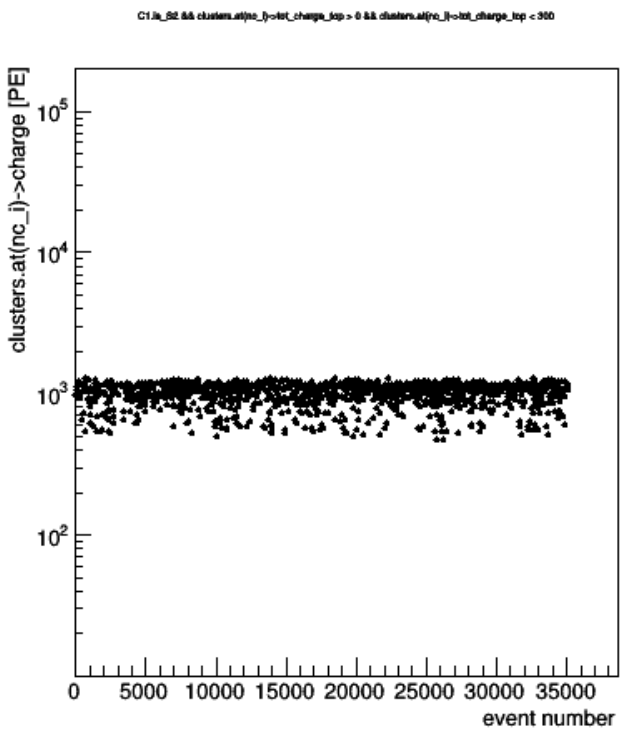
0 < tot_charge_top < 300 [PE]

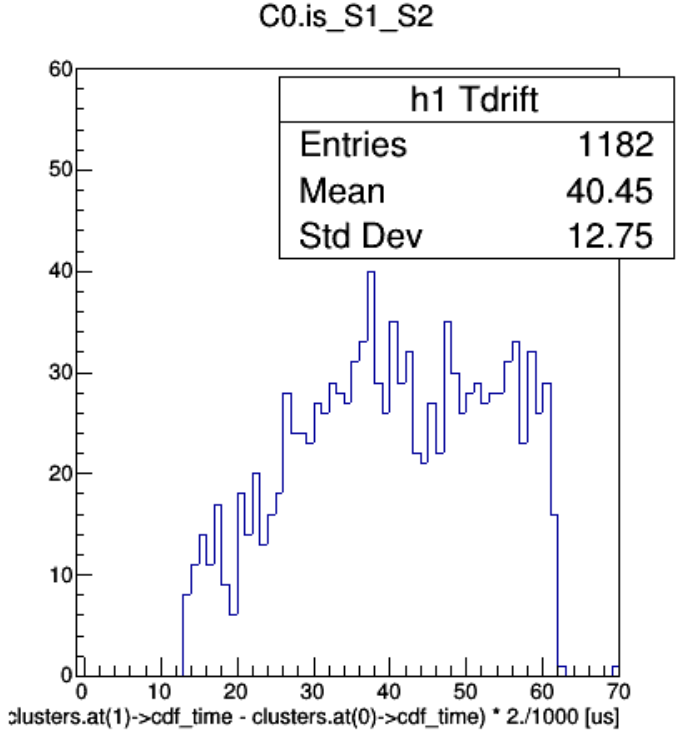






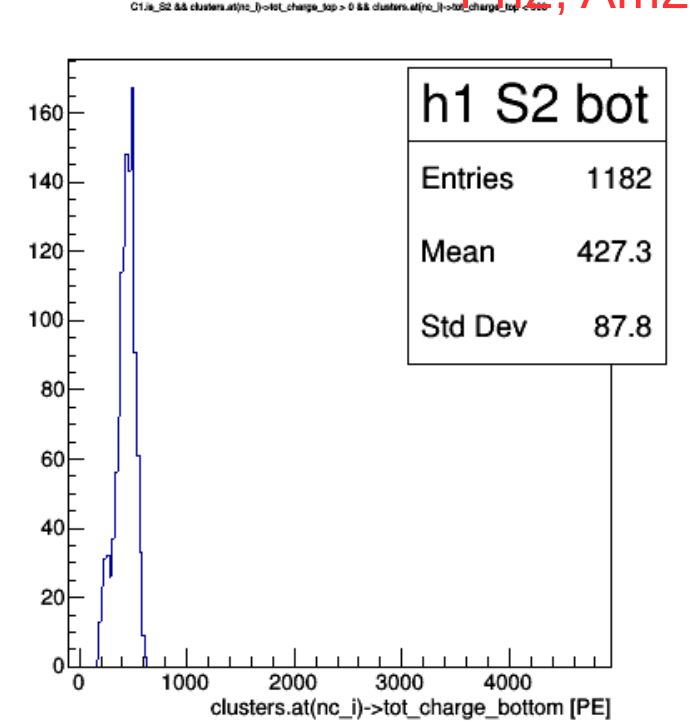


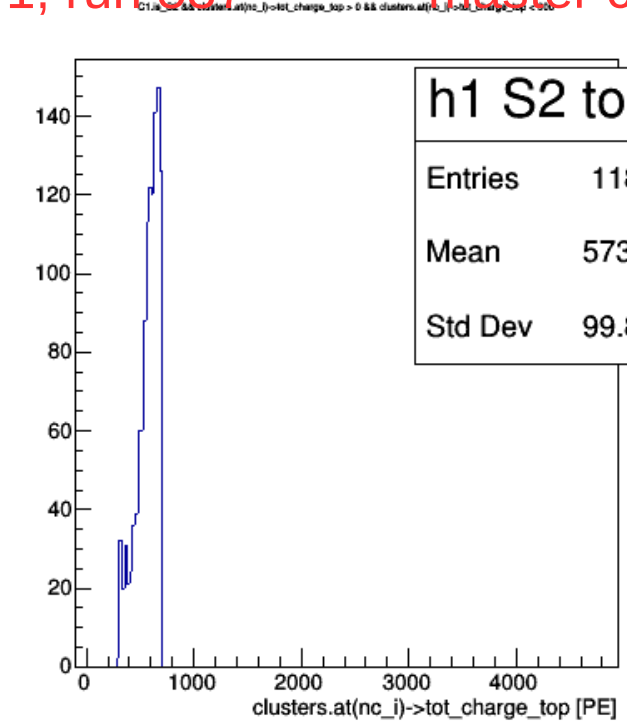


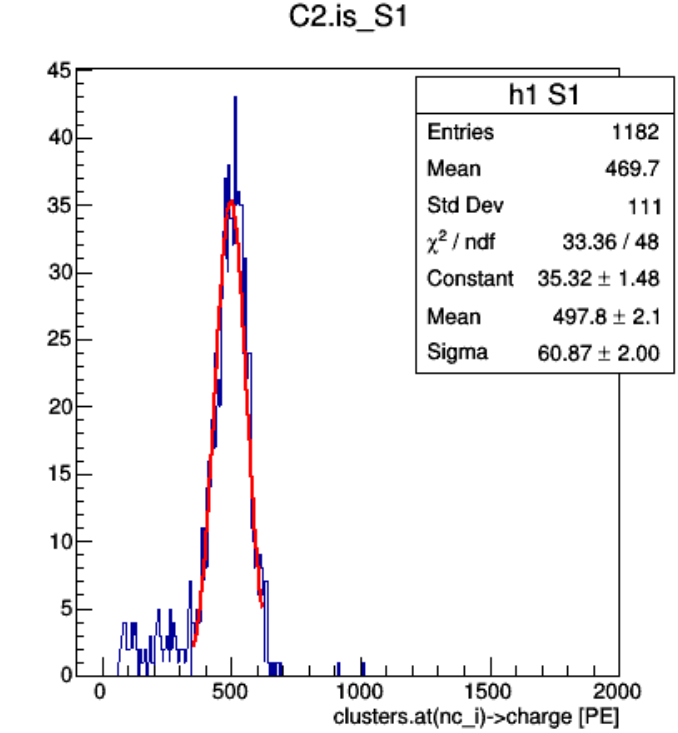


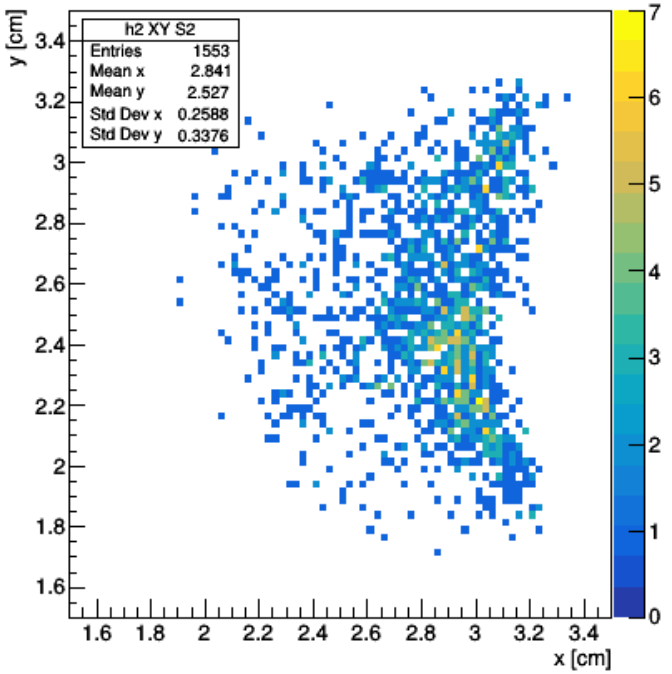
Ph2, Am241, run 537 master cut

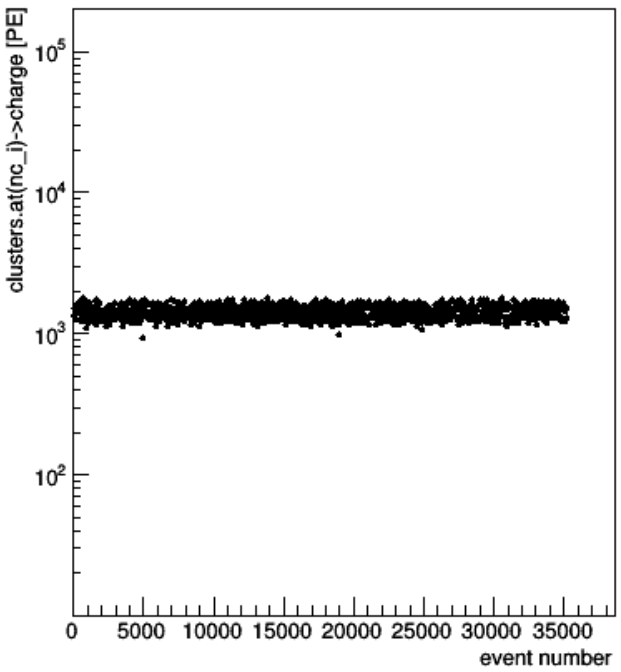
300 < tot_charge_top < 700 [PE]

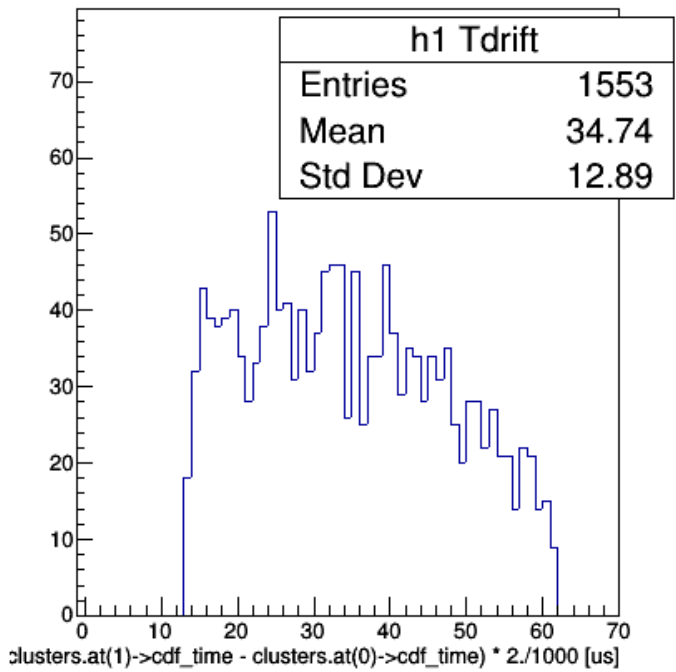






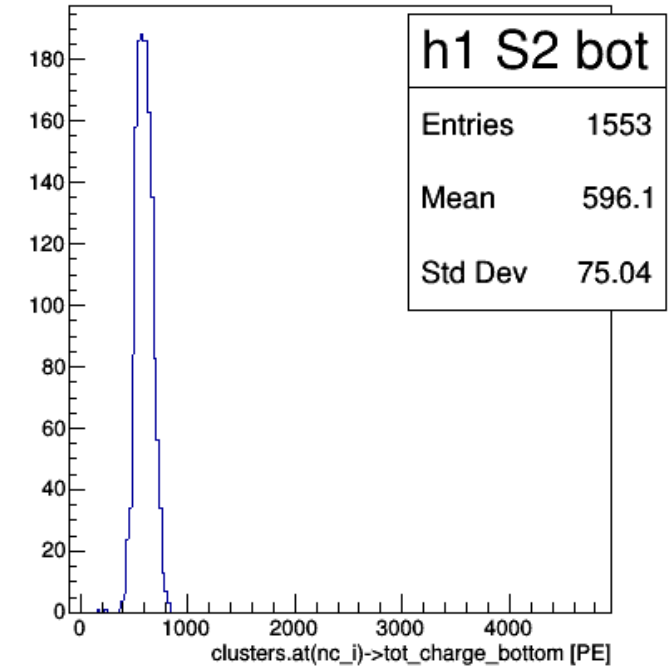


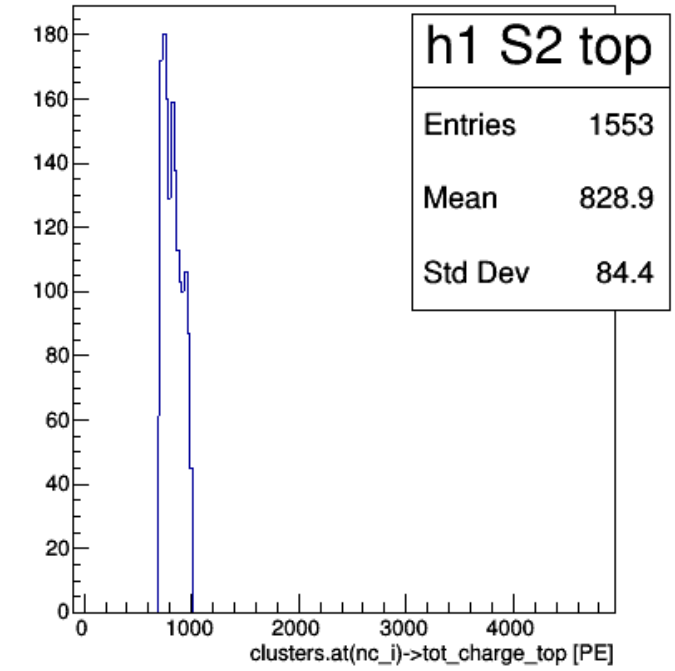


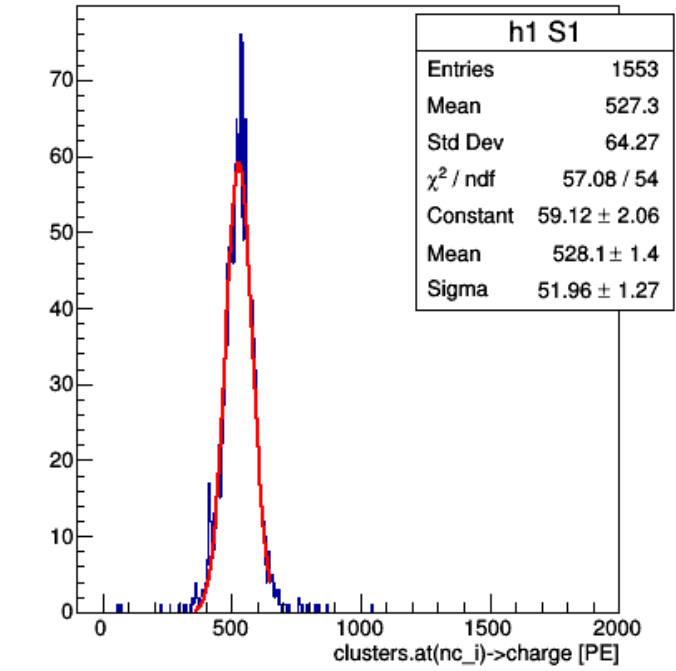


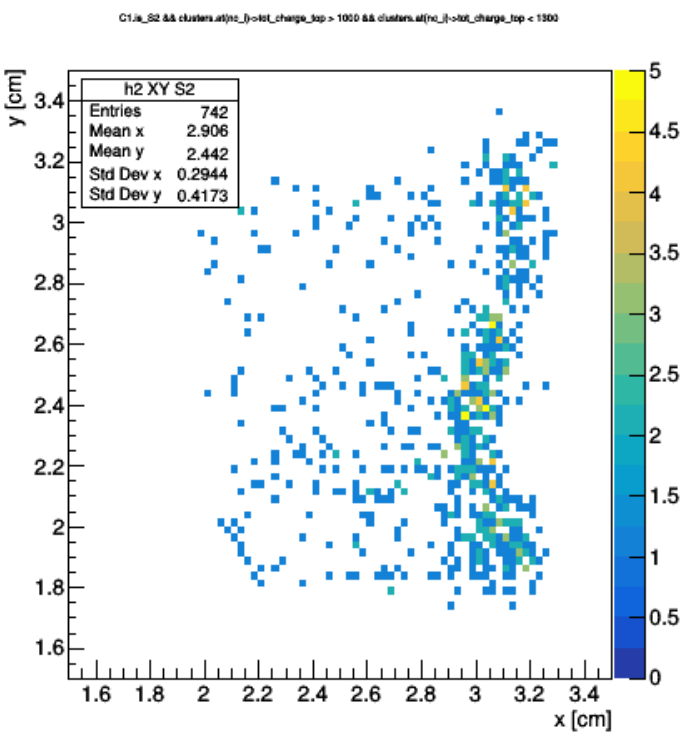
Ph2, Am241, run 537 master cut

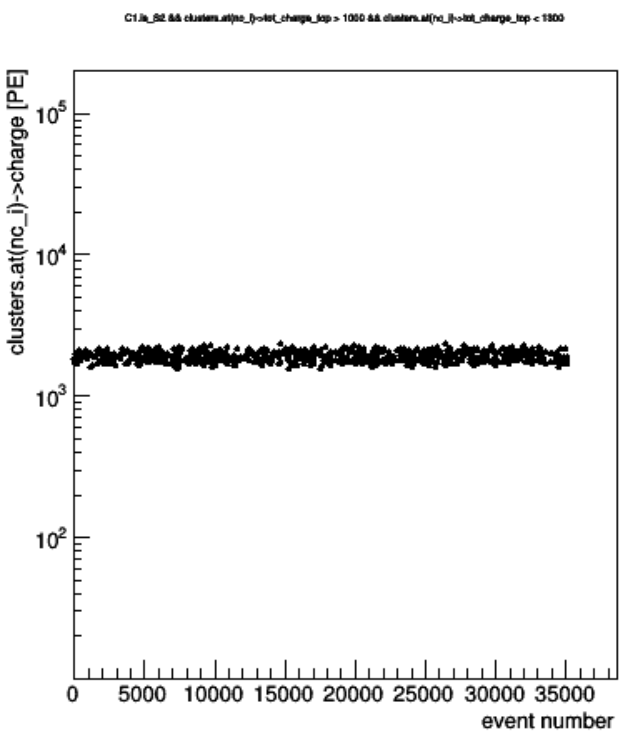
700 < tot_charge_top < 1000 [PE]

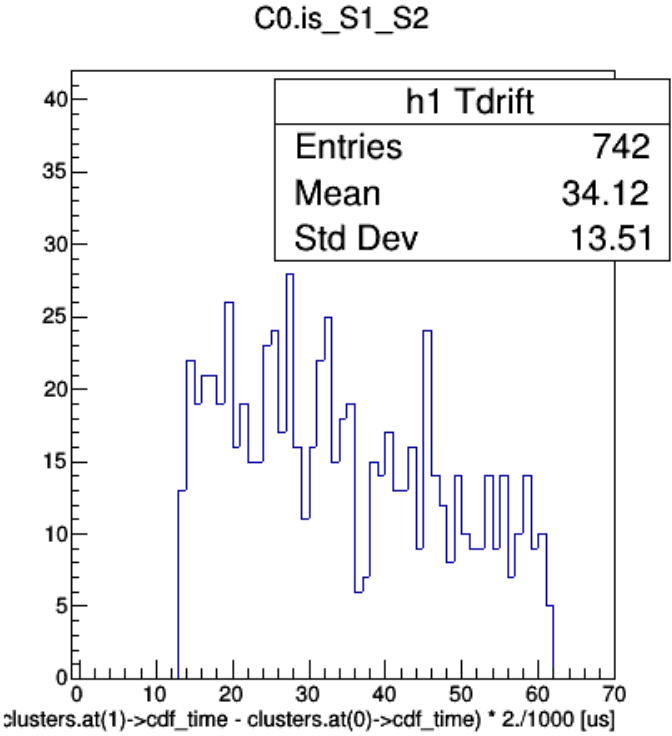






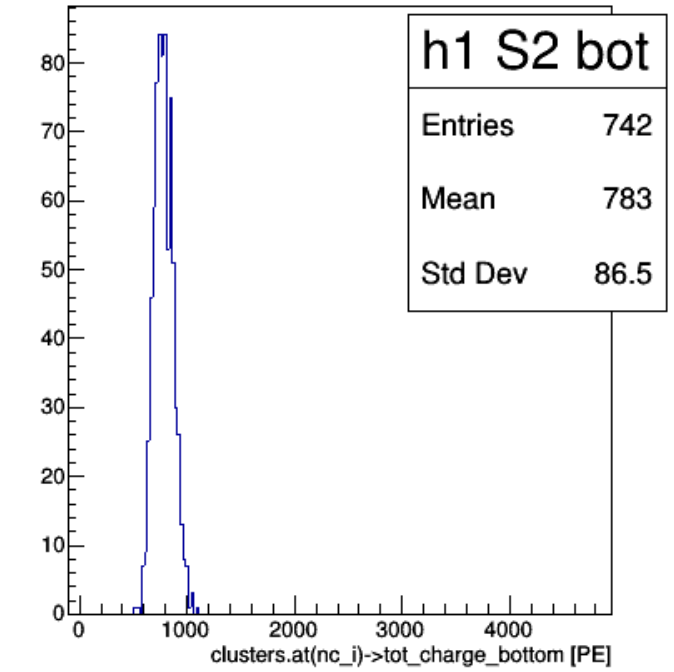


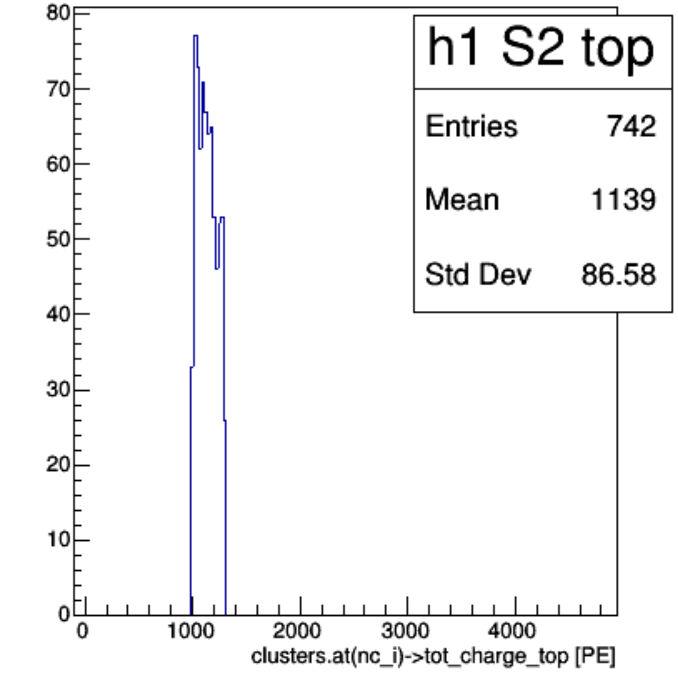


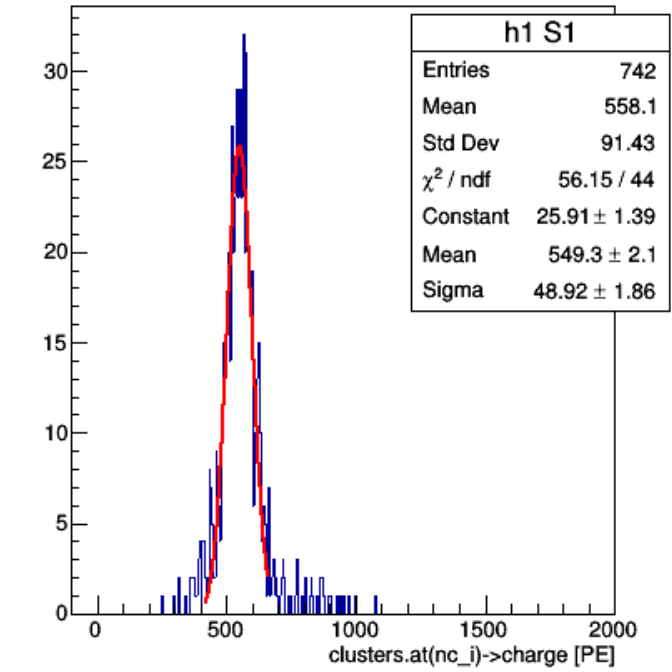


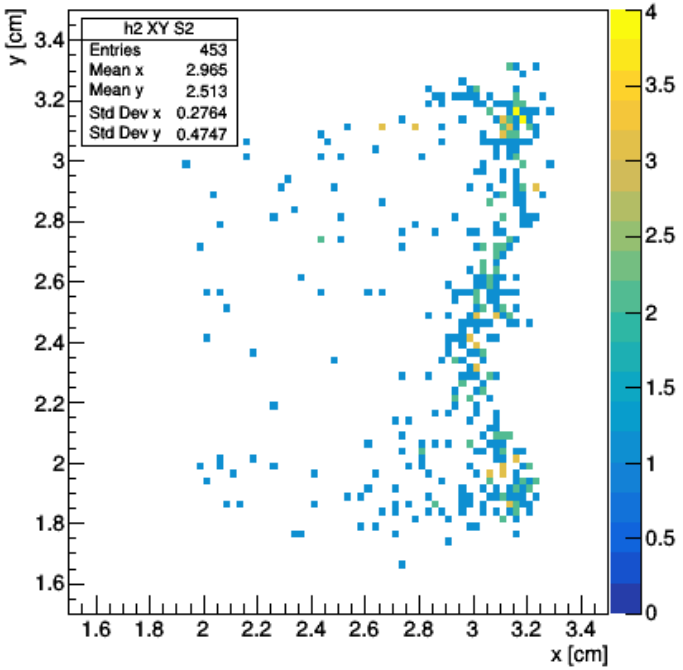
Ph2, Am241, run 537 master cut

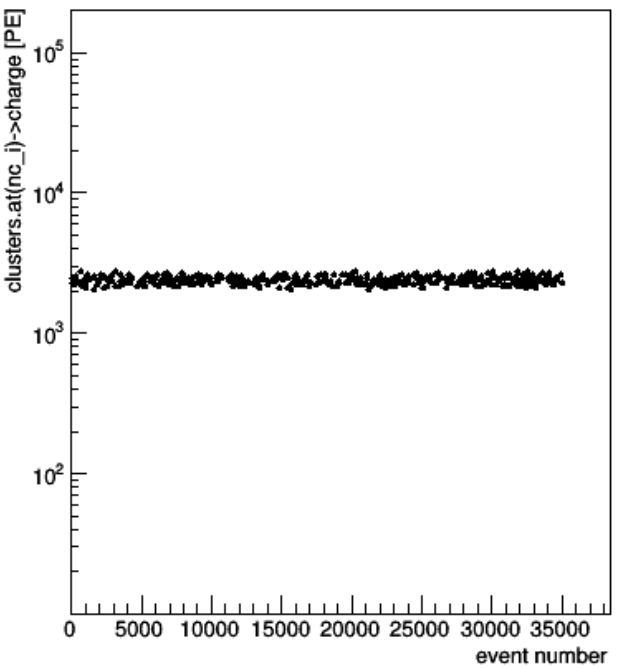
1000 < tot_charge_top < 1300 [PE]

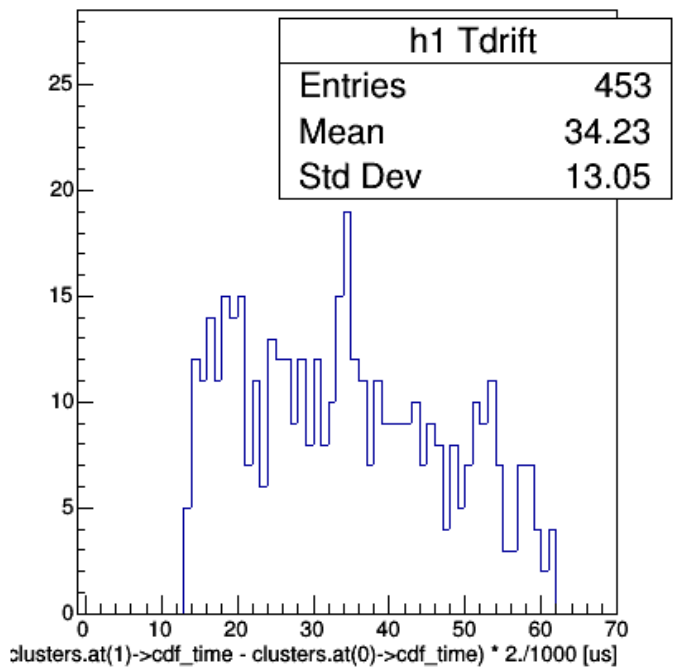






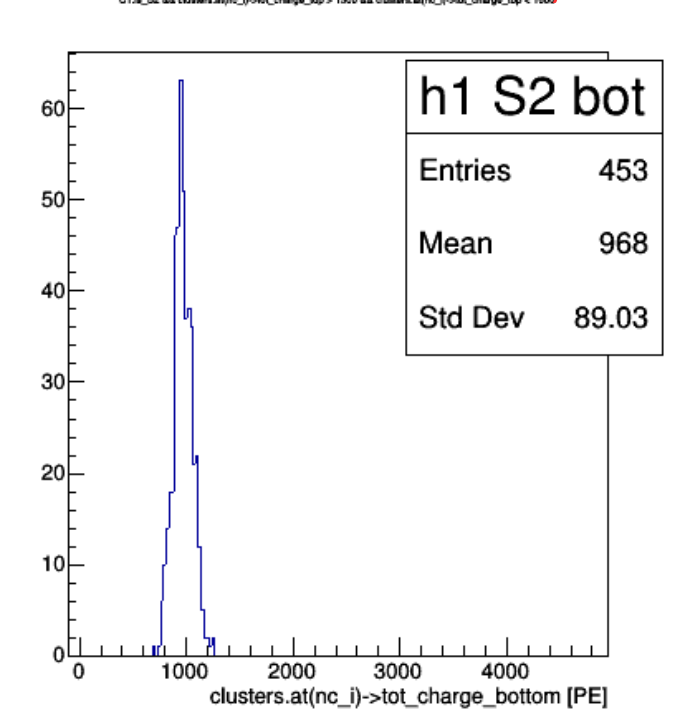


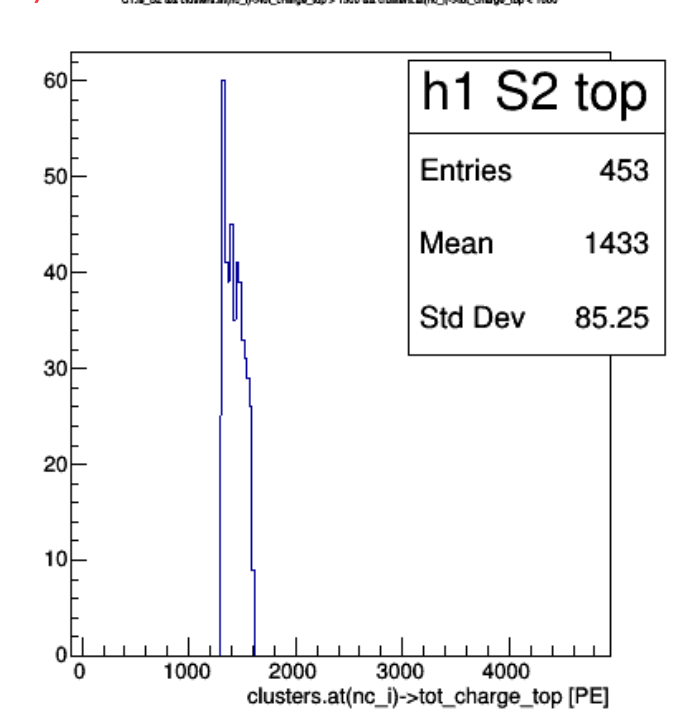


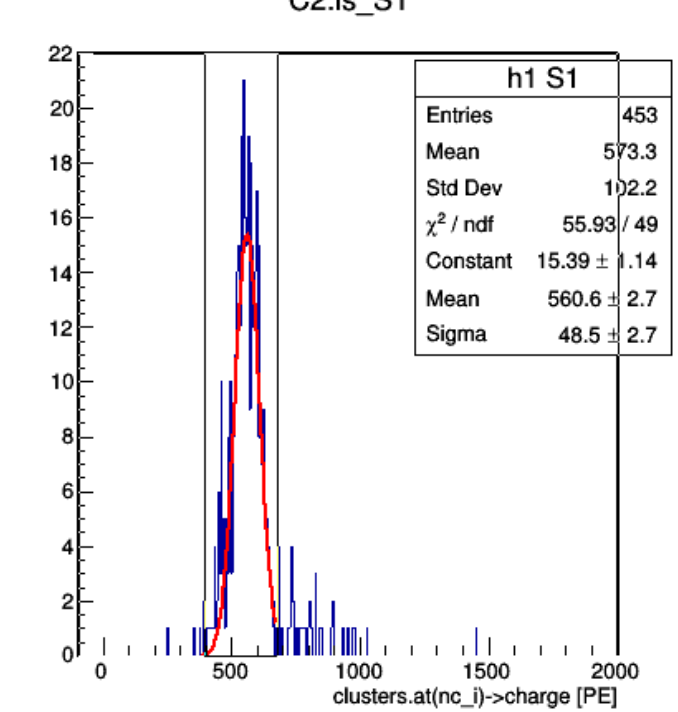


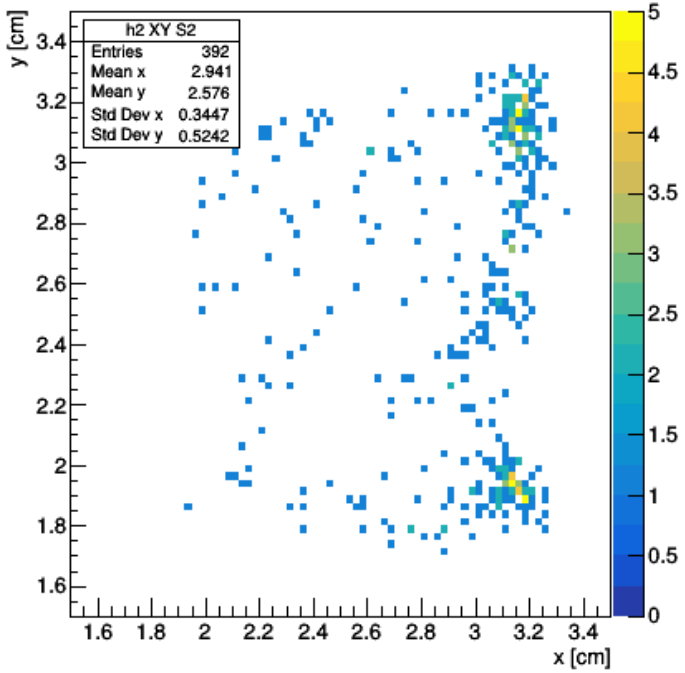
Ph2, Am241, run 537 master cut

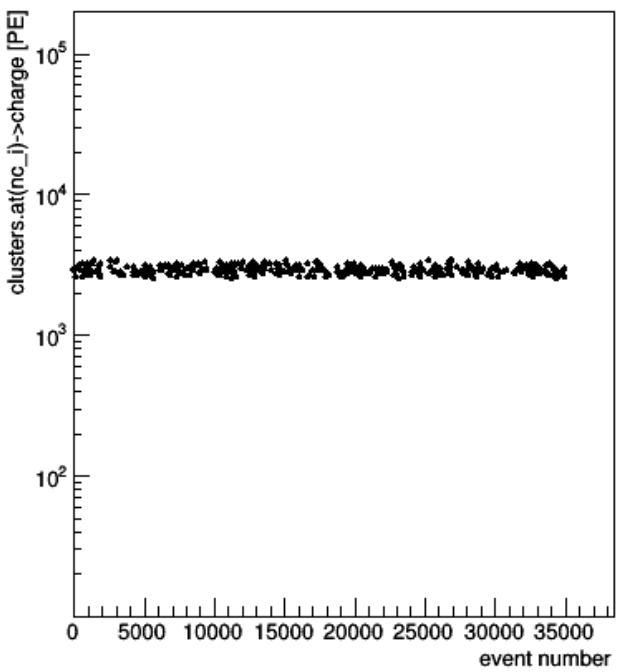
1300 < tot_charge_top < 1600 [PE]



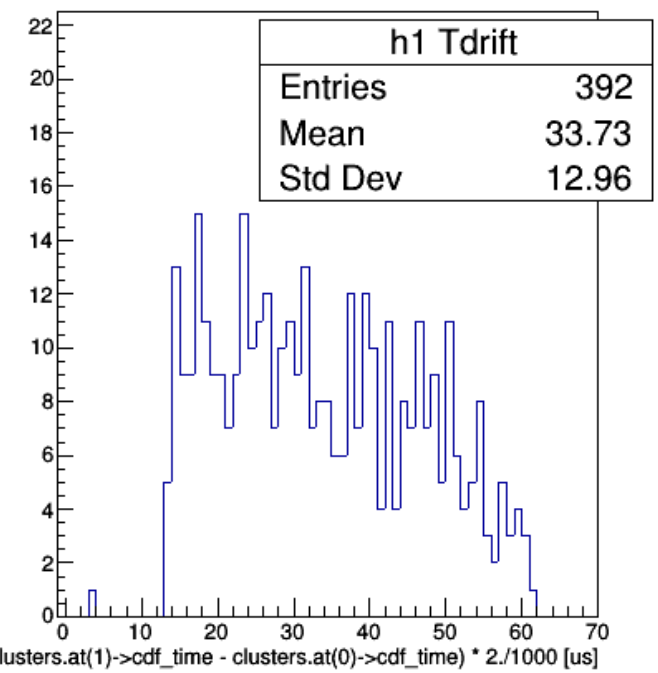








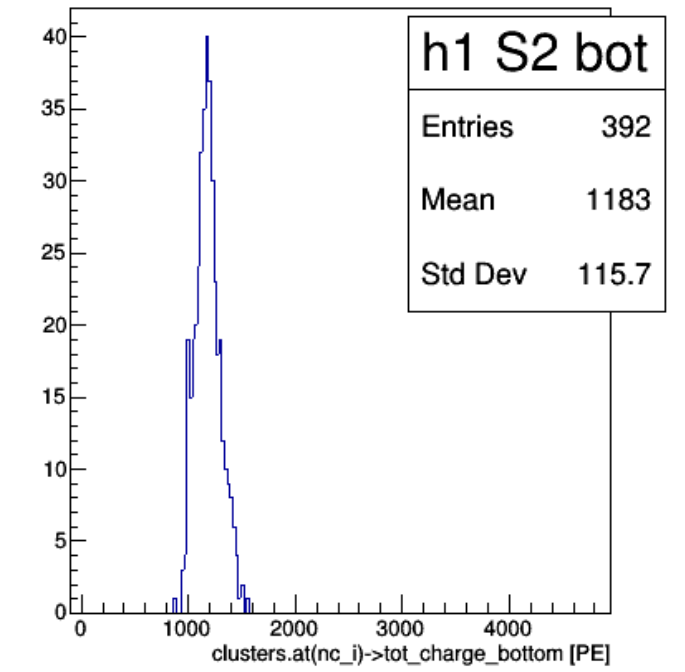
C0.is_S1_S2

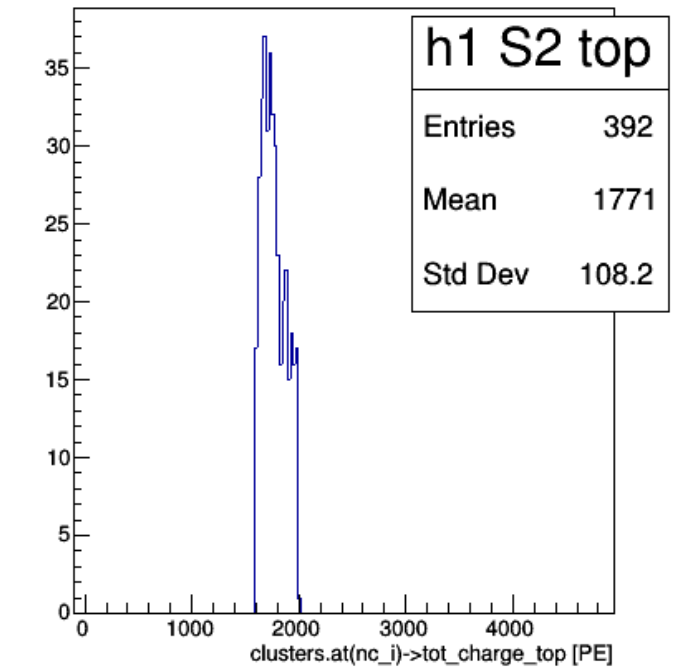


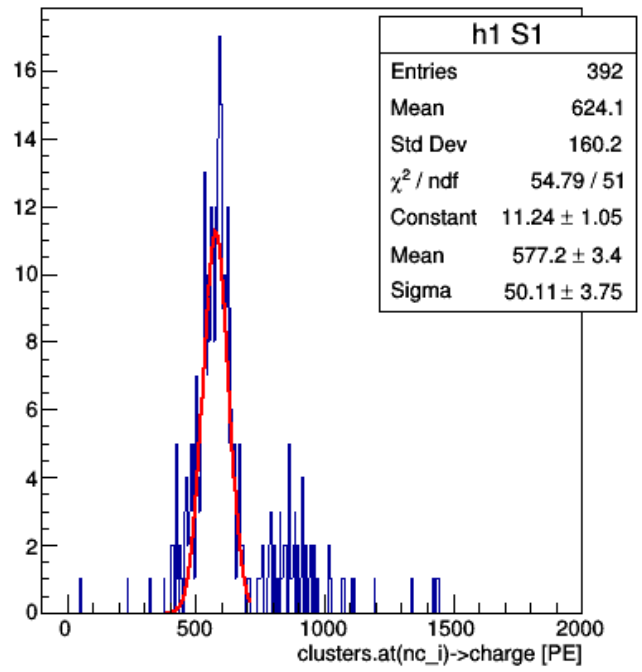
Ph2, Am241, run 537 master cut

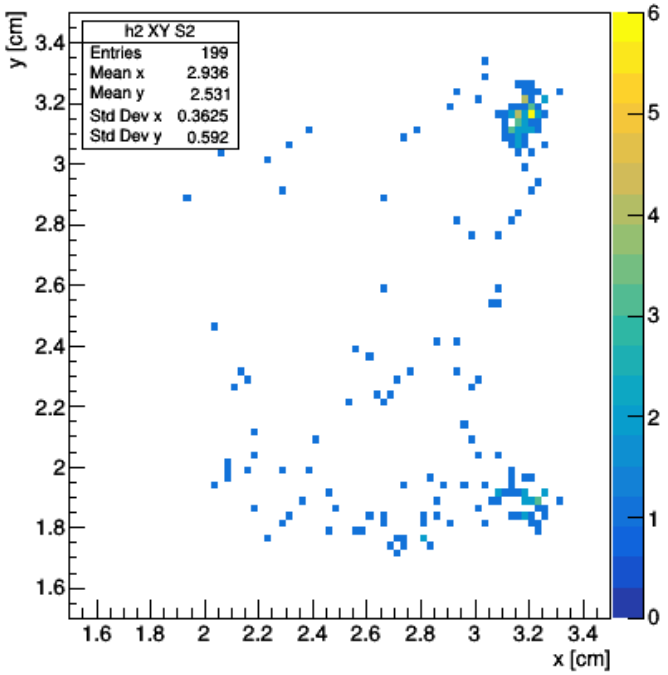
1600 < tot_charge_top < 2000 [PE]

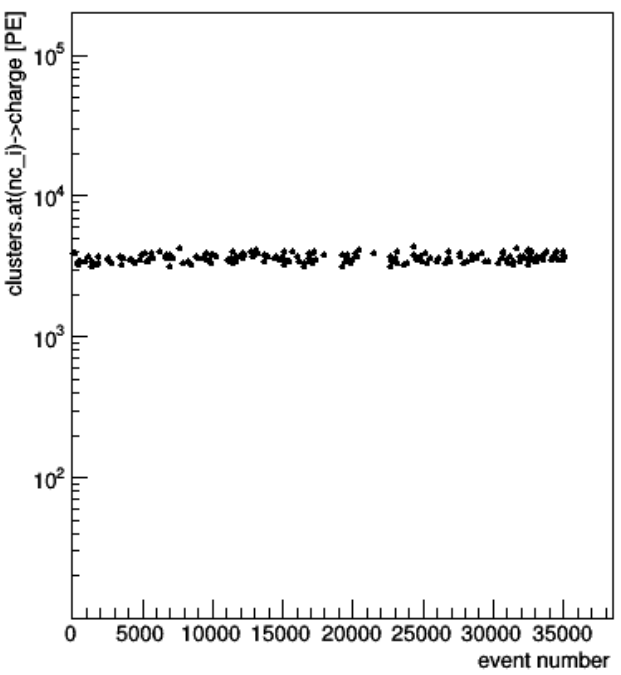
C2.is_S1

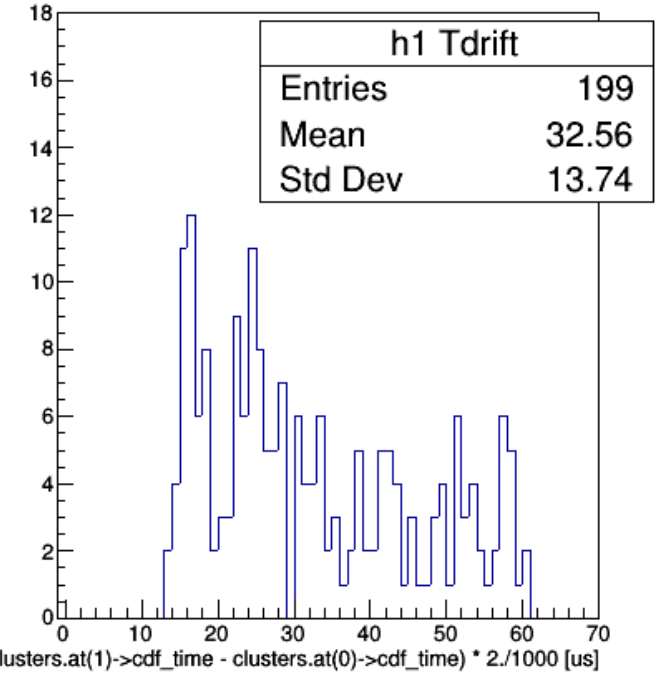






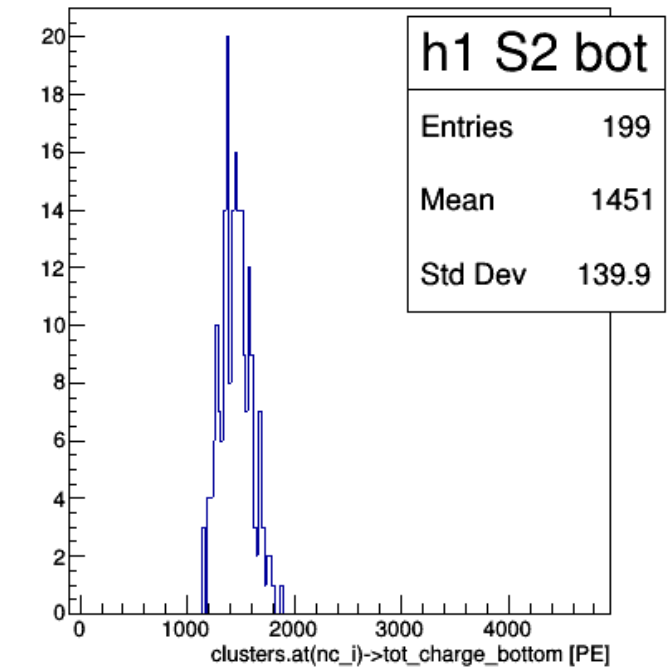


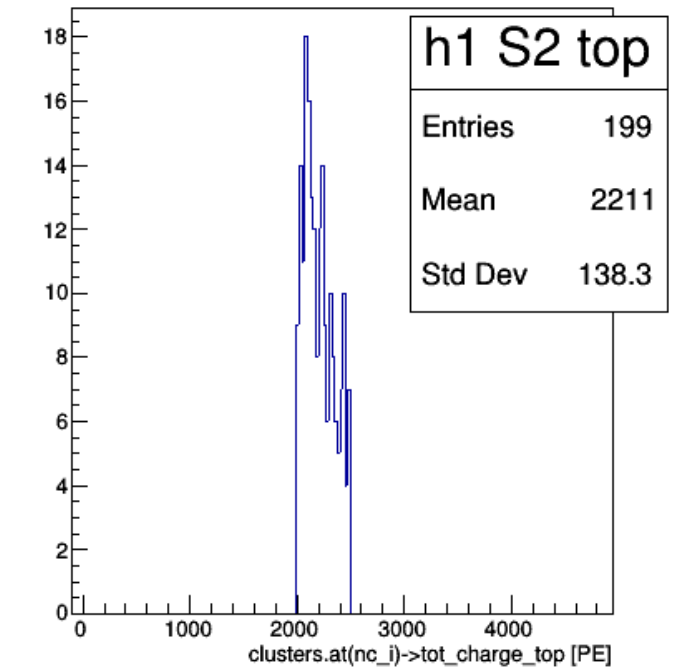


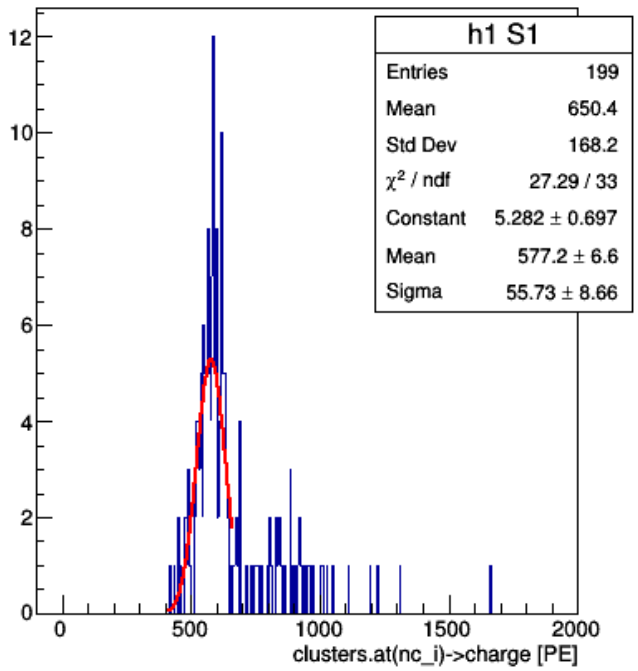


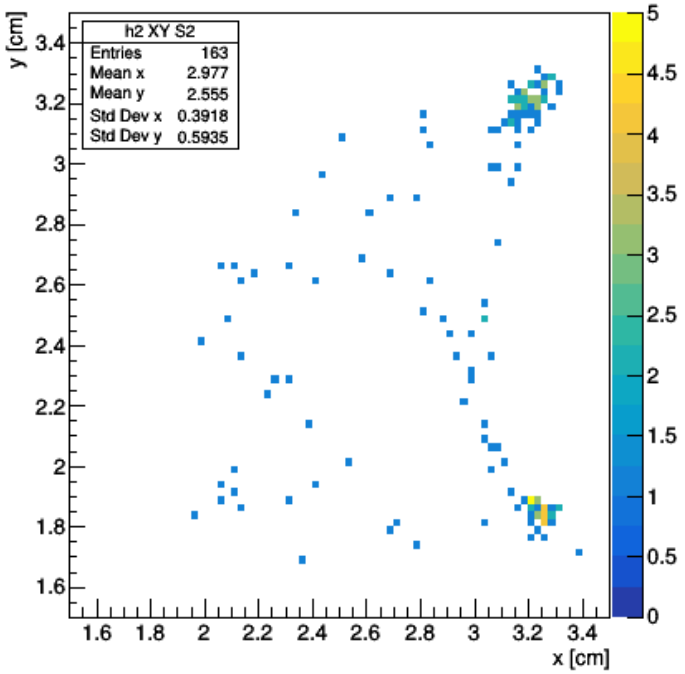
Ph2, Am241, run 537 master cut

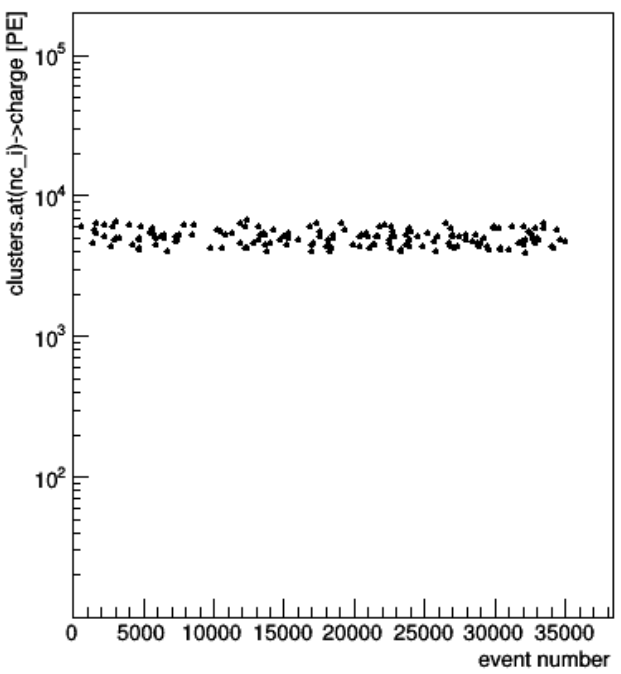
2000 < tot_charge_top < 2500 [PE]

