Status Update

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summary

- The npe 2D map created from the fixed & released fit was different from the mean charge map and the one made from p0 & p6-fixed fit.
- There wasn’t the side with more photoelectrons any more in the f&r fit graph.
- We suspected that the gain is not the same in all places in the PMT surface.
- I created the gain(p6-p0) map to confirm.
- In the gain map, I could see that it had a same kind of trend as the mean charge map.
- The trend we saw in the earlier map may have been due to the difference in gain, not the number of photo-electrons.

run595

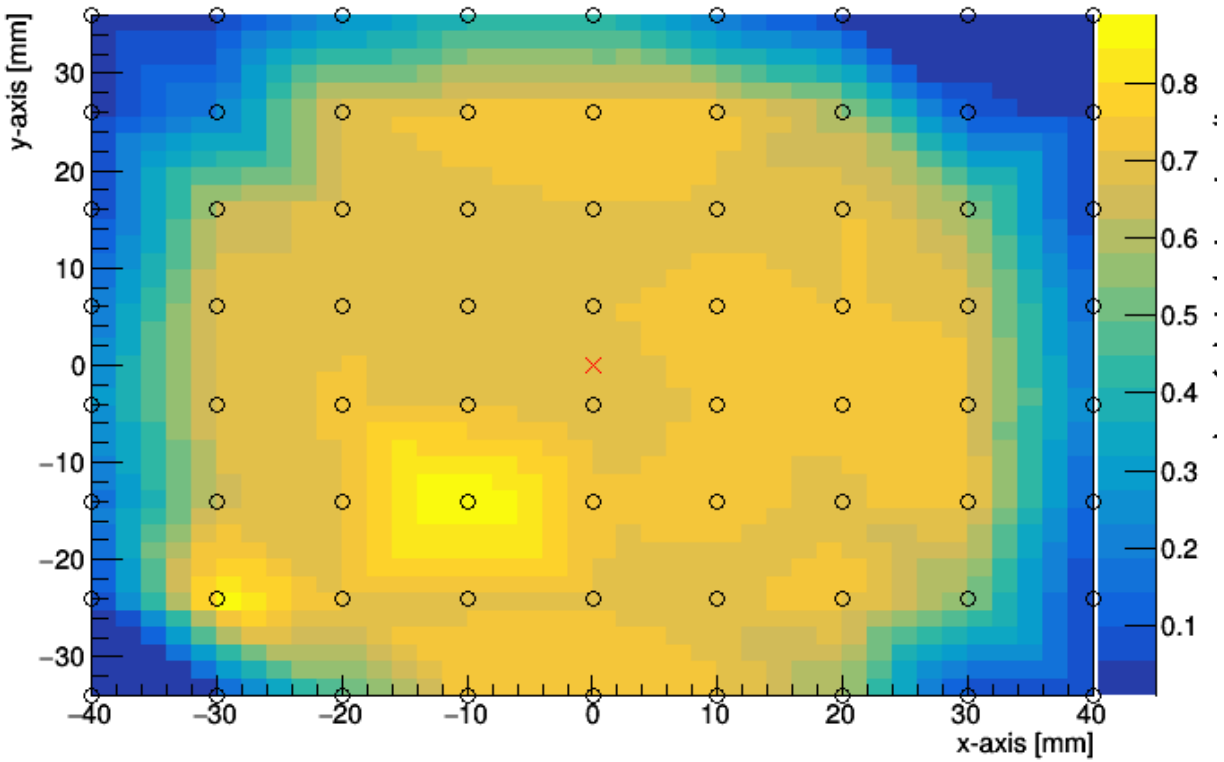
HV -1200V

Intensity: 150.0 mA, 70 psec

