

# **20170518 STATUS REPORT**

Ahram lee

# TOF Detector Preparation

DAQ system

Laptop did not boot last week...

Dasan took the laptop to examine and recover on 05/10,  
but they called that it suddenly worked.  
And did not find any source of making a booting error.

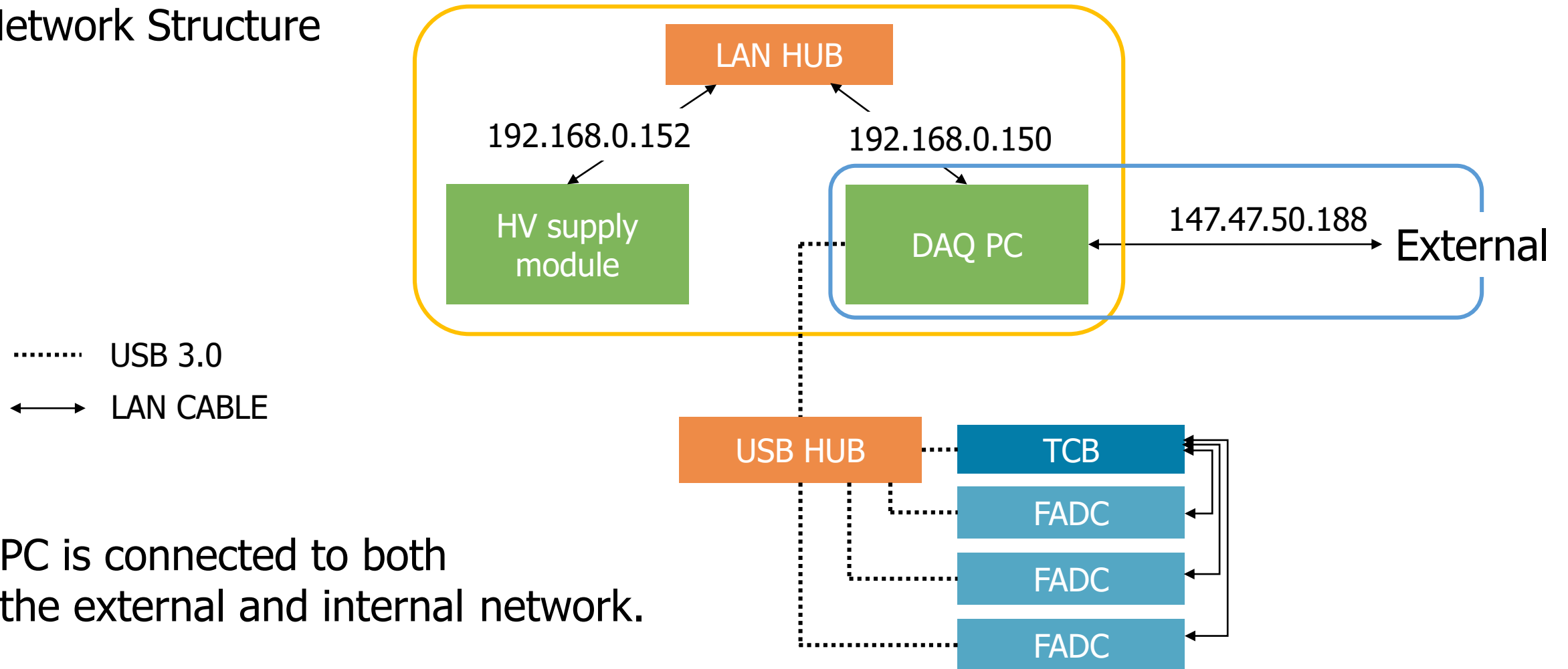
It is working successfully, for sure about DAQRC program, and has no error.  
Although there is no loss of data,  
there is back-up of all DAQ data in external HDD.