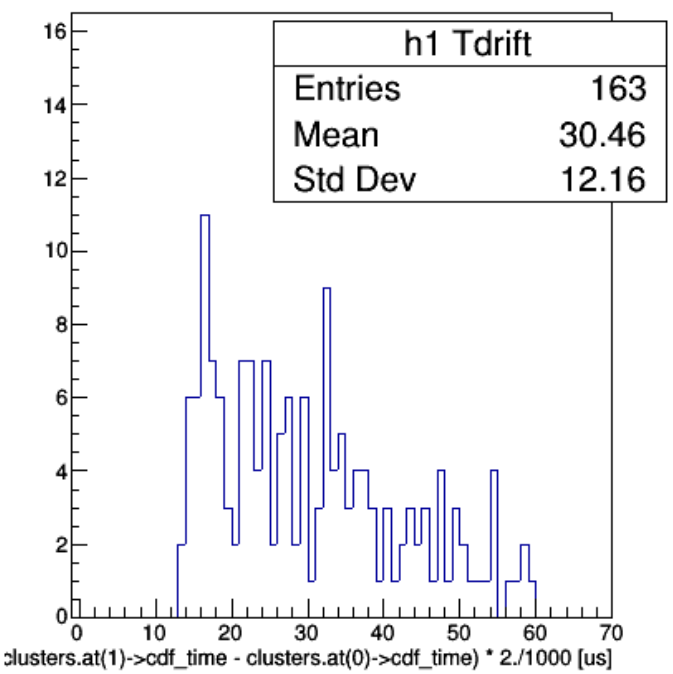






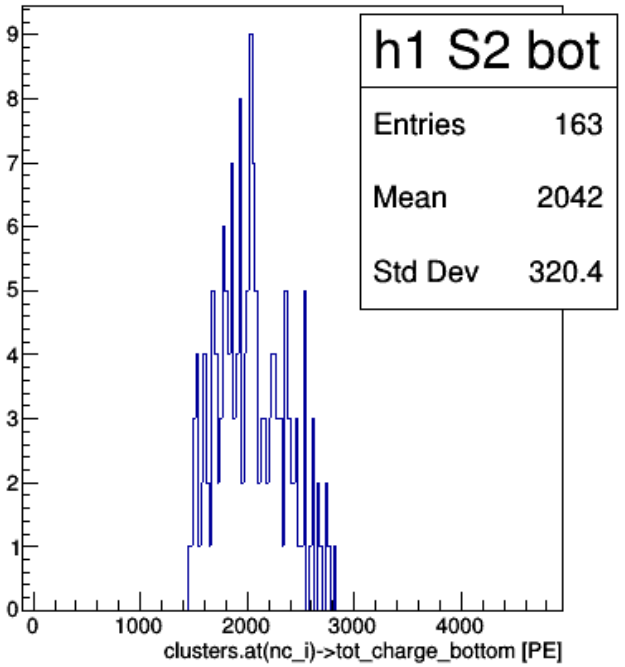


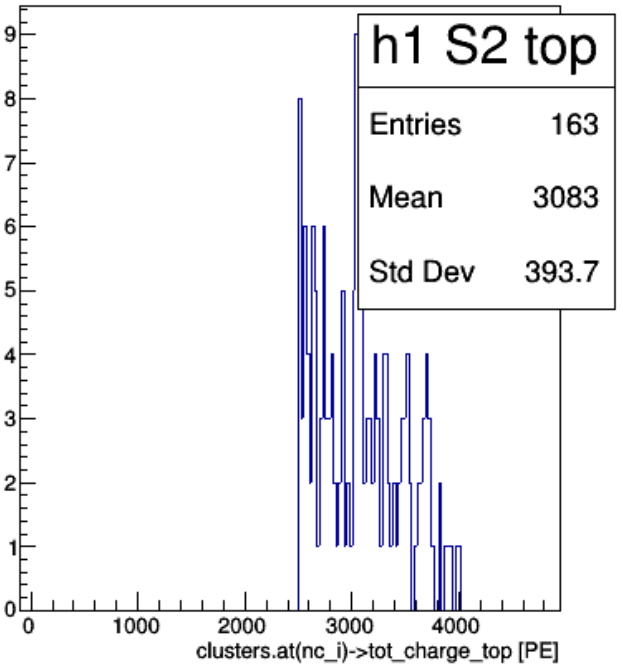


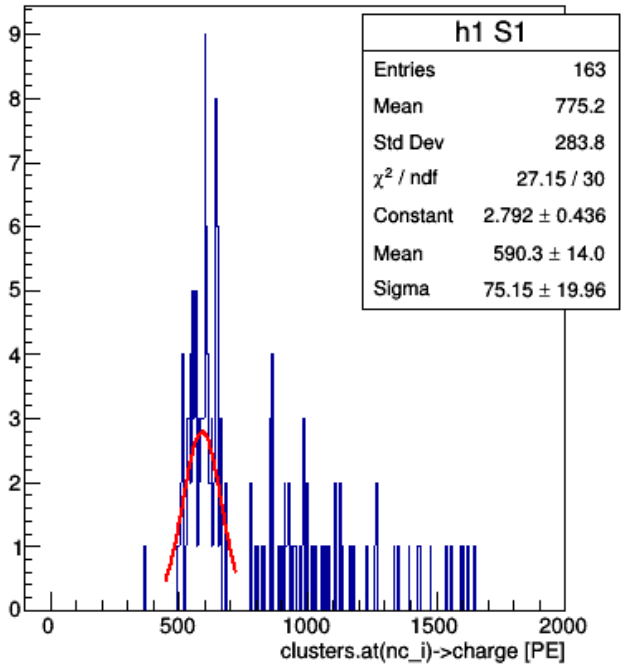


Ph2, Am241, run 537 master cut

2500 < tot_charge_top < 4000 [PE]

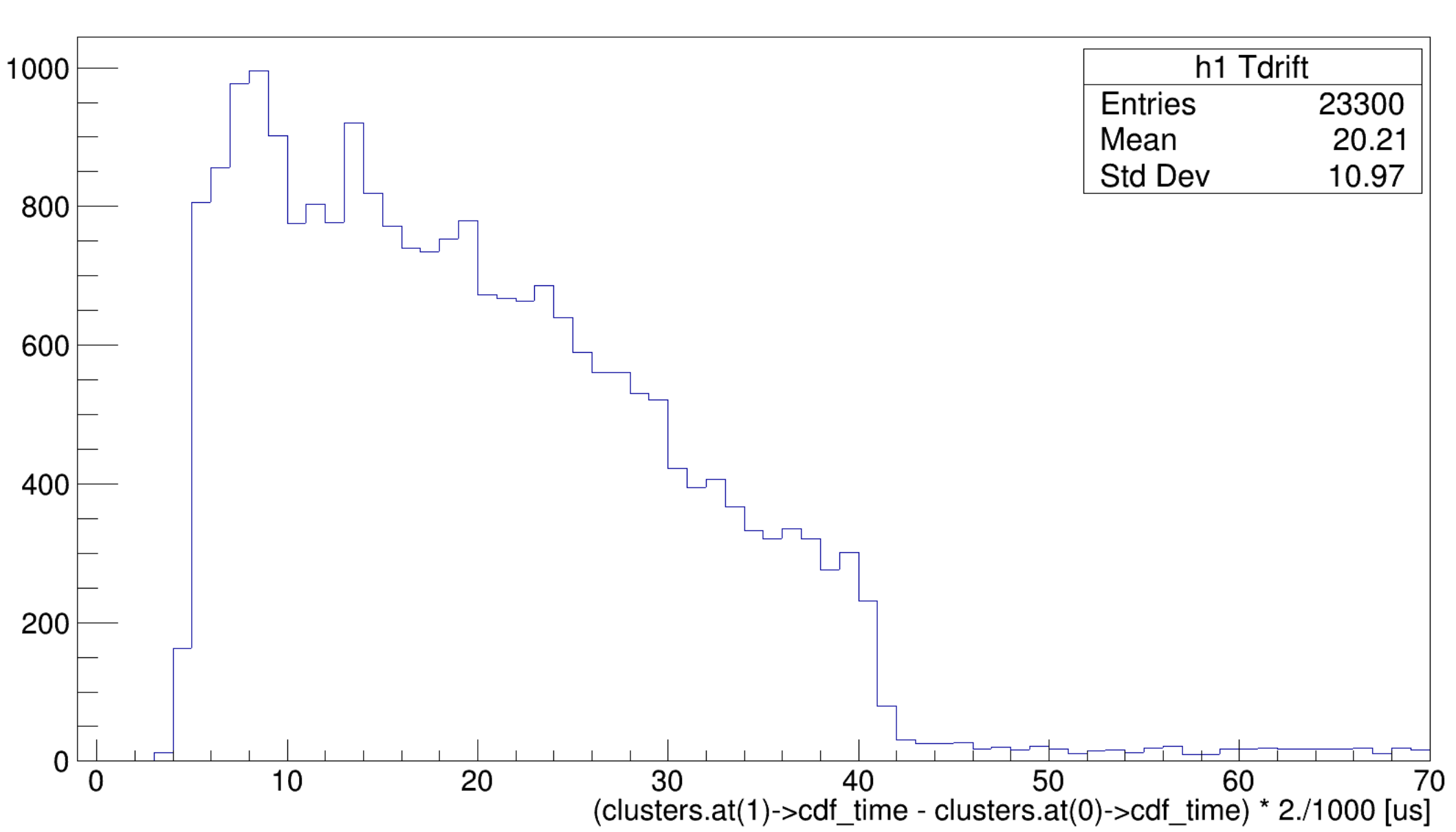






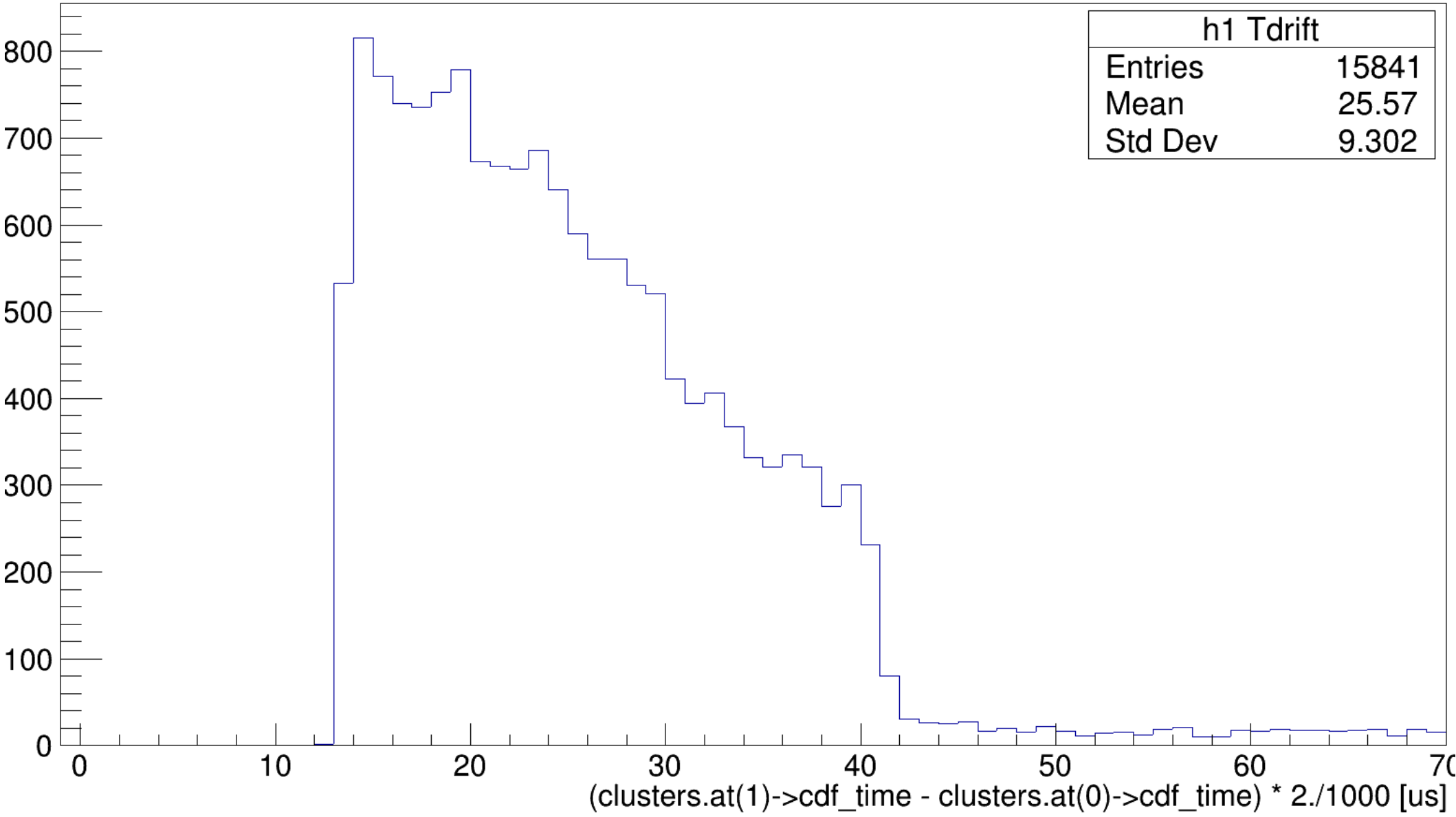
Ph2, Am241, run 542

Ph2, Am241, run 542



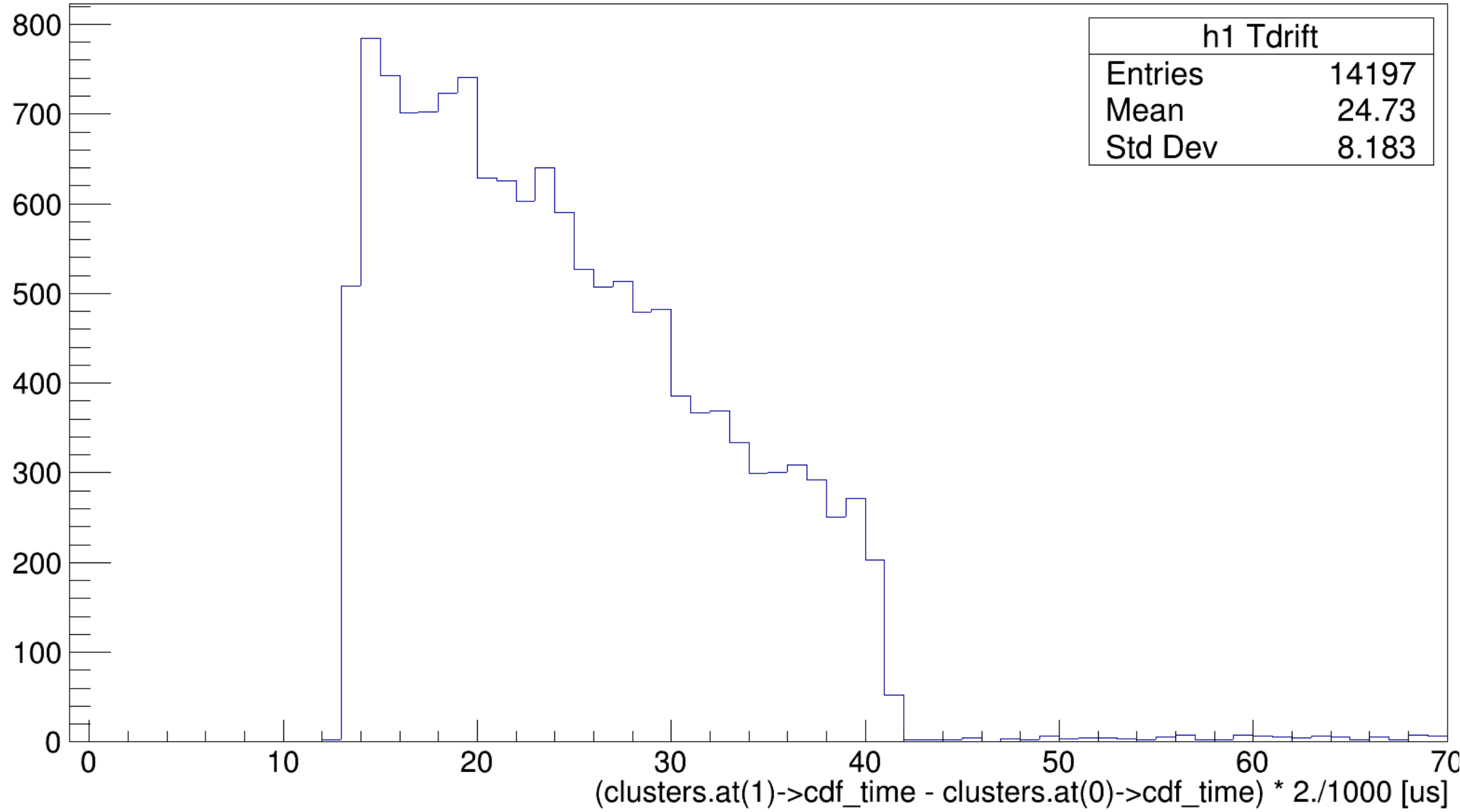
Ph2, Am241, run 542

C0.nc == 2 && C0.cls0_is_full

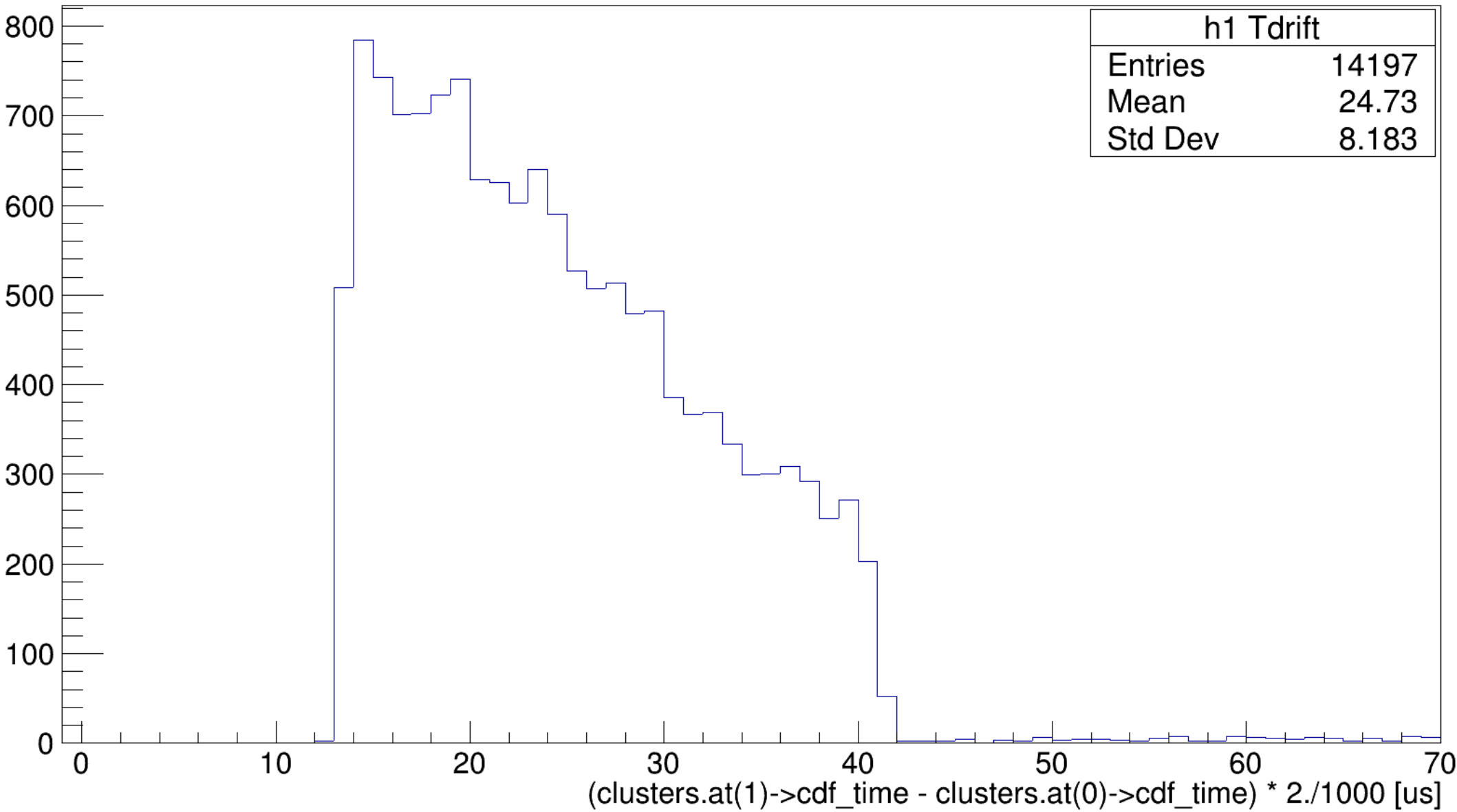


Ph2, Am241, run 542

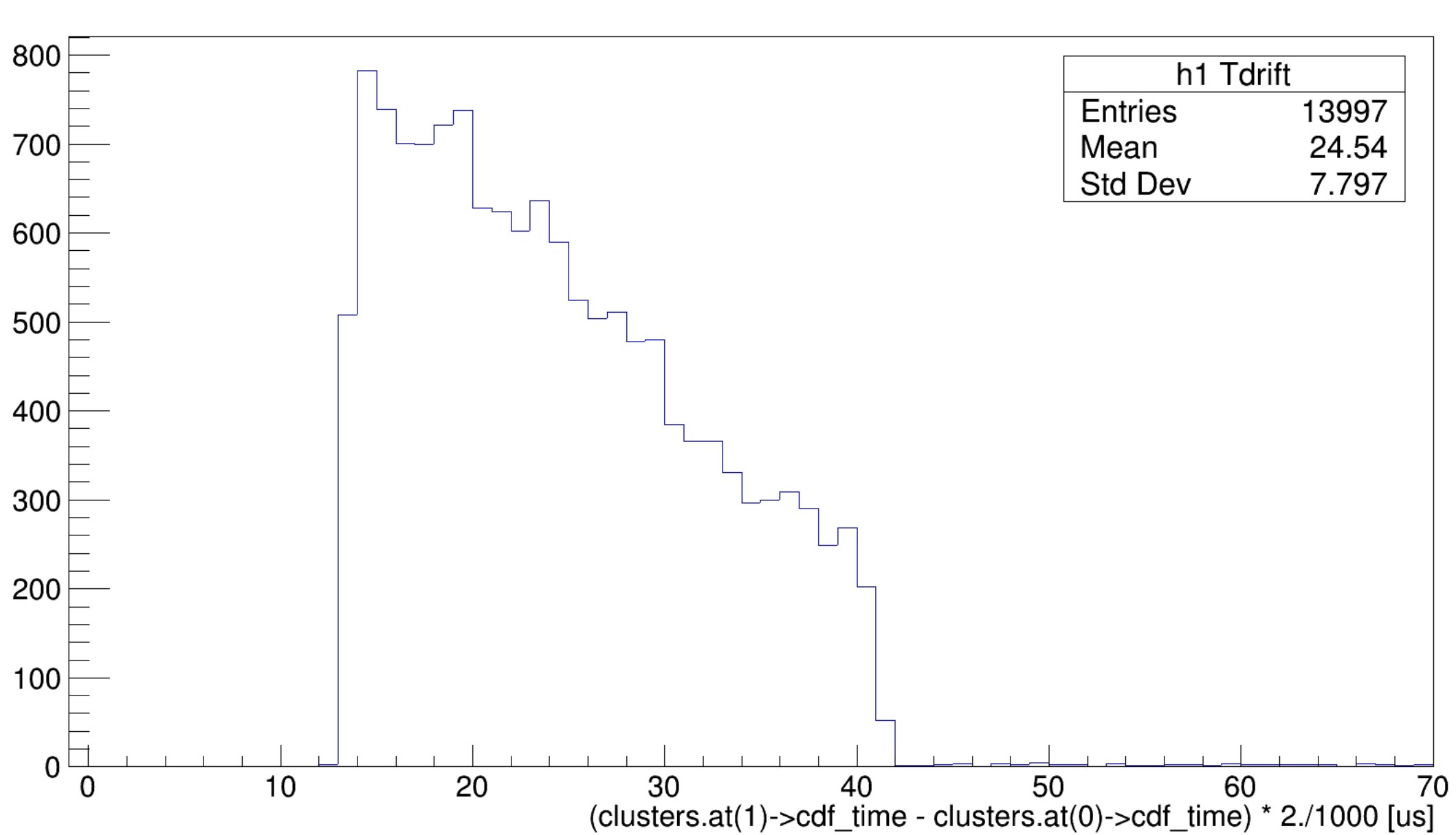
C0.nc == 2 && C0.cls0_is_full && C0.cls0_is_S1