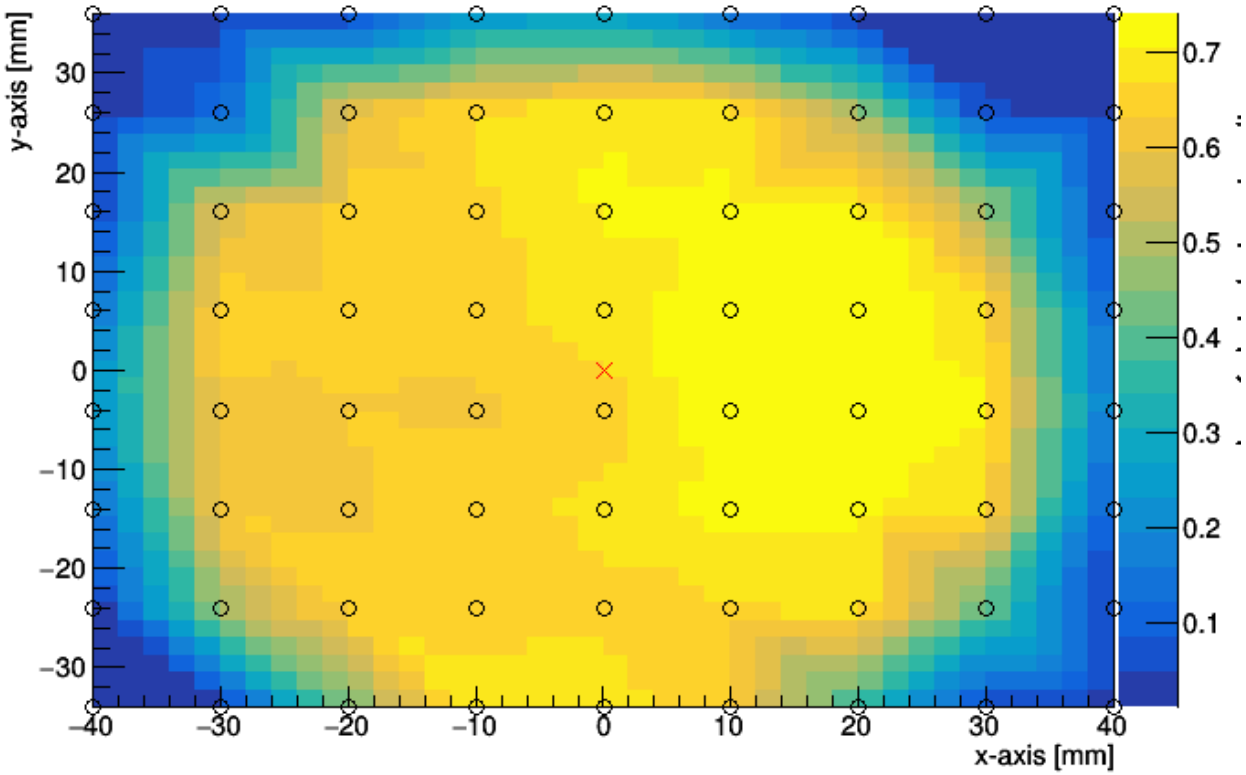
BC0038

npe(p4)/monitor mean

before

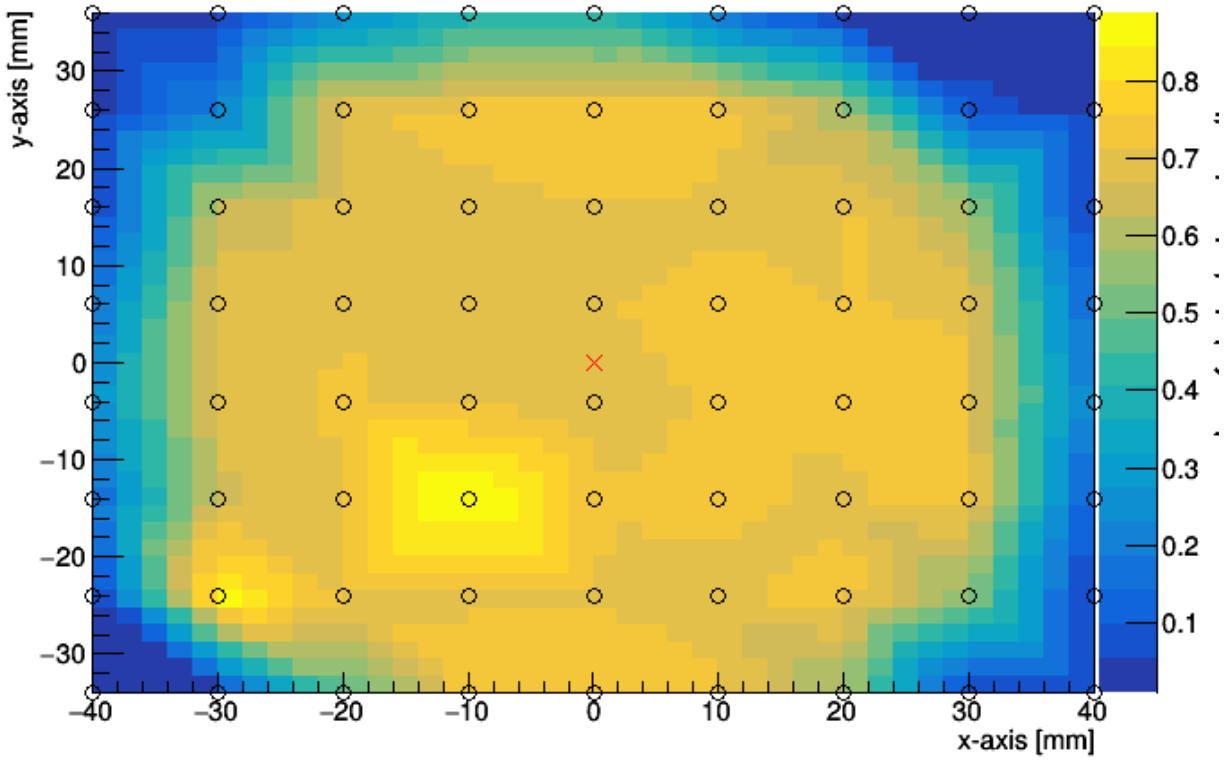


p0 and p6 fixed

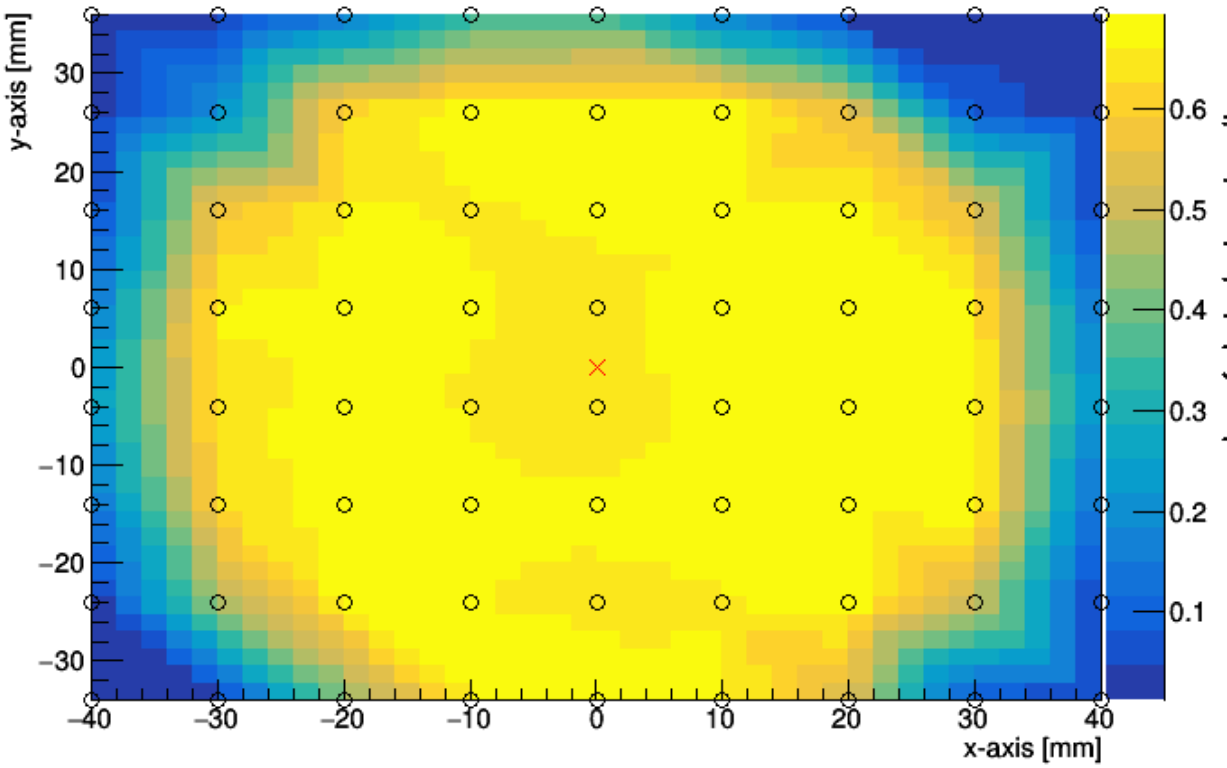


npe/monitor mean

before



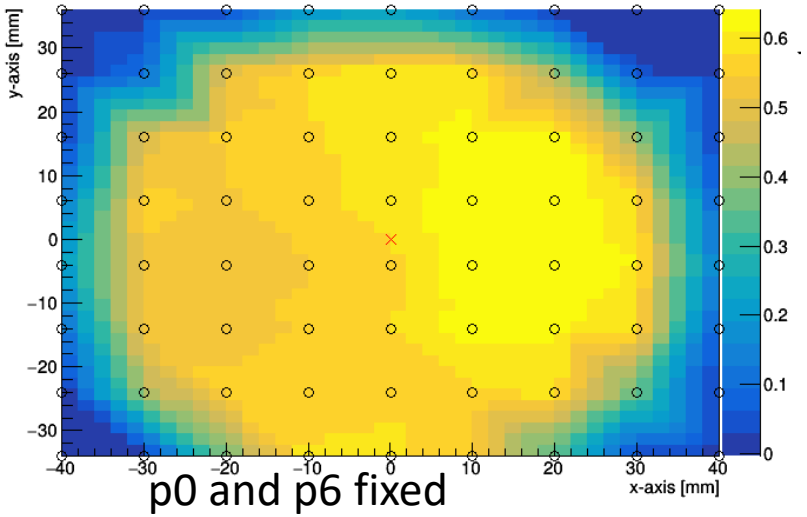
p0 and p6 fixed
& fitted again



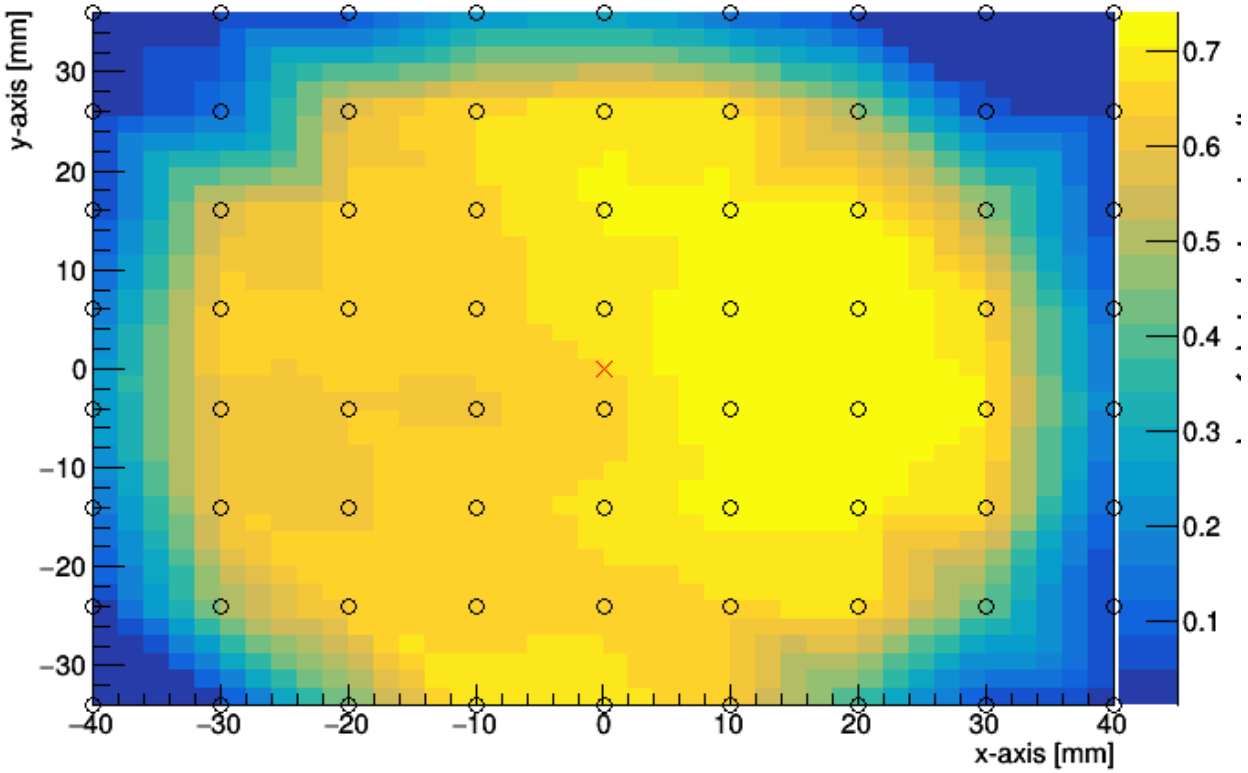
Fixed vs. fixed and released

Mean charge map and the p0&p6-fixed map seem similar, but the fixed and released one looks different.

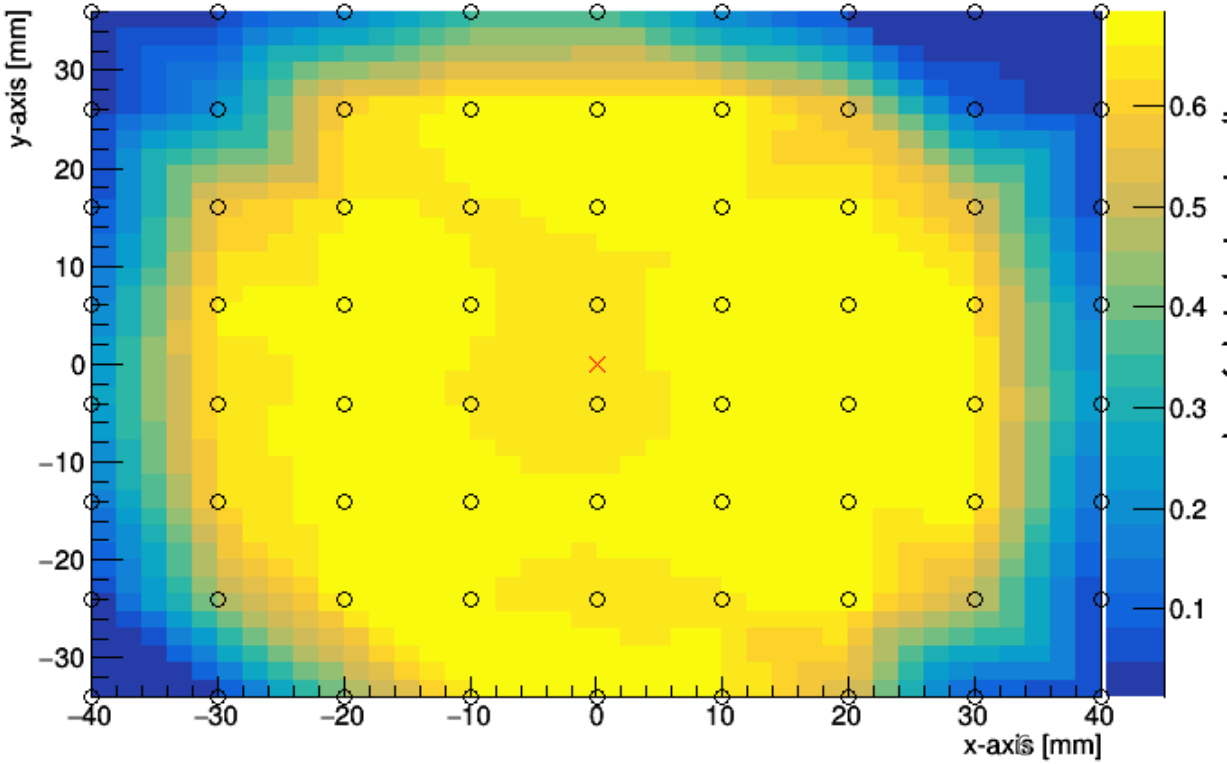
mean



p0 and p6 fixed

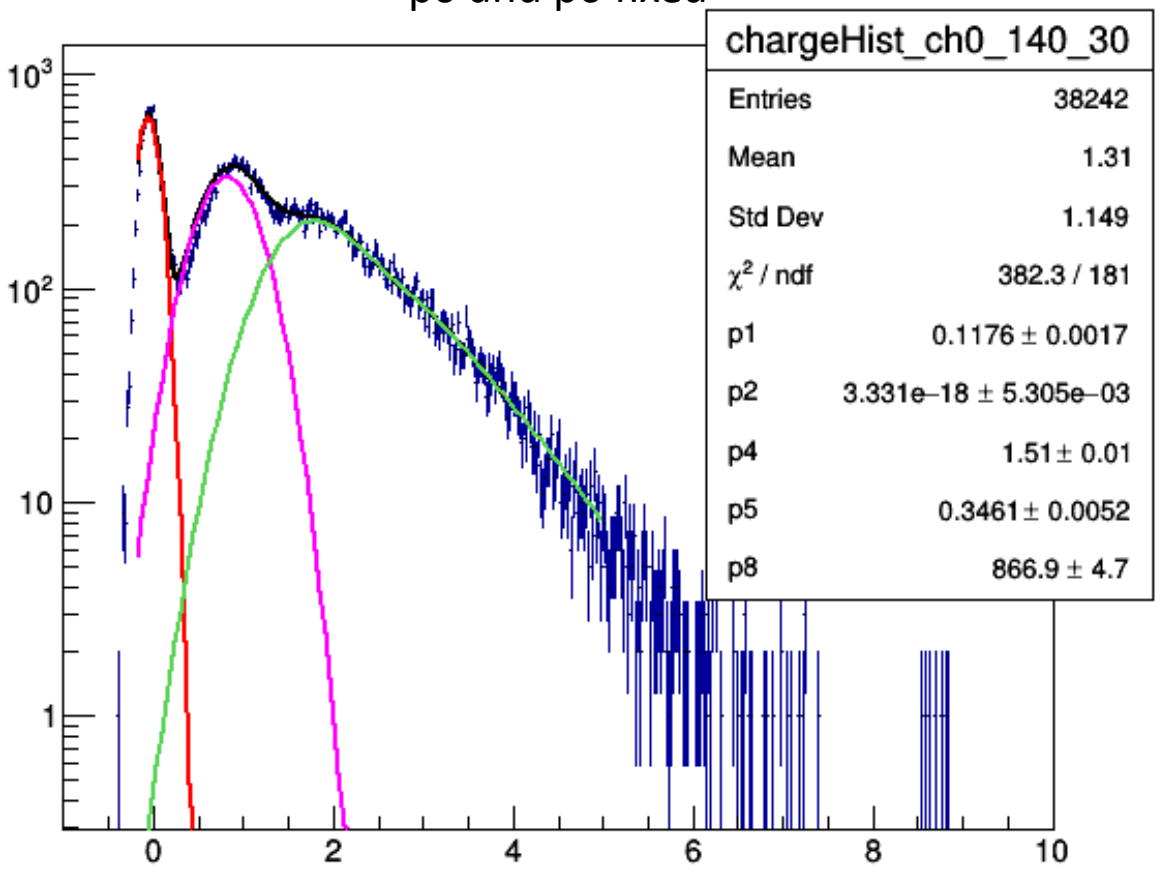


p0 and p6 fixed
& fitted again

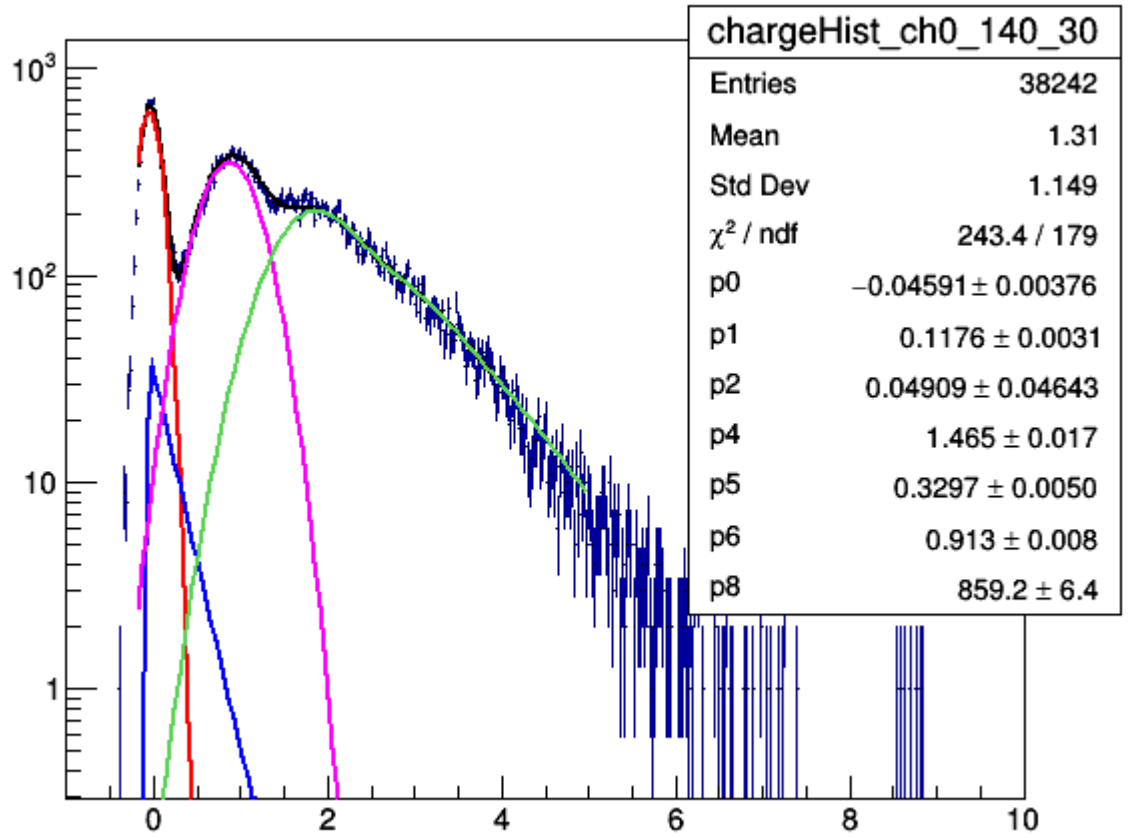


Fixed vs. fixed and released(at the center of the PMT)

