Weekly_MT_20250715

- E80-TC : QDC and TDC analysis
- E15-TC : Investigation of High Current Issue
- E80-CDC : Status
- ASAGI
- ToDo

“TC” = “Test Chamber”

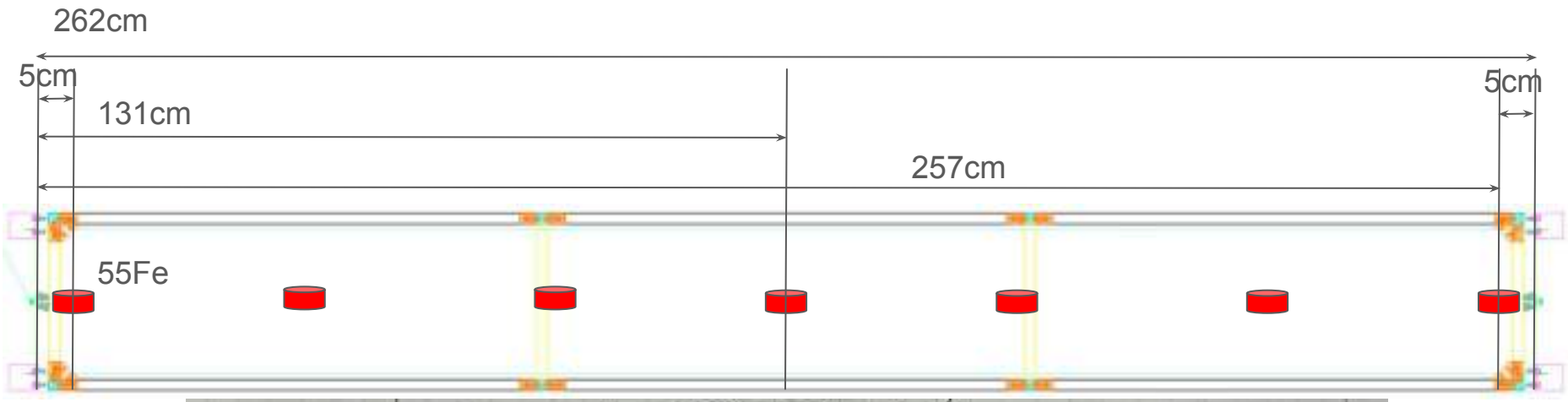
Yuto Kimura (Tohoku, D1)

E80-TC: Works until obon

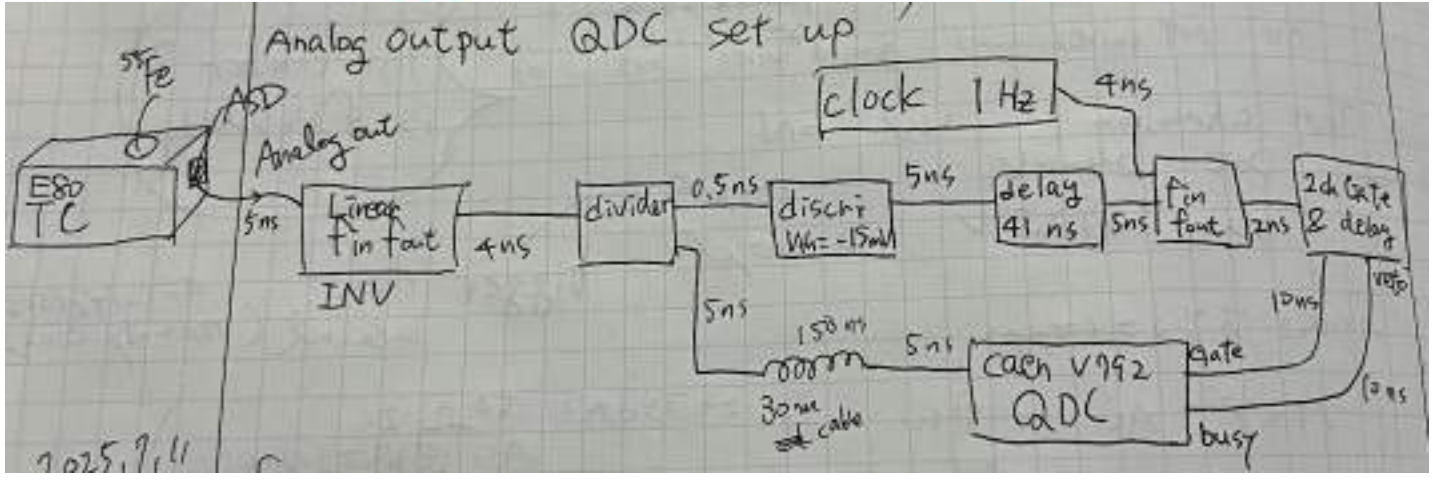
- **The total charge reaching the readout circuit** : QDC (55Fe)
  - **Raw** ← I've tried, but not taken the good data yet.
    It was very difficult (bad S/N, too small signals).
  - **Analog output (after ASD) with 55Fe**
    - Run summary is here (in GoogleDrive: knucl/E80/CDC_commissioning/gas_study/)
      https://docs.google.com/spreadsheets/d/1bPMTOXqNf5e4j0z5lOonKyGZfp3E6epB-0xUZRzt5G4/edit?gid=676465658#gid=676465658
    - Data is in "kekcc:/group/had/knucl/e15/detector_data/test_chmb/data_tc/qdc_2025Jul/"
  - **analog out with cosmic**
- **Efficiency and its position dependence**: TDC
  - **90Sr**
    - Data is in "kekcc:/group/had/knucl/e15/detector_data/test_chmb/data_tc/tdc_2025Jul/"
  - **Cosmic**

