sPHENIX INTT - Weekly Report

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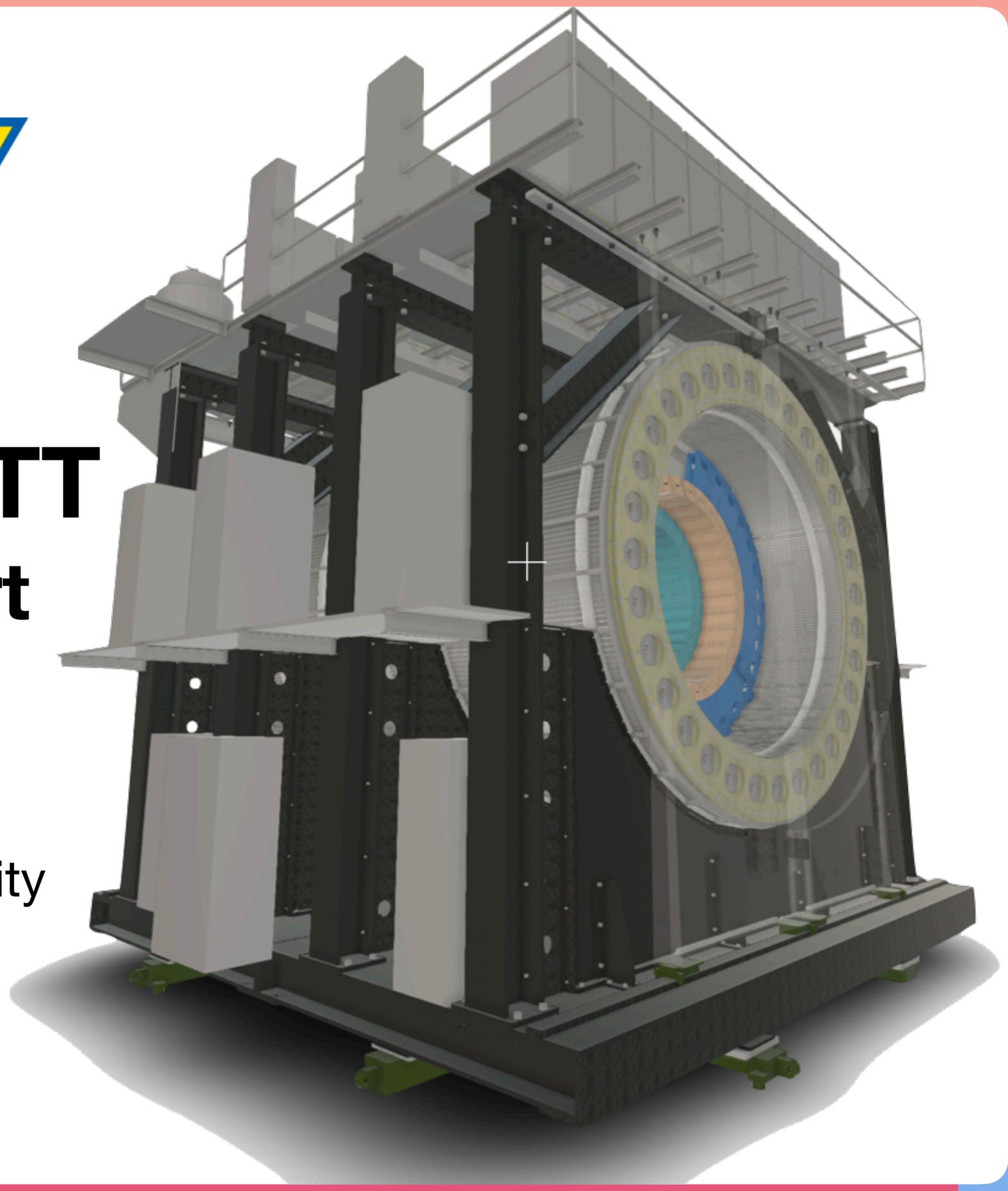
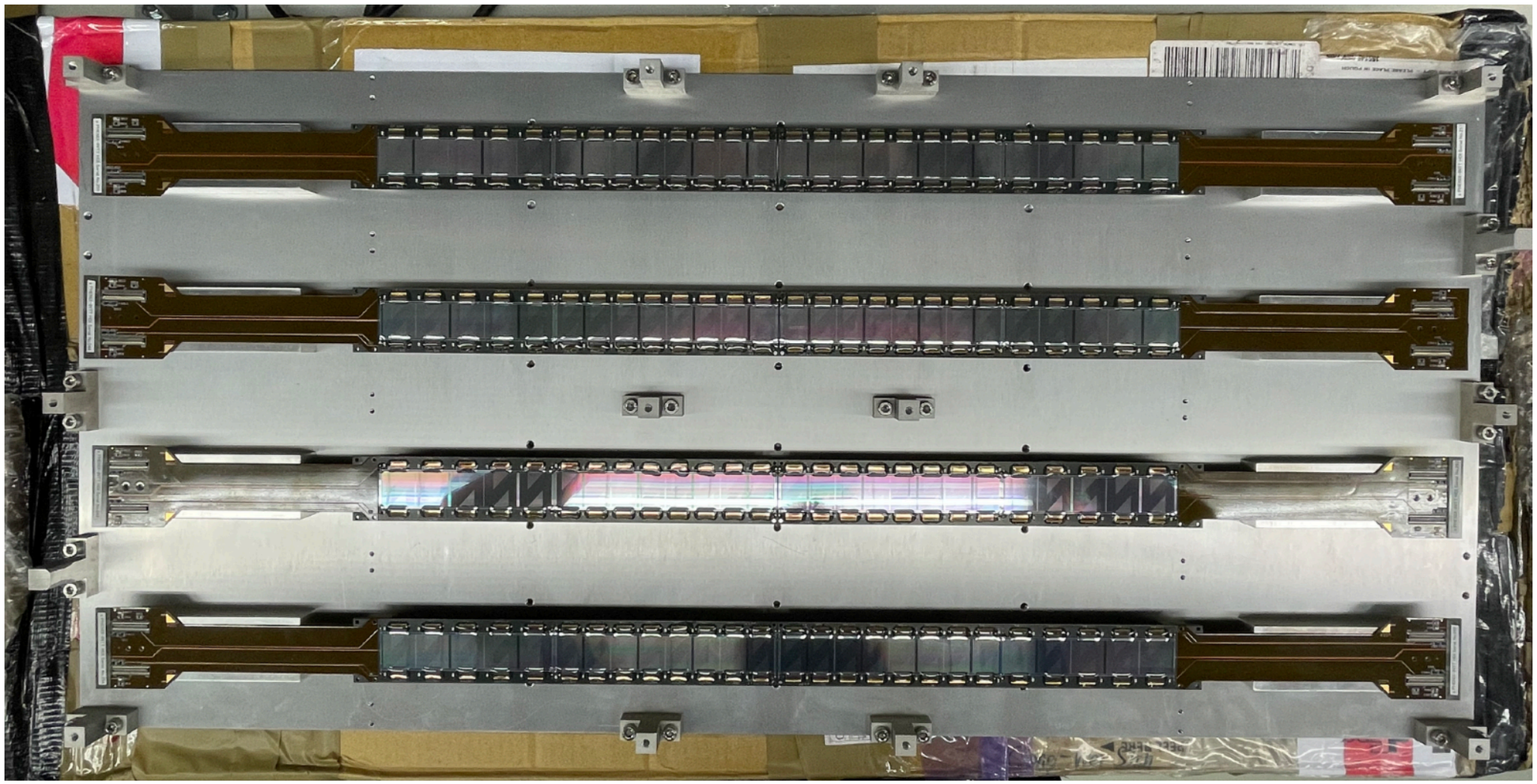
National Central University

2021/8/11



Ladder assembly

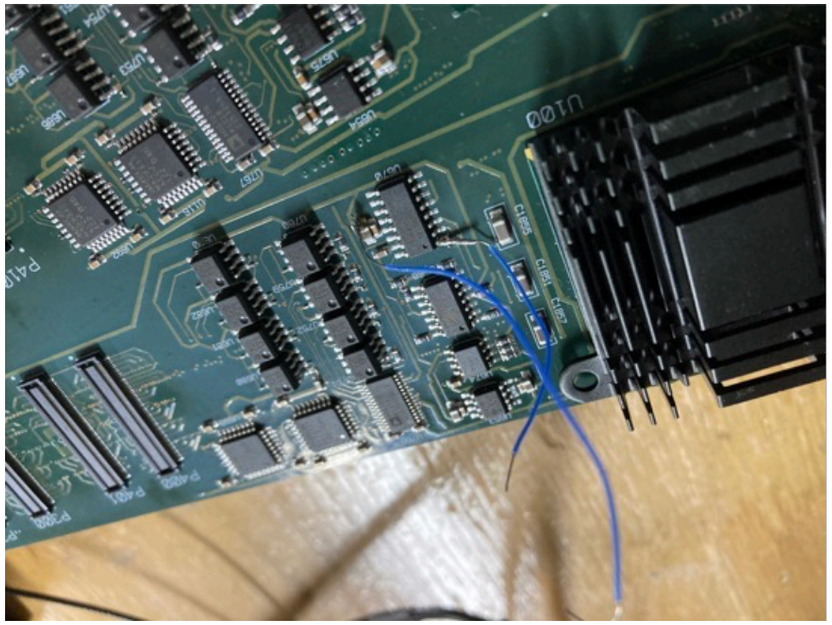
- 4 ladders have been assembled.
- Applying glue method : glue mask.
- Preliminary calibration results : all good, not bad chips.

