sPHENIX INTT - Weekly Report

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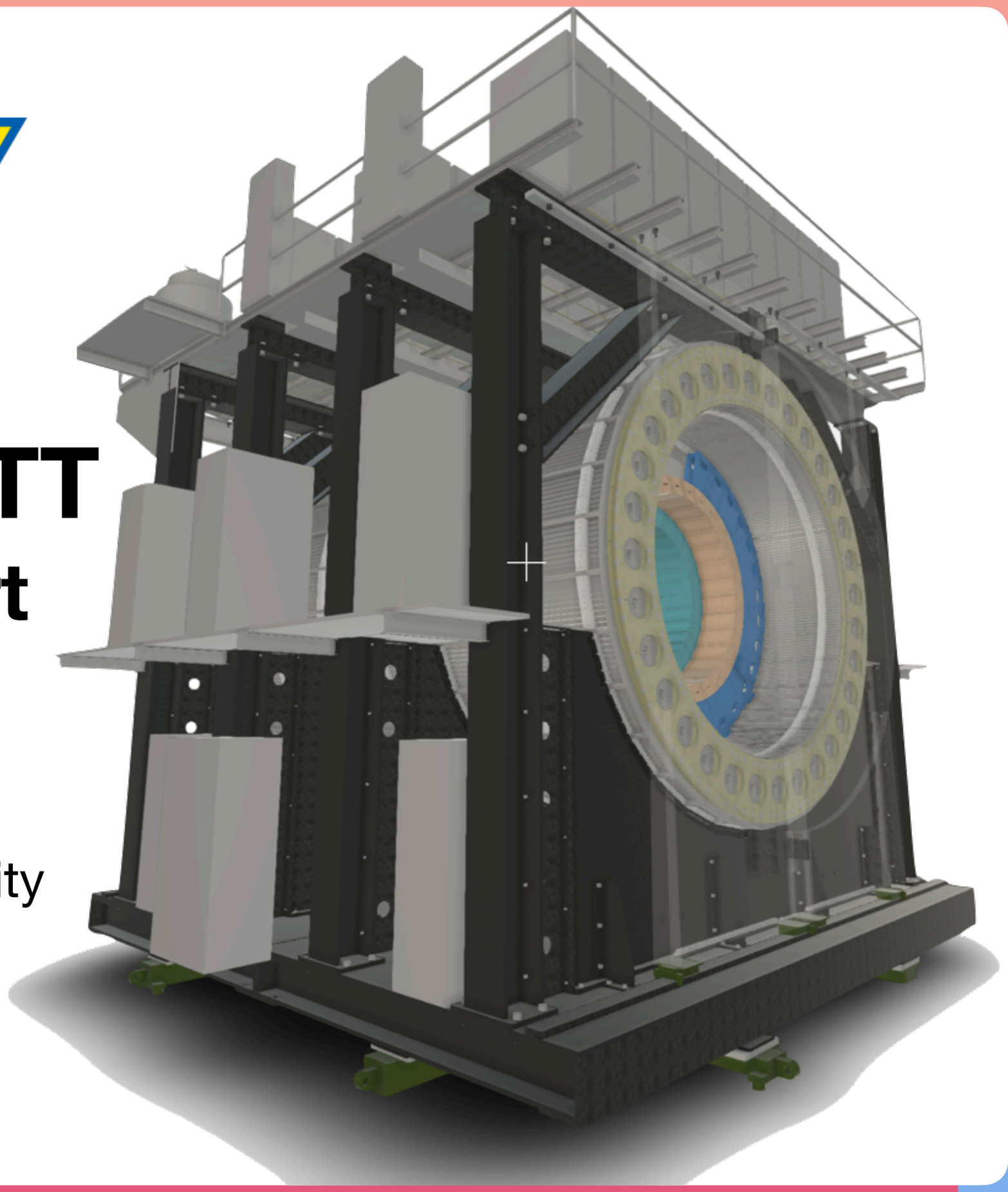
Chia-Ming Kuo

