Weekly 241223

Gas Study with Test Chamber, E80-CDC First Data, and my M-Thesis

Yuto Kimura

Report about the test chamber (24.12.17 ~ 24.12.23)

Goal: 1. Gain curve
2. Multiplicity
3. Layer (Wire) efficiency
of various gas ratio (Ar-CO2)

—> Choose the best ratio of Ar-CO2

Two weeks ago, we had a problem.

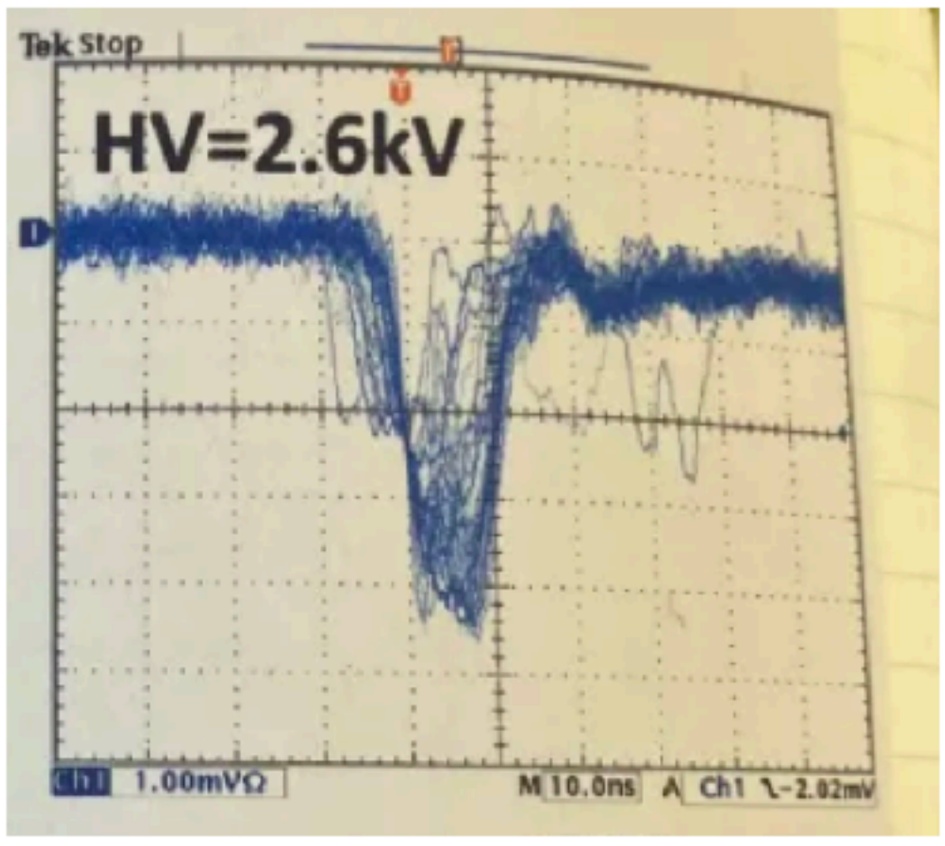
Test Chamber Ana

問題点2、
ArC2H6の今昔でゲインが違う。今の方が小さい。

2倍くらい違ウ!!!

今 2600V

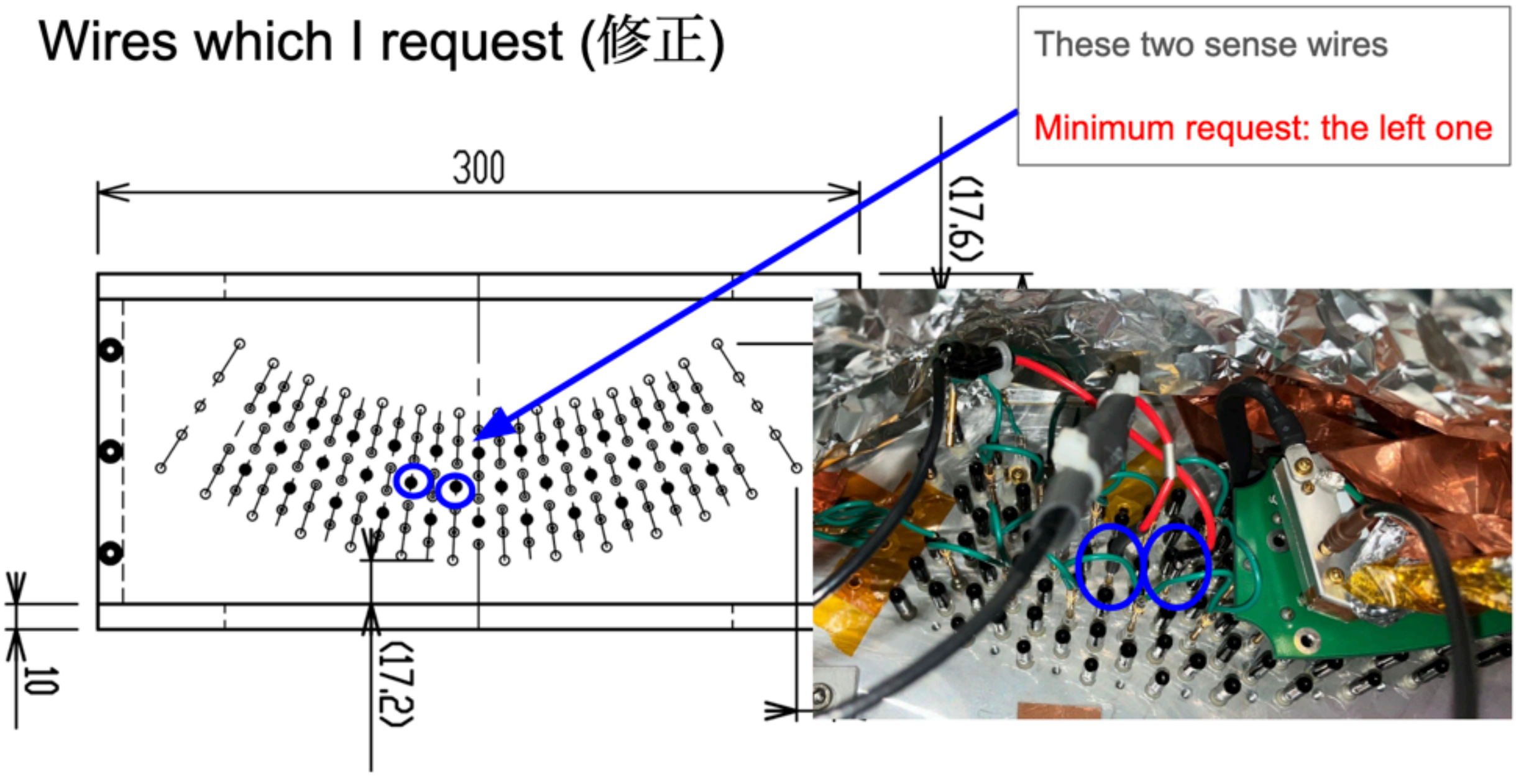
昔 2600V



Two wires were repaired by F. Sakuma and Hayashi Repic.

Purpose: To check the difference of gain between new and old wires.

Wires which I request (修正)

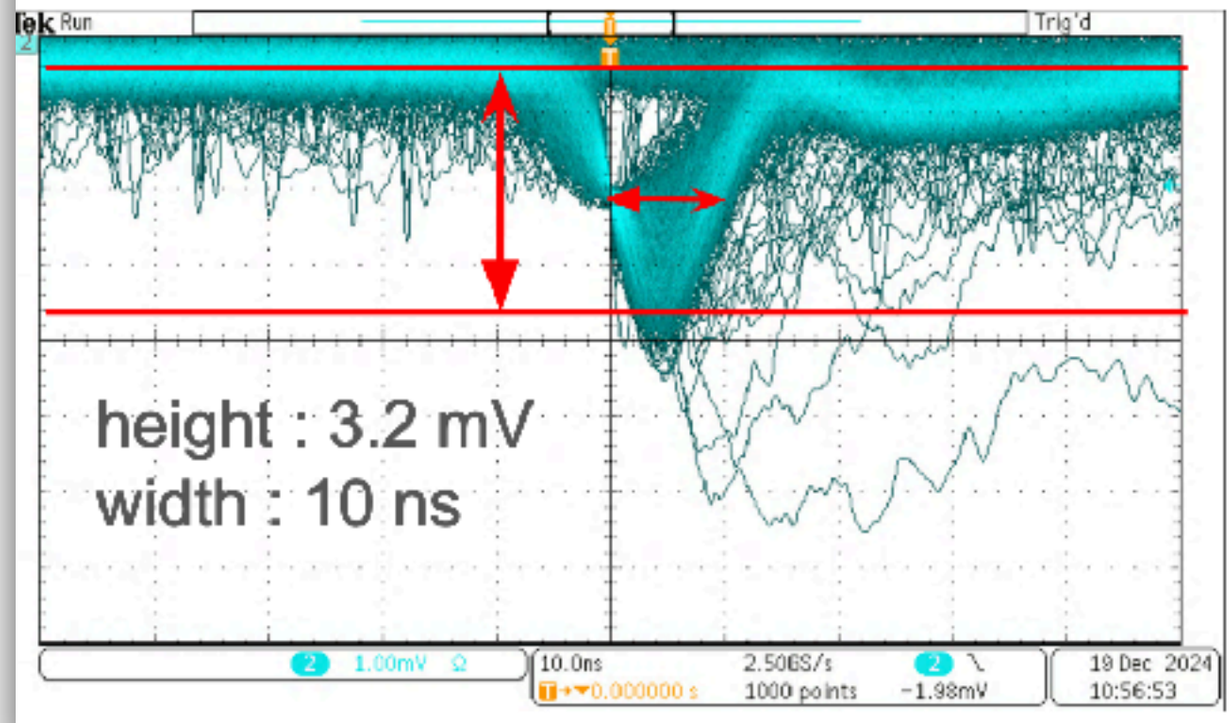


Pulse of New wire vs Old wire

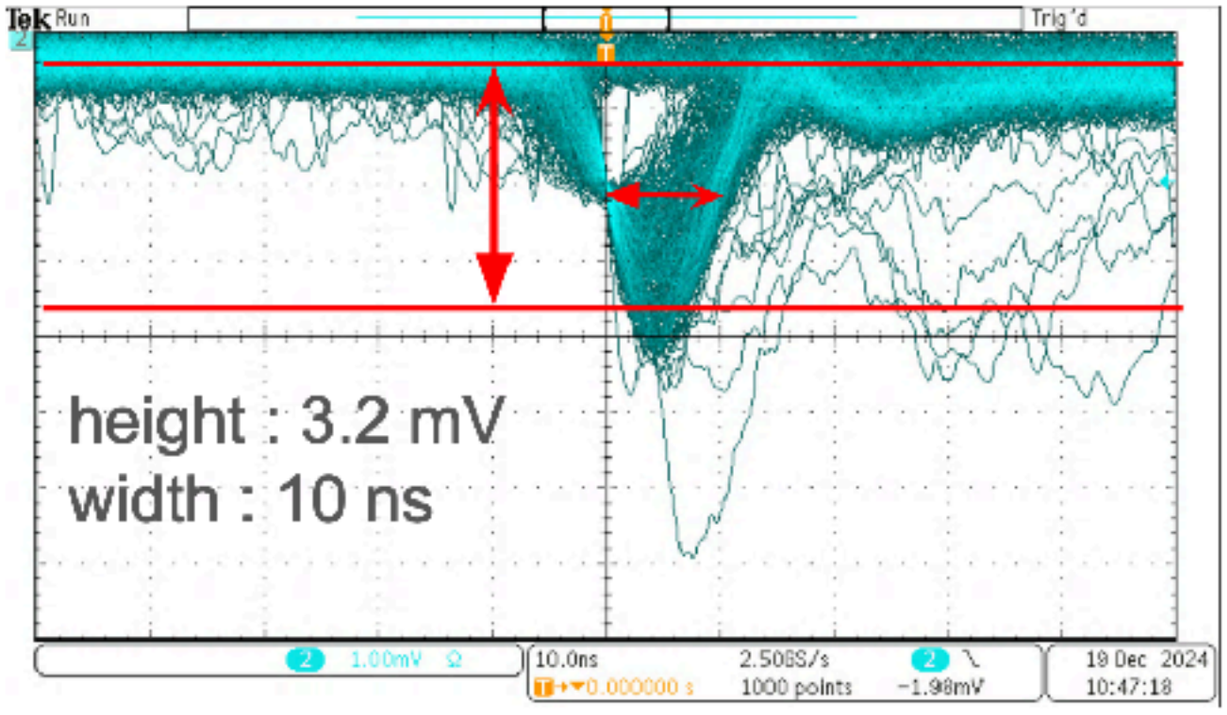
- 55Fe
- Gas : Ar-CO2 (88:12)
- HV : Field 2300 V, Guard 1239 V
- Layer2