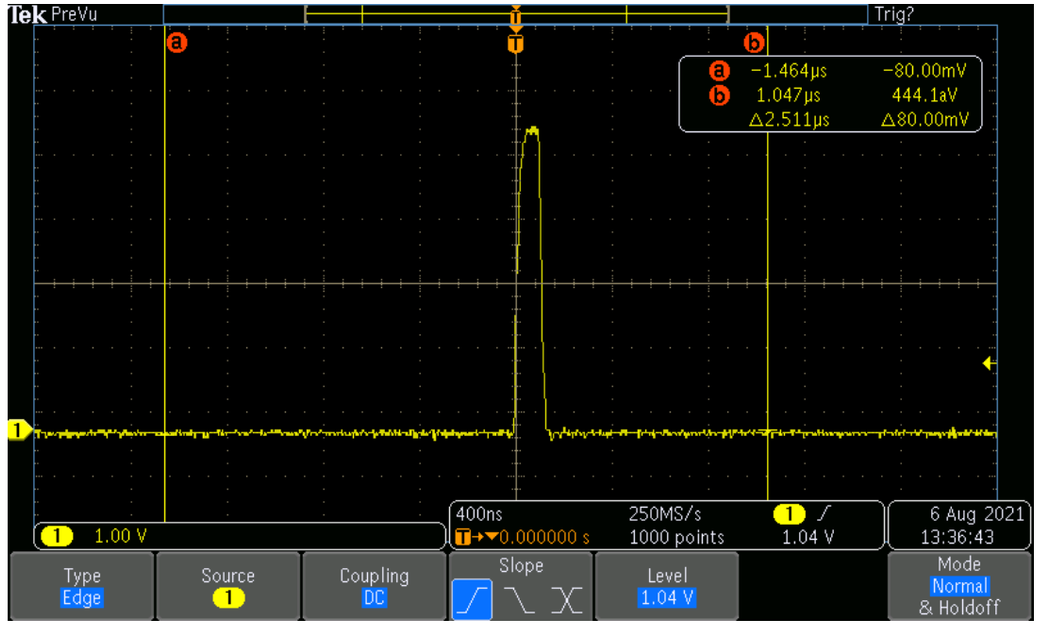


Second Testbench preparation

- The condition of bad ROC :
  1. Column A and C have been tested, both are bad.
  2. The chip current is consistent before & after clicking “init”.
  3. Test pulse seems to be no generated.

- Test pulse measured by oscilloscope
  - Functional ROC

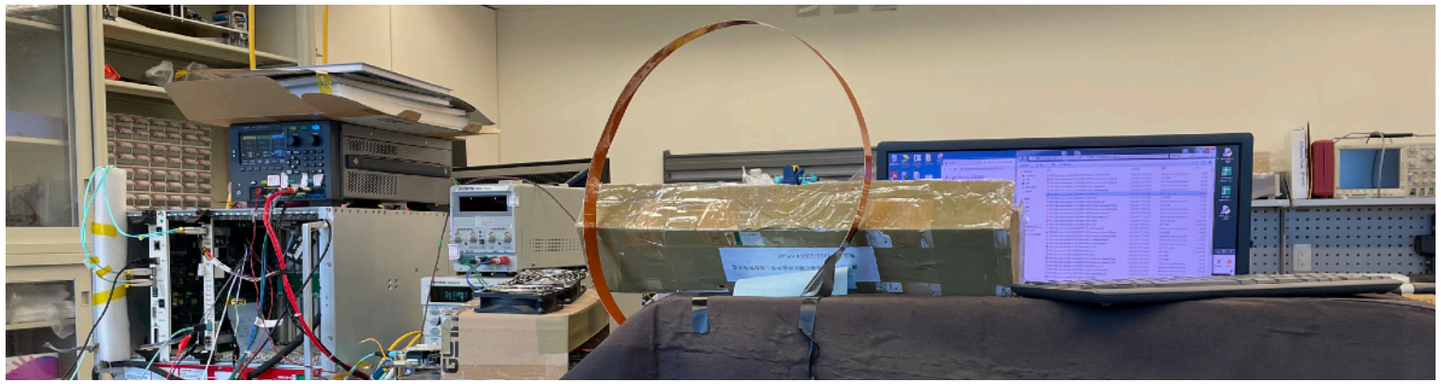


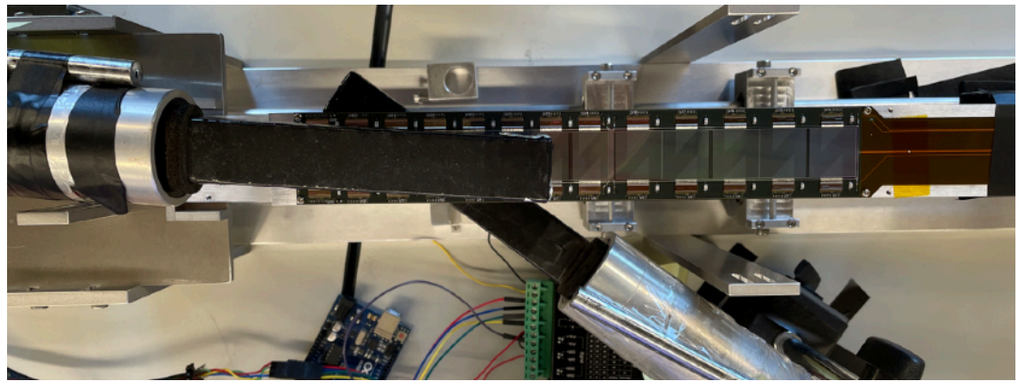


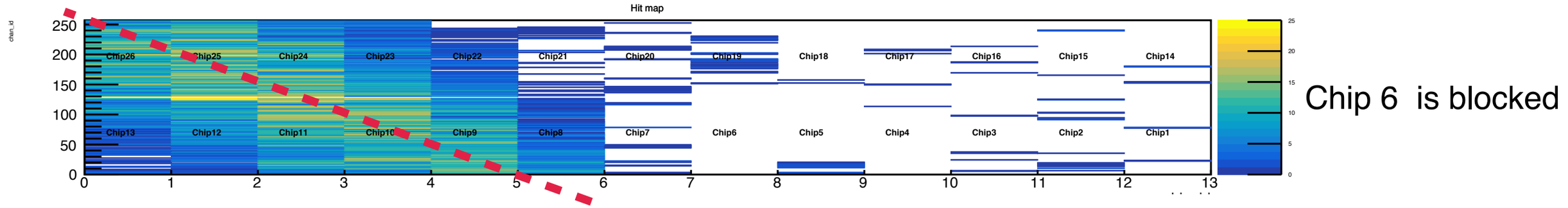
- Bad ROC :
  - Column A and C were both tested. Nothing.