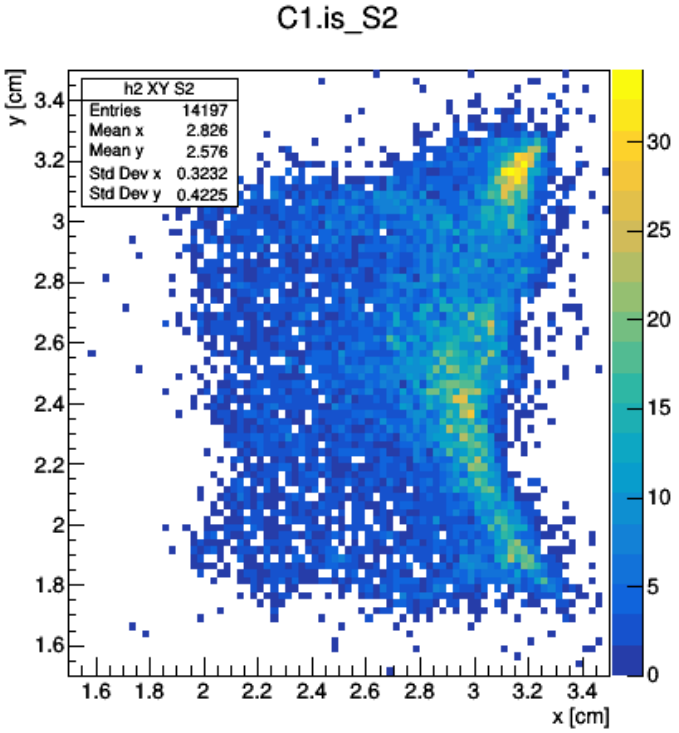
Ph2, Am241, run 542

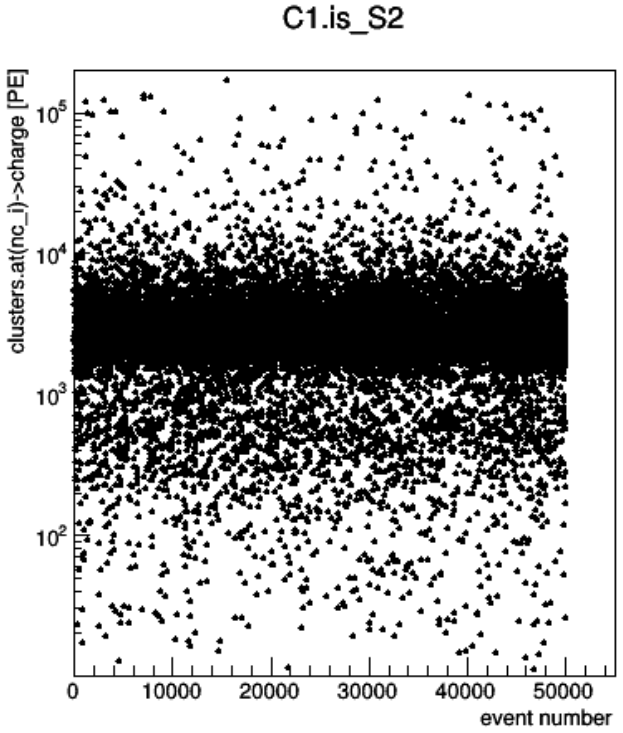


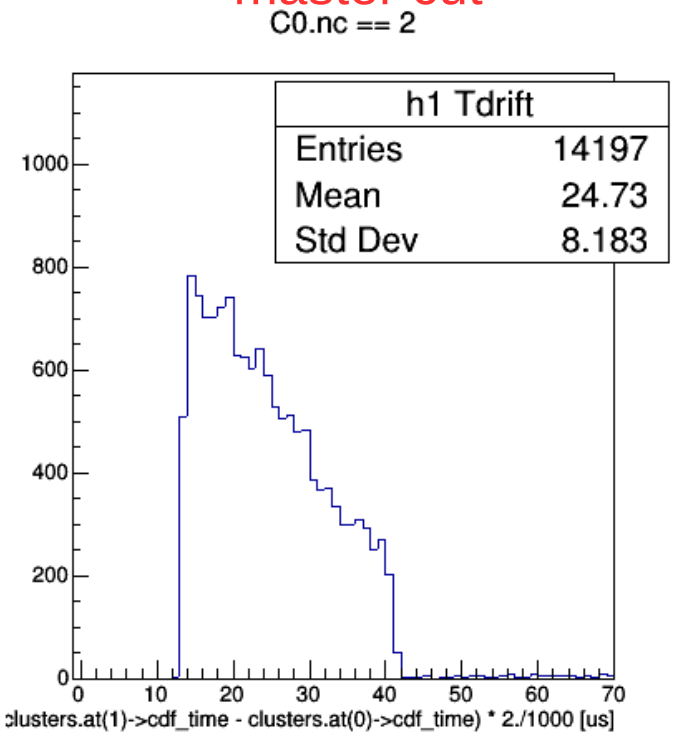
Ph2, Am241, run 542



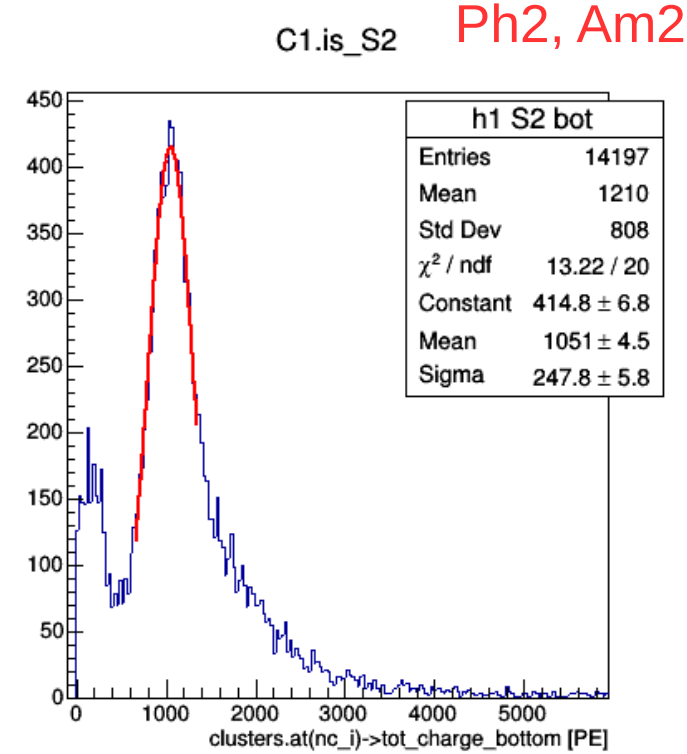
master cut

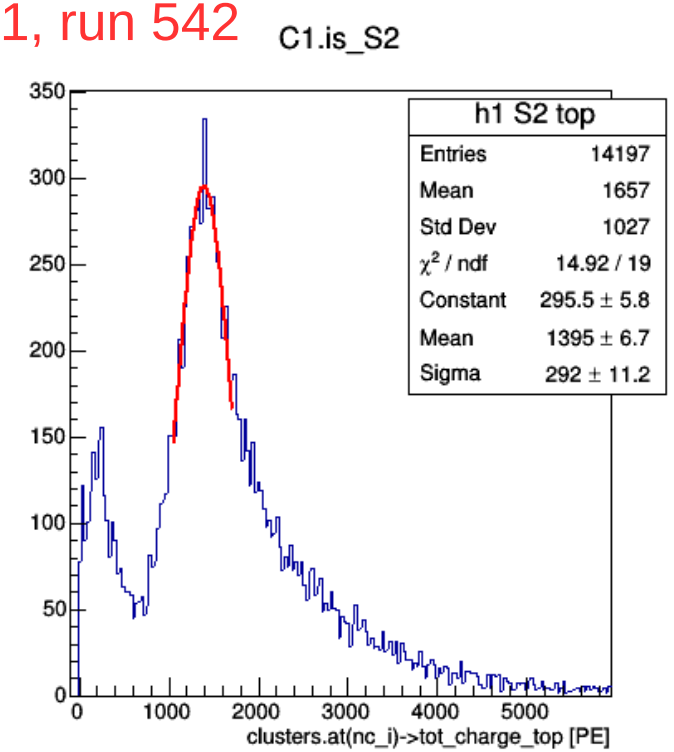


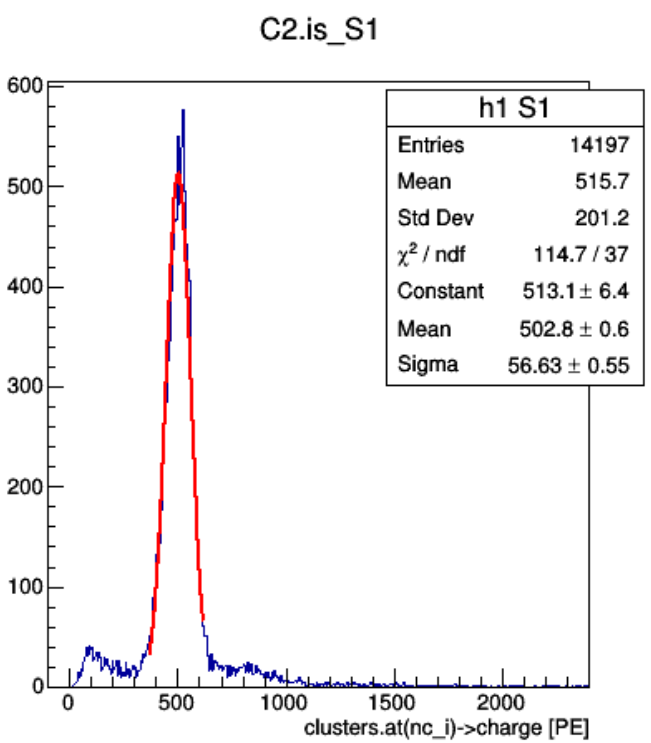




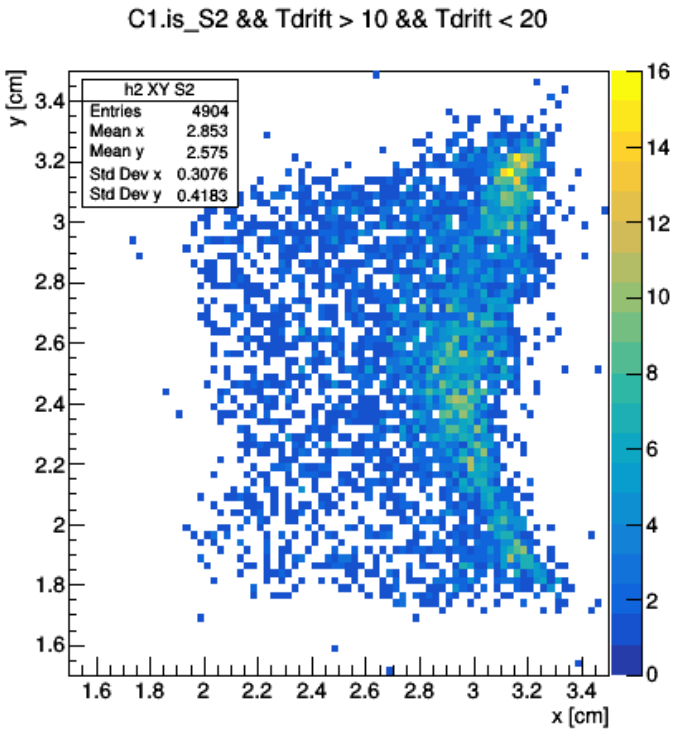
Ph2, Am241, run 542

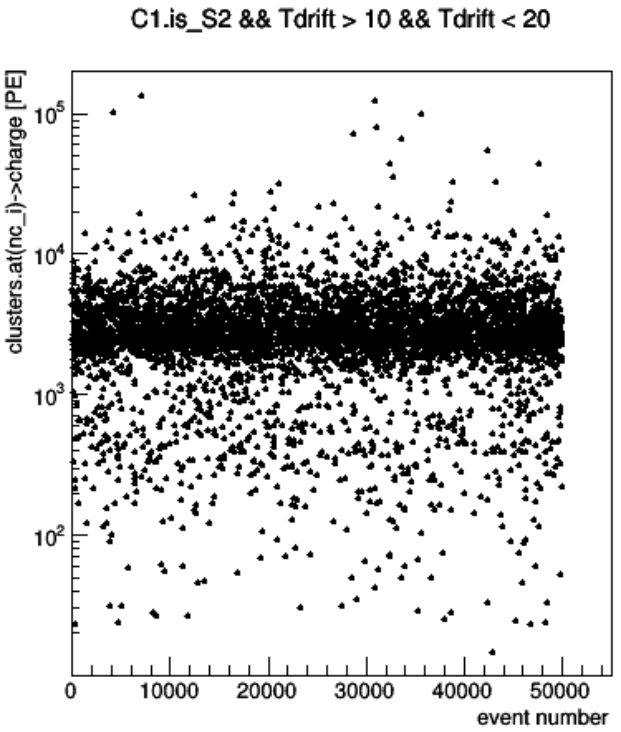


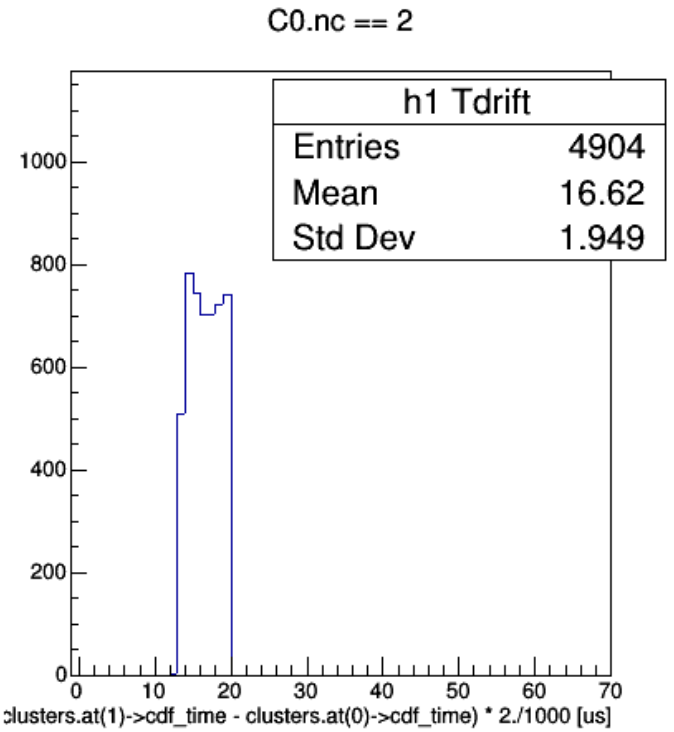




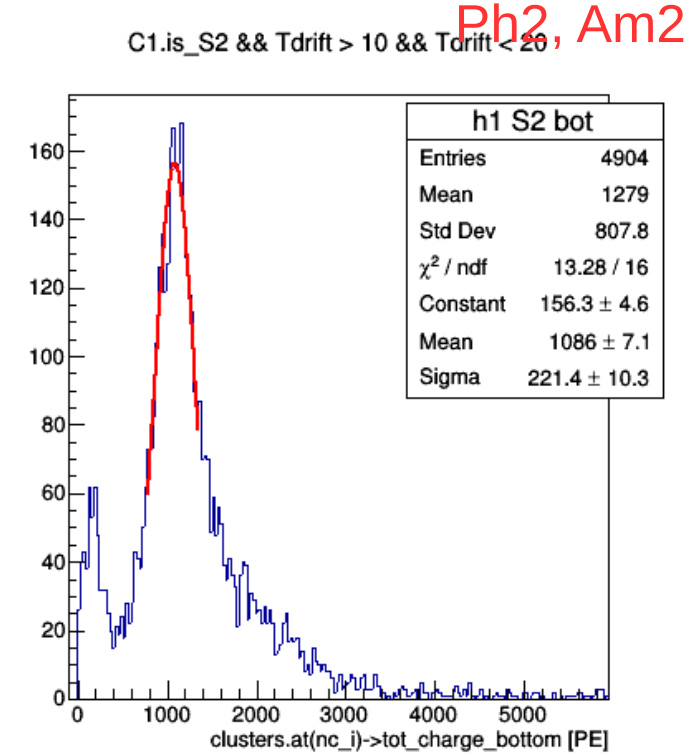
master cut

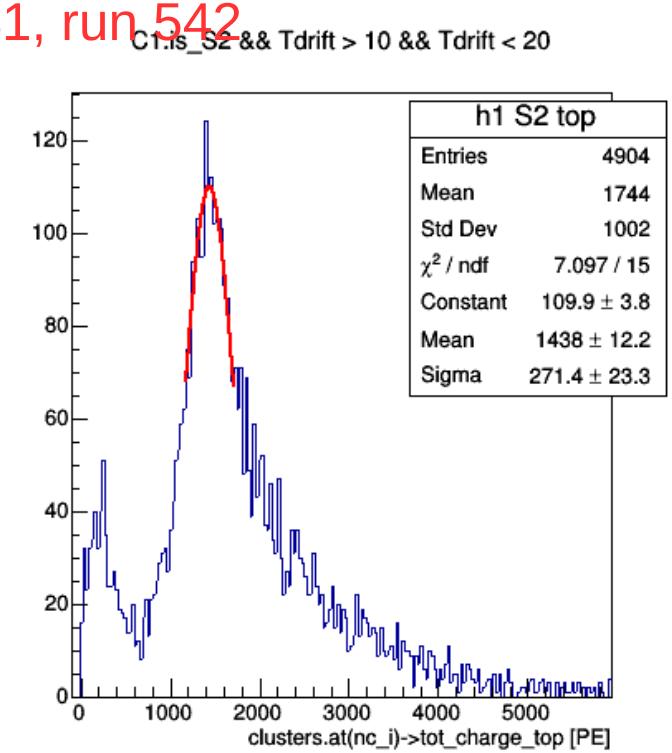


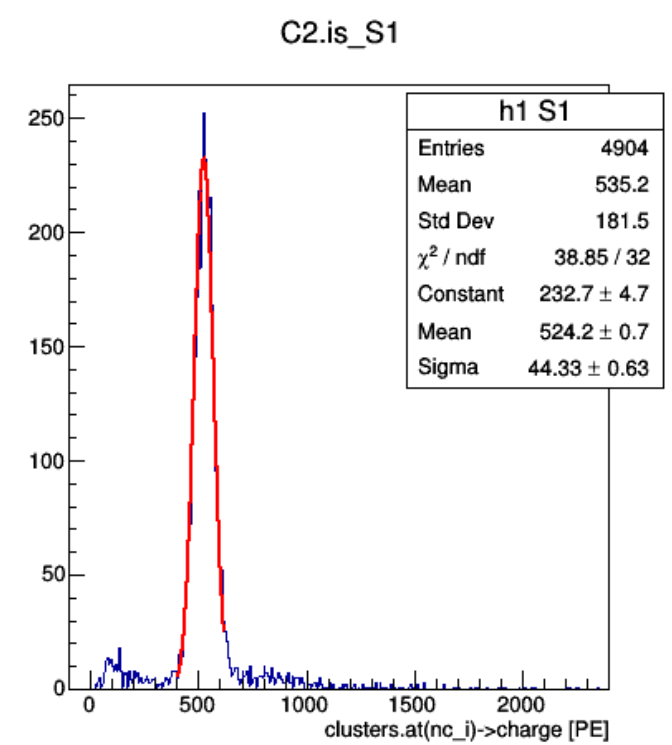




Ph2, Am241, run 542

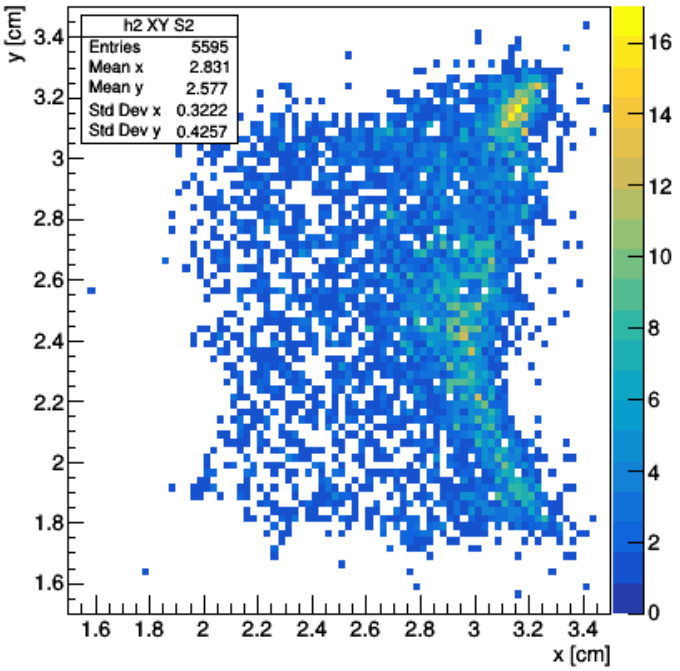




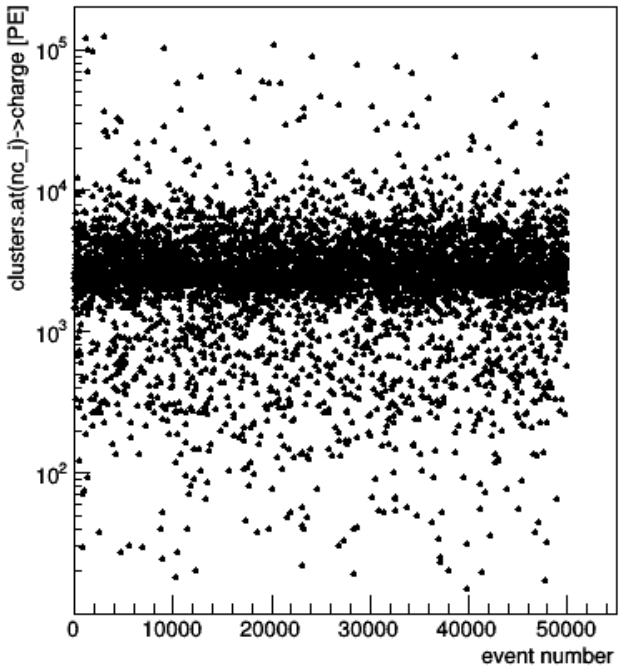


master cut

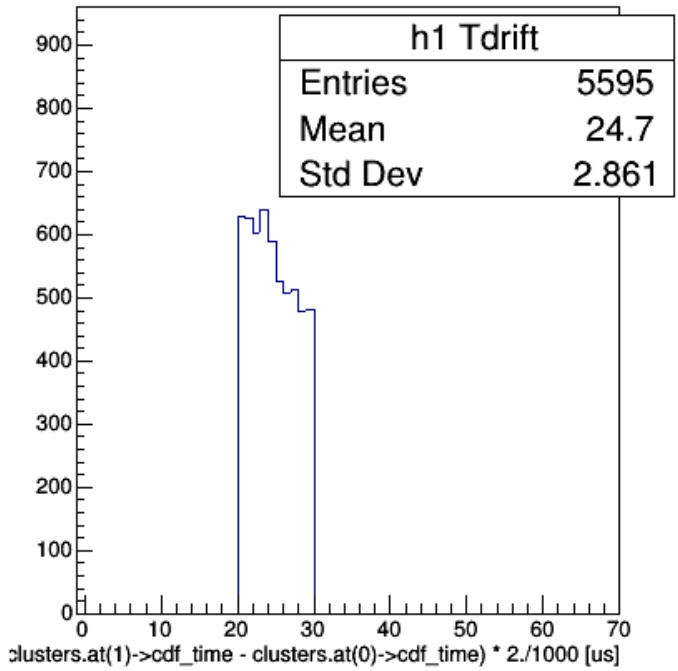
C1.is_S2 && Tdrift > 20 && Tdrift < 30



C1.is_S2 && Tdrift > 20 && Tdrift < 30

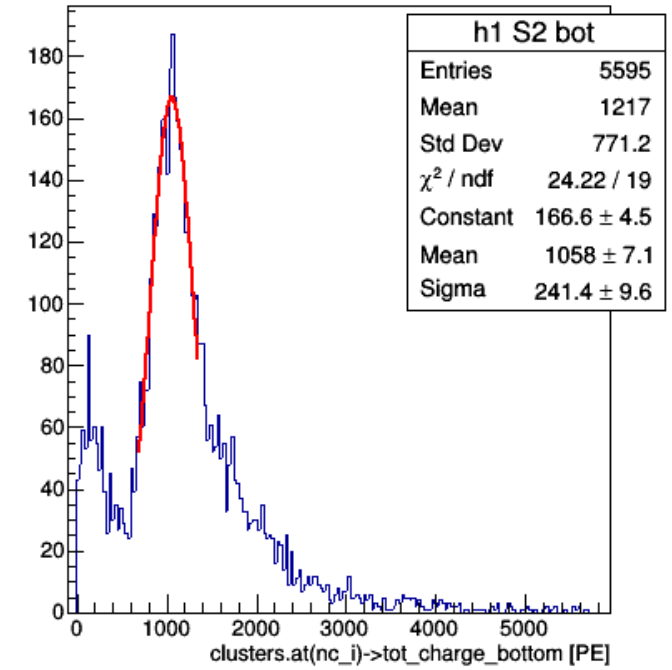


C0.nc == 2

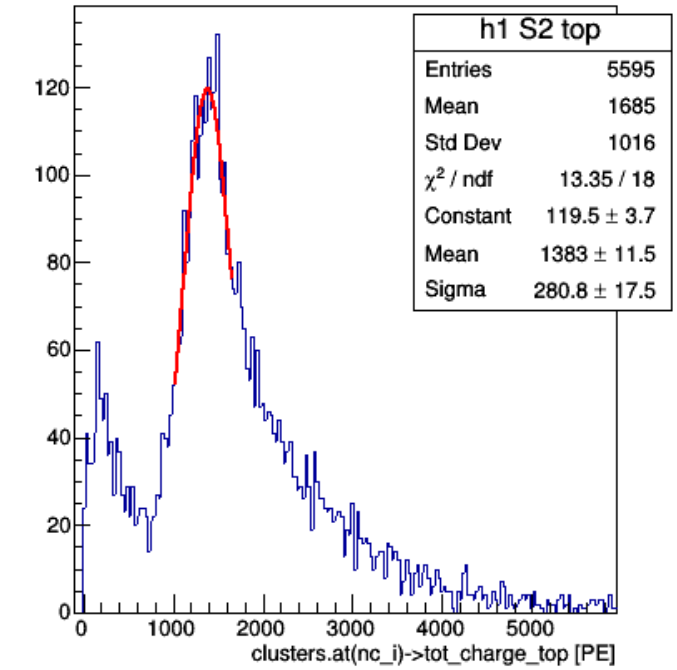


Ph2, Am241, run 542

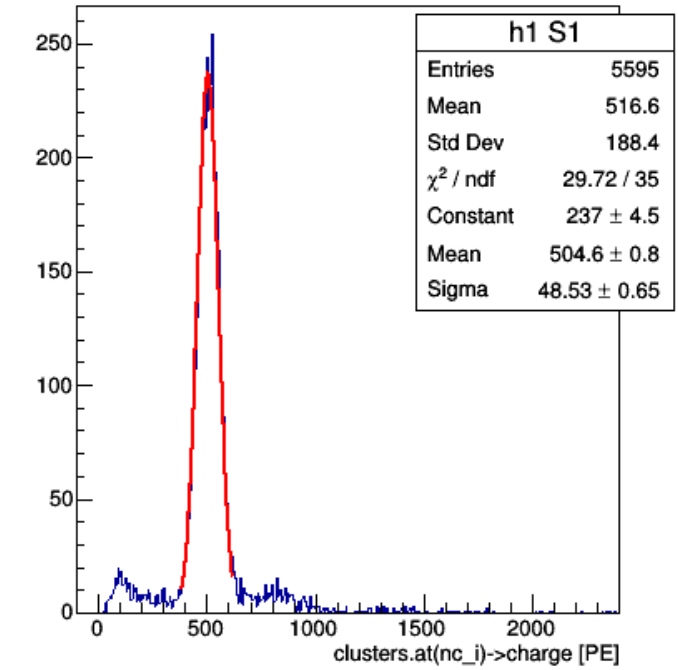
C1.is_S2 && Tdrift > 20 && Tdrift < 30



C1.is_S2 && Tdrift > 20 && Tdrift < 30

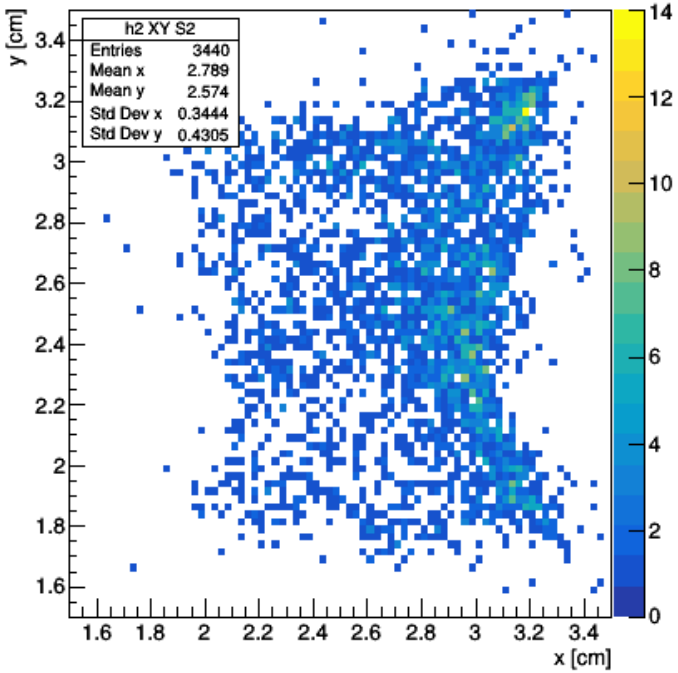


C2.is_S1

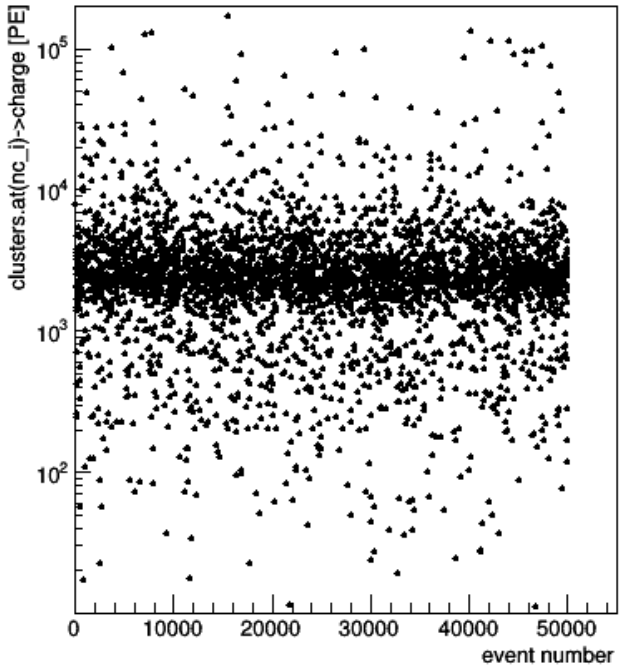


master cut

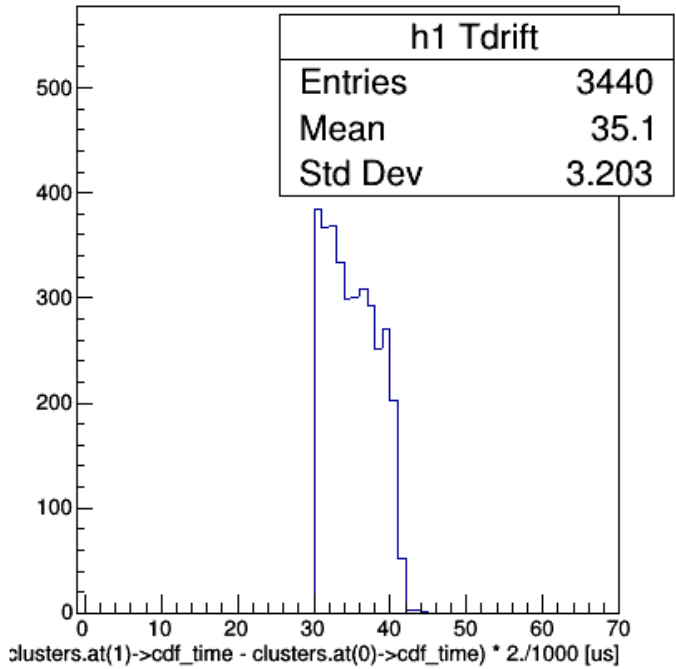
C1.is_S2 && Tdrift > 30 && Tdrift < 45



C1.is_S2 && Tdrift > 30 && Tdrift < 45

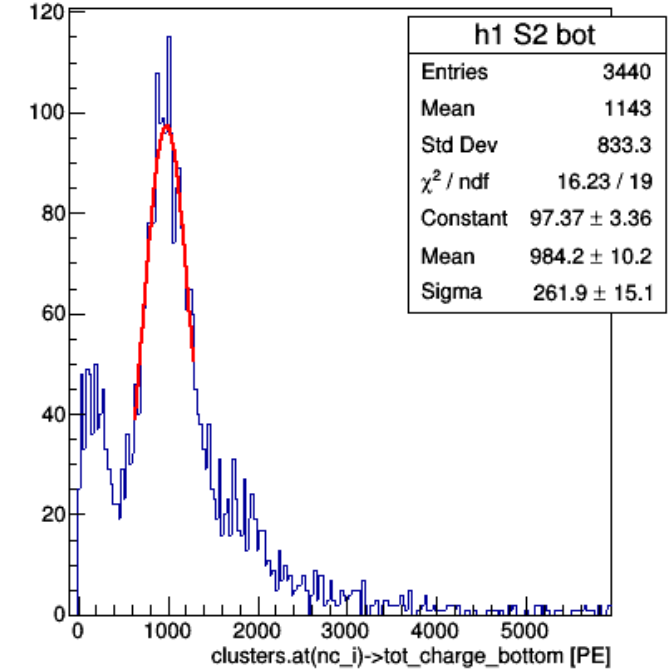


C0.nc == 2

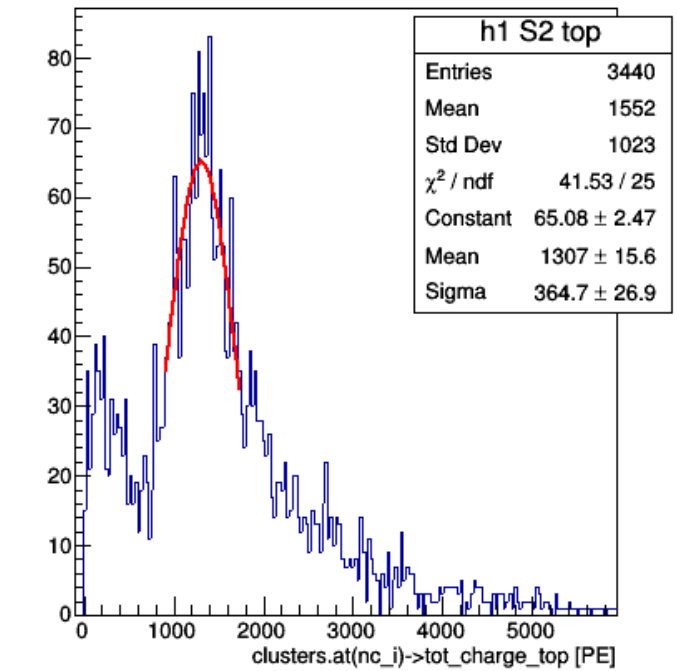


Ph2, Am241, run 542

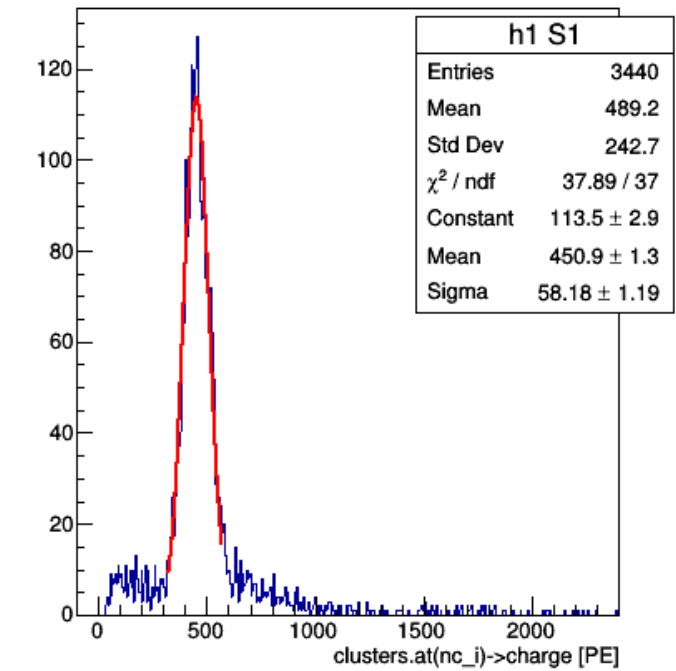
C1.is_S2 && Tdrift > 30 && Tdrift < 45

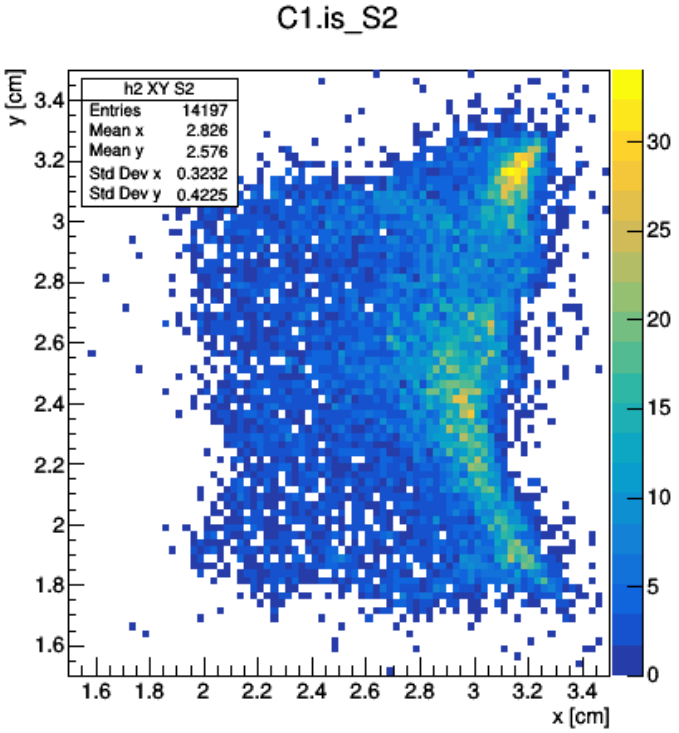


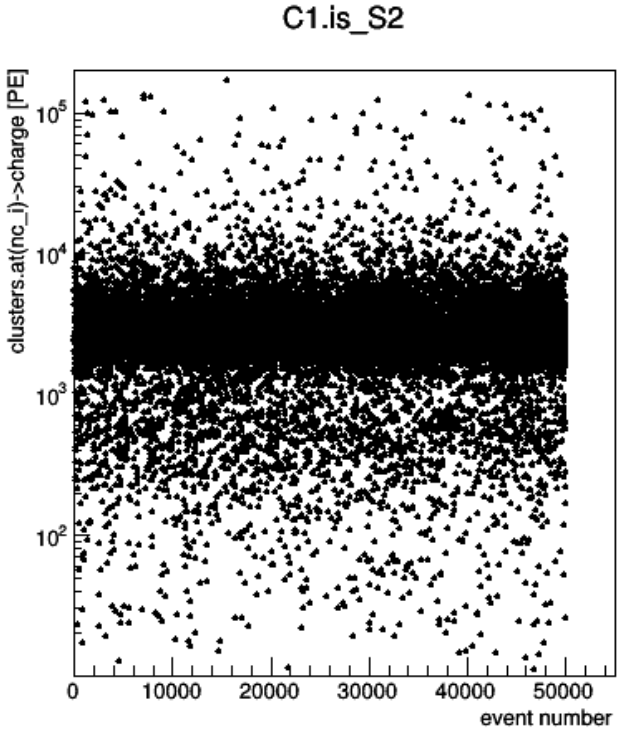
C1.is_S2 && Tdrift > 30 && Tdrift < 45

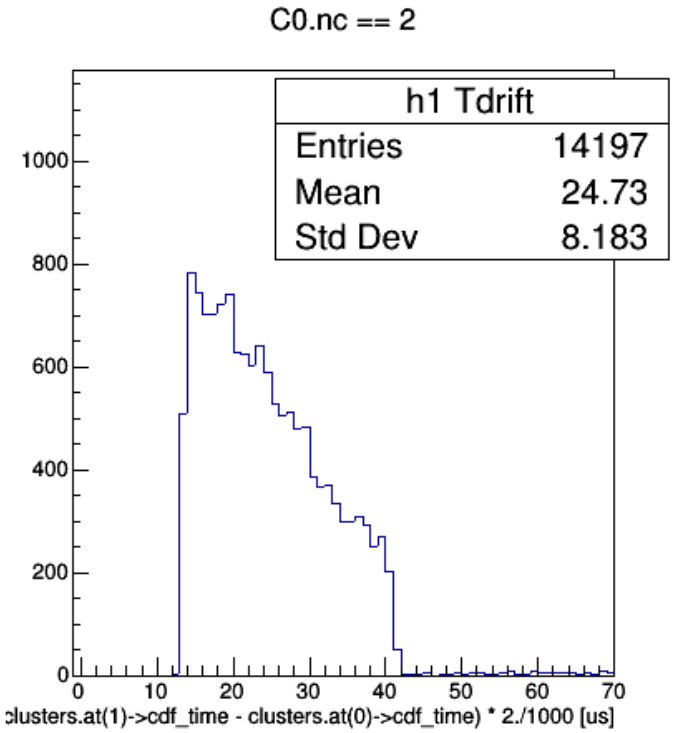


C2.is_S1

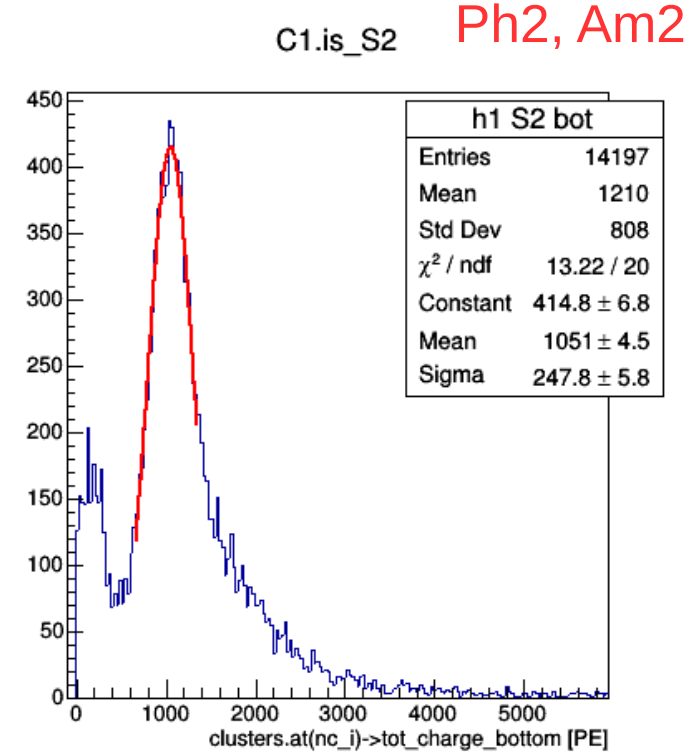


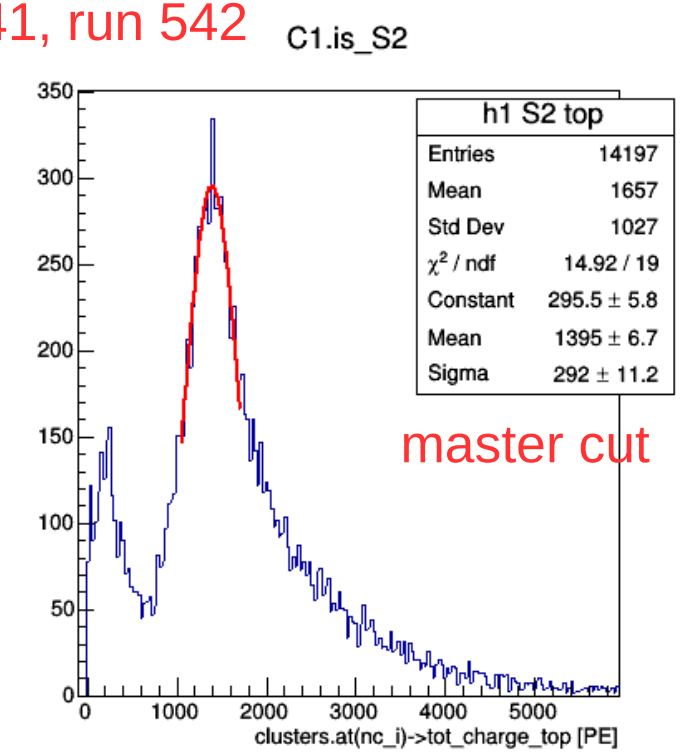




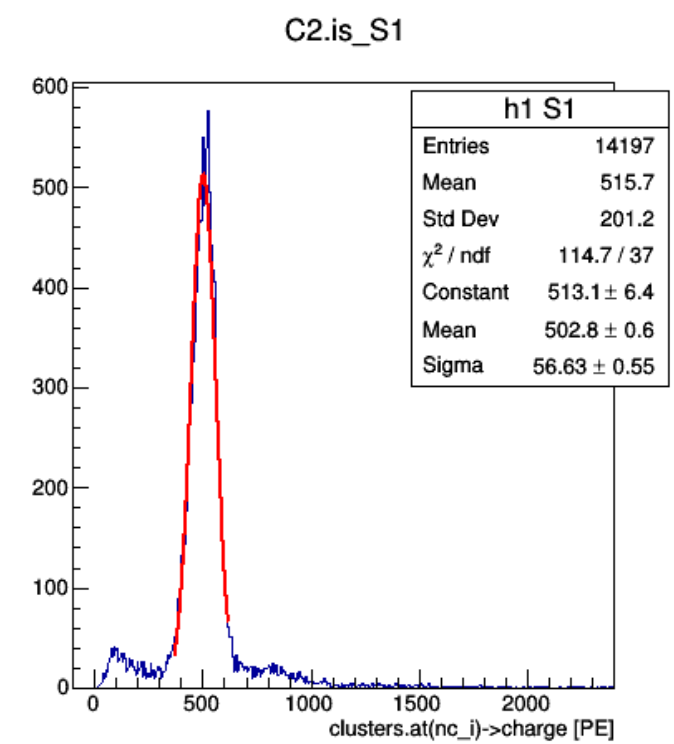


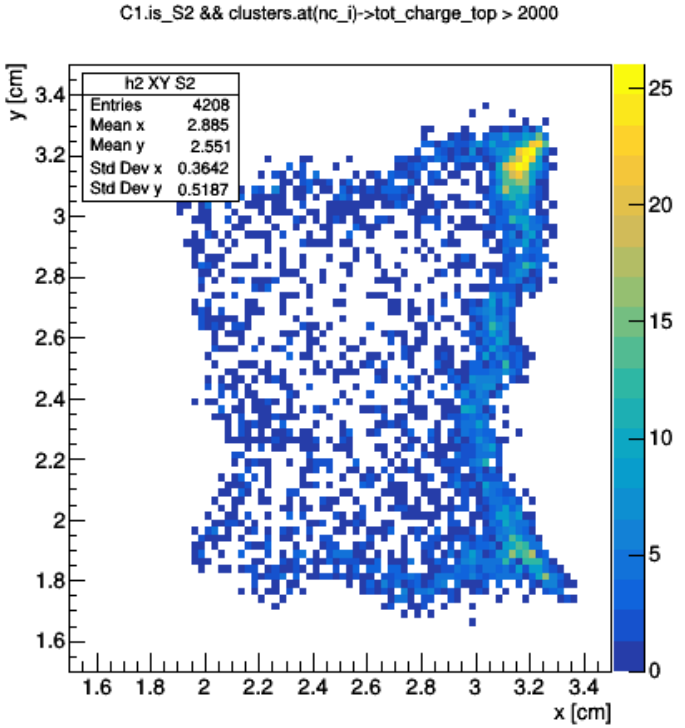
Ph2, Am241, run 542

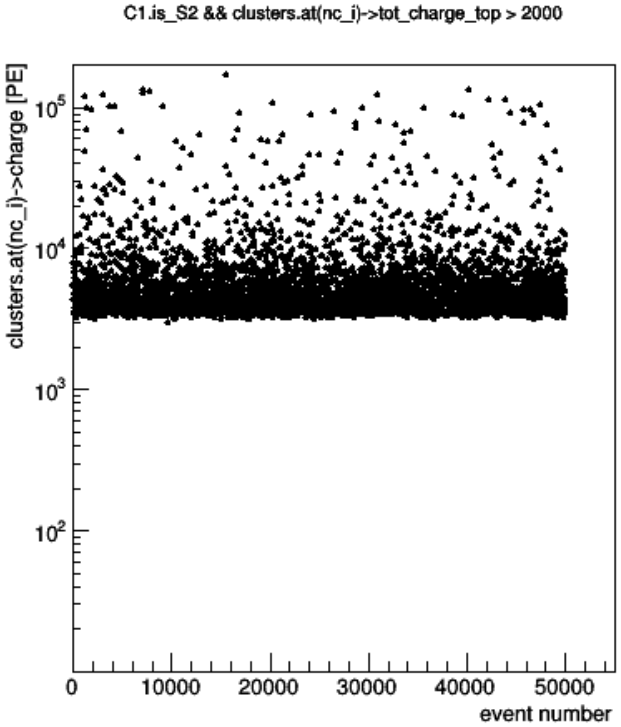


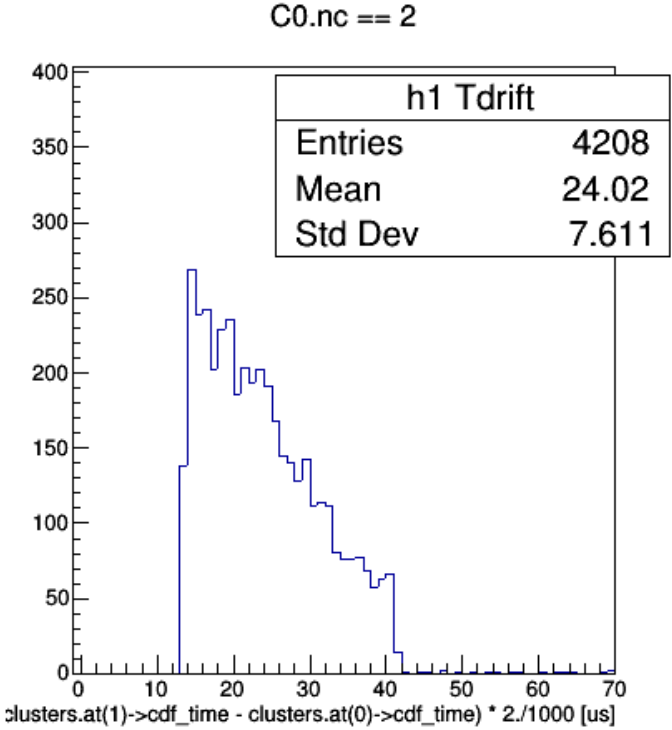


master cut



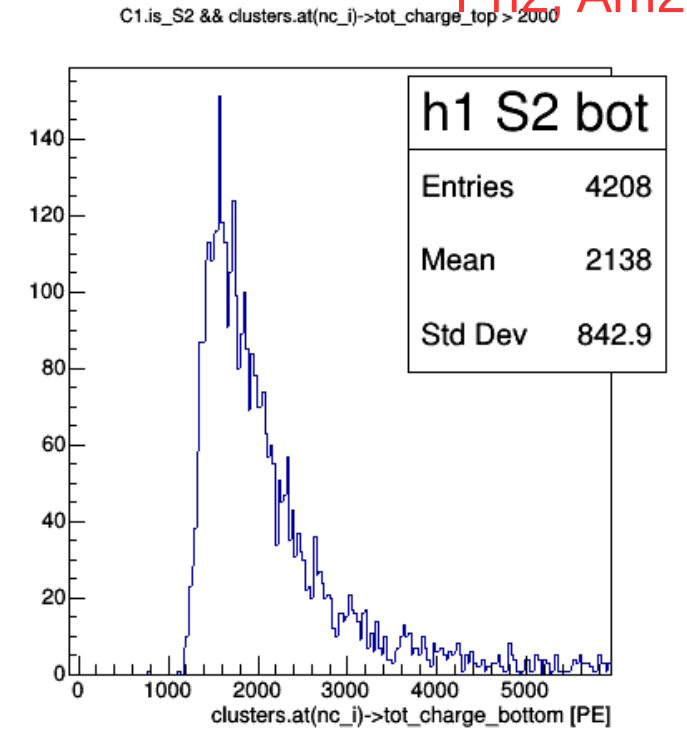


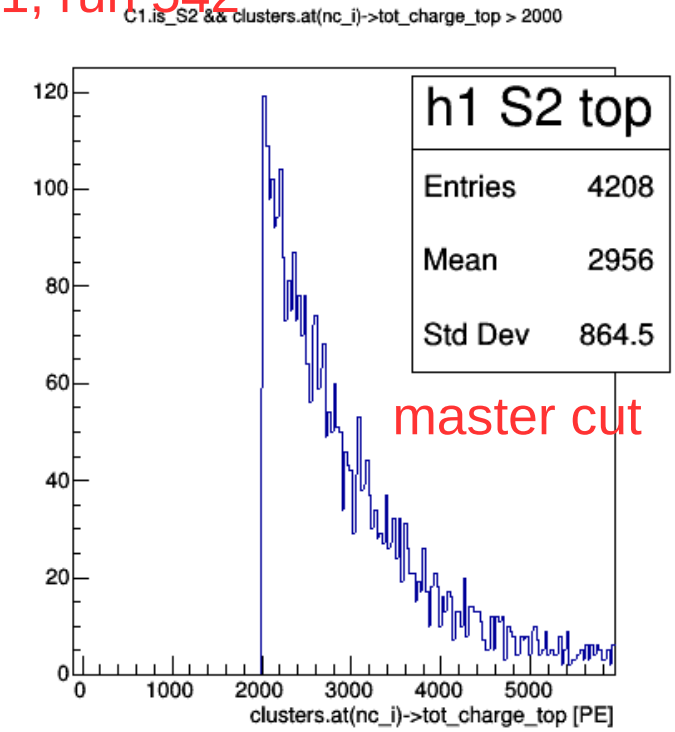




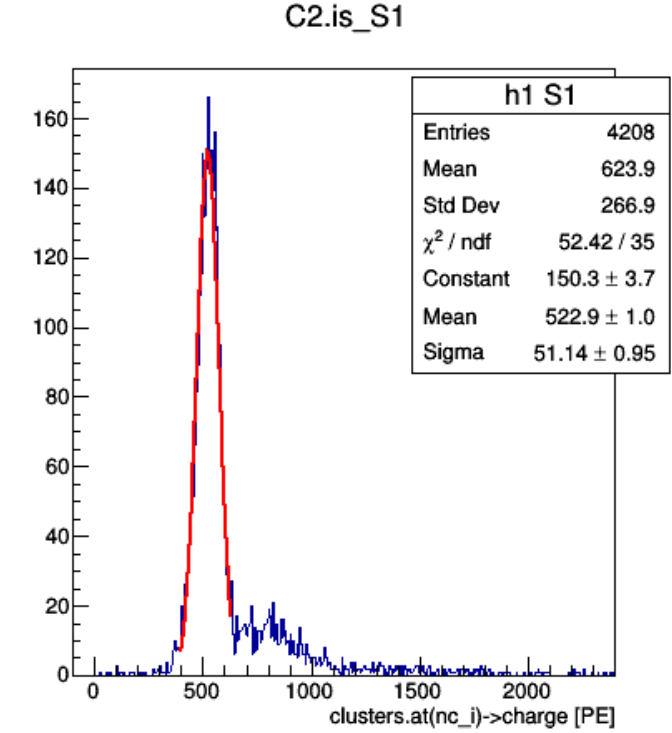
Ph2, Am241, run 542

tot_charge_top > 2000 [PE]

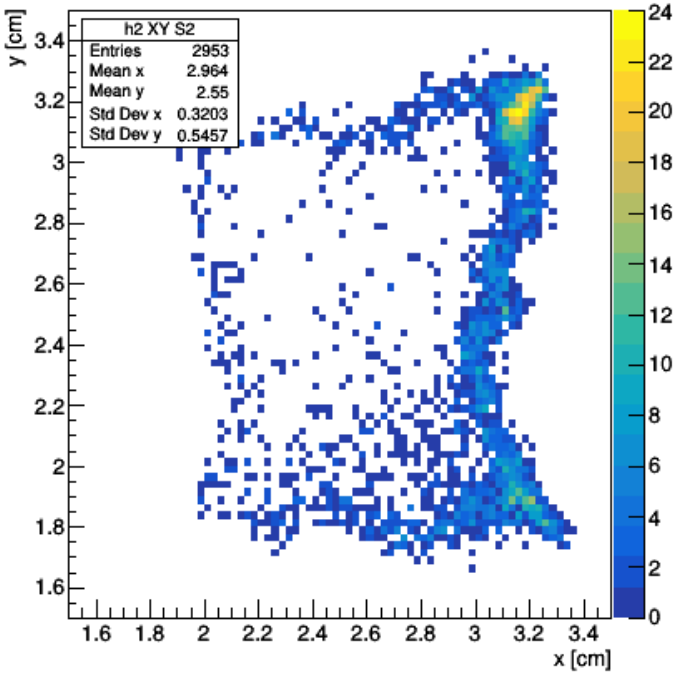


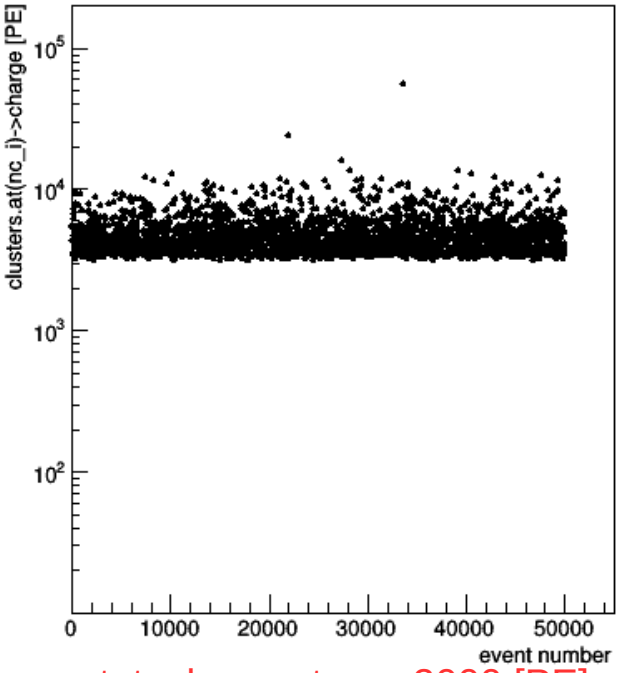


master cut



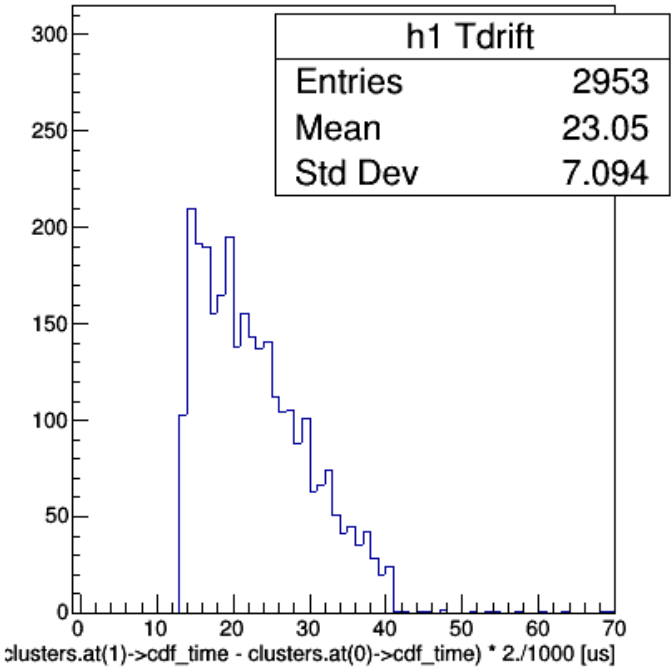
region_of_S2_uniformity (2.2 < x < 2.8; 2 < y < 3)





tot_charge_top > 2000 [PE]

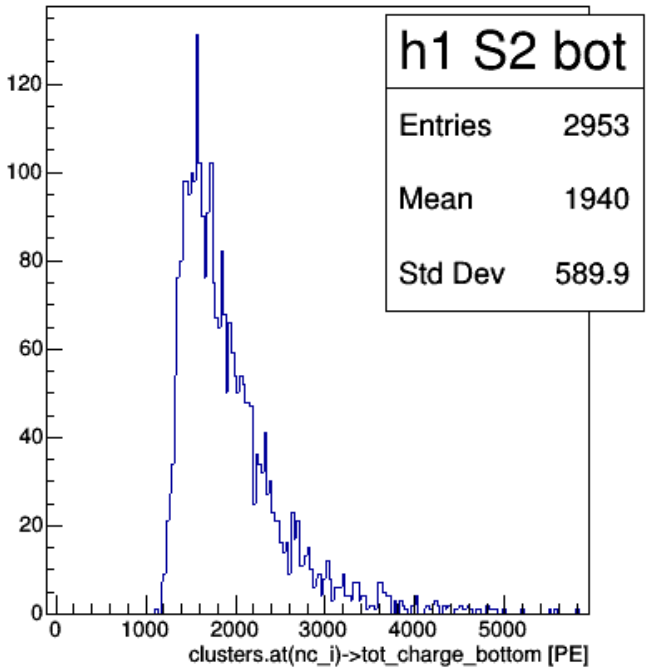
C0.nc == 2

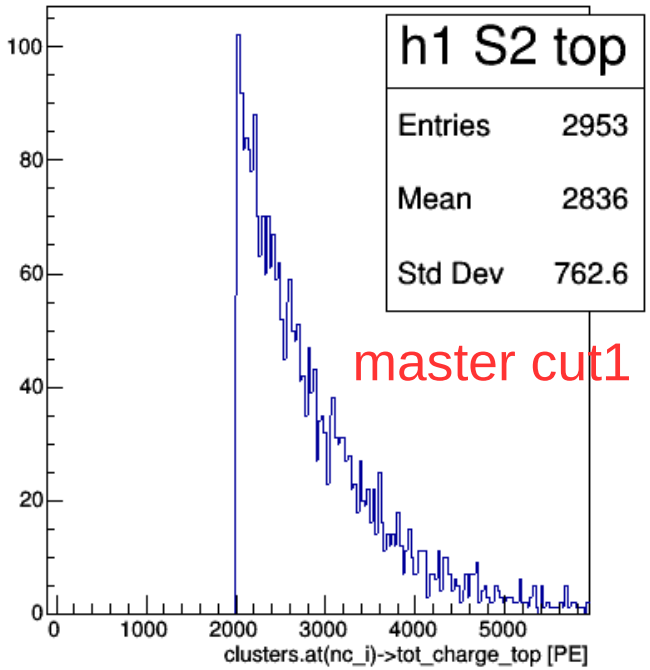


421 < charge < 625 [PE]

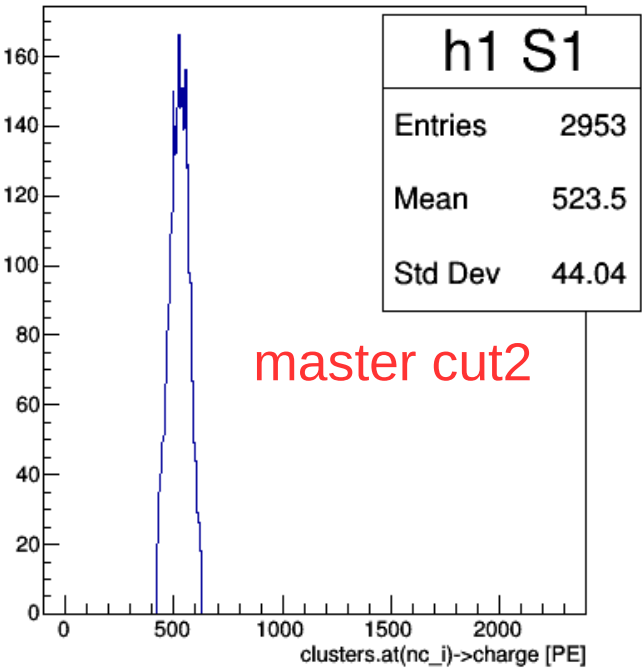
Ph2, Am241, run 542

C2.is_S1

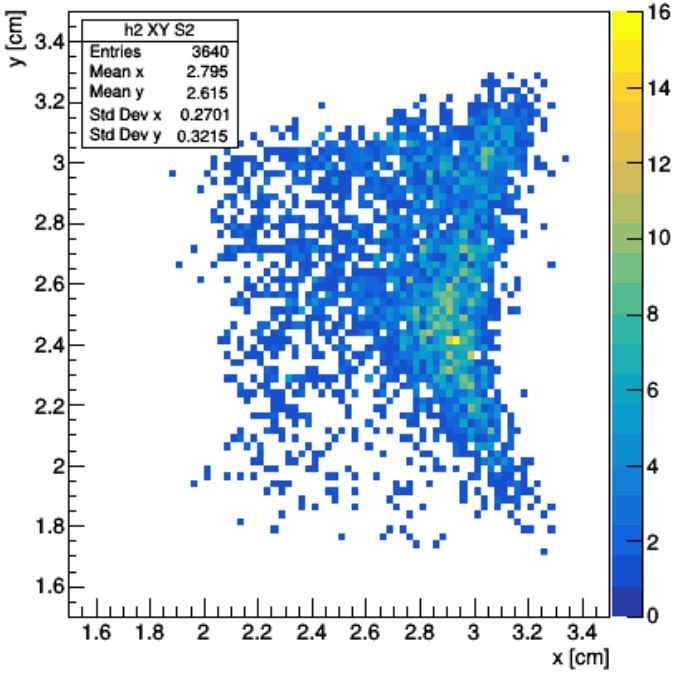


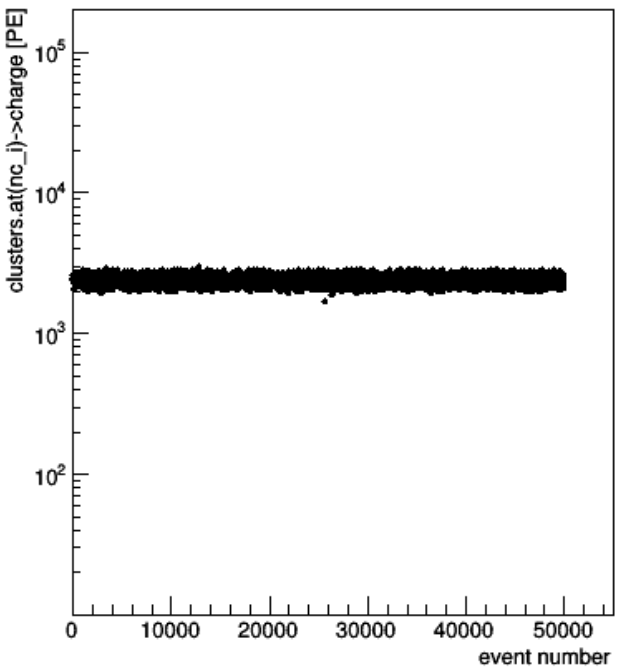


master cut1

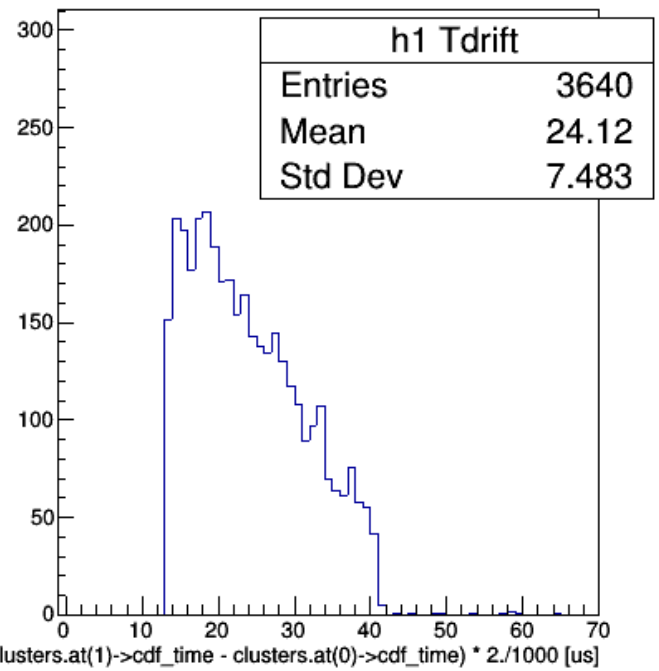


master cut2





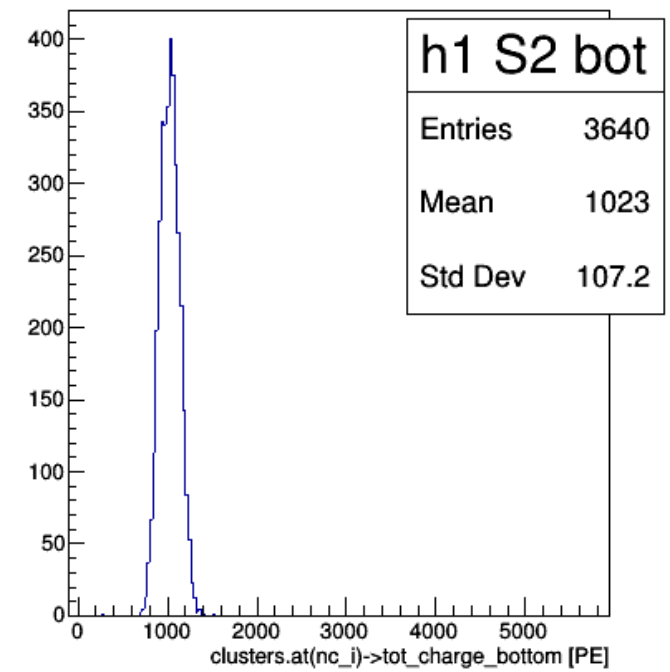
C0.nc == 2

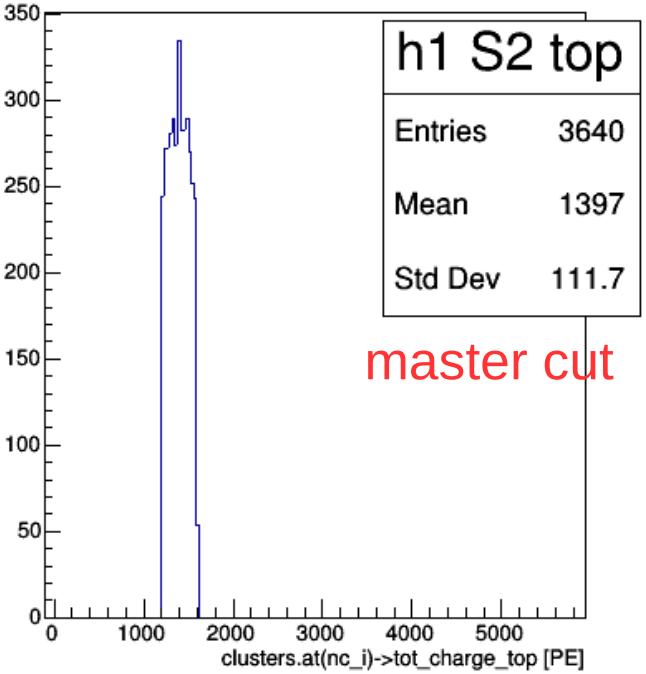


Ph2, Am241, run 542

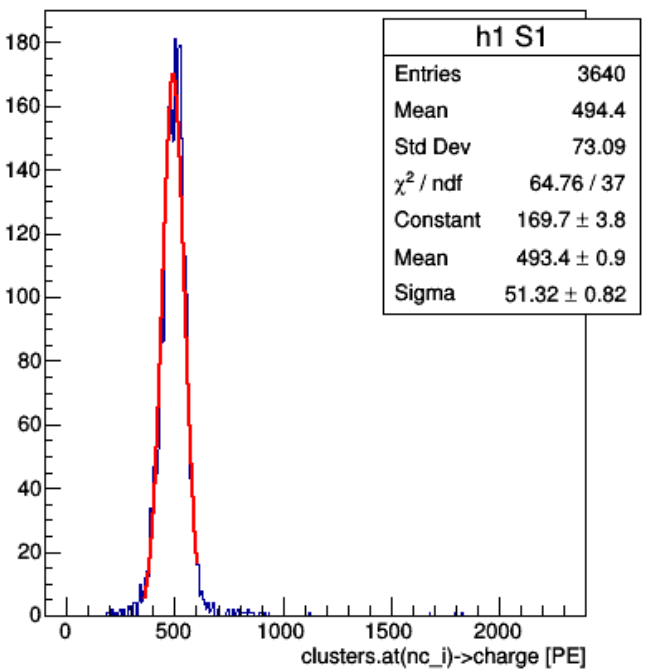
1200 < tot_charge_top < 1600 [PE]