After purchasing USB – Ethernet adapter, for internal network,  
Gain optimization will be started. (~ 2weeks)

# TOF Detector Preparation

DAQ system

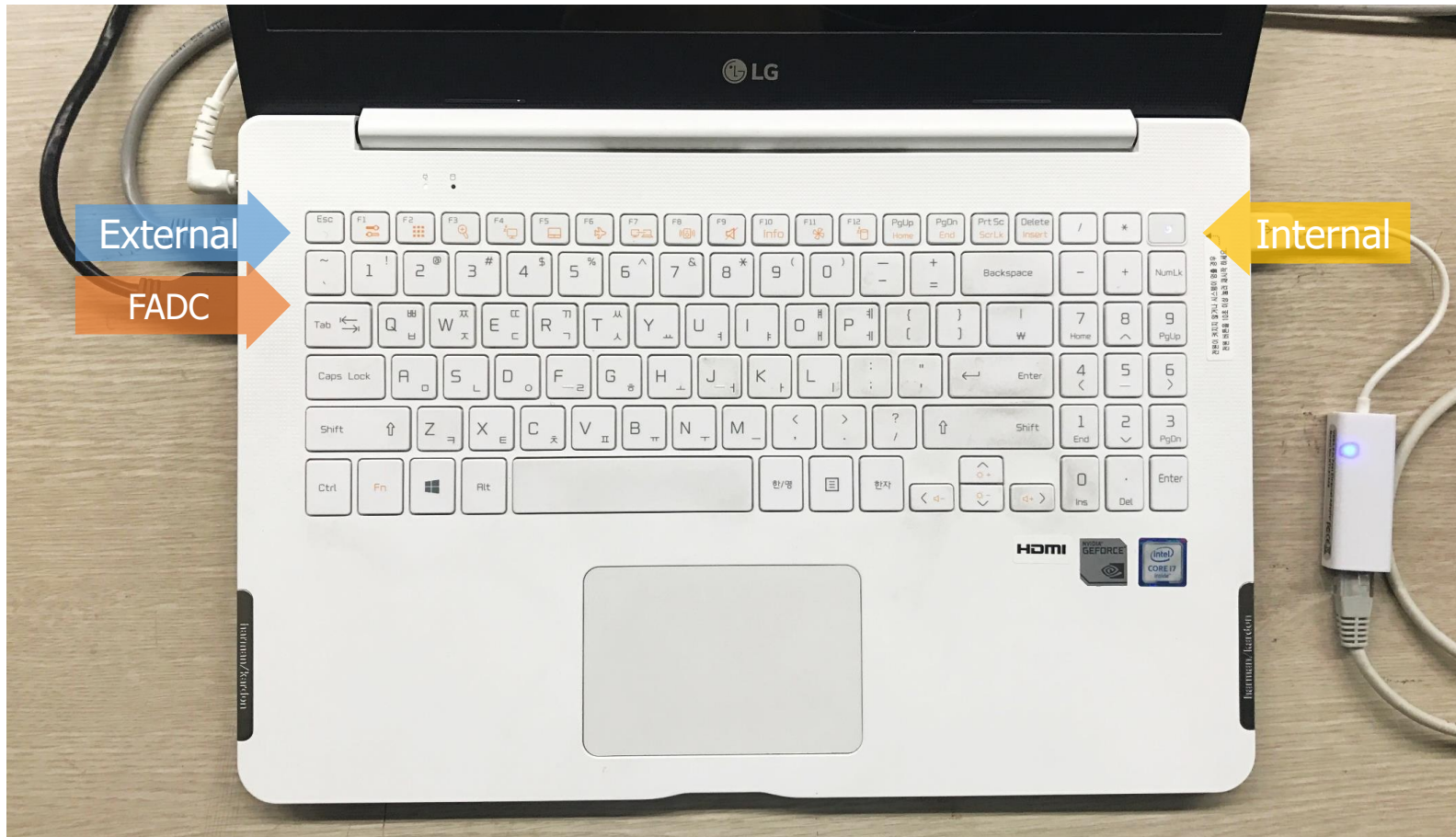
Network Structure



# TOF Detector Preparation

DAQ system

DAQPC – Specification



Intel Core i7-6500U

8GB ram

1TB HDD + 500GB SSD

USB3.0 port x2

- USB Hub (x10)