Exactly same wave form !!!!!!! → No aging effect...

old one



new one



We should forget the past measurement.
Then I will compare our measurement to my simulation, about the gain, relatively.
Now, I'm summarizing them quickly.

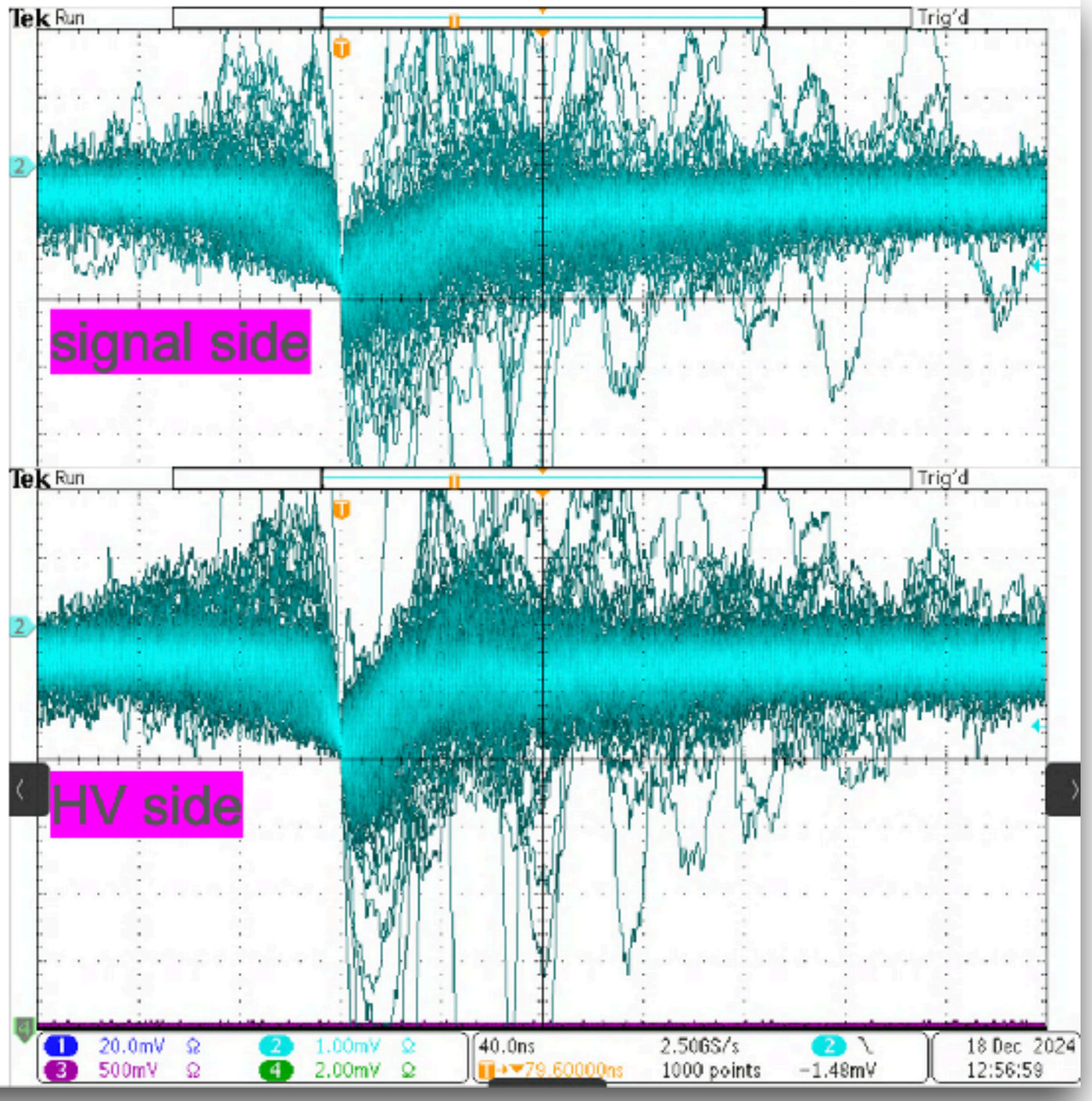
Report about the E80-CDC (24.12.16 ~ 24.12.23)

Goal: Get a track, and show it in event display.

At first, we check the analog signal before ASD with 90Sr.

Purpose1: To check the reflected wave

Purpose2: To get the peace of mind



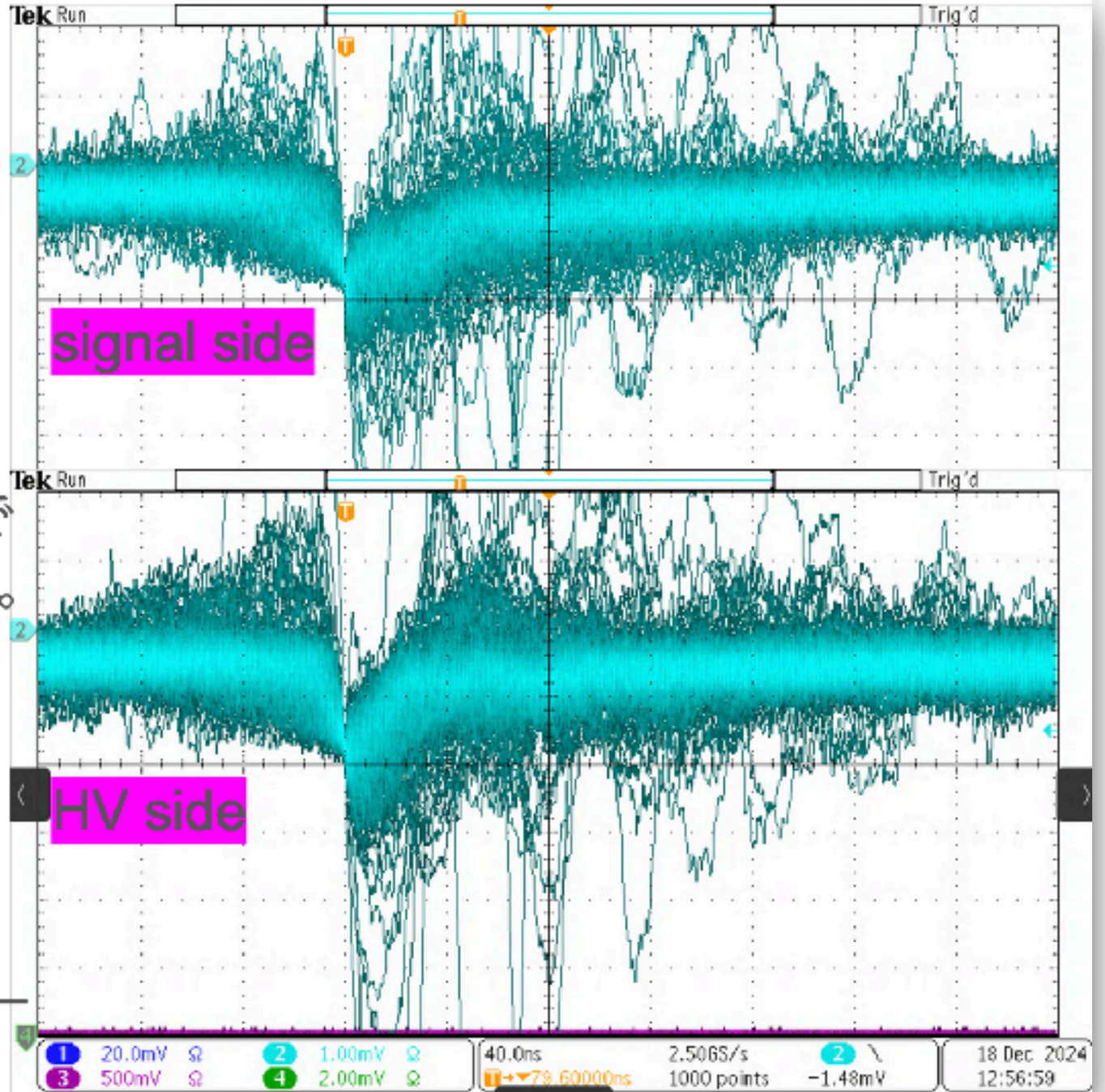
At first, we check the analog signal before ASD with 90Sr.