E15-TCでも厳しかった。

E80-TC: QDC with using 50Fe



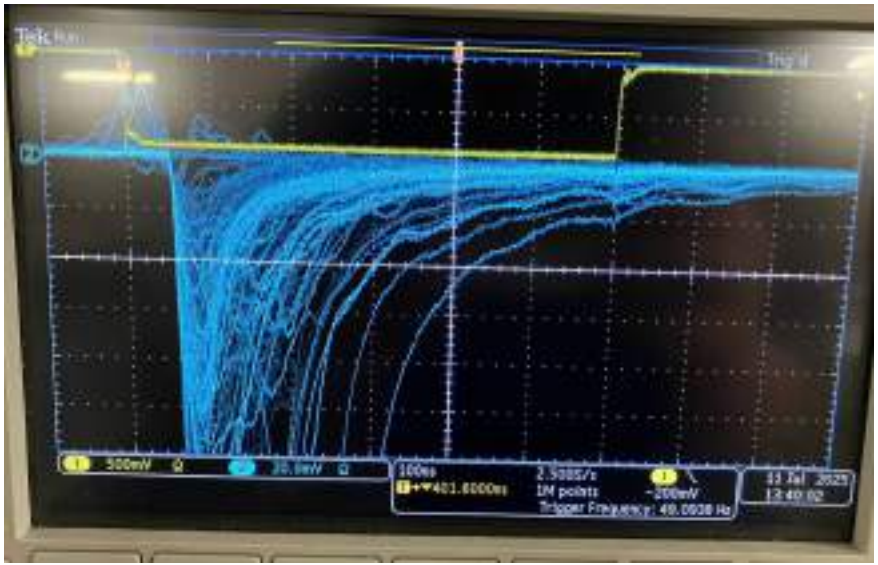
signal-side

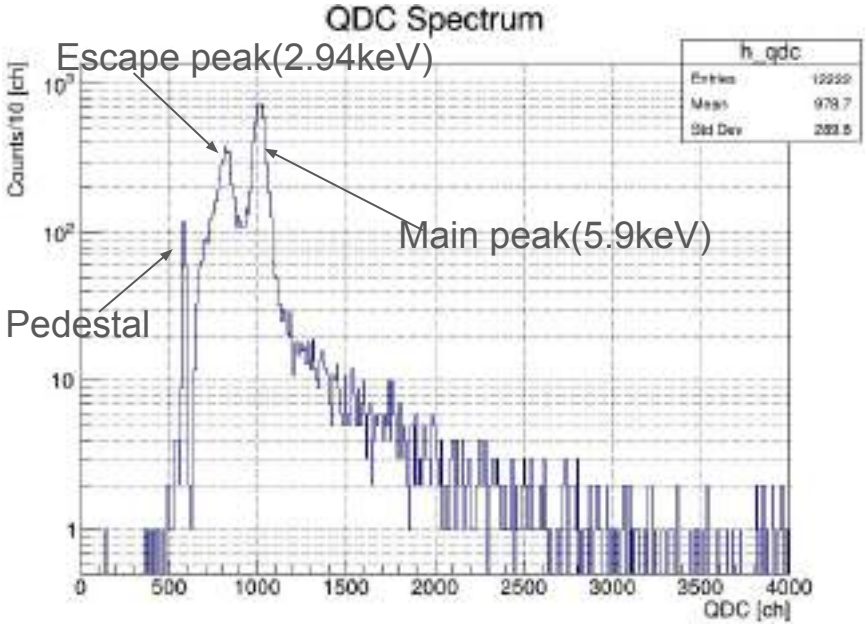


HV-side

E80-TC: QDC

Typical spectrum; run020, pos=43cm, -2550V, trig = self + clock1Hz



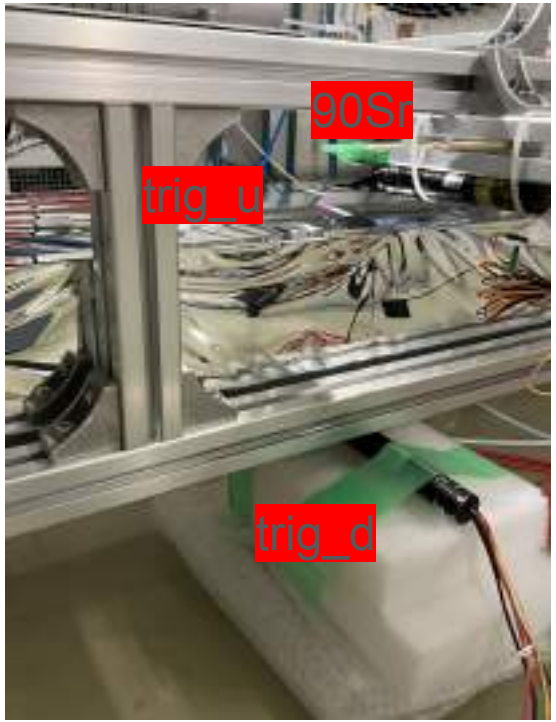


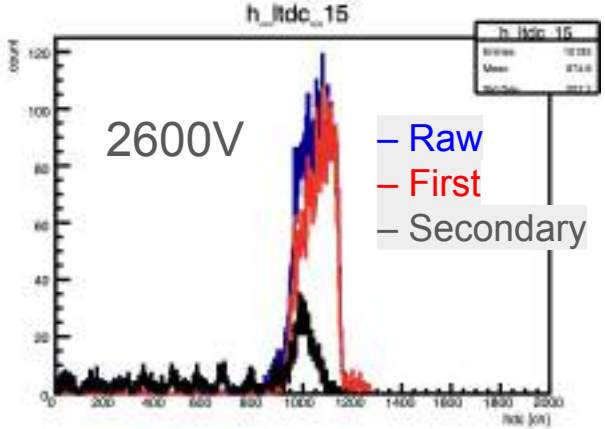
結果まとめられ次第Discoで共有します（目安今週中）。

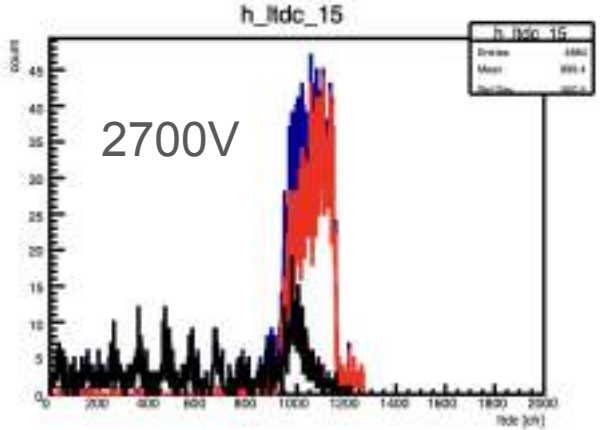
E80-TC: TDC ver.0

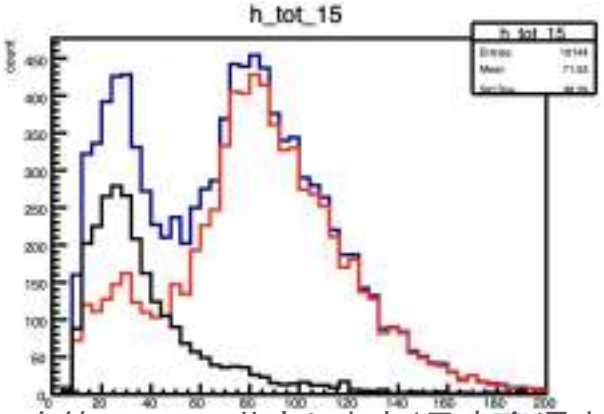
2025/07/14, Ar-C2H6(50:50), 90Sr, pos= center

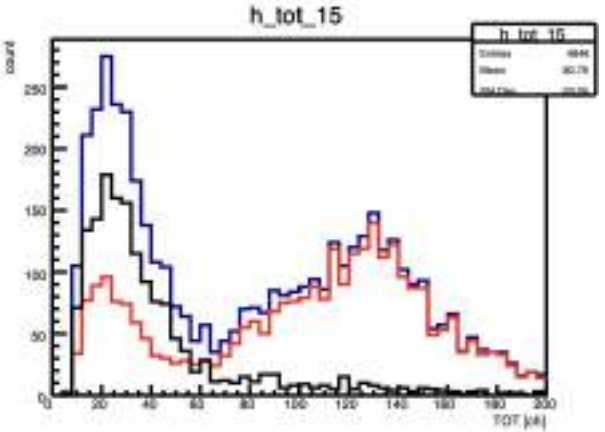
Looks good.
But, higher current than e15-tc,
so I couldn't check 2800V.











結果まとめられ次第 Discoで共有します(目安今週中)。

E80-TC: TDC ver.0

2025/07/14, Ar-C2H6(50:50), 90Sr, pos= center

Looks good.
But, higher current than e15-tc,
so I couldn’t check 2800V.