p0 and p6 fixed

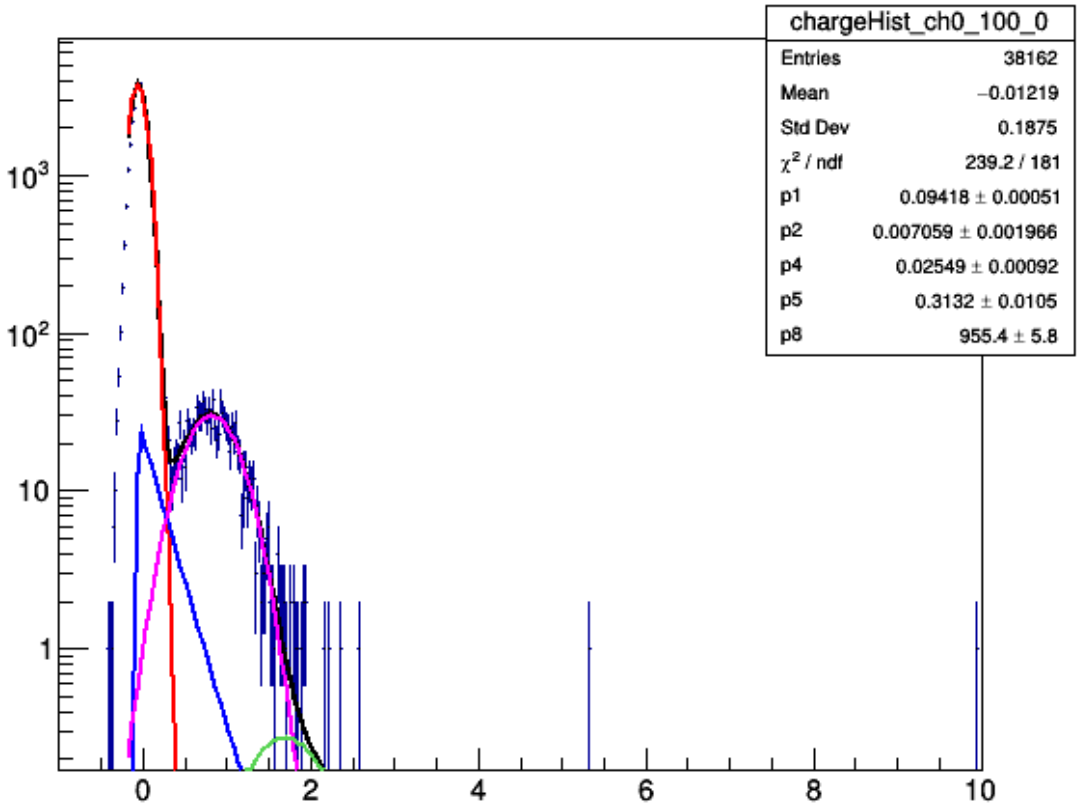


p0 and p6 fixed
& fitted again

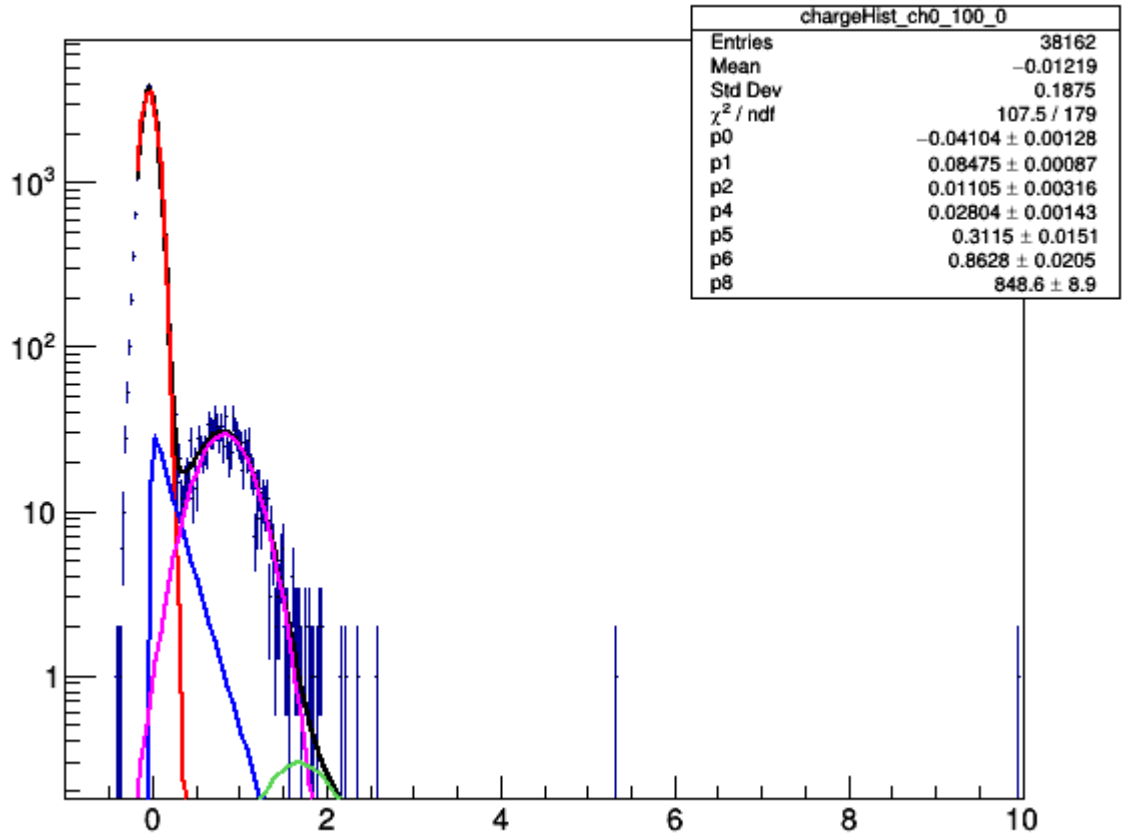


Fixed vs. fixed and released(at the edge of the PMT)

p0 and p6 fixed

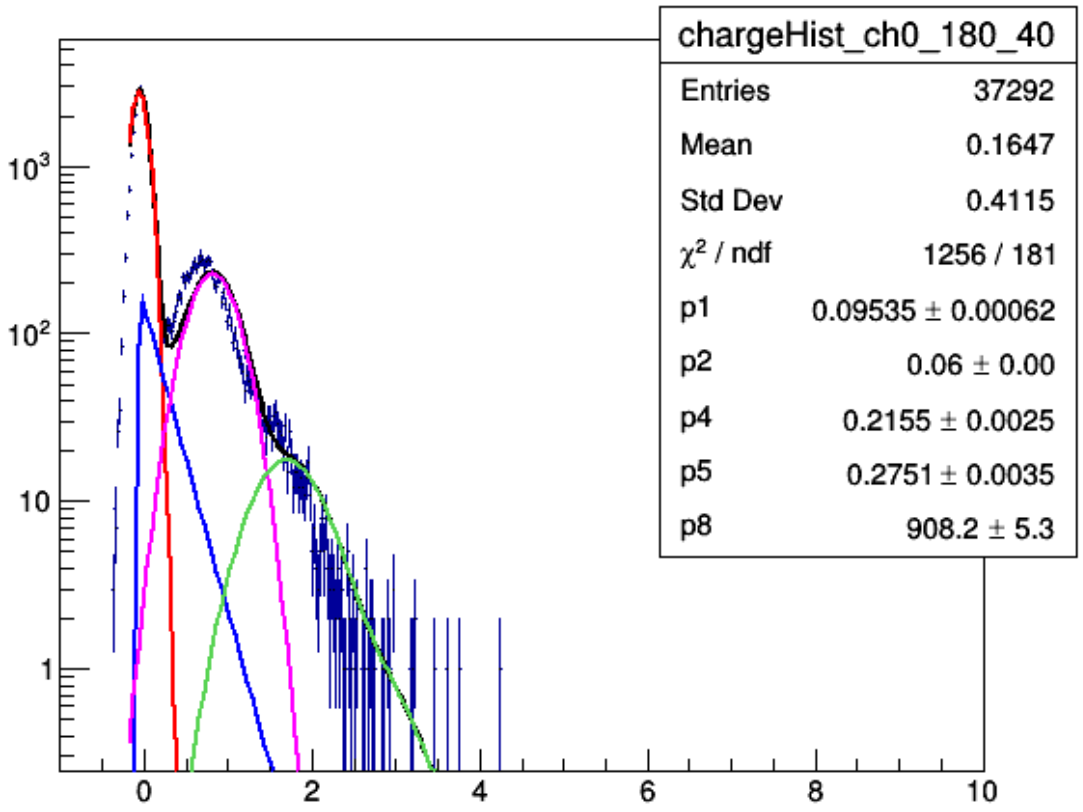


p0 and p6 fixed
& fitted again

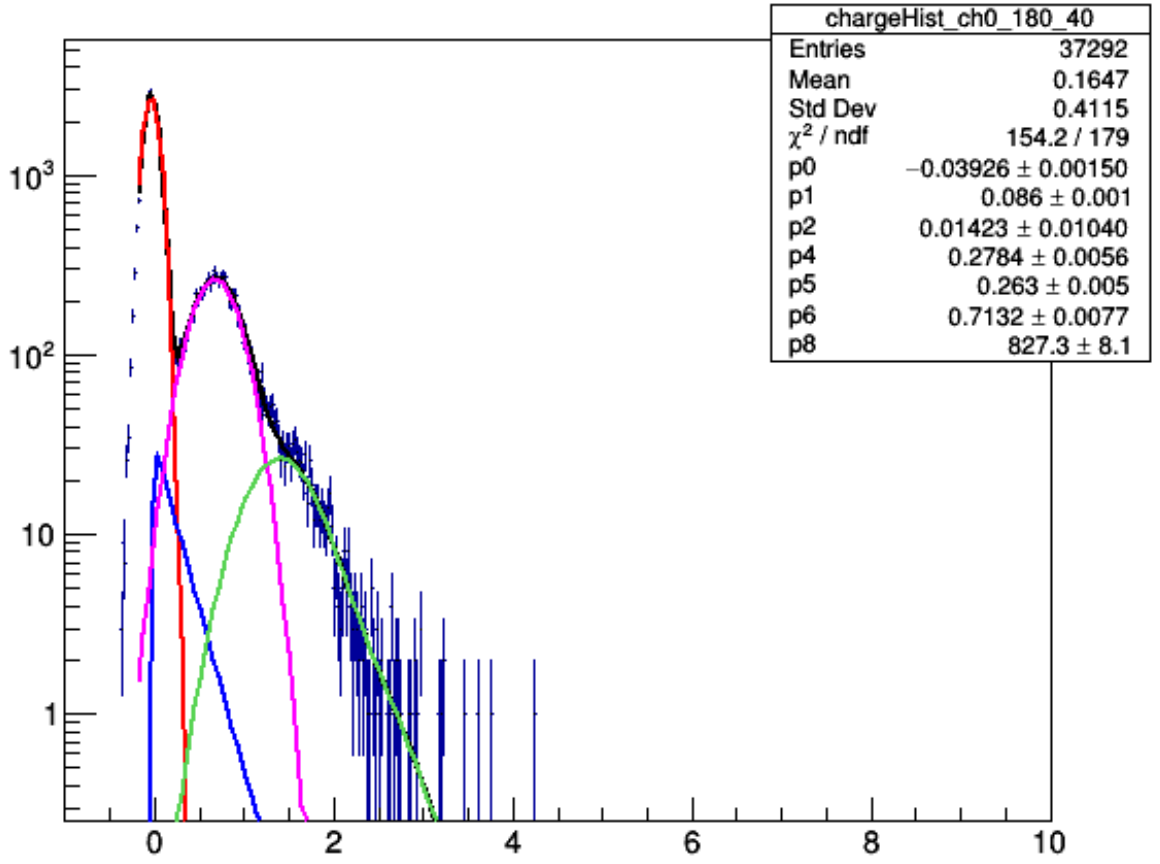


Fixed vs. fixed and released(at the edge)

p0 and p6 fixed



p0 and p6 fixed
& fitted again

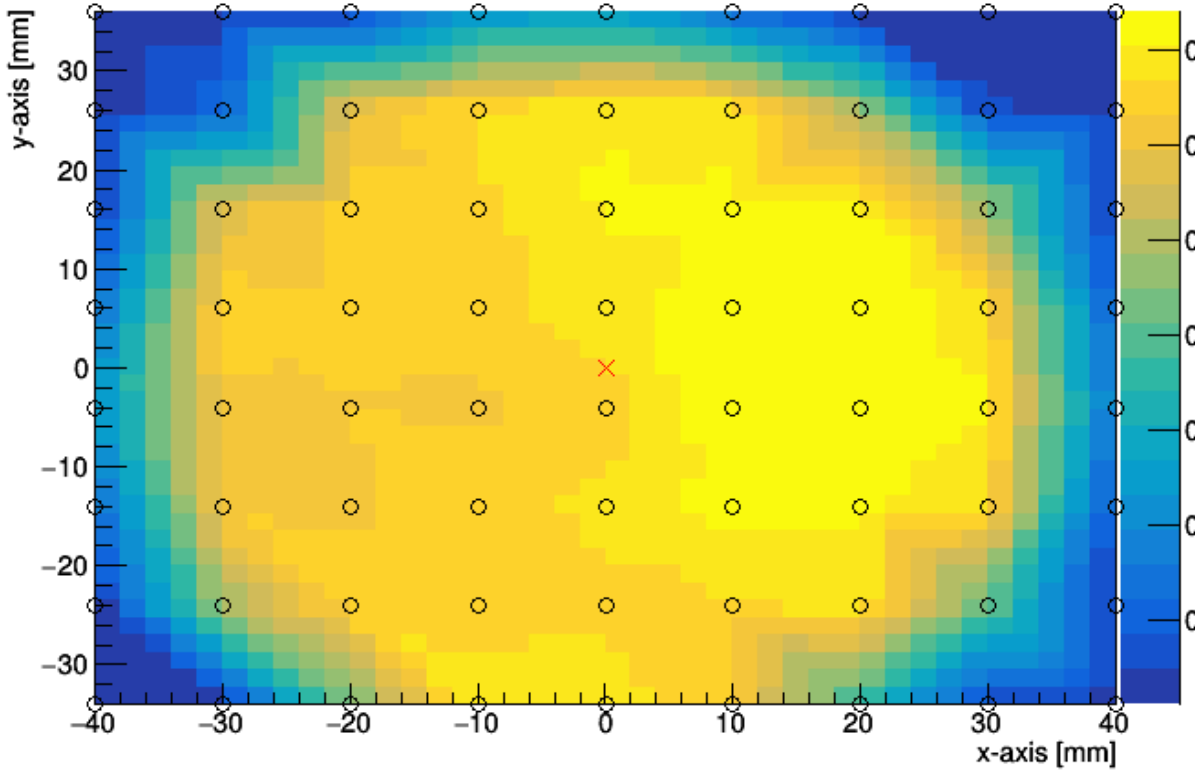


The fixed and released fitter seems better.

