

LLR-Kyushu

18/December Miura

Agenda

- Hit map
- Multiple hit
- Check pedestal
- MPV
- SN ratio
- Inactive thickness of silicon sensor

Data

- **Muon**

- 20180928_003723

- 20180928_200826

- 20180928_233202

- 20180929_153331

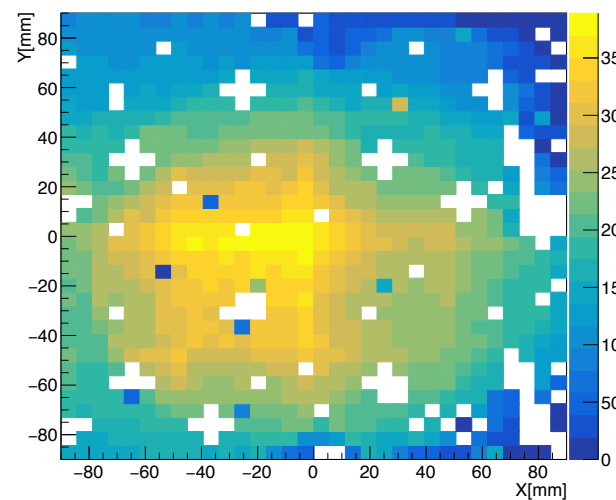
- 20180929_165712

- 20180929_223622

Hit map

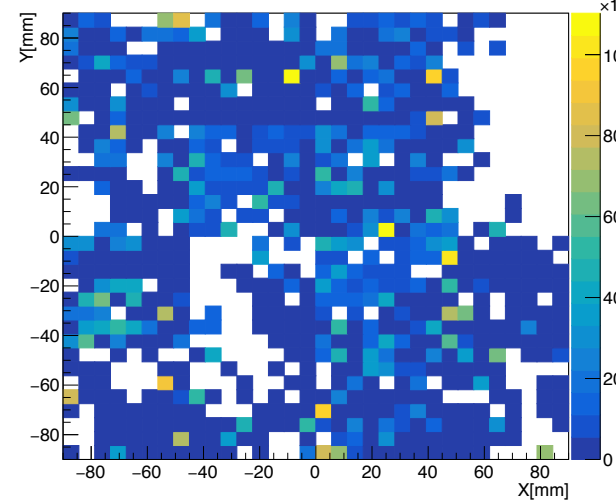
dif_1_1_1

hit_map



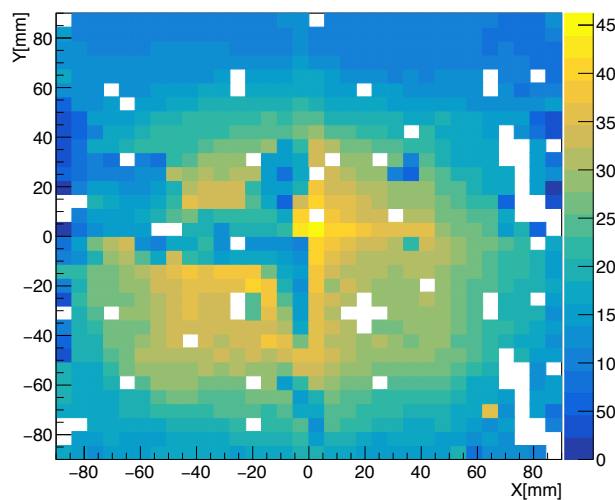
dif_1_1_2

hit_map



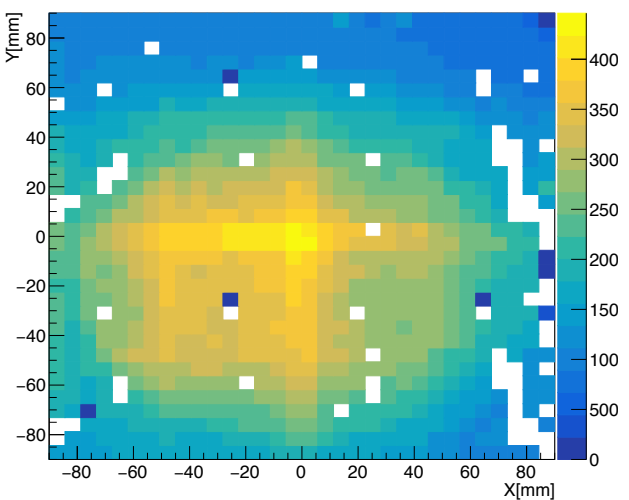
dif_1_1_3

hit_map



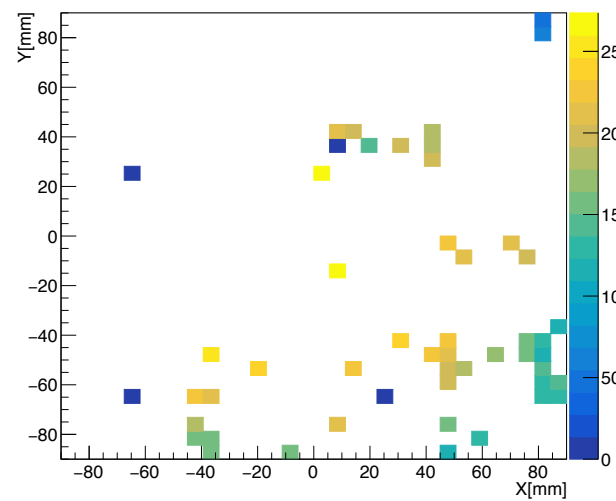
dif_1_1_4

hit_map



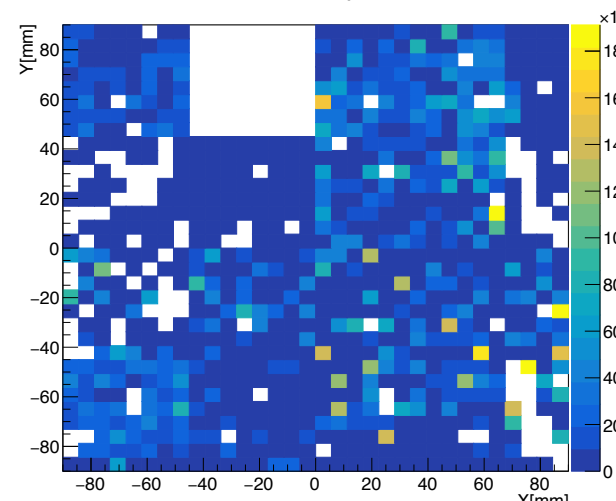
dif_1_2_1

hit_map



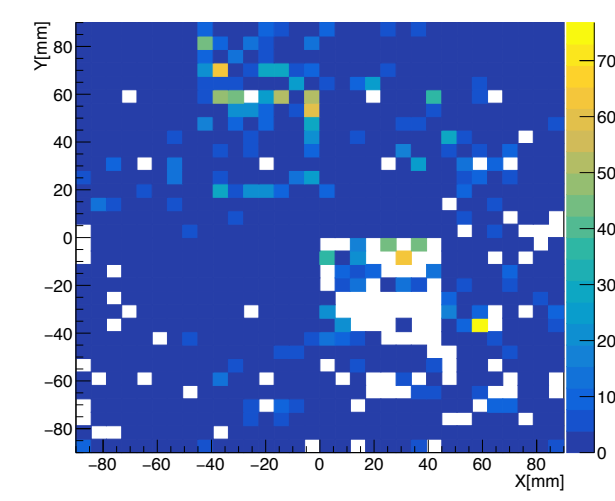
dif_1_2_2

hit_map



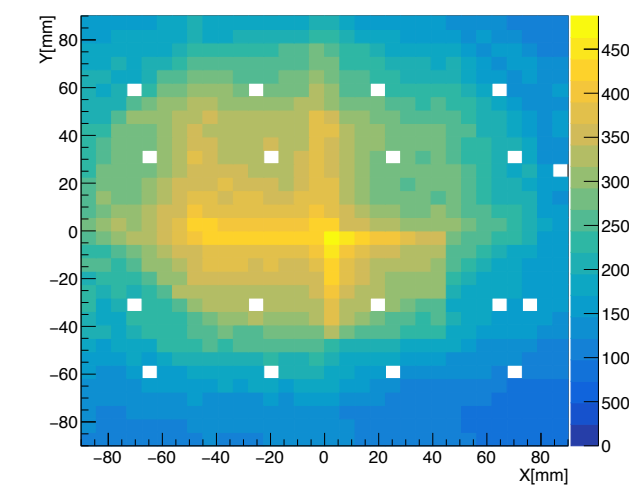
dif_1_2_3

hit_map



dif_1_2_5

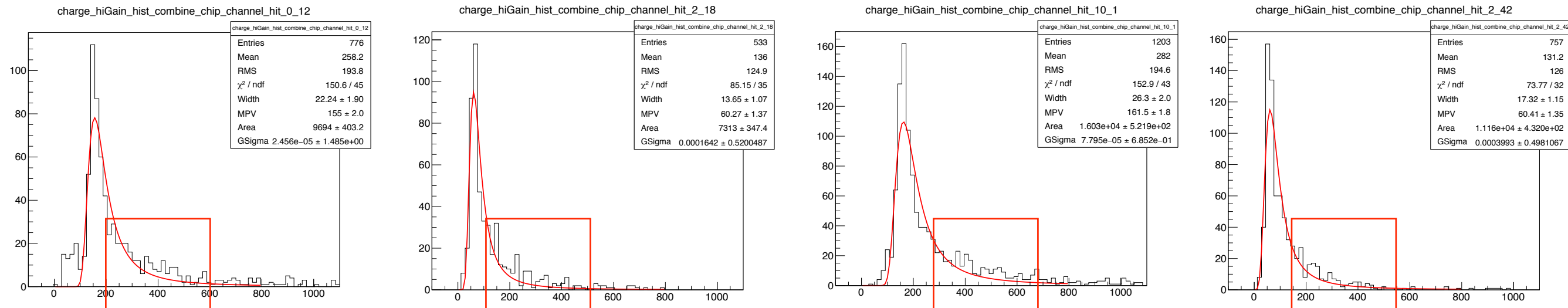
hit_map



gain_hit_high[][][] == 1

Remove masked channel on xml file

Fit with LanGaus

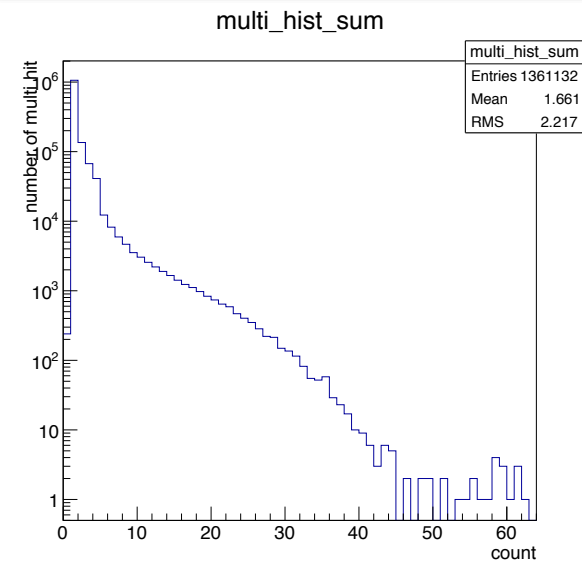


Did any showers happen ?