E15-TC: HV-Current status

- どっかのワイヤーがだめ?
- LowPassがだめ?

pot_all, gua_all

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.44 uA	999.5 V	On
02....	test1gua	10.00 uA	1000.0 V	0.20 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

pot_HV-right, gua_all

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.18 uA	999.8 V	On
02....	test1gua	10.00 uA	1000.0 V	0.22 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

pot_HV-left, gua_all

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.26 uA	999.8 V	On
02....	test1gua	10.00 uA	1000.0 V	0.22 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

特別悪いワイヤーは無い確率が高い。
ほぼ一律に全て悪いか、その他の原因。

E15-TC: HV-Current status

- どっかのワイヤーがだめ?
- LowPassがだめ?

pot_all, gua_all, perfect LowPass

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.44 uA	999.5 V	On
02....	test1gua	10.00 uA	1000.0 V	0.20 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

pot_all, gua_all_Ccut

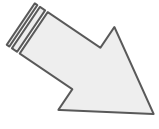
	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.38 uA	999.5 V	On
02....	test1gua	10.00 uA	1000.0 V	0.16 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

pot_all_Ccut, gua_all_Ccut, first time

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.34 uA	999.5 V	On
02....	test1gua	10.00 uA	1000.0 V	0.14 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off

pot_all_Ccut, gua_all_Ccut, second time

	Name	I0Set	V0Set	IMon	VMon	Pw
02....	test1pot	10.00 uA	1000.0 V	0.34 uA	999.5 V	On
02....	test1gua	10.00 uA	1000.0 V	0.14 uA	999.8 V	On
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off



少なからずLowPass回路の影響はある。

E15-TC: HV-Current status

pot_all_Ccut, gua_all_Ccut, operation voltage

	Name	I0Set	V0Set	IMon	VMon	Pw	S
02....	test1pot	10.00 uA	2750.0 V	2.70 uA	2749.8 V	On	
02....	test1gua	10.00 uA	1500.0 V	0.22 uA	1499.8 V	On	
02....	test2pot	10.00 uA	2500.0 V	0.00 uA	0.0 V	Off	
02....	test2gua	10.00 uA	1508.0 V	0.00 uA	0.0 V	Off	

この電流値にしてはほとんどふらつかない(~ +- 0.04 uA)。不安定な時は+- 2 uAとかでふらつく。

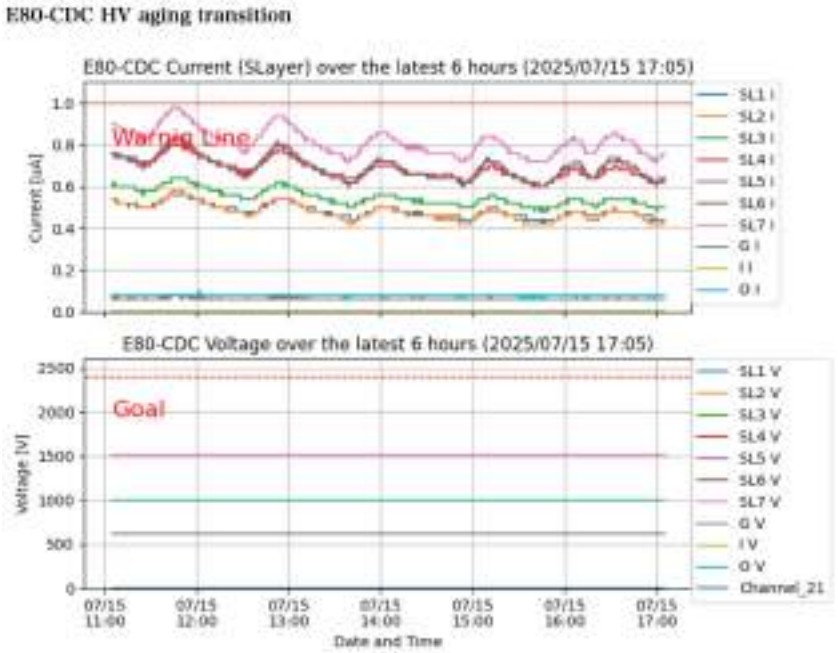
⇒ しっかりとした電流 → SHVやLowPassなどの外部要因ではない(気がする)。

⇒ シリコンオイルの蒸気でワイヤーがだめになった？

とりあえず、放置してみる。

E80-CDC: Status

2025/7/10 11:13 HV→ON, pot -1000V, gua -623V, Inner -1000V, Outer -1000V
2025/7/11 19:51 HV→Off
2025/7/14　9:38 HV→ON, pot -1500V, gua -623V, Inner -1000V, Outer -1000V



ToDo

- E15-TC: Investigation of High Current Issue
  - カラス。
- E80-TC: analysis of QDC and TDC with e80-tc（今週中）
  - キャパシタ外してみる。
- ASAGI: Summary of past materials (今日明日) → study plan（今週中）
  -
- JPS abst(detector session), ~ Aug. 12
- Summary of the gas study: waiting for comments
  - ver. 0 → shared in Discord