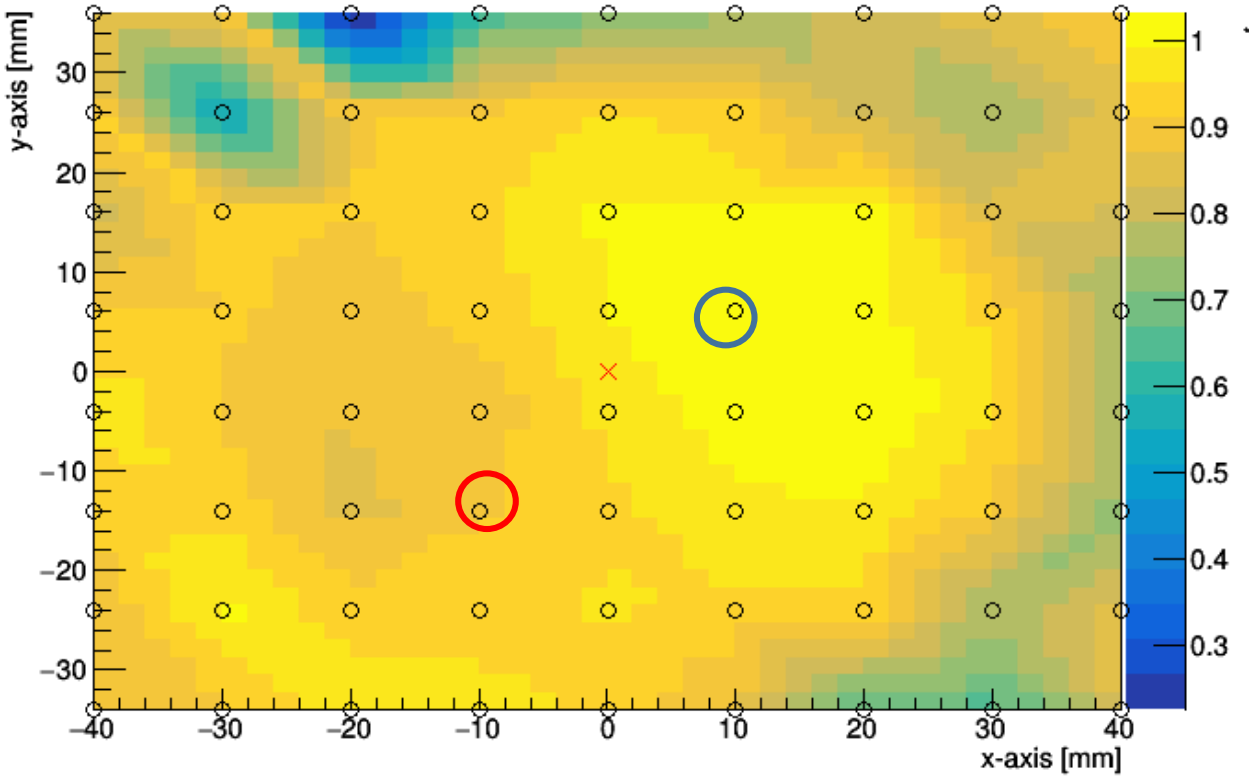
gain map

We can see the same kind of trend in the p0&p6-fixed npe graph and the mean graph.

p0 and p6 fixed

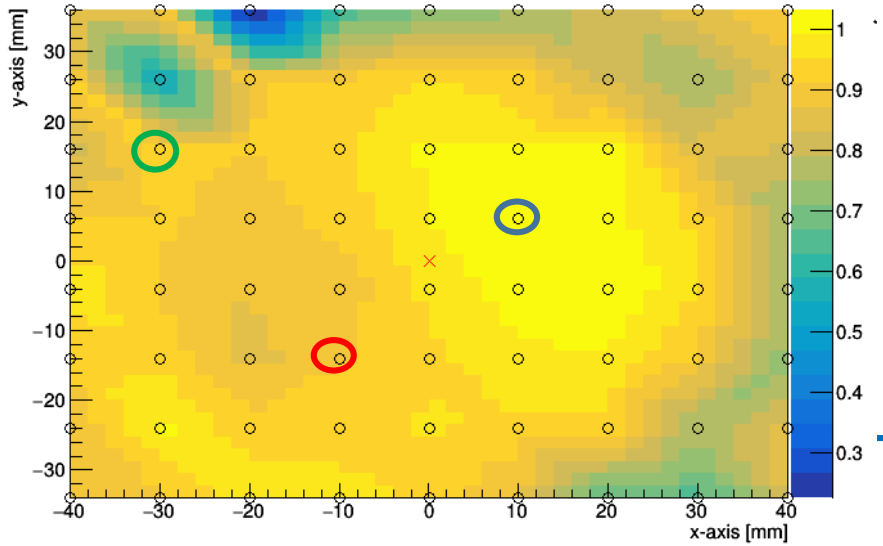


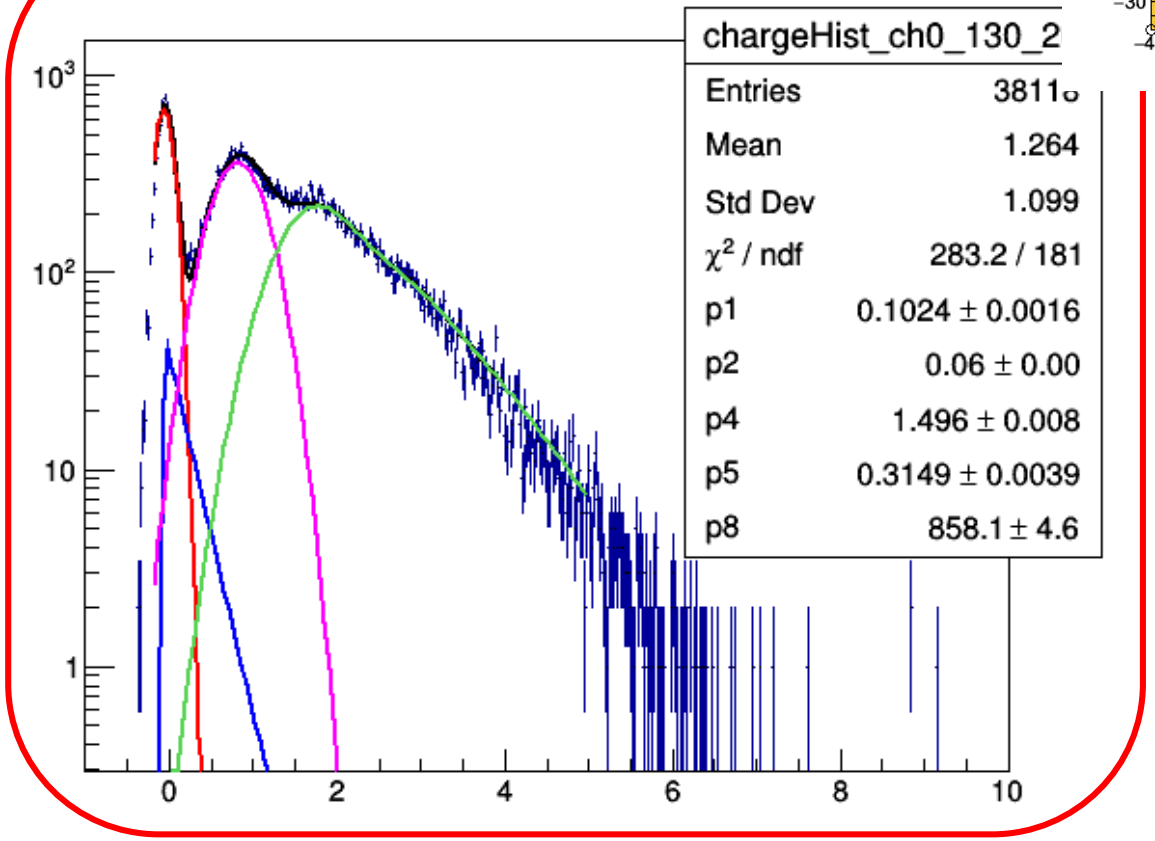
gain

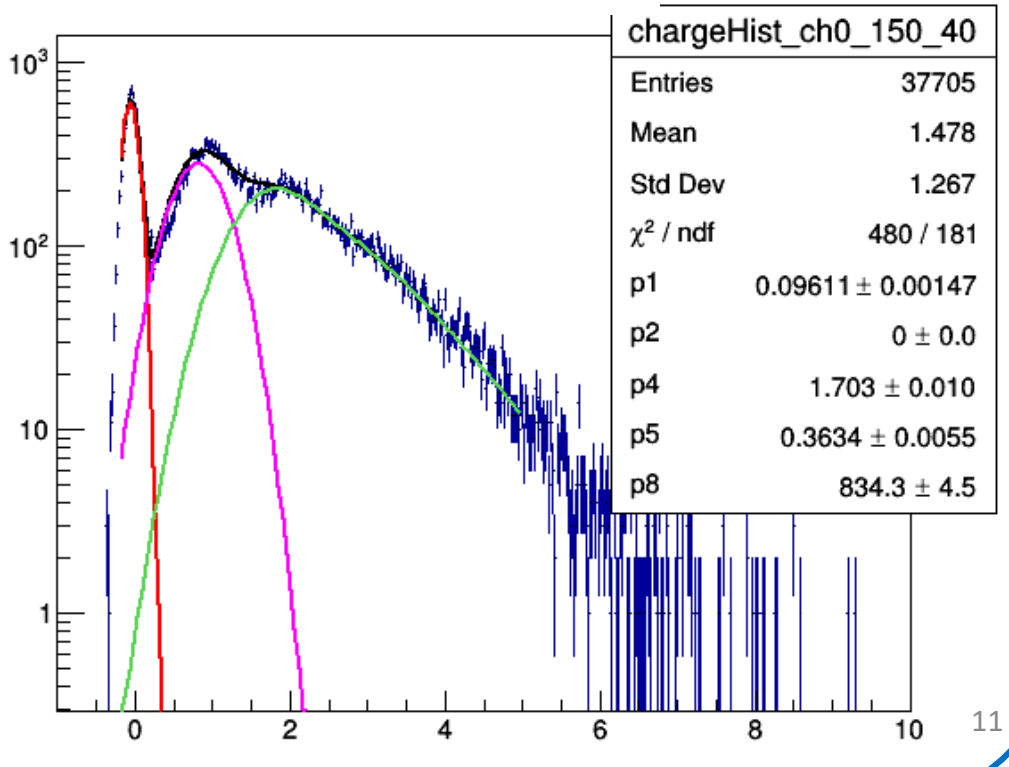


gain

p0 & p6 are fixed at the green position.
We can see that the gain is increasing in position(150, 40)