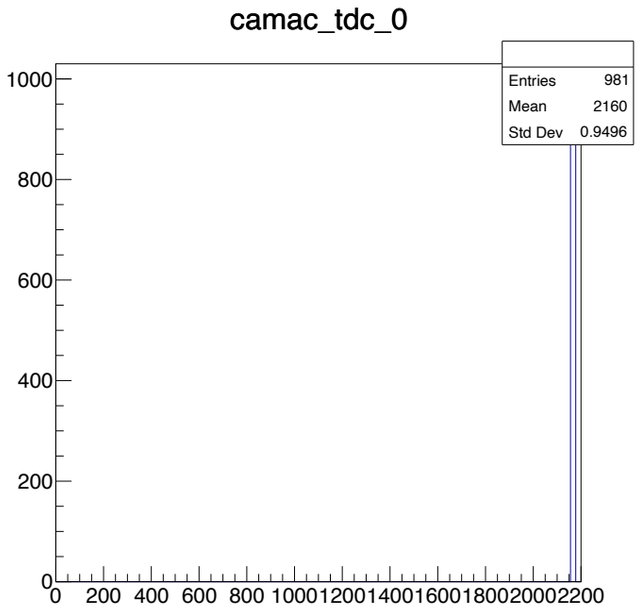
National Central University

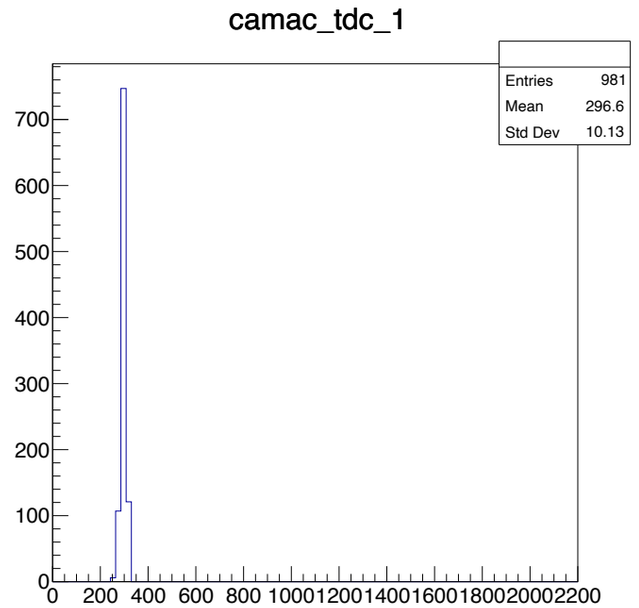
2021/12/3

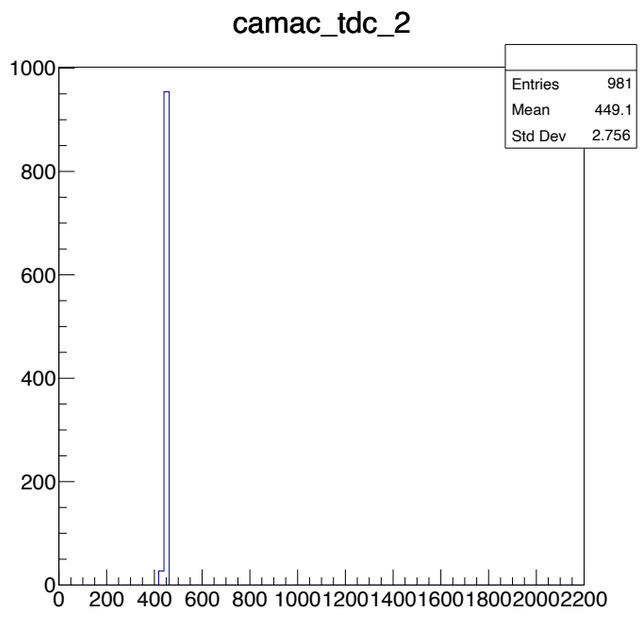


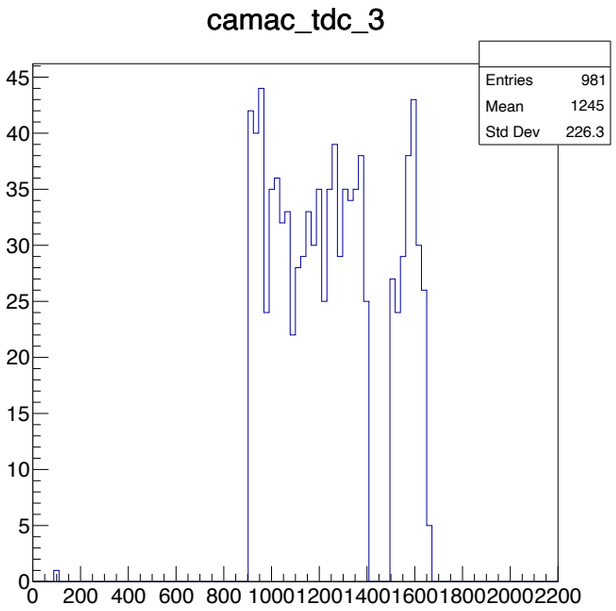
File name : NWU_fphx_raw_20211129-1747_0.root