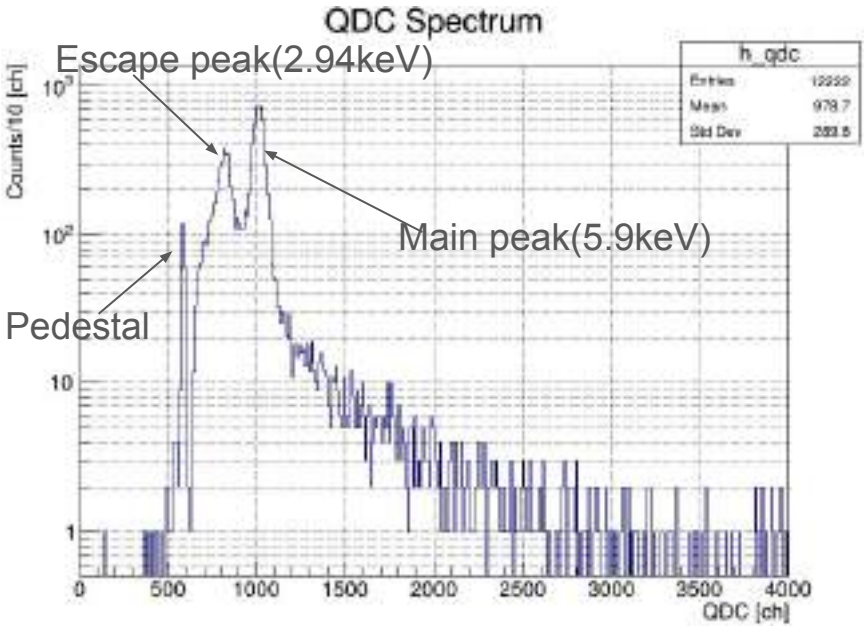
Discoで共有します。

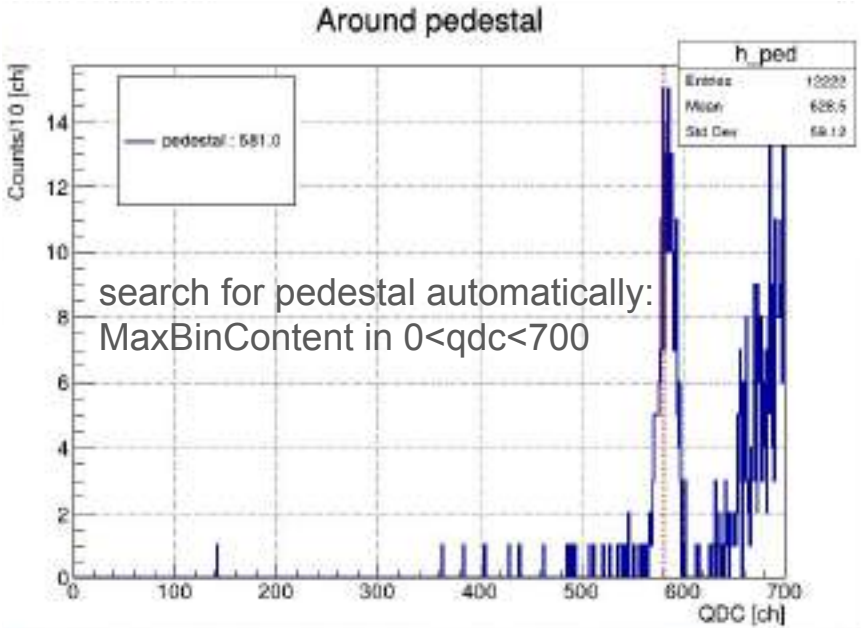
Schedule 7/16(Wed) ~7/18(Fri): intensive course@Sendai
8/4(Mon) ~8/8(Fri) : intensive course@Sendai

Back up

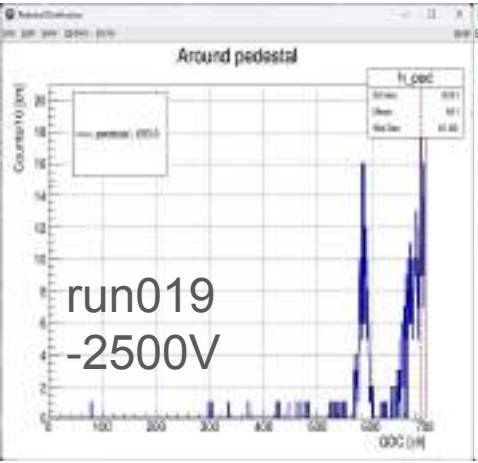
E80-TC: QDC, Pedestal

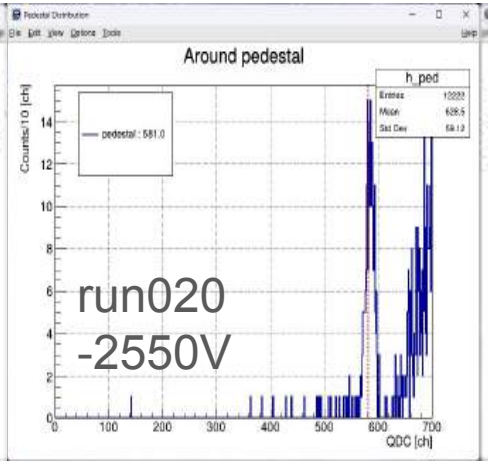
Typical spectrum; run020, pos=43cm, -2550V
*** There was entries below the pedestal due to small Vth (~15mV)