C2.is_S1

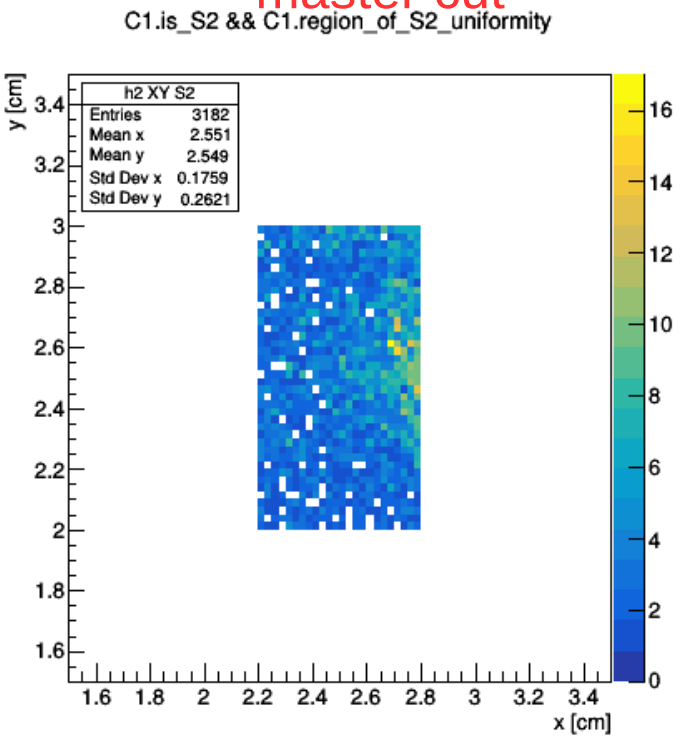


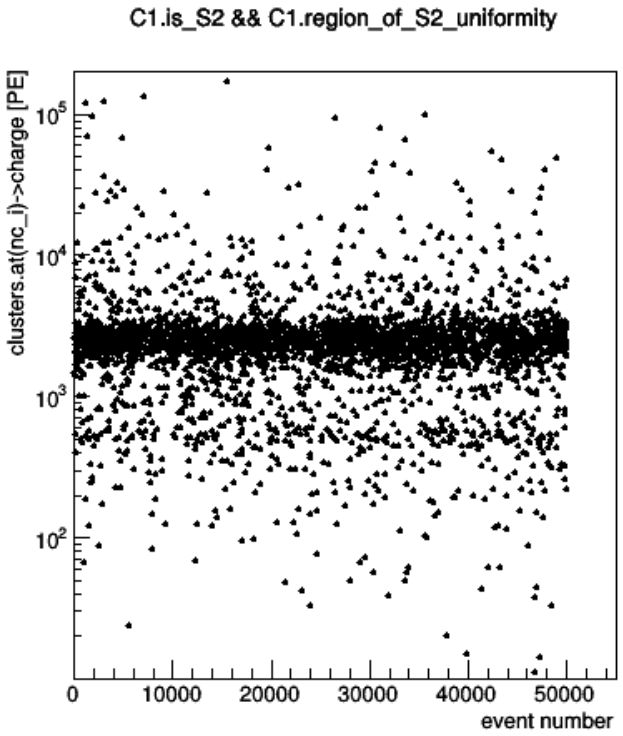


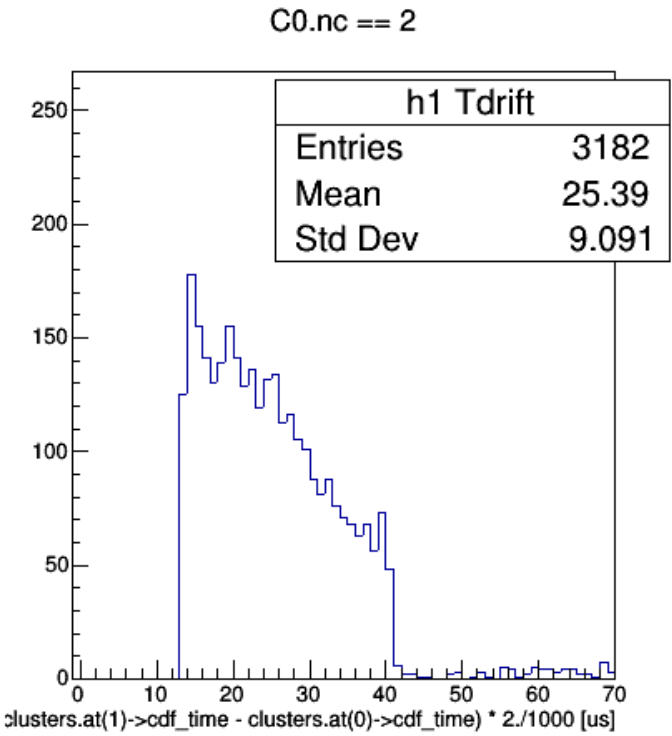
master cut



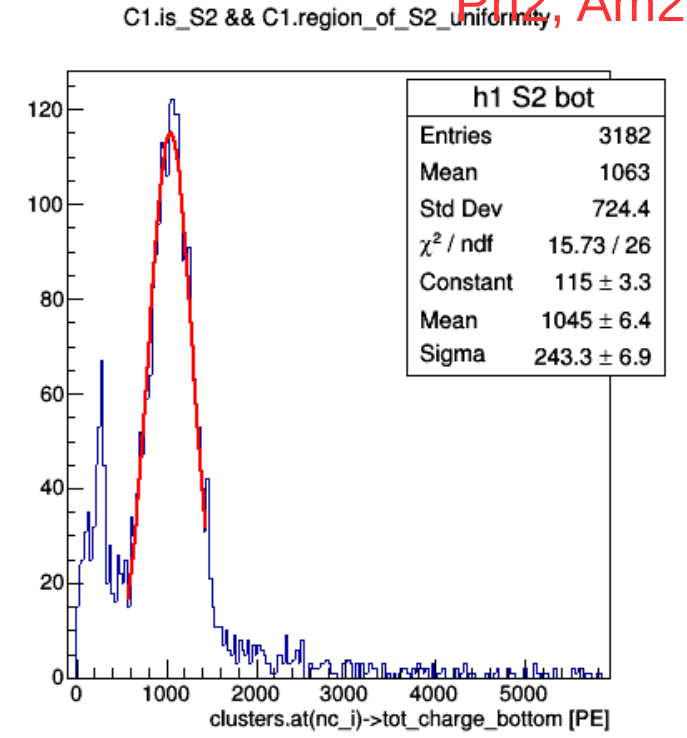
master cut

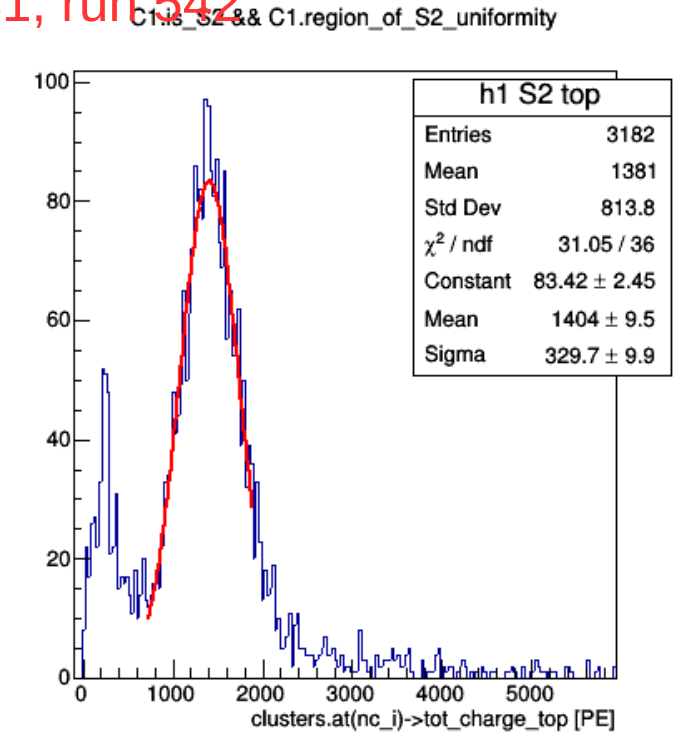


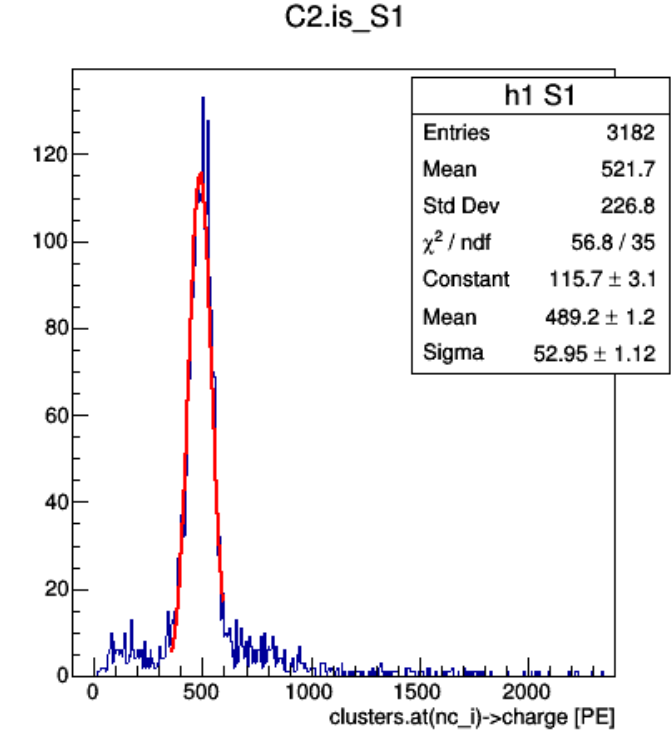




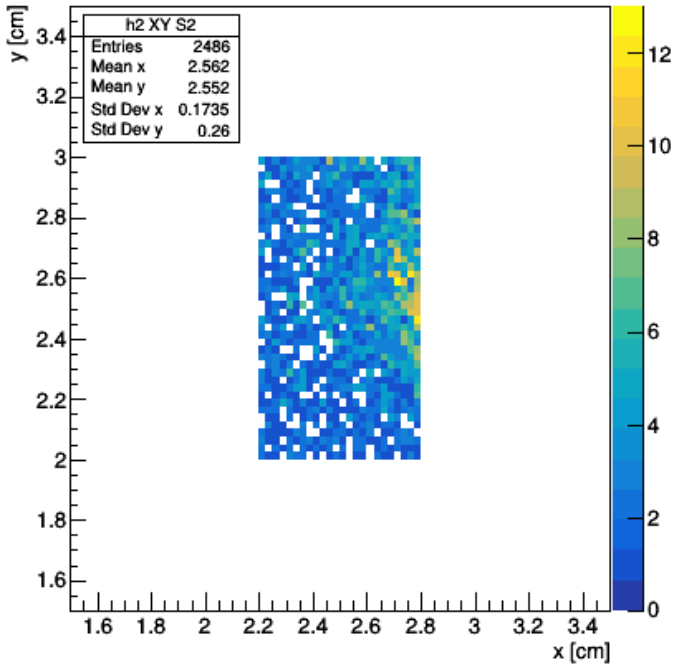
Ph2, Am241, run 542

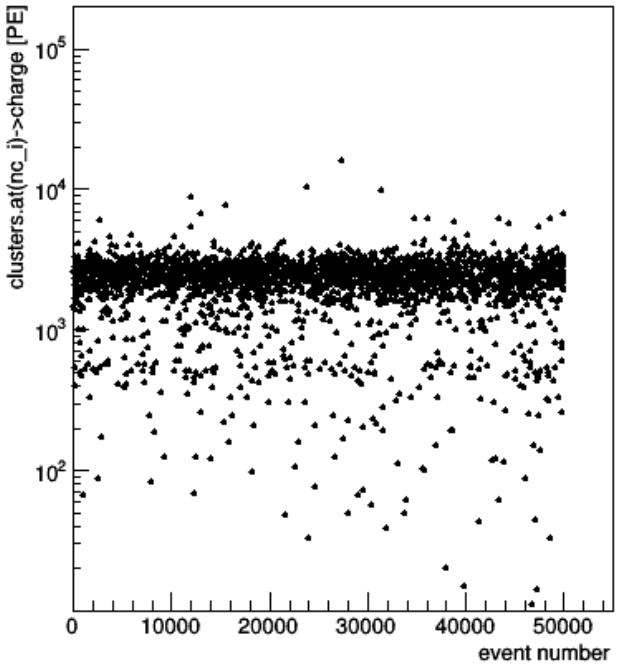




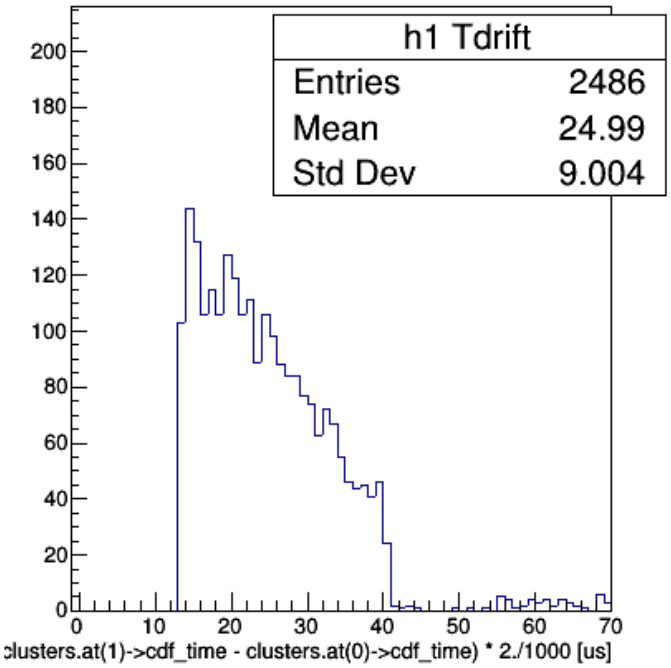


master cut1





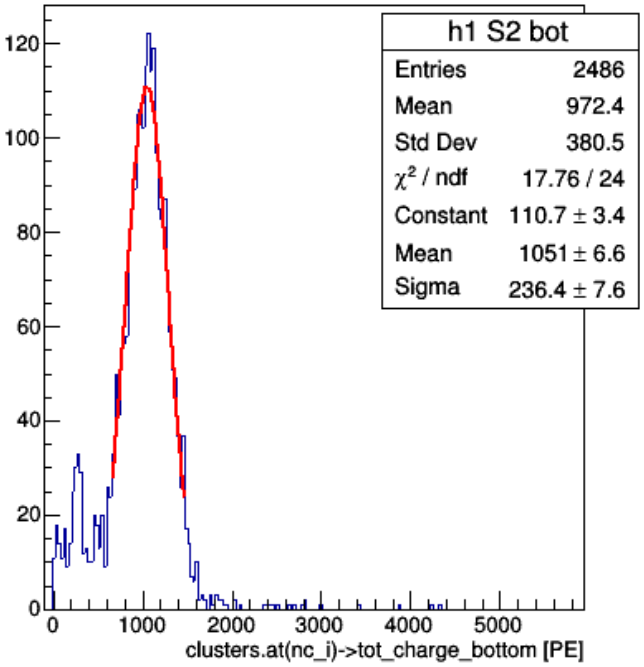
C0.nc == 2

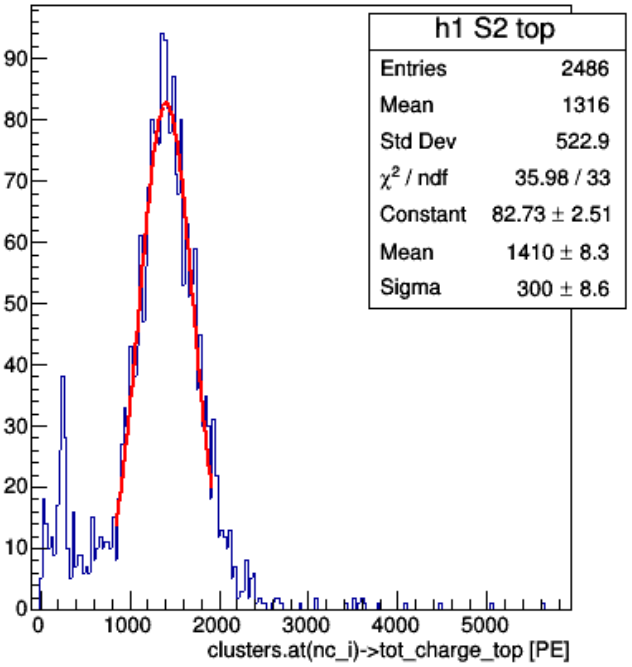


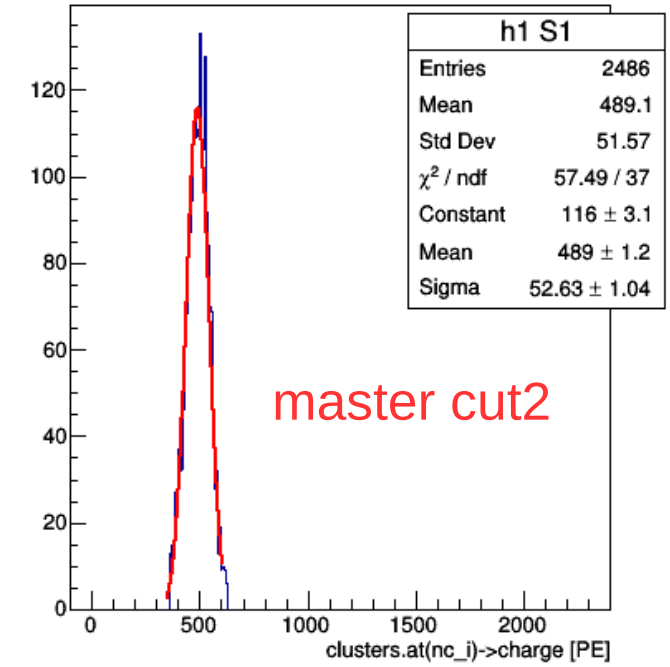
Ph2, Am241, run 542

357 < charge < 622 [PE]

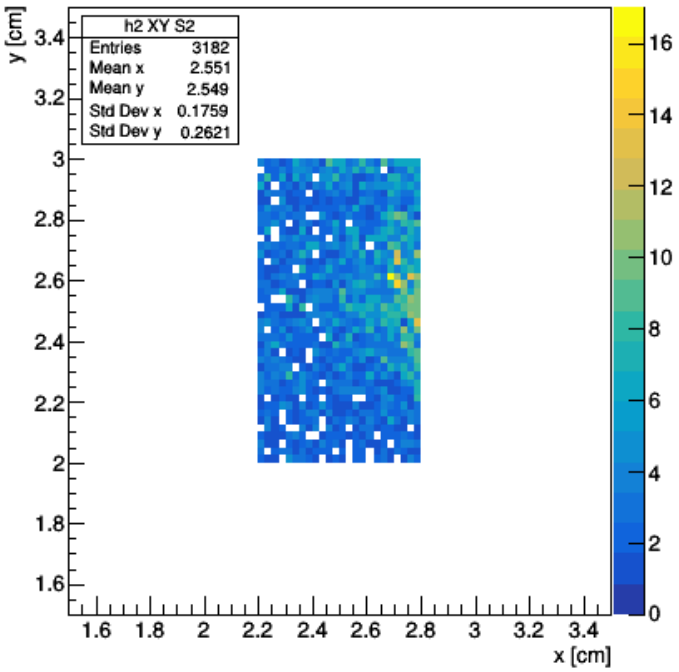
C2.is_S1

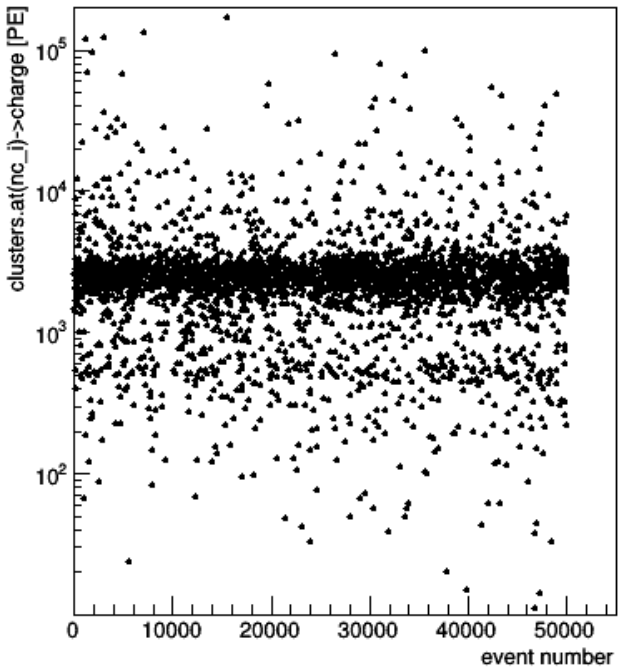




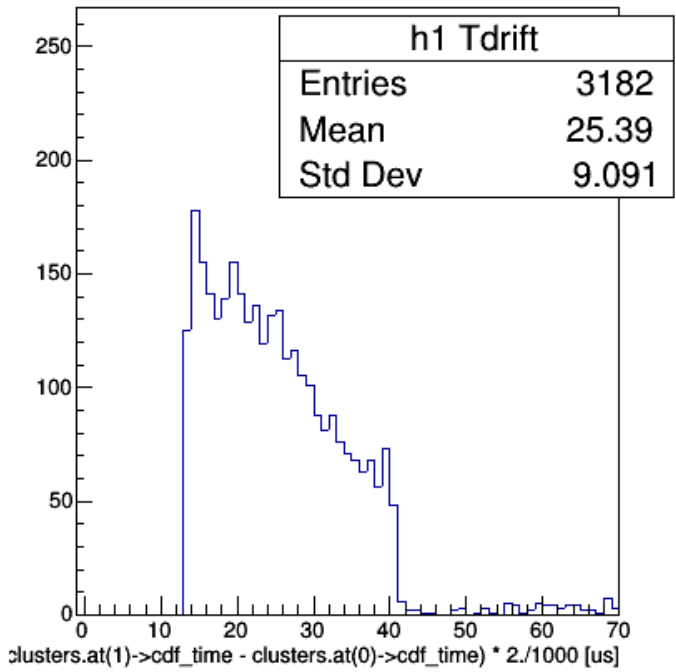


master cut2

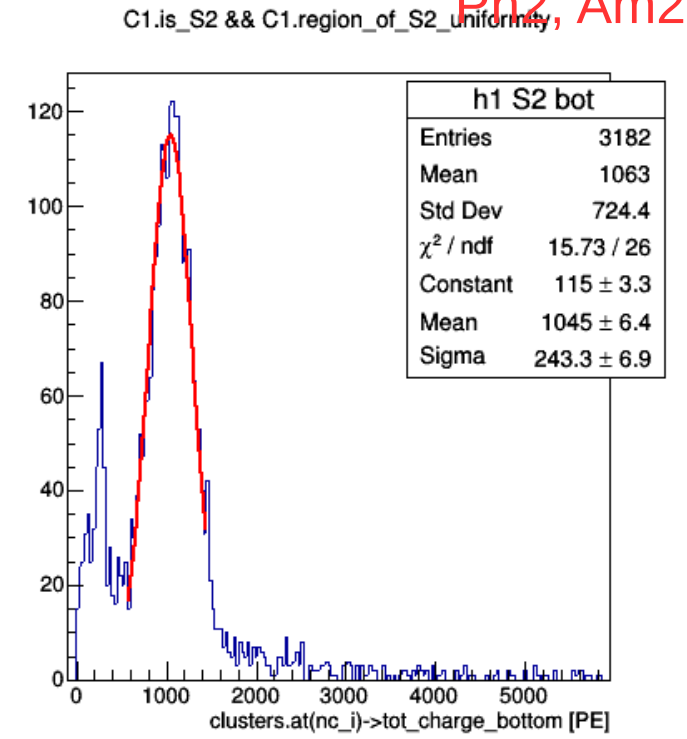


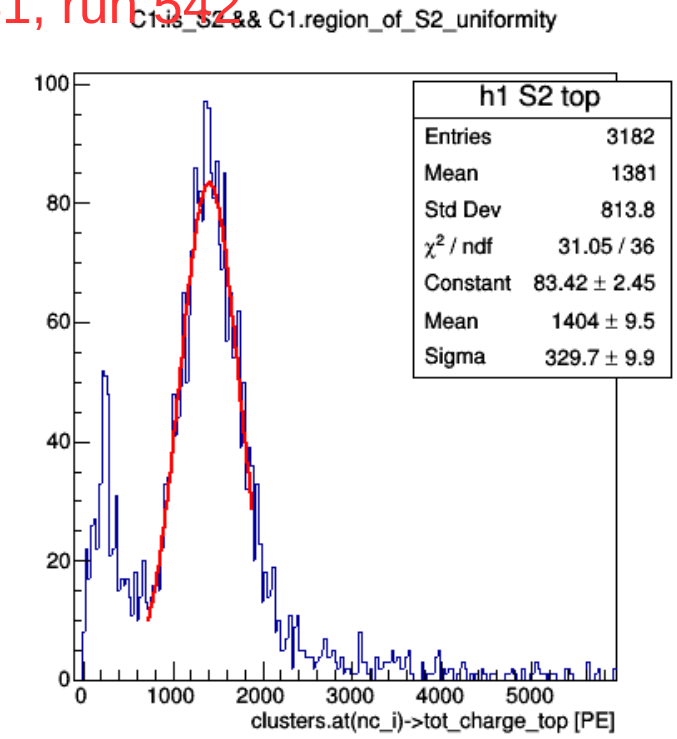


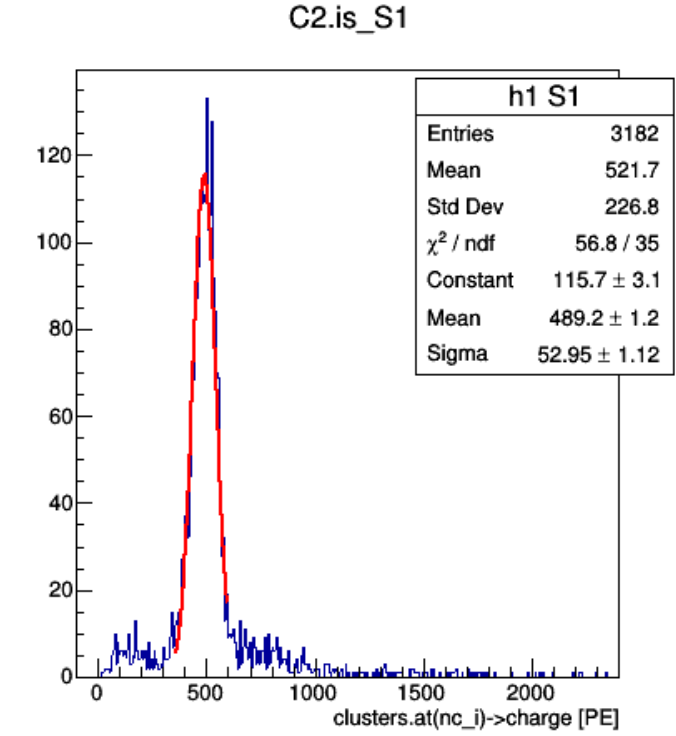
master cut



Ph2, Am241, run 542

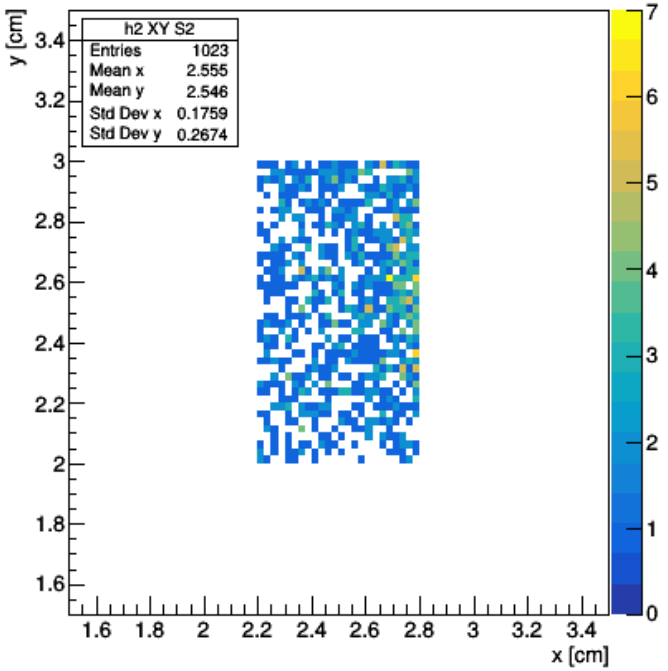




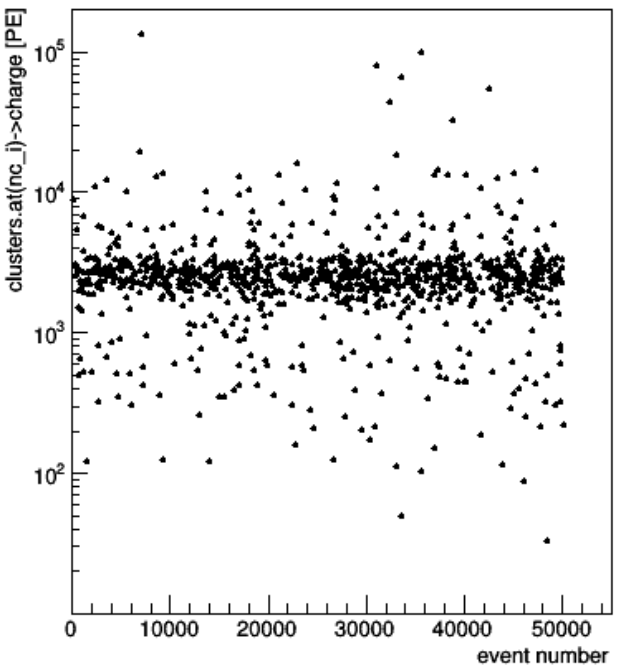


master cut

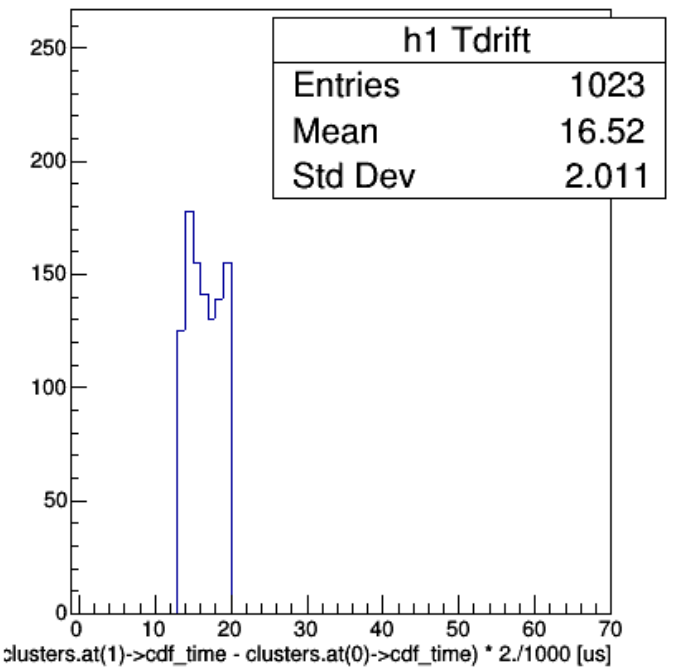
C1.is_S2 && C1.region_of_S2_uniformity && Tdrift > 10 && Tdrift < 20



C1.is_S2 && C1.region_of_S2_uniformity && Tdrift > 10 && Tdrift < 20

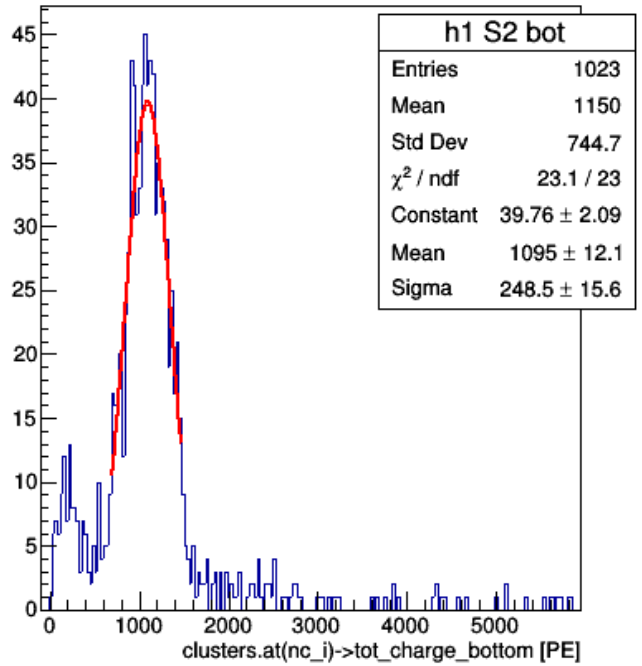


C0.nc == 2

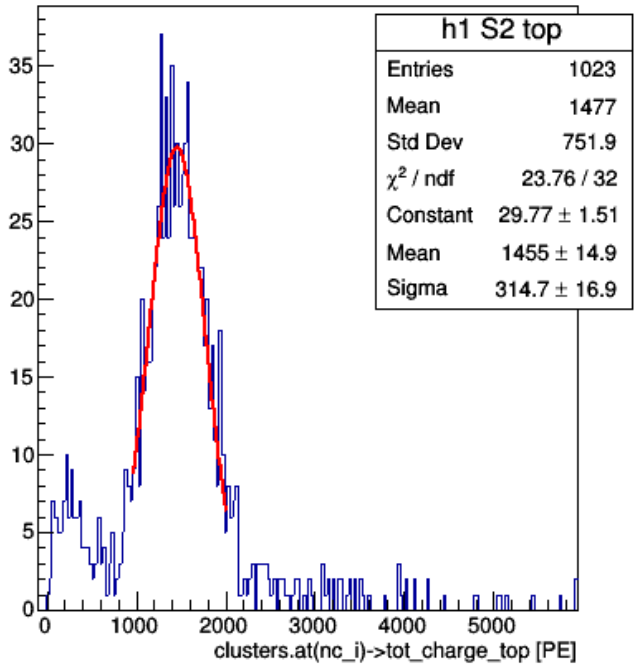


Ph2, Am241, run 542

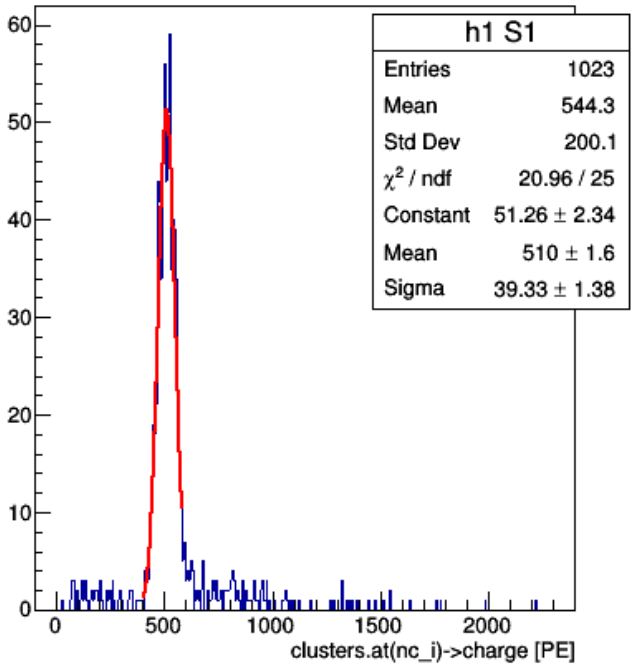
C1.is_S2 && C1.region_of_S2_uniformity && Tdrift > 10 && Tdrift < 20



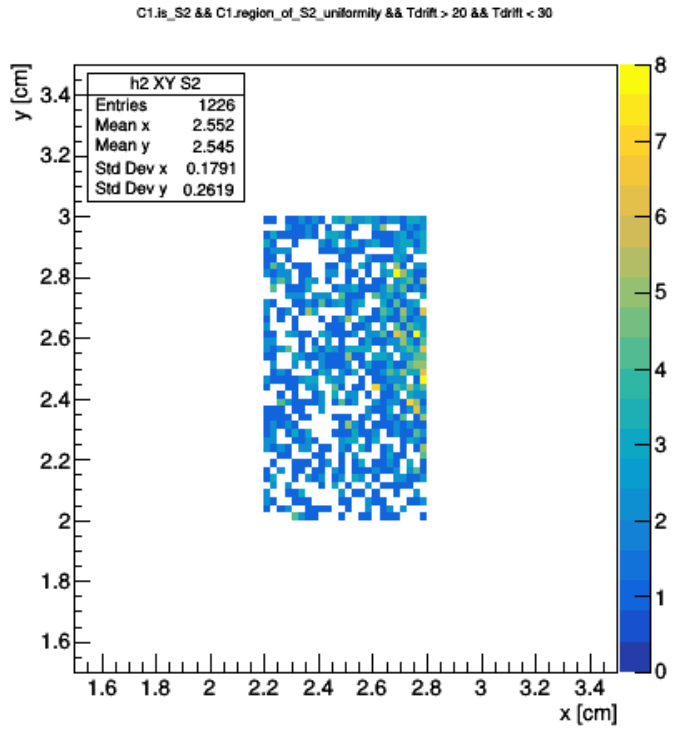
C1.is_S2 && C1.region_of_S2_uniformity && Tdrift > 10 && Tdrift < 20