Cosmic test

- Cosmic test with 2 scintillators + BEC

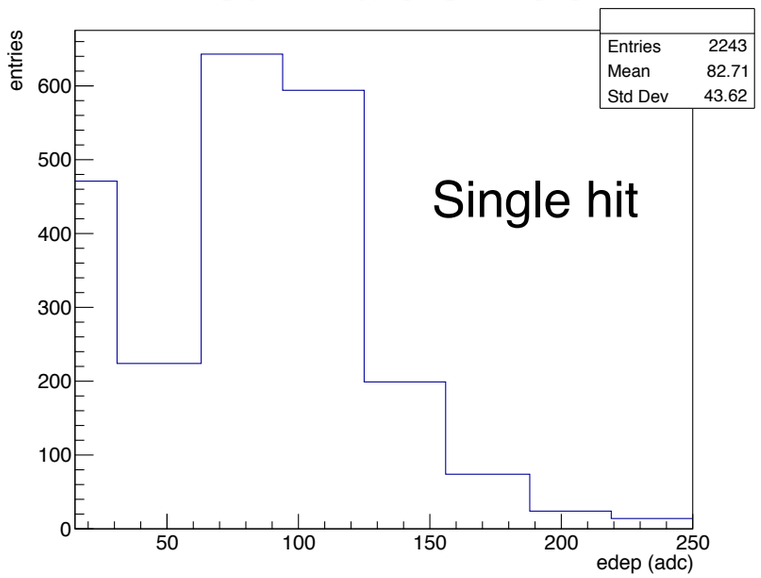




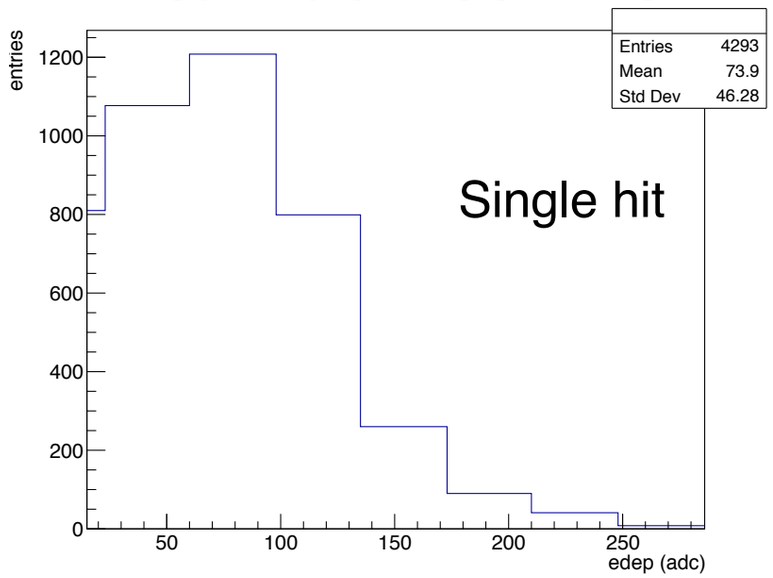


Chip 6 is blocked

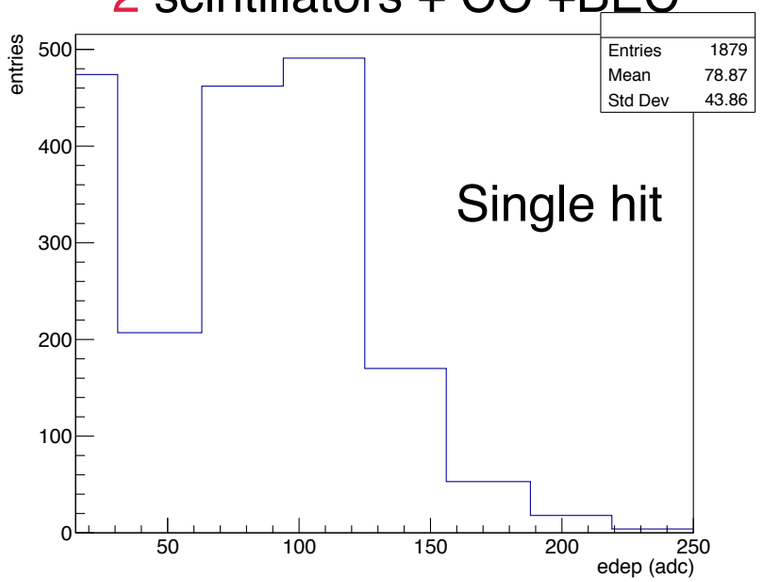
2 scintillators + CC



1 scintillator + CC +BEC

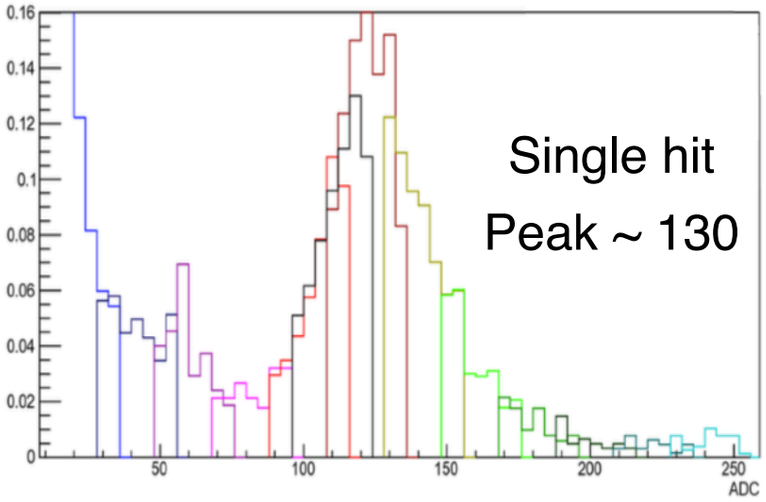


2 scintillators + CC +BEC

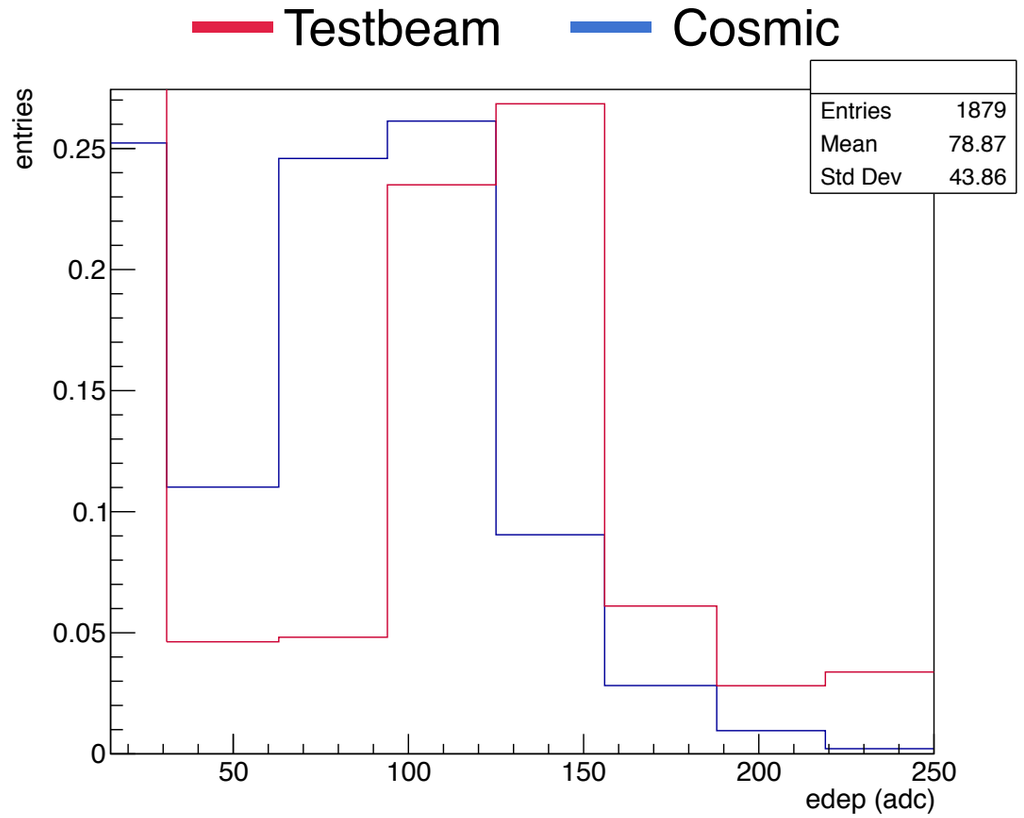


Cosmic test, comparison

DAC Scan result from last TestBeam

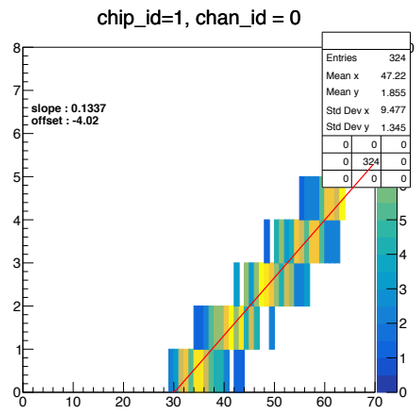


DAC 0	15
DAC 1	31
DAC 2	63
DAC 3	94
DAC 4	125
DAC 5	156
DAC 6	188
DAC 7	219



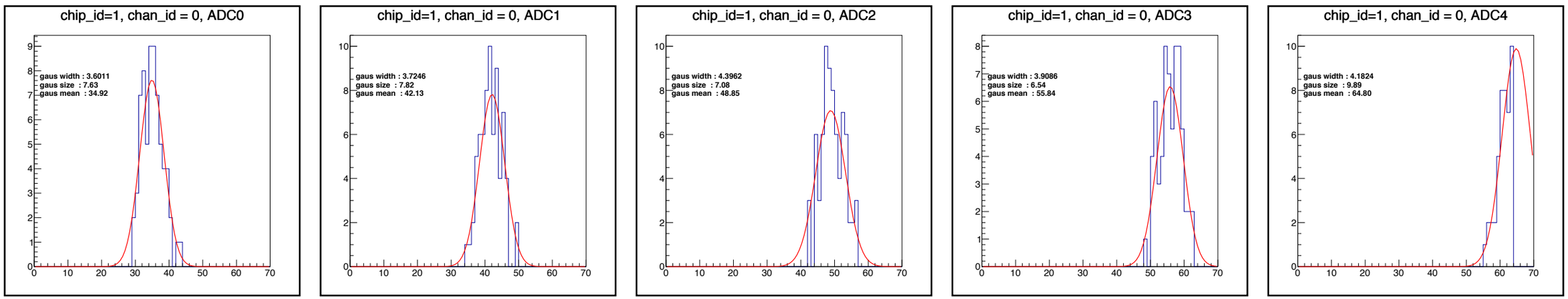
Channel classification update

Multiple approaches for channel study.
12 plots for each channel.
Take chip 1, channel 0 as example.