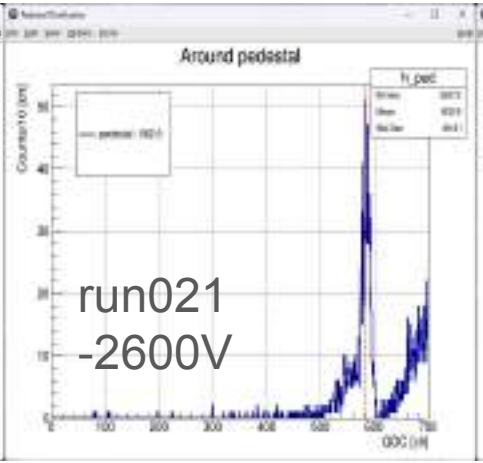


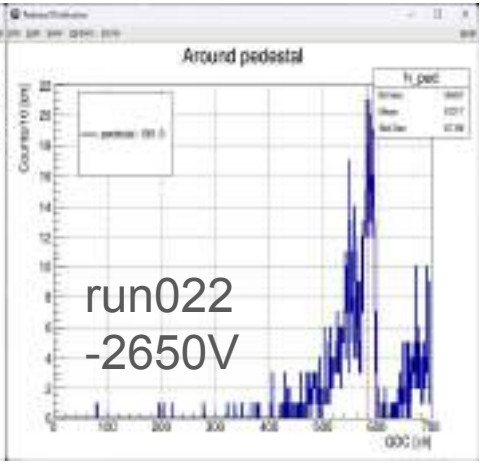


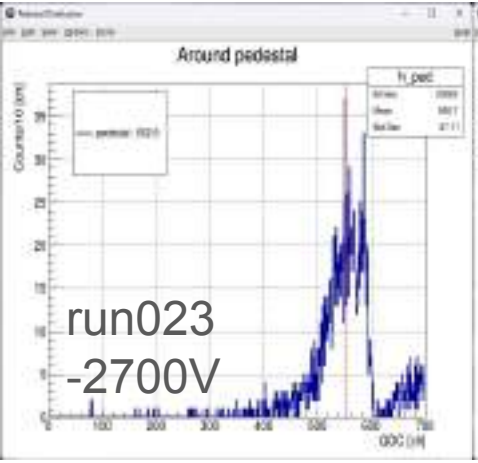
E80-TC: QDC, Pedestal

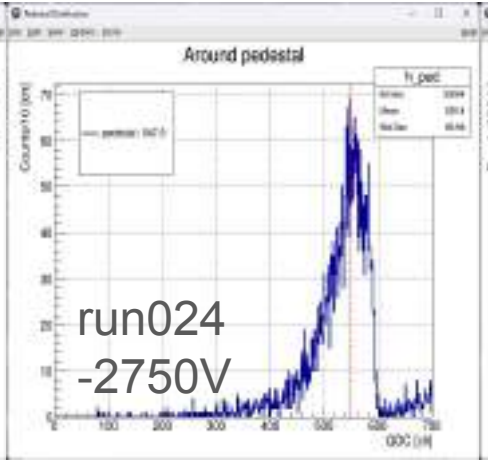


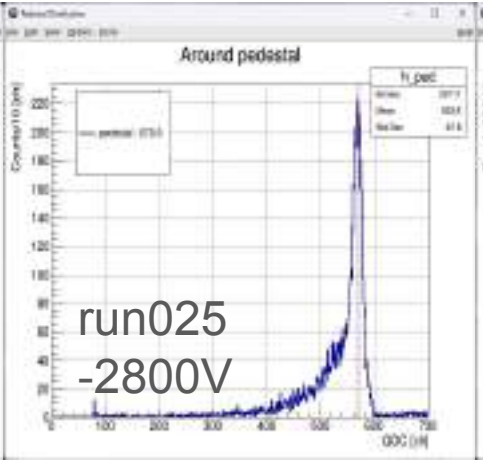


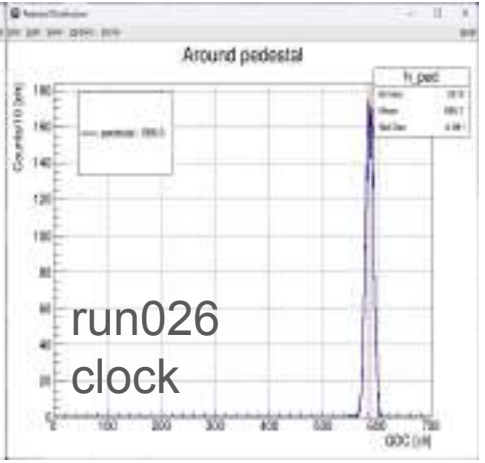






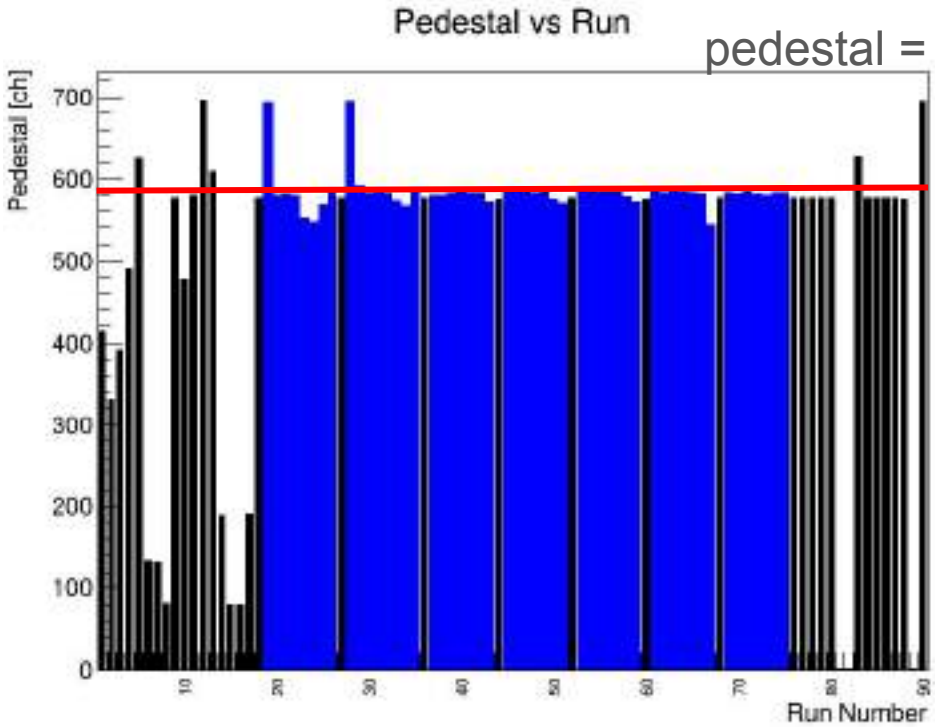






E80-TC: QDC, Pedestal

Runs highlighted in blue are used for the analysis.

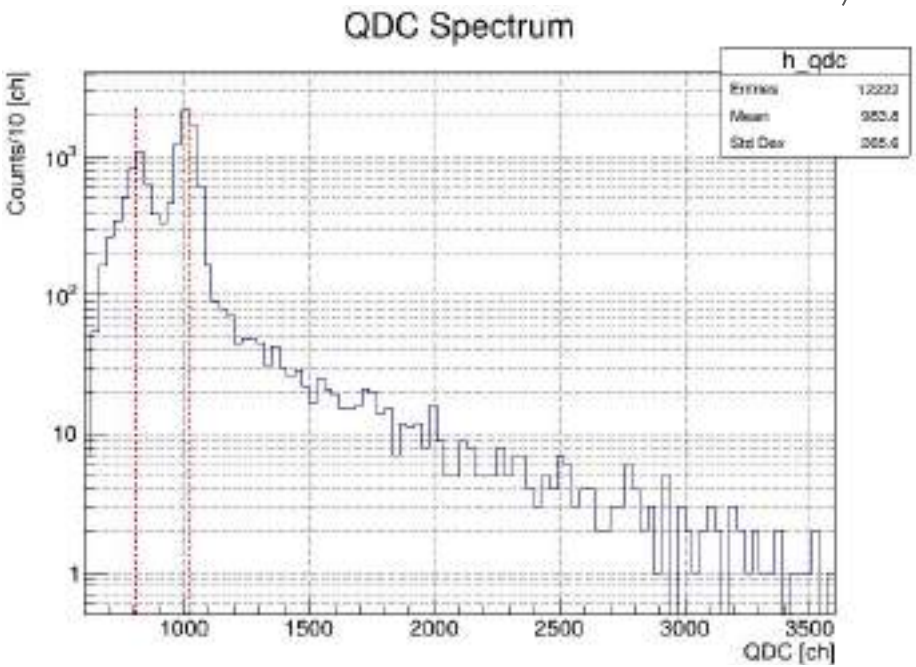


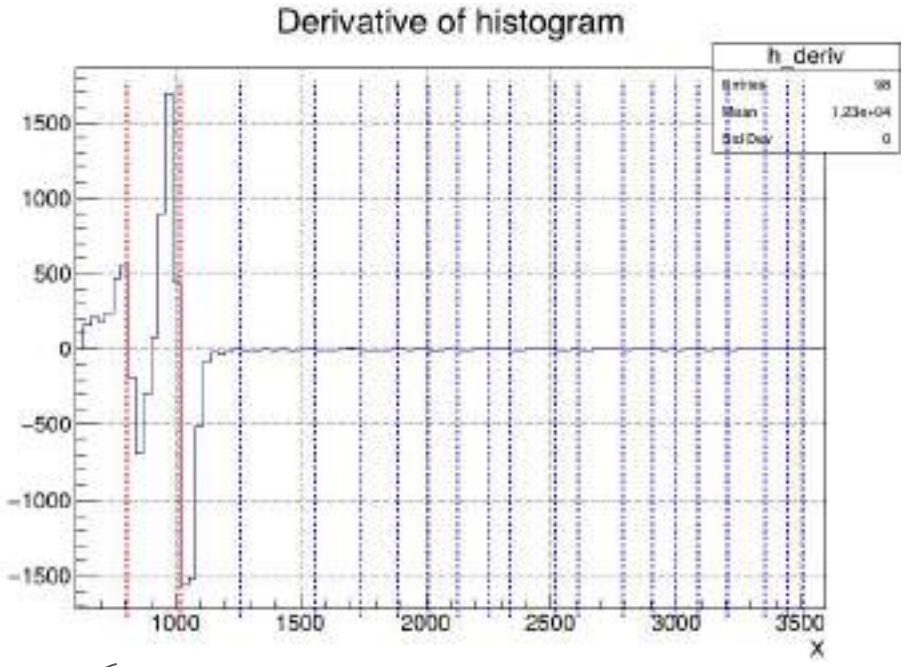
pedestal = 586 [ch] (for all runs)