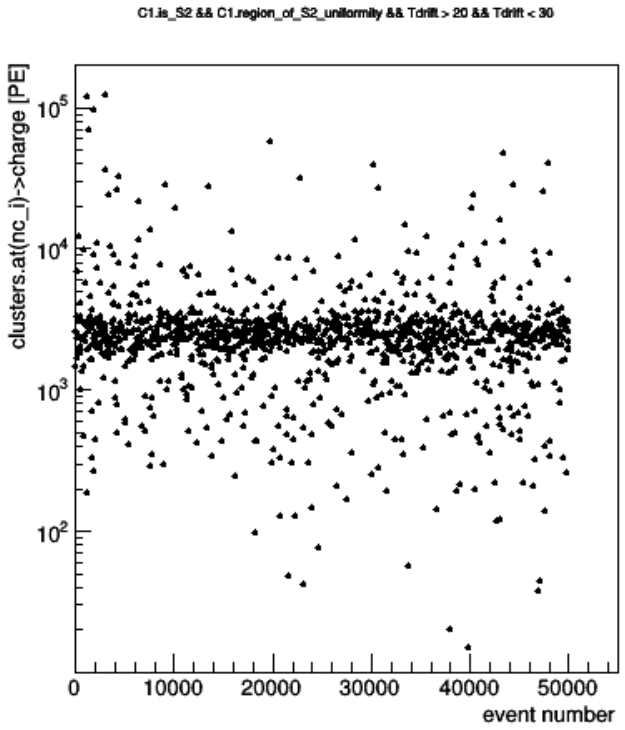


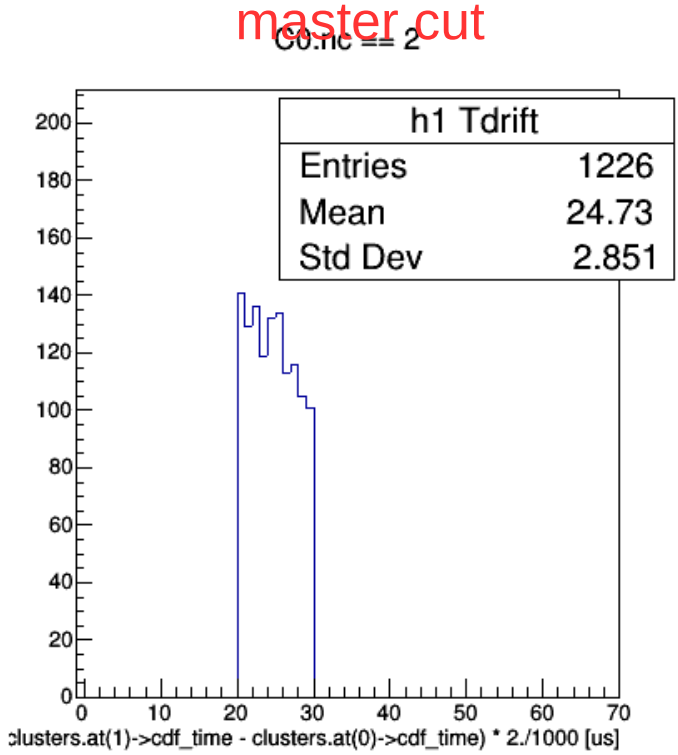
C2.is_S1



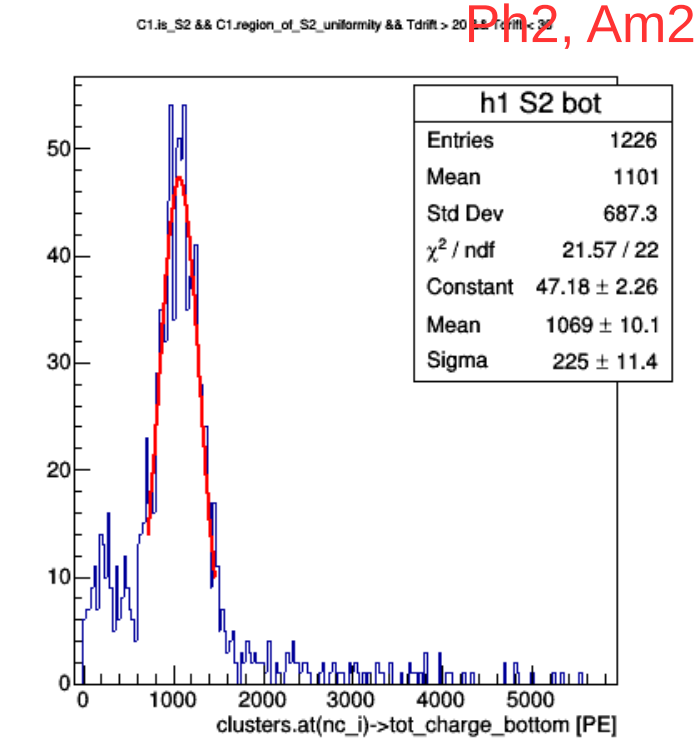
master cut

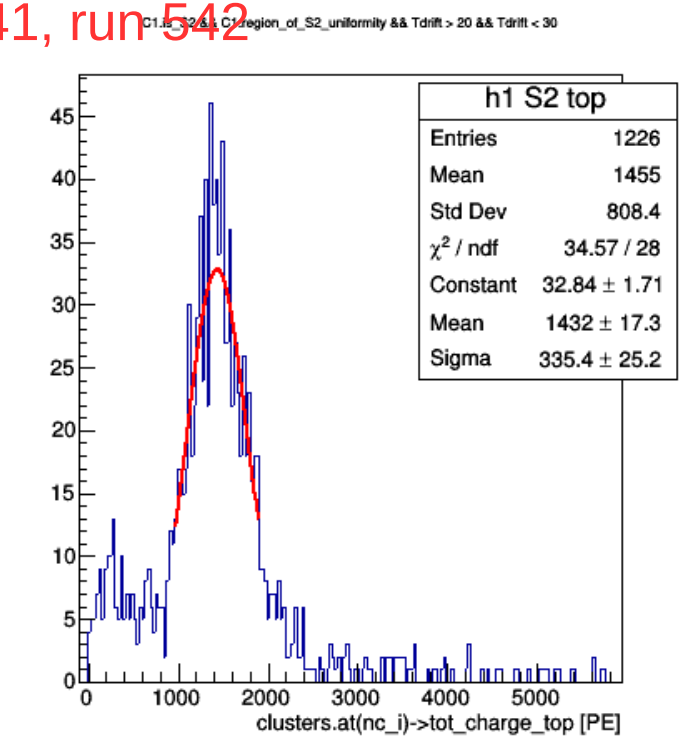


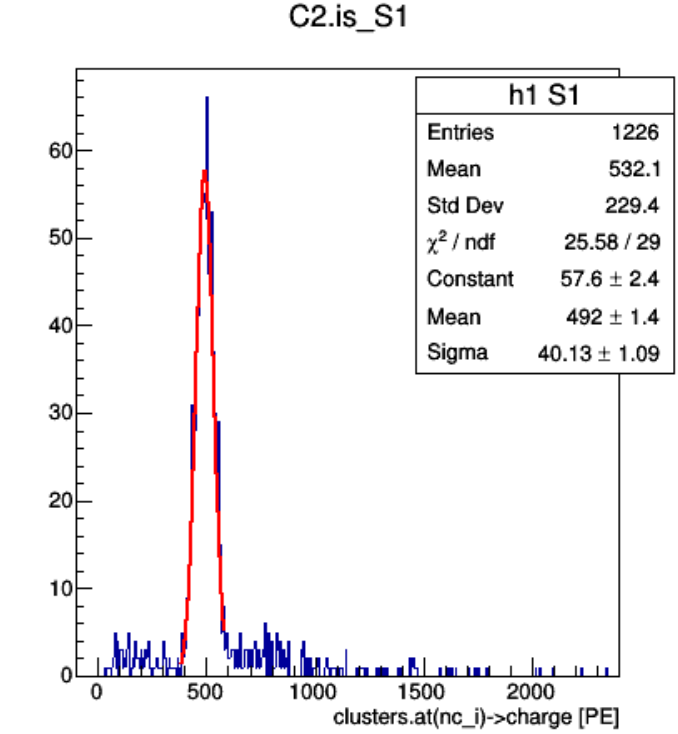




Ph2, Am241, run 542

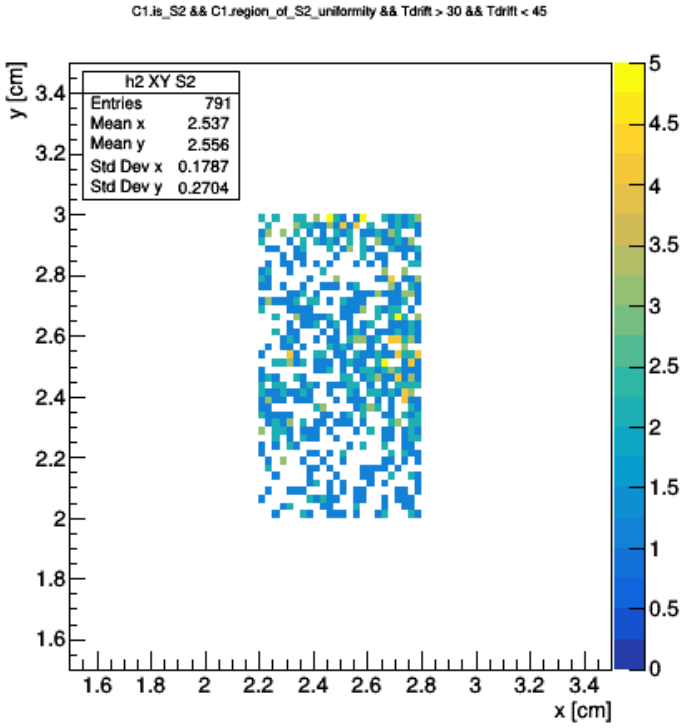


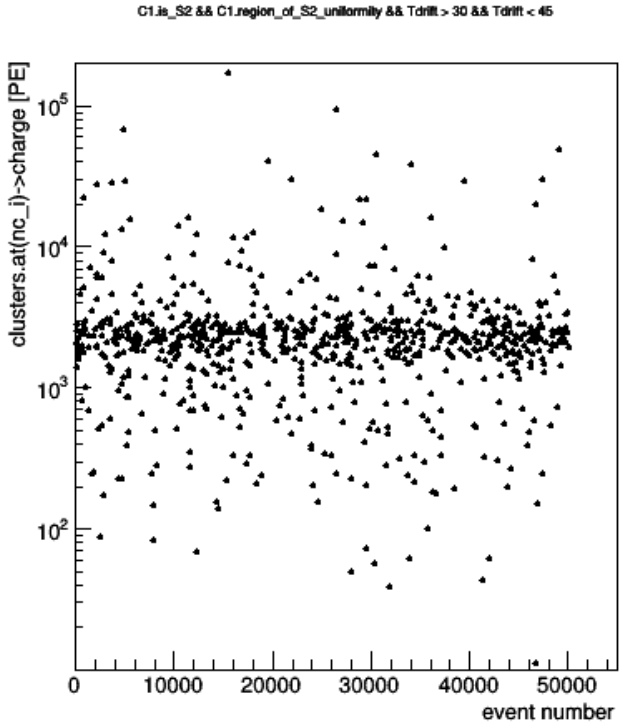


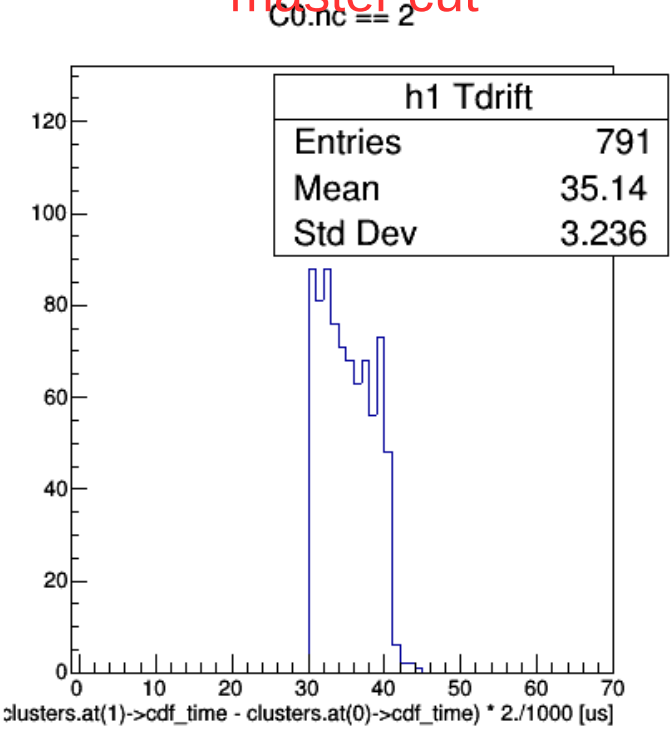


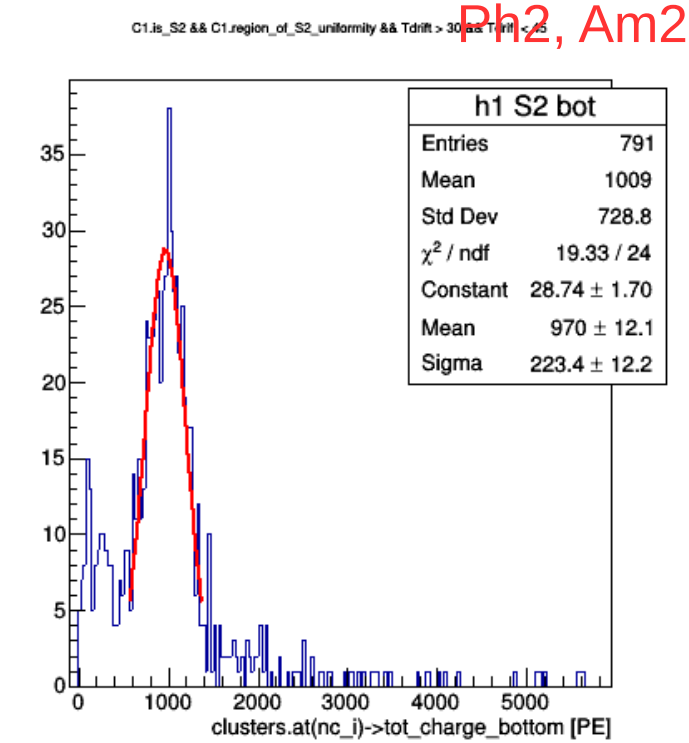
master cut

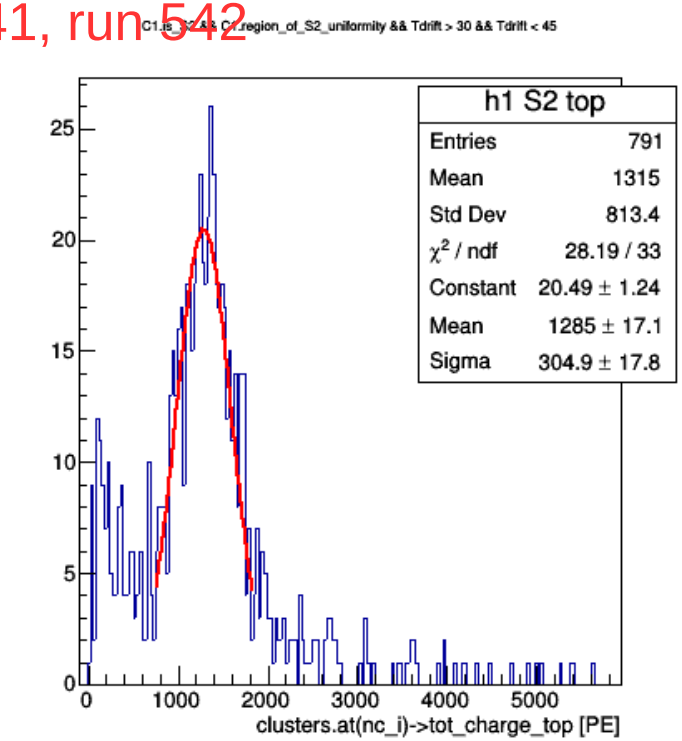
Ph2, Am241, run 542

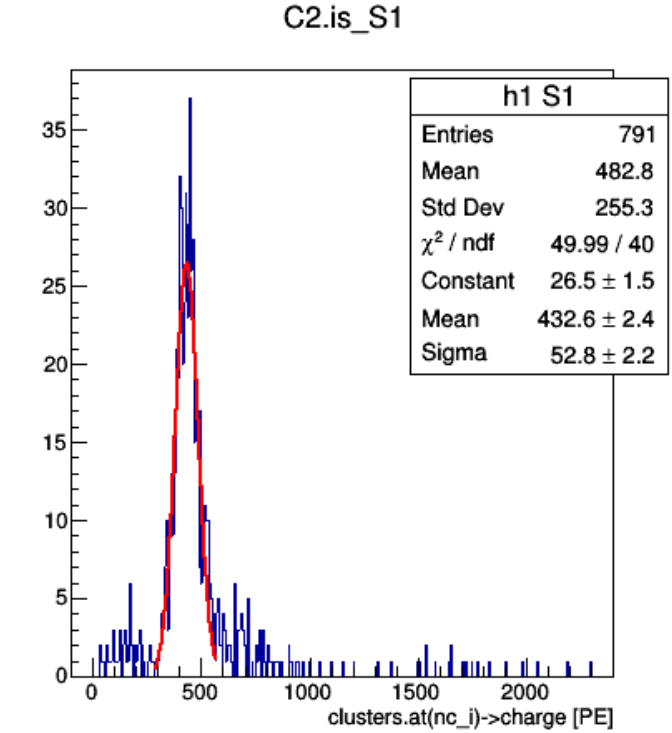


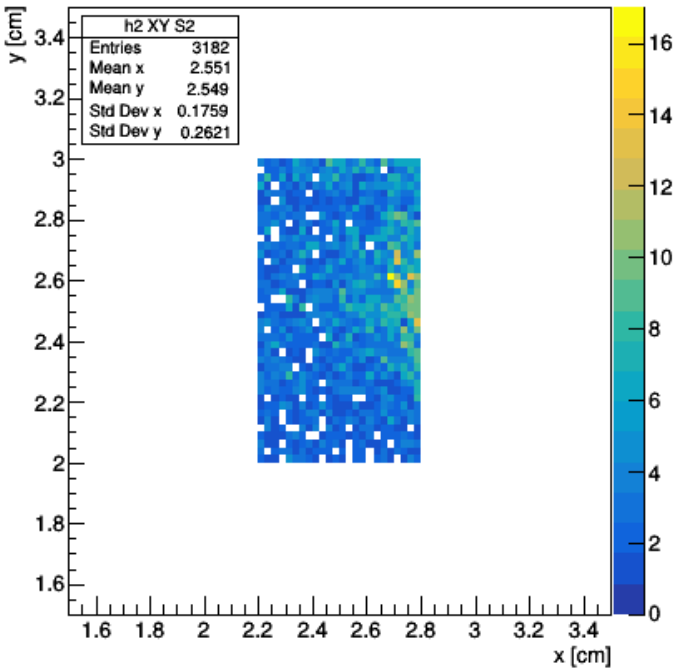


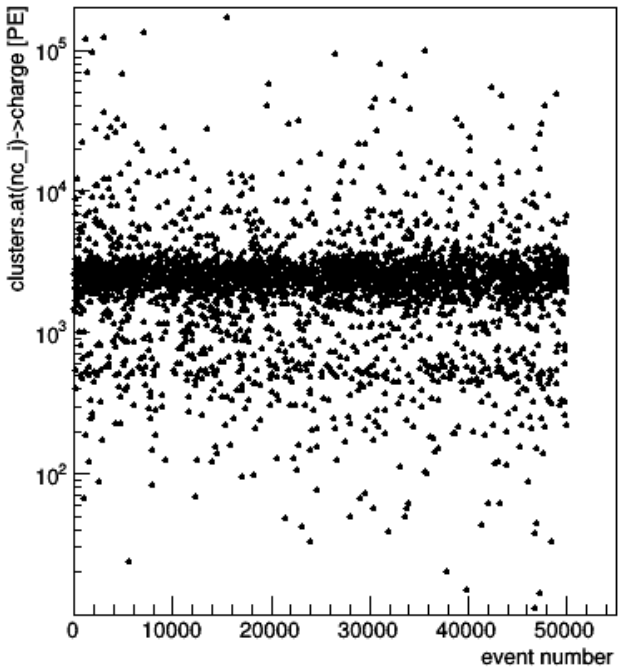




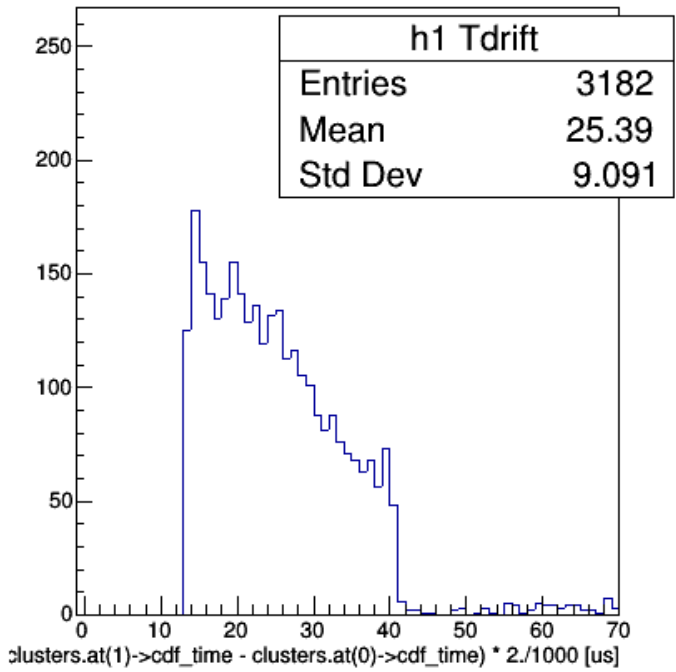




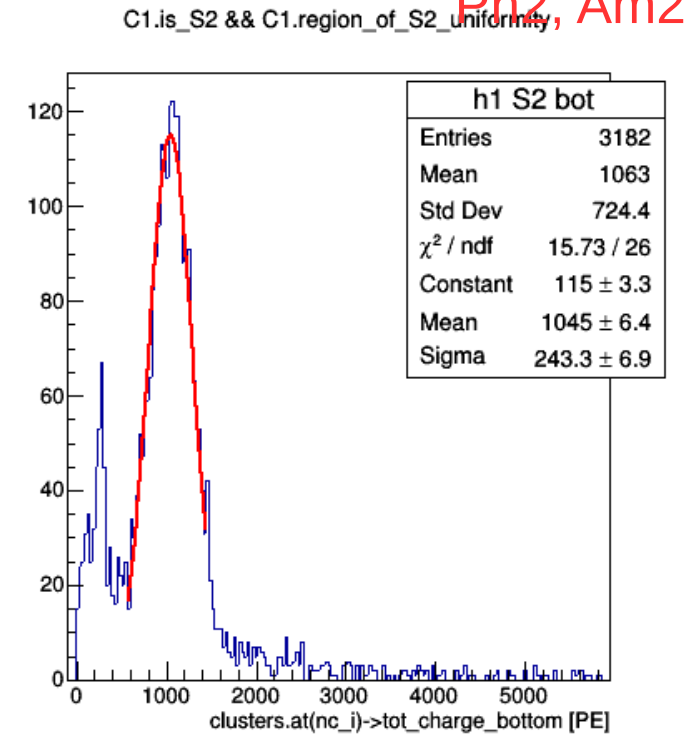


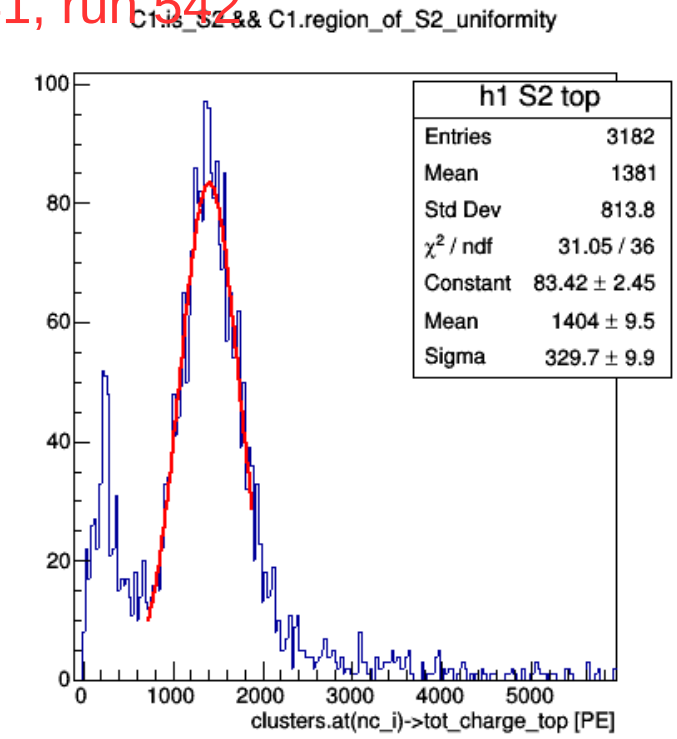


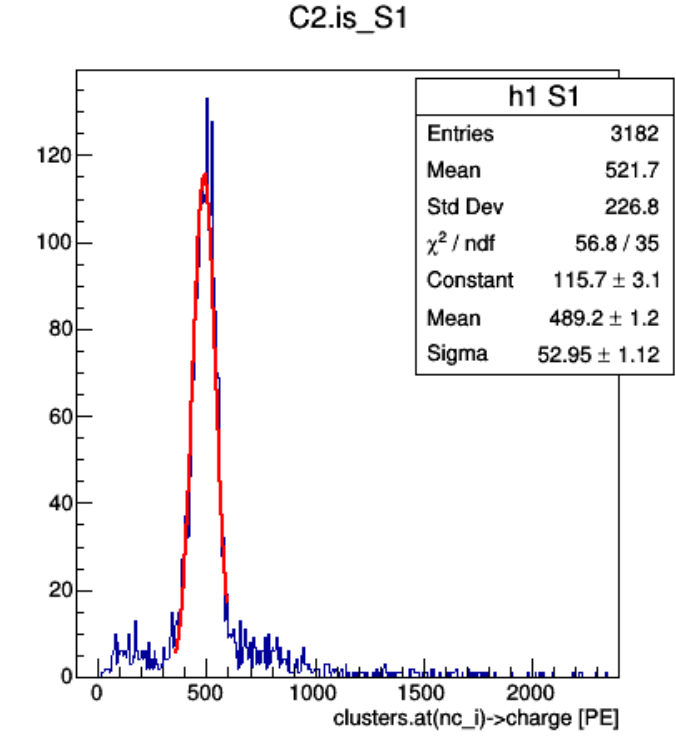
master cut

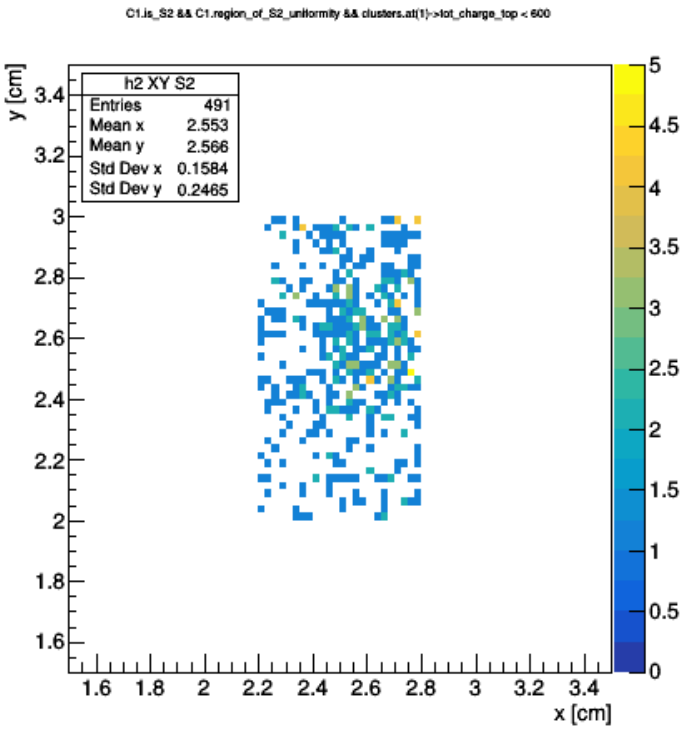


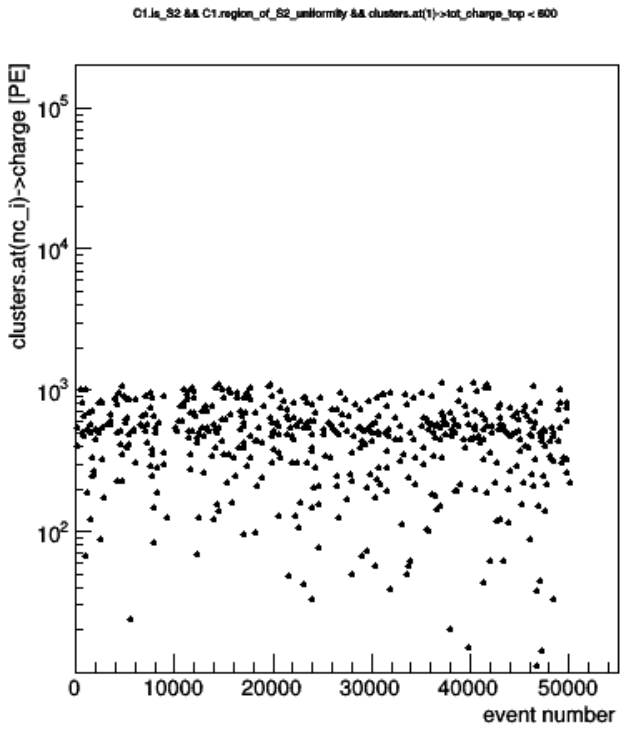
Ph2, Am241, run 542

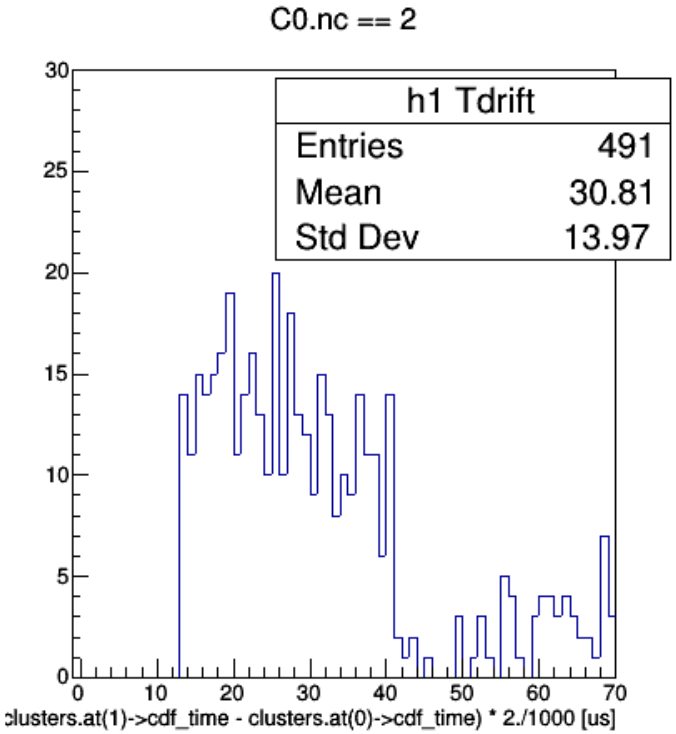






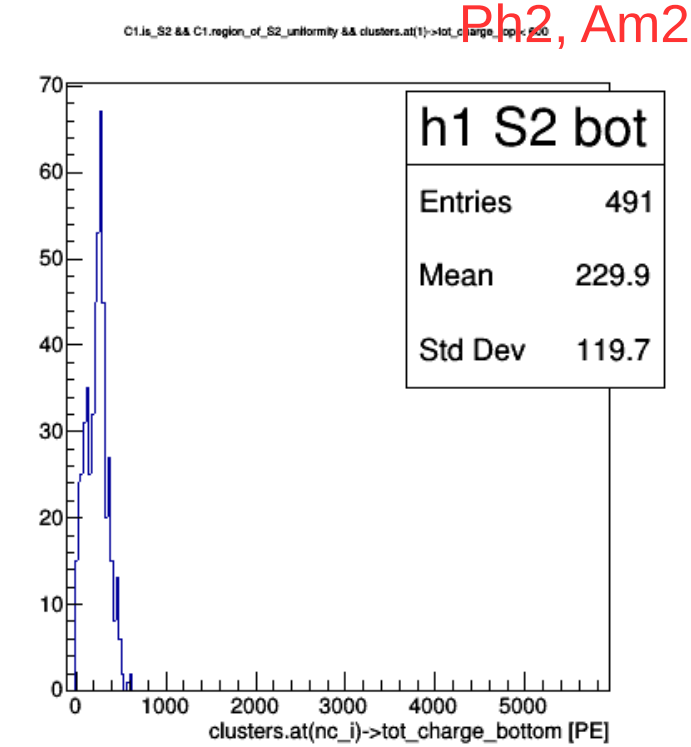


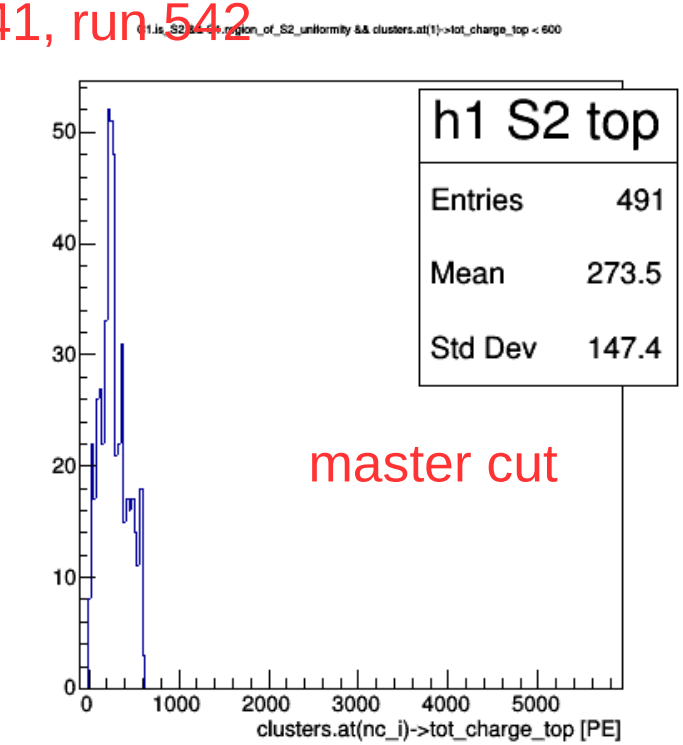




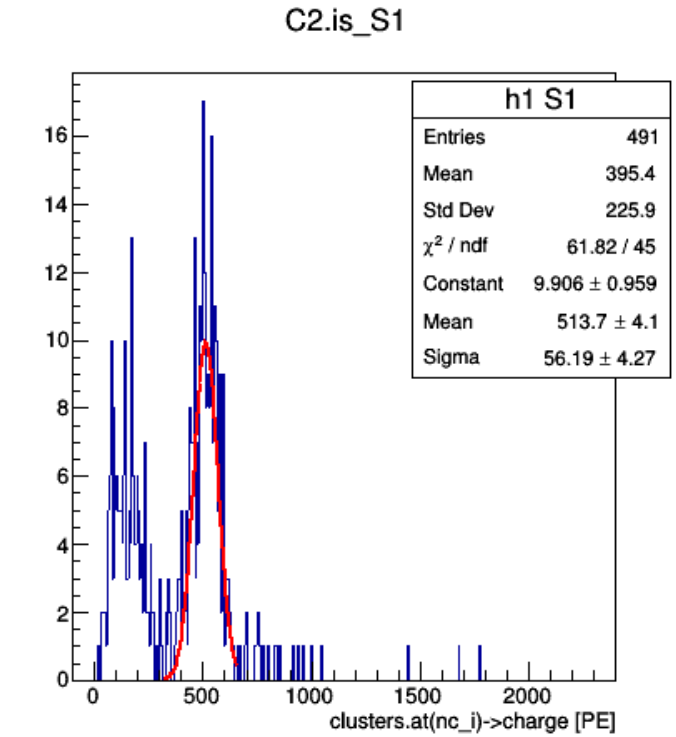
tot_charge_top < 600 [PE]

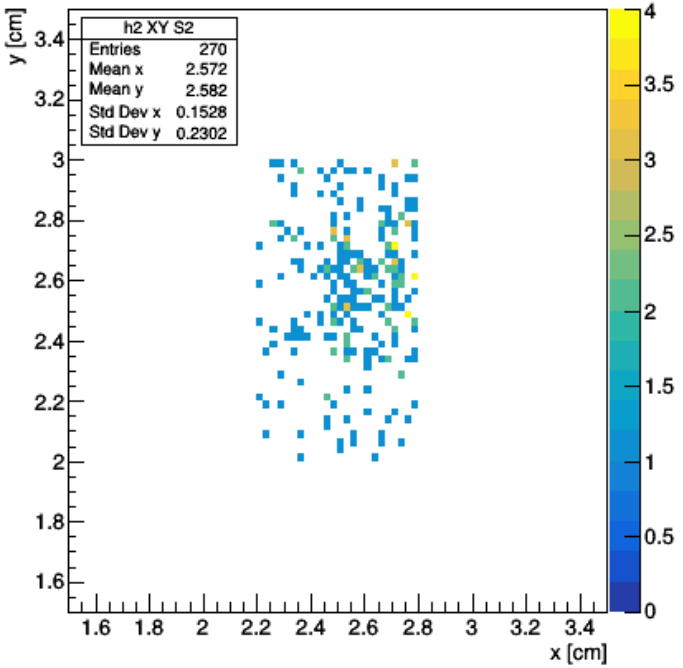
Ph2, Am241, run 542

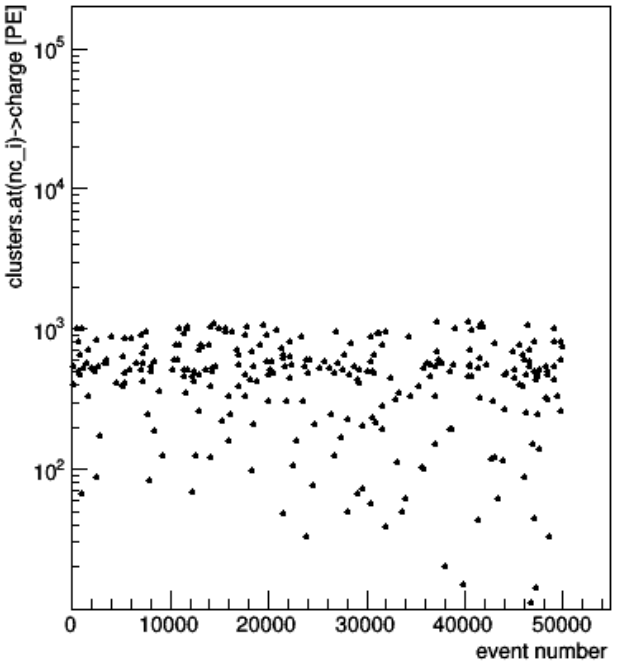




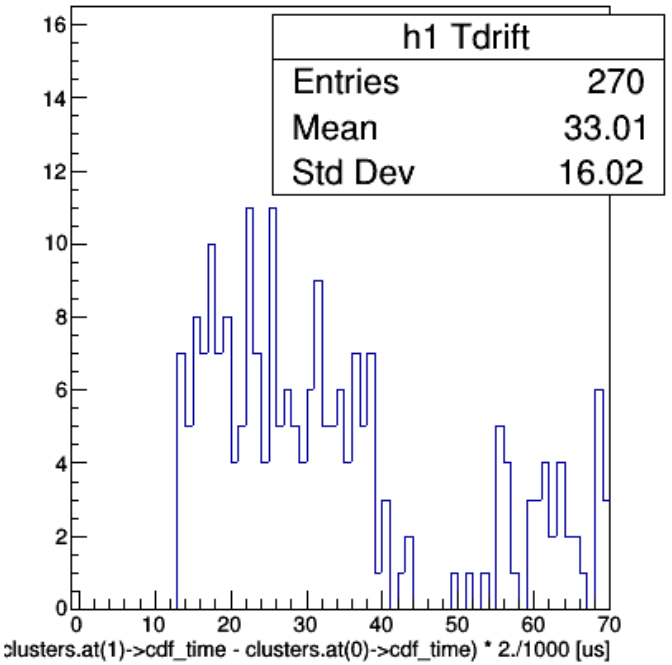
master cut







C0.nc == 2

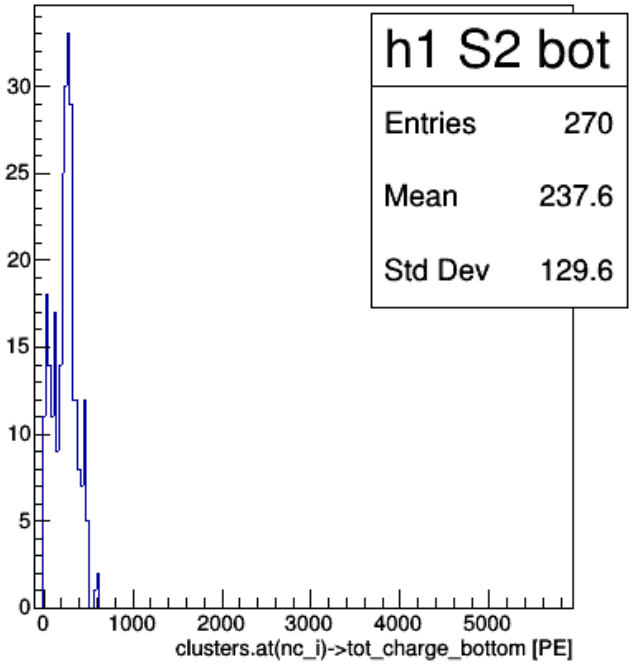


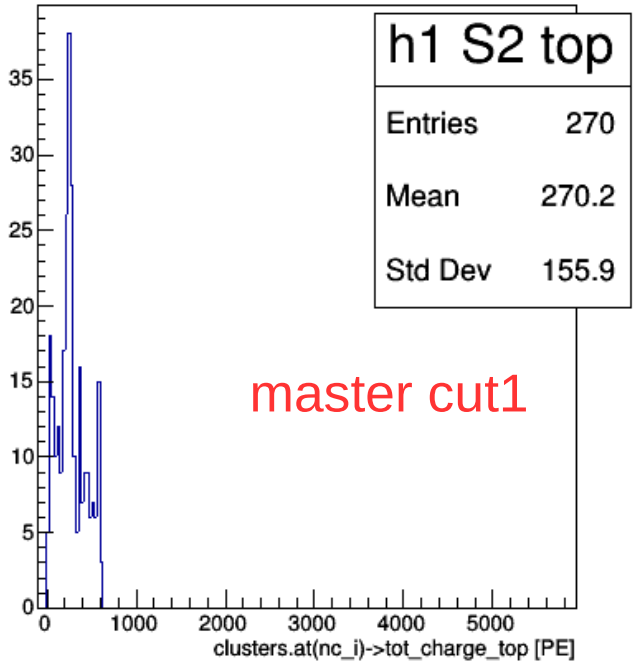
tot_charge_top < 600 [PE]

357 < charge < 622 [PE]

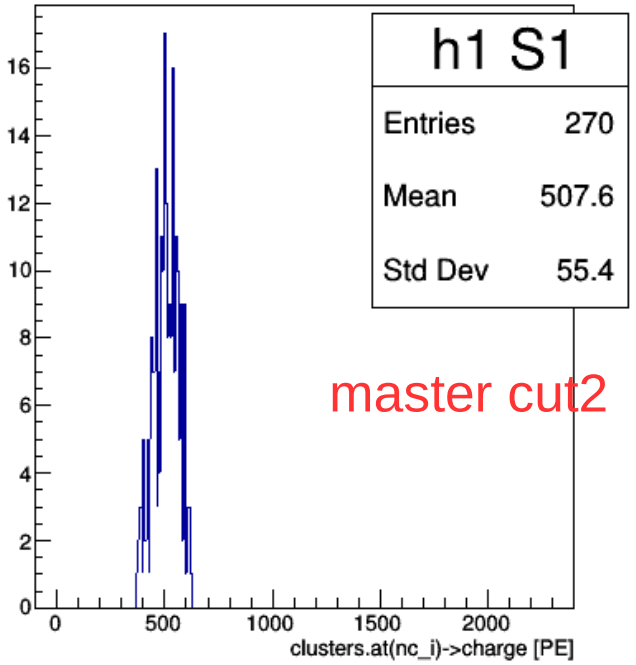
Ph2, Am241, run 542

C2.is_S1

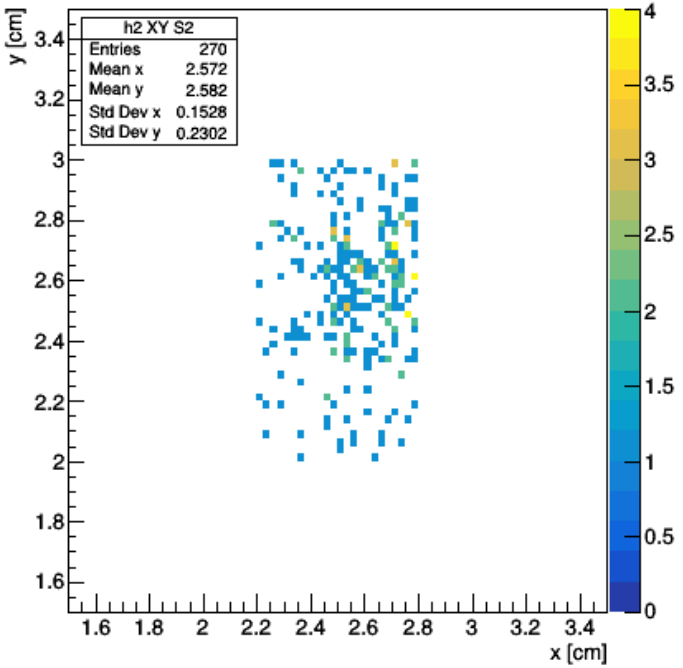


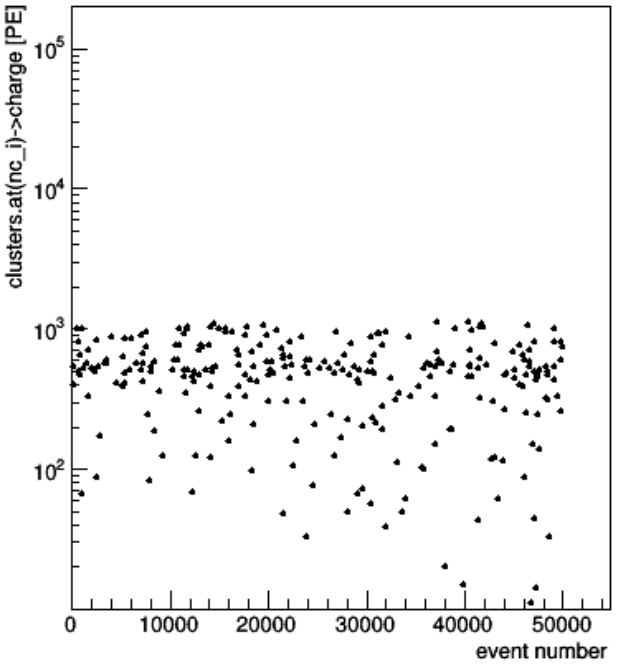


master cut1

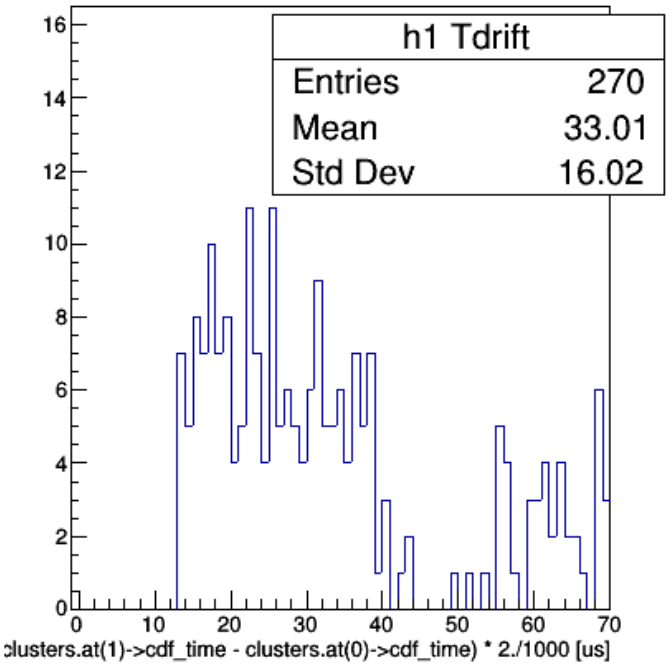


master cut2





C0.nc == 2

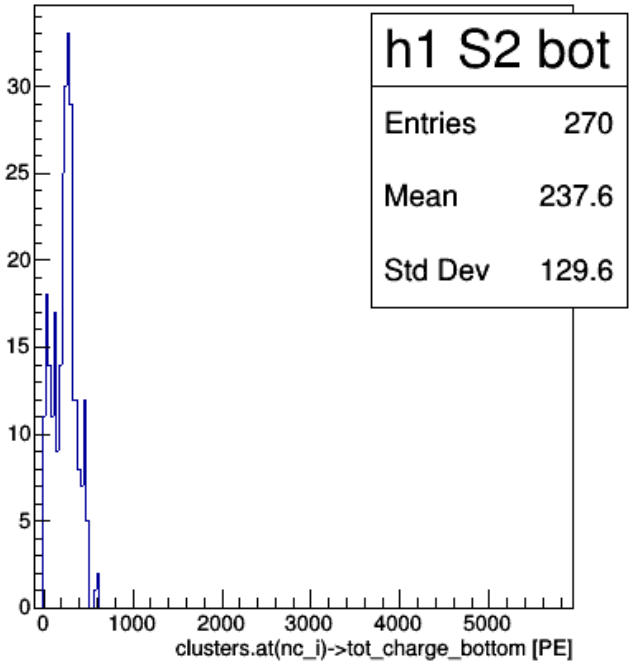


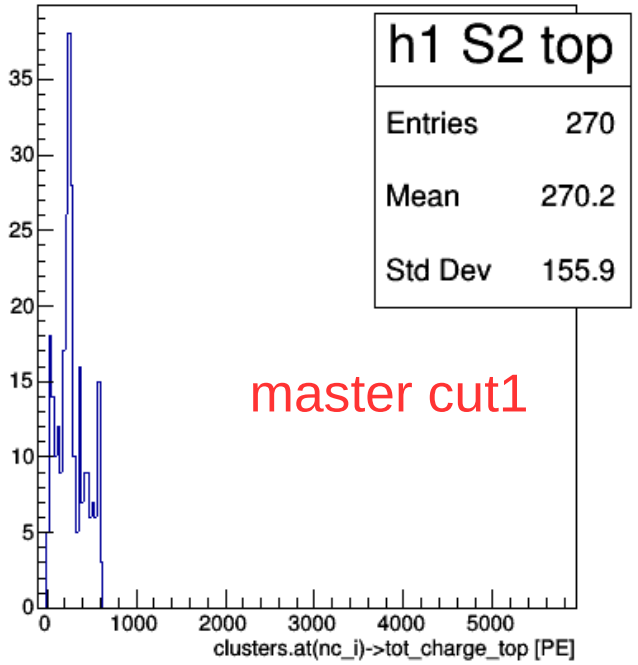
tot_charge_top < 600 [PE]

357 < charge < 622 [PE]

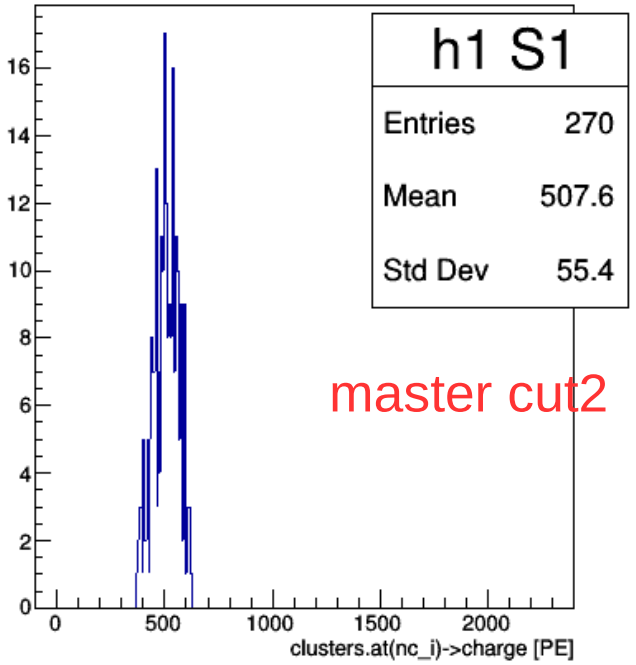
Ph2, Am241, run 542

C2.is_S1

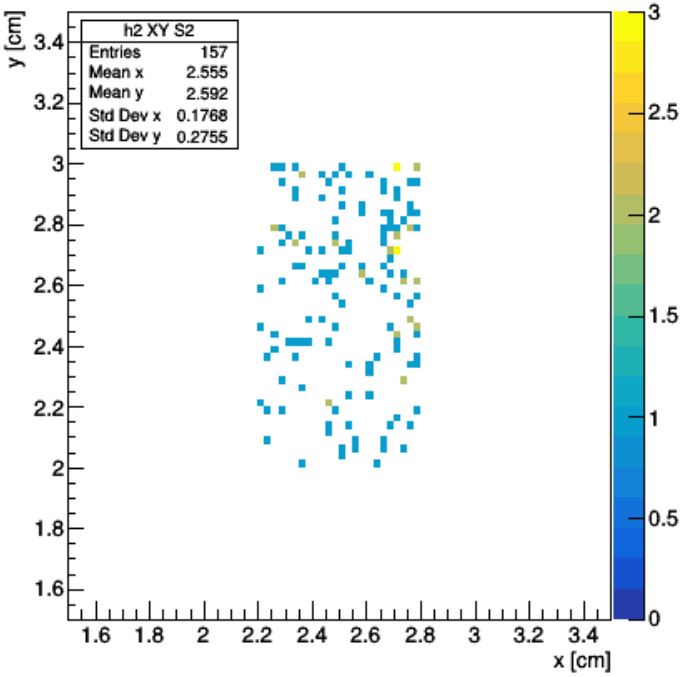


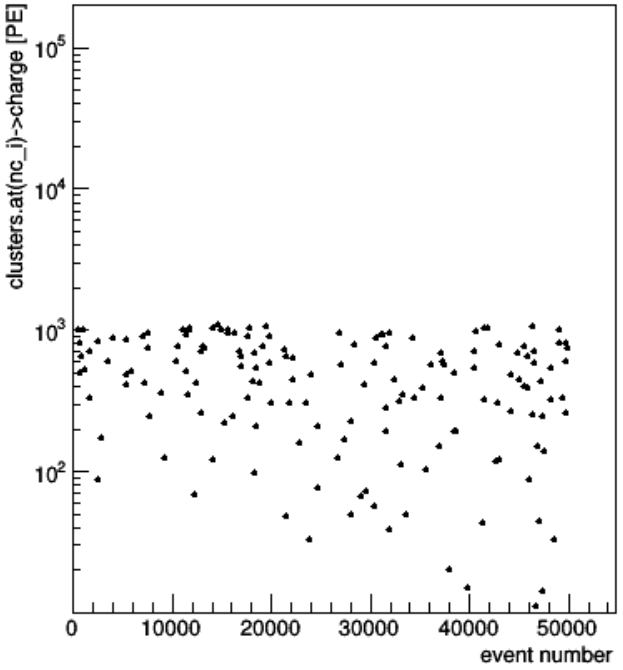


master cut1

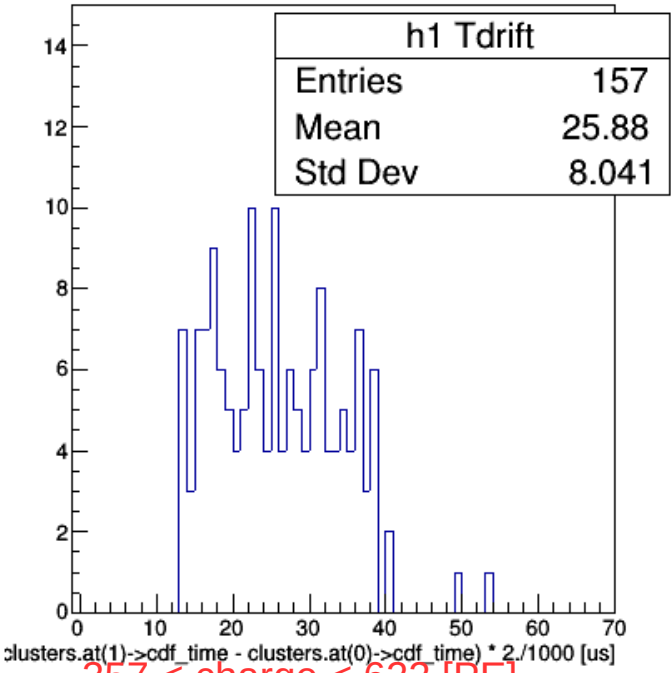


master cut2





C0.nc == 2



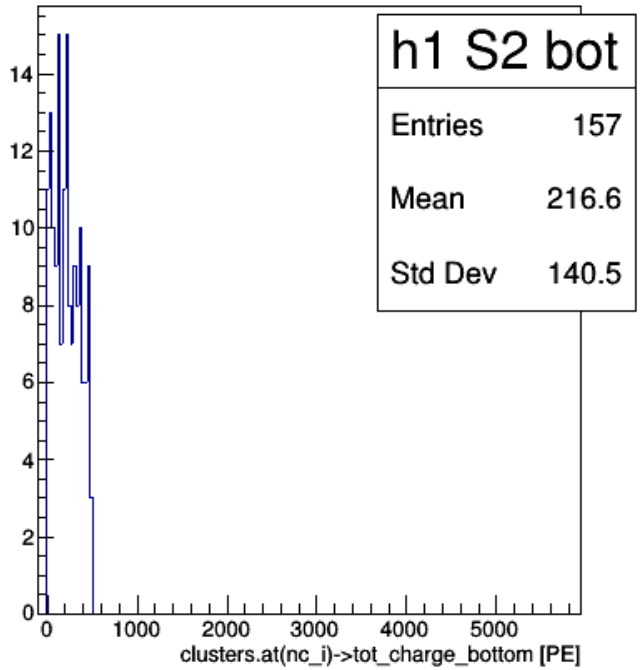
tot_charge_top < 600 [PE]

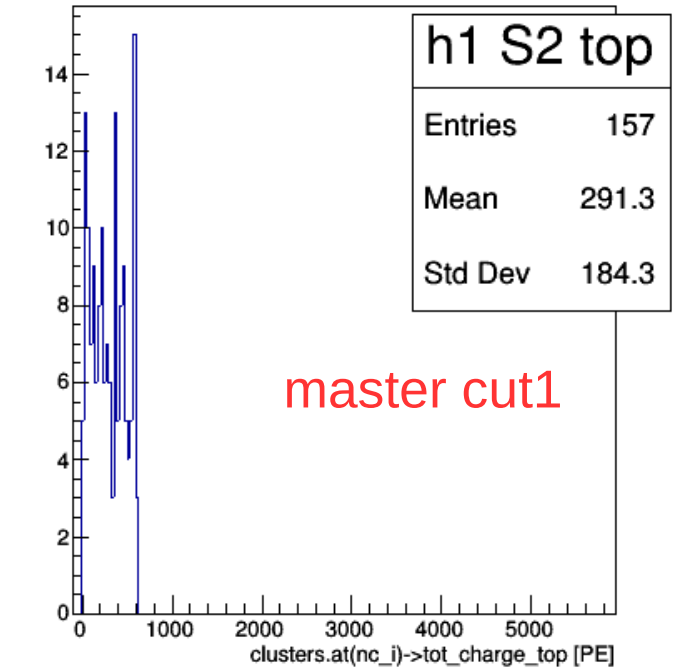
357 < charge < 622 [PE]