Data collecting ~ 180MB/sec

# TOF Detector Preparation

DAQ system

Data size estimation

1 signal = 12bit \* 500MHz \* 1 $\mu$ s  $\sim$  750byte

1 experiment = 500hit \* 750byte  $\sim$  0.4MB

250x(1hit)+60x(2hit)+10x(3hit)

	At least 1 Hit	2 Layer Hits (T-B)	3 Layer Hits (T-B-?)
1m Height (Original)	247	55.235	6.910
2m Height	240	55.494	6.925

1 day = 700 exp. \* 0.4MB  $\sim$  300MB

1 month = 30 days \* 140MB  $\sim$  9 GB

1 experiment  
0.5sec(exp.) + 2min(pause)

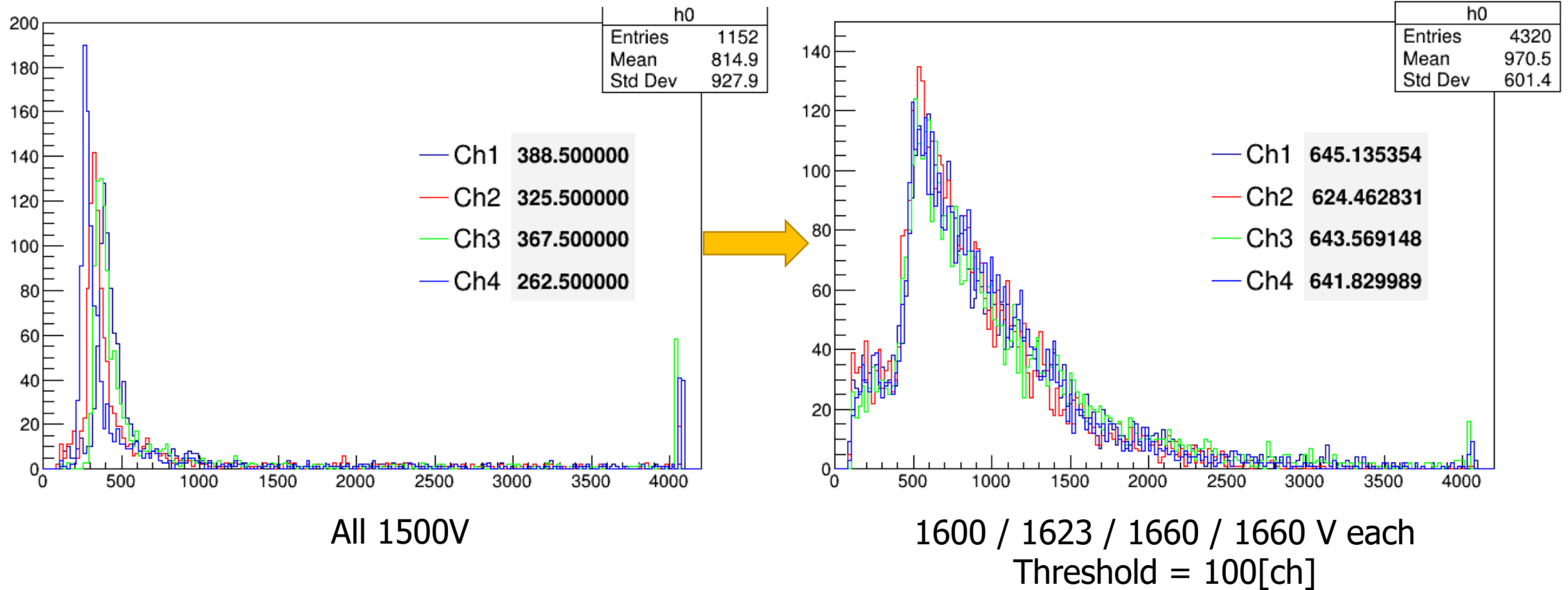
Ref. Simulation results  
depending on  
cosmic ray origin height,  
in 500ms window  
(J.W. Hwang, 161128)