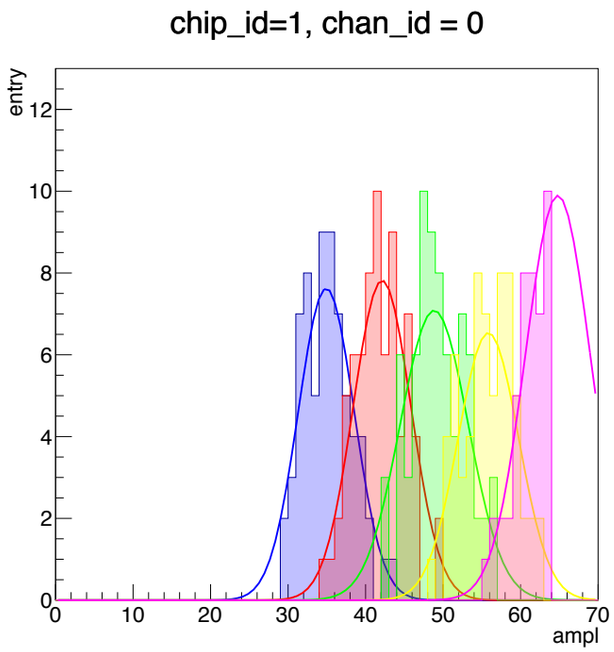


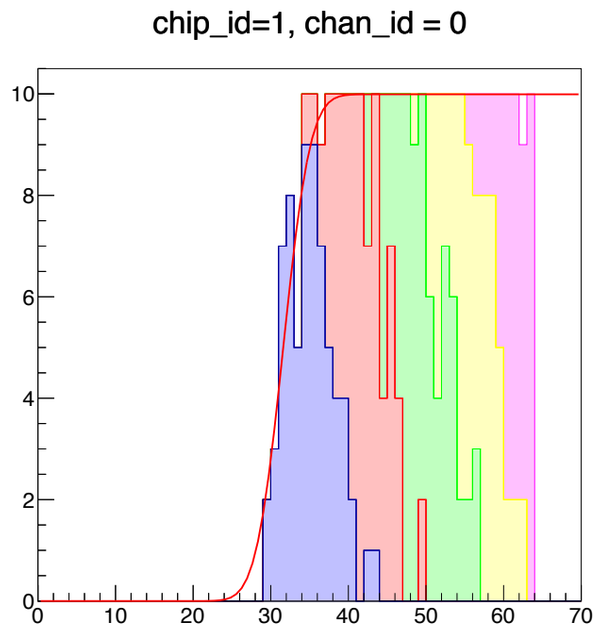
amp - adc

Distribution and fit of each ADC (up to adc 4)