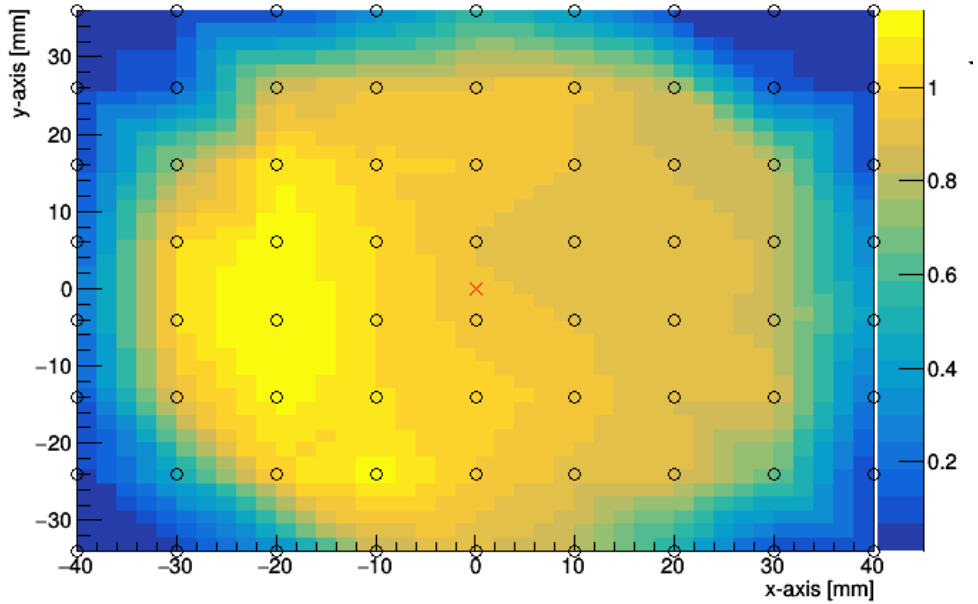


run537

HV 1200 V

Intensity 150.0 mA, 70 psec

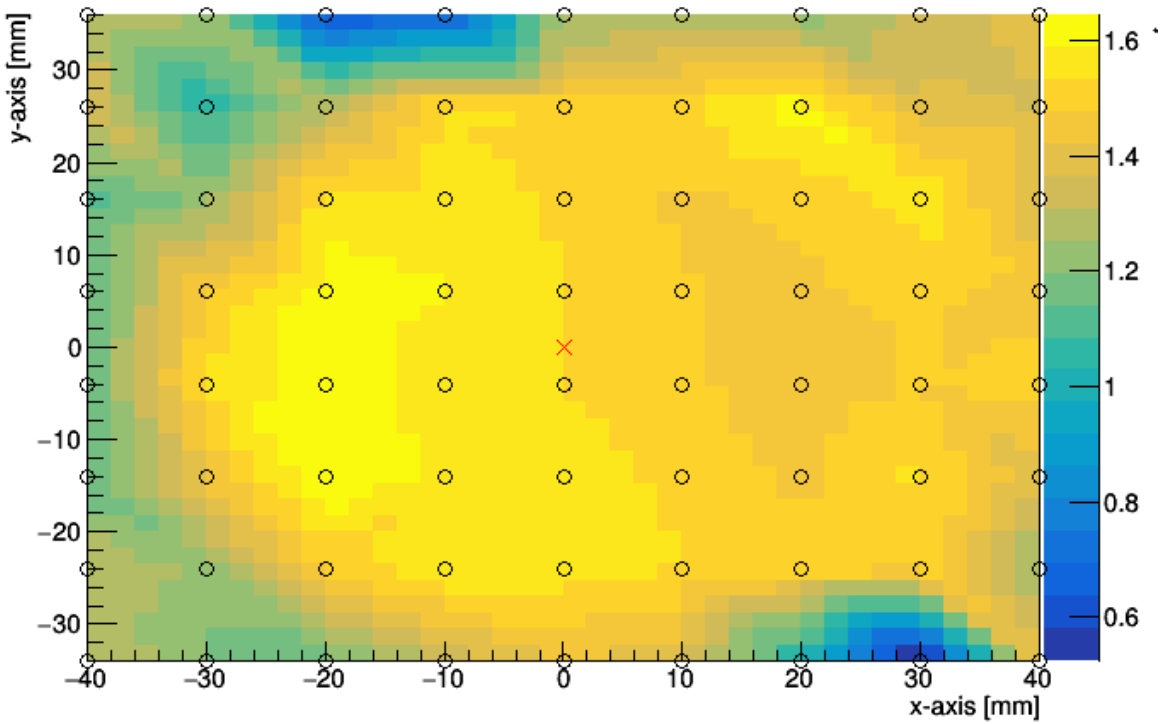
BC0035

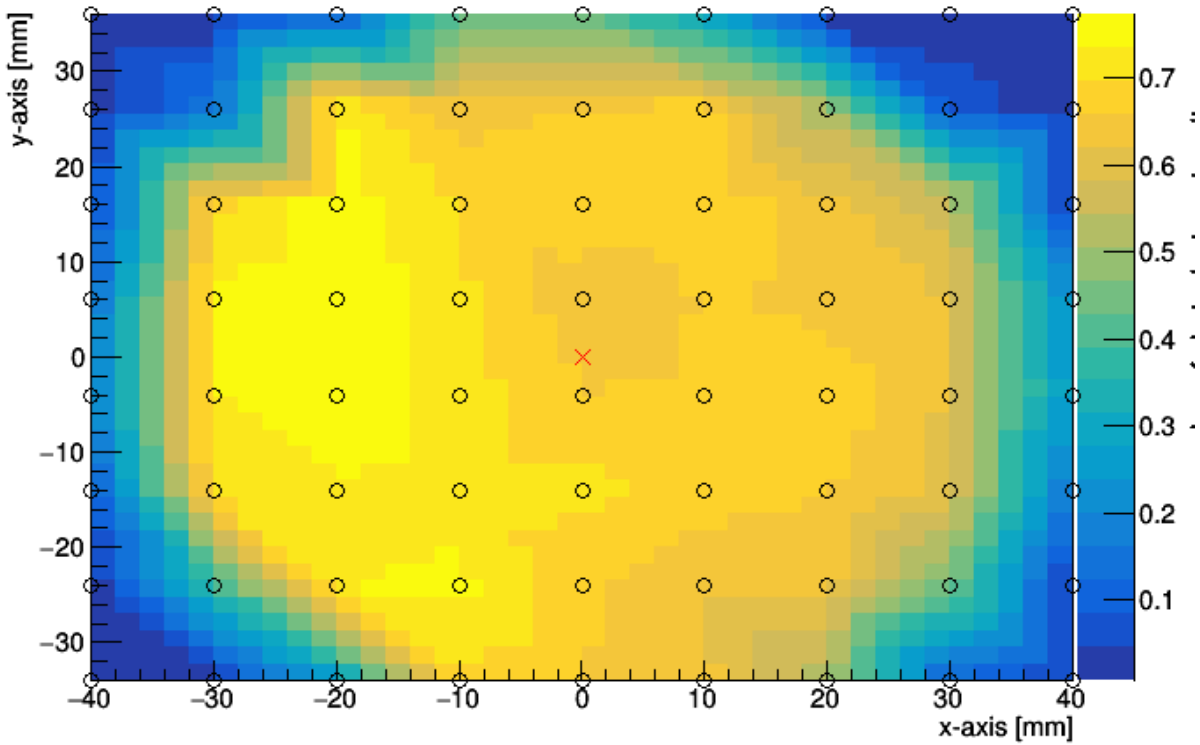


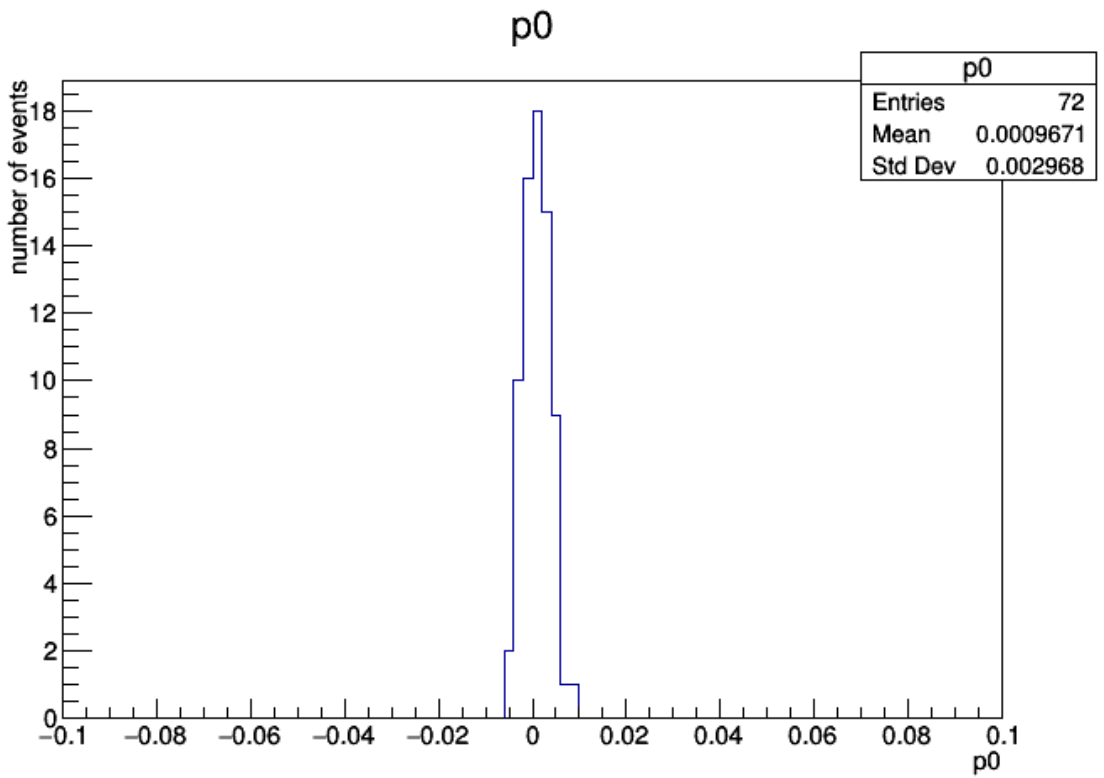
mean

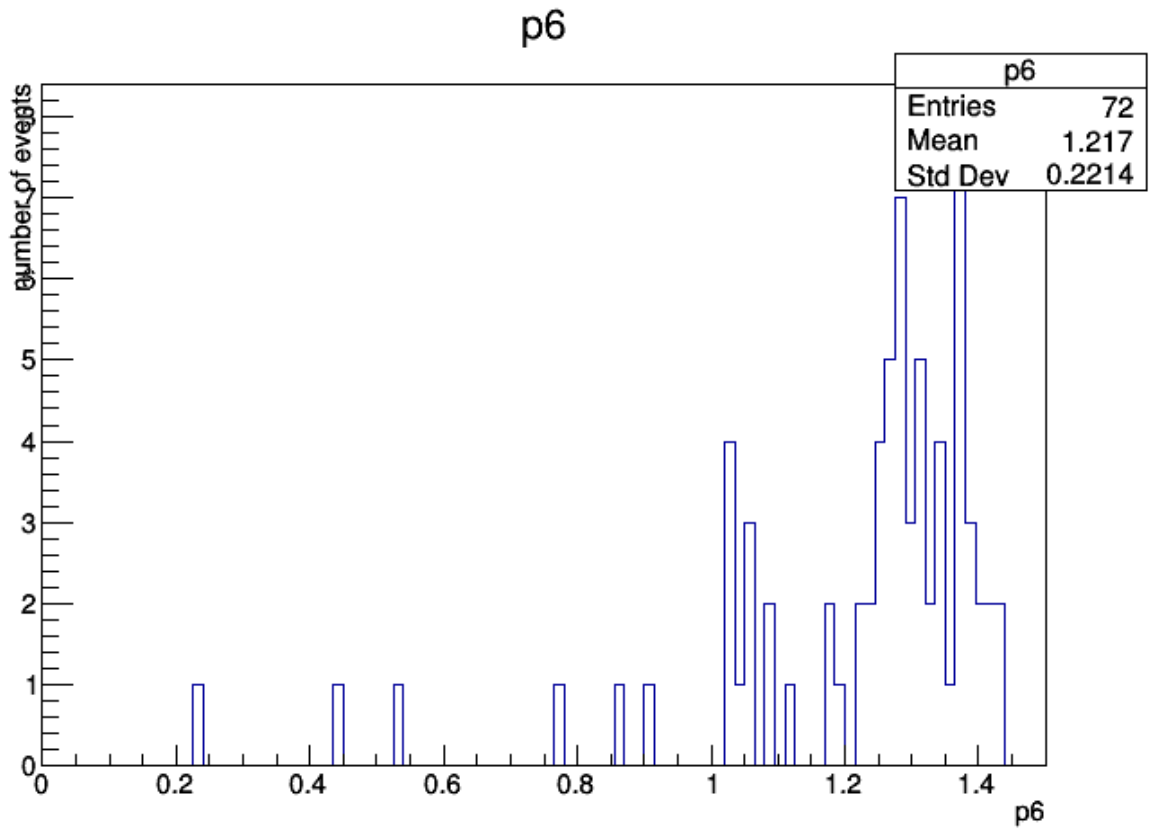
p0 and p6 fixed
& fitted again

gain



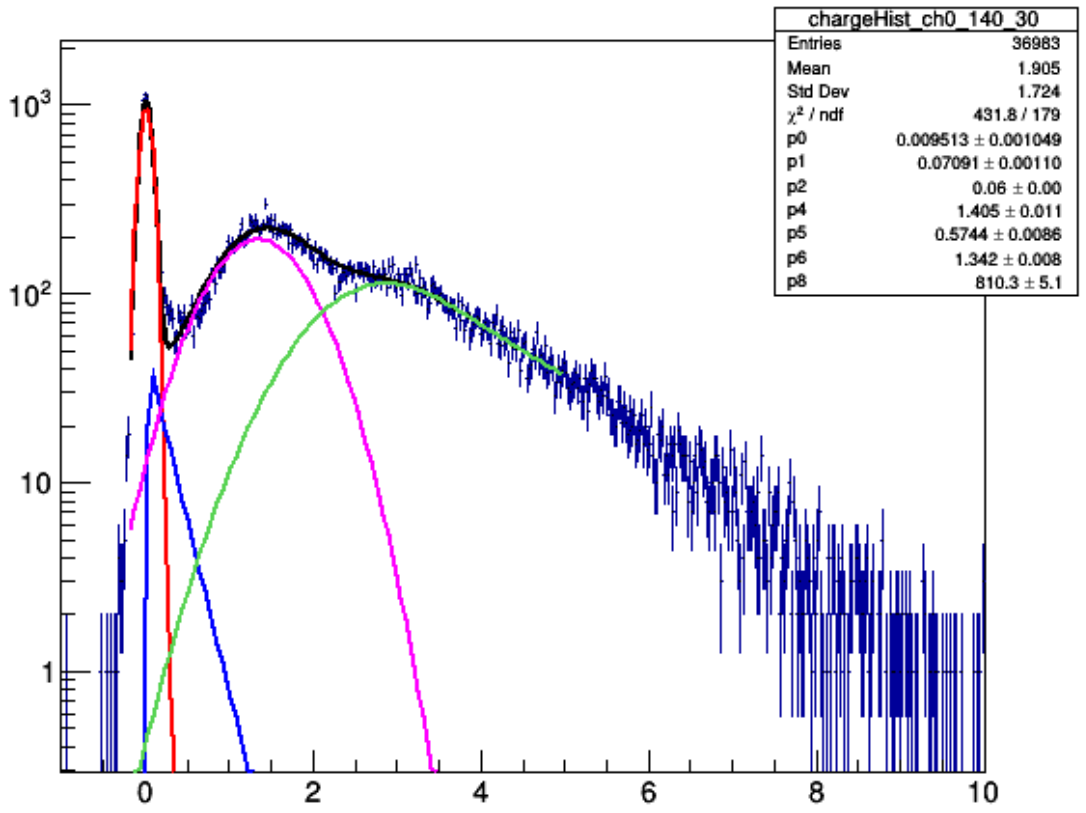



p0
p0
Entries 72
Mean 0.0009671
Std Dev 0.002968
number of events
p0

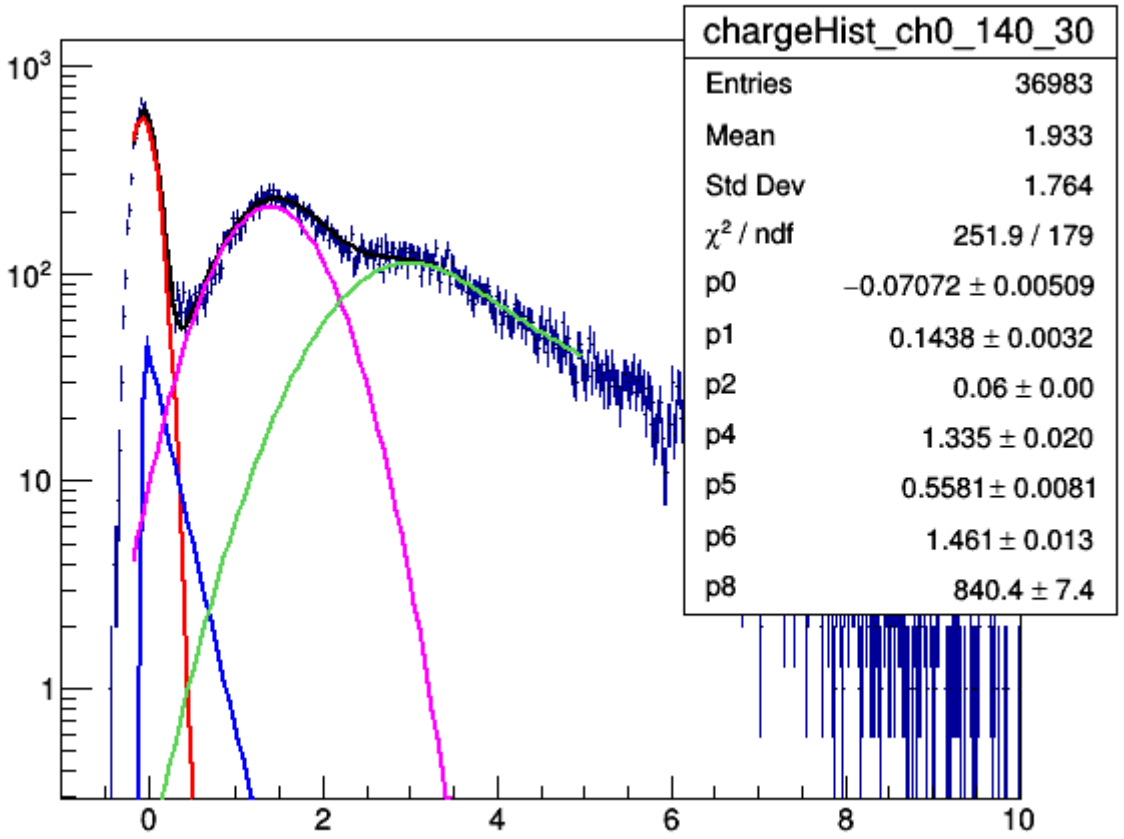

p6
p6
Entries 72
Mean 1.217
Std Dev 0.2214
number of events
p6

Center of the PMT

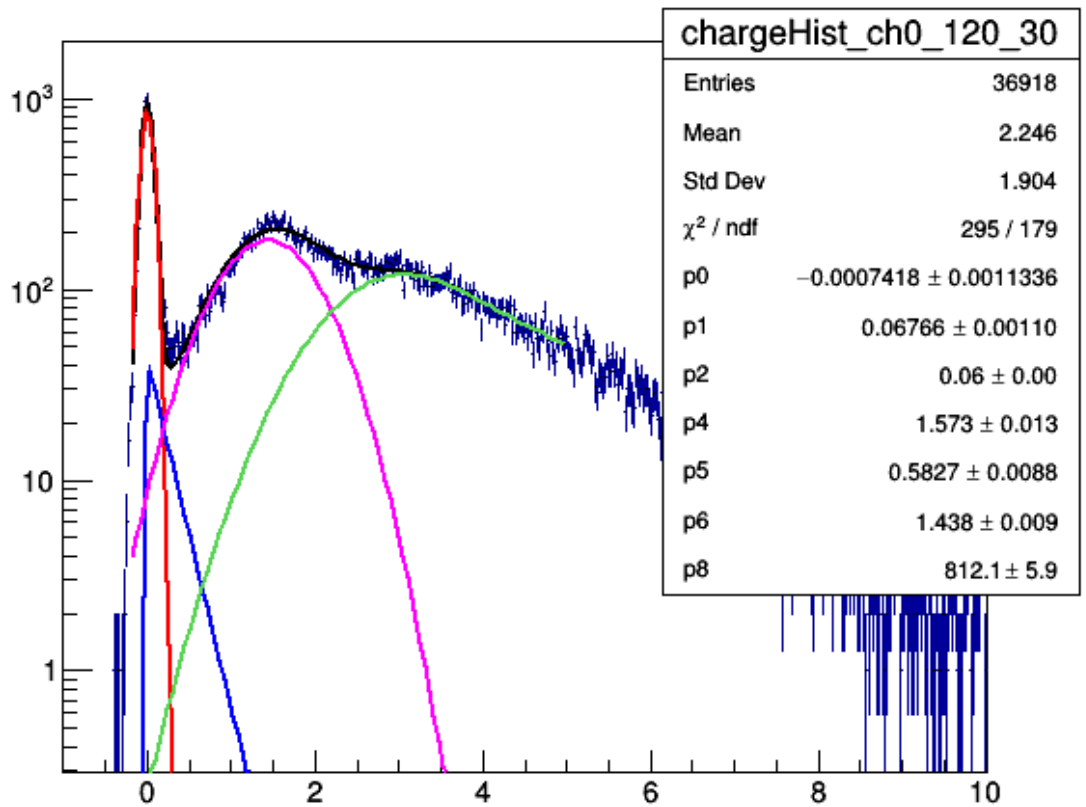
normal



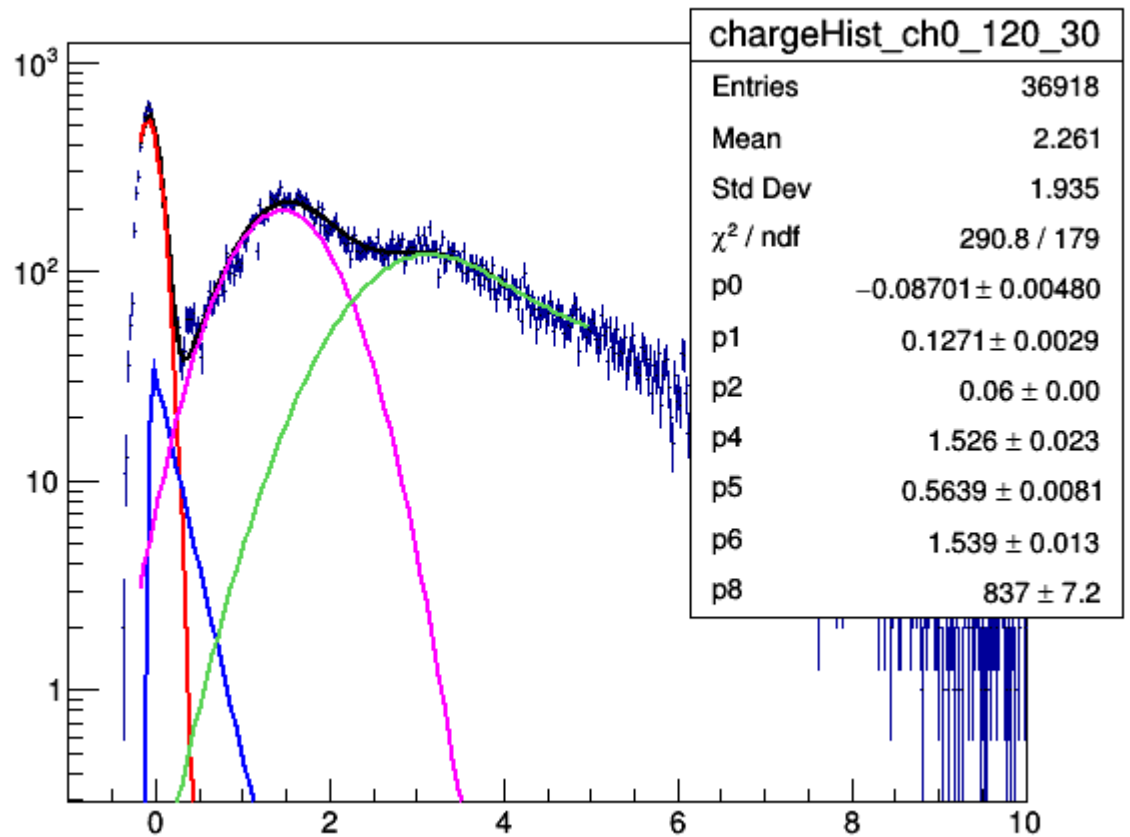