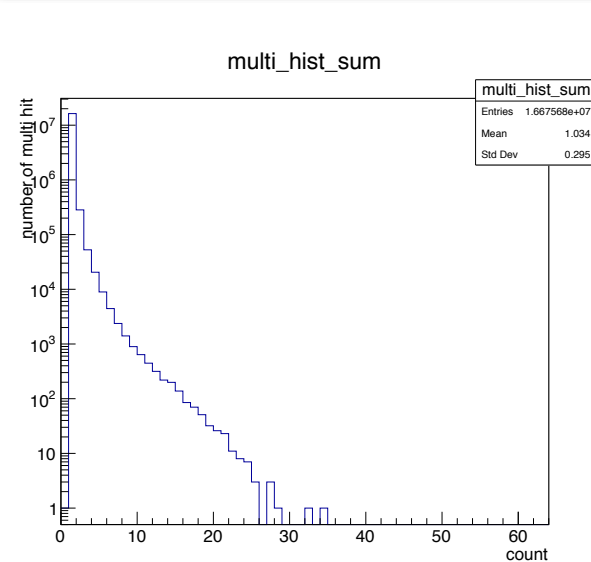
→ We have to remove multiple hit

Multiple hit

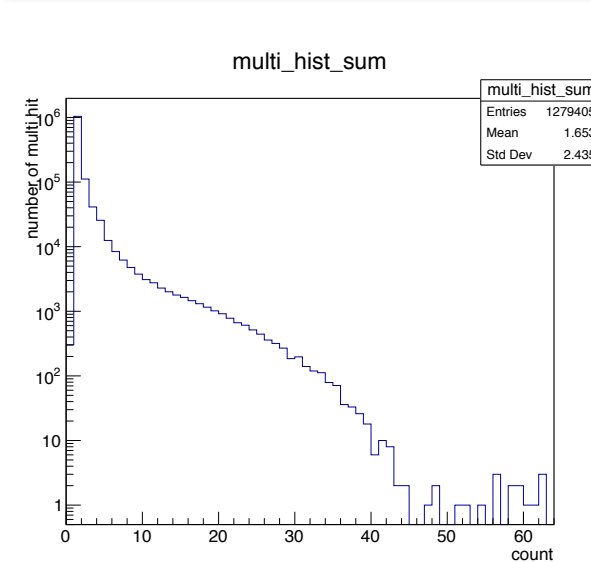
dif_1_1_1



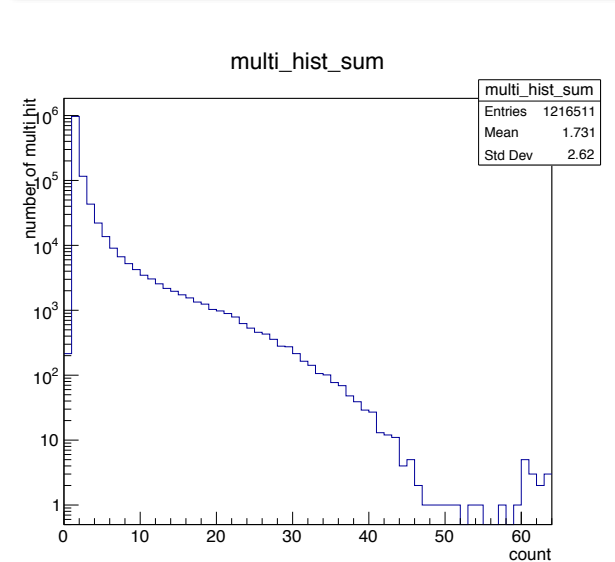
dif_1_1_2



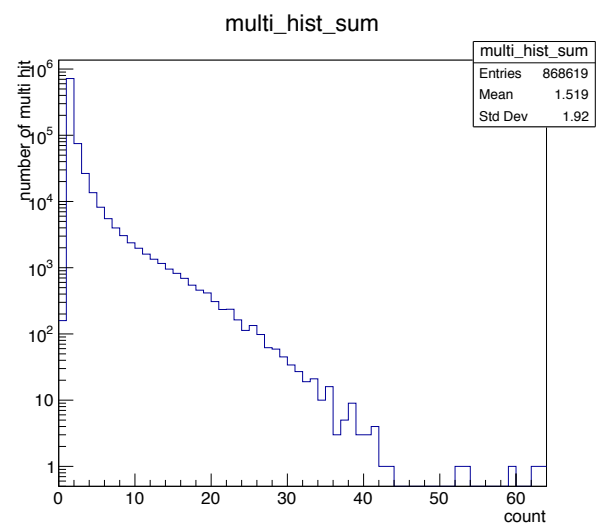
dif_1_1_3



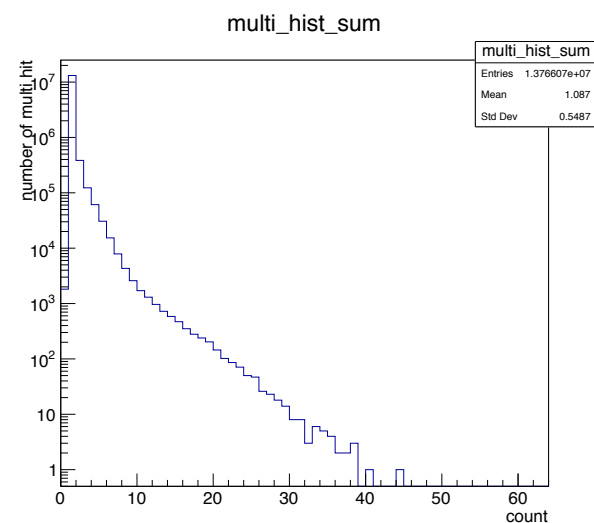
dif_1_1_4



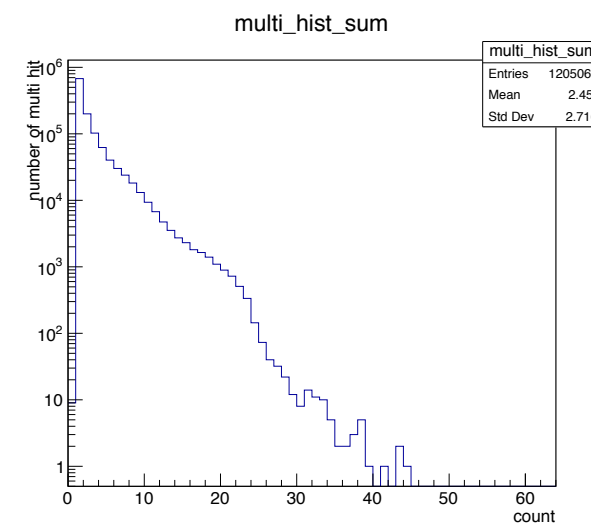
dif_1_2_1



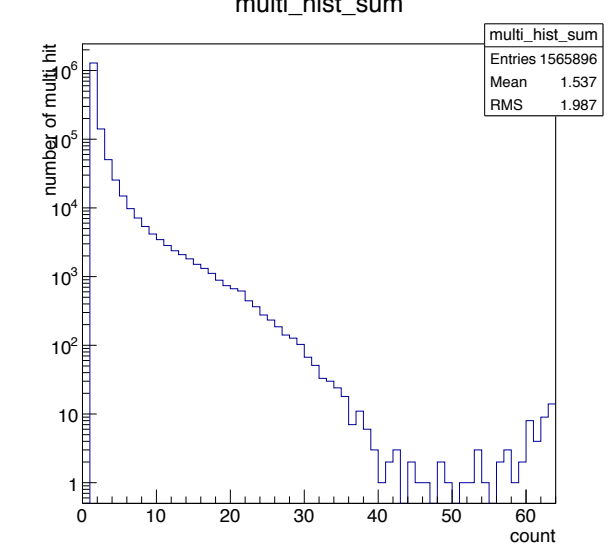
dif_1_2_2



dif_1_2_3



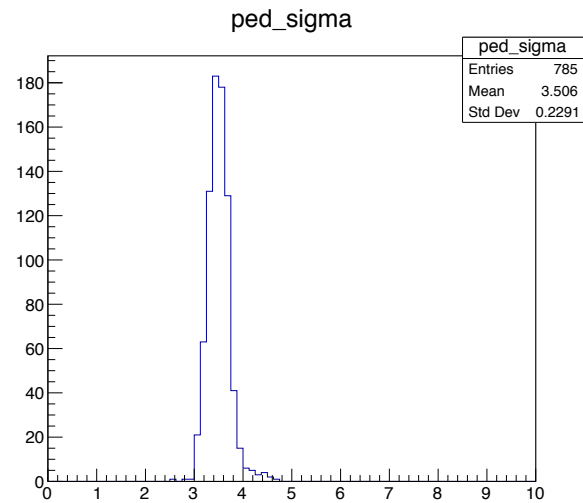
dif_1_2_5



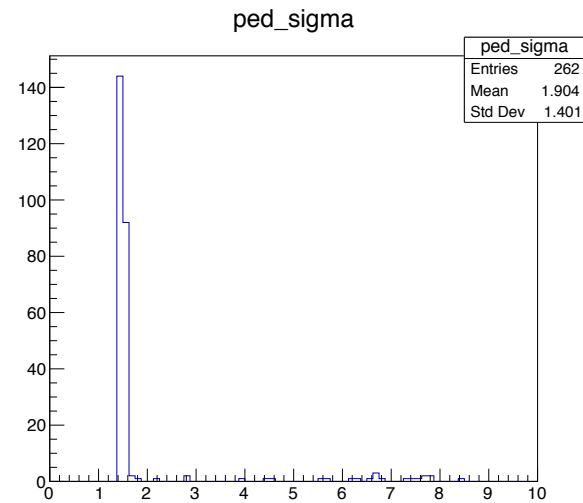
- Approximately, multiple hit were occurred at 10 %
- Badbcid[][] ==0