Purpose1: To check the reflected wave

Purpose2: To get the peace of mind

90Sr

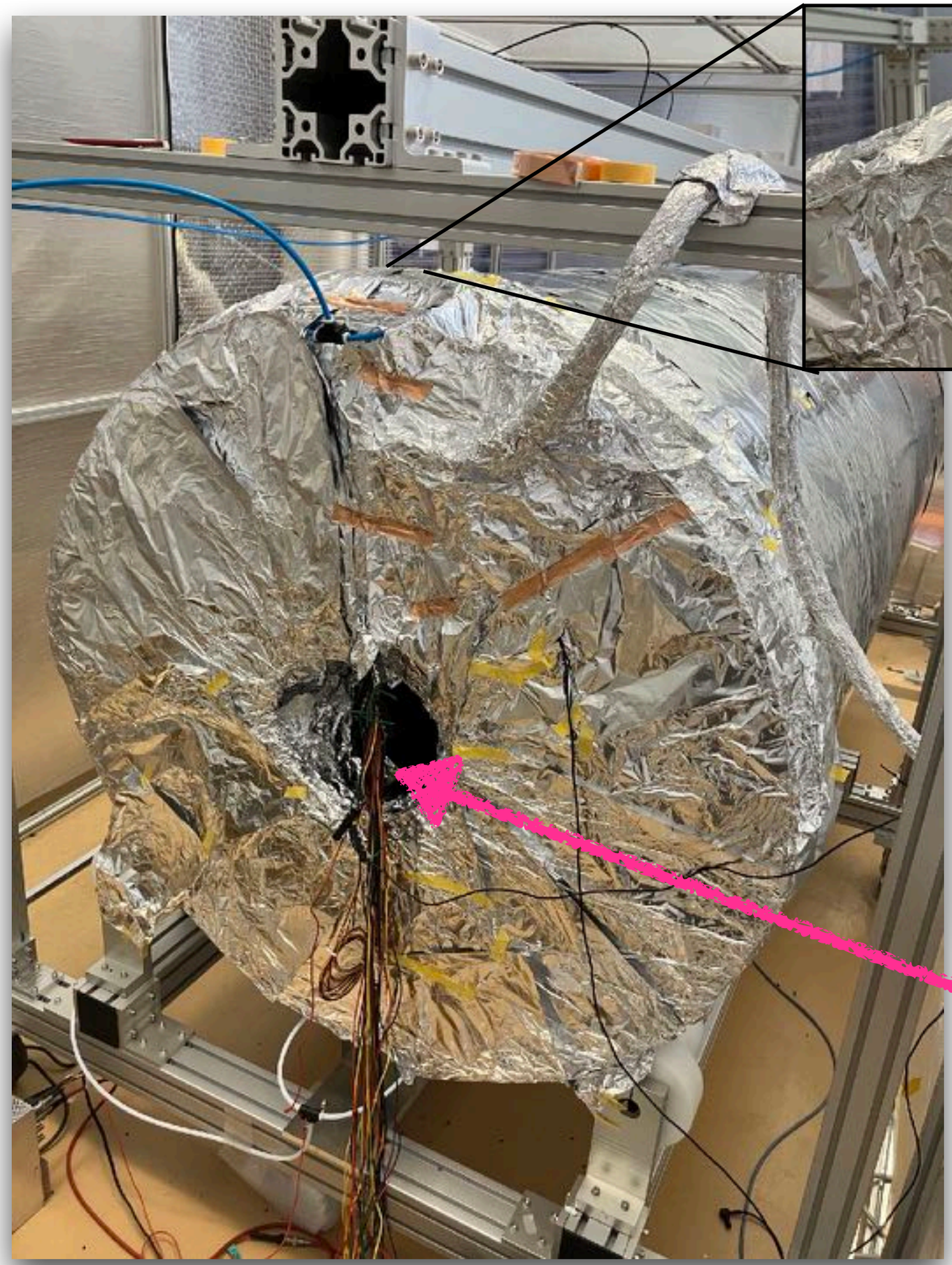
- 心の目で見ると反射成分が見える
- Test Chamberに比べて
  幅が広い？
- Test Chamberで90Sr見てないので
  もう一度ガス流して明日見てみる。

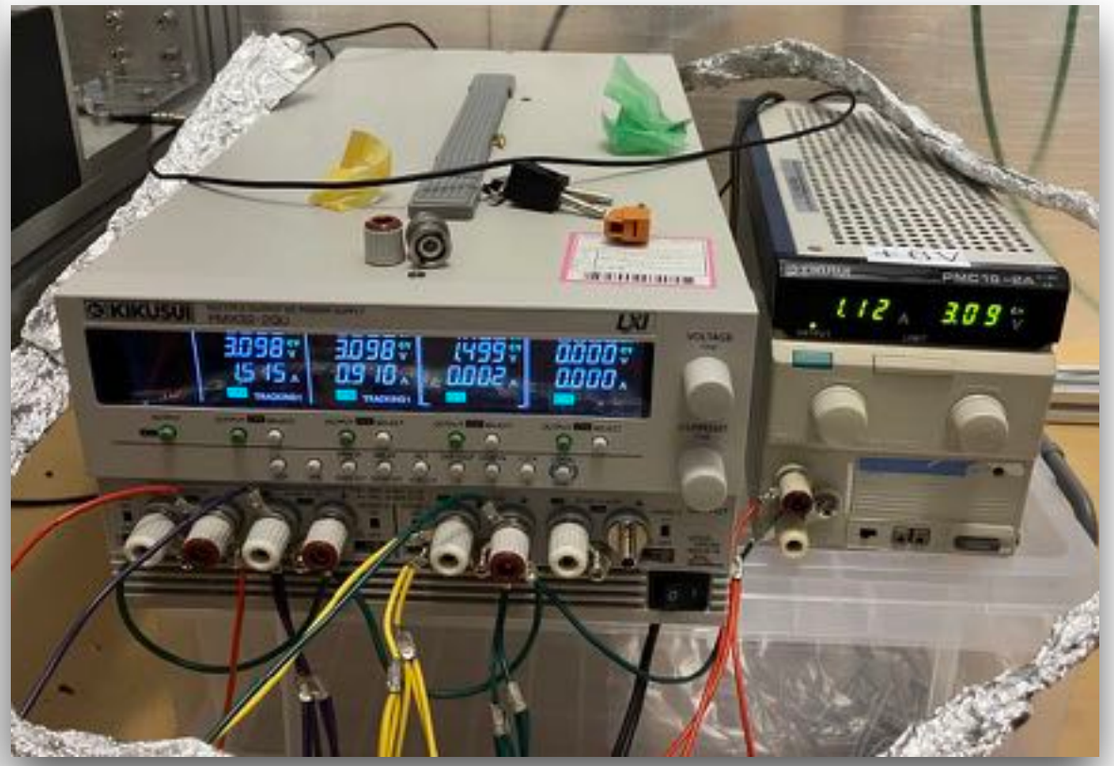


55Fe, test chamber は幅10nsくらい

＊なぜか55FeはE80-CDCで見れない。

Anyway, I took the data with 90Sr and cosmic-ray.





Trigger counter (3*3*0.5 cm)

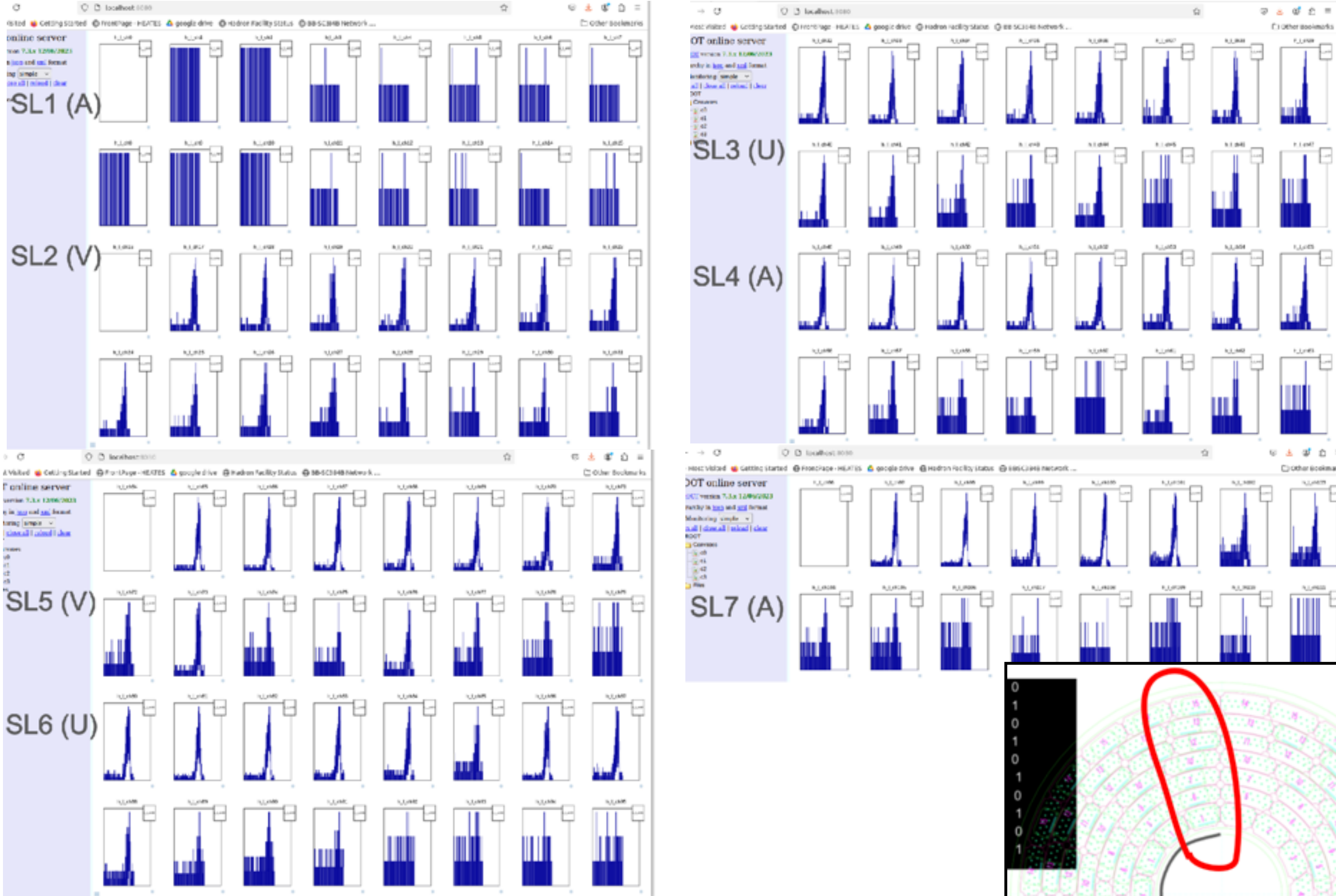
2024.12.22; 90Sr, Sig side, run57, 50k event

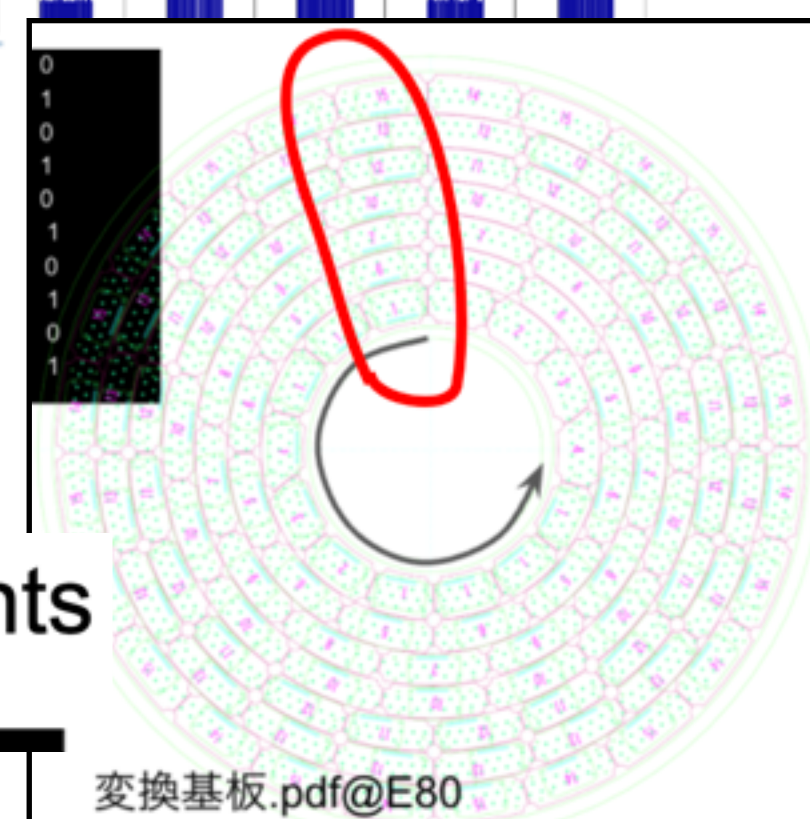
CAEN Universal Power Supply System Controller