p0 and p6 fixed
& fitted again

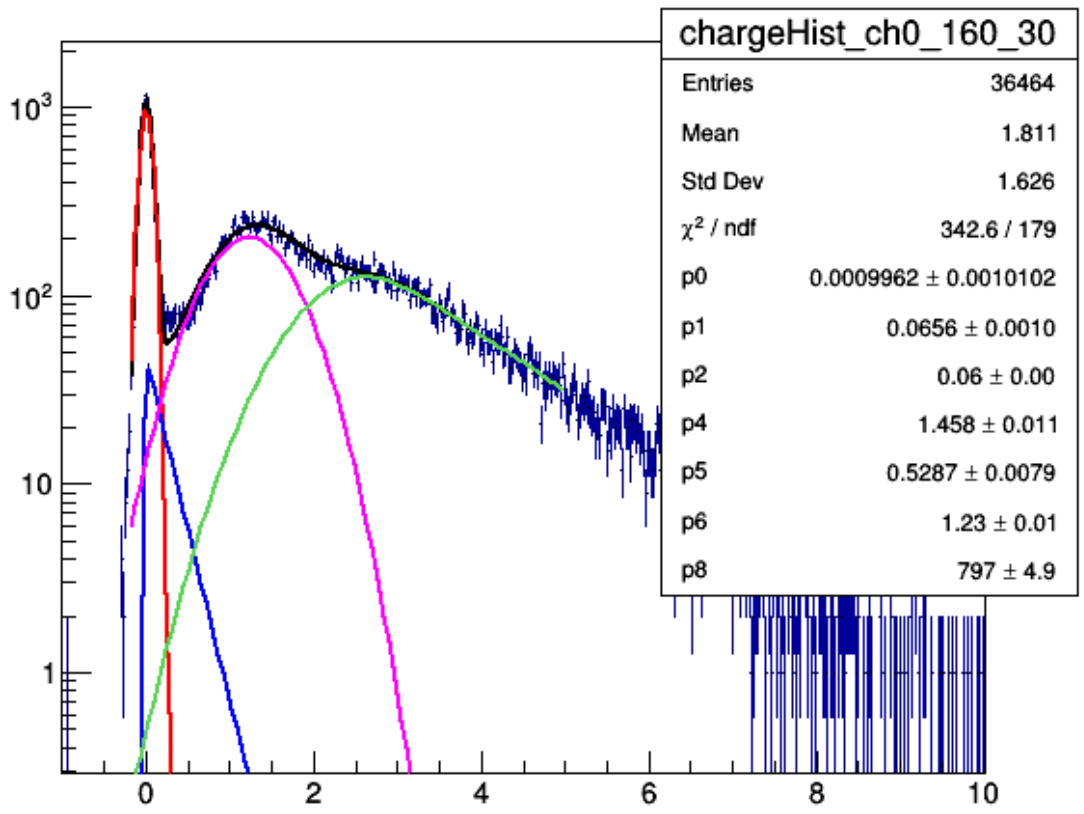


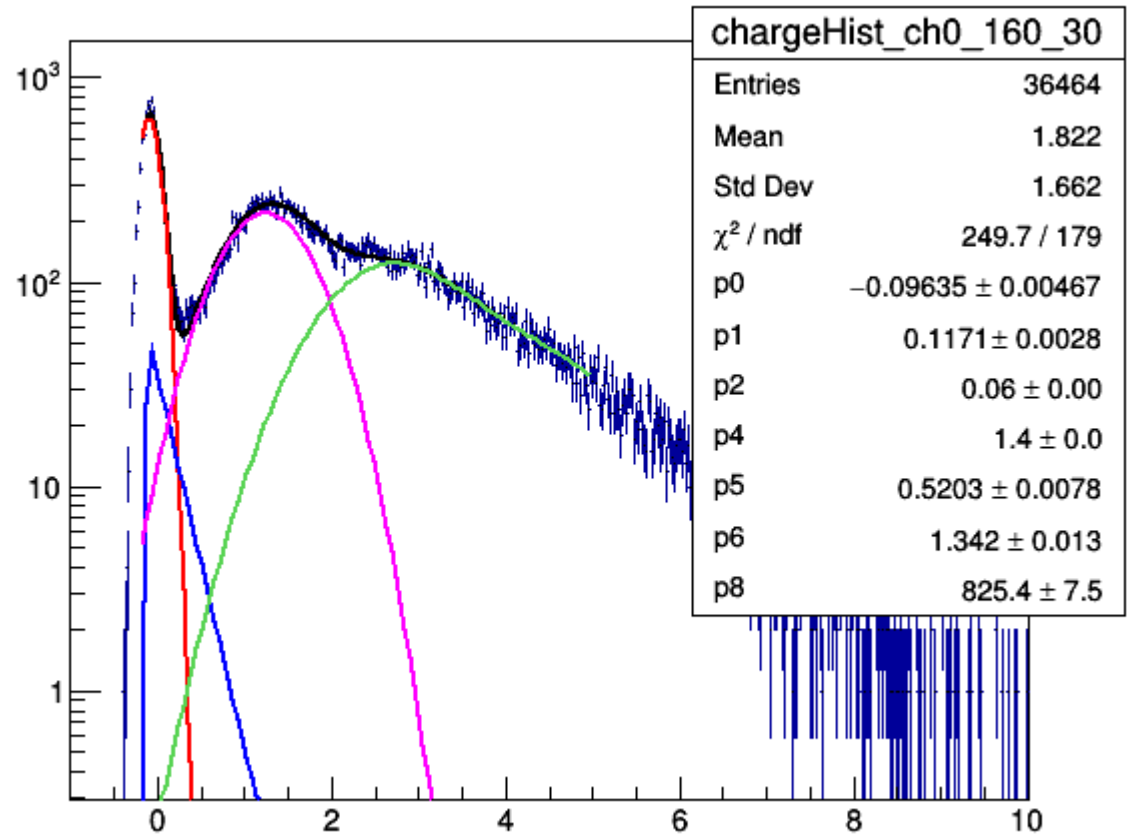
normal



p0 and p6 fixed
& fitted again




chargeHist_ch0_160_30
Entries 36464
Mean 1.811
Std Dev 1.626
χ² / ndf 342.6 / 179
p0 0.0009962 ± 0.0010102
p1 0.0656 ± 0.0010
p2 0.06 ± 0.00
p4 1.458 ± 0.011
p5 0.5287 ± 0.0079
p6 1.23 ± 0.01
p8 797 ± 4.9
10³
10²
10
1
0
2
4
6
8
10


chargeHist_ch0_160_30
Entries 36464
Mean 1.822
Std Dev 1.662
χ² / ndf 249.7 / 179
p0 −0.09635 ± 0.00467
p1 0.1171 ± 0.0028
p2 0.06 ± 0.00
p4 1.4 ± 0.0
p5 0.5203 ± 0.0078
p6 1.342 ± 0.013
p8 825.4 ± 7.5
10³
10²
10
1
0
2
4
6
8
10