Sigma of pedestal

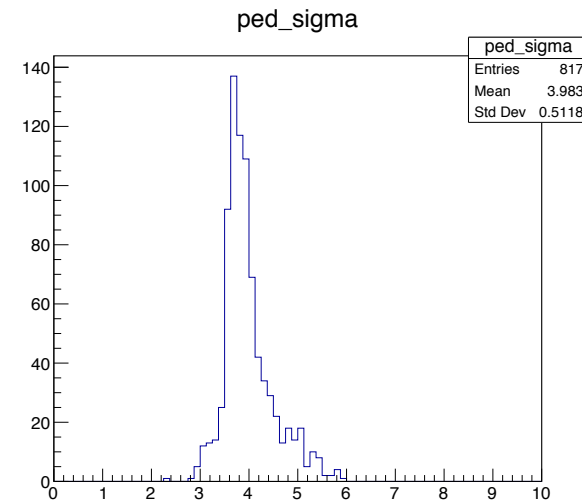
dif_1_1_1



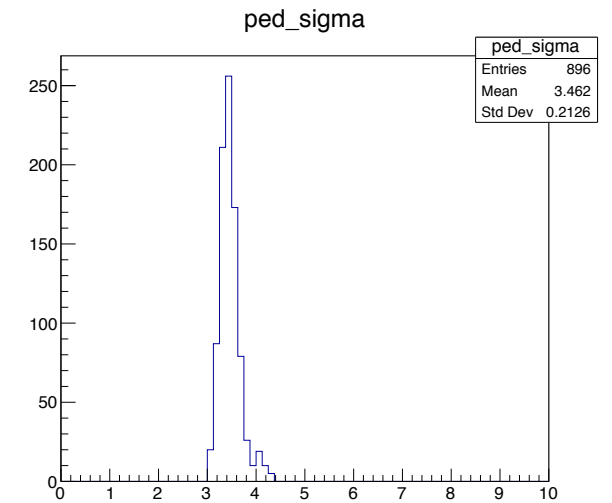
dif_1_1_2



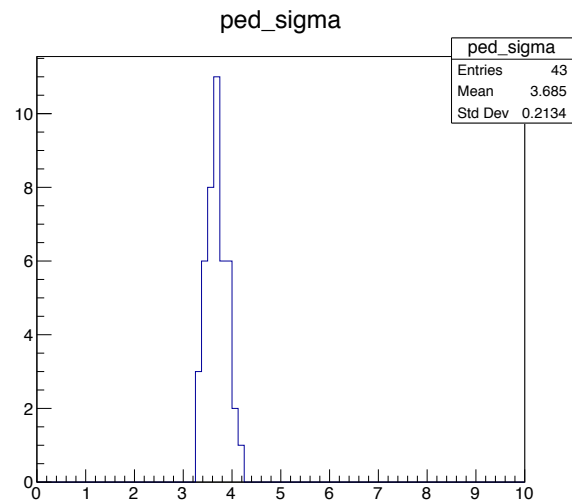
dif_1_1_3



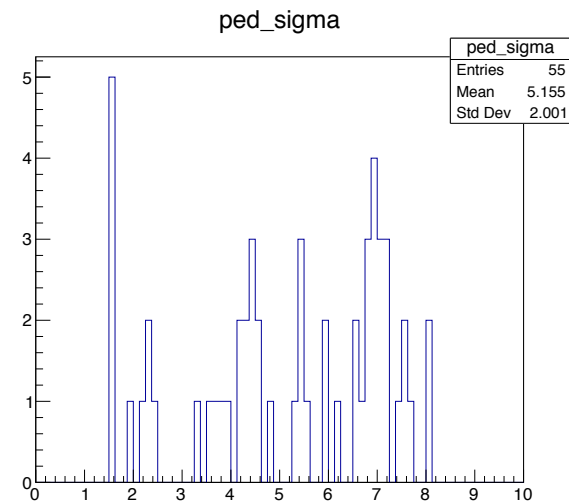
dif_1_1_4



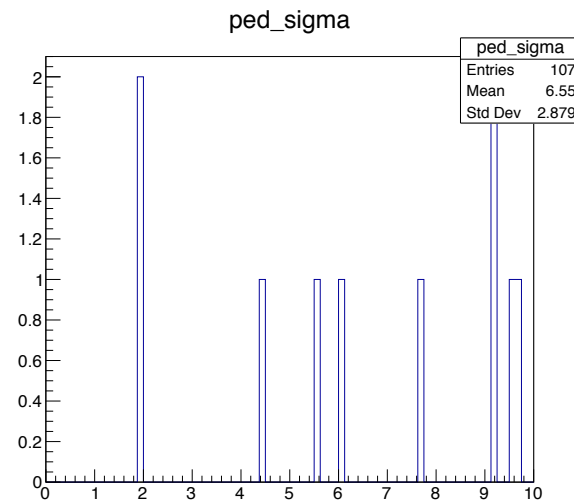
dif_1_2_1



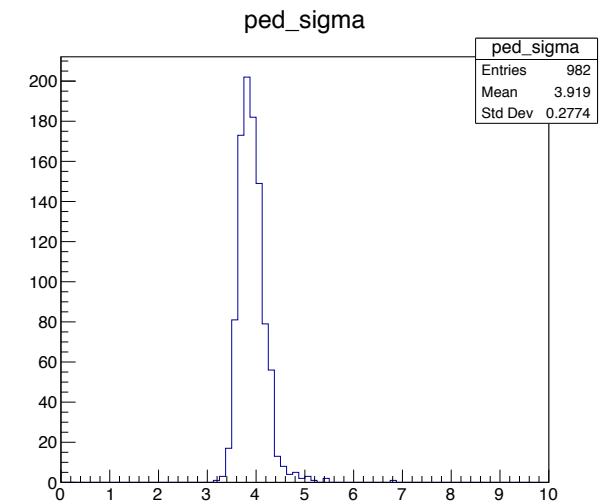
dif_1_2_2



dif_1_2_3



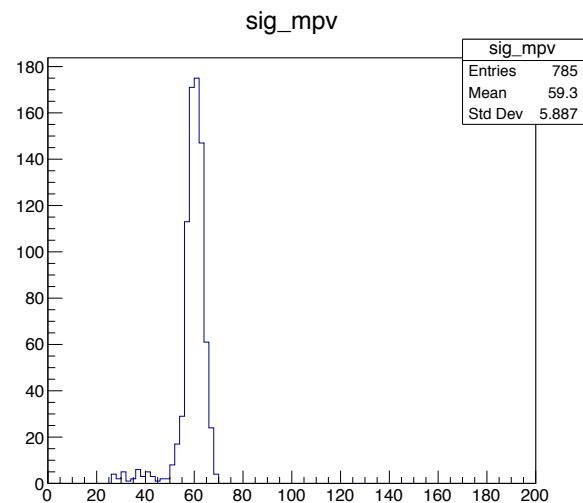
dif_1_2_5



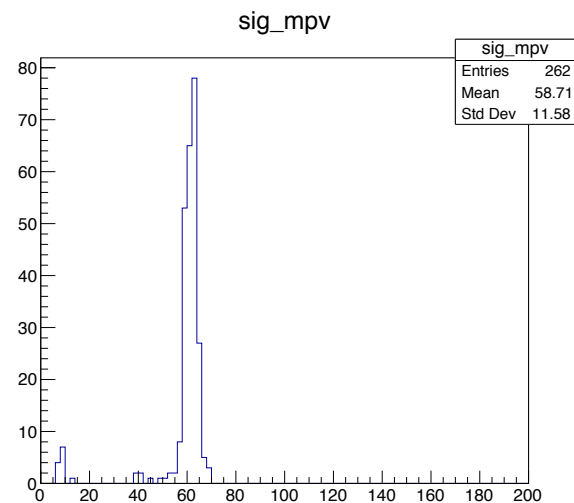
gain_hit_high[][][] ==0 && badbcid[][]==0