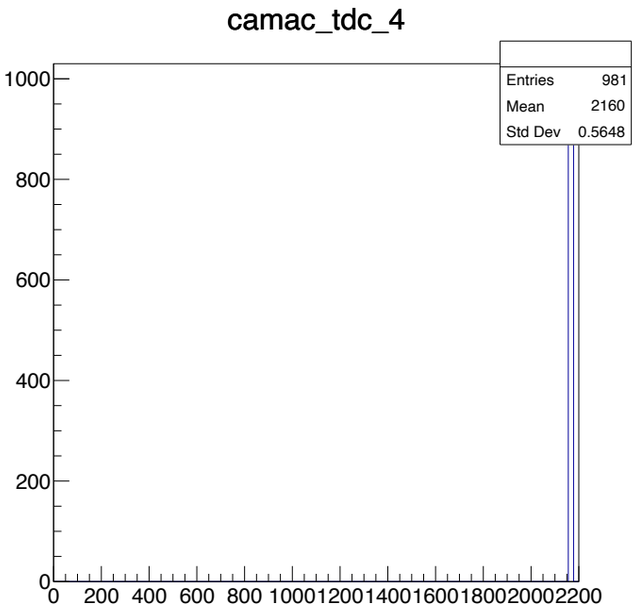
DSE ratio : 702/981 = 71.5%

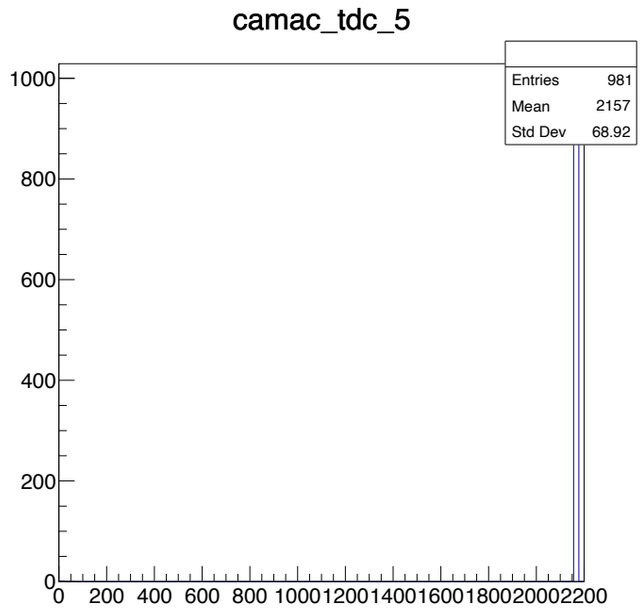






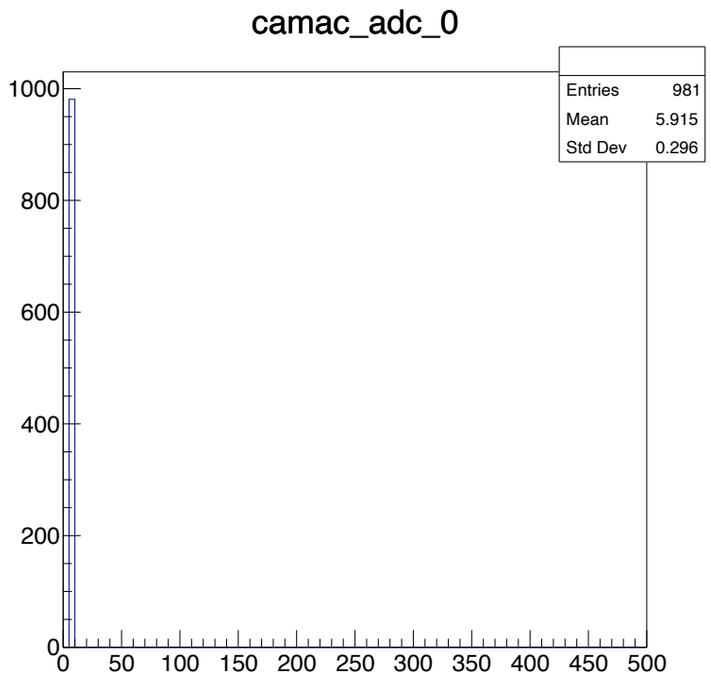


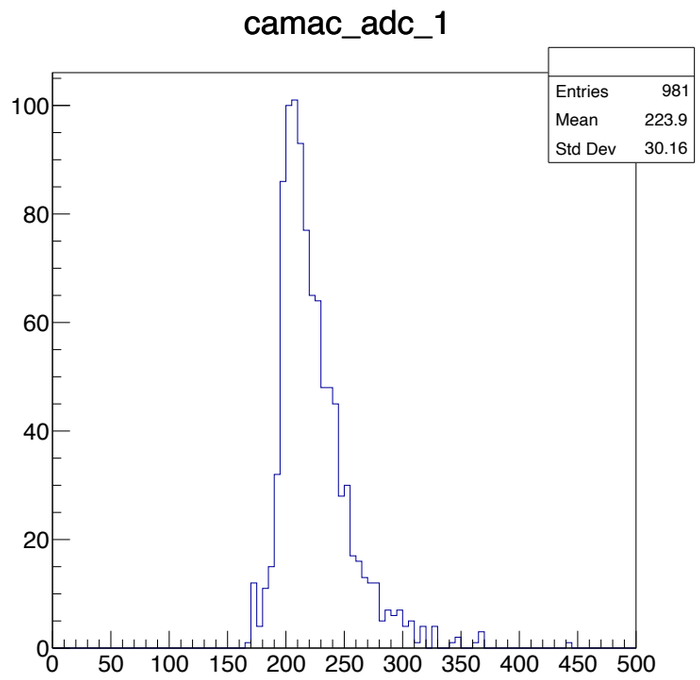


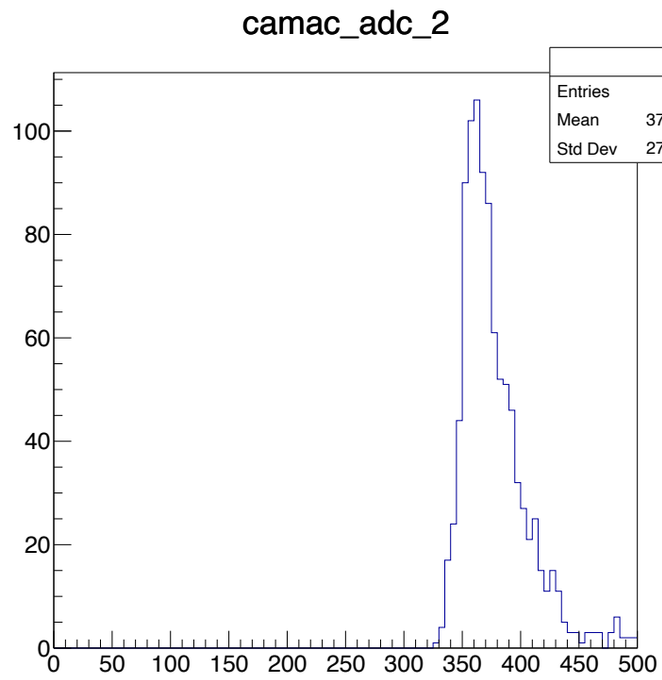


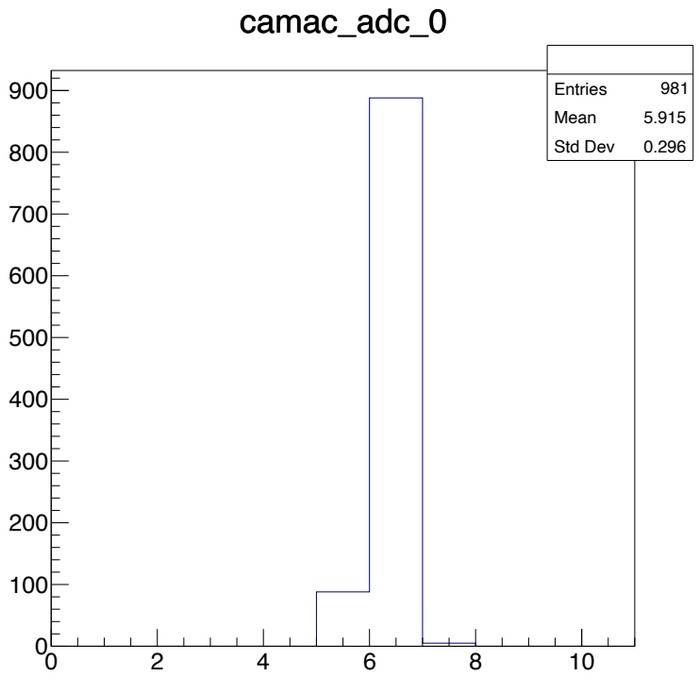