clusters.at(1)->f90 < 0.2

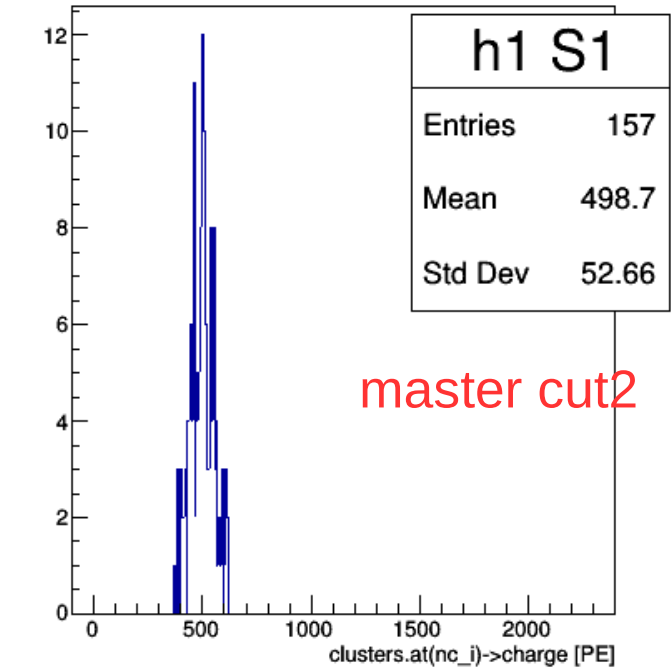
Ph2, Am241, run 542

C2.is_S1





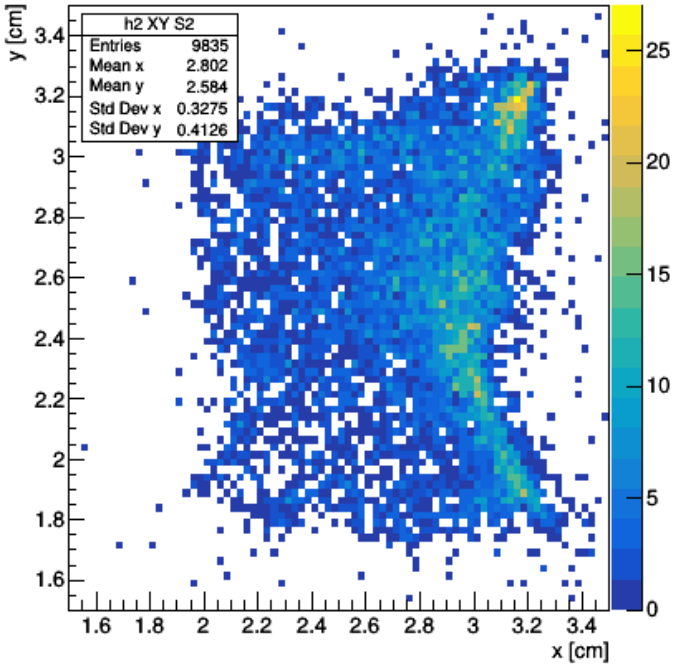
master cut1



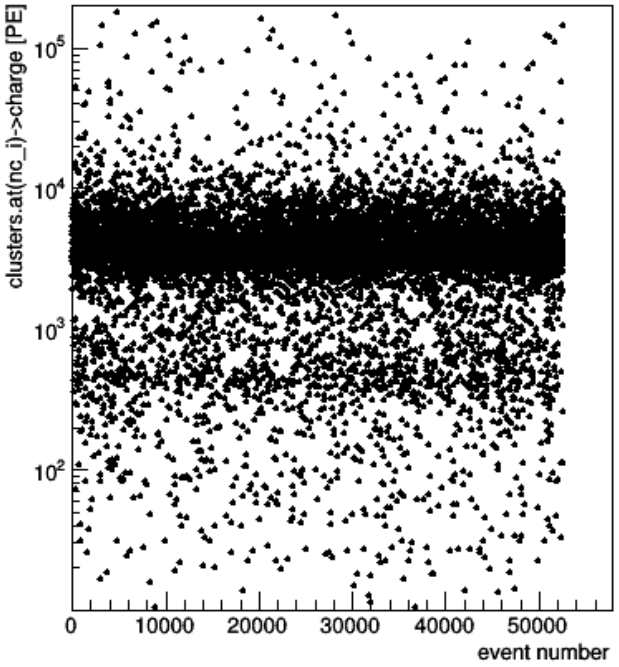
master cut2

Ph2, Am241, run 544

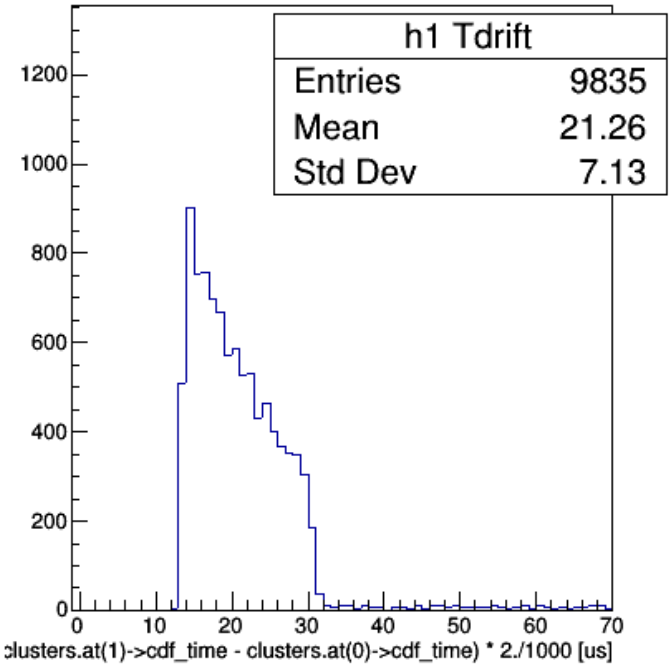
C1.is_S2



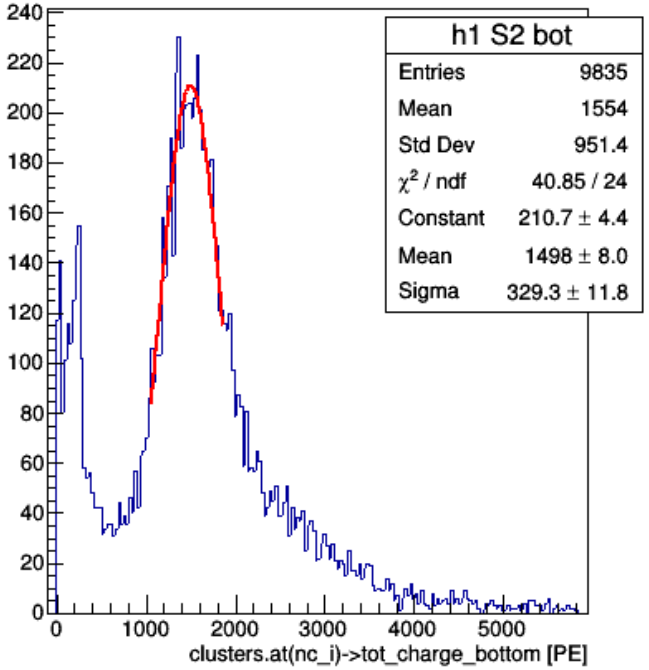
C1.is_S2



C0.nc == 2

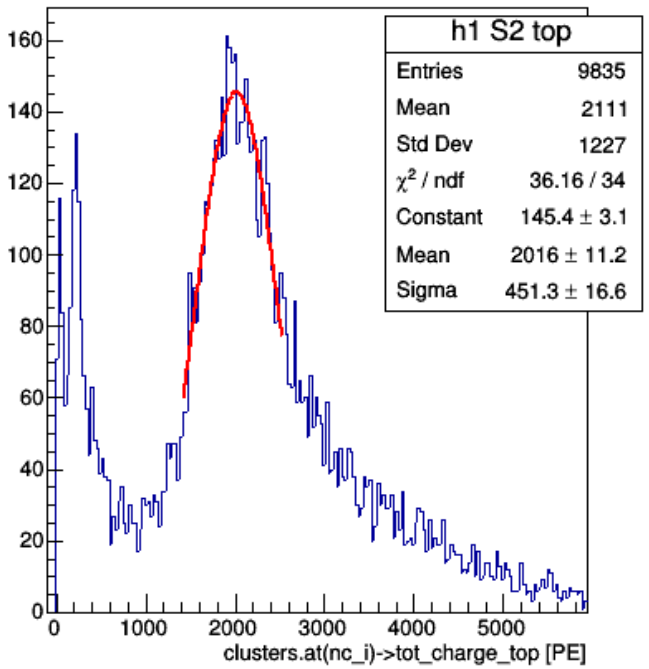


C1.is_S2

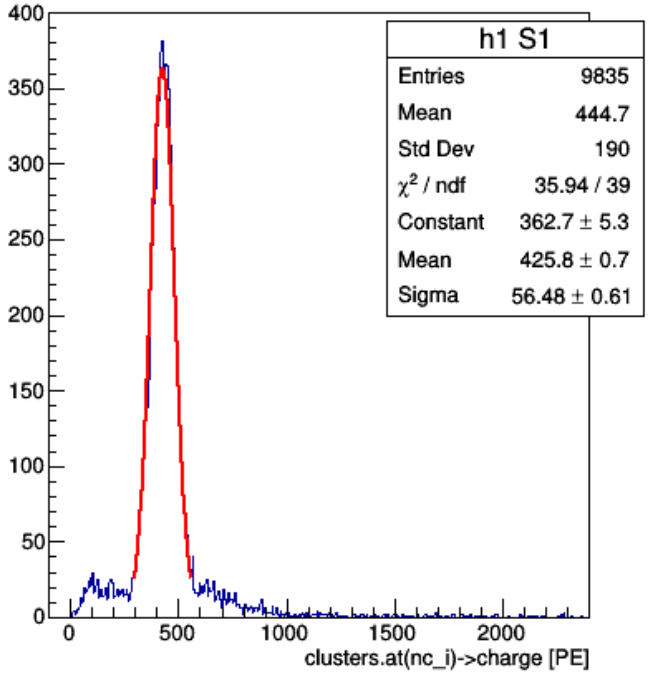


Ph2, Am241, run 544

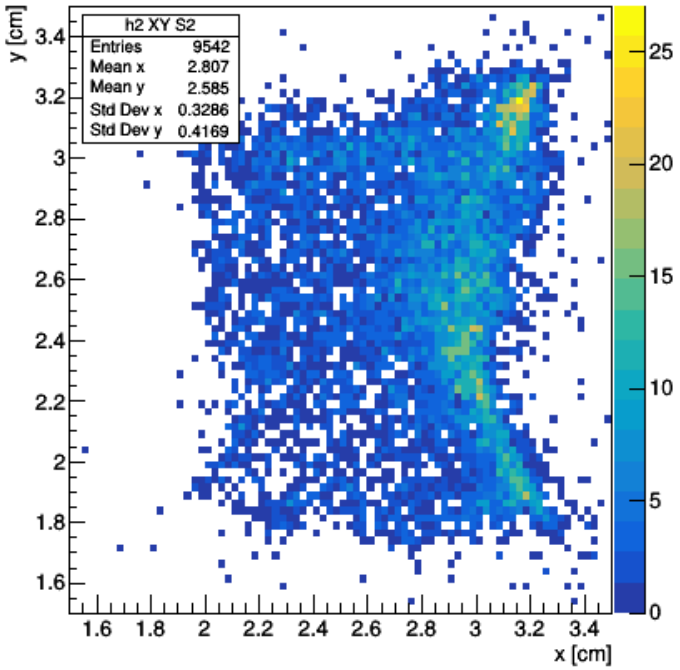
C1.is_S2



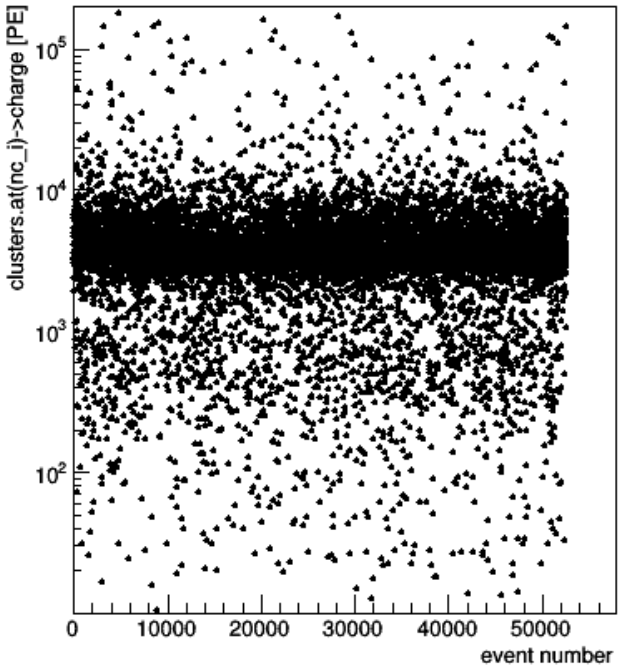
C2.is_S1

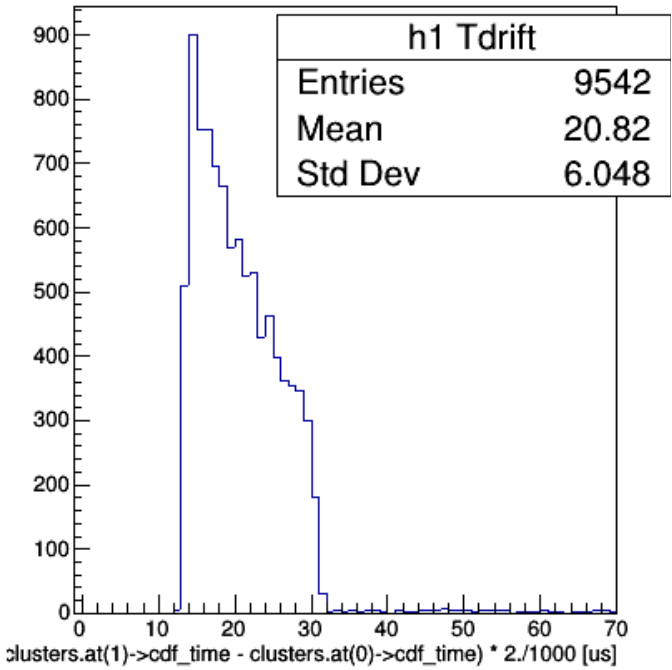


C1.is_S2_v2

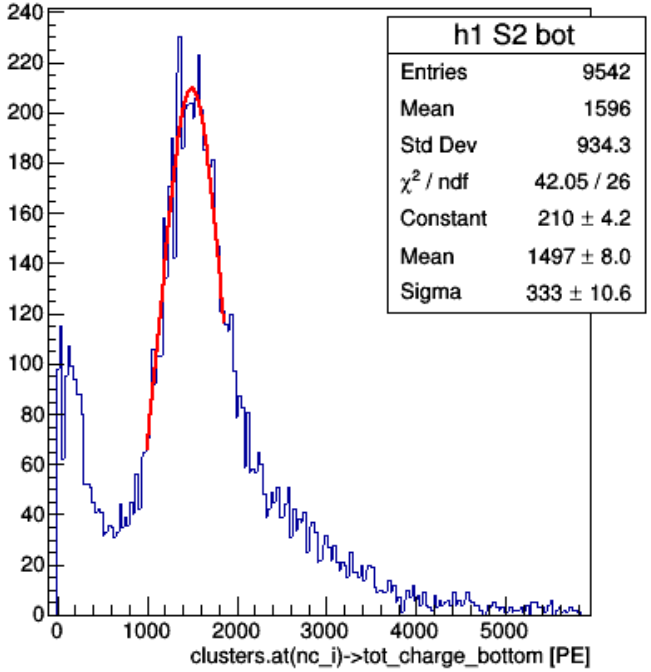


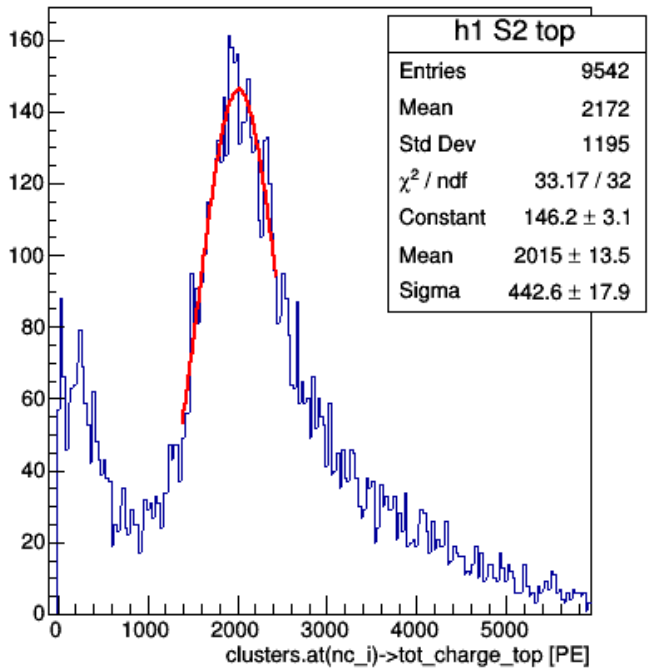
C1.is_S2_v2



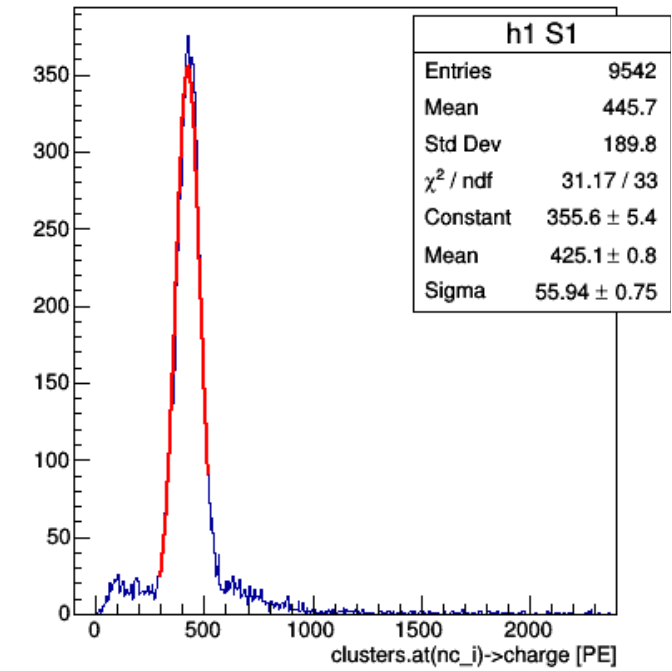


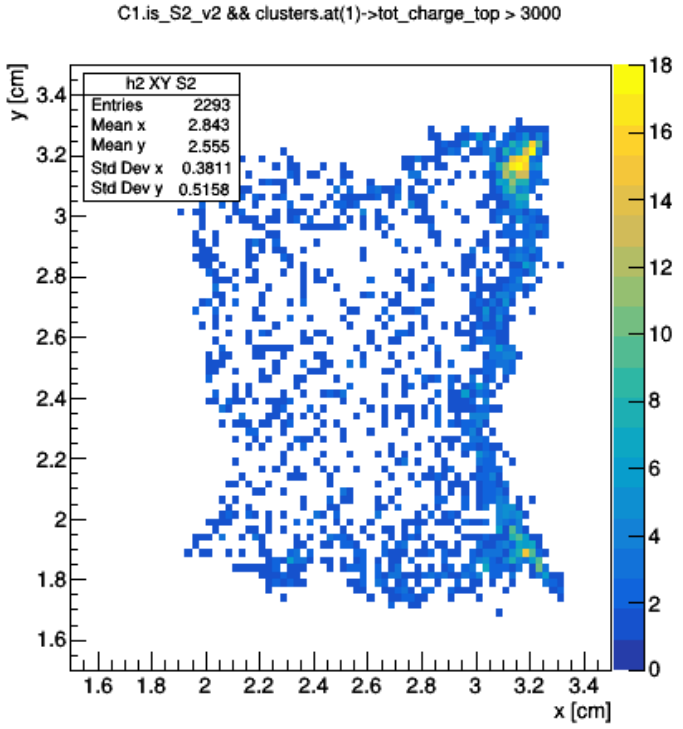
C1.is_S2_v2 Ph2, Am241, run 544 C1.is_S2_v2

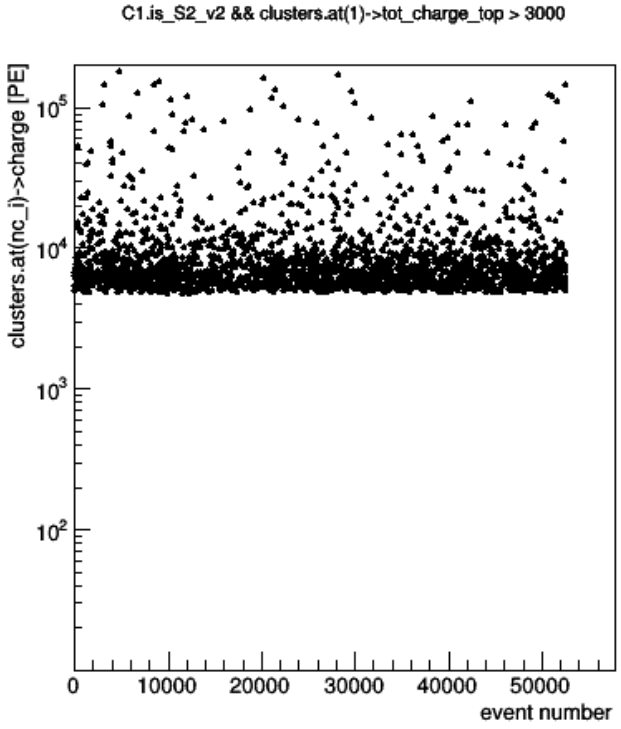


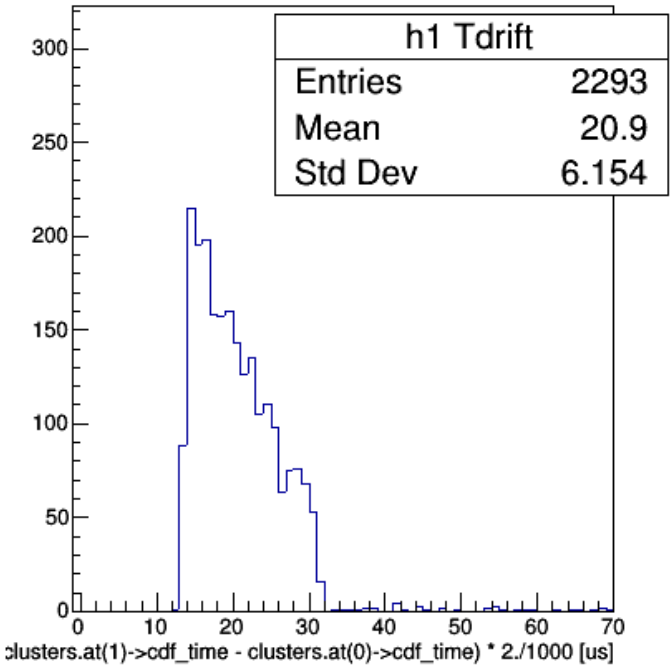


C2.is_S1



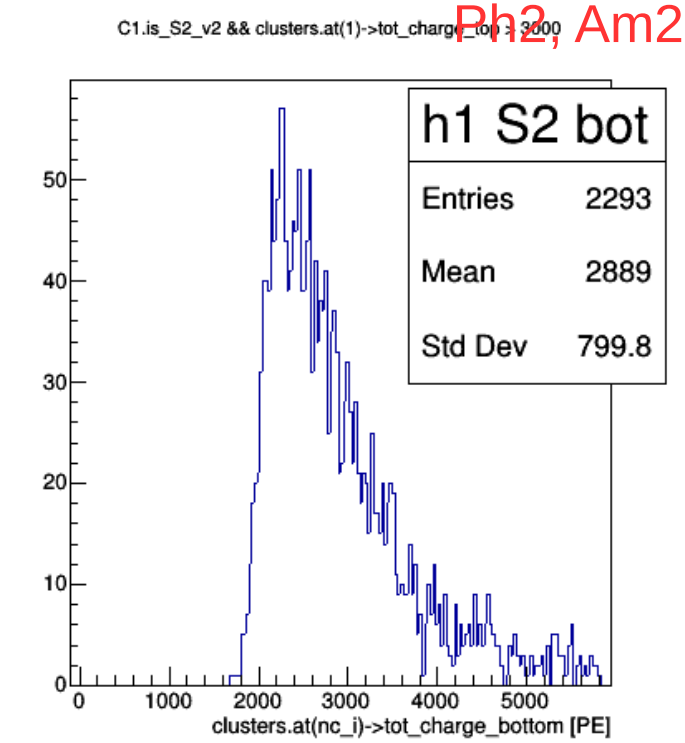


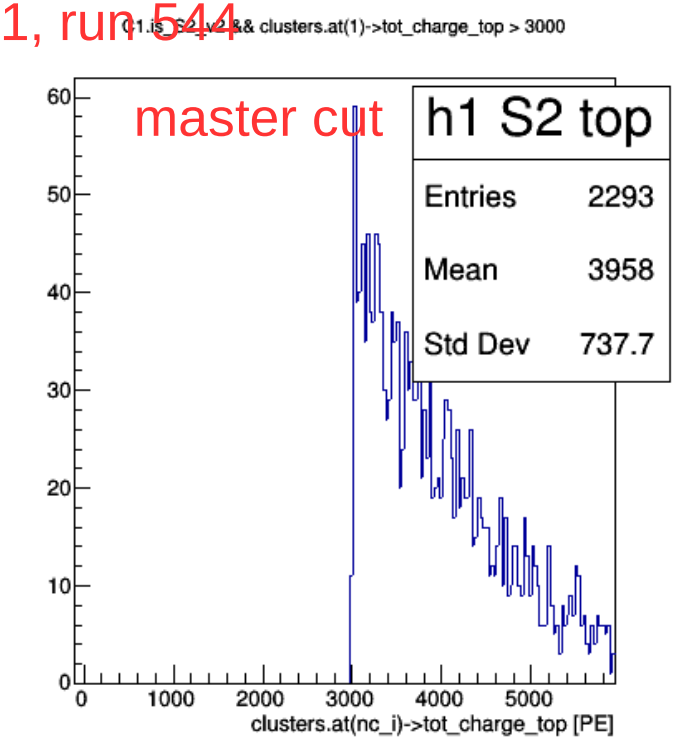


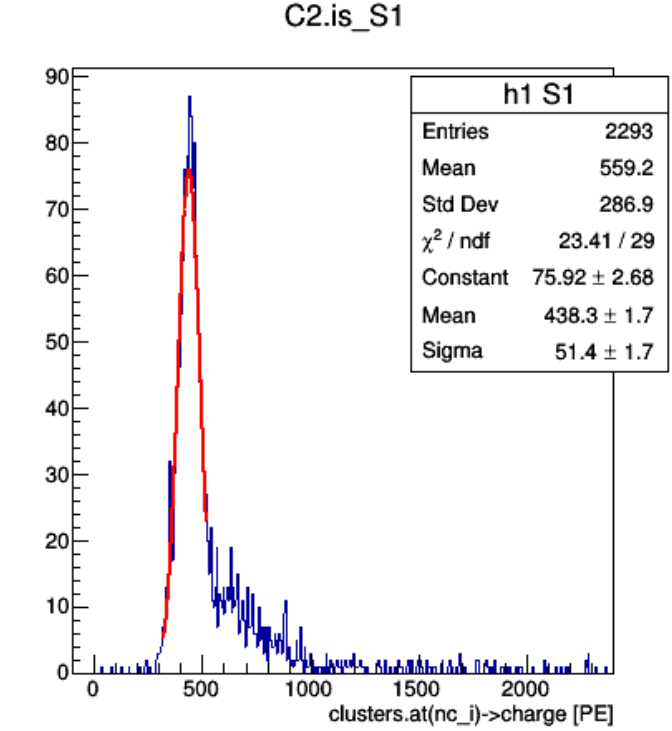


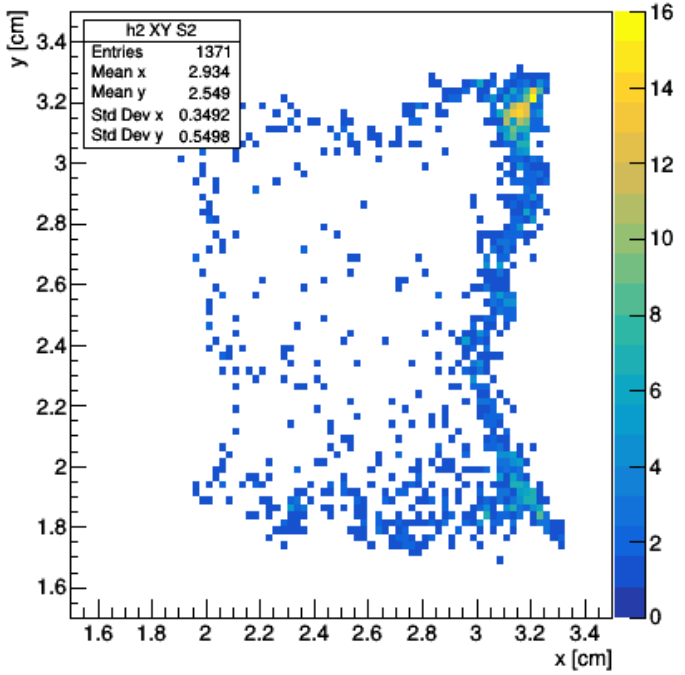
tot_charge_top > 3000 [PE]

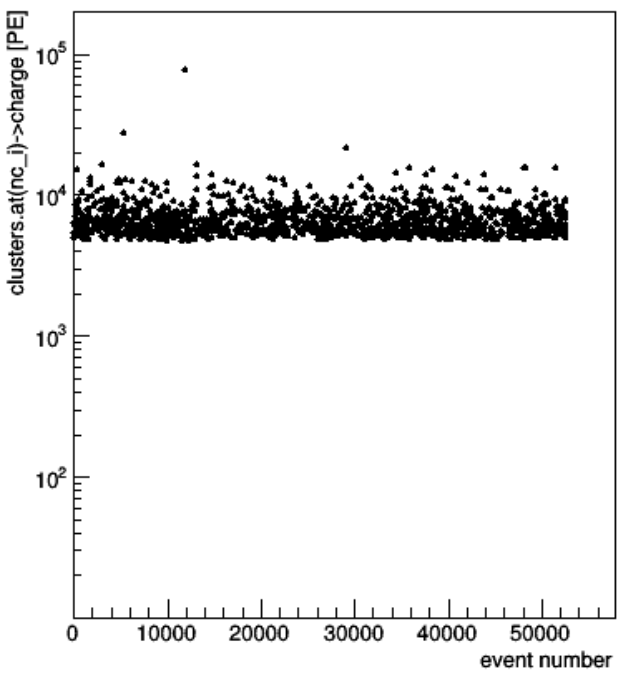
Ph2, Am241, run 544

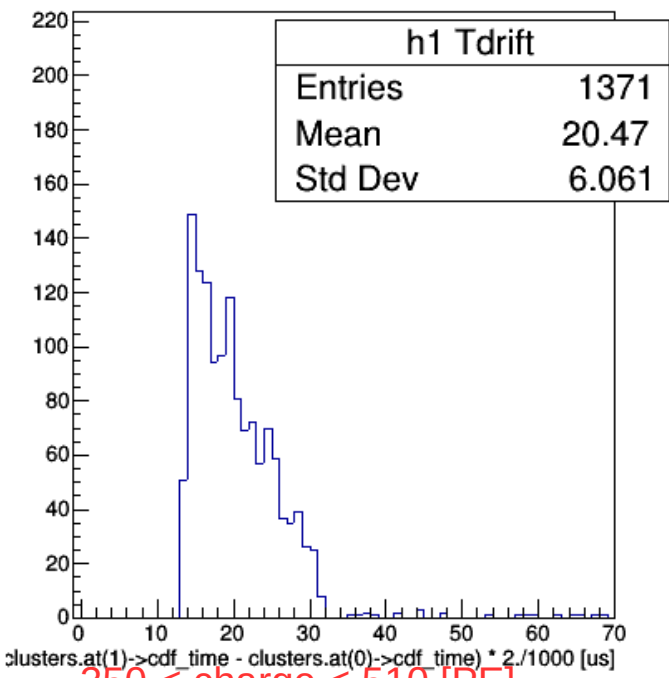










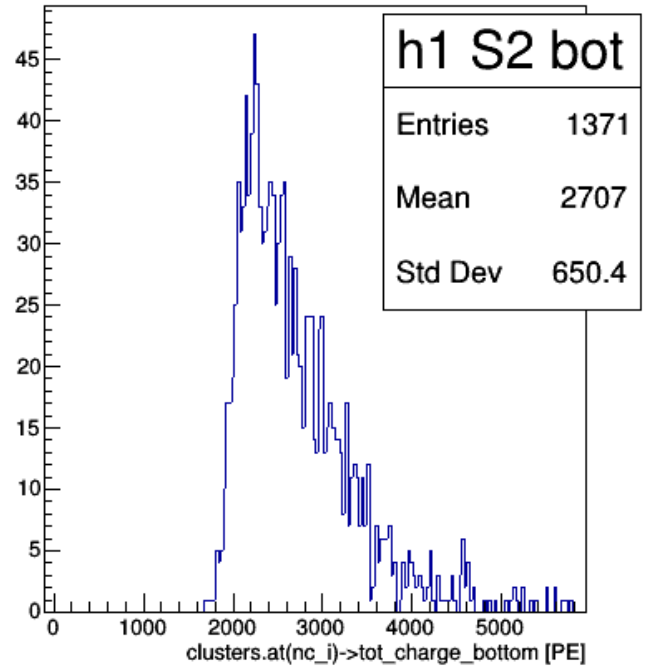


tot_charge_top > 3000 [PE]

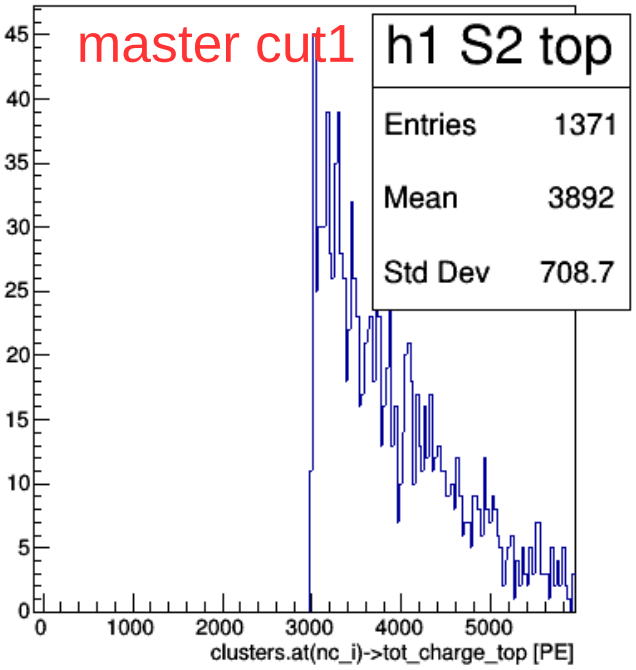
350 < charge < 510 [PE]

Ph2, Am241, run 544

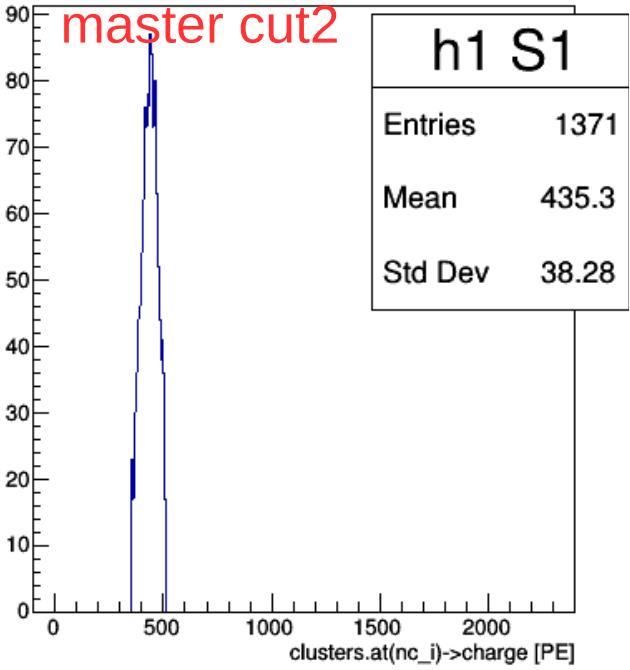
C2.is_S1

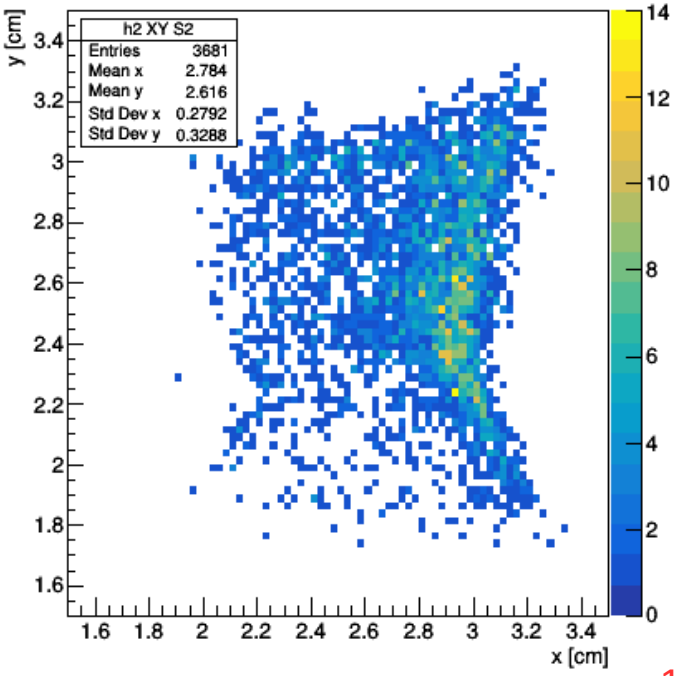


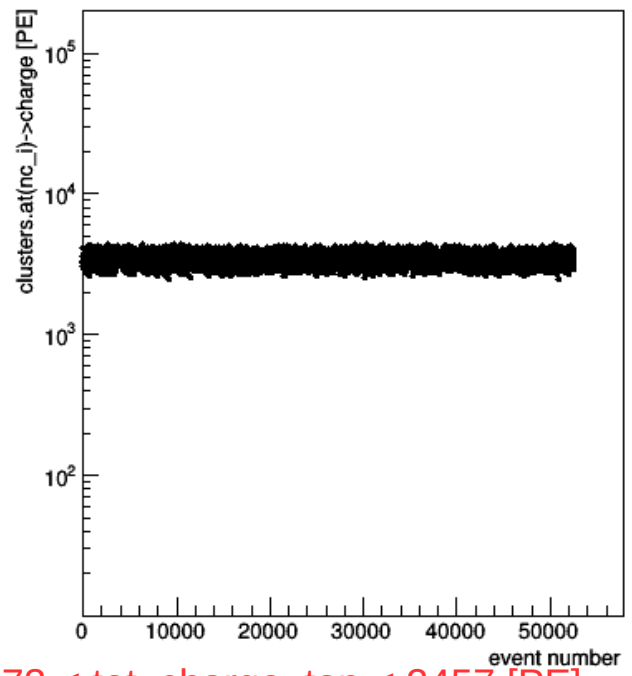
master cut1

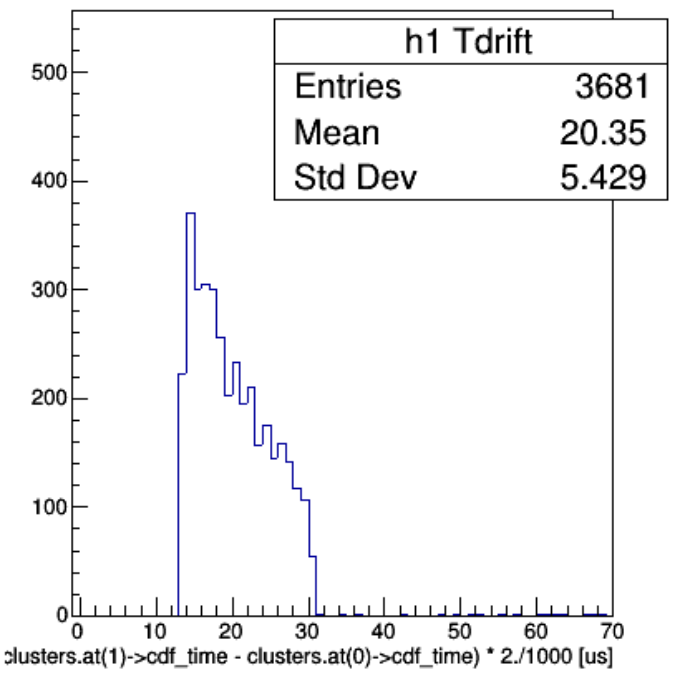


master cut2



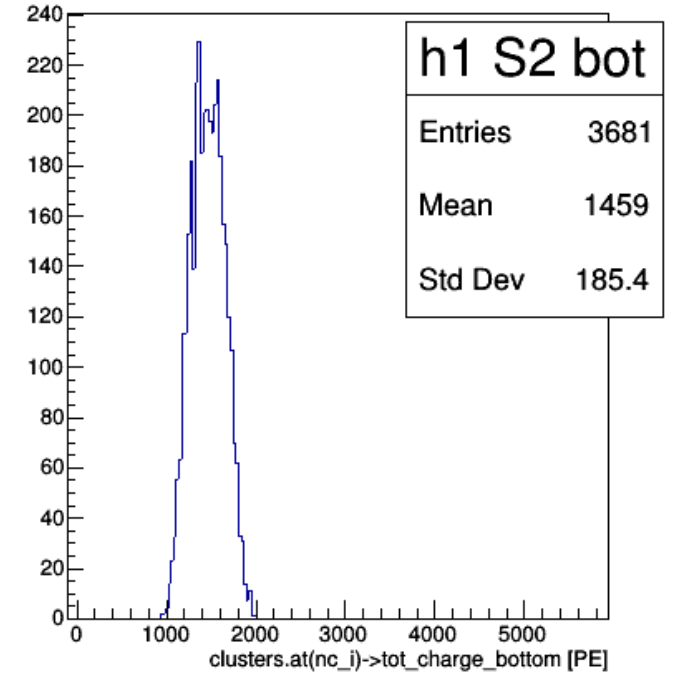




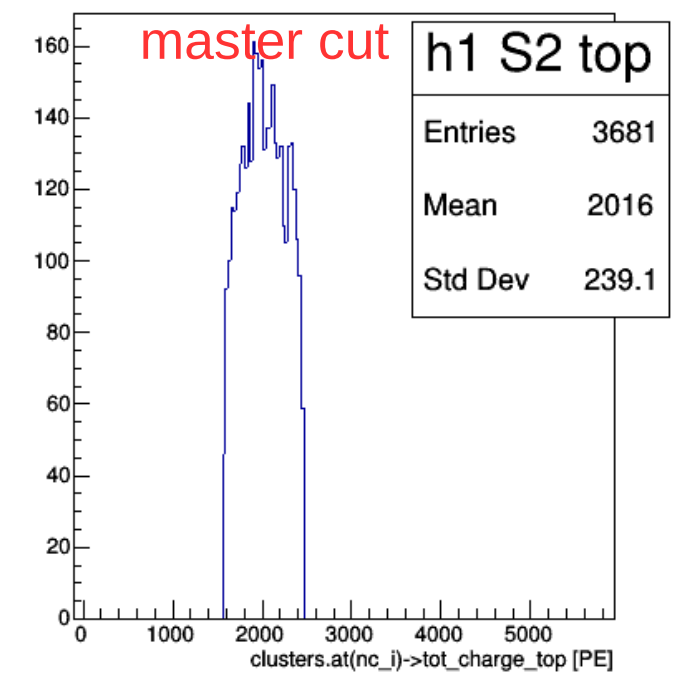


1573 < tot_charge_top < 2457 [PE]

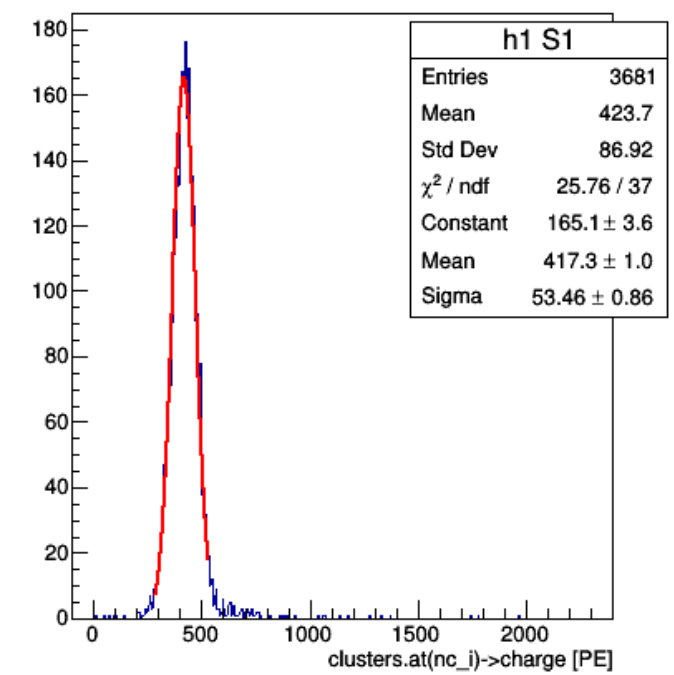
Ph2, Am241, run 544



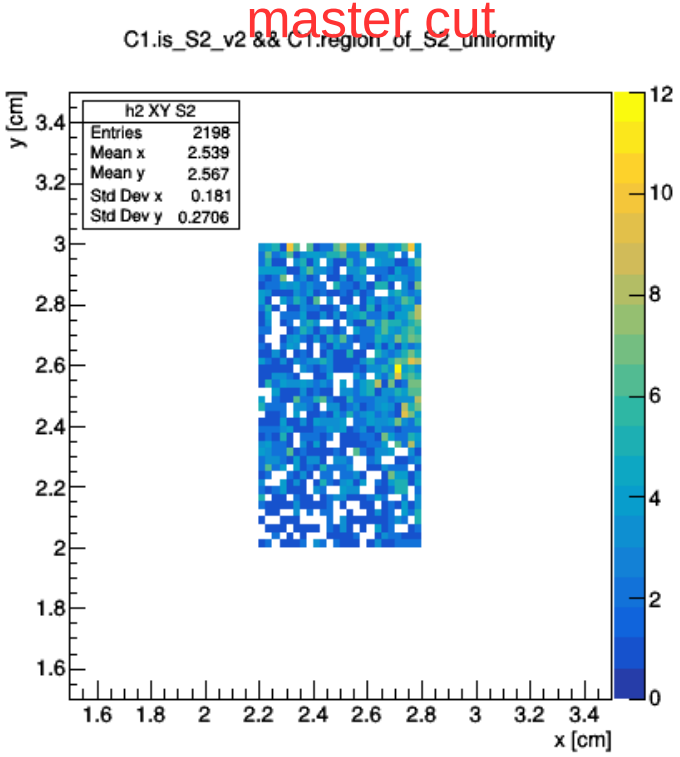
master cut

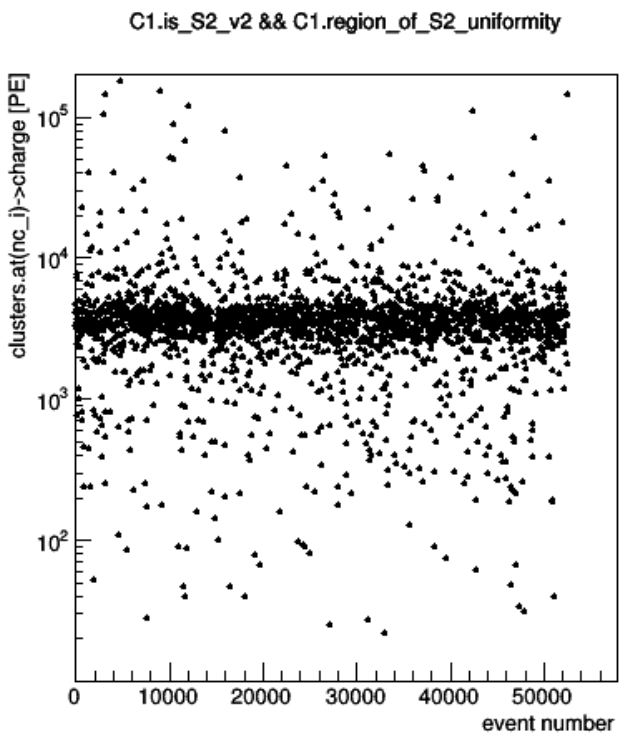


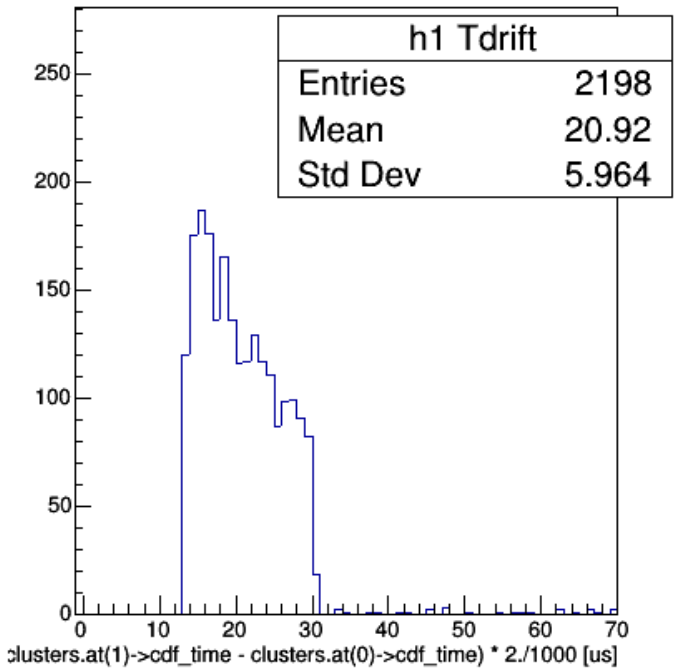
C2.is_S1



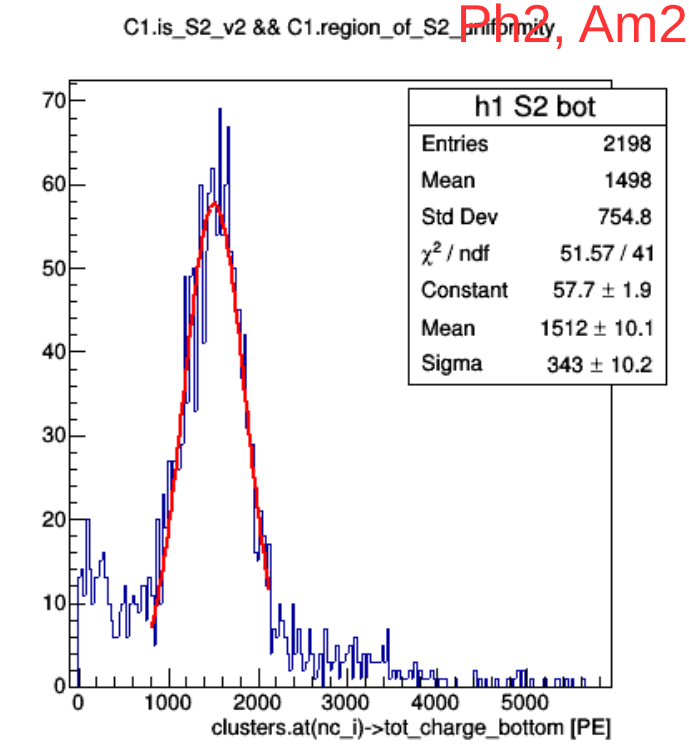
master cut

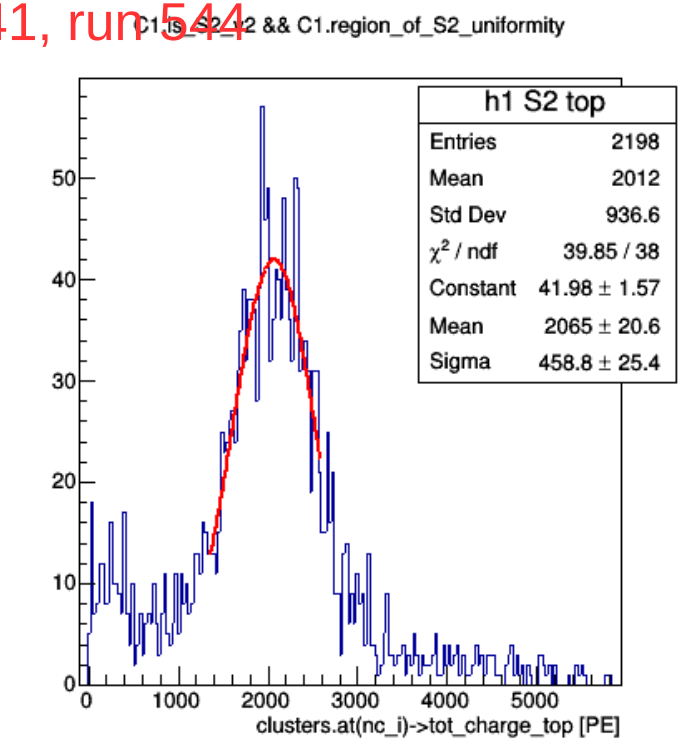


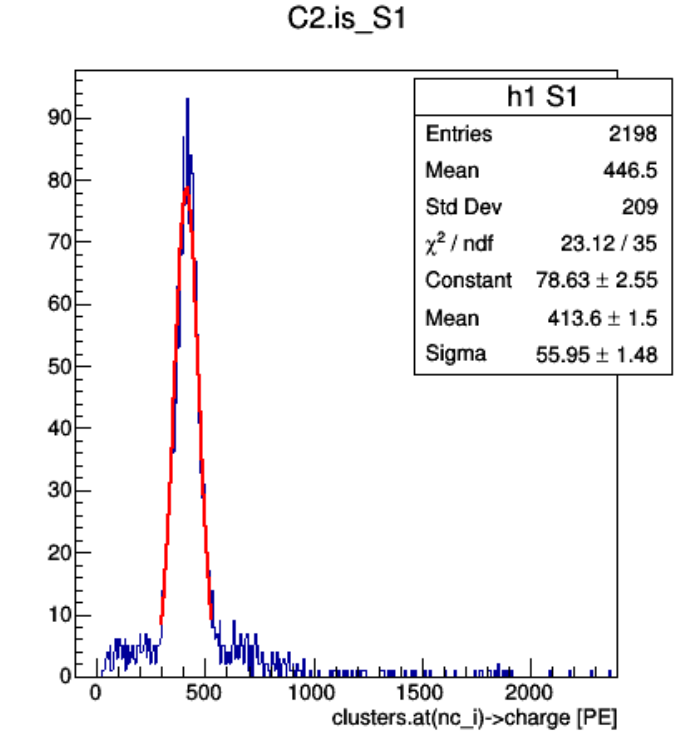




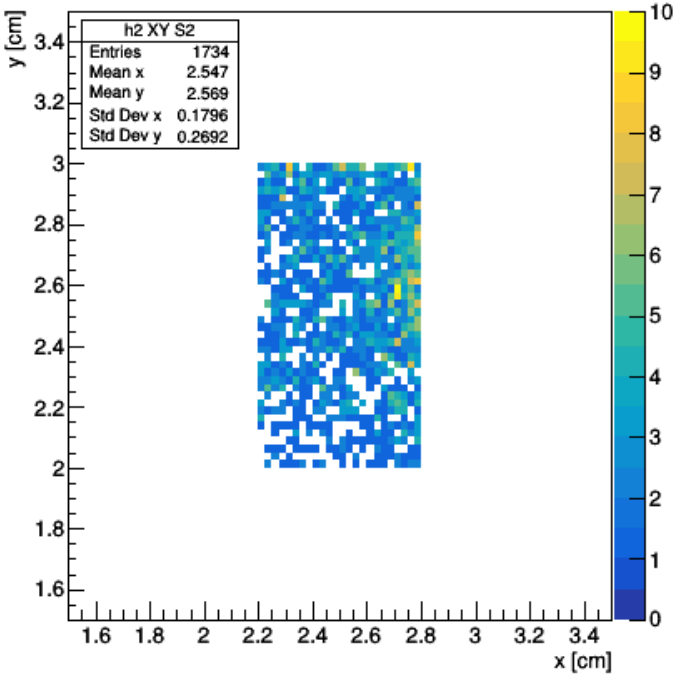
Ph2, Am241, run 544

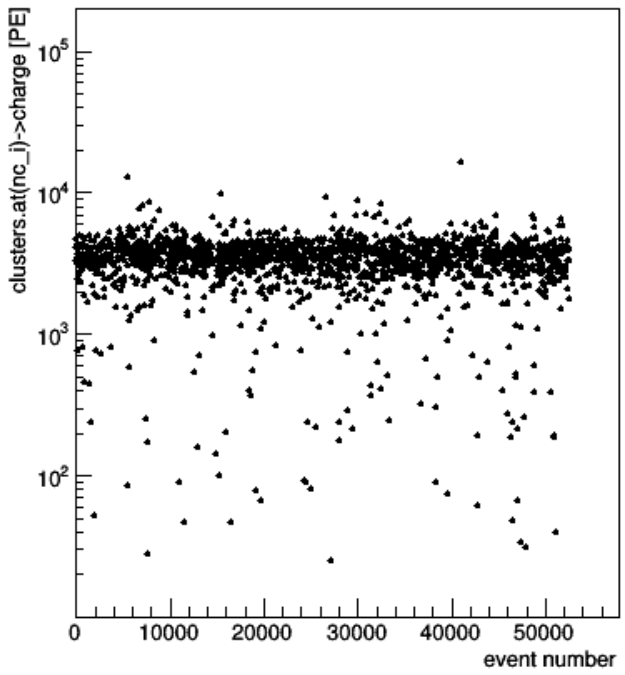


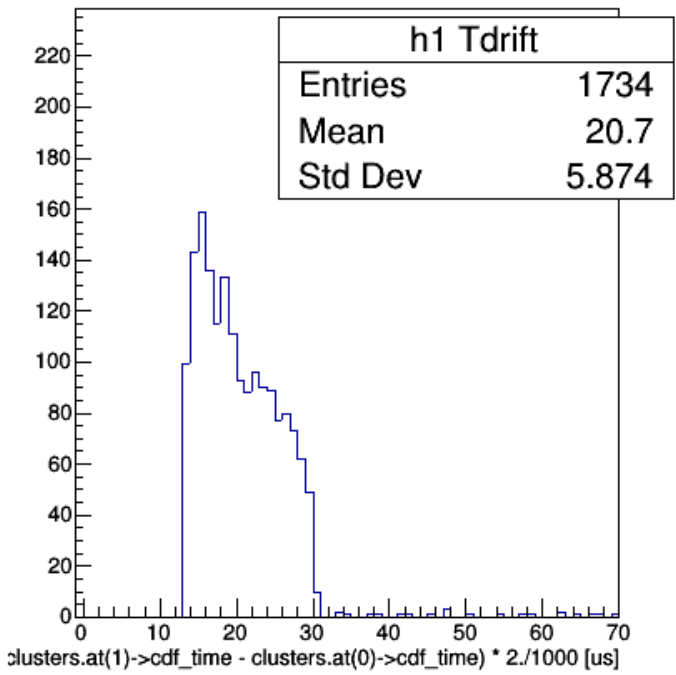




master cut1



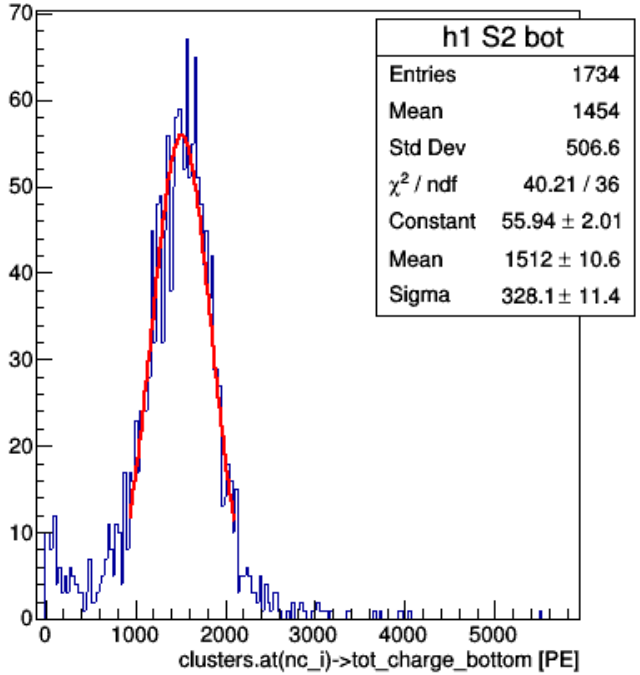


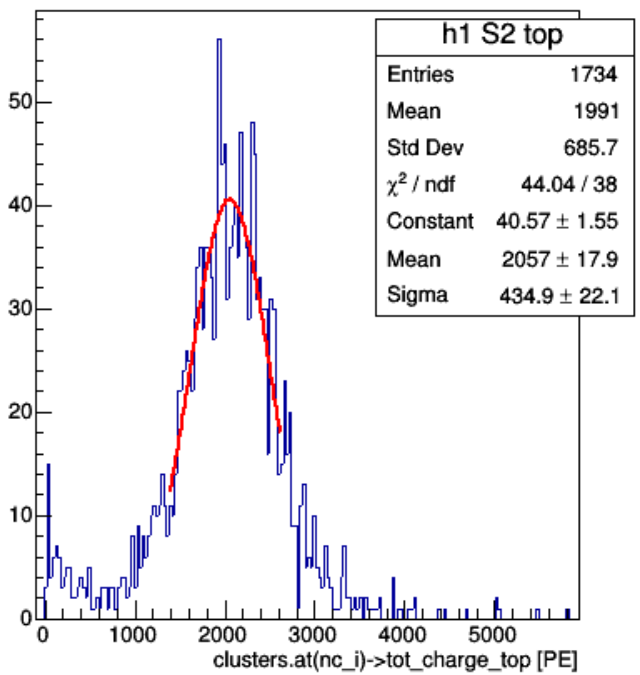


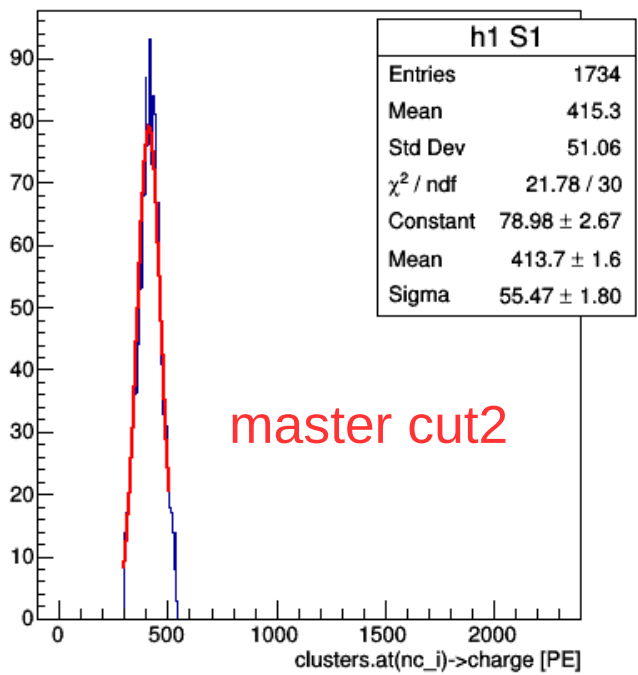
Ph2, Am241, run 544

300 < charge < 510 [PE]