MPV of lan-gaus

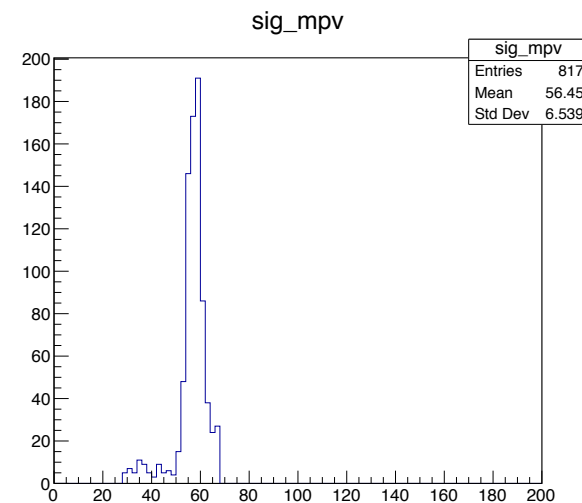
dif_1_1_1



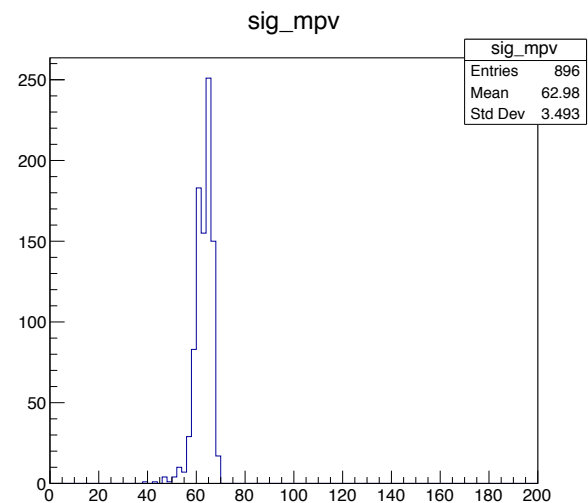
dif_1_1_2



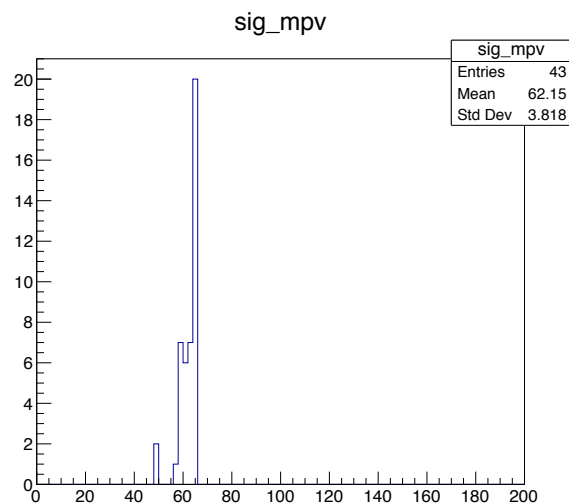
dif_1_1_3



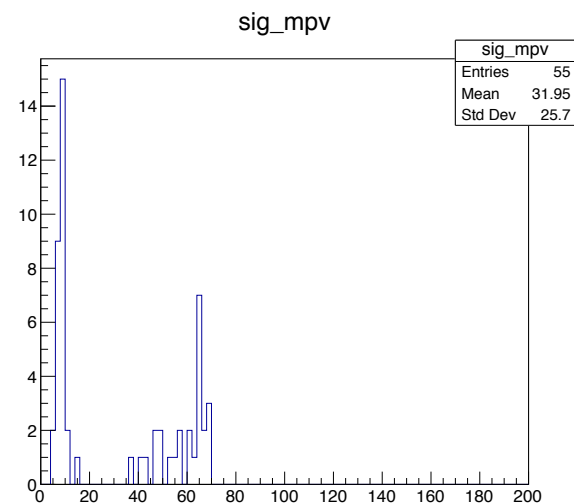
dif_1_1_4



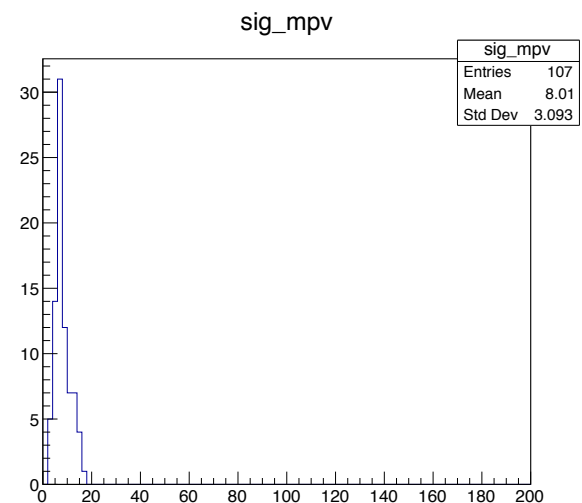
dif_1_2_1



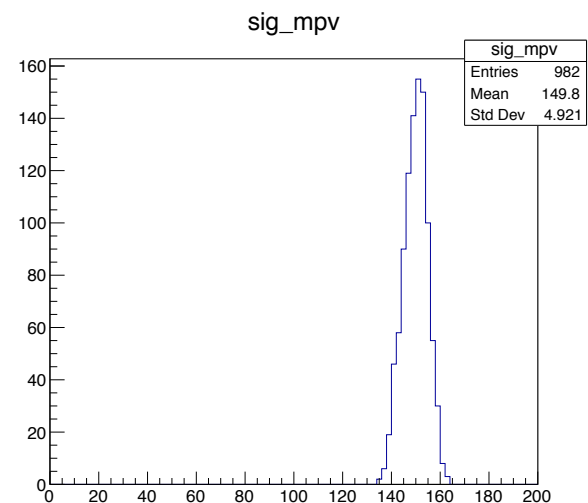
dif_1_2_2



dif_1_2_3



dif_1_2_5

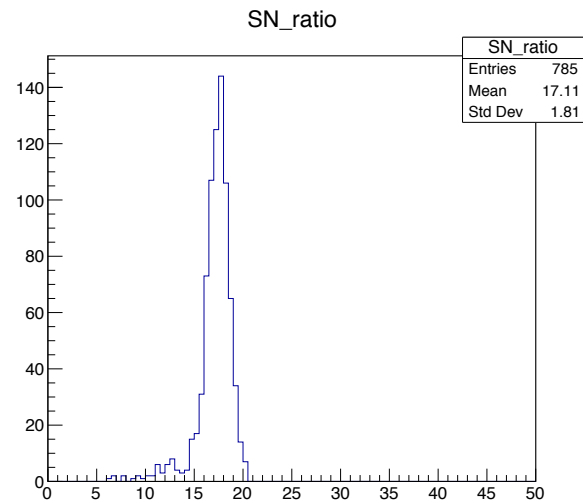


Event number per chip-channel is higher than 500

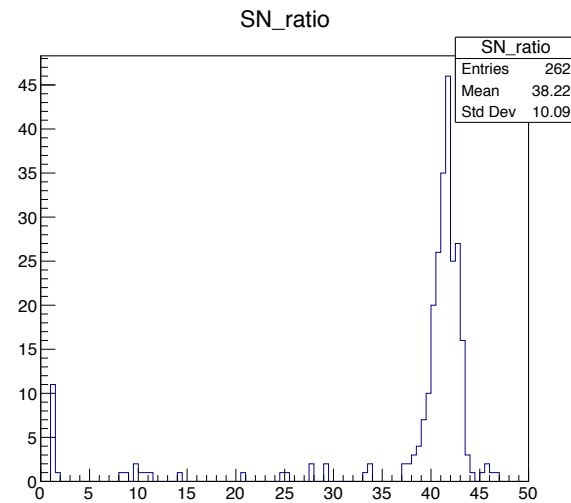
Chi/NDF is less than 3

SN ratio

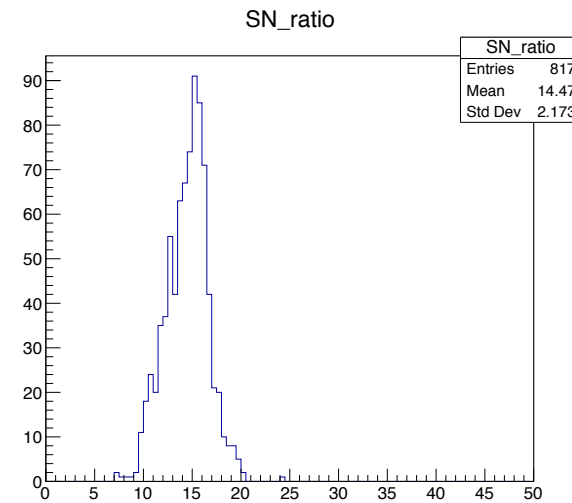
dif_1_1_1



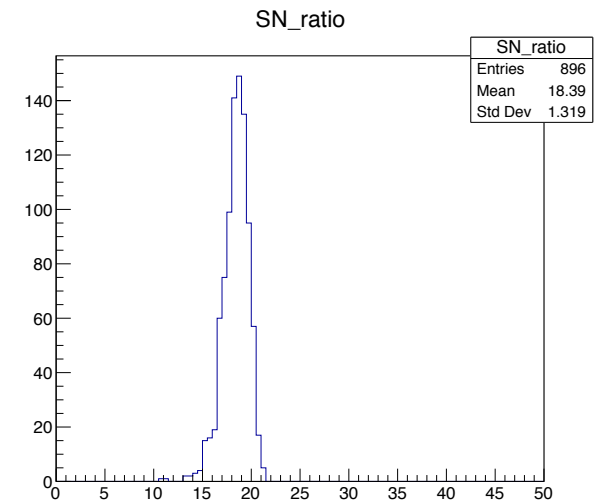
dif_1_1_2