E80-TC: QDC, Two peaks search

Typical spectrum; run020, pos=43cm, -2550V

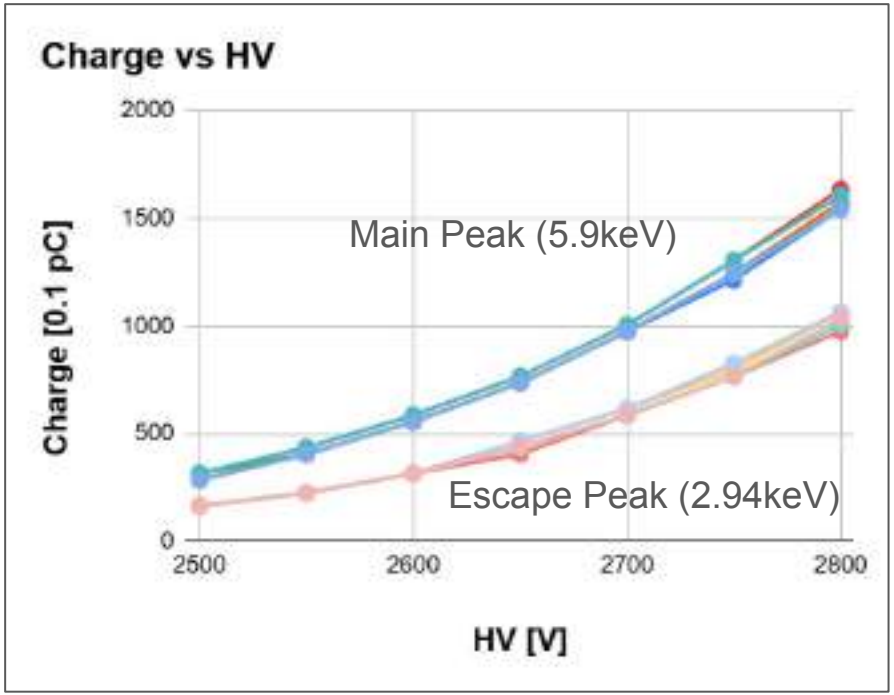
difference

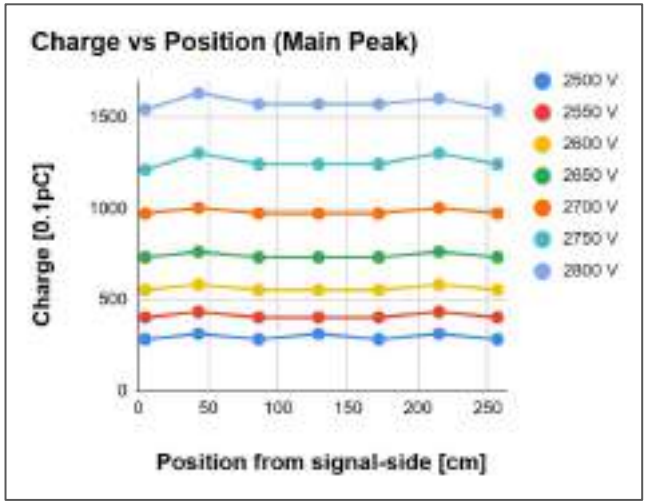


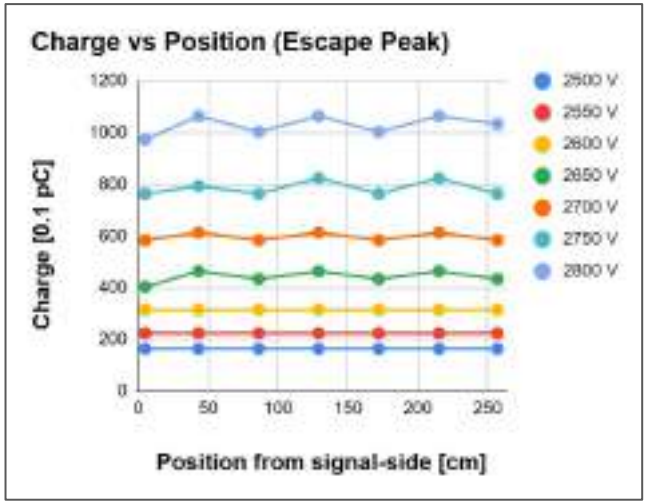


extract two peaks

E80-TC: QDC, Two peaks







E80-TC: QDC, Two peaks

main

position \ HV	2500	2550	2600	2650	2700	2750	2800
5	284	404	554	734	974	1214	1544
43	314	434	584	764	1004	1304	1634
86	284	404	554	734	974	1244	1574
129	314	404	554	734	974	1244	1574
172	284	404	554	734	974	1244	1574
215	314	434	584	764	1004	1304	1604
257	284	404	554	734	974	1244	1544

escape

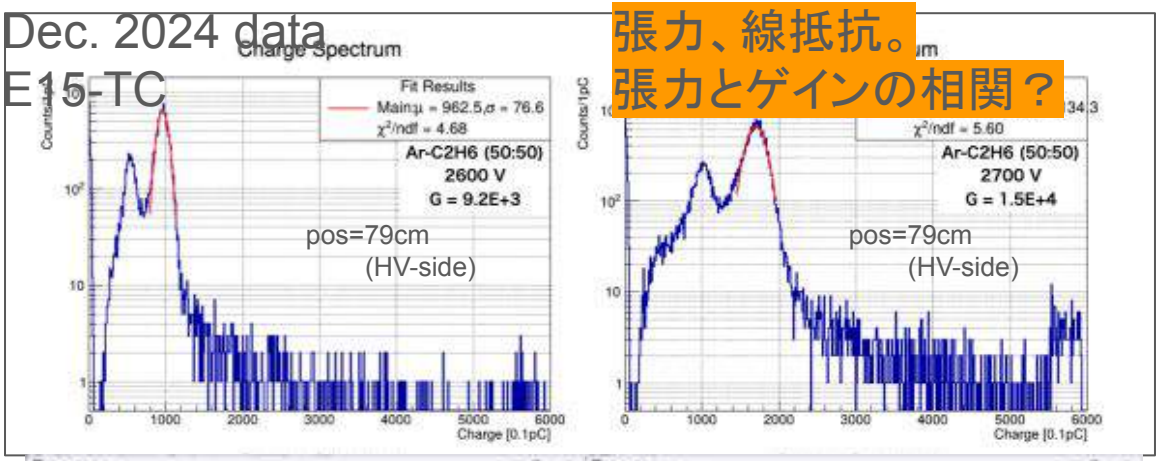
position \ HV	2500	2550	2600	2650	2700	2750	2800
5	164	224	314	404	584	764	974
43	164	224	314	464	614	794	1064
86	164	224	314	434	584	764	1004
129	164	224	314	464	614	824	1064
172	164	224	314	434	584	764	1004
215	164	224	314	464	614	824	1064
257	164	224	314	434	584	764	1034