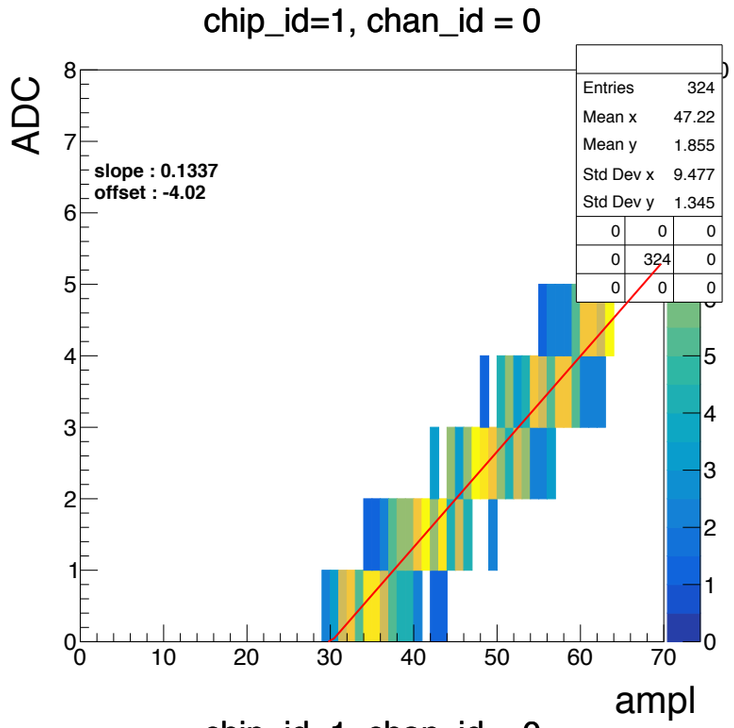
Overlap of 5 ADC distributions

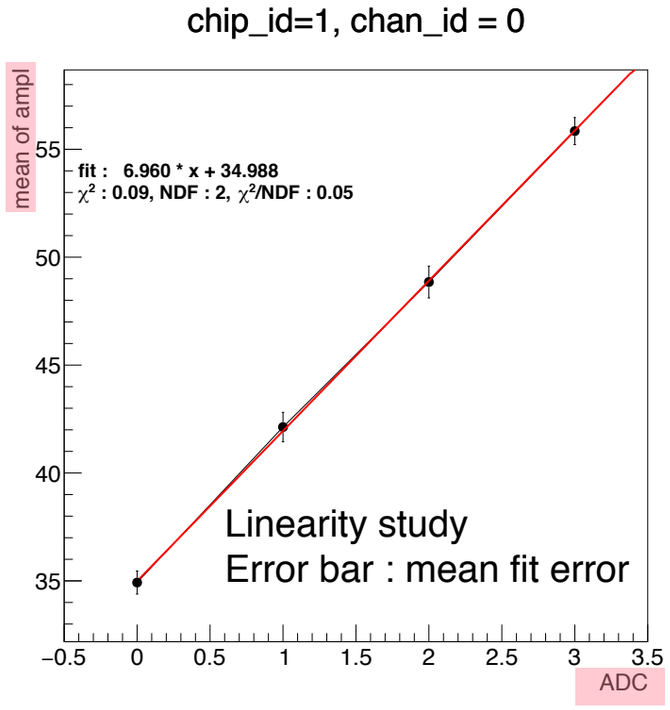


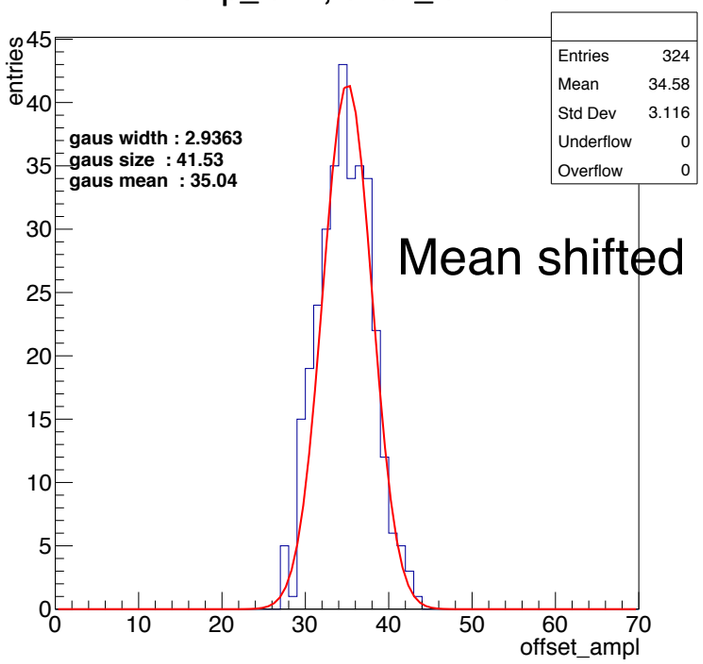


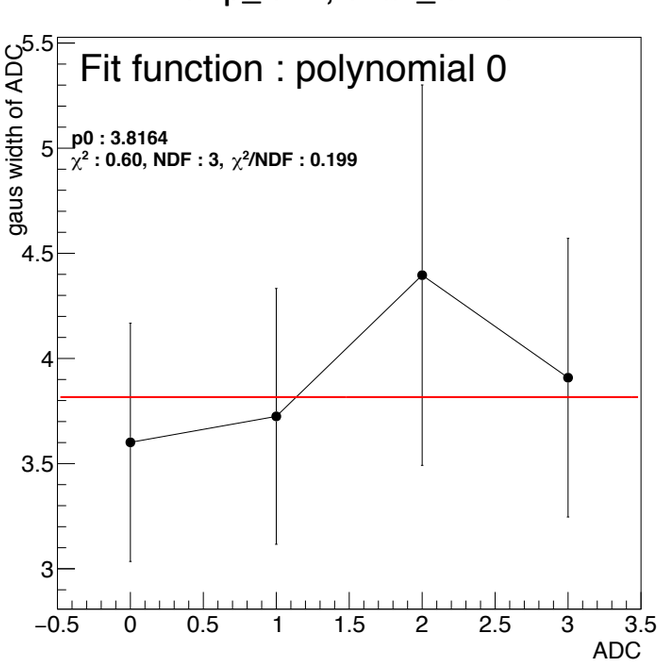
THStack

Channel classification update

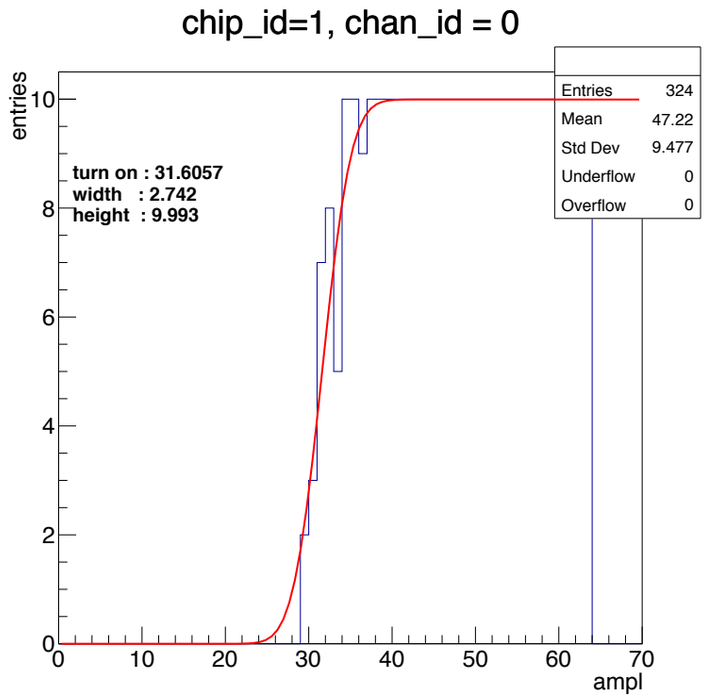






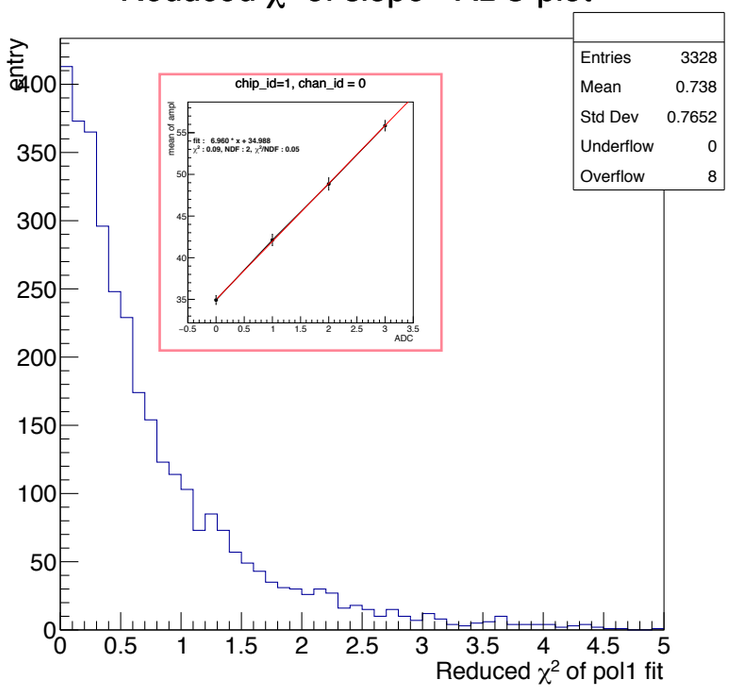


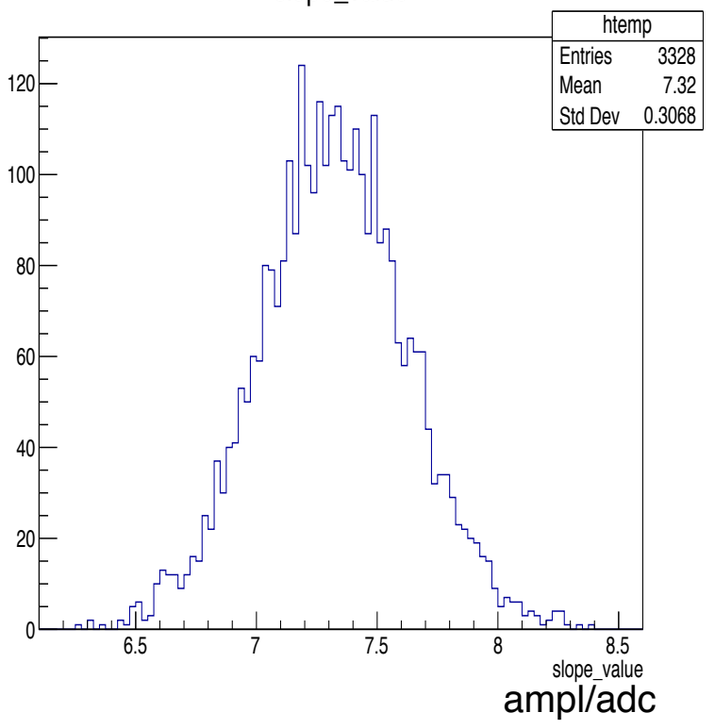
Fit function : error function

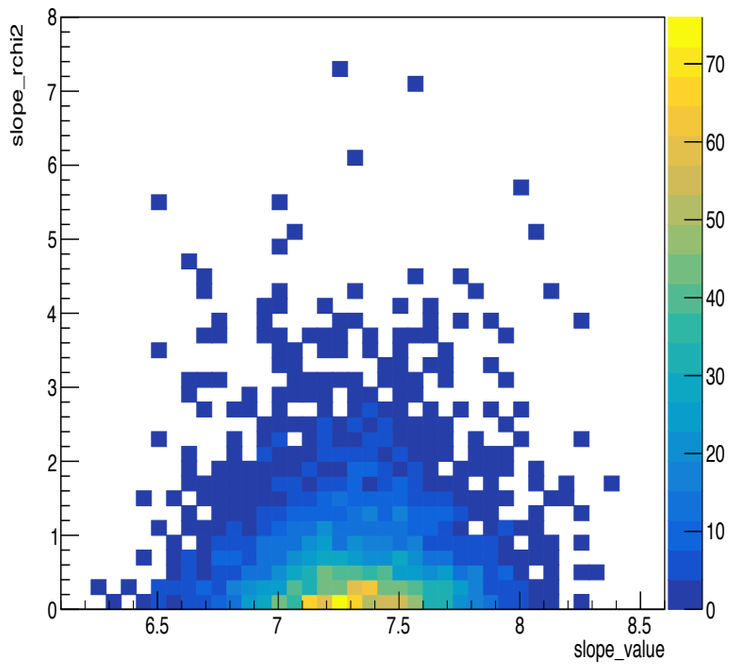


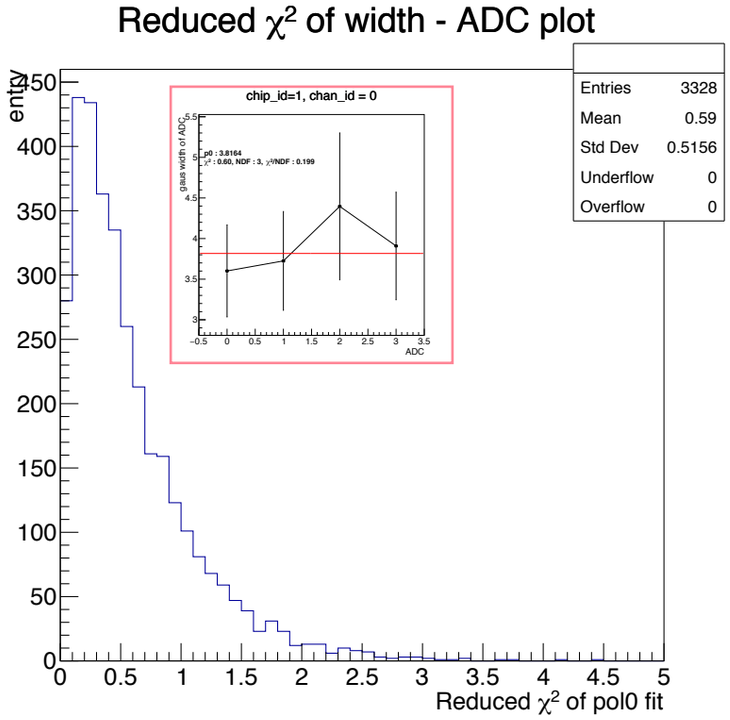
Channel classification update

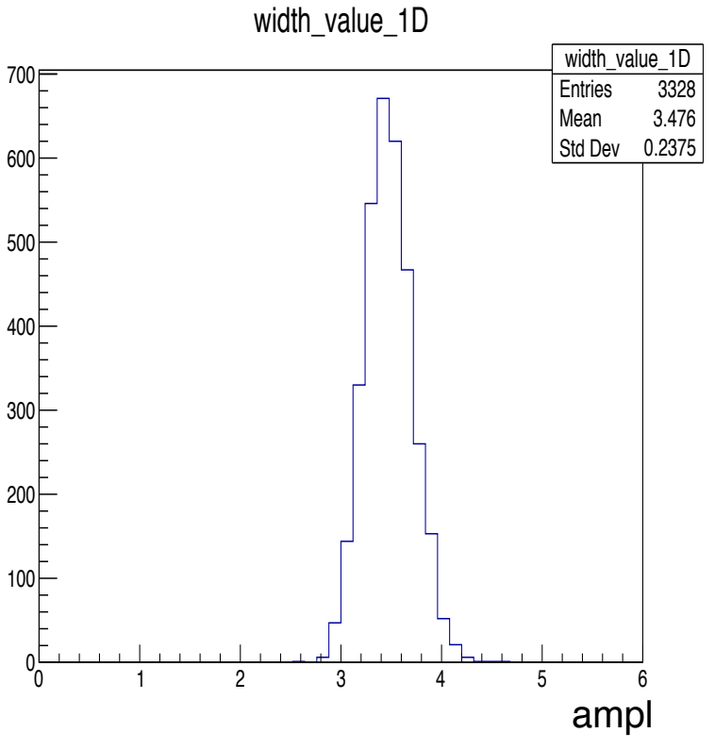
Half-ladder summary

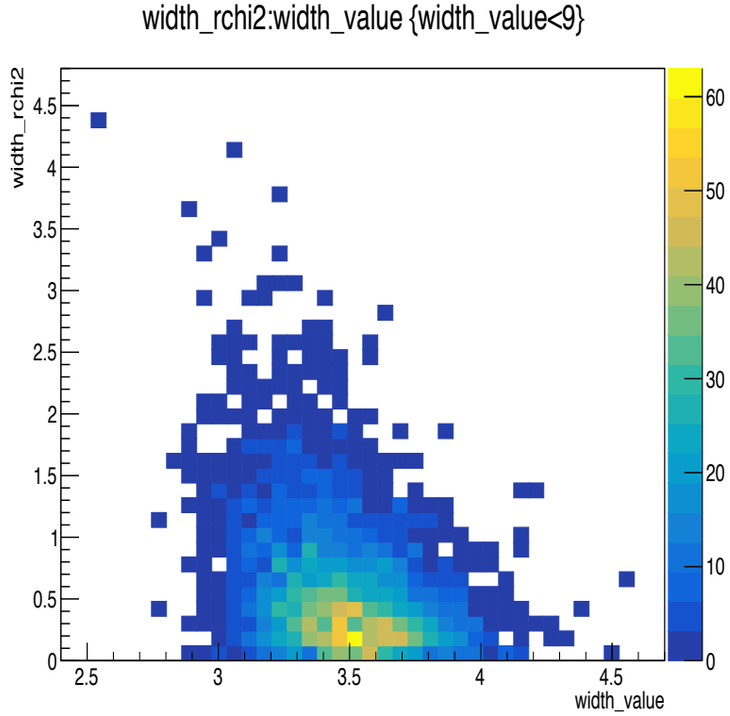






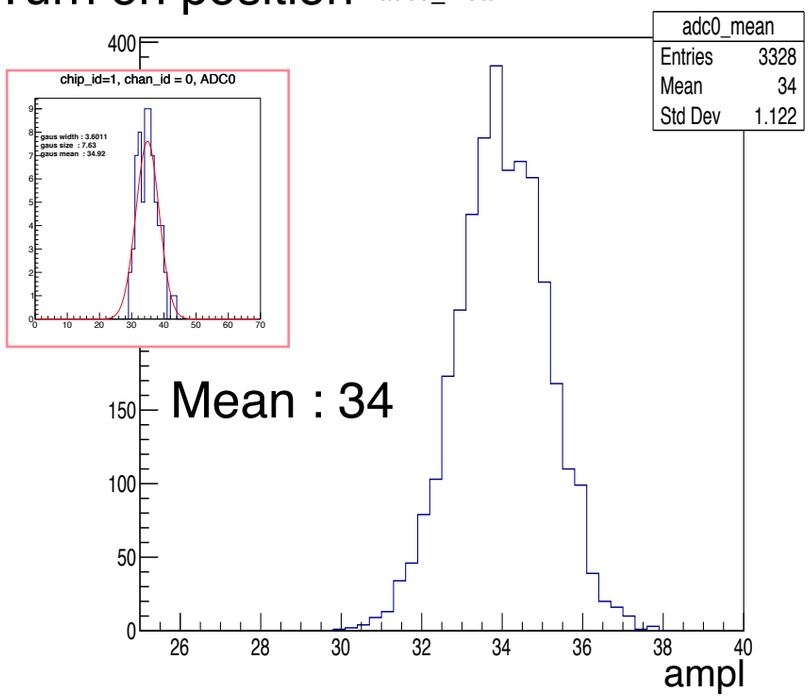




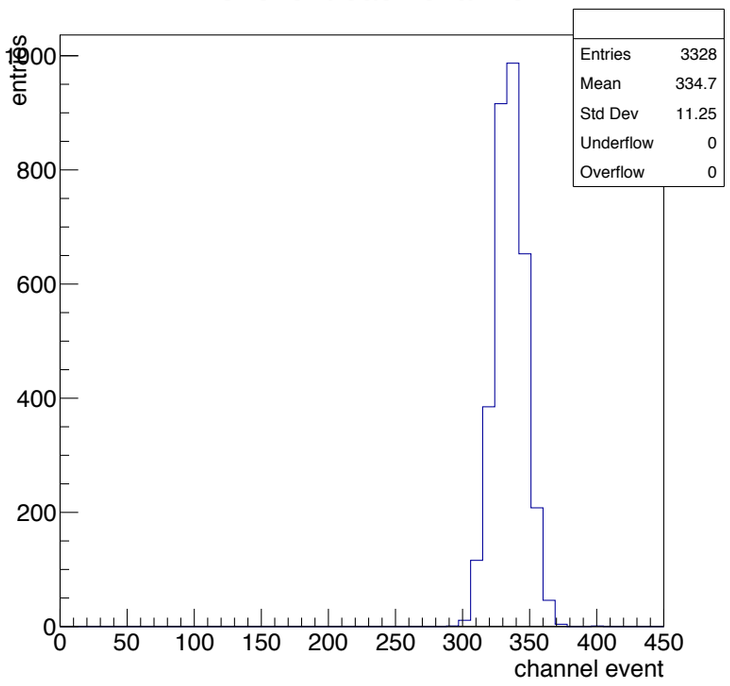


Channel classification update