All of the camac_tdc5 : 2158 ~ 2161

File name : NWU_fphx_raw_20211129-1747_0.root





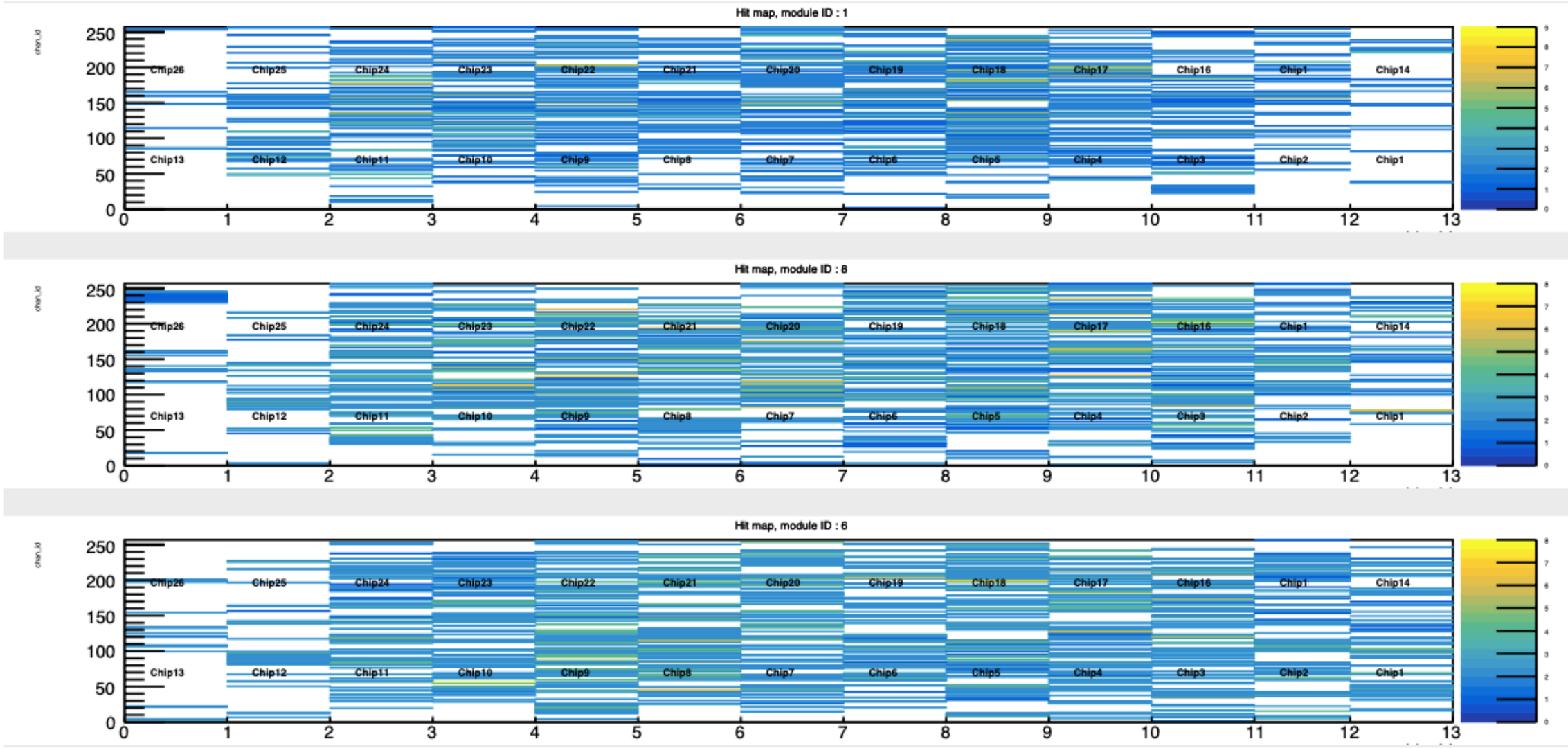




All of the camac_adc0 : 5 ~ 7

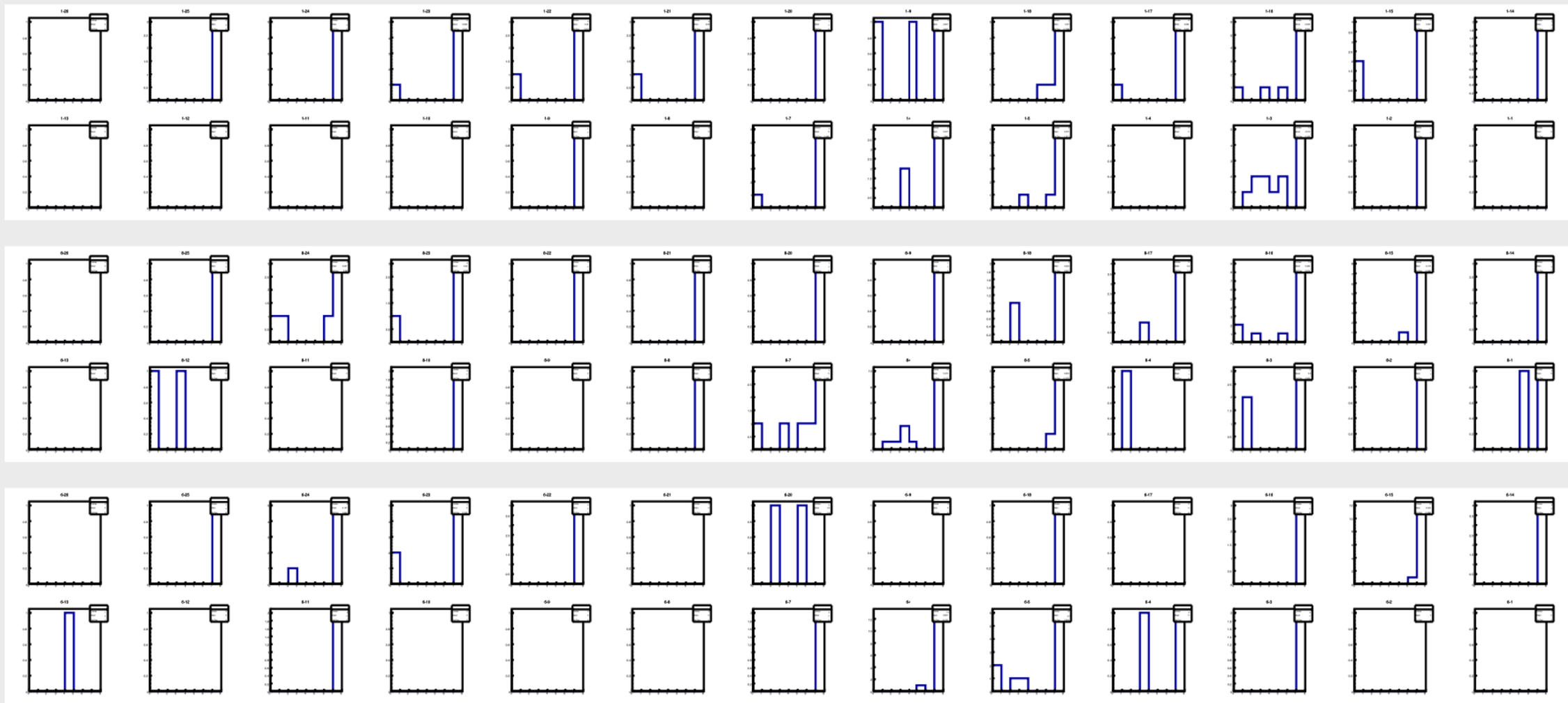
File name : NWU_fphx_raw_20211129-1747_0.root