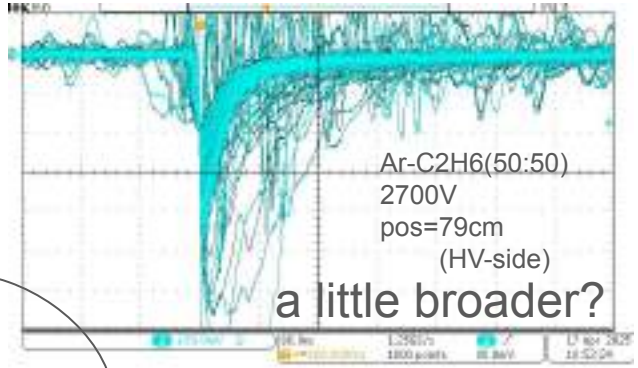
c.f.) Comparison with E15-TC

Sorry for inconsiderate range

Dec. 2024 data
E15-TC

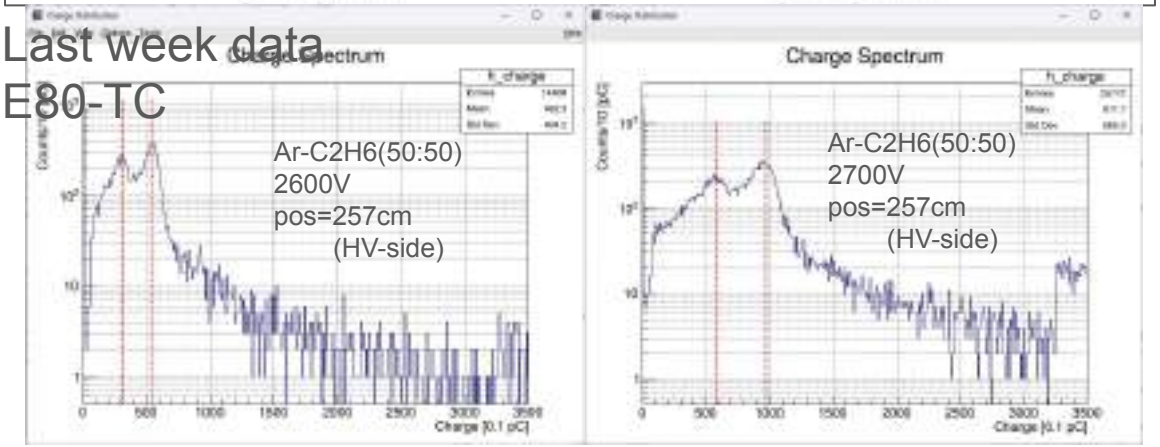
張力、線抵抗。
張力とゲインの相関？

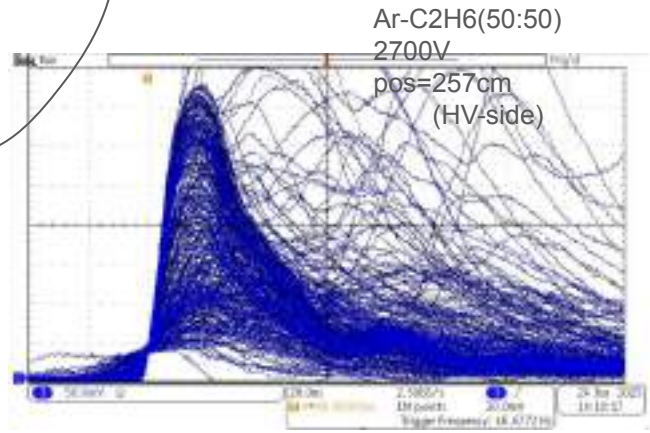




~1.6 times!?

Last week data
E80-TC

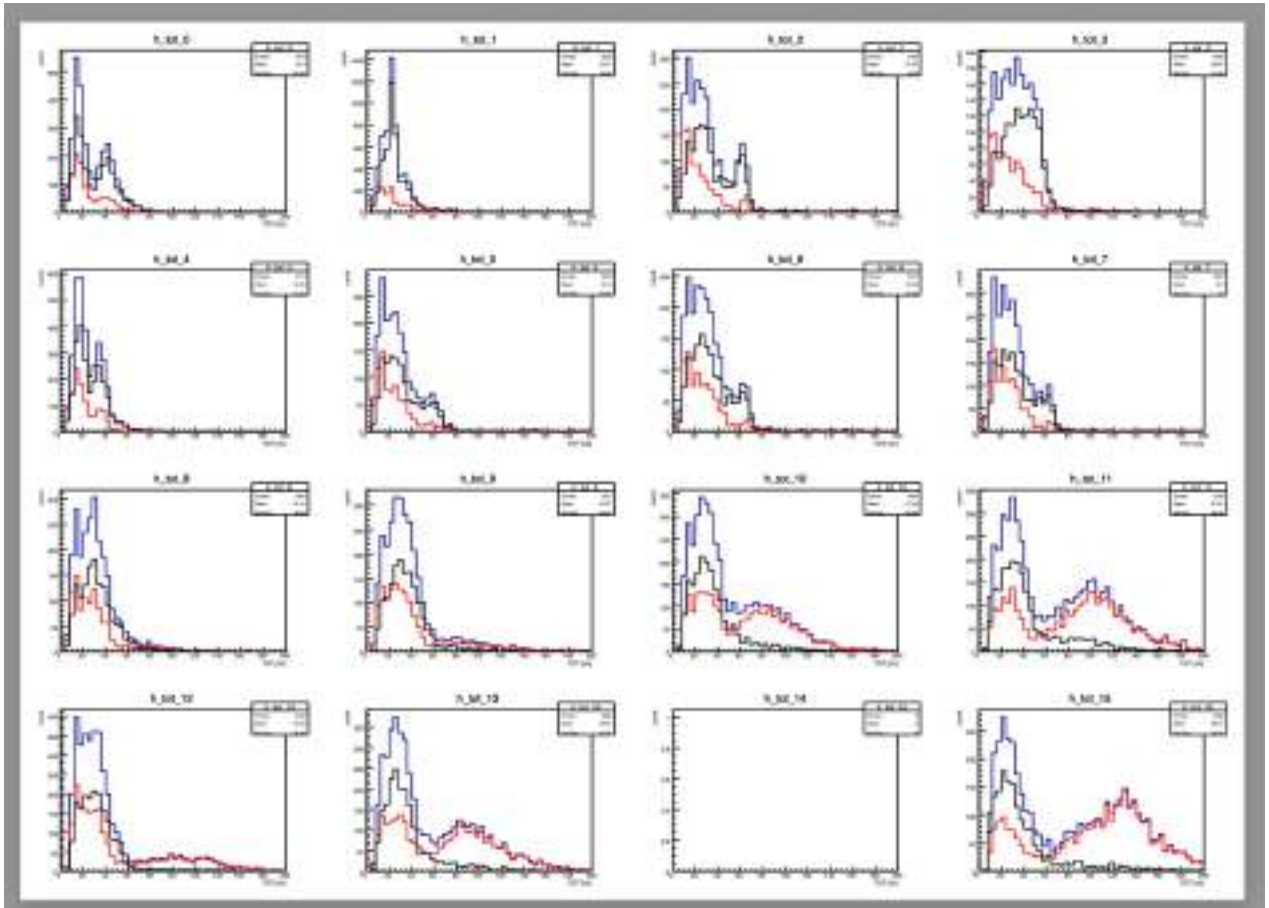




Anyway, we need a re-measurement with E15-TC.