Control Help

	Name	I0Set	V0Set	IMon	VMon	Pw	Status	RUp	RDWn	Trip
02....	Layer1	10.00 uA	1600.0 V	0.00 uA	1599.3 V	On		10 V/s	30 V/s	0.1
02....	Layer2	10.00 uA	2300.0 V	0.44 uA	2298.8 V	On		10 V/s	30 V/s	0.1
02....	Layer3	10.00 uA	2300.0 V	0.56 uA	2299.0 V	On		10 V/s	30 V/s	0.1
02....	Layer4	10.00 uA	2300.0 V	0.94 uA	2298.8 V	On		10 V/s	30 V/s	0.1
02....	Layer5	10.00 uA	2300.0 V	1.14 uA	2299.0 V	On		10 V/s	30 V/s	0.1
02....	Layer6	10.00 uA	2300.0 V	1.20 uA	2299.3 V	On		10 V/s	30 V/s	0.1
02....	Layer7	10.00 uA	2300.0 V	1.38 uA	2298.0 V	On		10 V/s	30 V/s	0.1
02....	Guard	10.00 uA	543.0 V	0.00 uA	542.8 V	On		2 V/s	8 V/s	0.1
02....	Inner	10.00 uA	1292.0 V	0.00 uA	1291.3 V	On		5 V/s	17 V/s	0.1
02....	Outer	10.00 uA	1541.0 V	0.00 uA	1539.8 V	On		7 V/s	20 V/s	0.1
02....	test_pot	10.00 uA	2300.0 V	0.00 uA	0.0 V	Off		20 V/s	50 V/s	0.1
02....	test_gua	10.00 uA	1239.0 V	0.00 uA	0.0 V	Off		20 V/s	50 V/s	0.1

SL1 is still unstable…

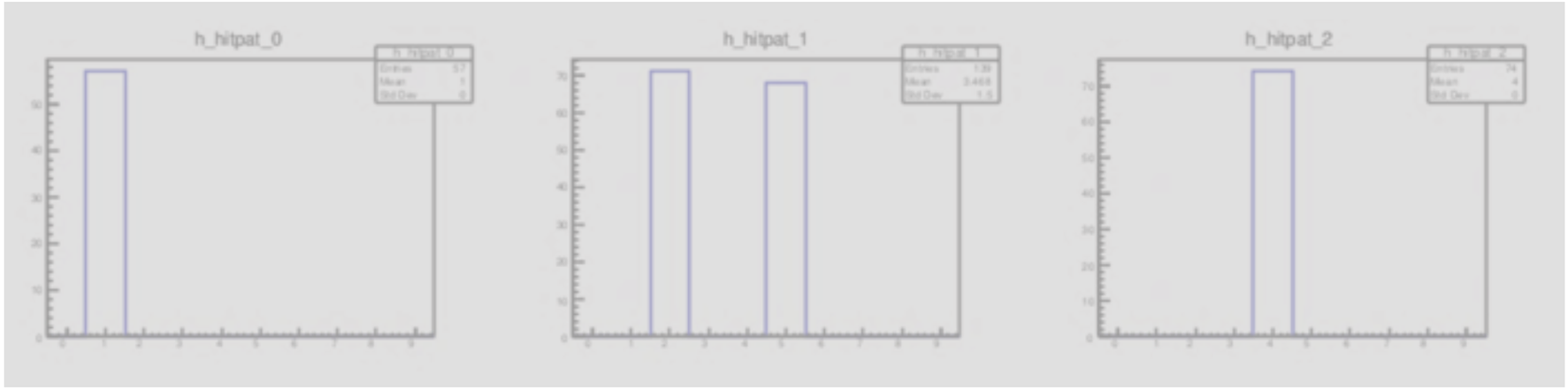


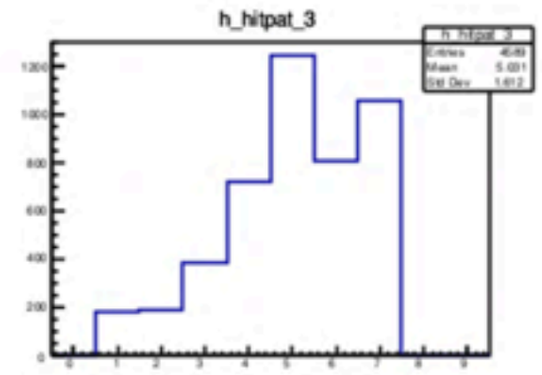


2024.12.22; 90Sr, Sig side, run57, 50k events

online histogram (leading TDC)

Hit Pattern


h_hitpat_0
h_hitpat_1
h_hitpat_2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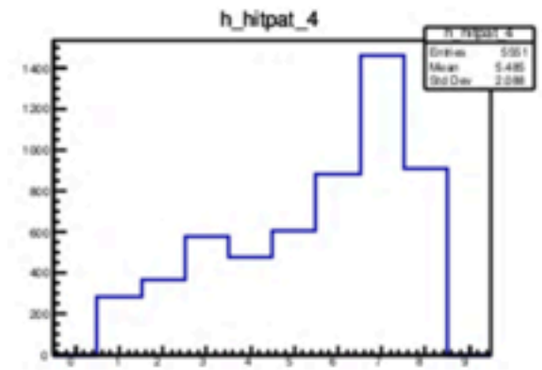
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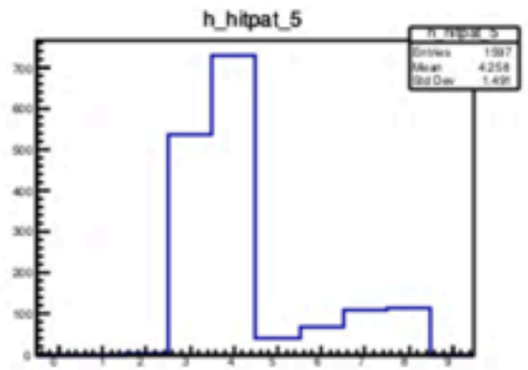
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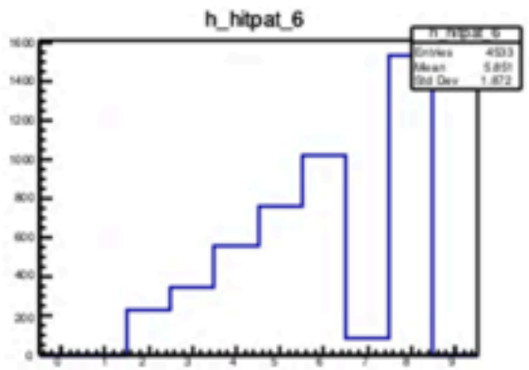
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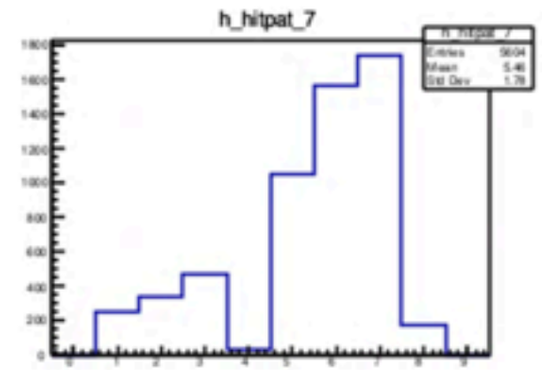
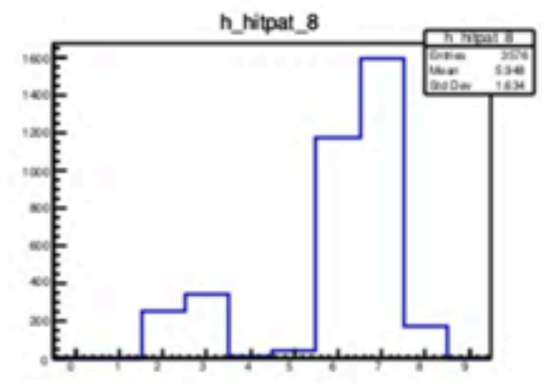
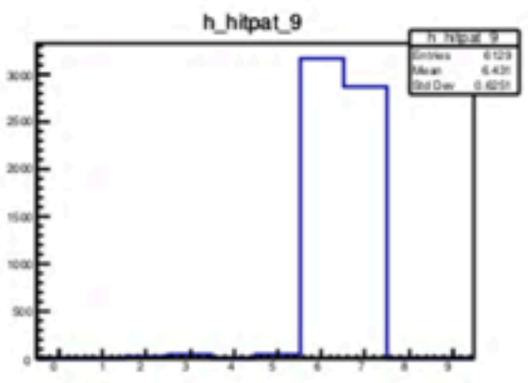
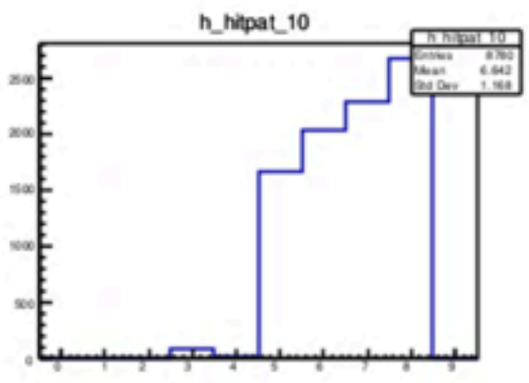