Hit map
From “tree” (not tree_both), not preselection



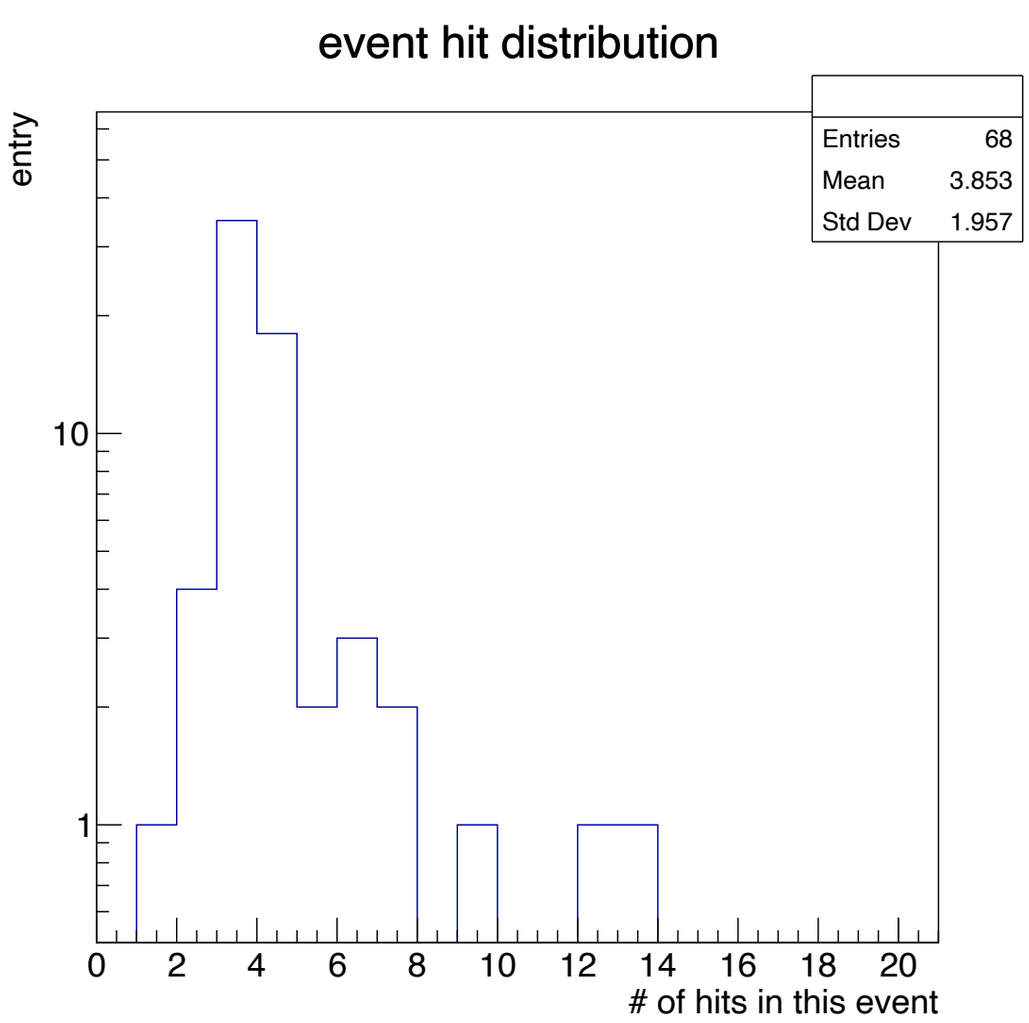
File name : NWU_fphx_raw_20211129-1747_0.root

chip adc
From tree_both
cut list : INTT_event, camac_tdc5, camac_adc, DSE, event length



File name : NWU_fphx_raw_20211129-1747_0.root

event hit distribution
From tree_both
cut list : INTT_event, camac_tdc5, camac_adc, DSE



Only 68 events survived after cut applied

```
layer 3 final counting :
 N_HHH : 13
 N_LHH : 6
 N_HLH : 0
 N_HHL : 1
 N_LLL : 34
=====3-layers=====efficiency results==========
|| l0 : 68.42105 %
|| l1 : 100.00000 %
|| l2 : 92.85714 %
=====3-layers=====efficiency results==========
```

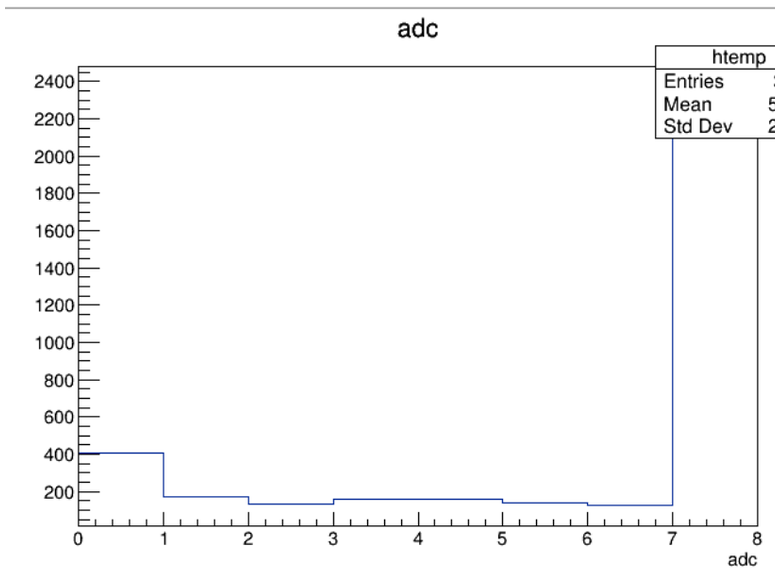
```
layer 3 final counting :
 N_HHH : 13
 N_LHH : 27
 N_HLH : 2
 N_HHL : 9
 N_LLL : 3
=====3-layers=====efficiency results==========
|| l0 : 32.50000 %
|| l1 : 86.66667 %
|| l2 : 59.09091 %
=====3-layers=====efficiency results==========
```