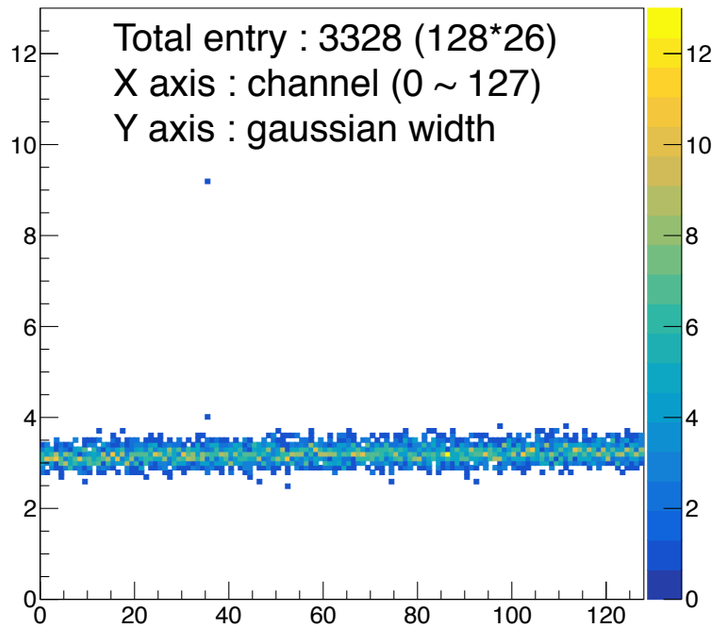
Turn on position adc0_mean



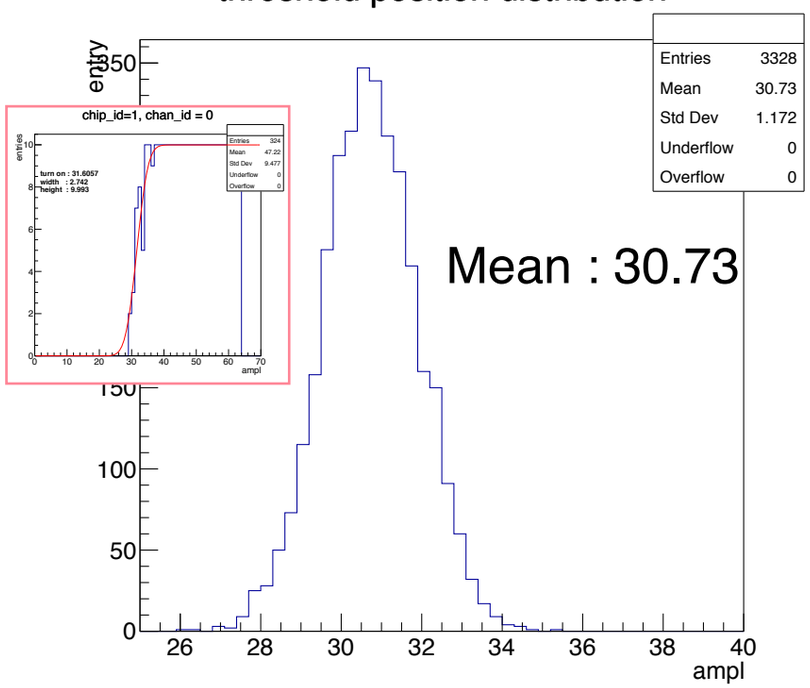
of event each channel



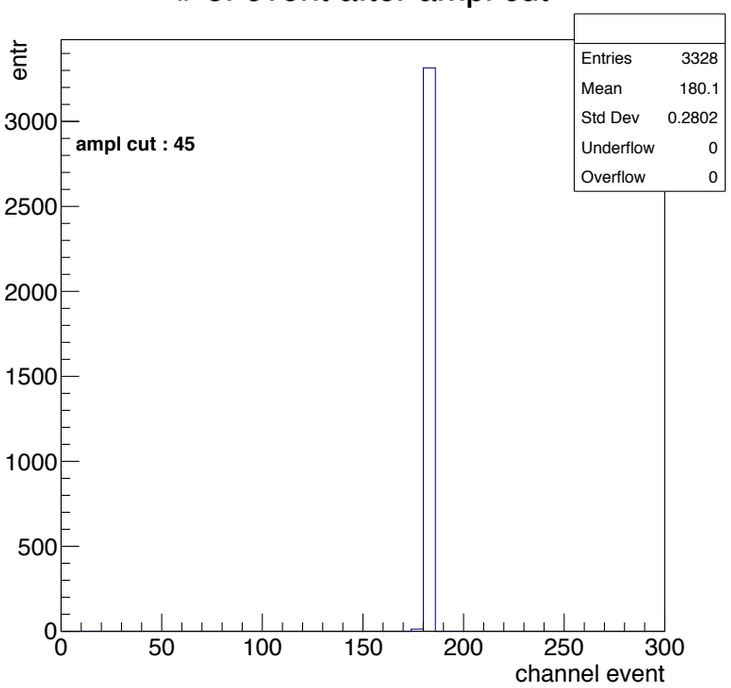
Gaus_width



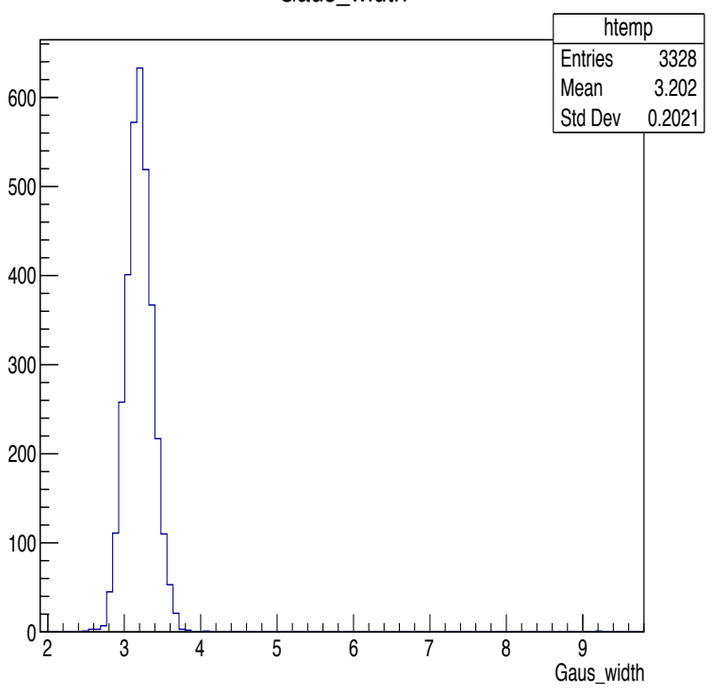
threshold position distribution



of event after ampl cut

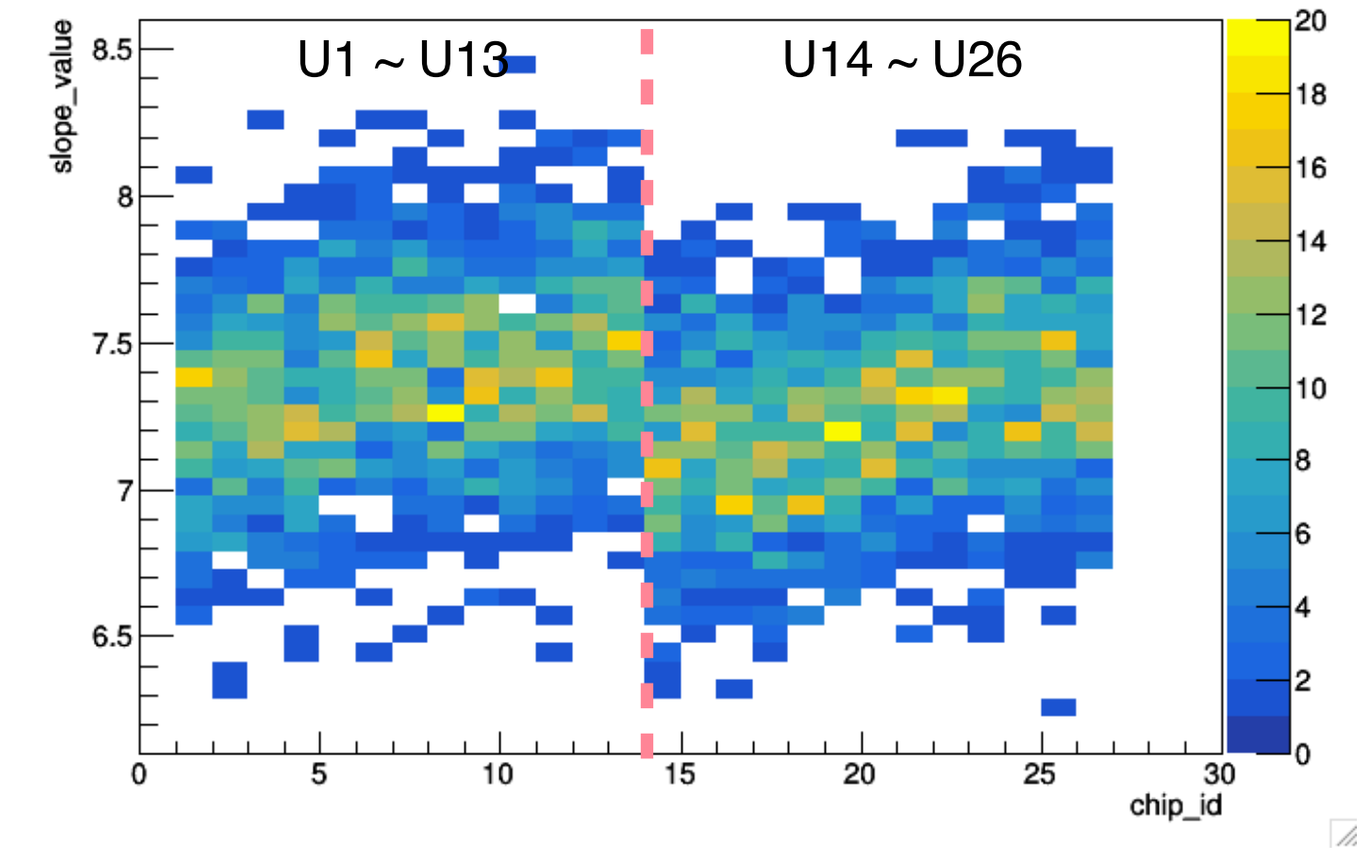


Gaus_width



Channel classification update

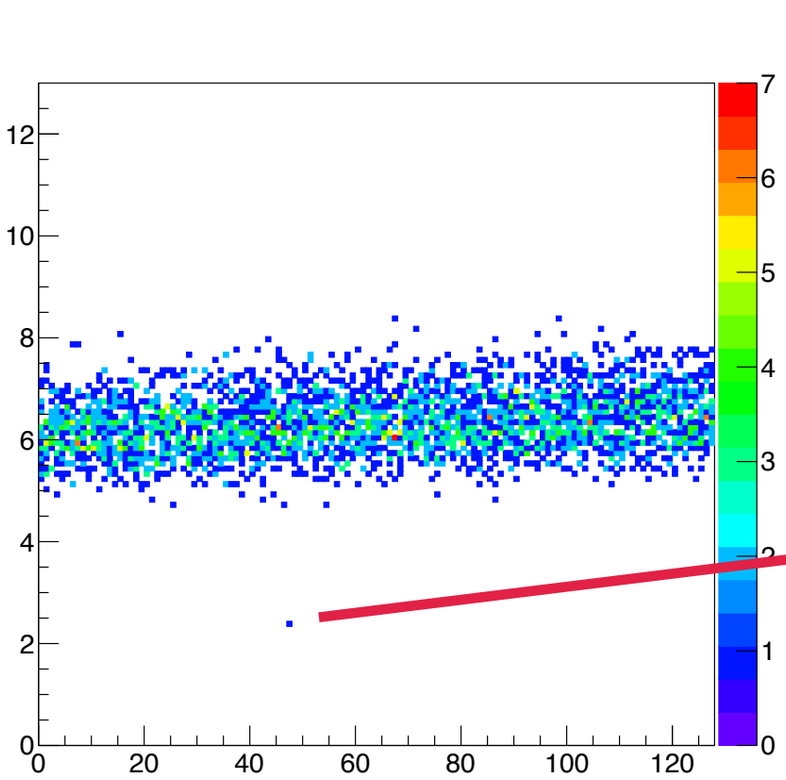
Ampl-ADC slope vs chip ID

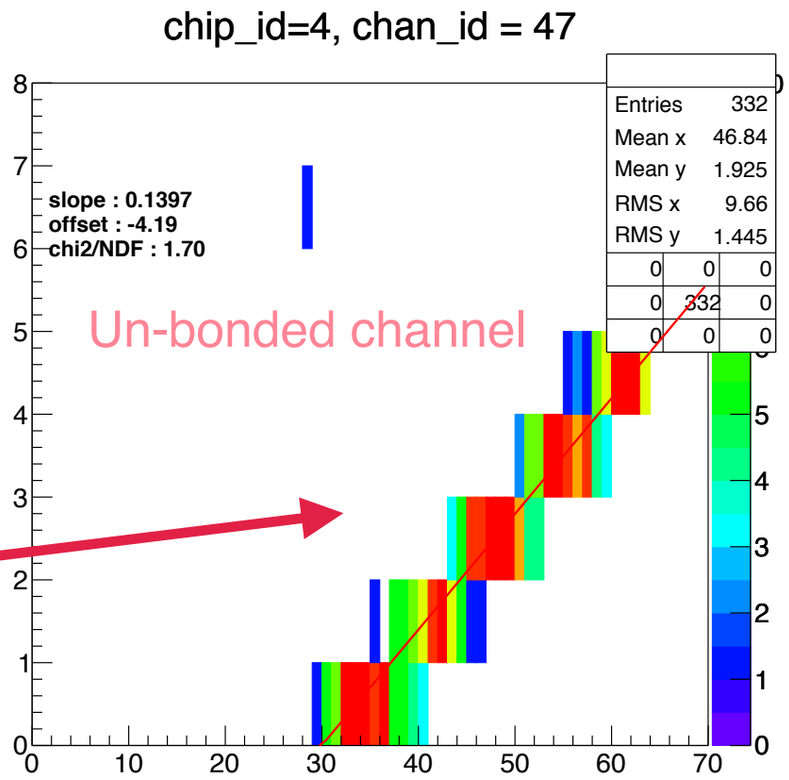


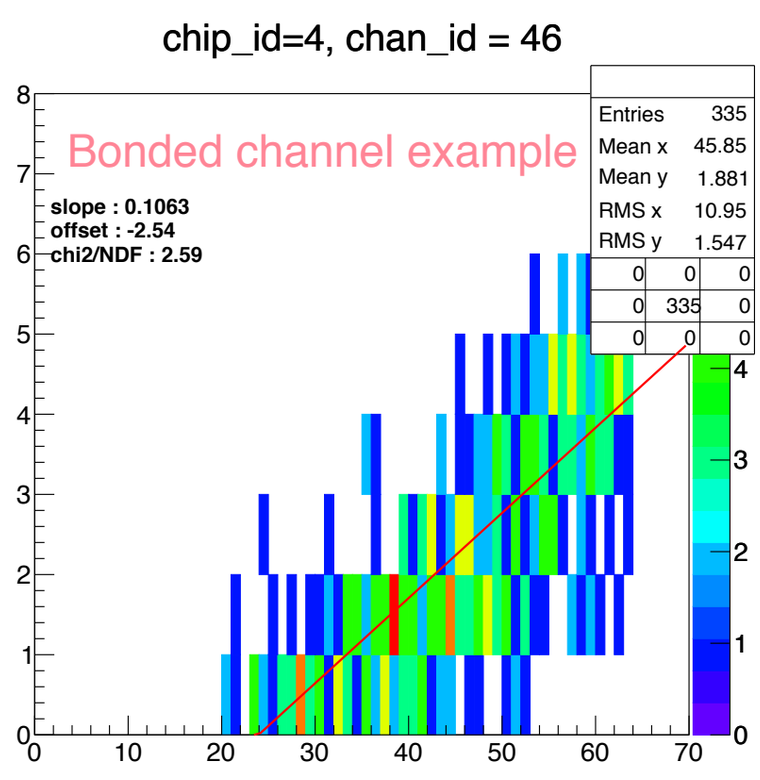
Slope changes as function of chip ID.
Amplitude of test pulse attenuates as it goes farther.

Channel classification update

- Un-bonded channel :
  - It can be checked by running calibration test without bias voltage







Summary