h_hitpat_7


h_hitpat_8


h_hitpat_9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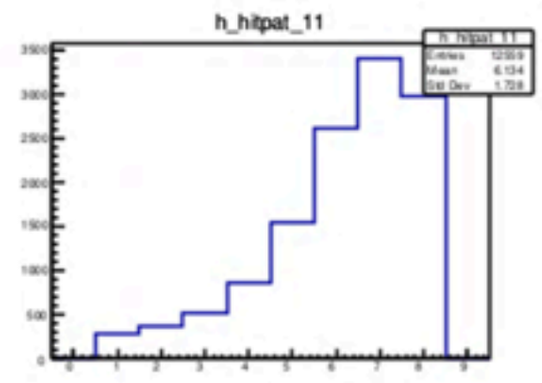
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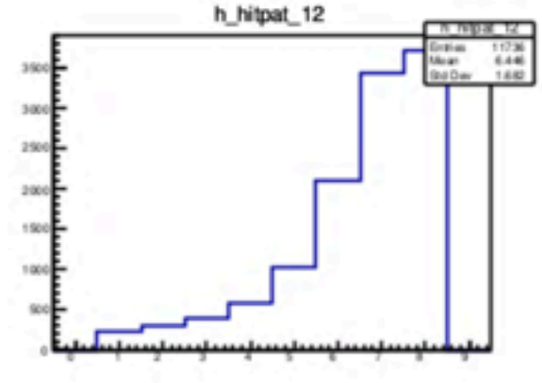
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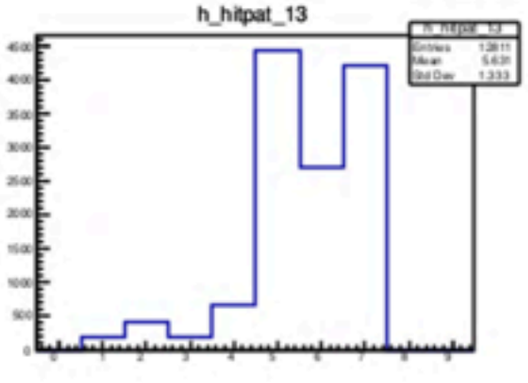
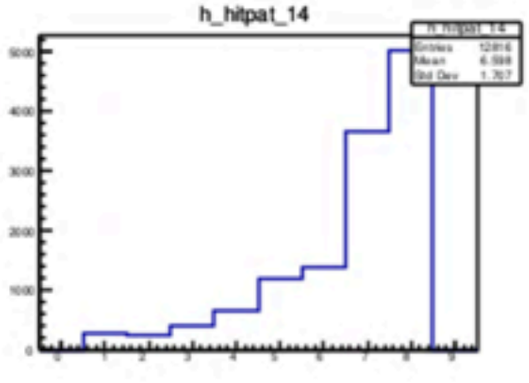
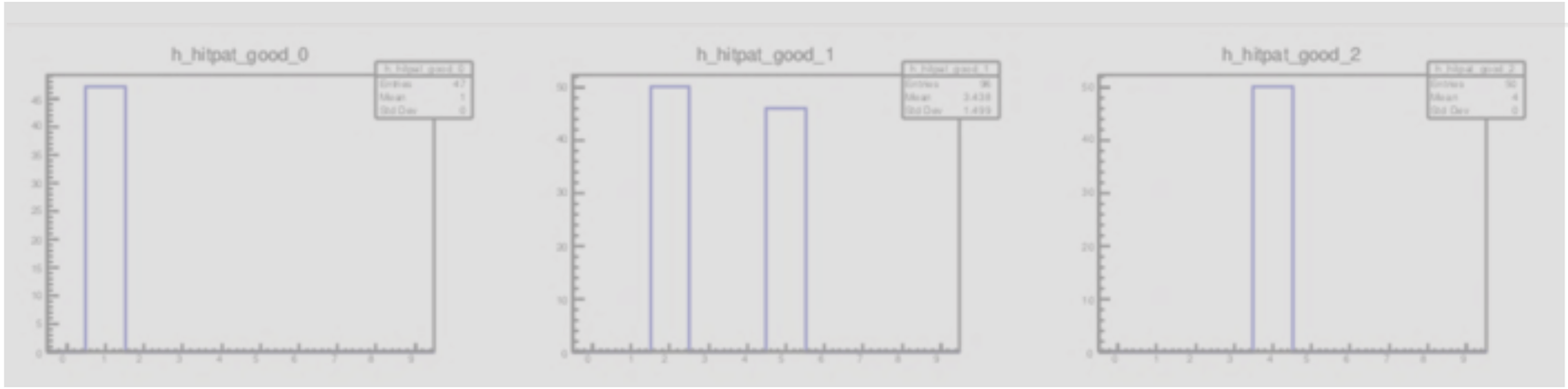
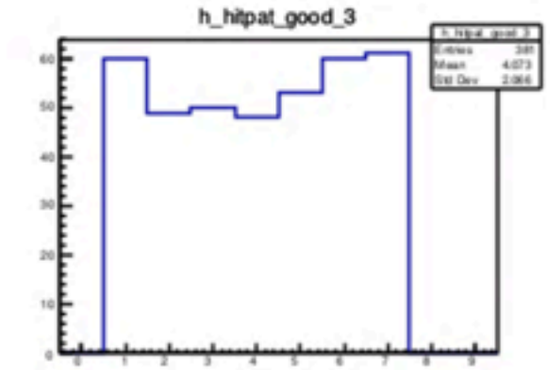