Turn off the 2 points cut

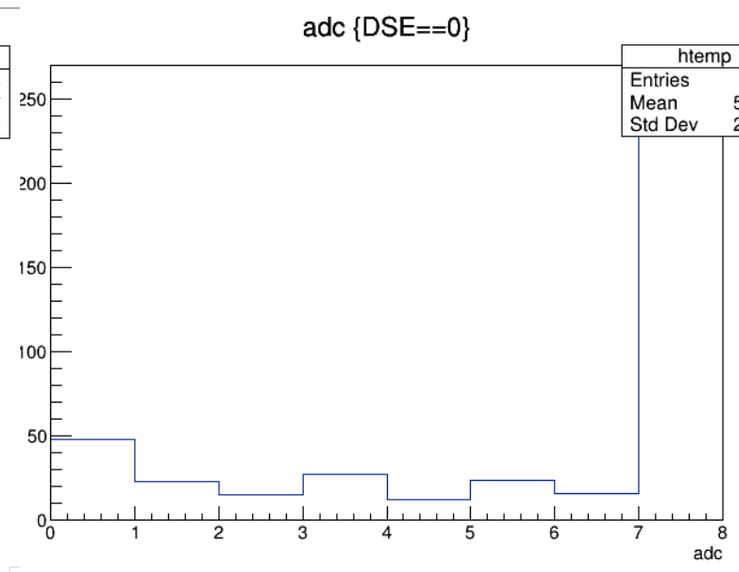
File name : NWU_fphx_raw_20211129-1747_0.root

adc distribution

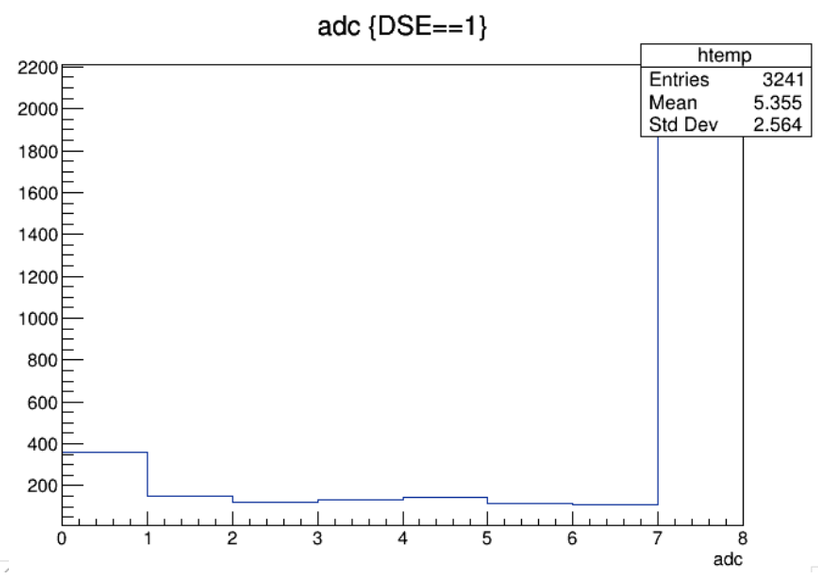
Combine



If (DSE == 0)

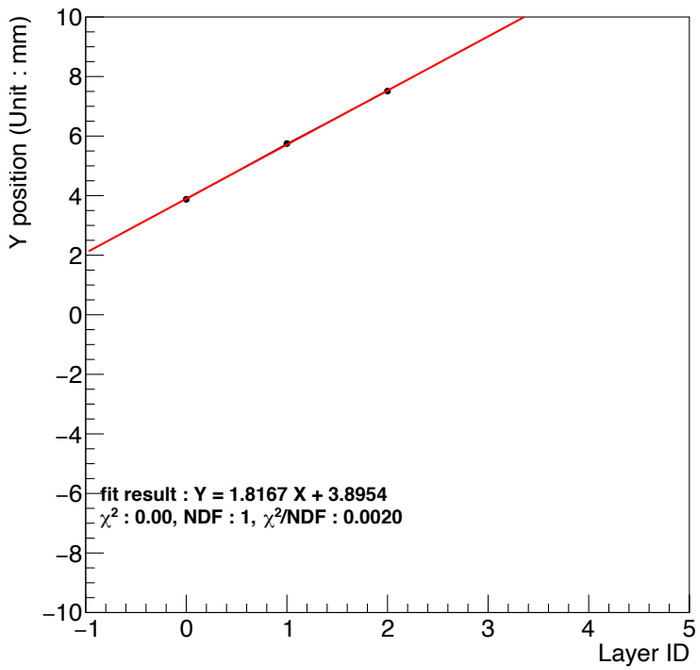


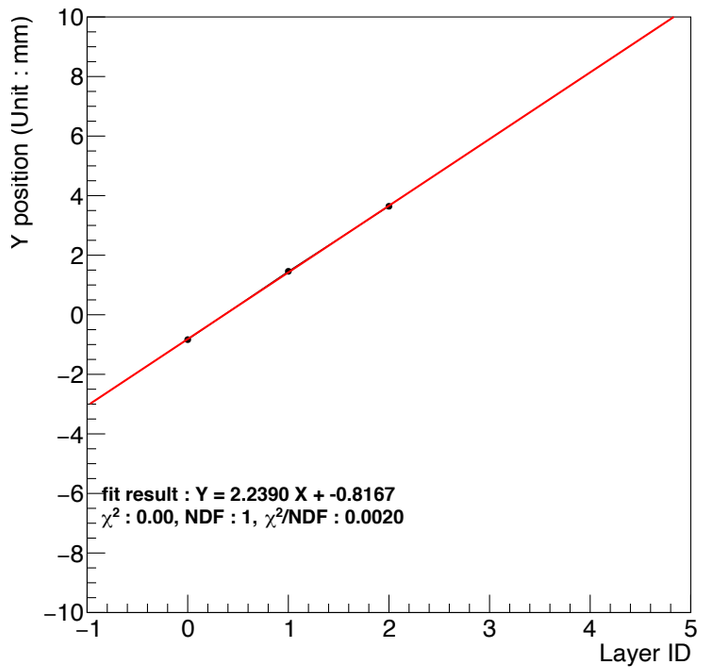
If (DSE == 1)