- Ladder assembly :
  - 4 ladders have been assembled, preliminary channel classification could be done this week.

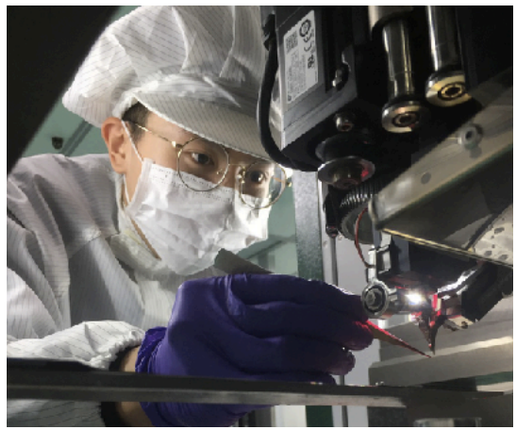
- Second Testbench preparation :
  - The test pulse measurements have been performed. The bad ROC board showed nothing.

- Cosmic test :
  - The noise can also be reduced with 2 scintillators + BEC
  - The MIP of testbeam result is higher than the one from cosmic test.

- Channel classification
  - Multiple approaches have been performed.

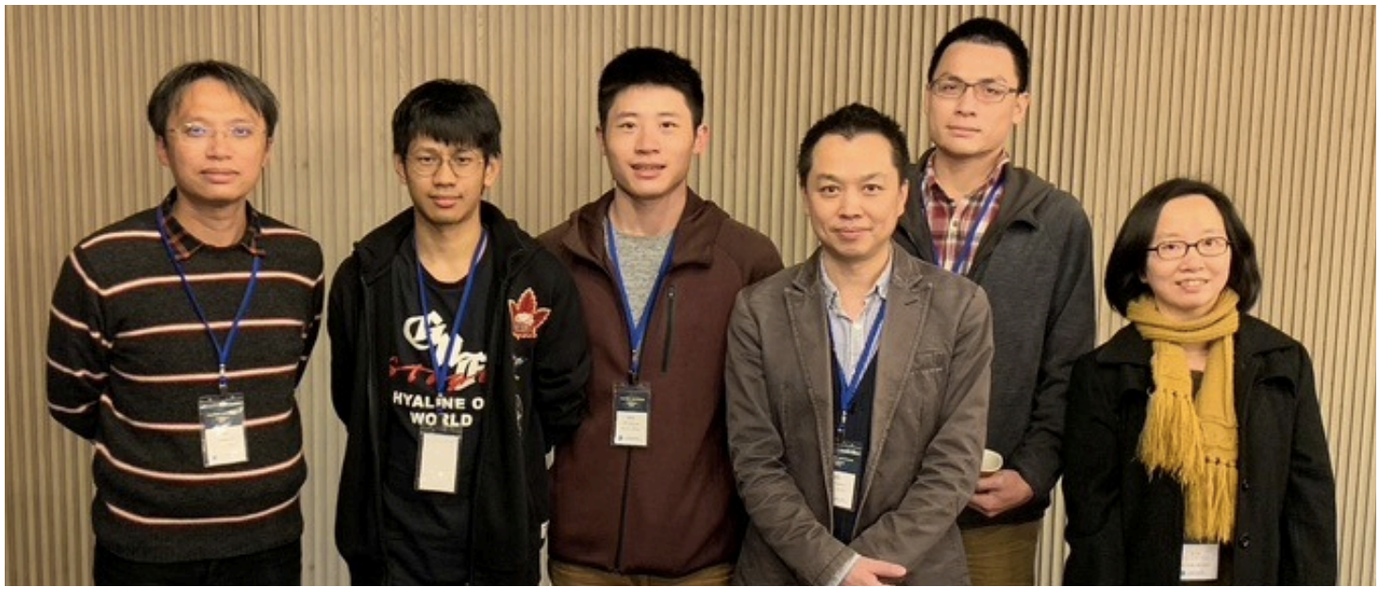
Back up

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

Second Testbench preparation

Need to be purchased

Item	required amount	status	where	note
ROC	1	0		Tested to be bad
FEM board	1	2	in NTU	Tested to be good
FEM-IB	1	0		Only one FEM-IB in TW
clock distribution board	1	1	in NTU	Tested to be good
VME crate	1	2	in NCU	
PCIE board	1	0		PCIe-6536B Board
cooling fan	4	4	in NCU	
win 7 PC	1	0		
Wifi module	1	0		
monitor, keyboard & mouse	1	1	in NCU	
NIM crate	1	1	in NCU	
cable				
ROC power cable	1	0		
chip power cable	1	1	in NCU	
2 pins optical fibers	3	3	in NTU	
10 m data cable	1	2	in NTU	
BCLK cable (clock)	1	2	in NTU	
PCIE cable	1	0		SHC68-C68-D4 cable.
PCIE adapter	1	0		NI653x cable adapter
USB cable (FEM-IB to PC)	1	1	in NCU	
clock distribution board power cable	1	0		
100V bias power cable	1	1	in NTU	
Power supply				
cooling fan power (12 V)	2	2	in NCU	
5.8V	2	0		
4.2V (chip power)	1	0		
5V	1	0		
5V, 15A	1	0		30 A power supply (GW instek, SPS-1230)
100V	1	1	in NTU	