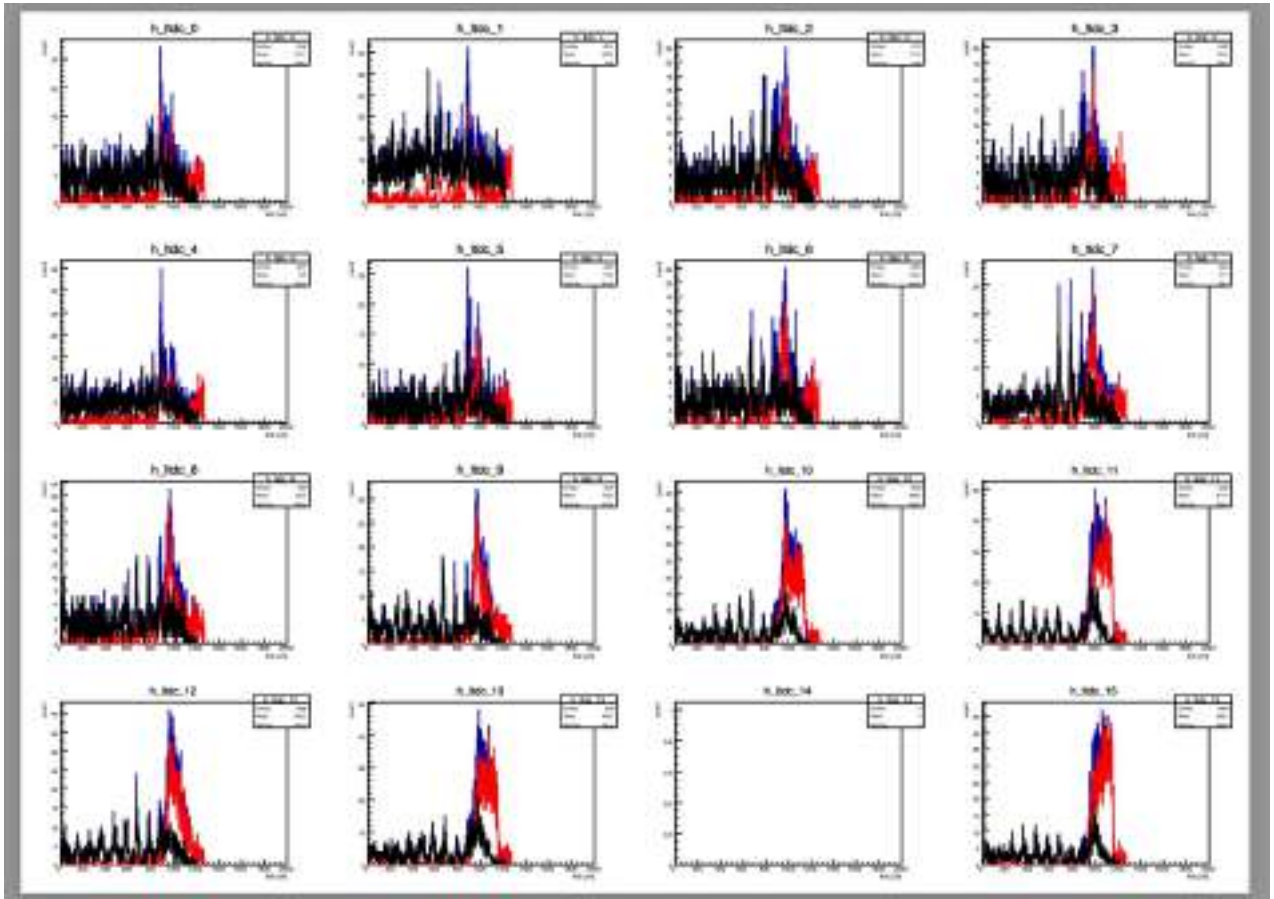
E80-TC: TDC ver.0

2025/07/14, Ar-C2H6(50:50), 90Sr, pos= center



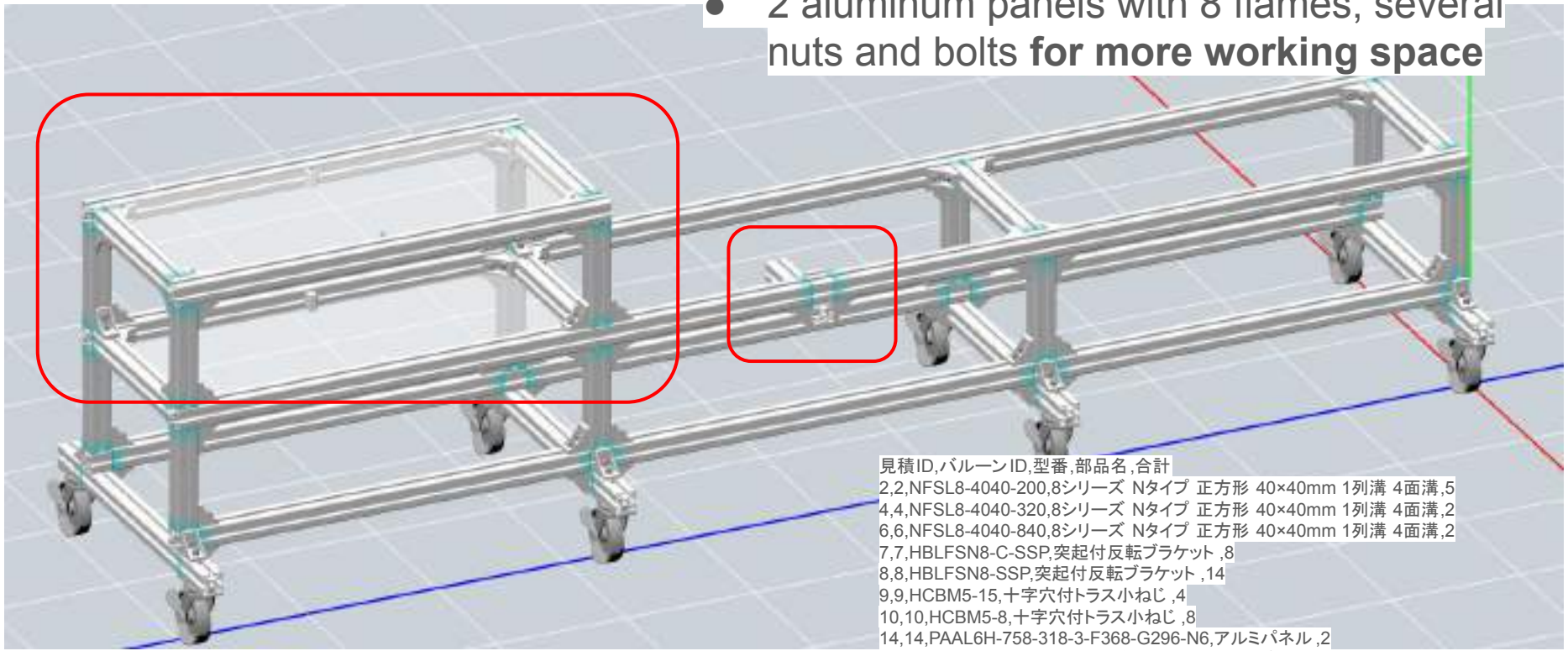
E80-TC: TDC ver.0

2025/07/14, Ar-C2H6(50:50), 90Sr, pos= center



E80-TC: Additional flames and panels I want

- 1 flame **for fixing a trigger scinti**
- 2 aluminum panels with 8 flames, several nuts and bolts **for more working space**



見積ID,バルーンID,型番,部品名,合計
2,2,NFSL8-4040-200,8シリーズ Nタイプ 正方形 40×40mm 1列溝 4面溝,5
4,4,NFSL8-4040-320,8シリーズ Nタイプ 正方形 40×40mm 1列溝 4面溝,2
6,6,NFSL8-4040-840,8シリーズ Nタイプ 正方形 40×40mm 1列溝 4面溝,2
7,7,HBLFSN8-C-SSP,突起付反転ブラケット ,8
8,8,HBLFSN8-SSP,突起付反転ブラケット ,14
9,9,HCBM5-15,十字穴付トラス小ねじ ,4
10,10,HCBM5-8,十字穴付トラス小ねじ ,8
14,14,PAAL6H-758-318-3-F368-G296-N6,アルミパネル ,2
15,15,HCBR8,パネルサポートブラケット　樹脂タイプ ,4

E80-TC: Current situation

messed up…