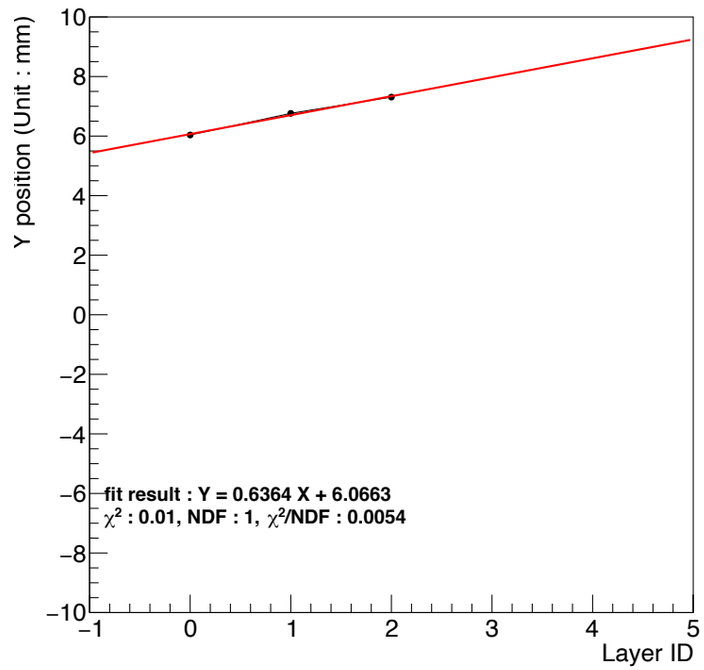


File name : NWU_fphx_raw_20211129-1747_0.root

We still have some good events



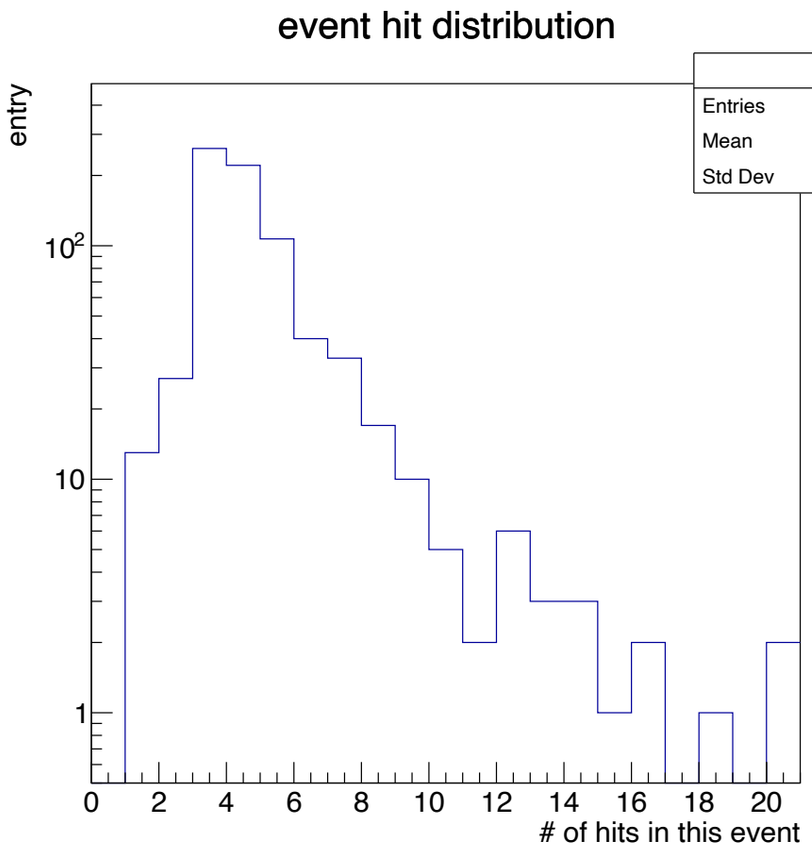




If DSE is included

From tree_both

cut list : INTT_event, camac_tdc5, camac_adc, ~~DSE~~




```
layer 3 final counting :
 N_HHH : 182
 N_LHH : 34
 N_HLH : 1
 N_HHL : 28
 N_LLL : 299
=====3-layers=====efficiency results==========
|| l0 : 84.25926 %
|| l1 : 99.45355 %
|| l2 : 86.66667 %
=====3-layers=====efficiency results==========
```

```
layer 3 final counting :
 N_HHH : 182
 N_LHH : 203
 N_HLH : 11
 N_HHL : 137
 N_LLL : 11
=====3-layers=====efficiency results==========
|| l0 : 47.27273 %
|| l1 : 94.30052 %
|| l2 : 57.05329 %
=====3-layers=====efficiency results==========
```

Turn off the 2 points cut

For the cosmic test, only the middle layer can be studied the efficiency.

Summary

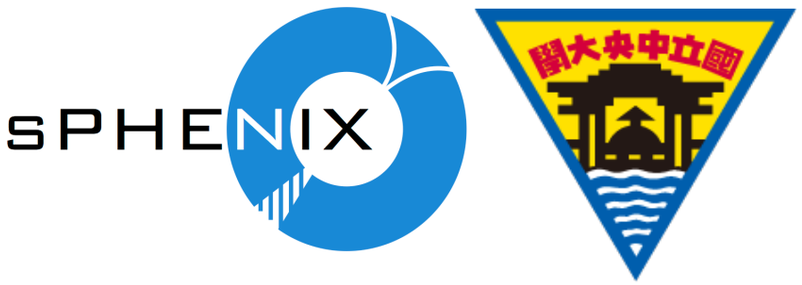
- The camac_adc0 and camac_tdc5 seems to be weird.
- Only 68 events passed the preselection.

- If the DSE is included, we can have more events.

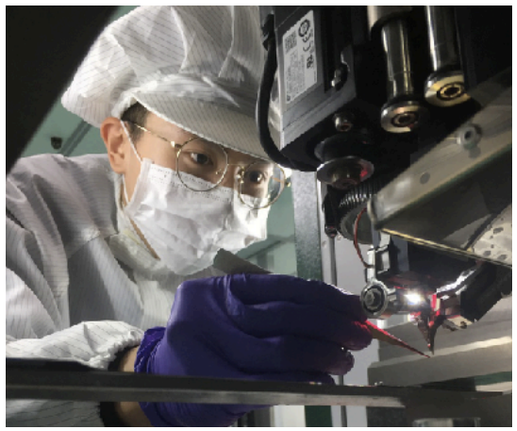
- In the case of that DSE is included and the 2 points cut is off, the middle layer efficiency is ~ 94%.
  - To be honest, the efficiency study of the case with 3 layers and cosmic source is not precise.
    1. Only the middle layer can be studied.
    2. Cosmic particles come from everywhere, No selection can be applied on the 2 points case.

- Question :
  - How many scintillators was used in this test ?