h_hitpat_13

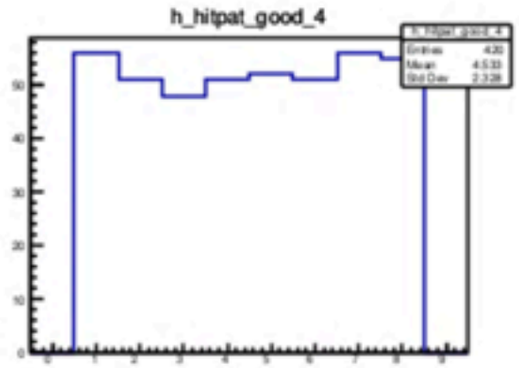

h_hitpat_14

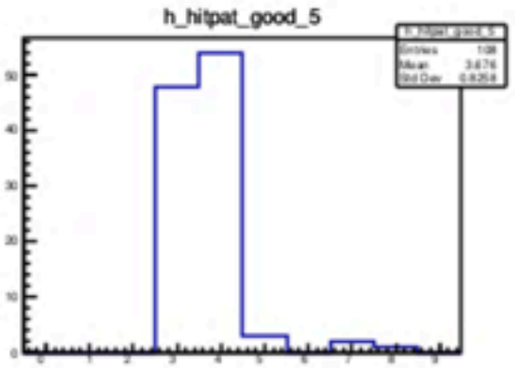
Hit Pattern

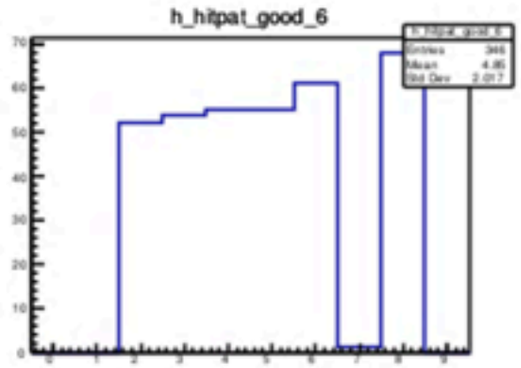
All Layer(except for SL1) Hit required

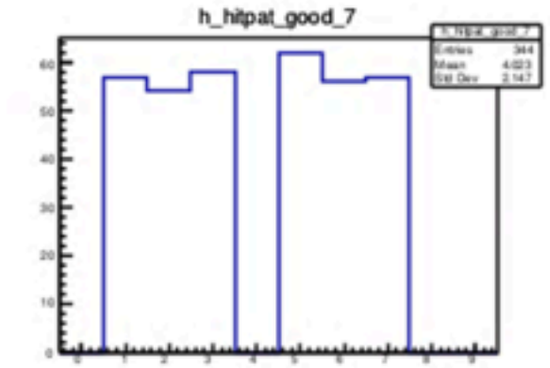


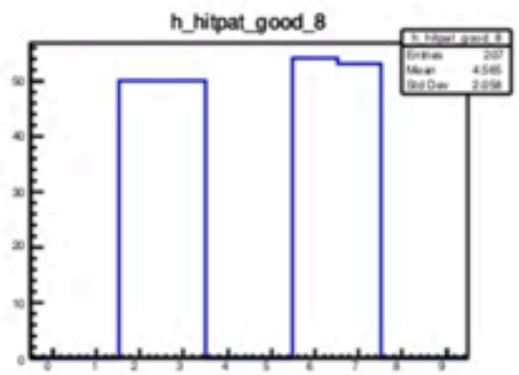


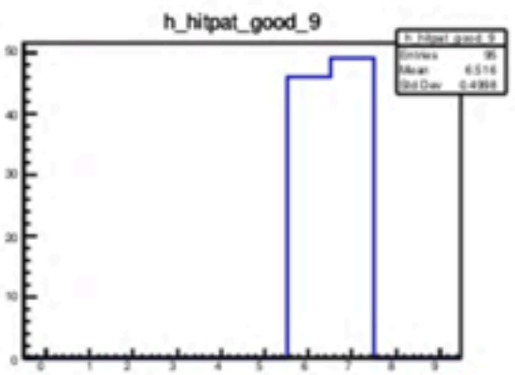


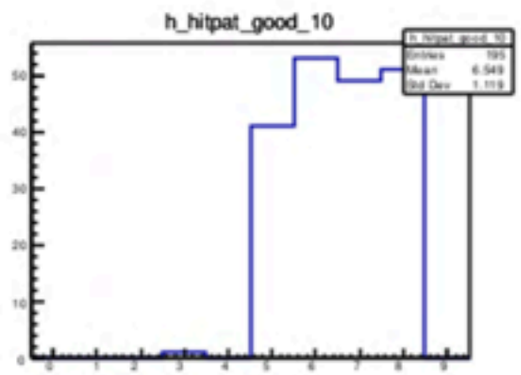


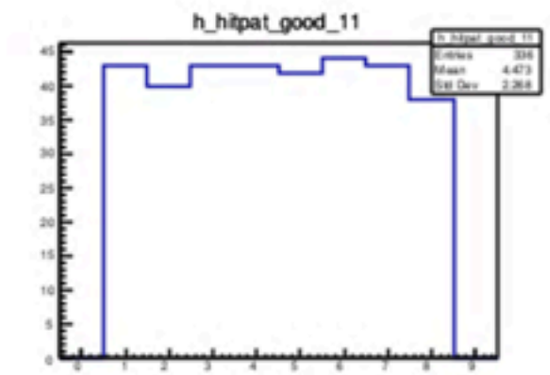


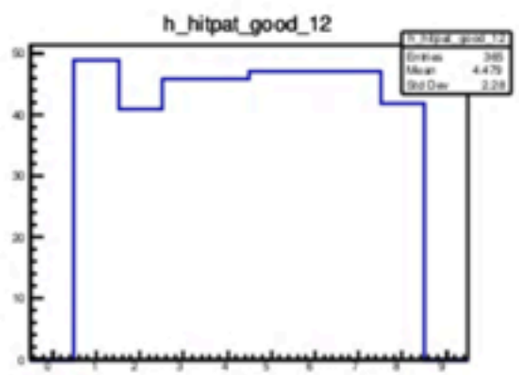


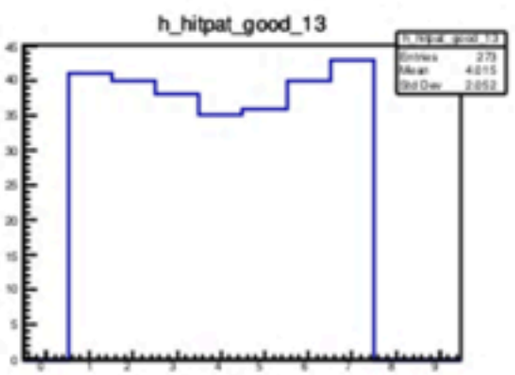


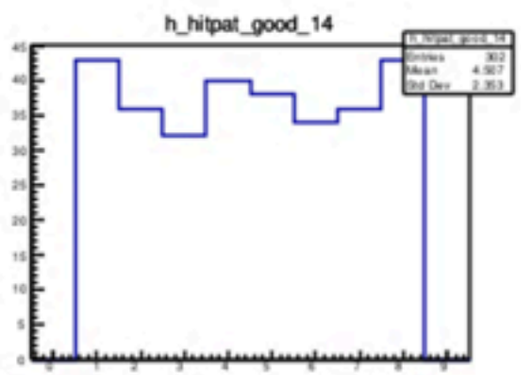






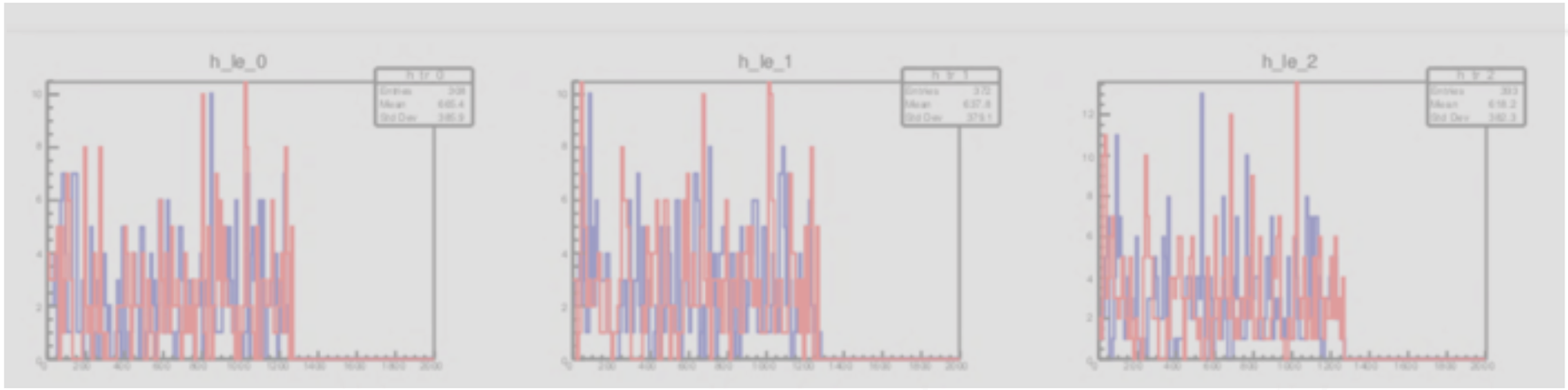


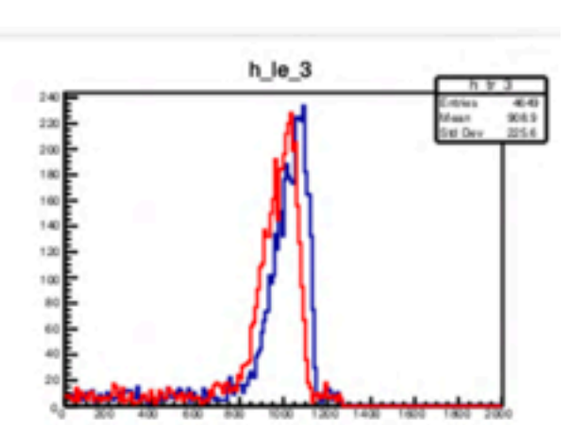


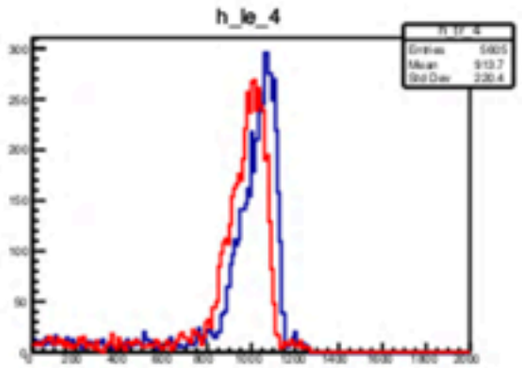


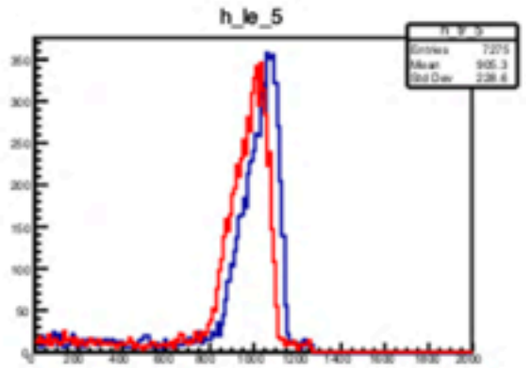
むしろノイズだけに
なっているようだ。。。

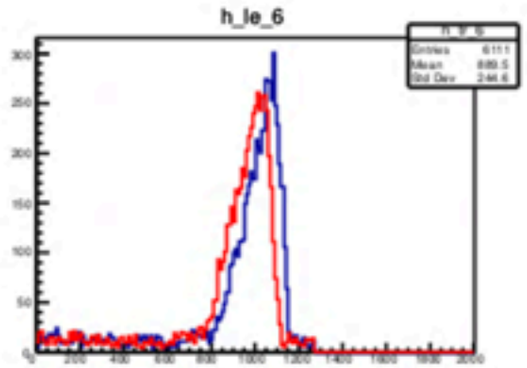
Leading and Trailing

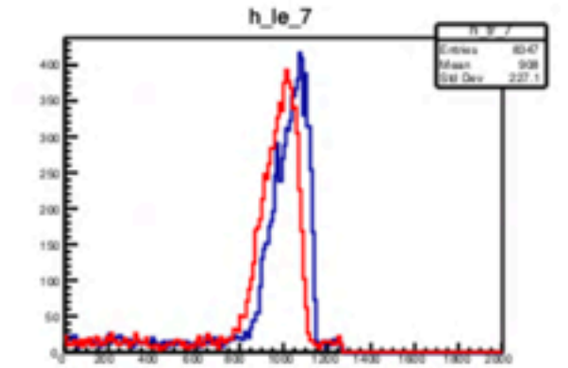


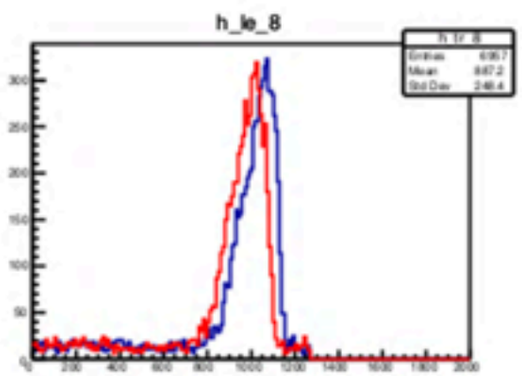


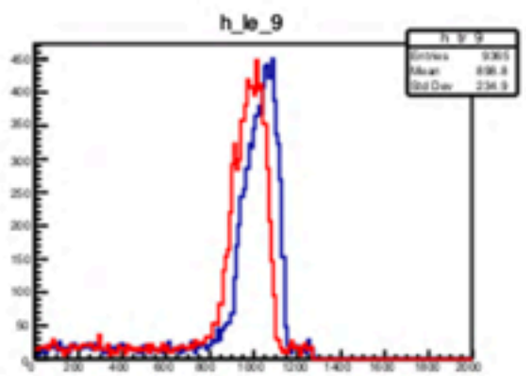


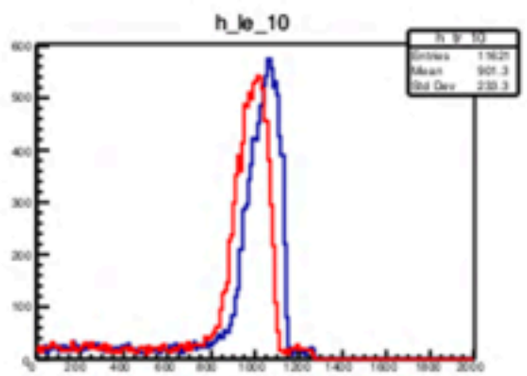


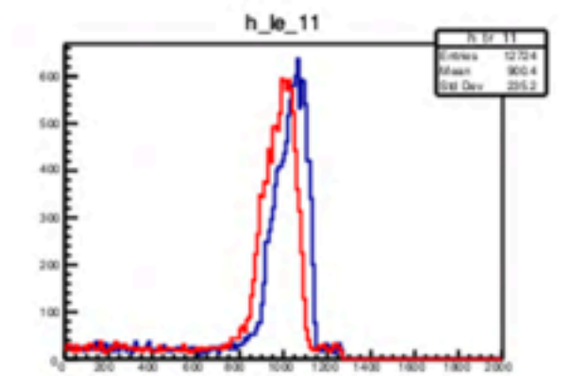


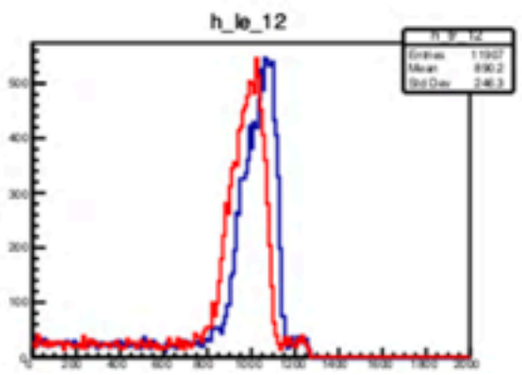