# TOF Detector Preparation

12bar test

Gain optimization – BAR3, BAR4  
without trigger

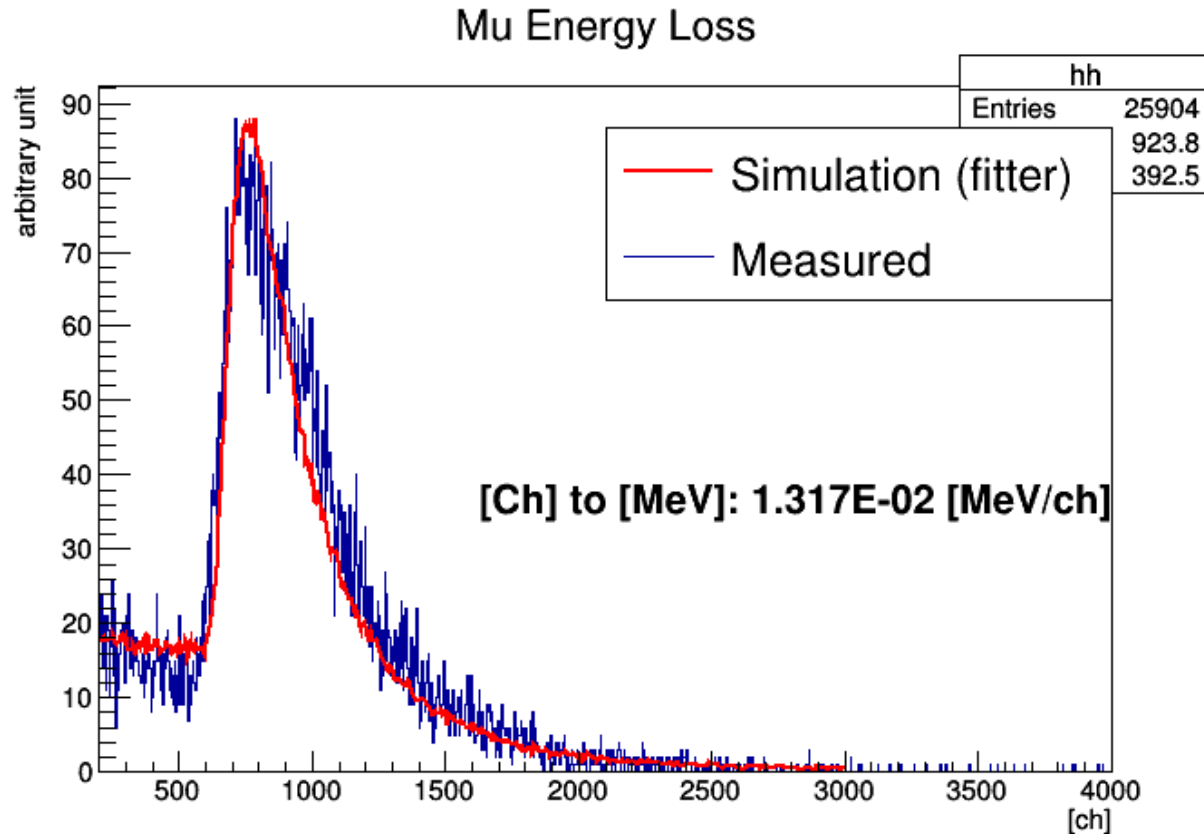
Previous slide (05/11)



# TOF Detector Preparation

12bar test

Gain optimization – BAR3 (Left:1600V, Right:1623V)  
without trigger



To convert [ch] to [eV],  
Fit height distribution of BAR3(blue)  
with Muon energy distribution(red).