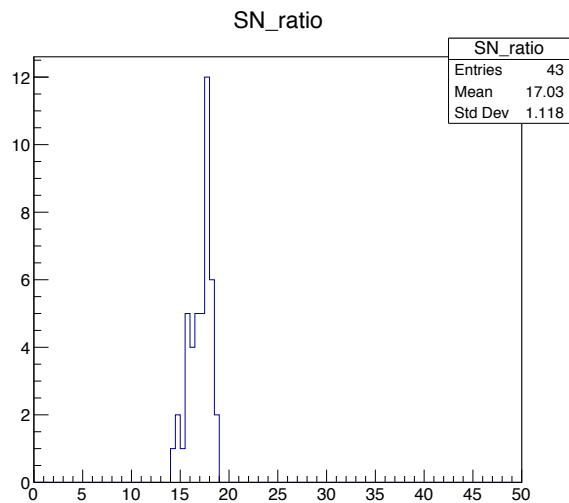
dif_1_1_3



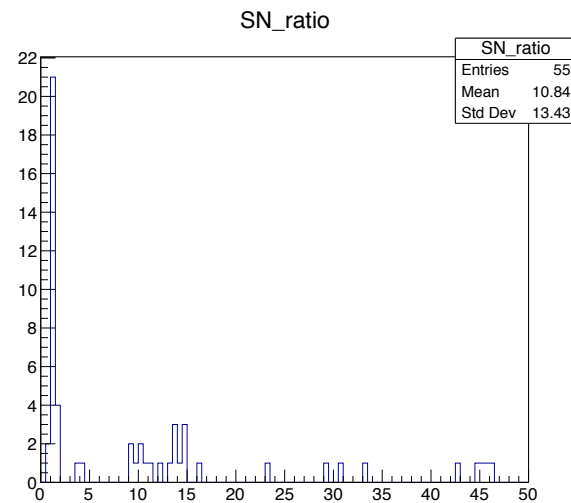
dif_1_1_4



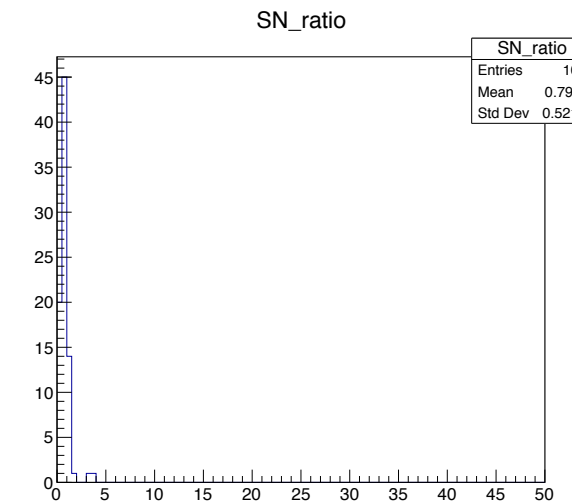
dif_1_2_1



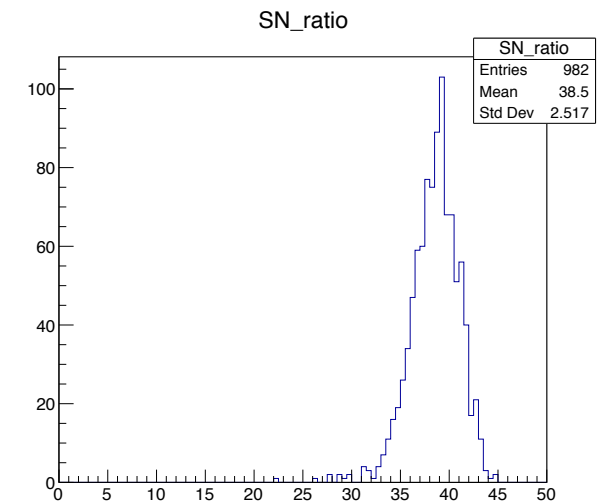
dif_1_2_2



dif_1_2_3



dif_1_2_5

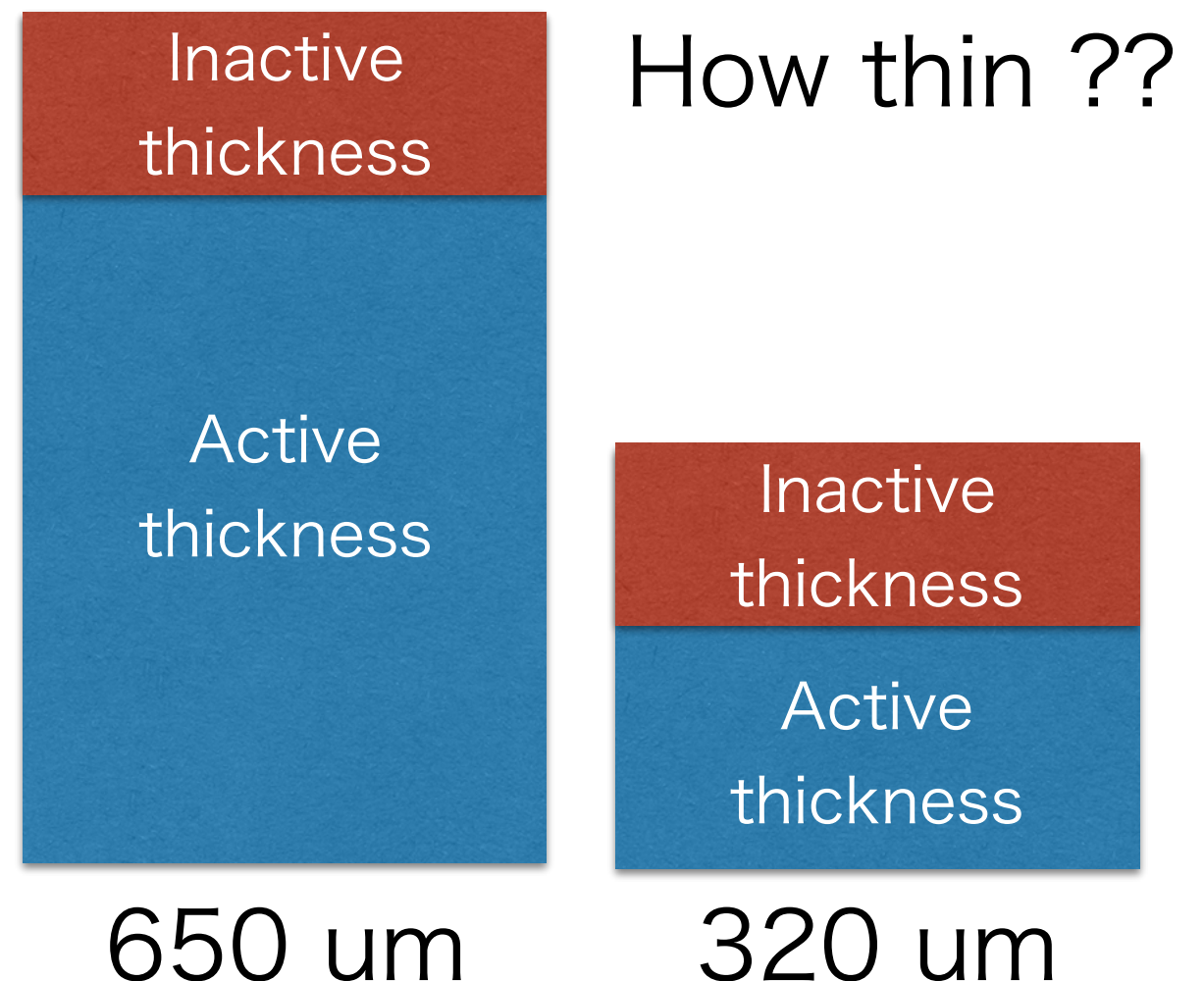


Event number per chip-channel is higher than 500

Chi/NDF is less than 3

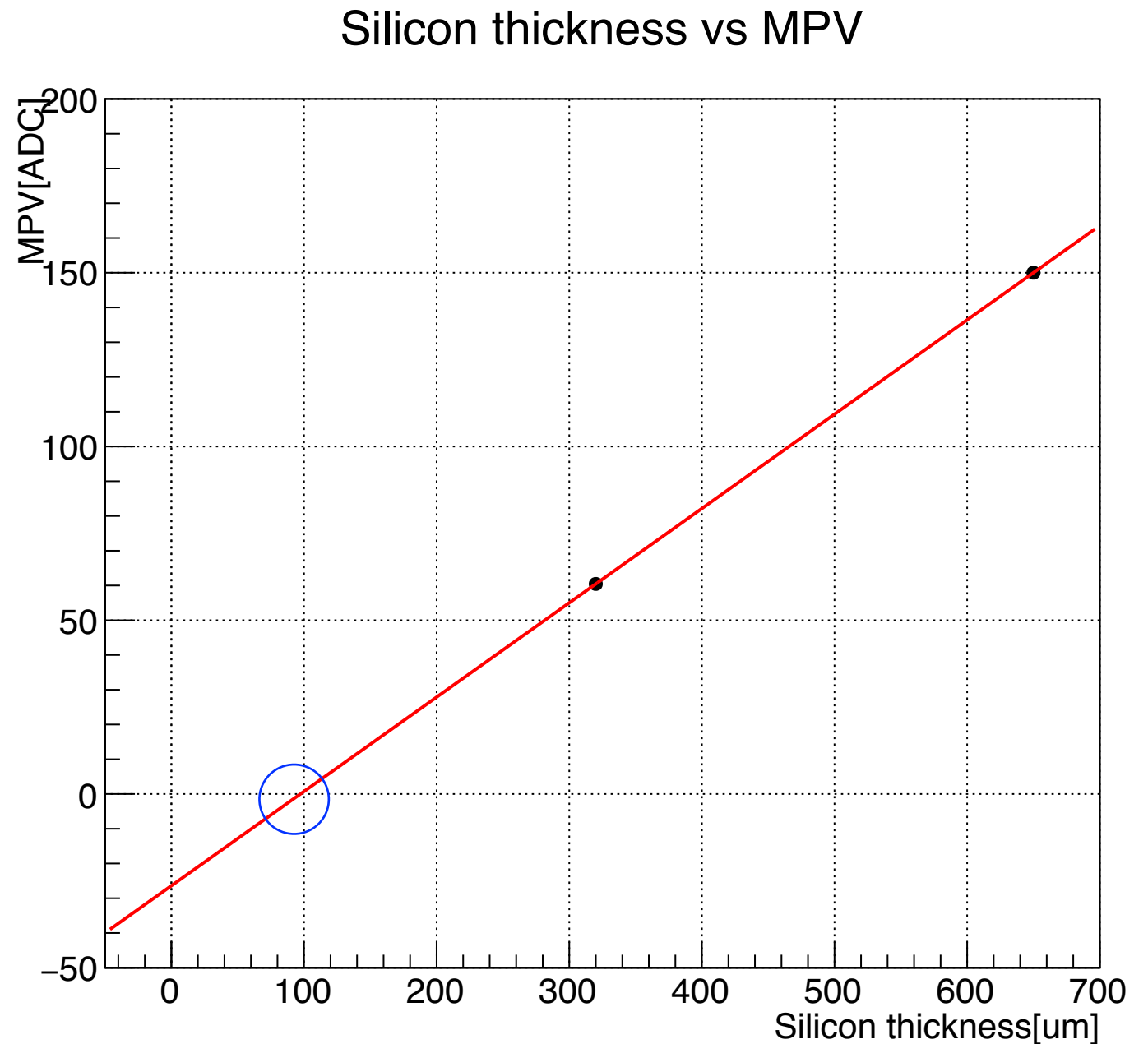
Calculate inactive thickness

- Hamamatsu say that the sensors don't have inactive thickness, but we think the sensors have the thickness.
- Active thickness of the sensors is proportional to MPV
- In this analysis, I assumed the inactive thickness is constant.