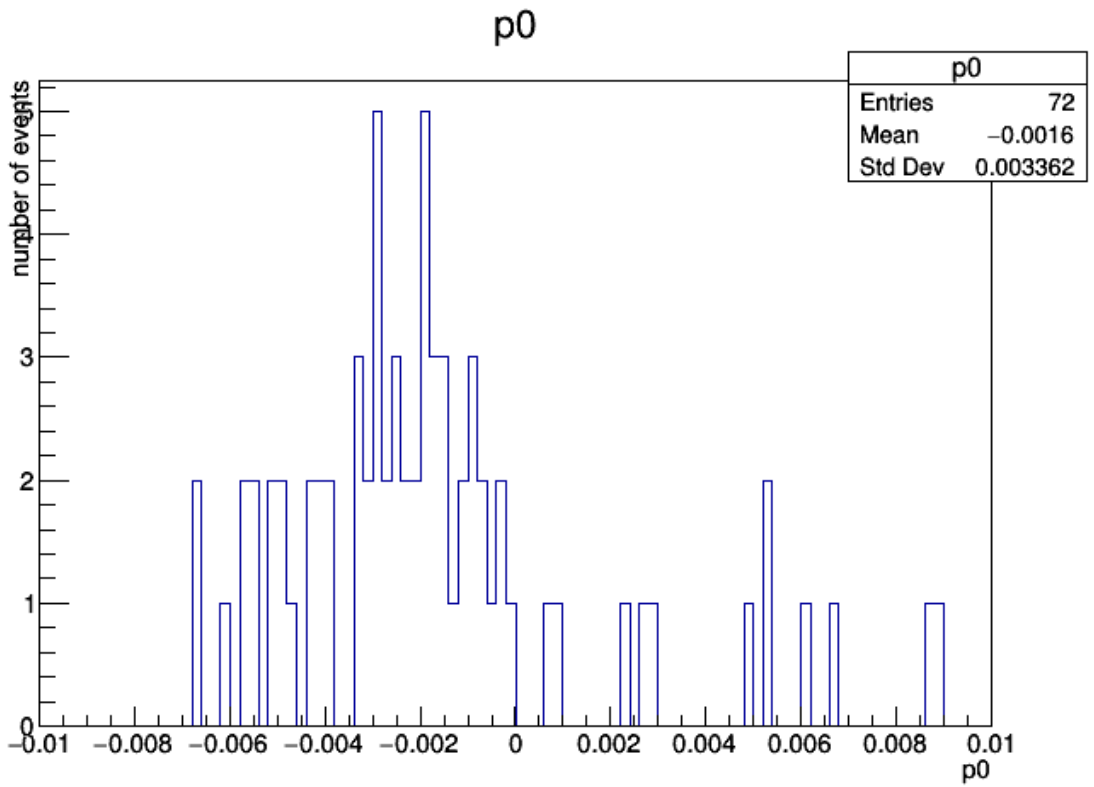
run458

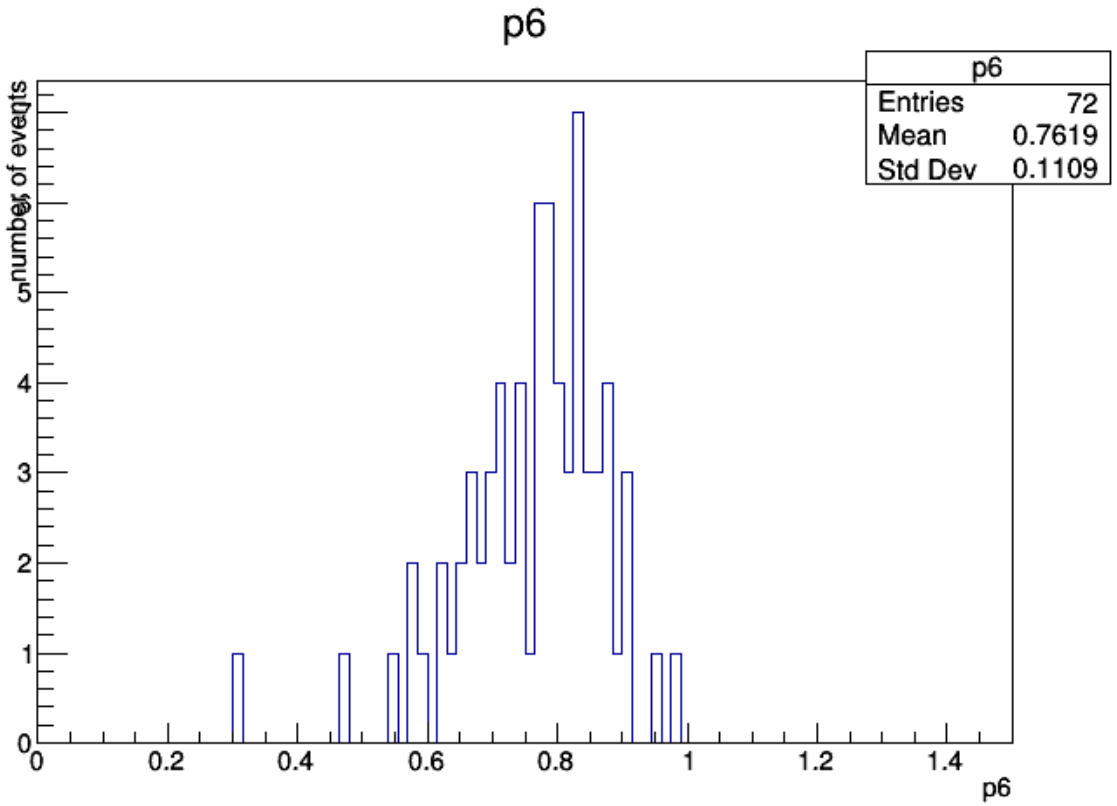
HV 1200 V

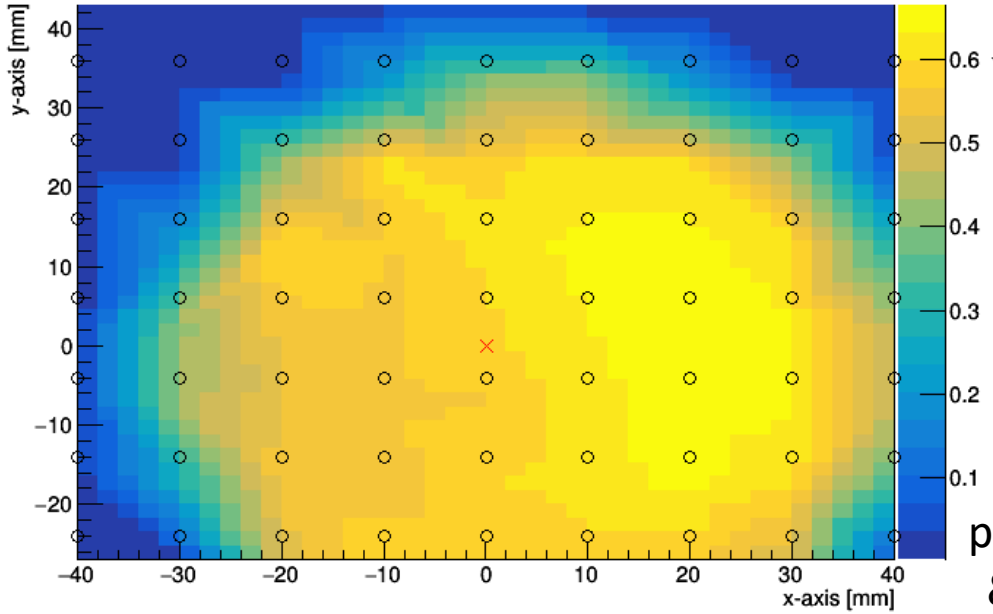
Intenisty 150.0 mA, 70psec

BC0038

Determining p0 and p6



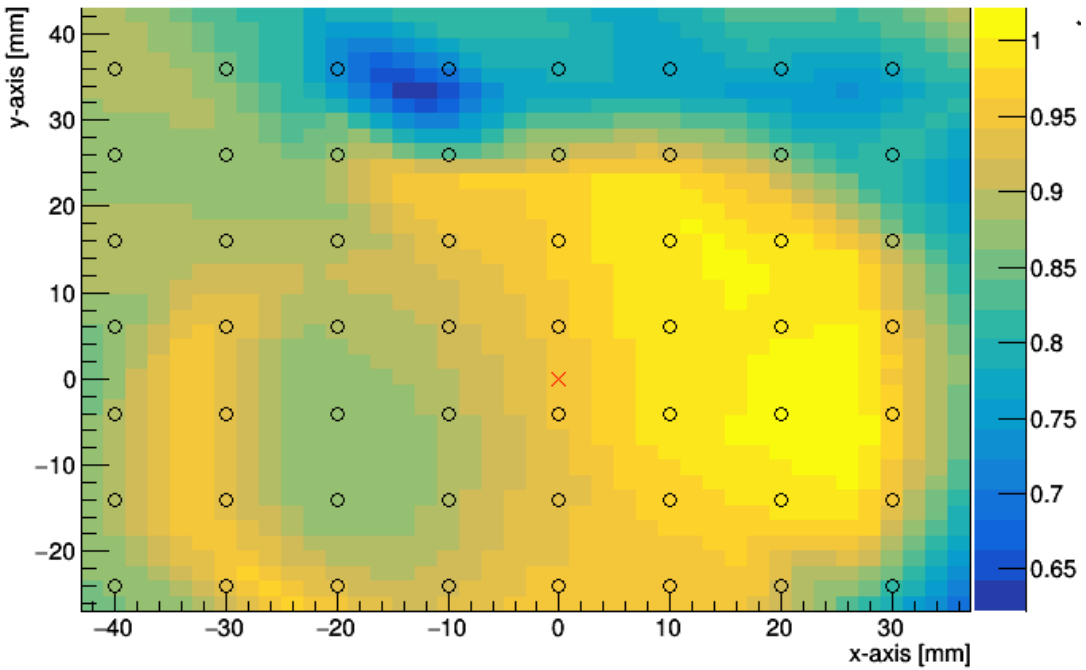


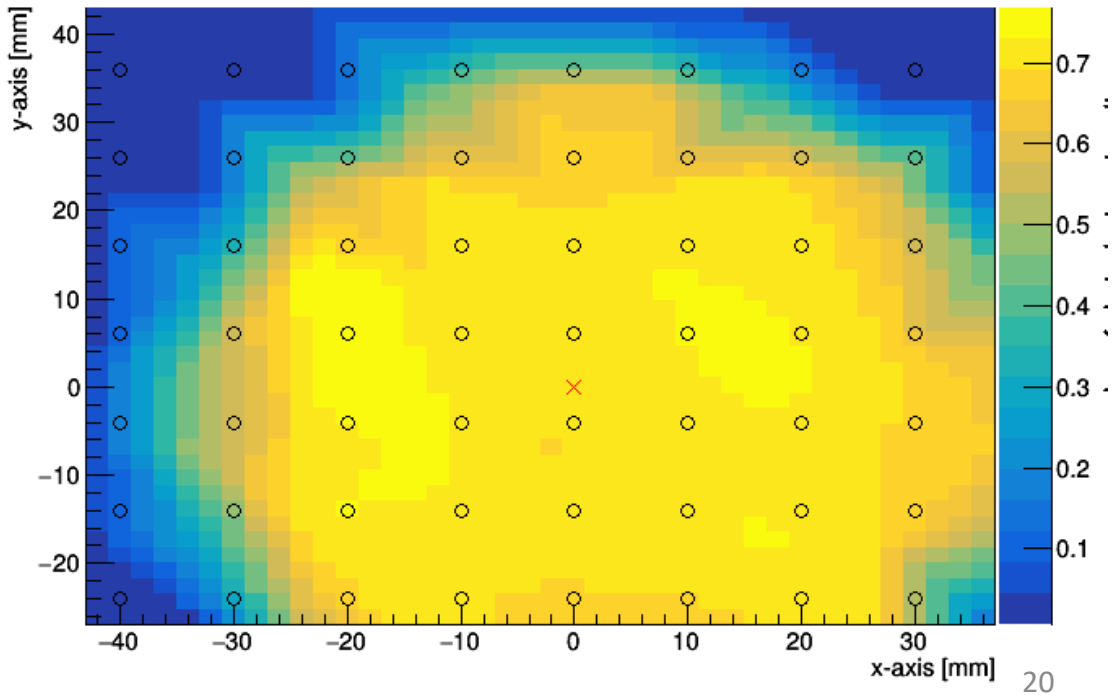


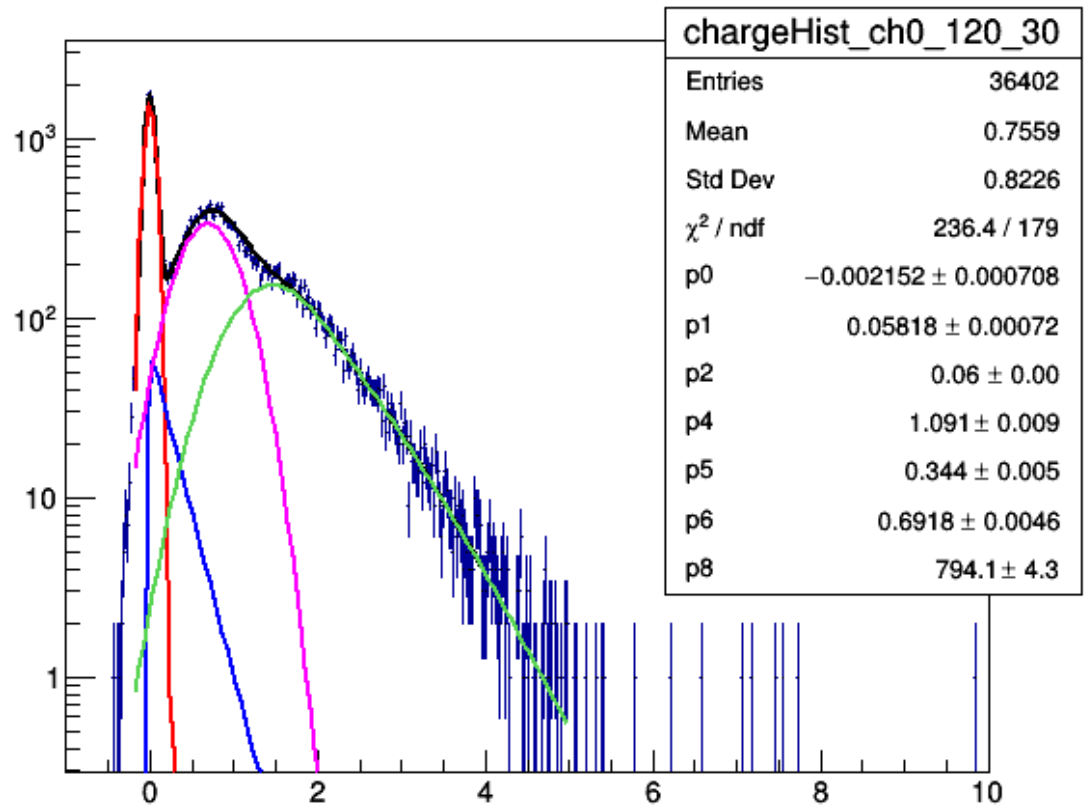
mean

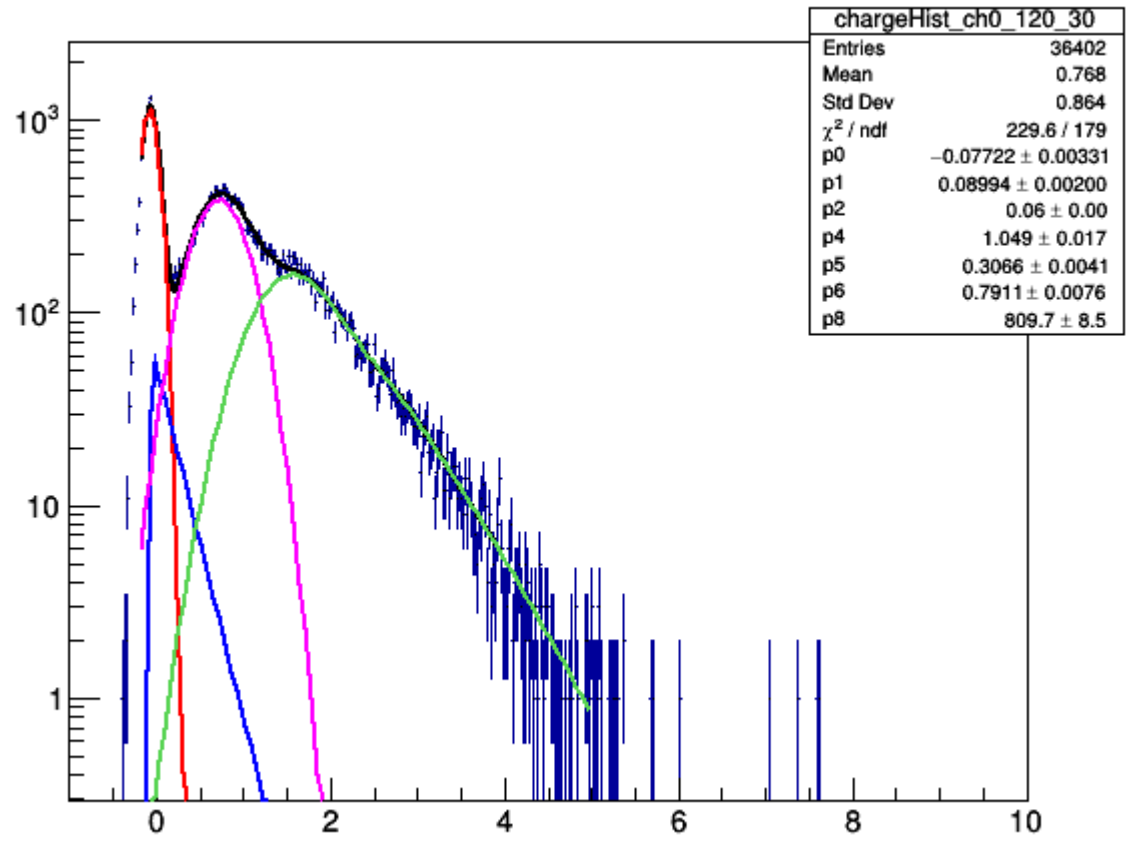
gain

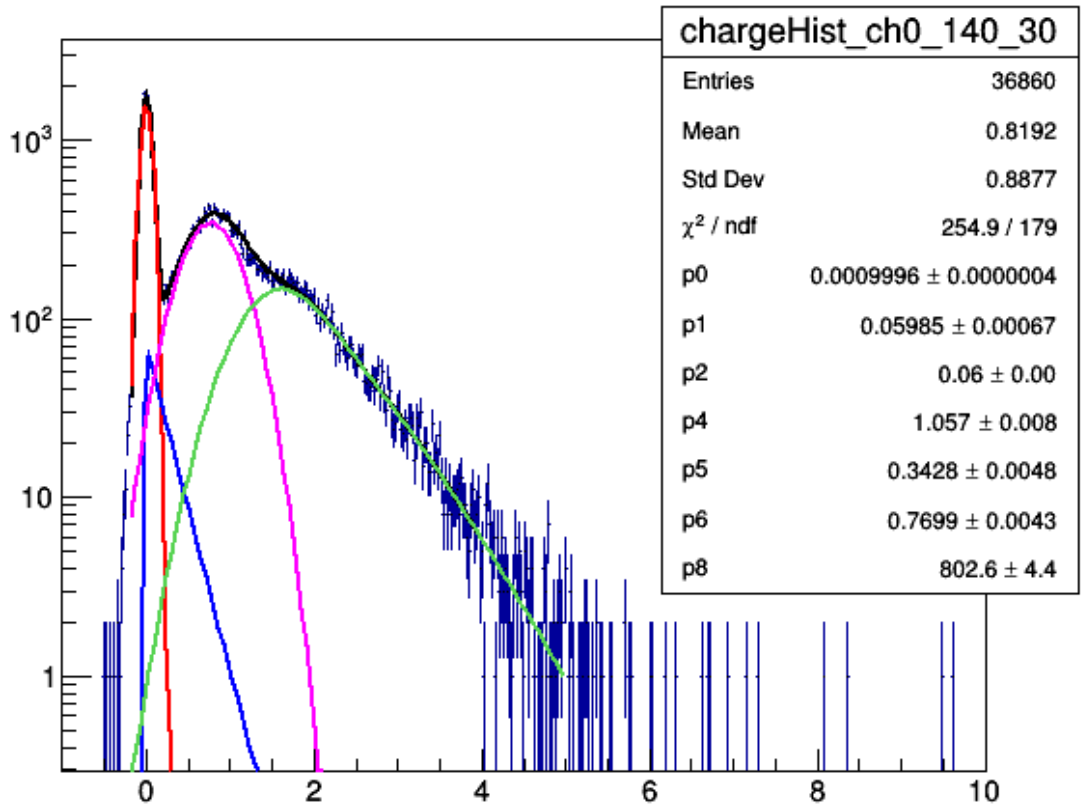
p0 and p6 fixed
& fitted again

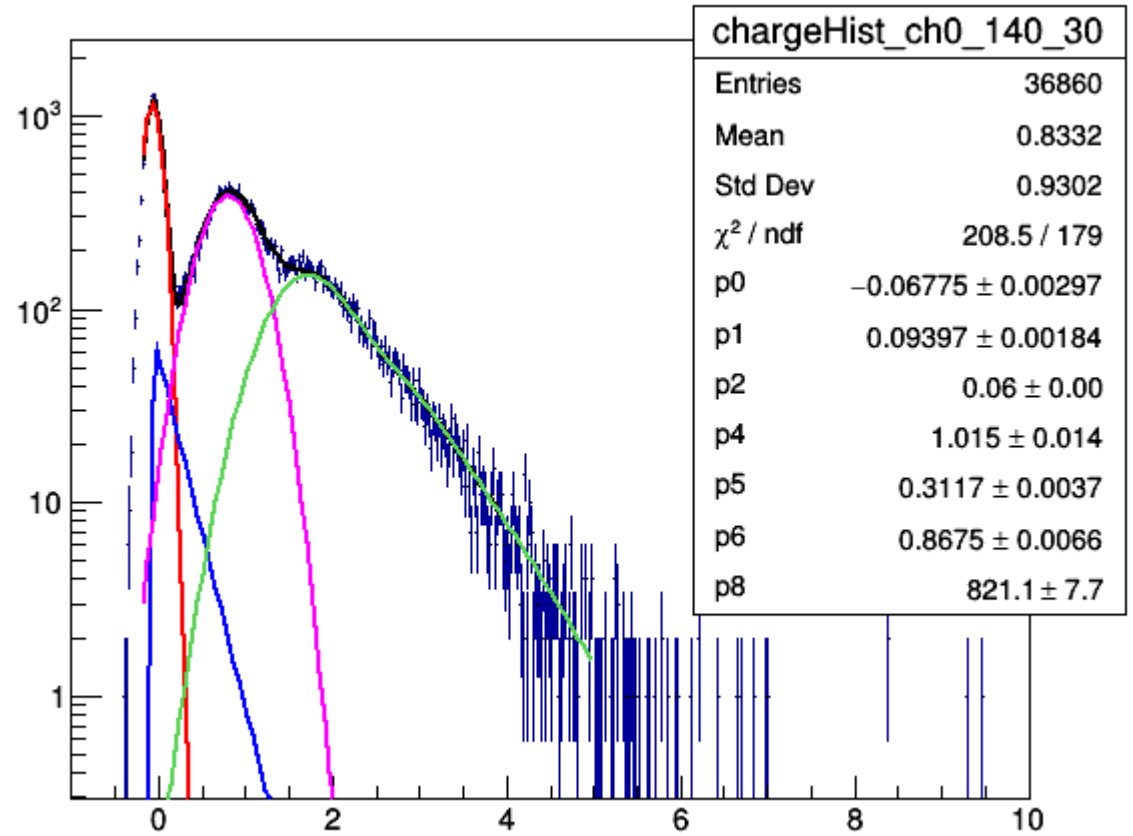


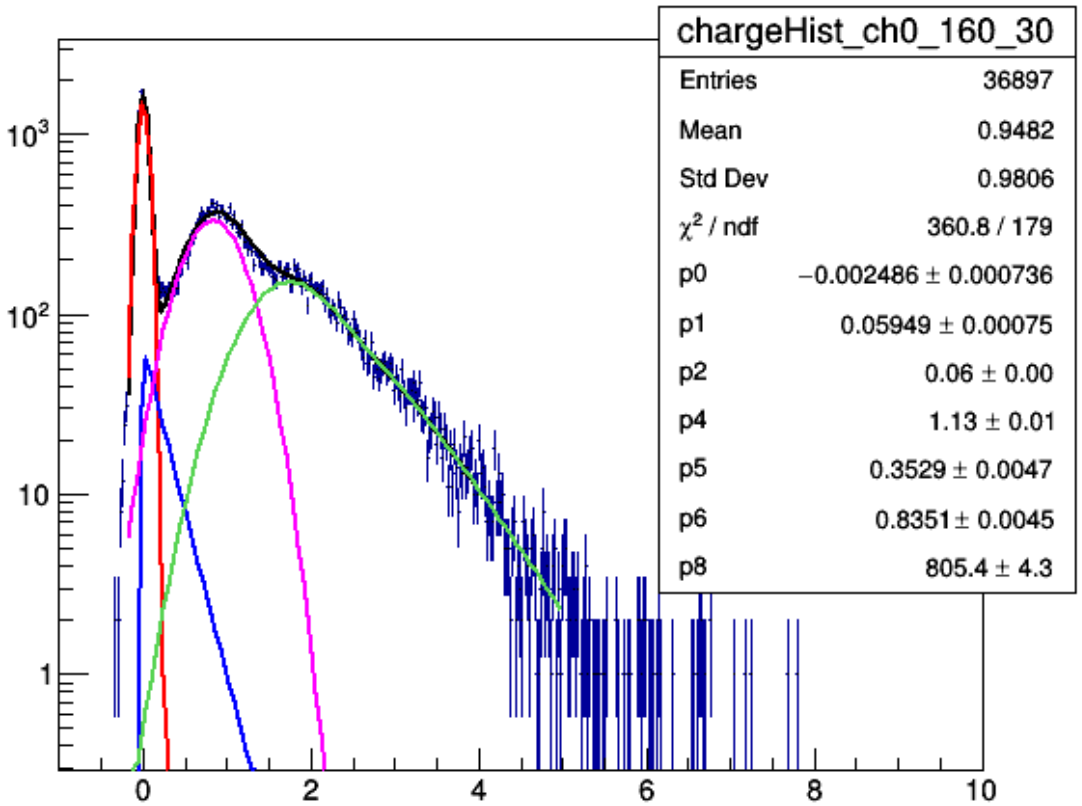


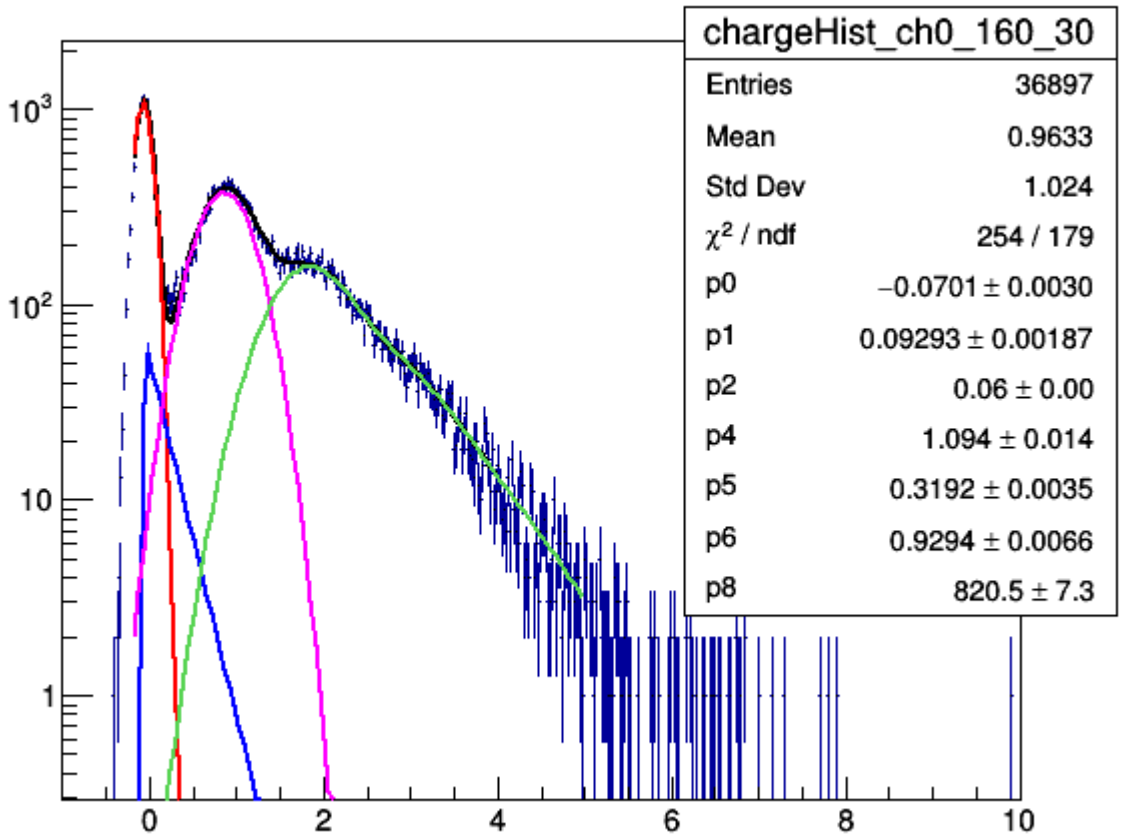

chargeHist_ch0_120_30
Entries 36402
Mean 0.7559
Std Dev 0.8226
χ² / ndf 236.4 / 179
p0 −0.002152 ± 0.000708
p1 0.05818 ± 0.00072
p2 0.06 ± 0.00
p4 1.091 ± 0.009
p5 0.344 ± 0.005
p6 0.6918 ± 0.0046
p8 794.1 ± 4.3
10³
10²
10
1
0
2
4
6
8
10


chargeHist_ch0_120_30
Entries 36402
Mean 0.768
Std Dev 0.864
χ² / ndf 229.6 / 179
p0 −0.07722 ± 0.00331
p1 0.08994 ± 0.00200
p2 0.06 ± 0.00
p4 1.049 ± 0.017