Threshold = 20[ch]  
Measured =  $\sqrt{\text{left} * \text{right}}$

As a result,  
1 [ch]  $\leftrightarrow$  13[keV]  
1 [MeV]  $\leftrightarrow$  75 [ch]

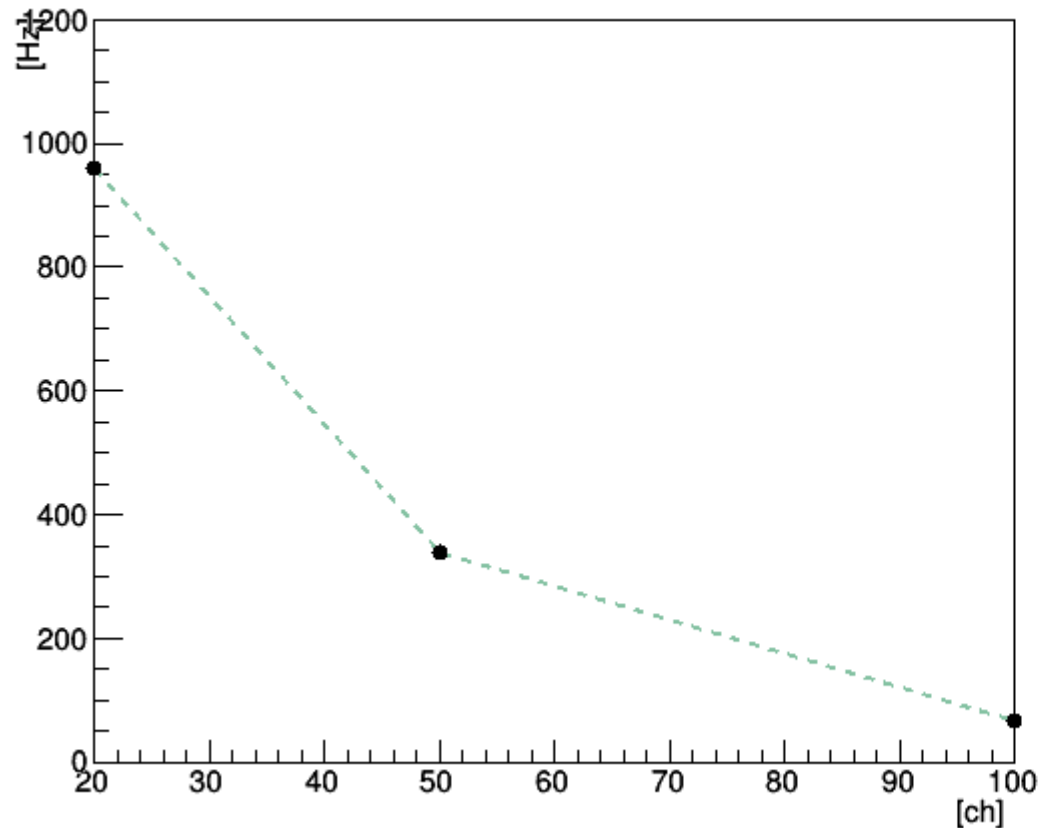
# TOF Detector Preparation

12bar test

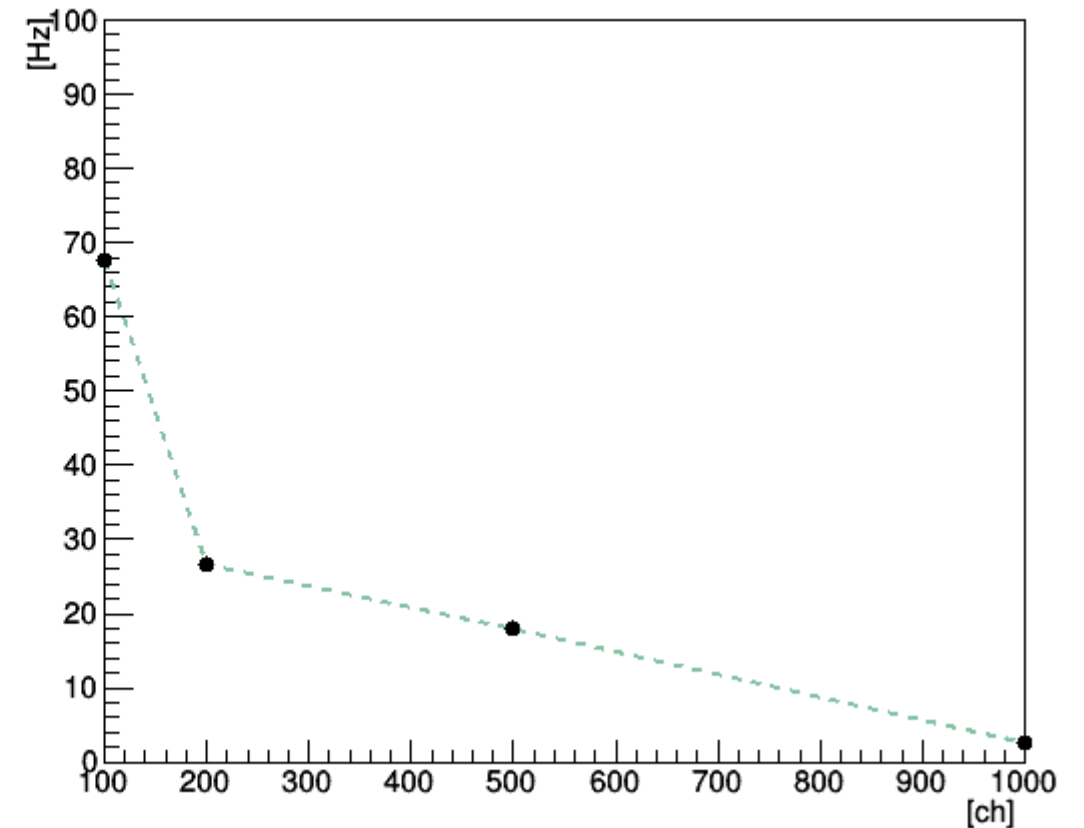
Gain optimization : noise rate change by threshold[ch]