Silicon thickness vs MPV

- Errors of the point is error MPV which I fitted histogram of MPV with Gaus.
- When y is 0, the x is inactive thickness.
- As a result, inactive thickness is 97.2678 ± 0.881887 .



$$“y=(x-[0])/[1]” = (“x=[1]y+[0]”).$$

Back up slides

–Johnny Appleseed

Fit with Landaus

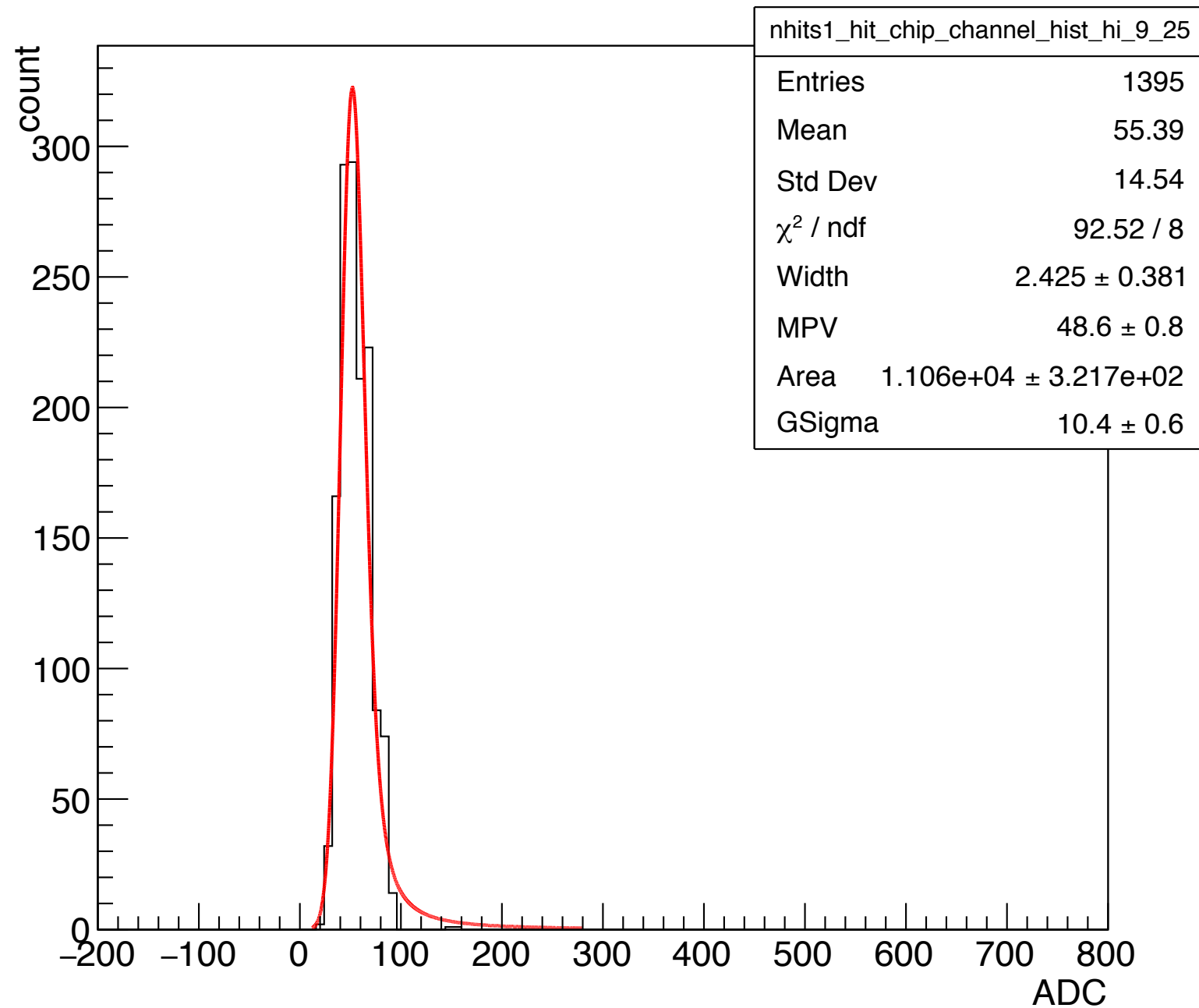
	dif_111	dif_112	dif_113	dif_114	dif_121	dif_122	dif_123	dif_125
totalCC	906	745	951	957	51	855	219	1006
used CC langau	806	651	855	917	45	755	219	995
clear num <3	785	262	817	896	43	55	107	982
clear num 3=<1	20	93	36	20	2	210	20	13
miss	1	296	2	0	0	589	18	0
ndf0	0	8	0	1	0	11	74	0
CC rate	88.4765625	72.75390625	92.87109375	93.45703125	4.98046875	83.49609375	21.38671875	98.2421875
clear rate	99.87593052	54.53149002	99.76608187	99.89094875	100	35.09933775	57.99086758	100
used rate	97.39454094	40.24577573	95.55555556	97.70992366	95.55555556	7.284768212	48.85844749	98.69346734

- Some DIFs (111,113,114,125) are good.
- On the other hand, other DIF is not good.