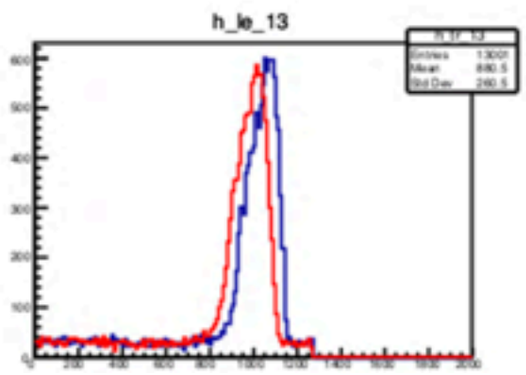


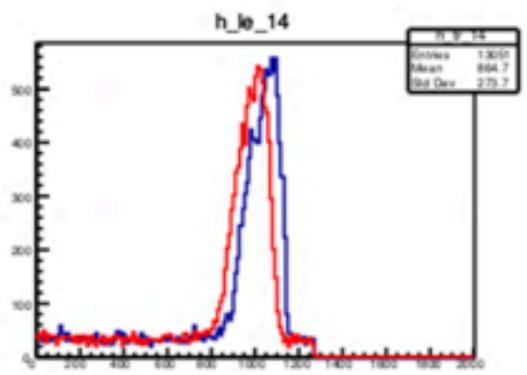




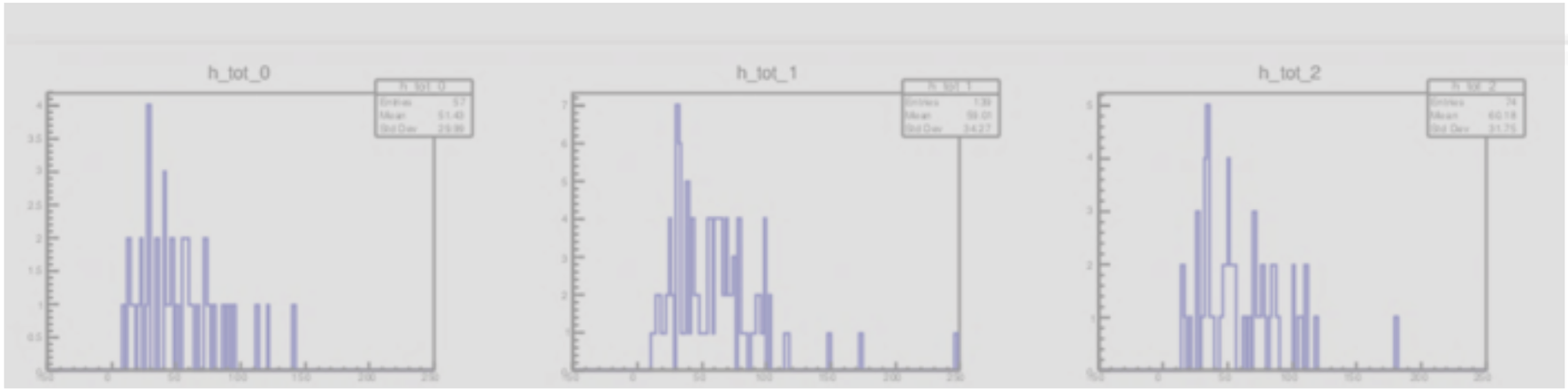


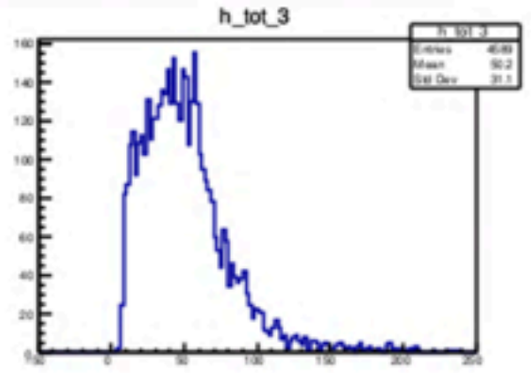


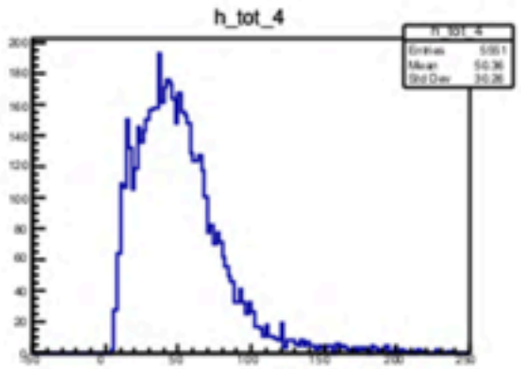


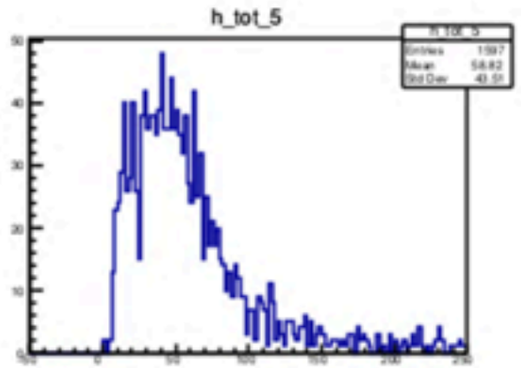


ToT


h_tot_0
h_tot_1
h_tot_2


h_tot_3


h_tot_4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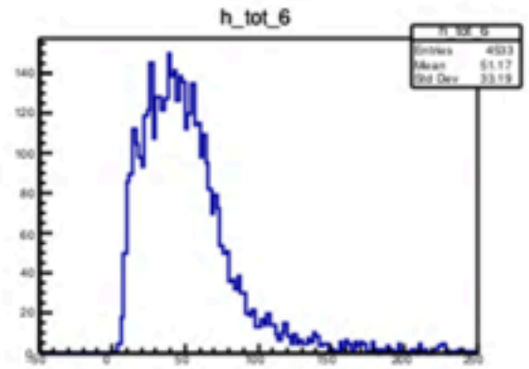
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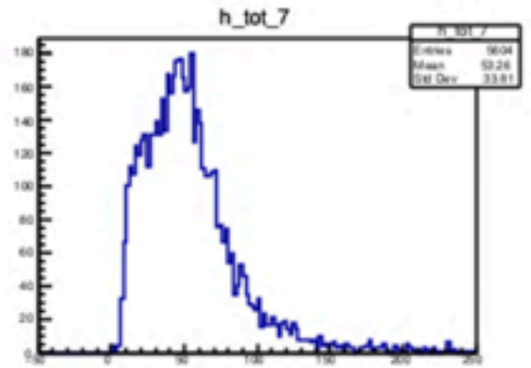
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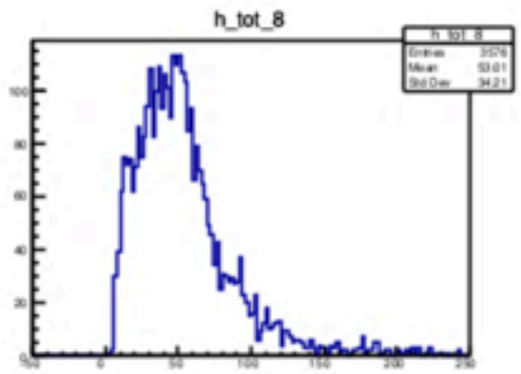
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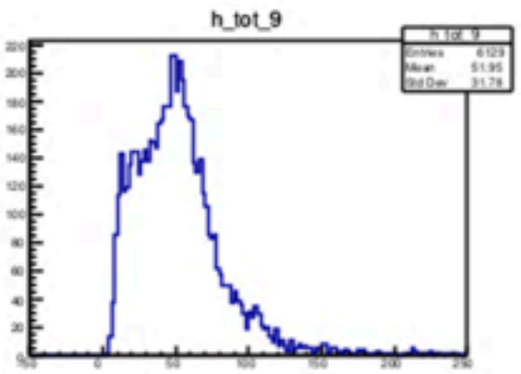
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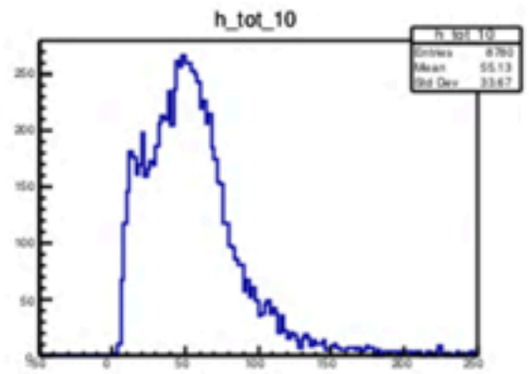
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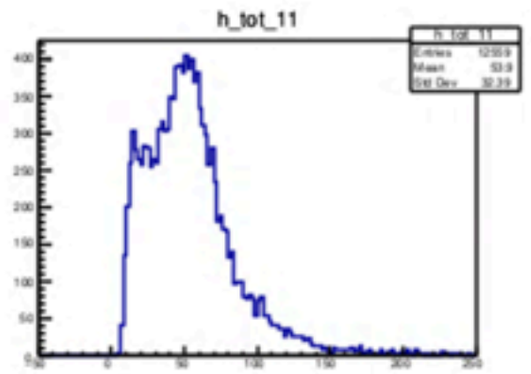
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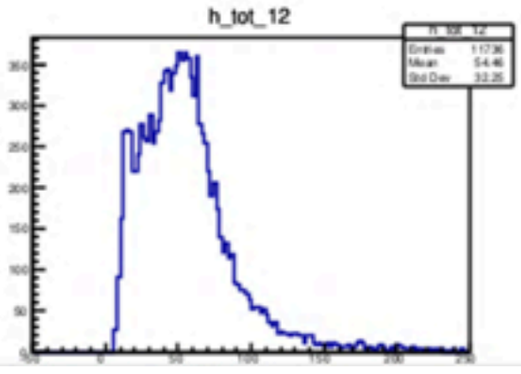
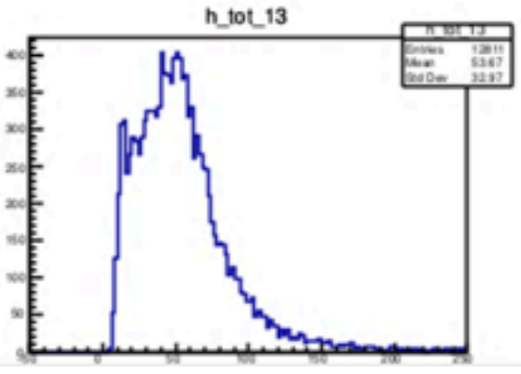
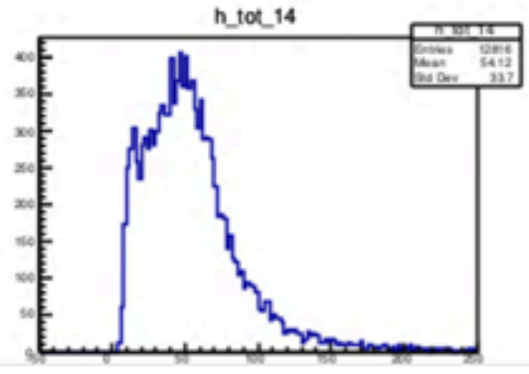
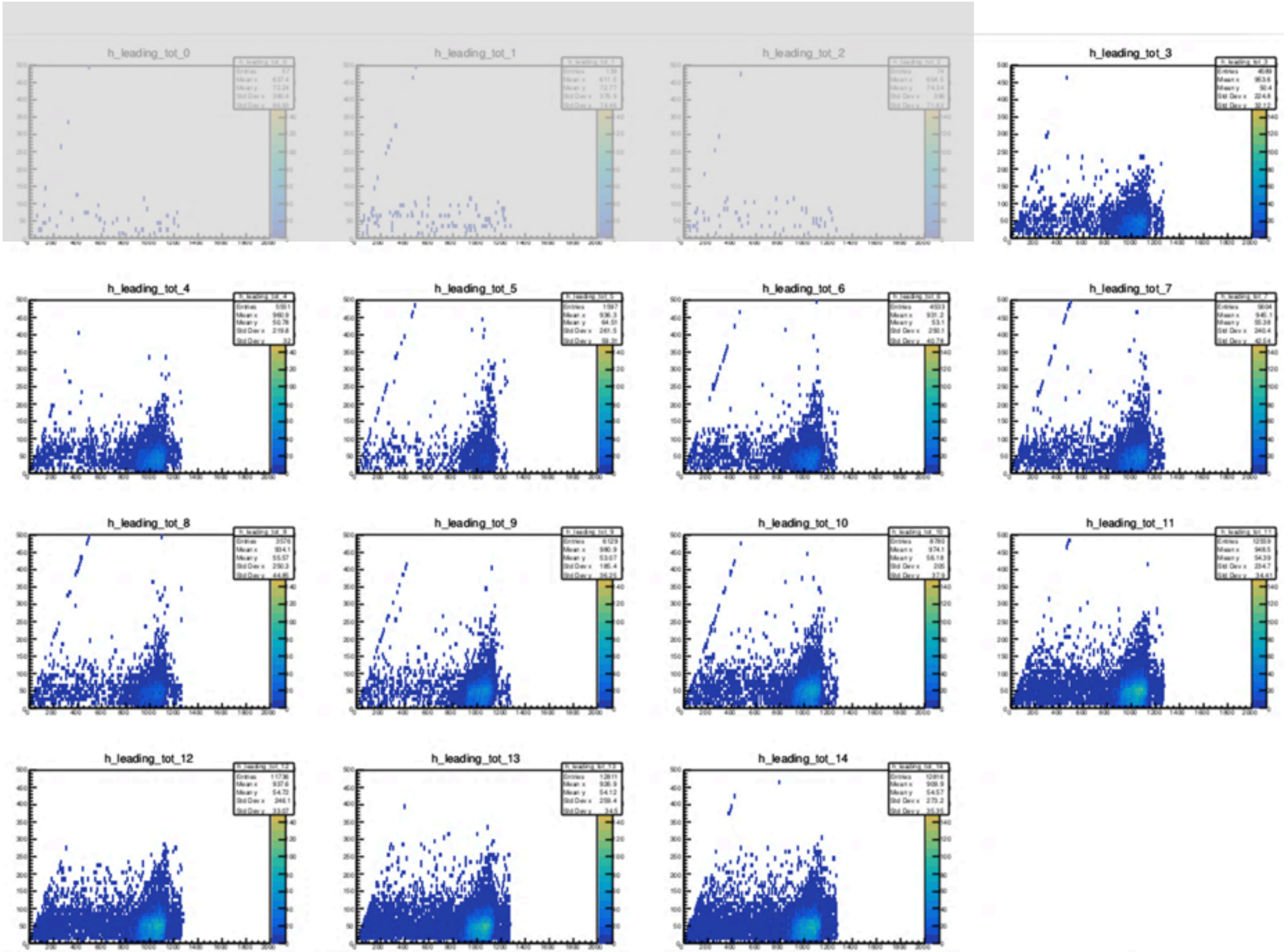