Previous analysis (01/25)

(threshold) vs (noise rate)



(threshold) vs (noise rate)





# TOF Detector Preparation

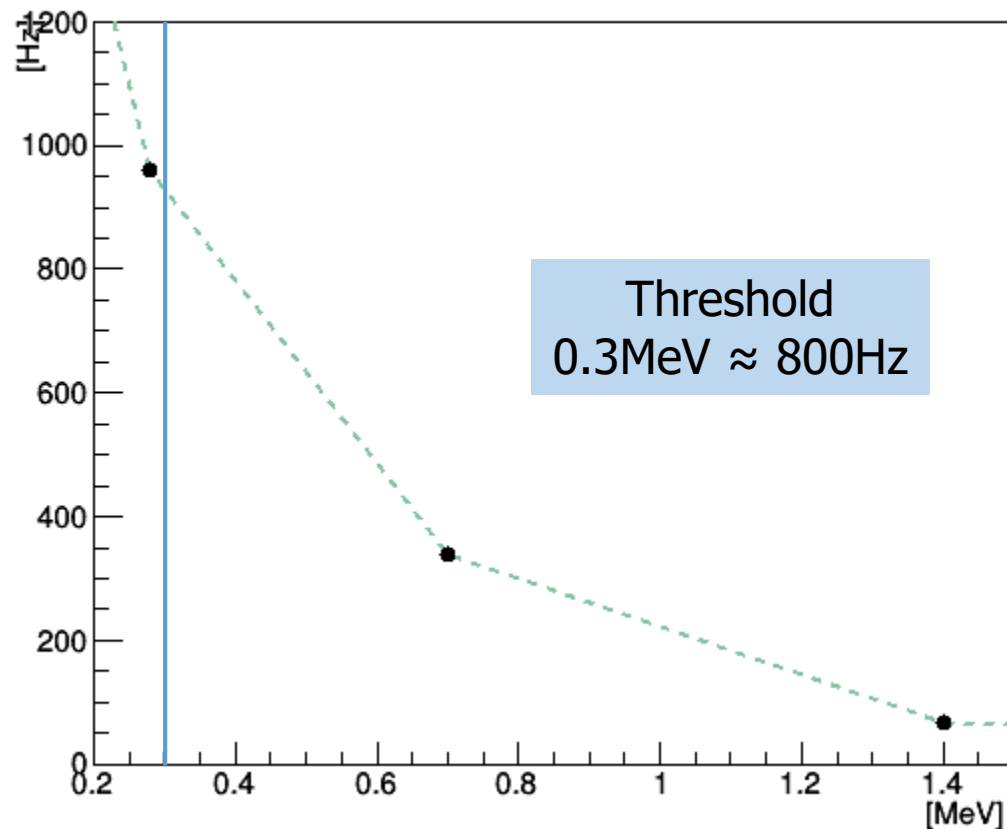
12bar test

Gain optimization : noise rate change by threshold[MeV]