Bad distribution

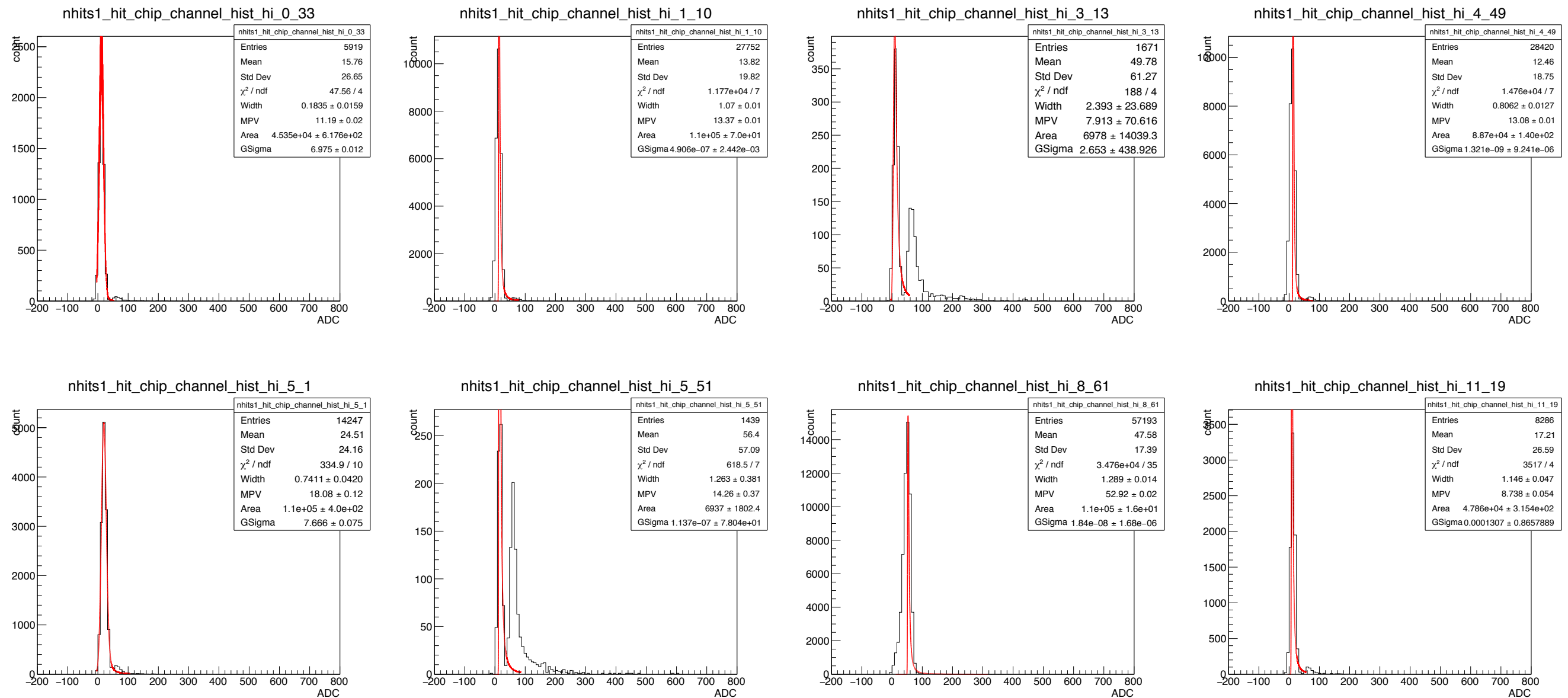
Dif_111

nhits1_hit_chip_channel_hist_hi_9_25



Bad distribution

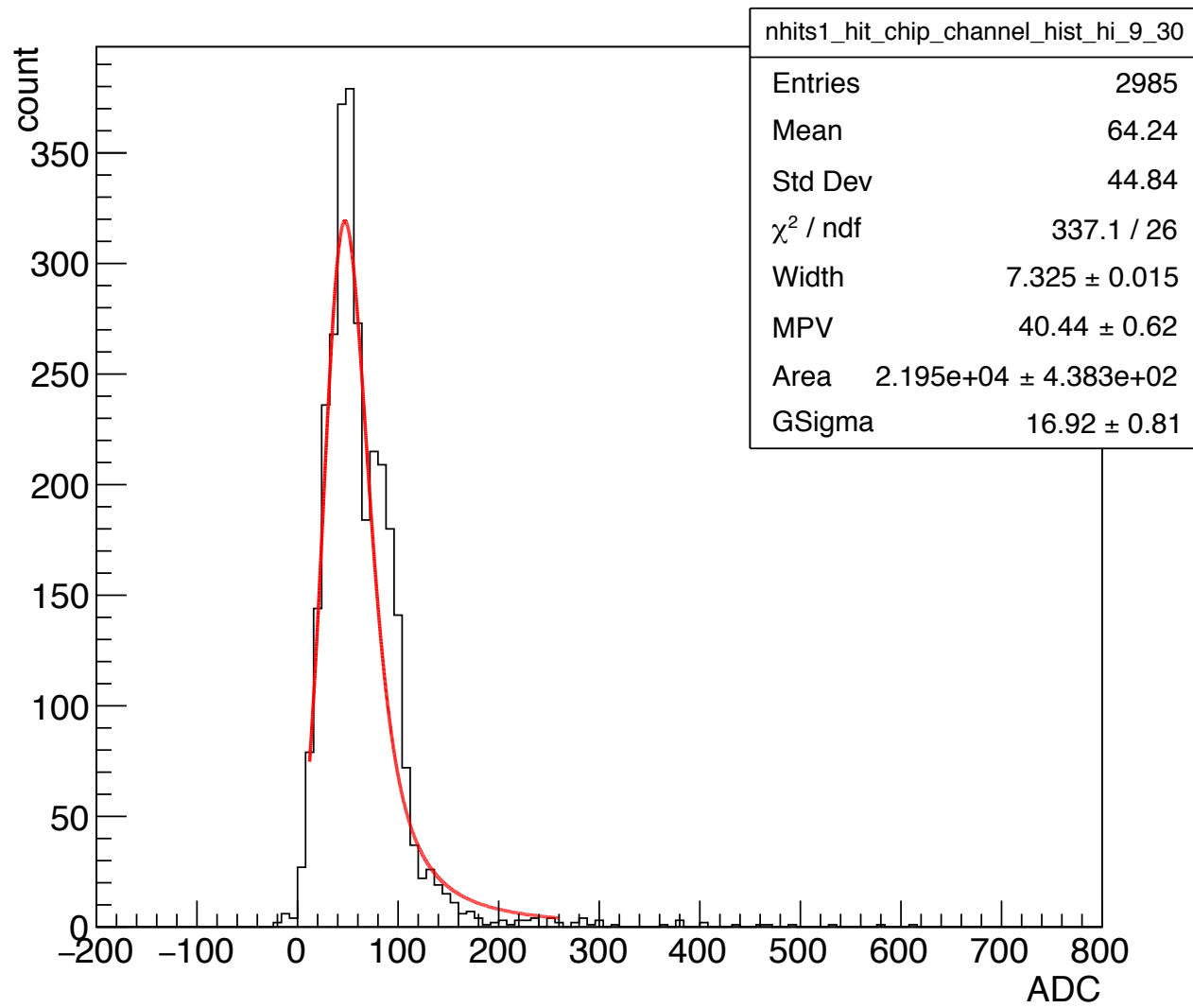
Dif_112



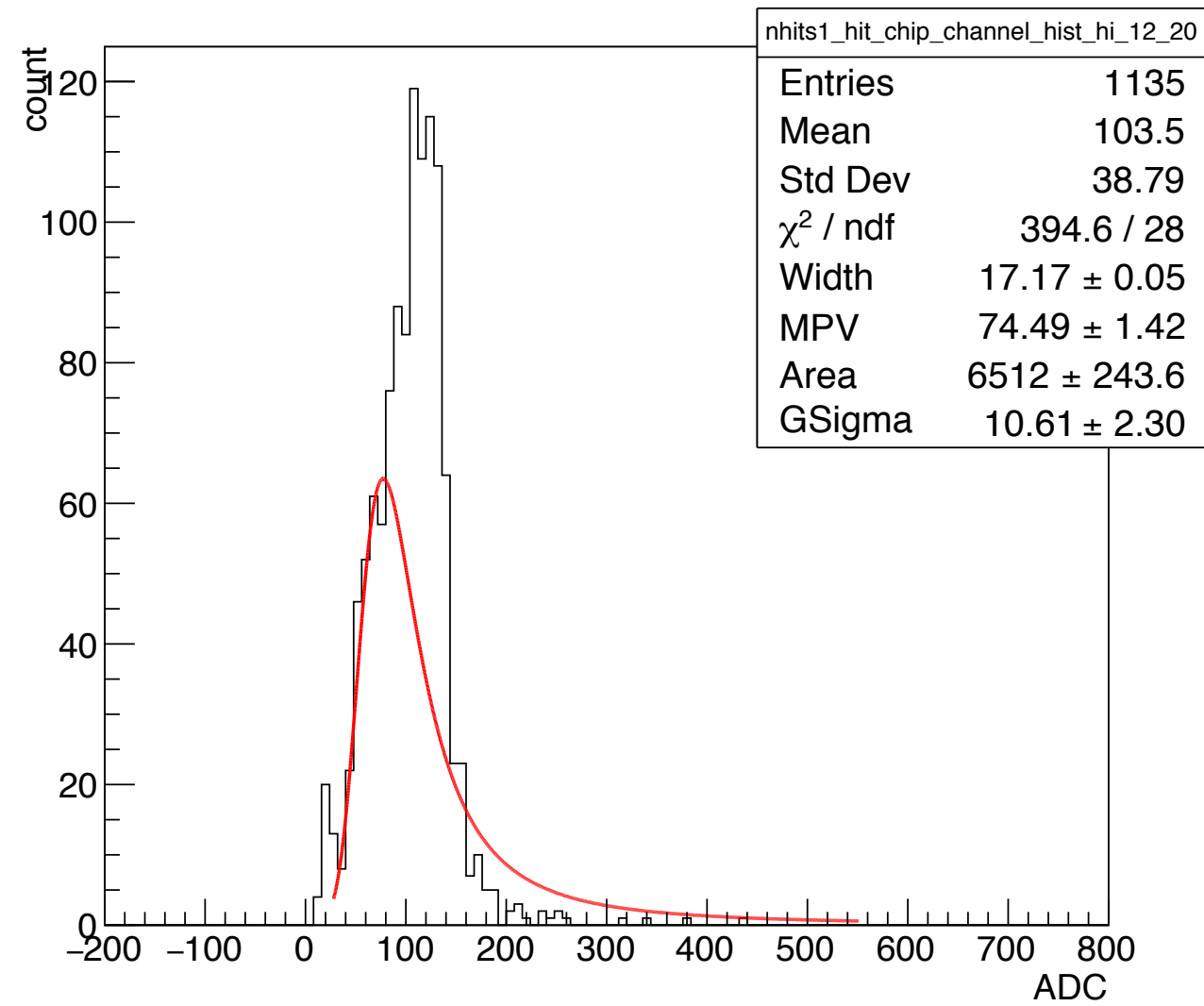
Bad distribution

Dif_113

nhits1_hit_chip_channel_hist_hi_9_30



nhits1_hit_chip_channel_hist_hi_12_20

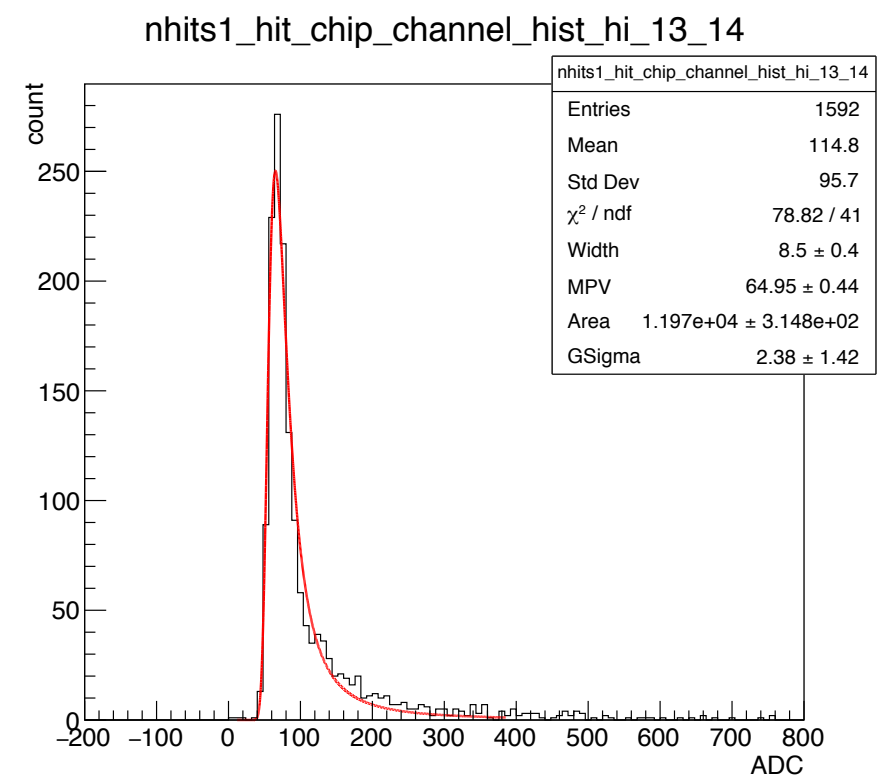
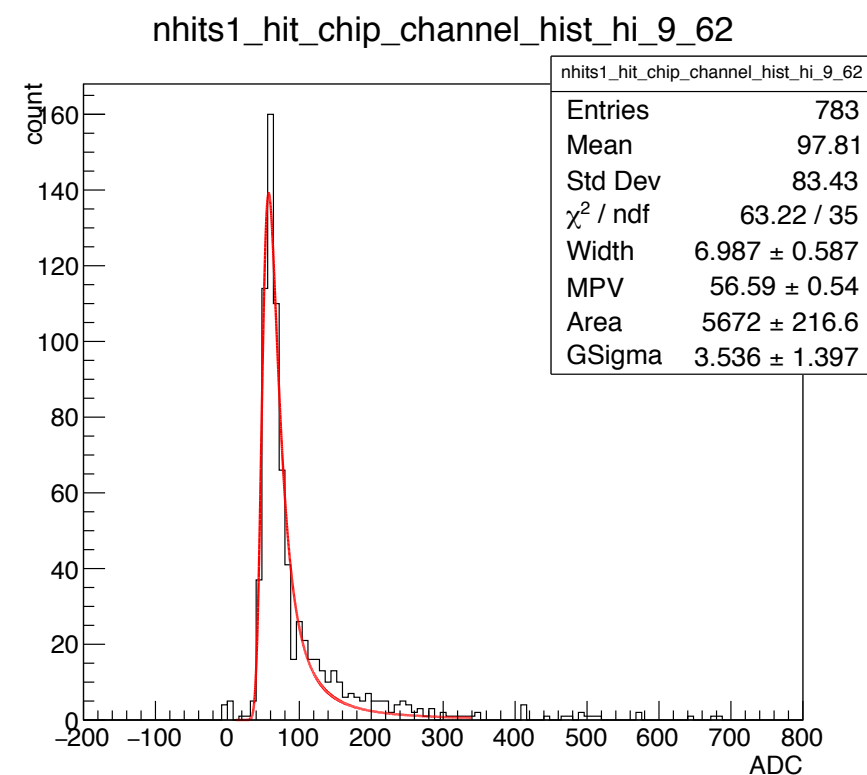
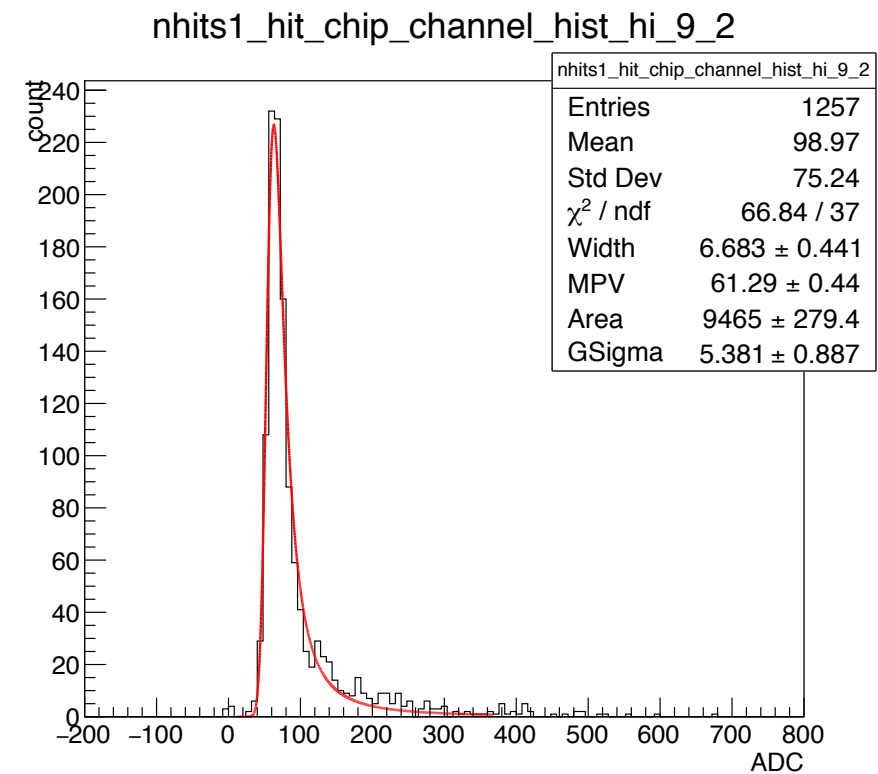
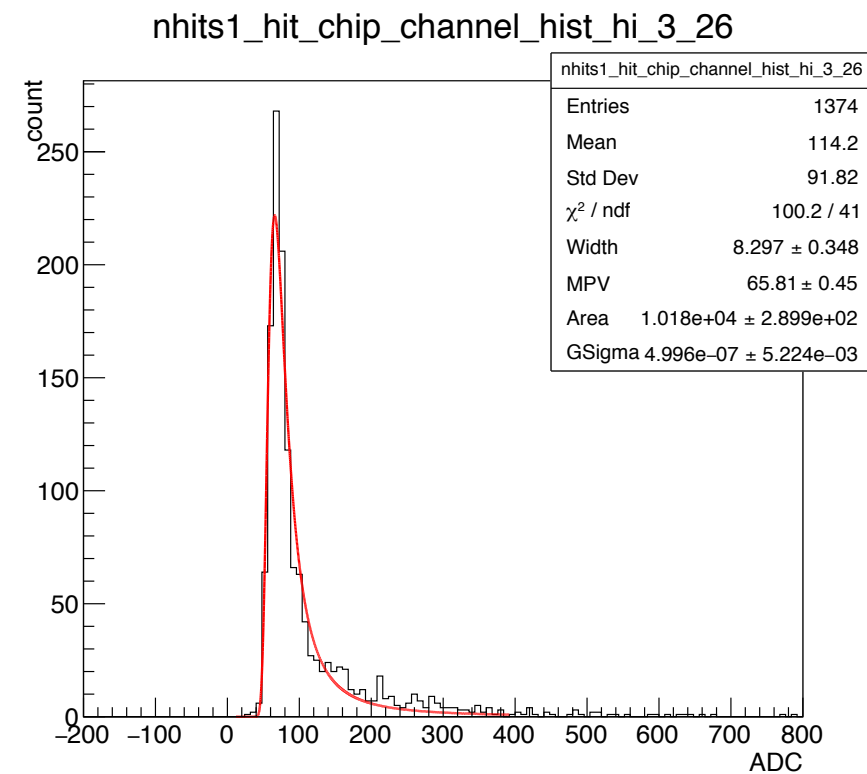