C2.is_S1



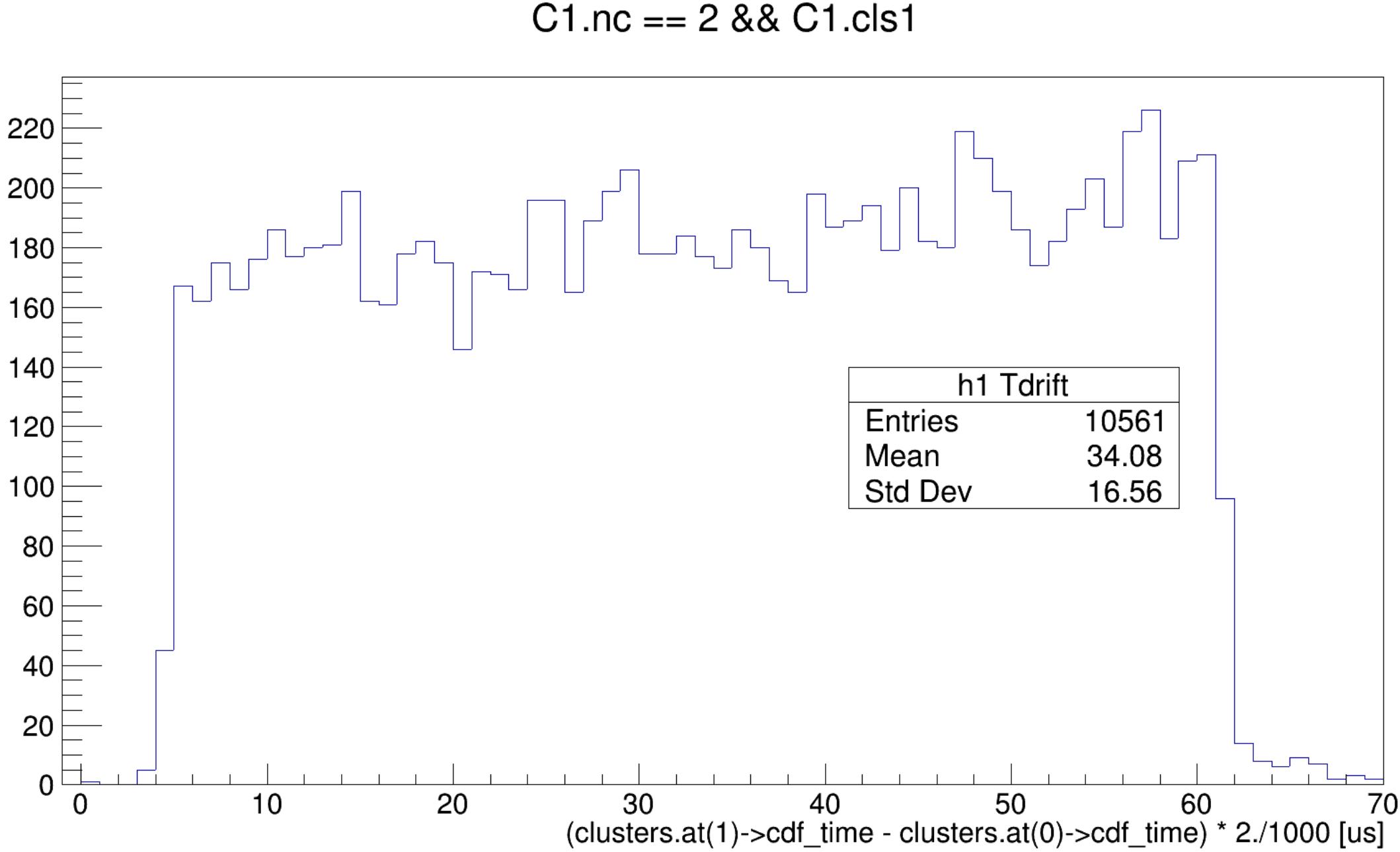




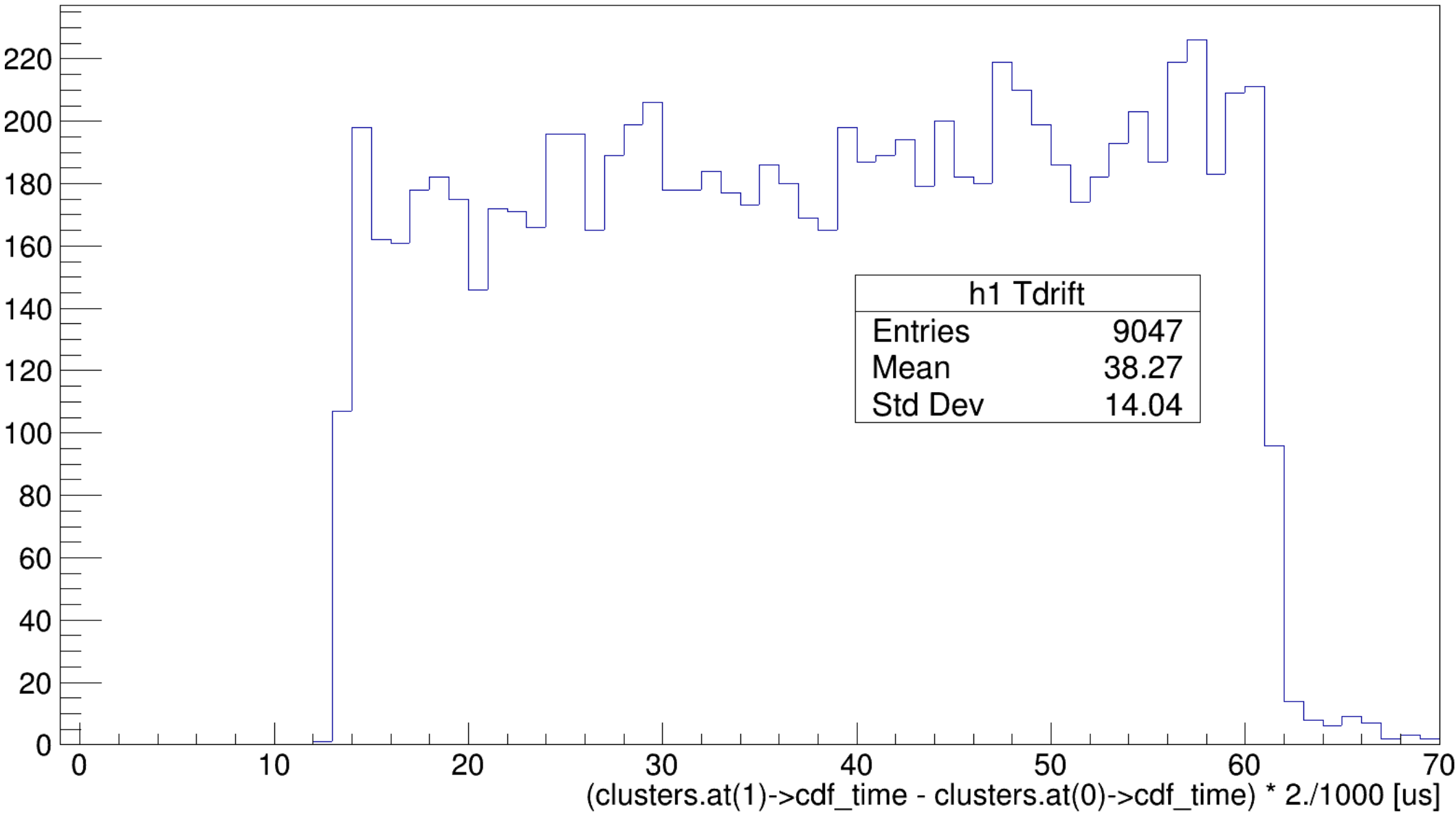
master cut2

Ph2, bkg, run 534

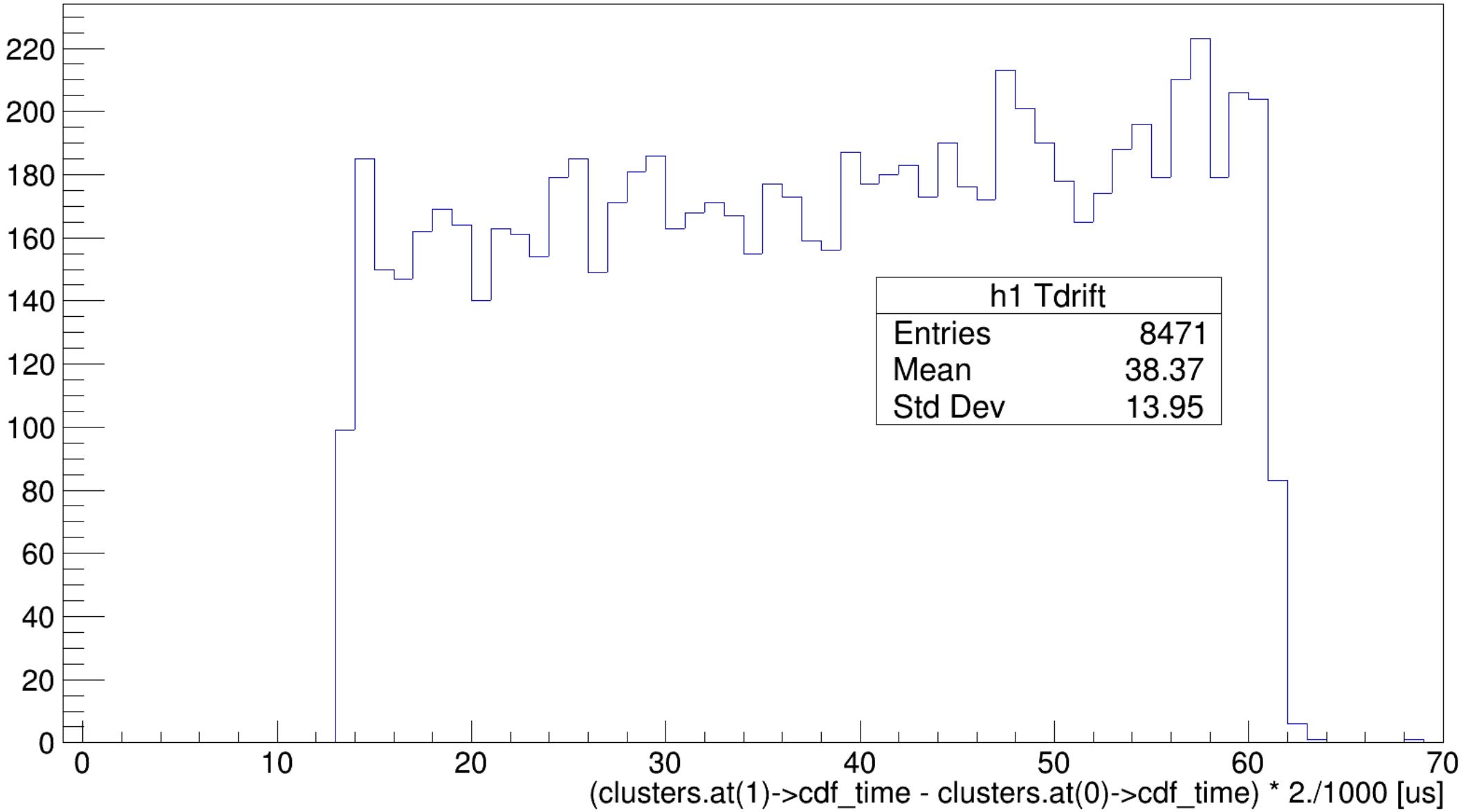
Ph2, bkg, run 534



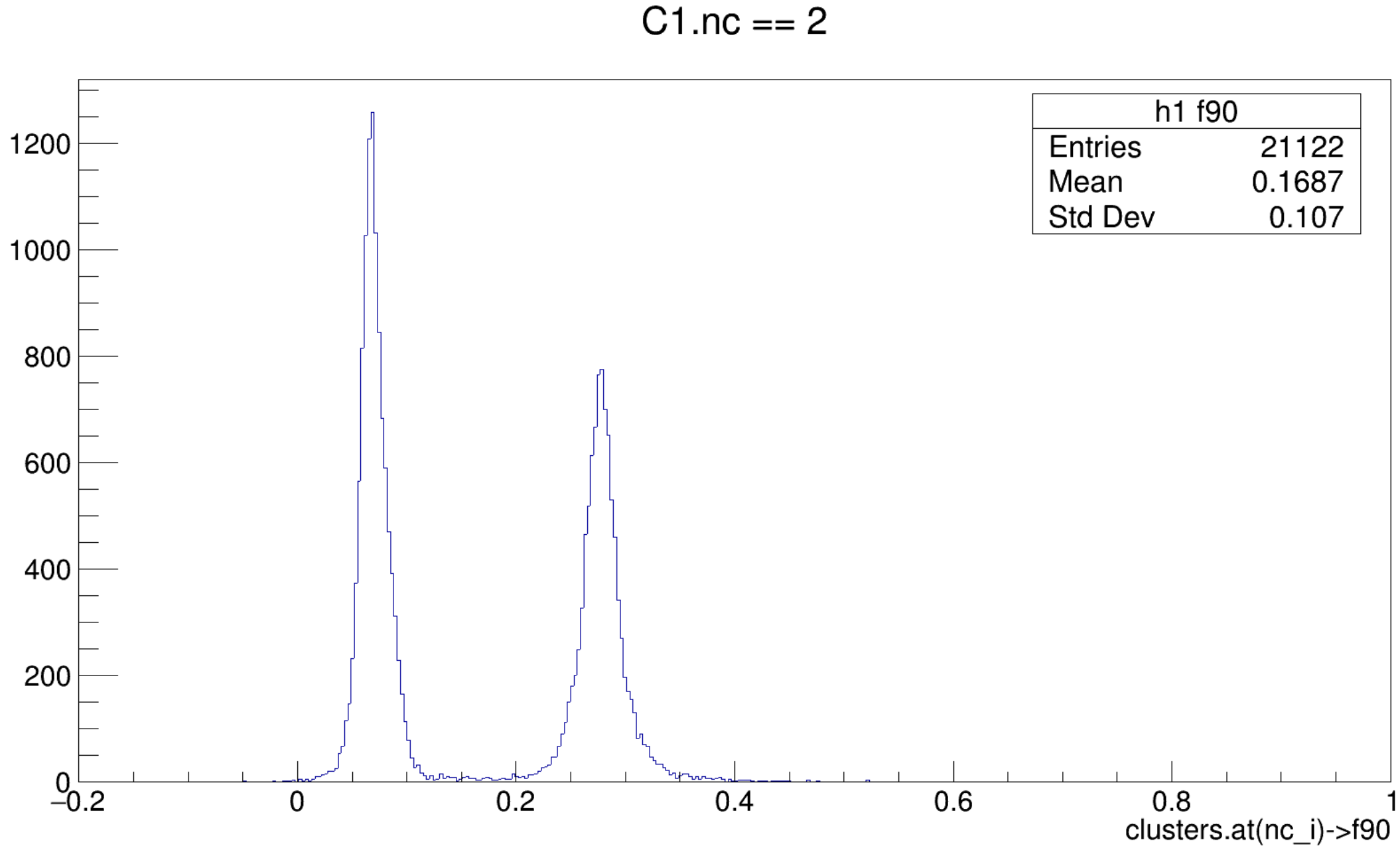
Ph2, bkg, run 534



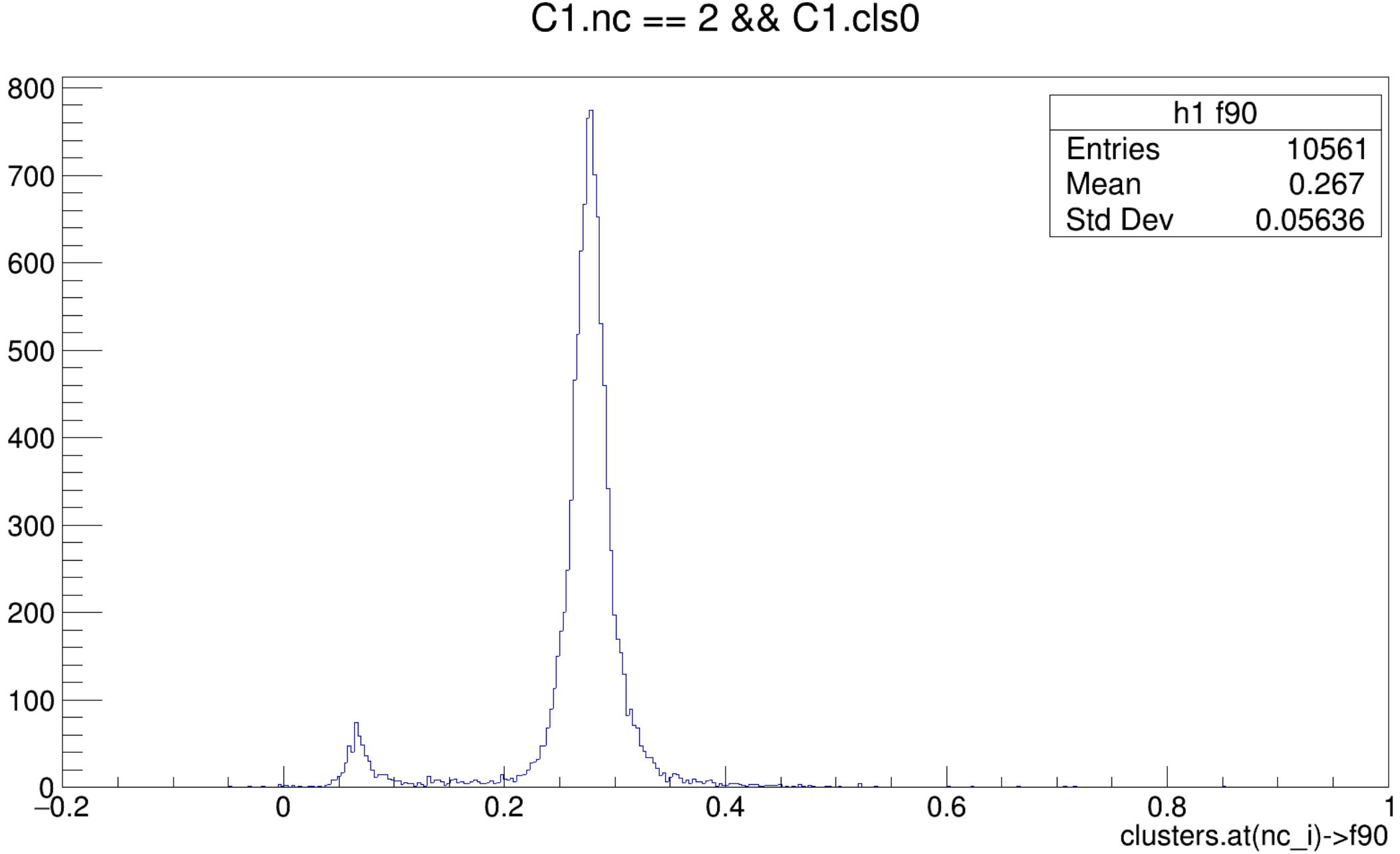
Ph2, bkg, run 534



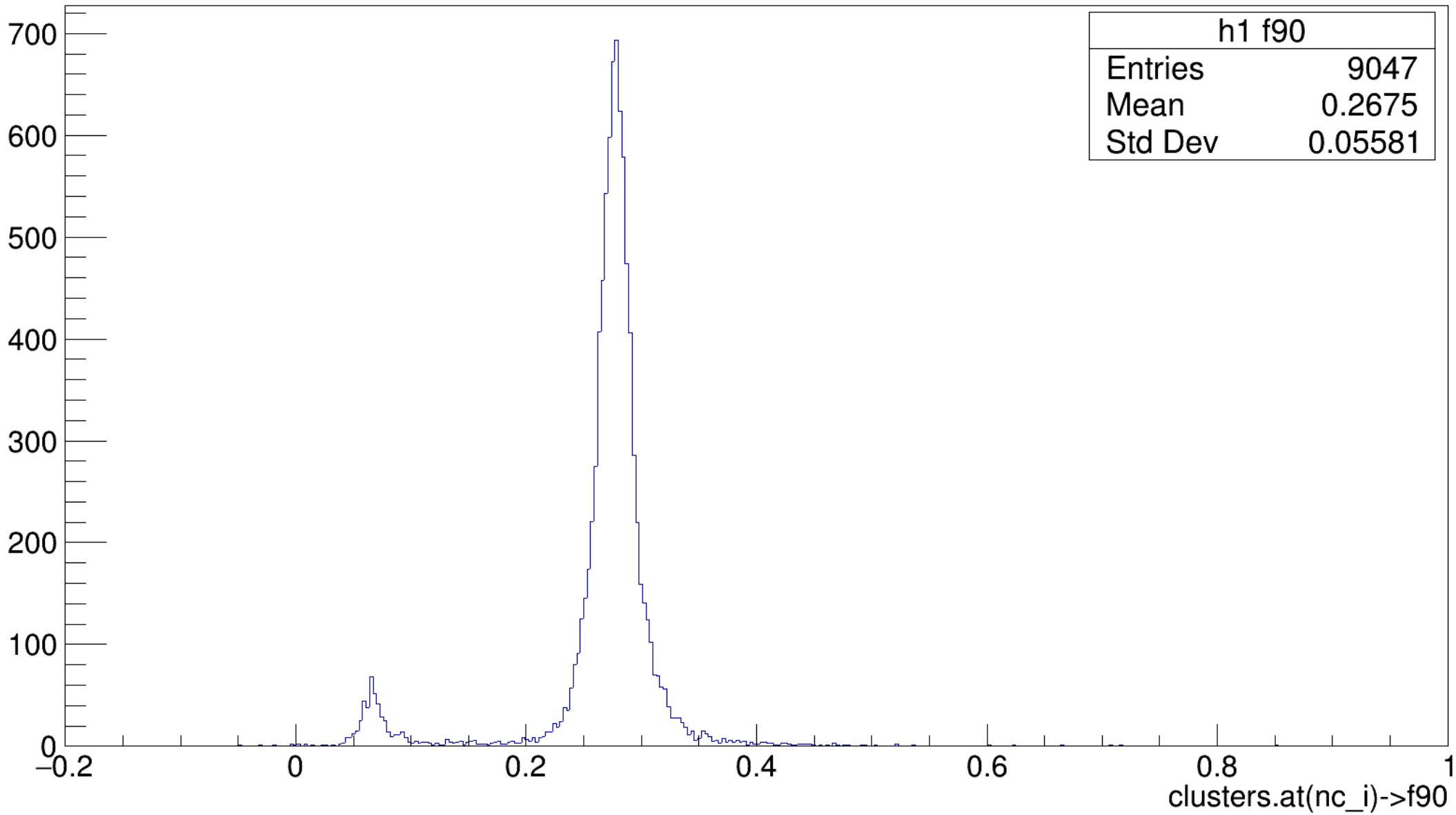
Ph2, bkg, run 534



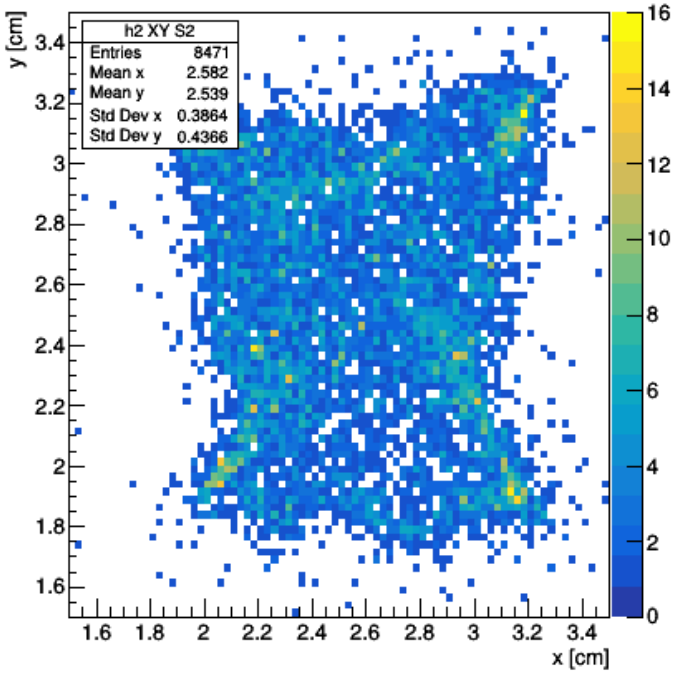
Ph2, bkg, run 534



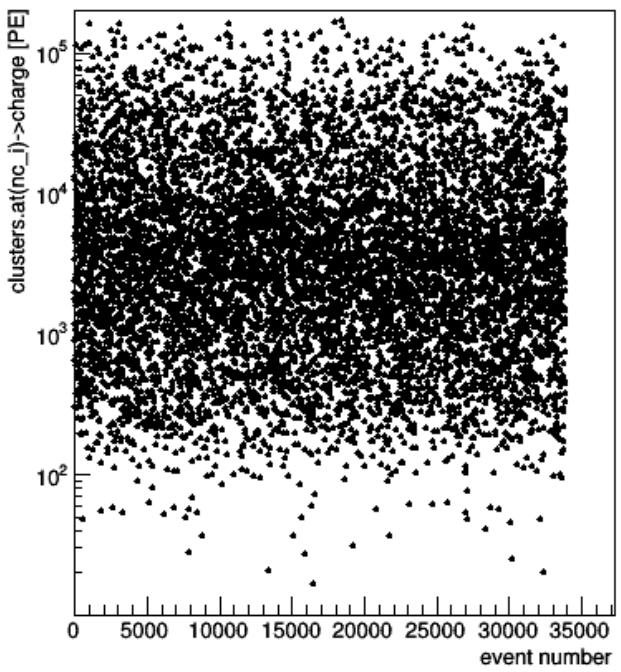
Ph2, bkg, run 534



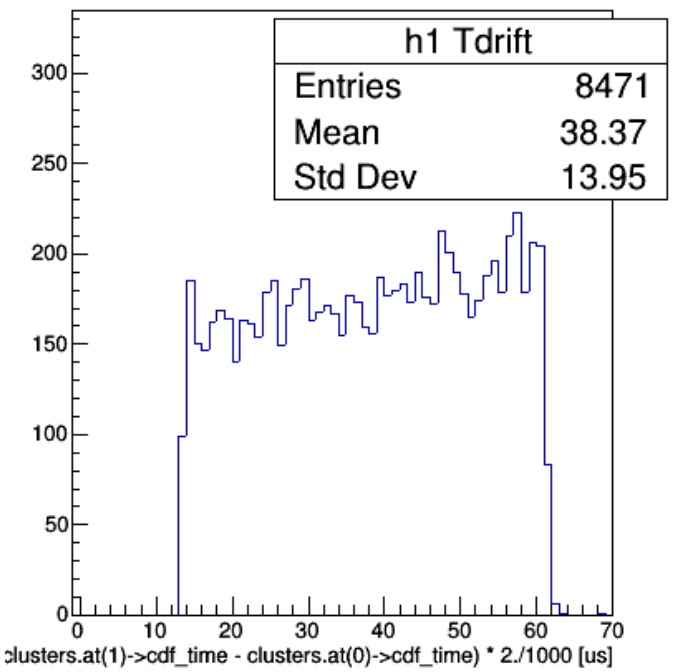
C1.is_S2



C1.is_S2

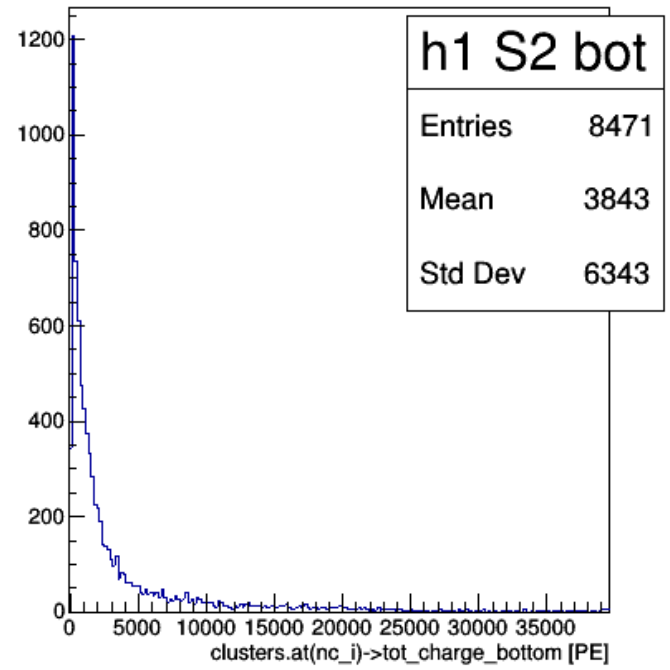


C0.is_S1_S2

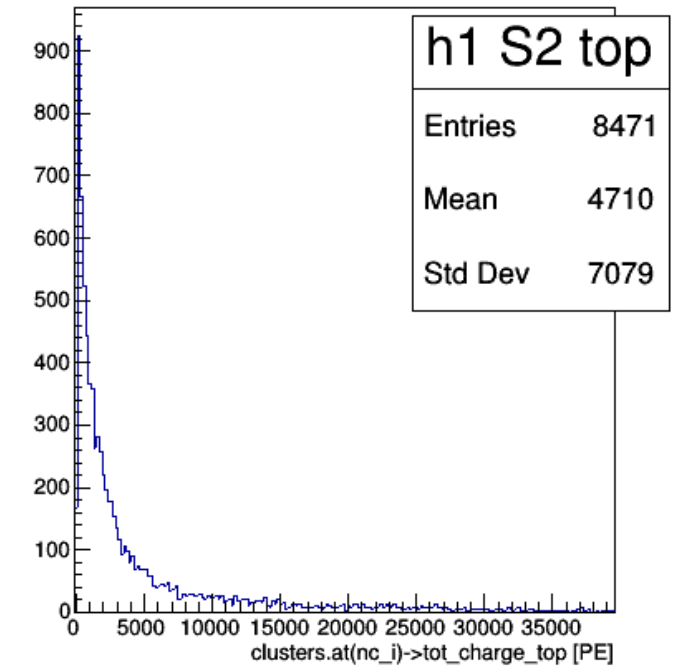


Ph2, bkg, run 534

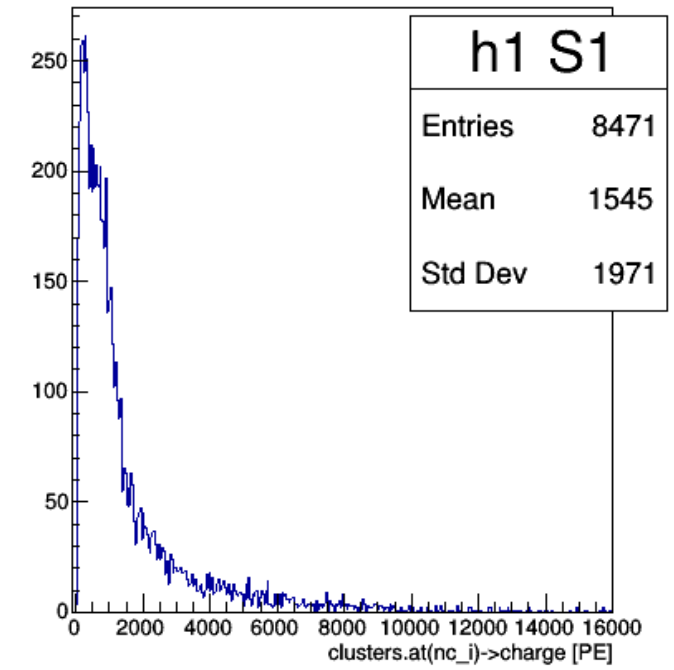
C1.is_S2



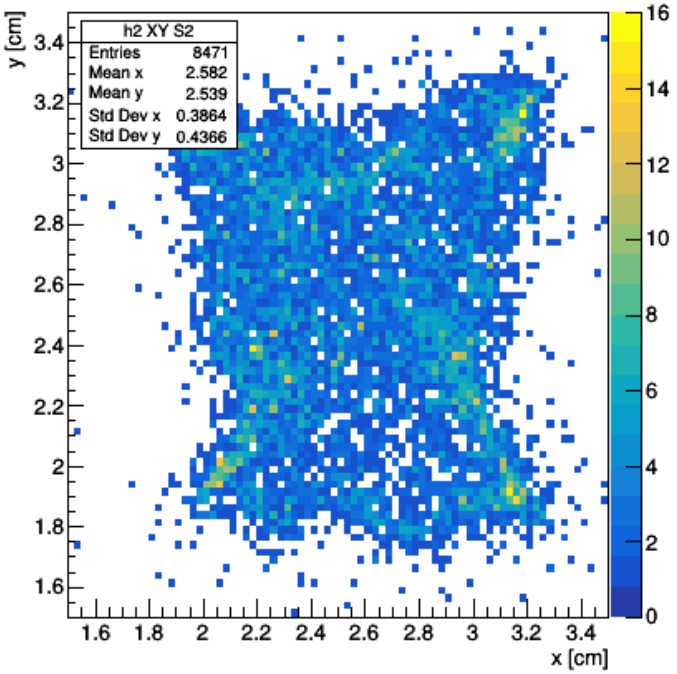
C1.is_S2 master cut



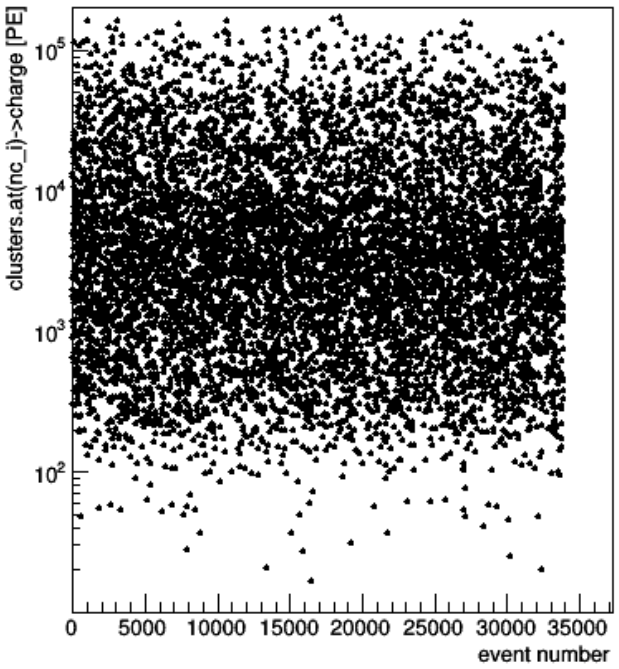
C2.is_S1



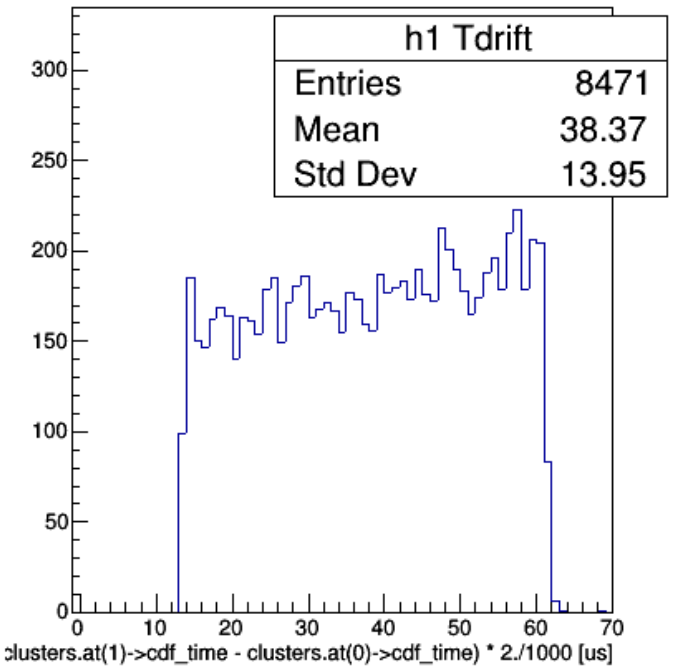
C1.is_S2



C1.is_S2

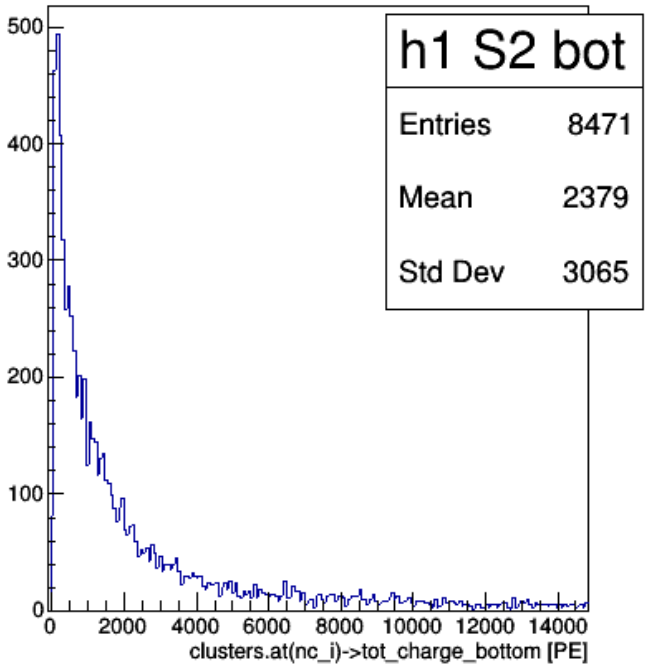


C0.is_S1_S2

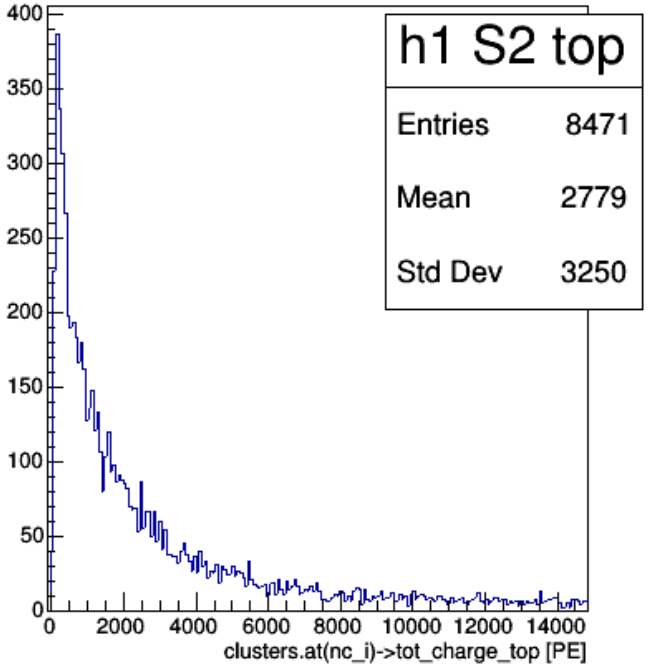


Ph2, bkg, run 534 master cut

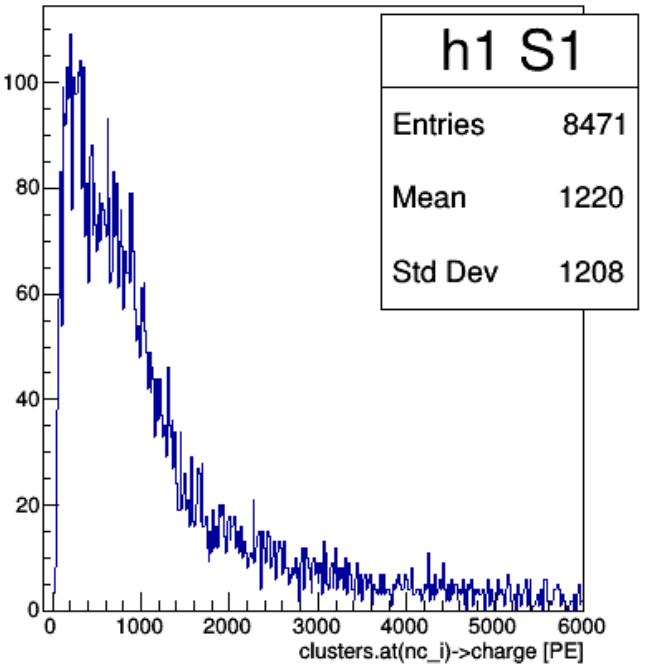
C1.is_S2

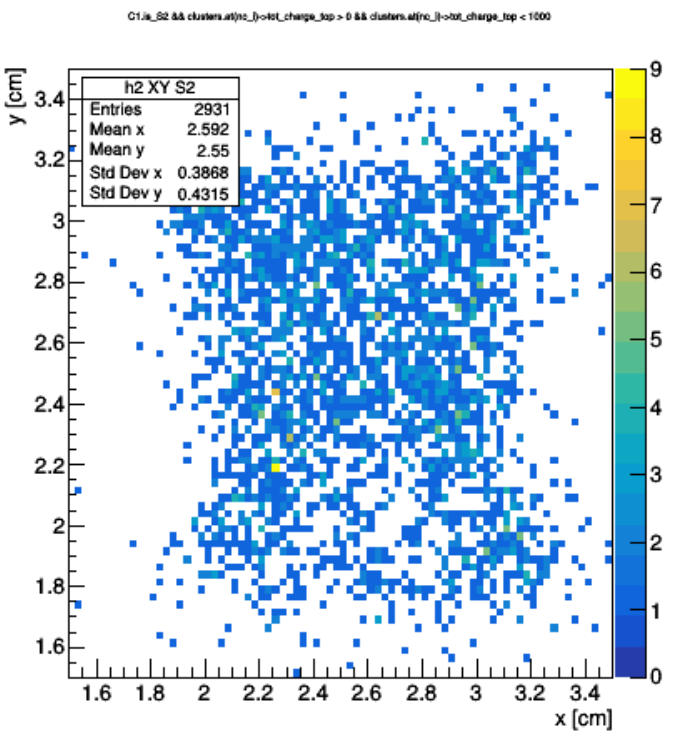


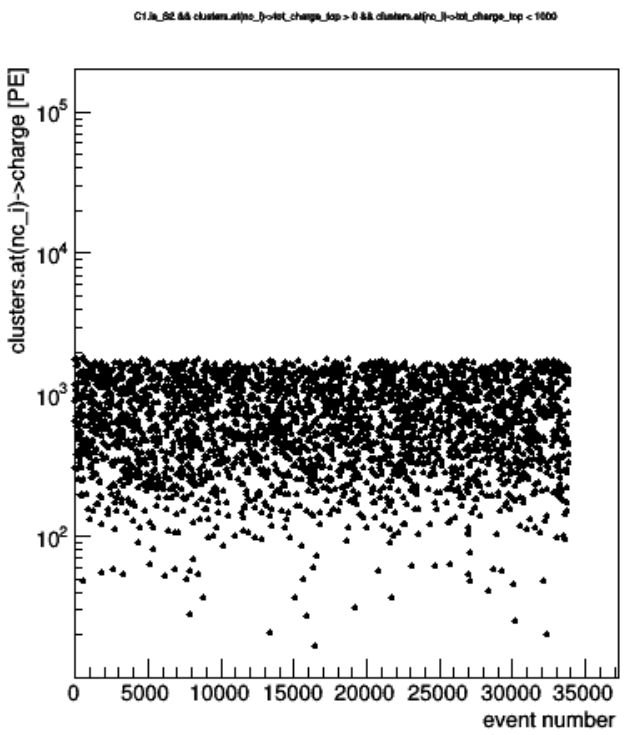
C1.is_S2

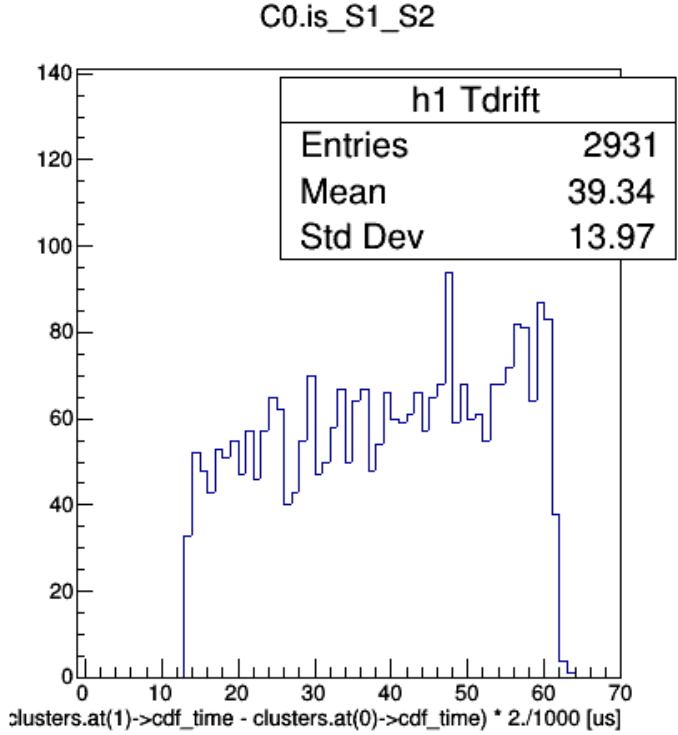


C2.is_S1



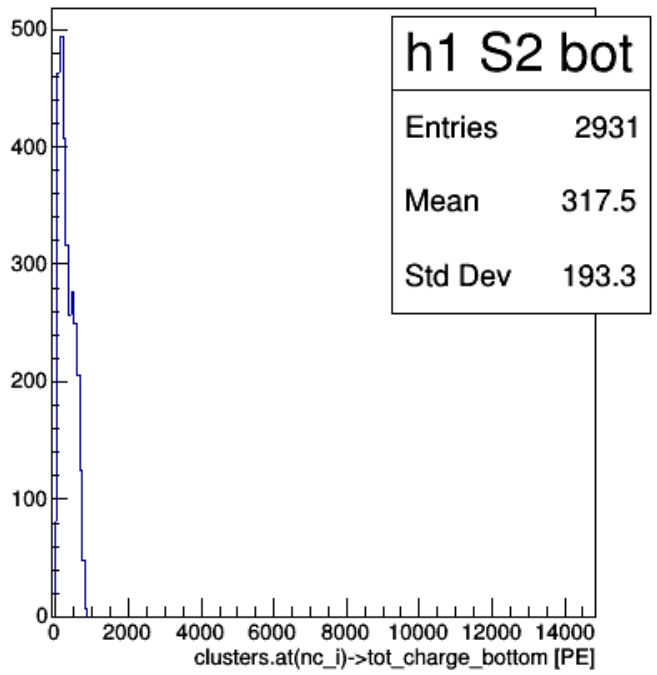


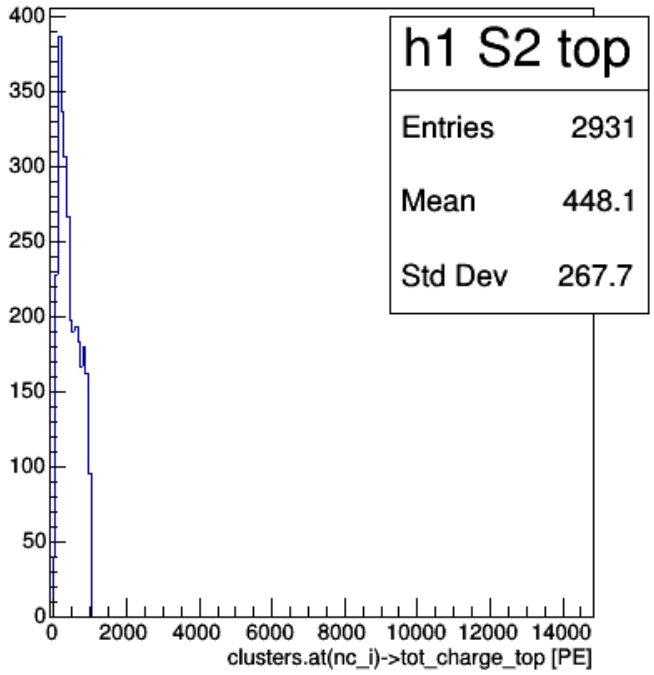


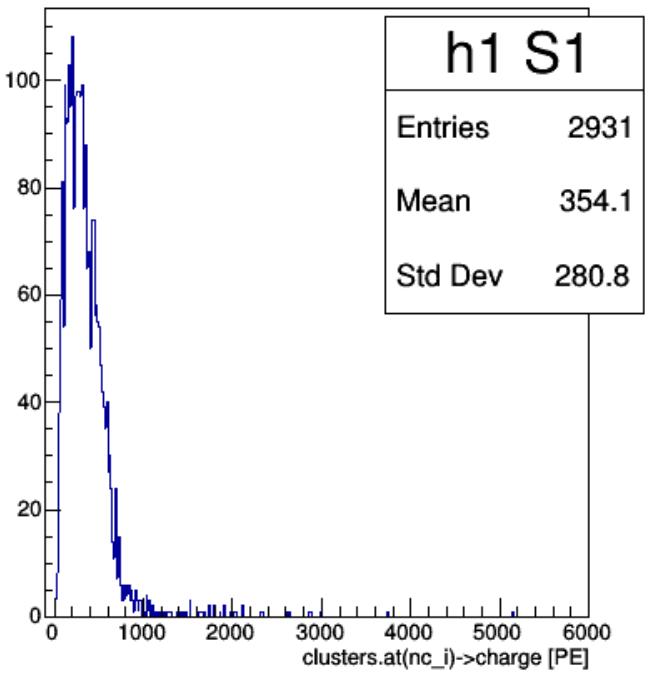


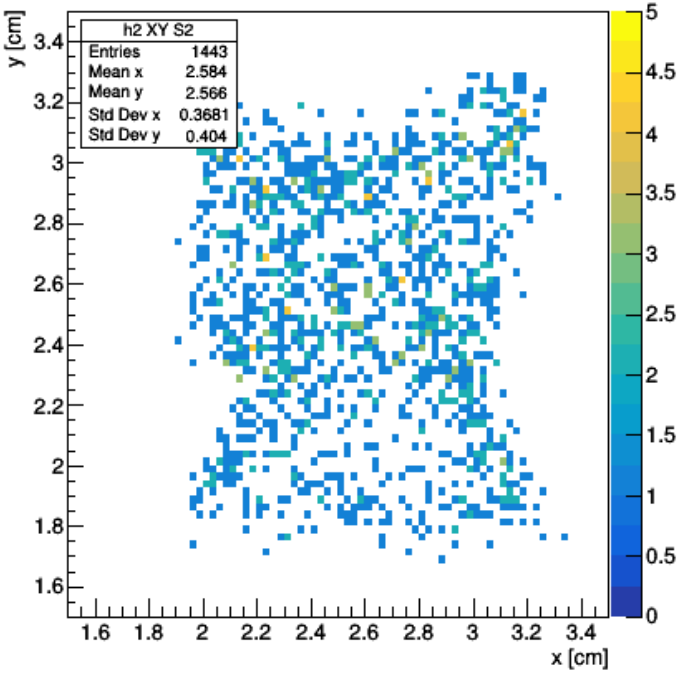
Ph2, bkg, run 534 master cut

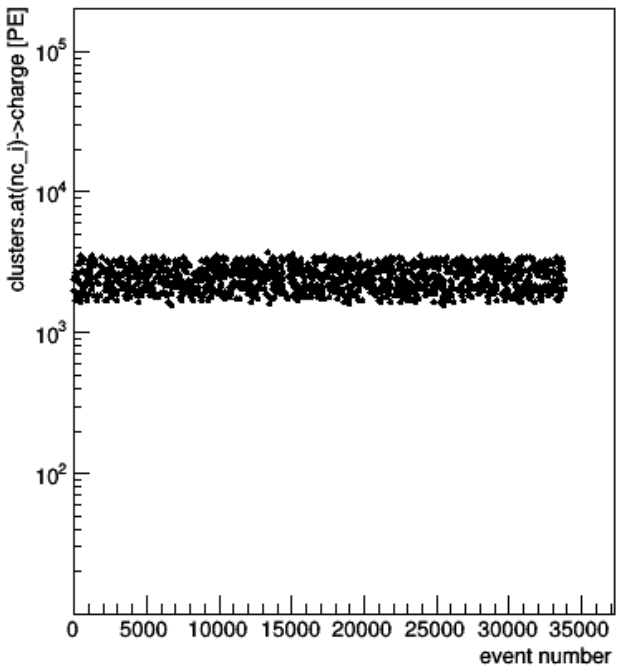
0 < tot_charge_top < 1000 [PE]