h_tot_12


h_tot_13

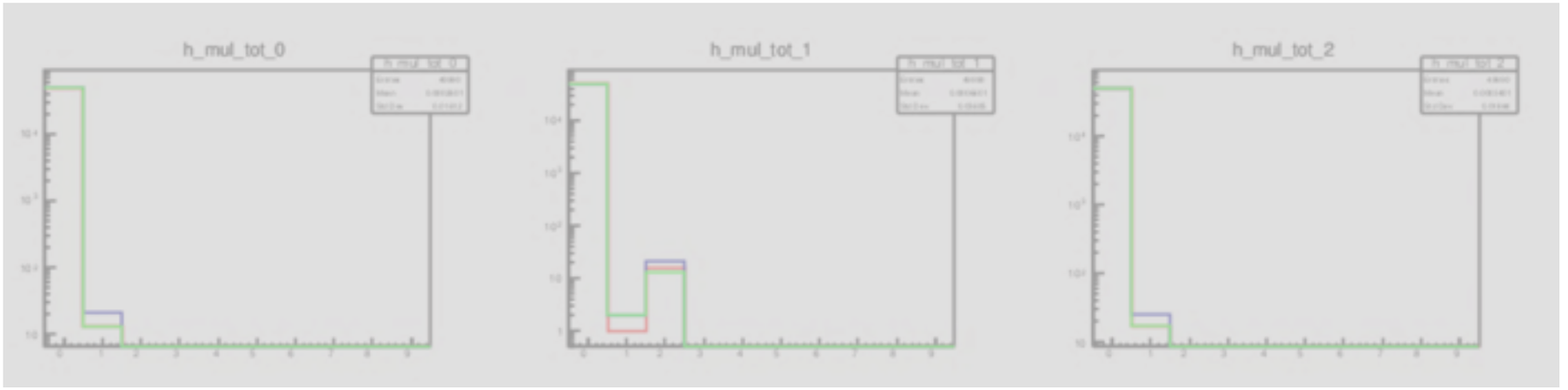

h_tot_14

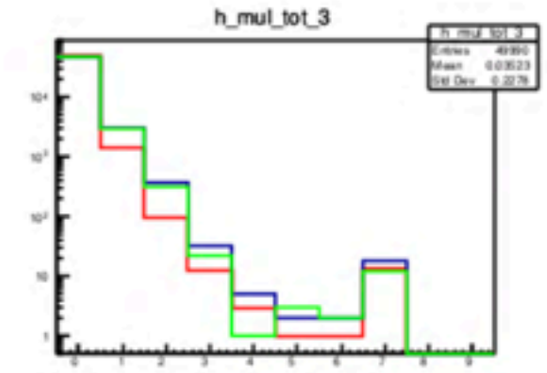
ToT vs Leading

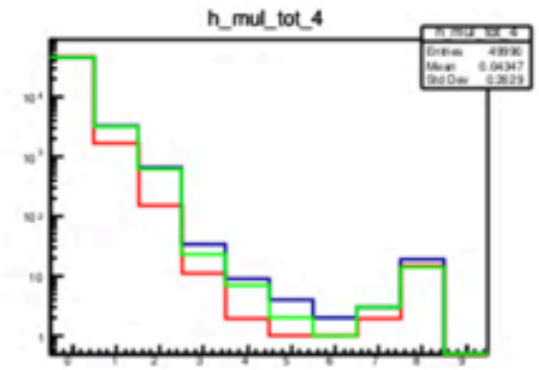


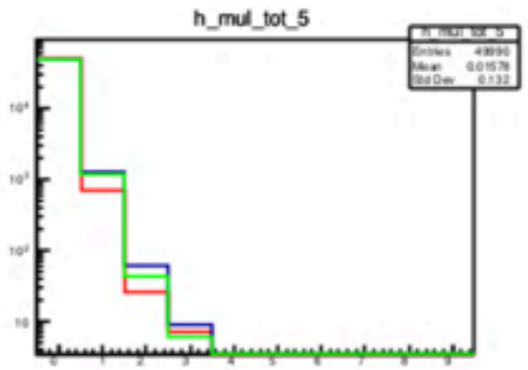
ToT vs Leading

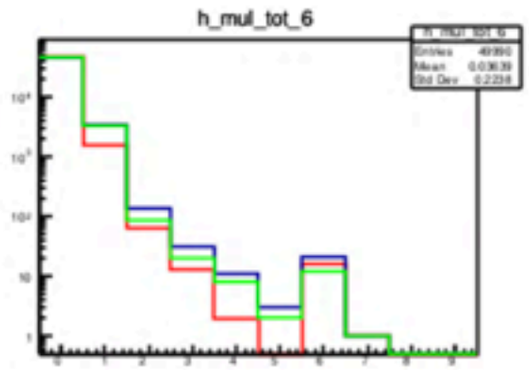
Blue : Raw, Red: ToT>50, Green: 700<leading<1200

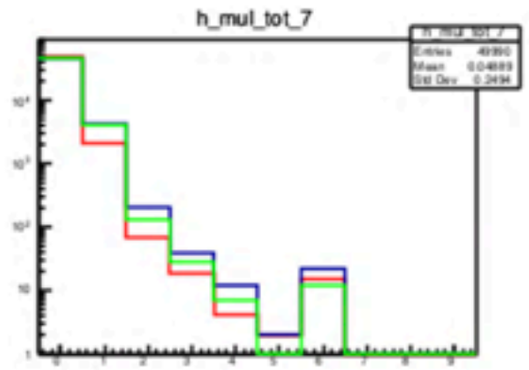


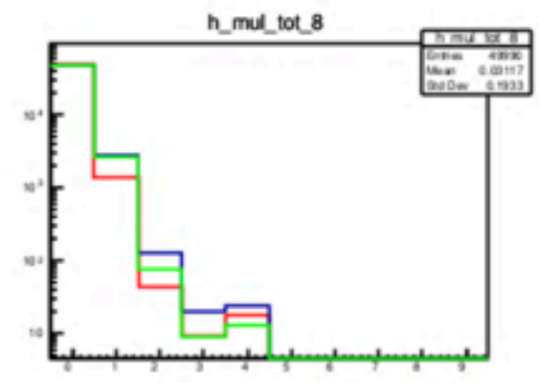


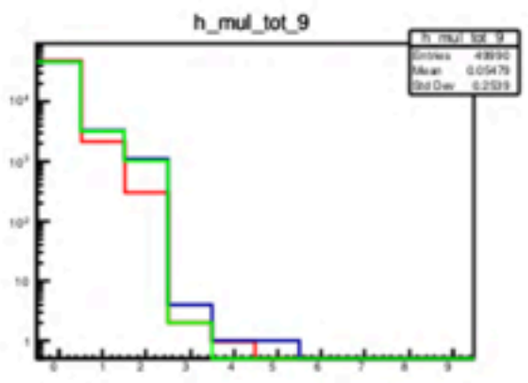


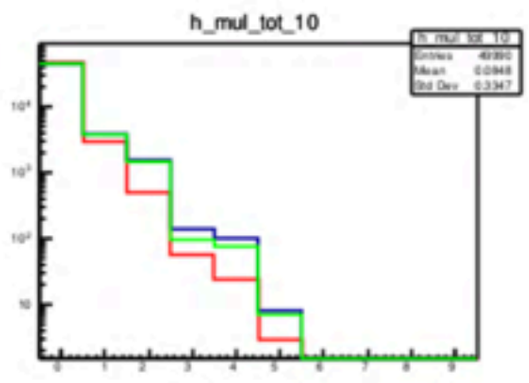


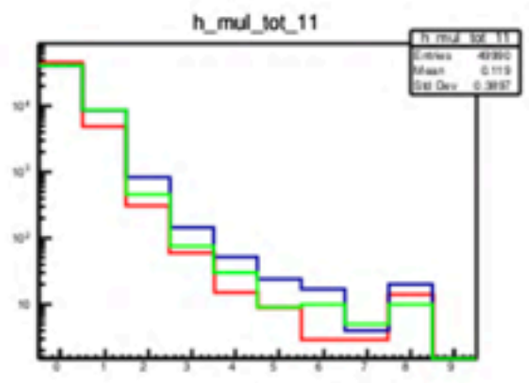


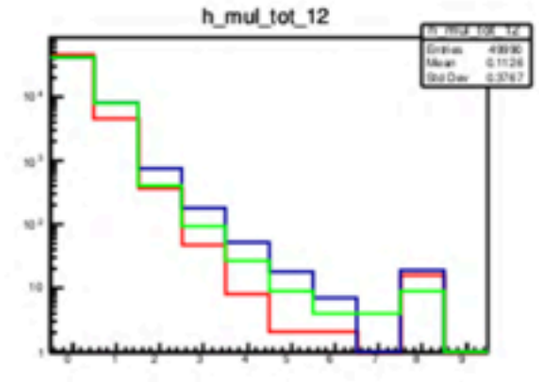


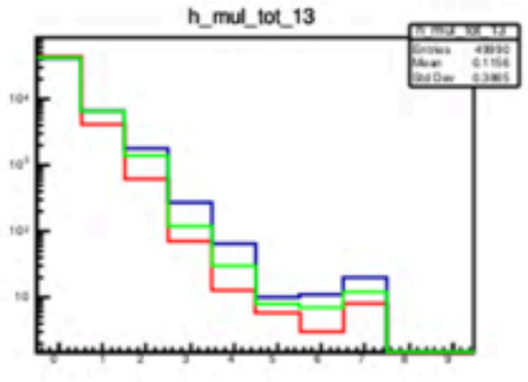


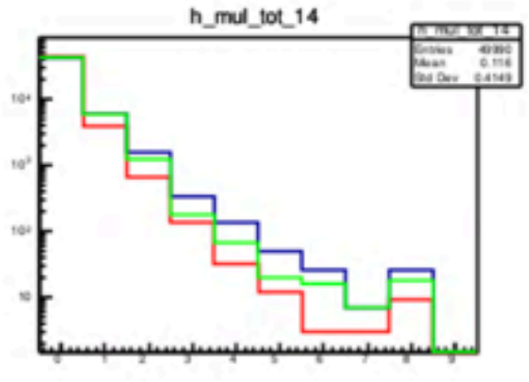












What’s the good events? I don’t know…

Event display code is been debagged now.

解析今日足掻く。

HV ２３５０Vにしてもう一度(90Srと)宇宙線。

SL1をどうにかする。