Dif_1 1 4

- None

Good distribution

Dif_121

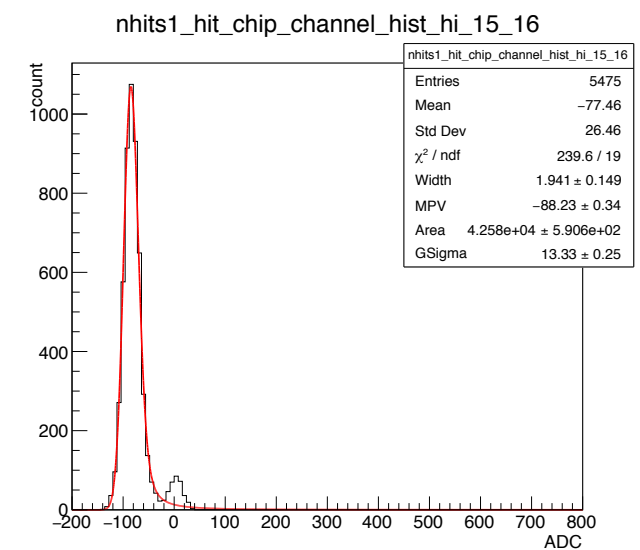
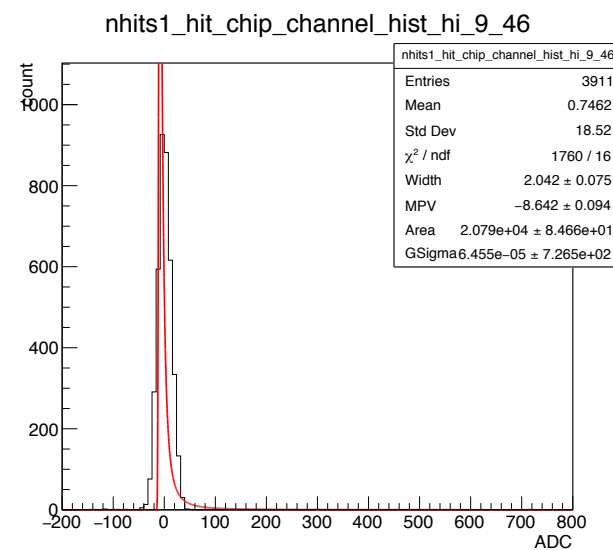
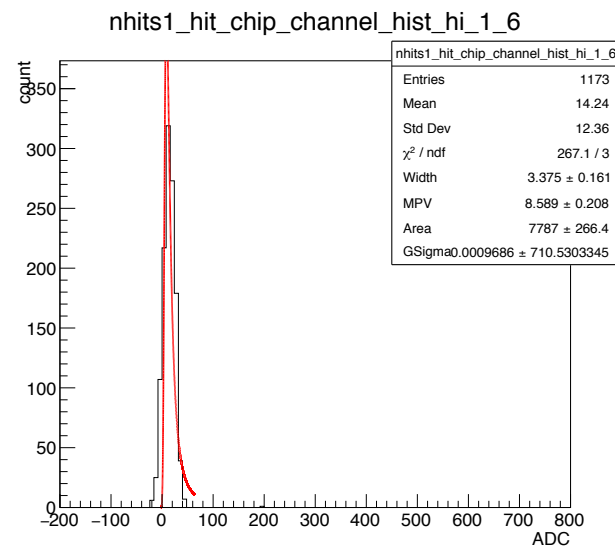
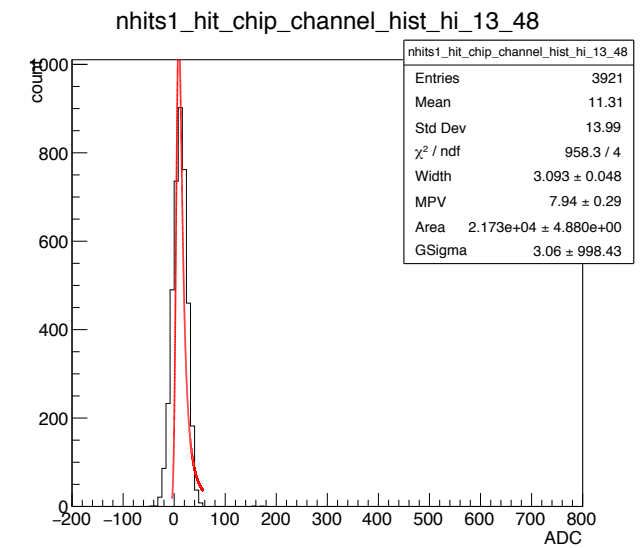
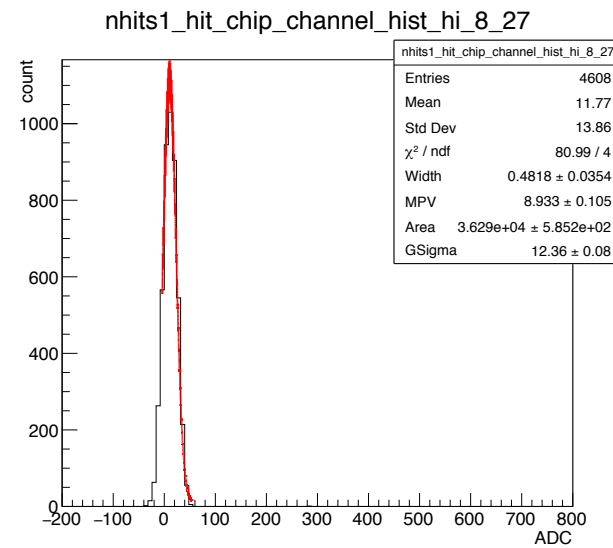
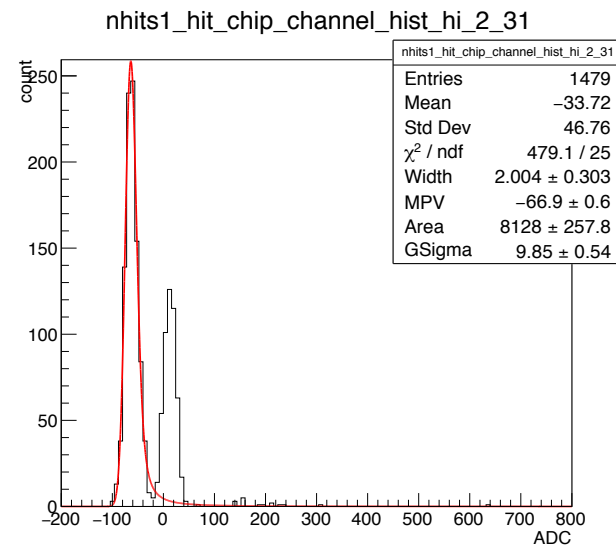


Dif_1 22

- None

Bad distribution

Dif_123



Dif_1 25

- None