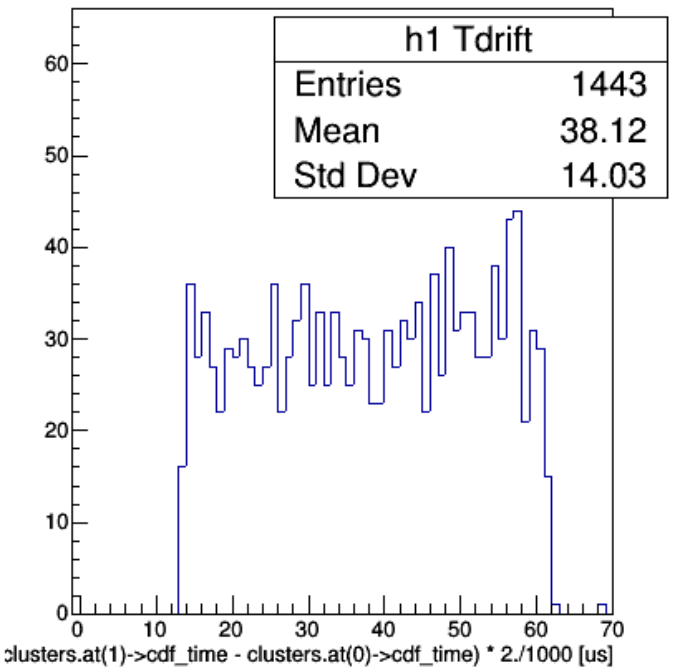








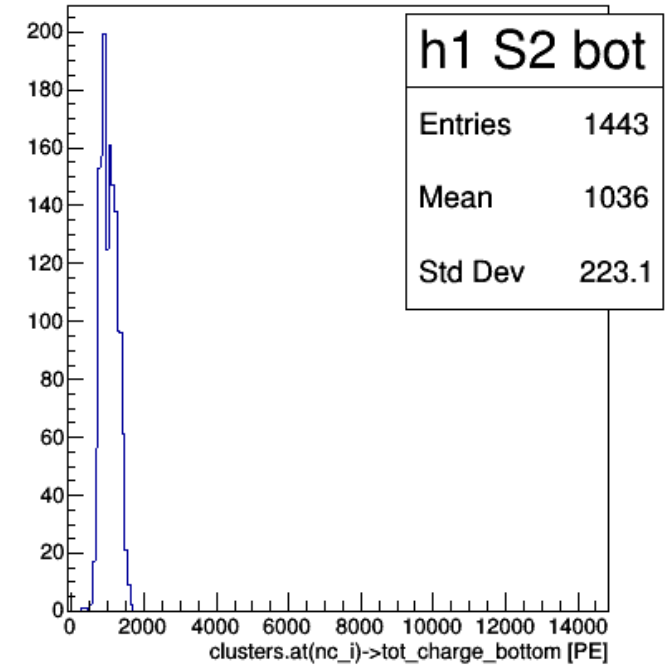
C0.is_S1_S2

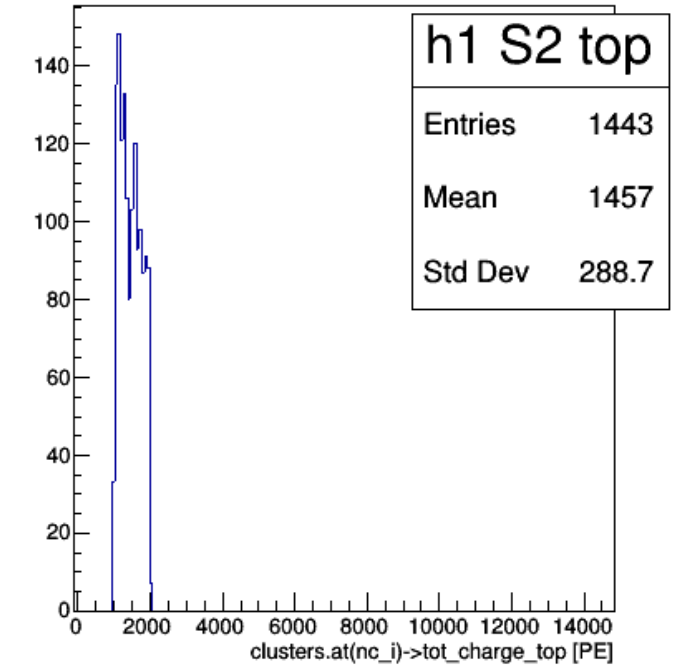


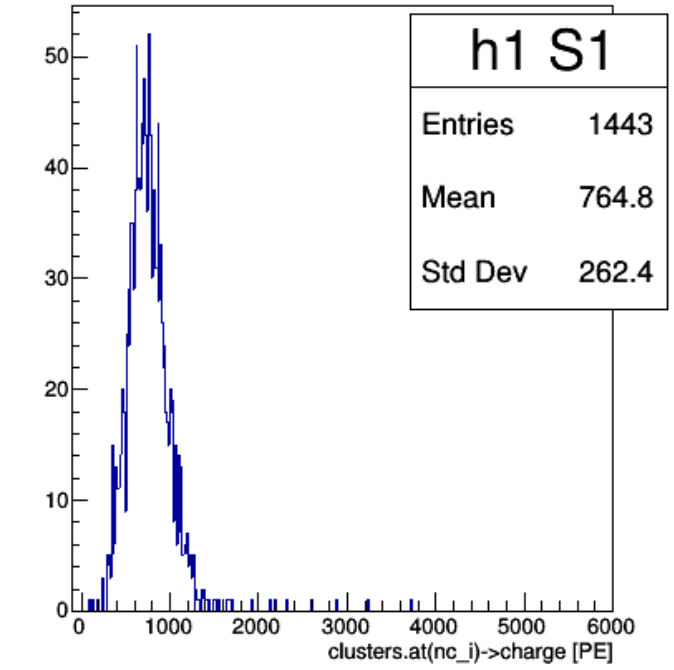
Ph2, bkg, run 534 master cut

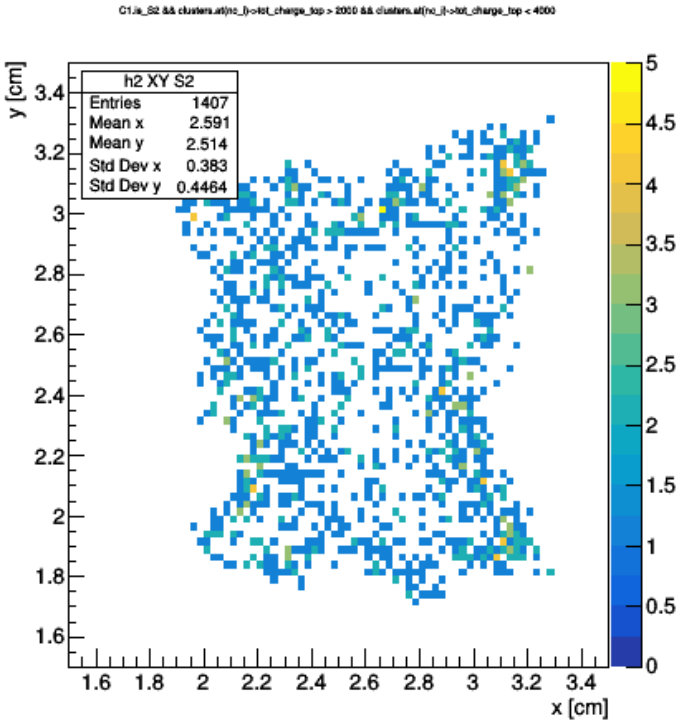
1000 < tot_charge_top < 2000 [PE]

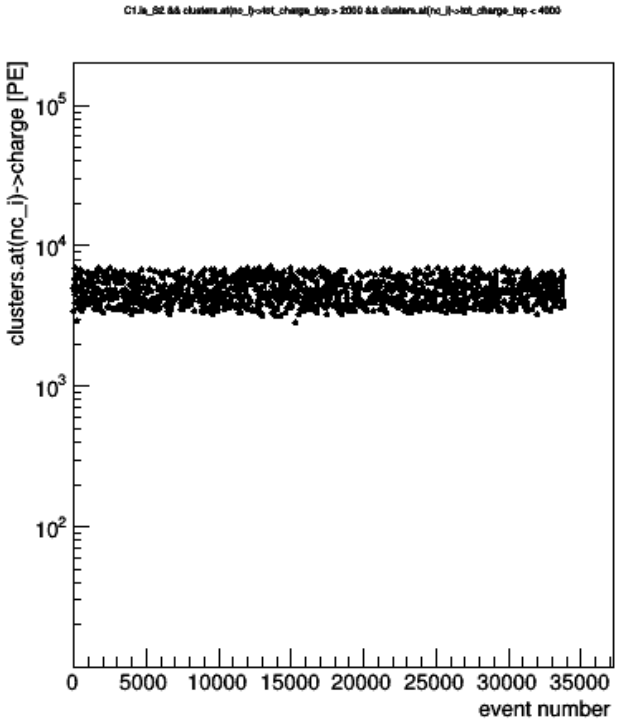
C2.is_S1

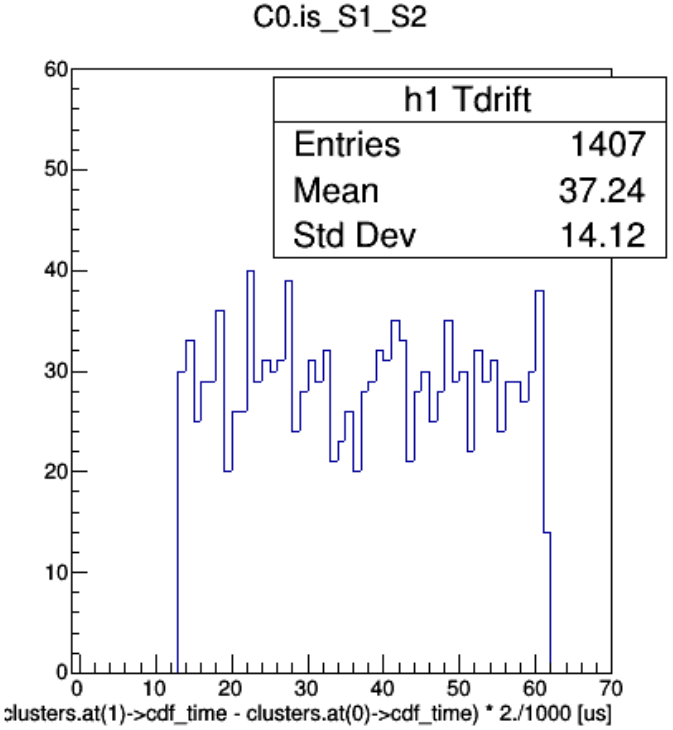






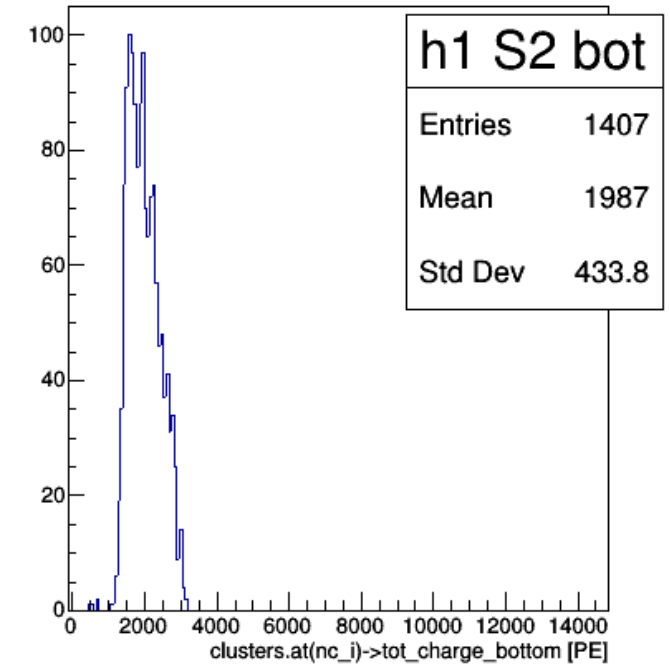


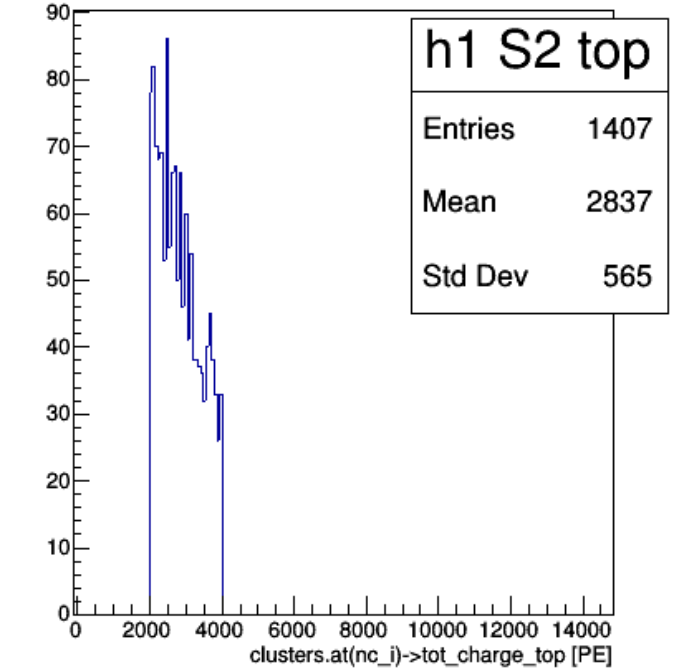


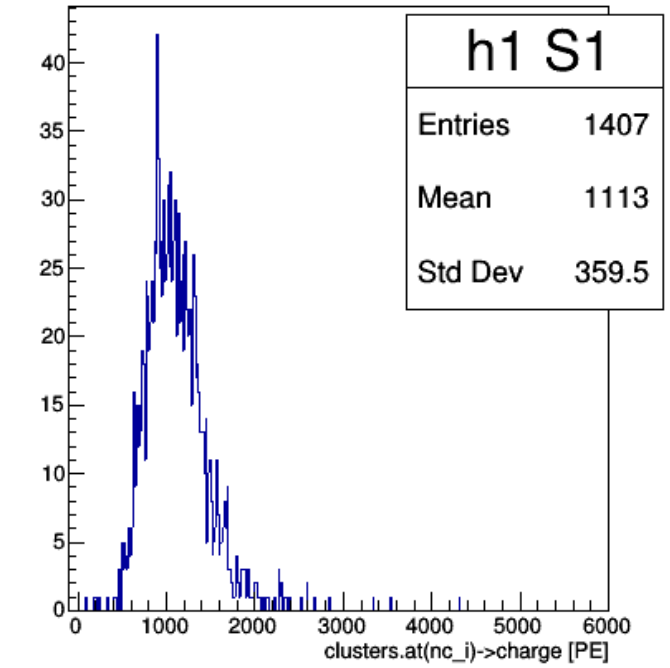


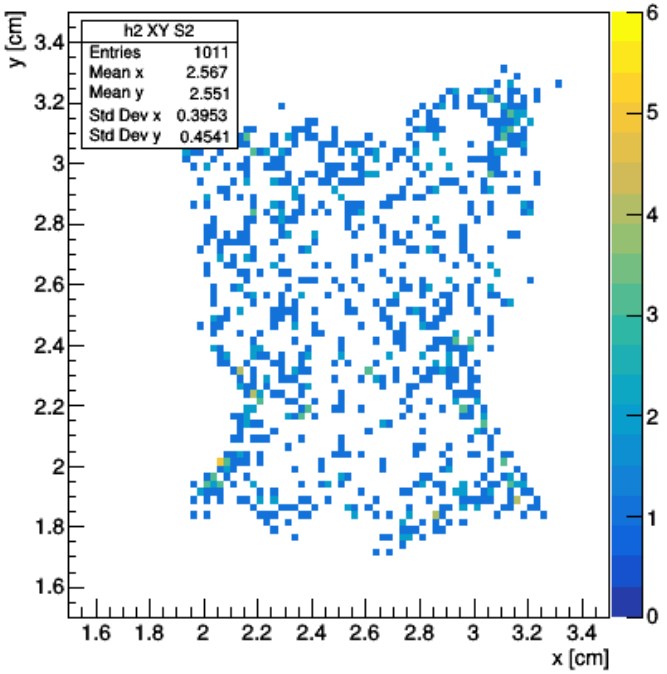
Ph2, bkg, run 534 master cut

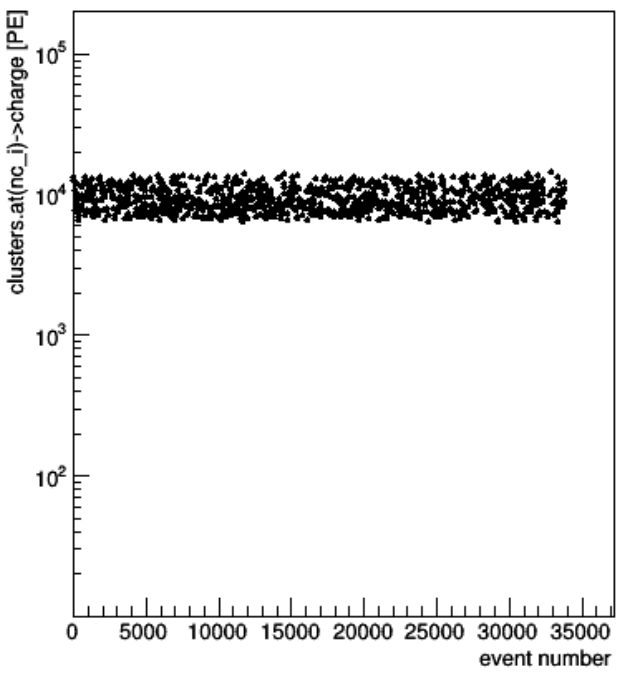
2000 < tot_charge_top < 4000 [PE]

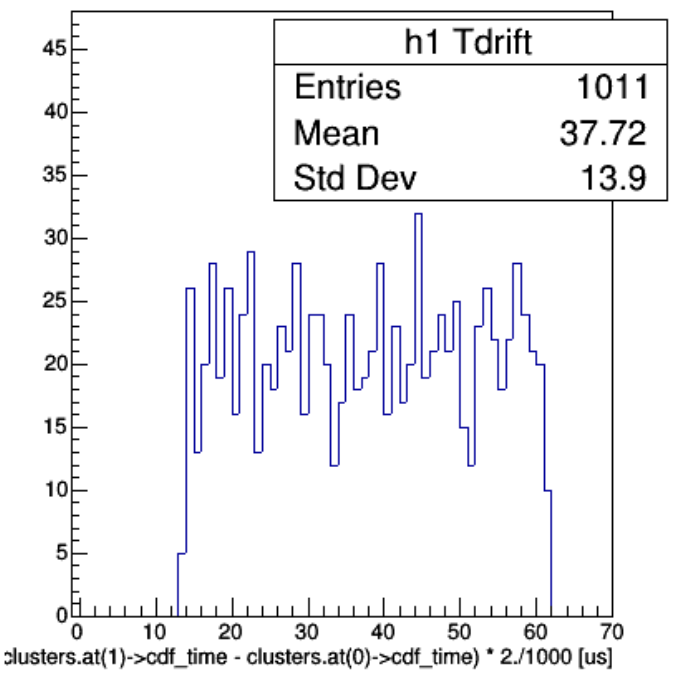






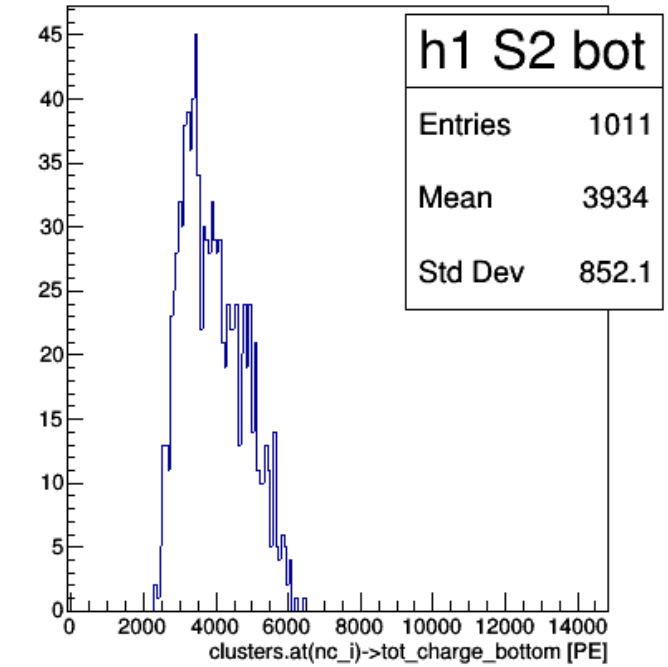


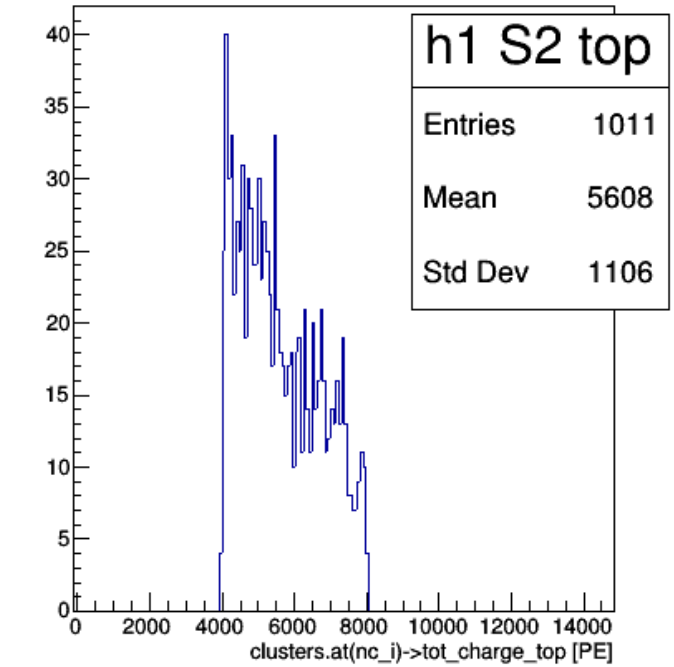


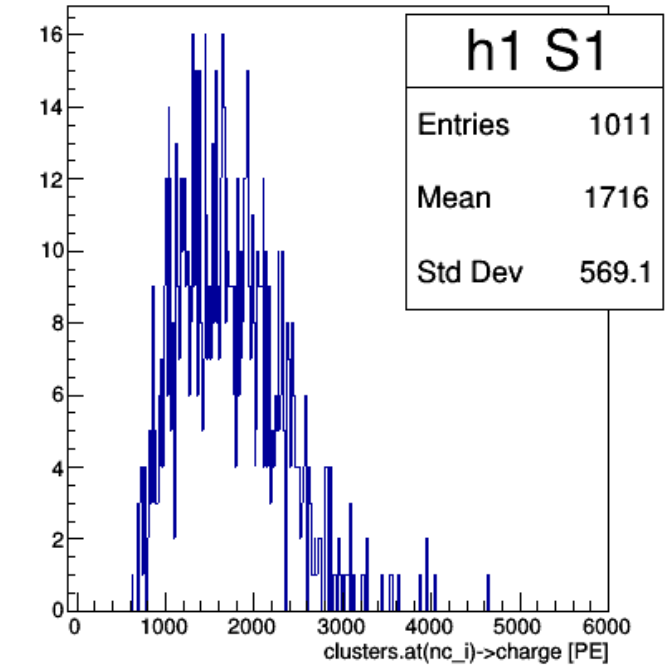


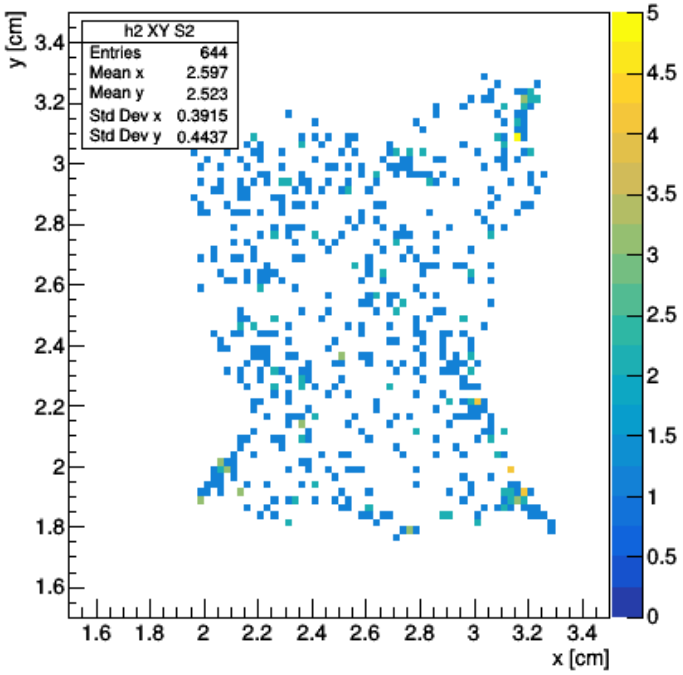
Ph2, bkg, run 534 master cut

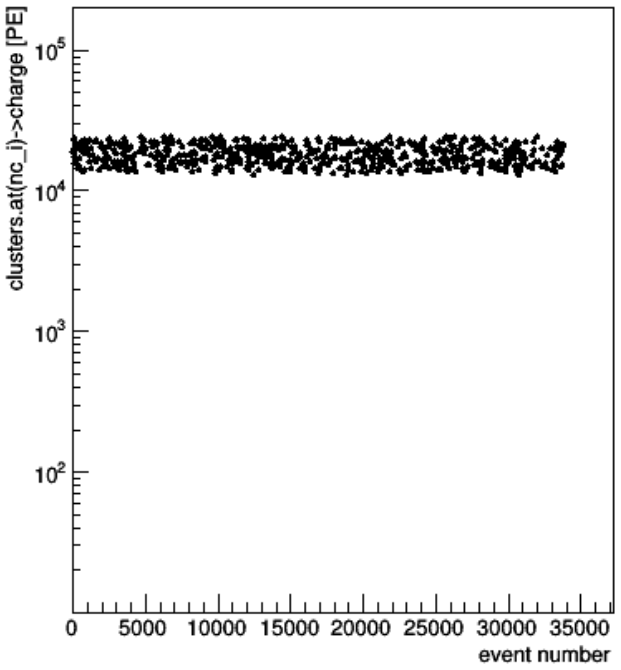
4000 < tot_charge_top < 8000 [PE]

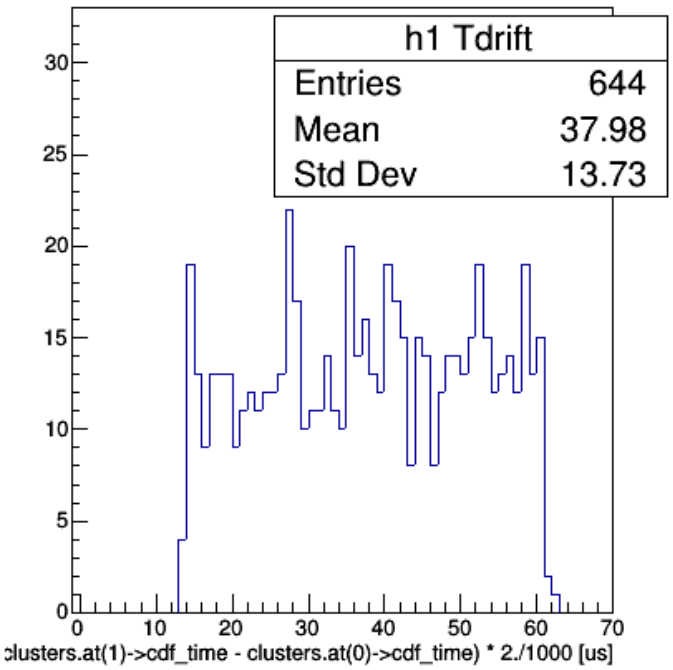






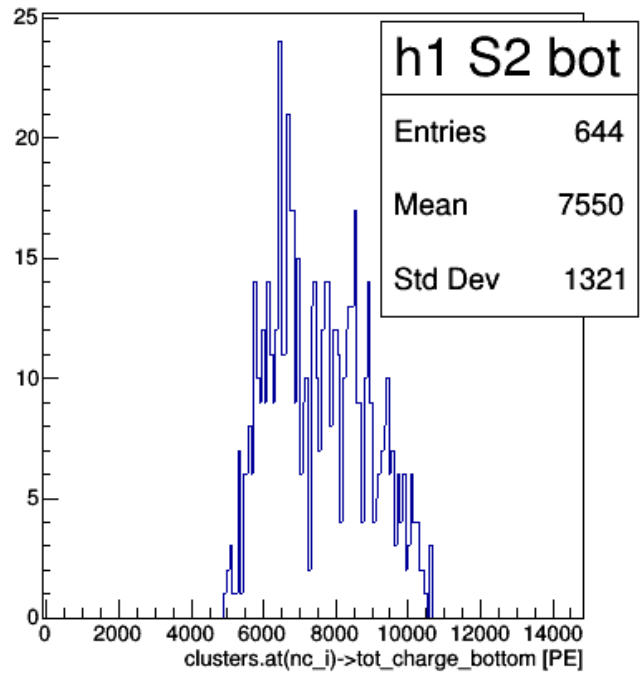


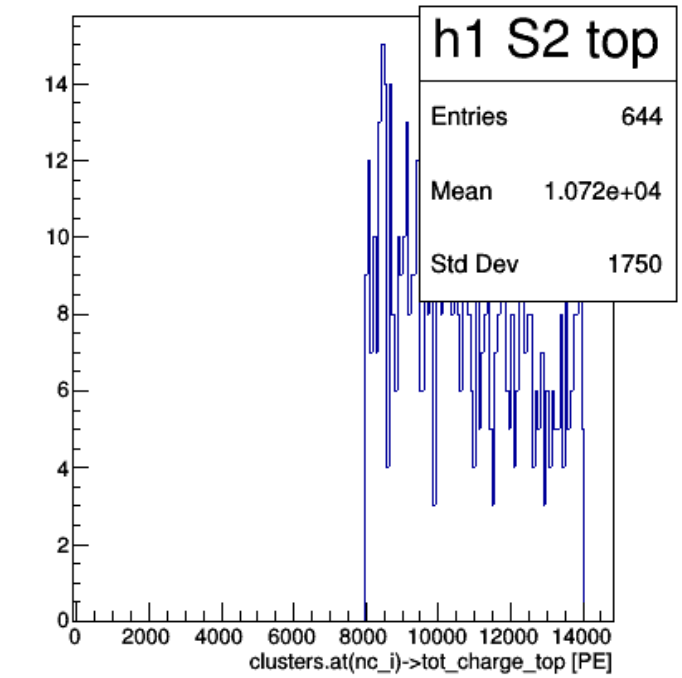


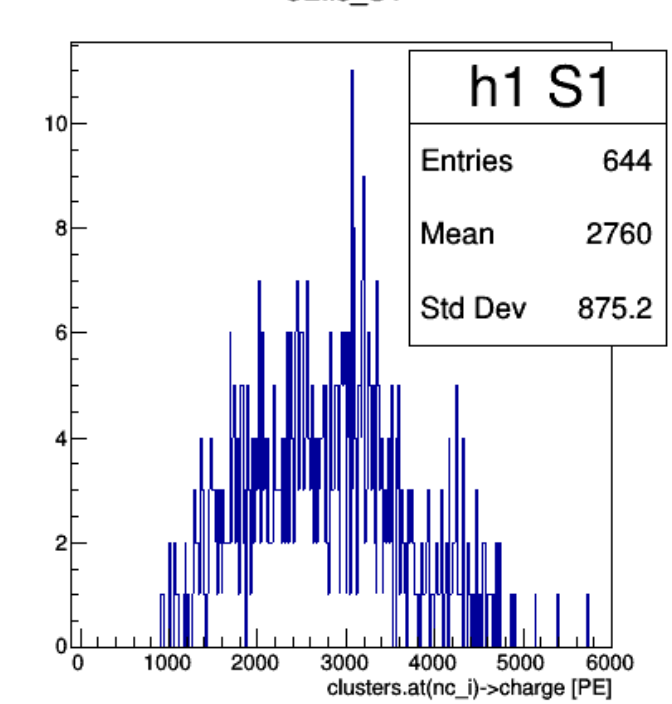


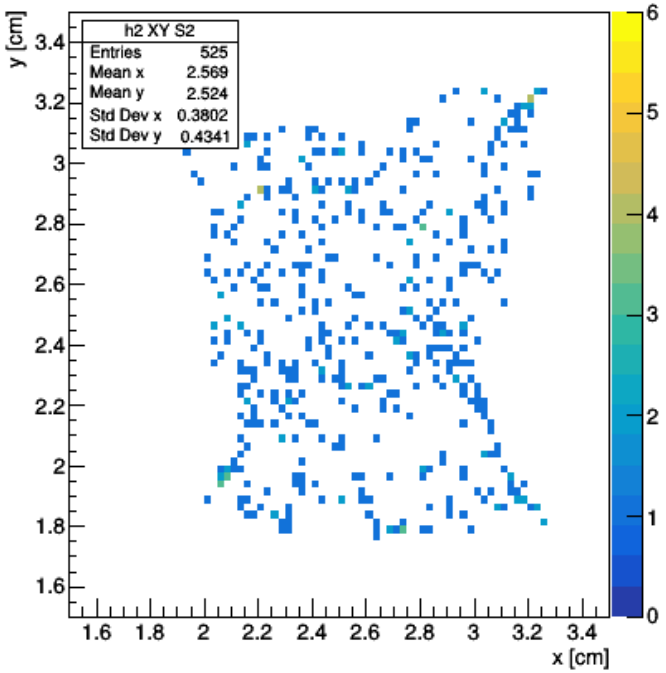
Ph2, bkg, run 534 master cut

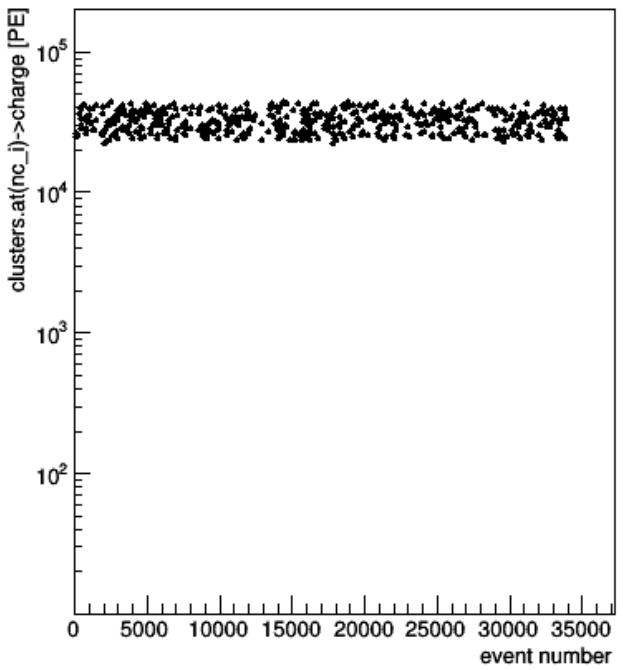
8000 < tot_charge_top < 14000 [PE]



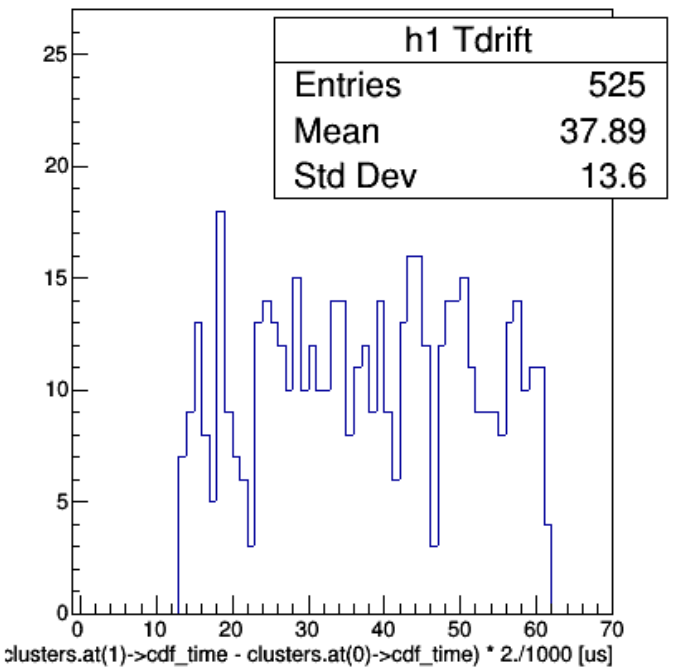






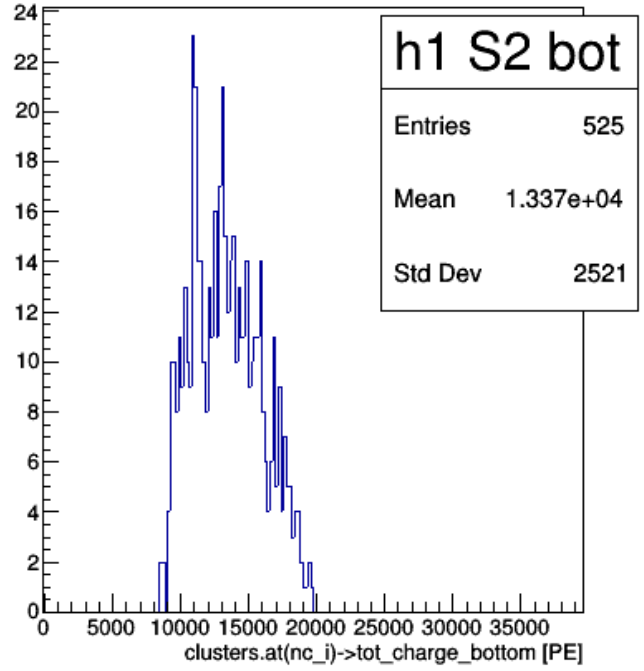


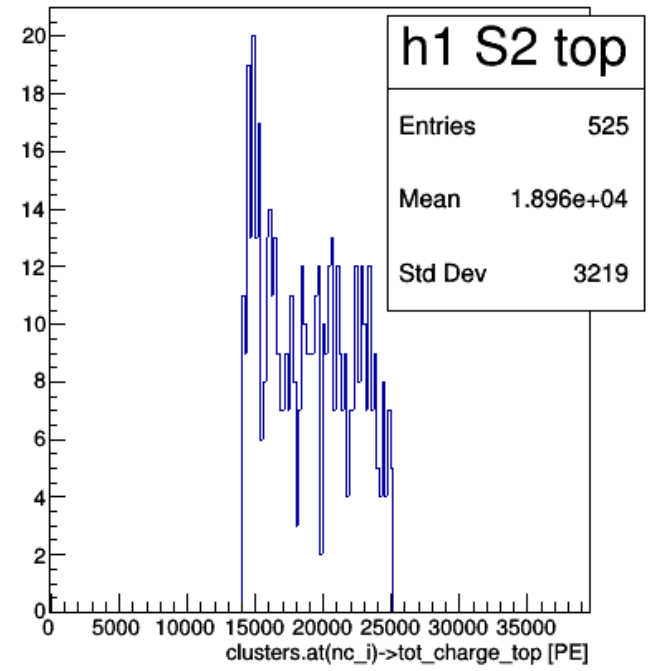
C0.is_S1_S2

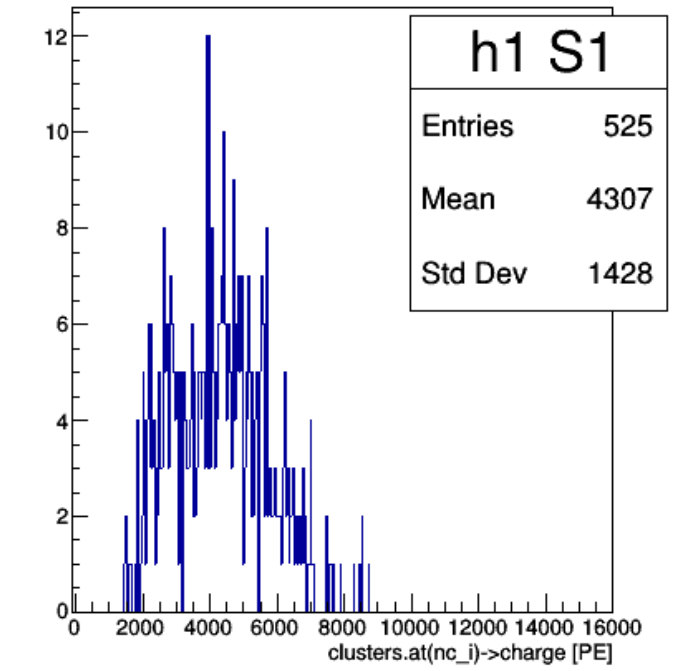


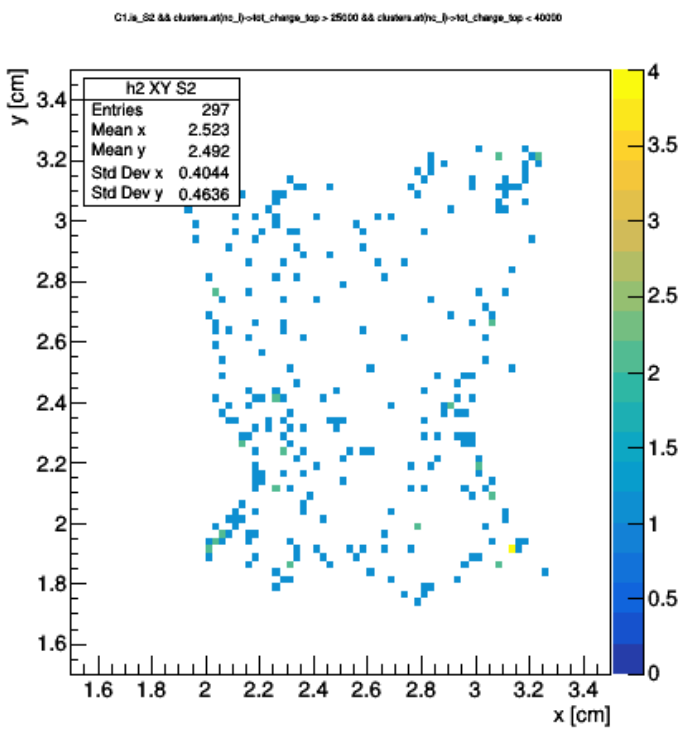
Ph2, bkg, run 534 master cut 14000 < tot_charge_top < 25000 [PE]

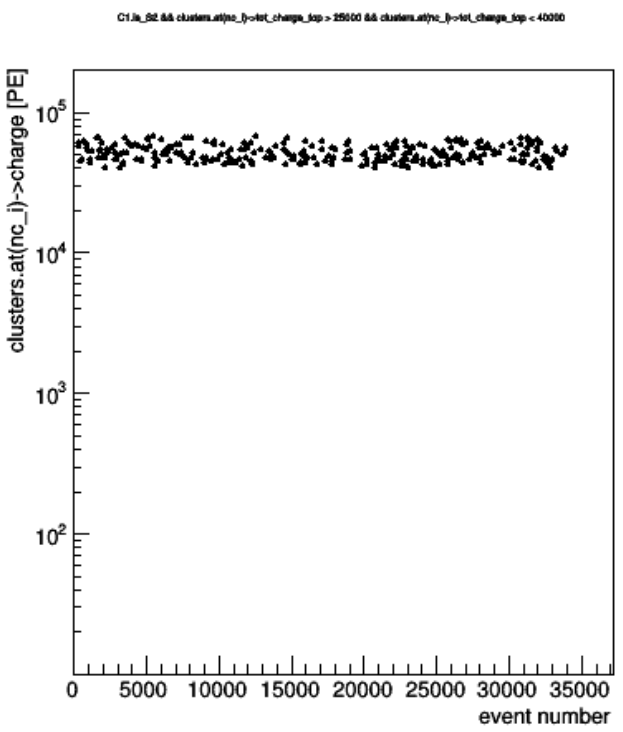
C2.is_S1

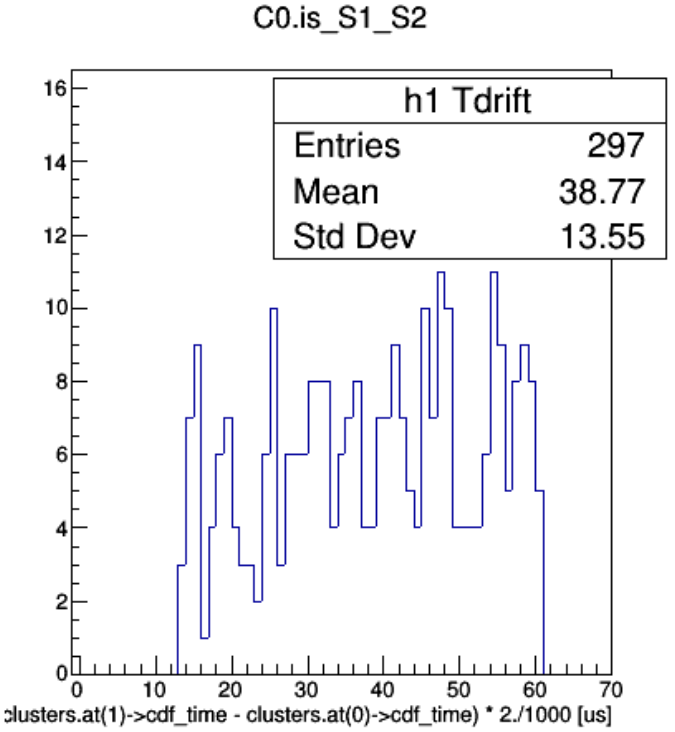












Ph2, bkg, run 534 master cut 25000 < tot_charge_top < 40000 [PE]