Back up

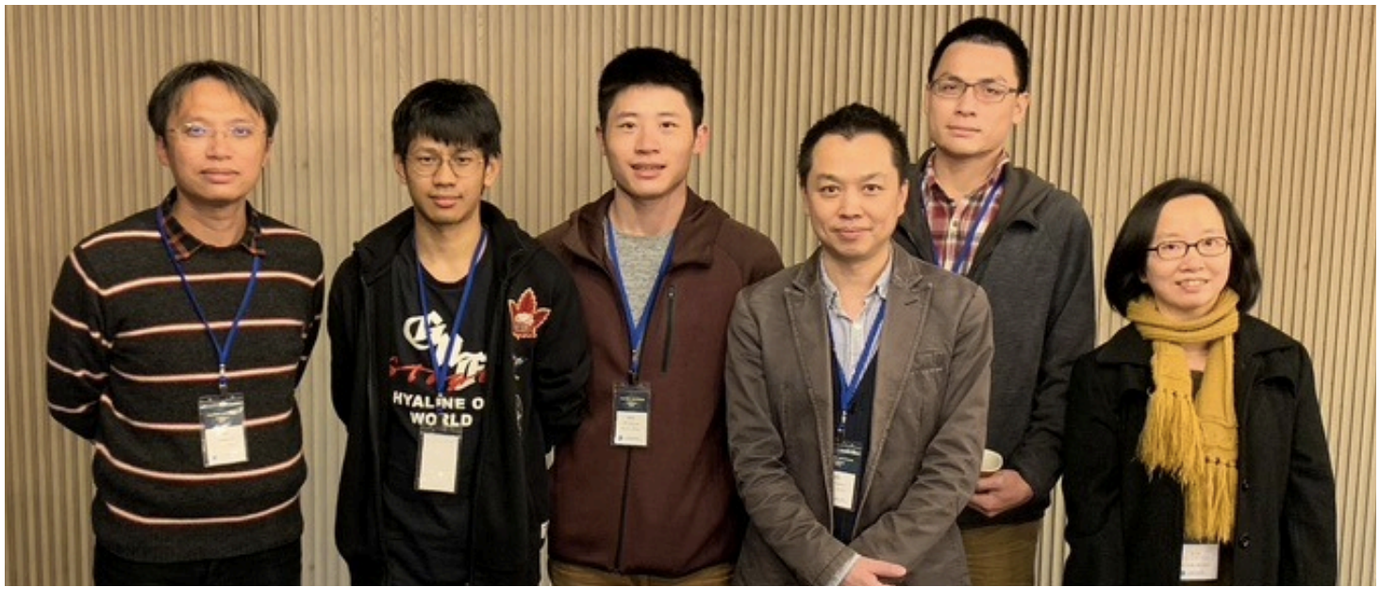


Taiwan INTT team



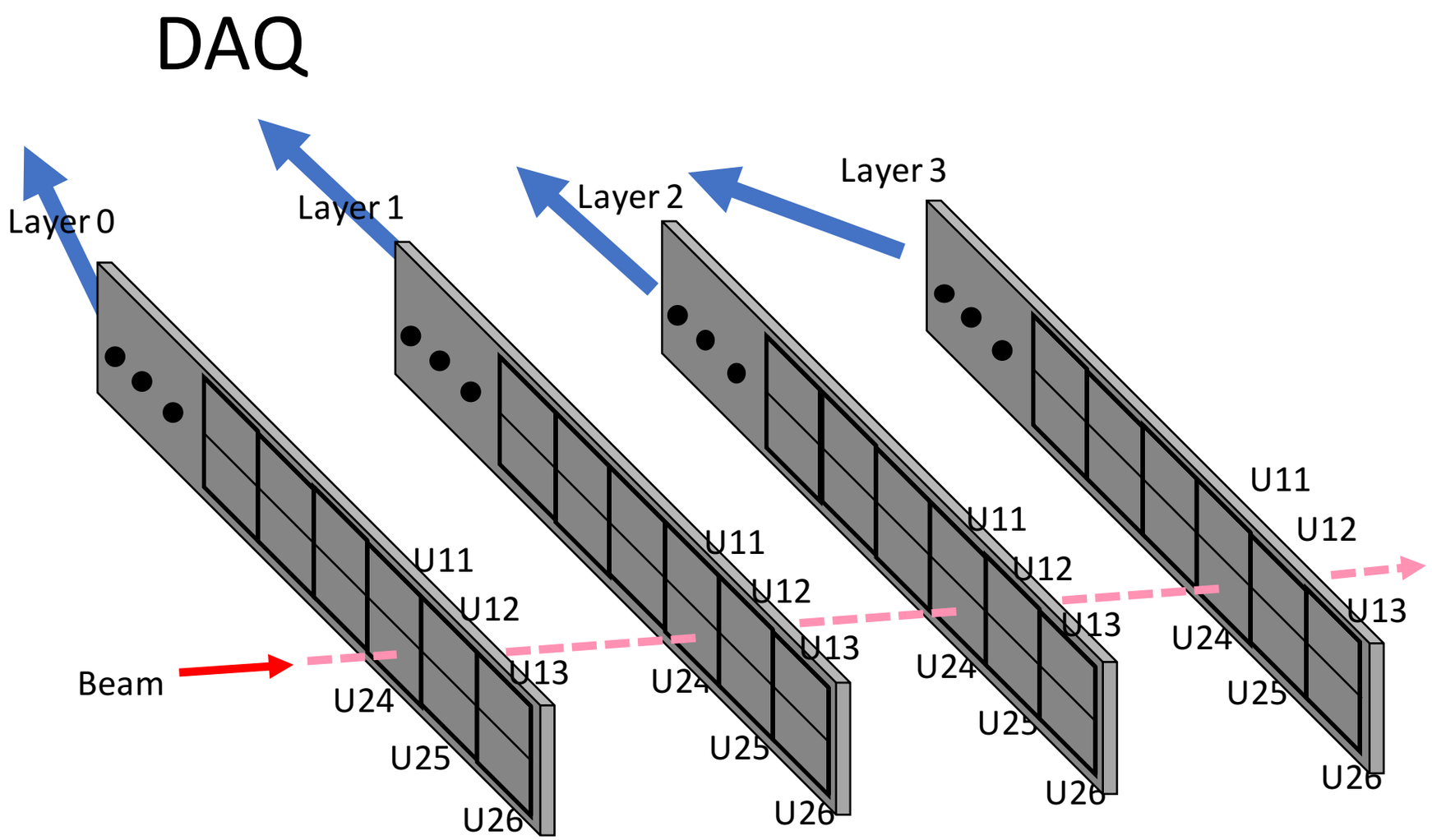
Ou-Wei Cheng

Kai-Yu Cheng



Chia-Ming Kuo Cheng-Wei Shih Lian-Sheng Tsai
Wei-Che Tang Rong-Shyang Lu Jenny Huang

Current Testbeam setup in G4



Channel ID order