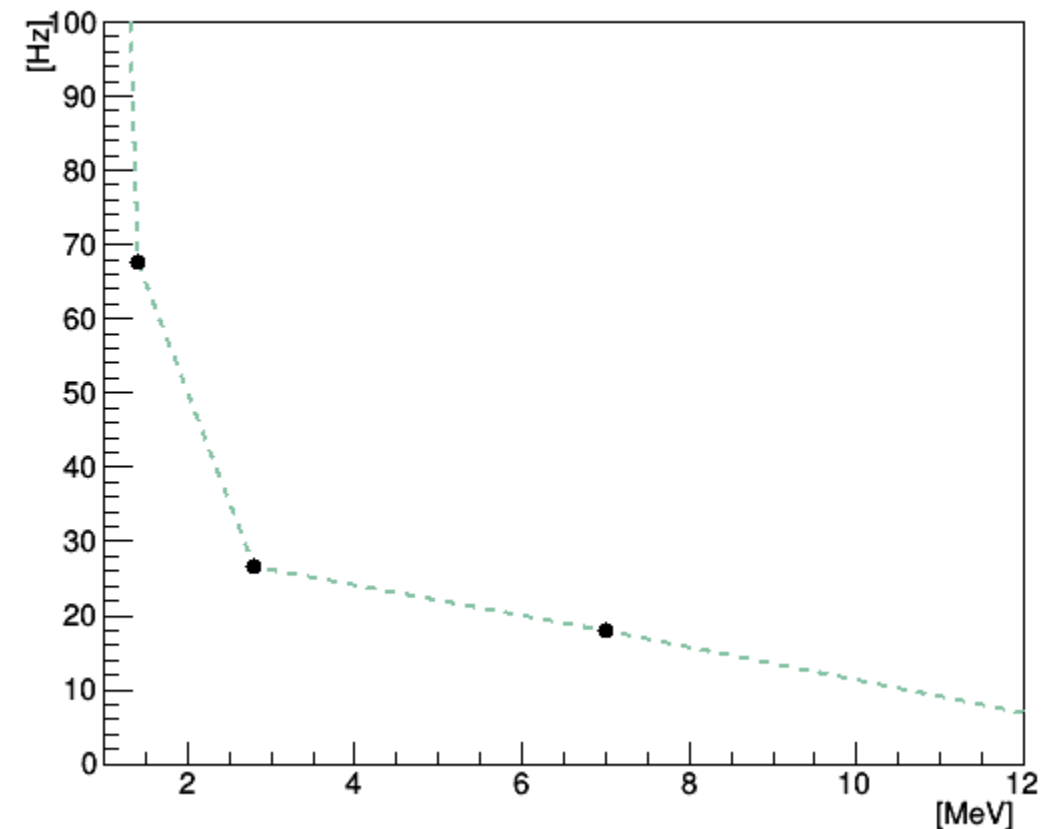
Previous analysis (01/25)

1[ch]  $\approx$  14[keV]

(threshold) vs (noise rate)



(threshold) vs (noise rate)



# TOF Detector Preparation

## Cables & connectors

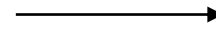
~~Thomas cable — sent e-mail a week ago ...~~

~~A-tech (from IBS)~~

Elkoh engineering

( SHV – RG59 – SHV ) x 100, 10m

( BNC – RG58 – SMA ) x 100, 10m

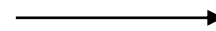


Cannot see speculations of cables,  
and know exact day of delivery date  
before order!

NexansKorea

SHV x200, SMA x100, BNC x 100

RG58, RG59 2km each



Takes about 8~10 weeks to produce.  
To delivery, maybe about 2 months.

CERN stores – not in contact

order cables & connectors separately  
and make in CEA?