p5 0.3066 ± 0.0041
p6 0.7911 ± 0.0076
p8 809.7 ± 8.5
10³
10²
10
1
0
2
4
6
8
10


chargeHist_ch0_140_30
Entries 36860
Mean 0.8192
Std Dev 0.8877
χ² / ndf 254.9 / 179
p0 0.0009996 ± 0.0000004
p1 0.05985 ± 0.00067
p2 0.06 ± 0.00
p4 1.057 ± 0.008
p5 0.3428 ± 0.0048
p6 0.7699 ± 0.0043
p8 802.6 ± 4.4
10³
10²
10
1
0
2
4
6
8
10


chargeHist_ch0_140_30
Entries 36860
Mean 0.8332
Std Dev 0.9302
χ² / ndf 208.5 / 179
p0 −0.06775 ± 0.00297
p1 0.09397 ± 0.00184
p2 0.06 ± 0.00
p4 1.015 ± 0.014
p5 0.3117 ± 0.0037
p6 0.8675 ± 0.0066
p8 821.1 ± 7.7
10³
10²
10
1
0
2
4
6
8
10


chargeHist_ch0_160_30
Entries 36897
Mean 0.9482
Std Dev 0.9806
χ² / ndf 360.8 / 179
p0 −0.002486 ± 0.000736
p1 0.05949 ± 0.00075
p2 0.06 ± 0.00
p4 1.13 ± 0.01
p5 0.3529 ± 0.0047
p6 0.8351 ± 0.0045
p8 805.4 ± 4.3


chargeHist_ch0_160_30
Entries 36897
Mean 0.9633
Std Dev 1.024
χ² / ndf 254 / 179
p0 −0.0701 ± 0.0030
p1 0.09293 ± 0.00187
p2 0.06 ± 0.00
p4 1.094 ± 0.014
p5 0.3192 ± 0.0035
p6 0.9294 ± 0.0066
p8 820.5 ± 7.3