

# INTT progress report

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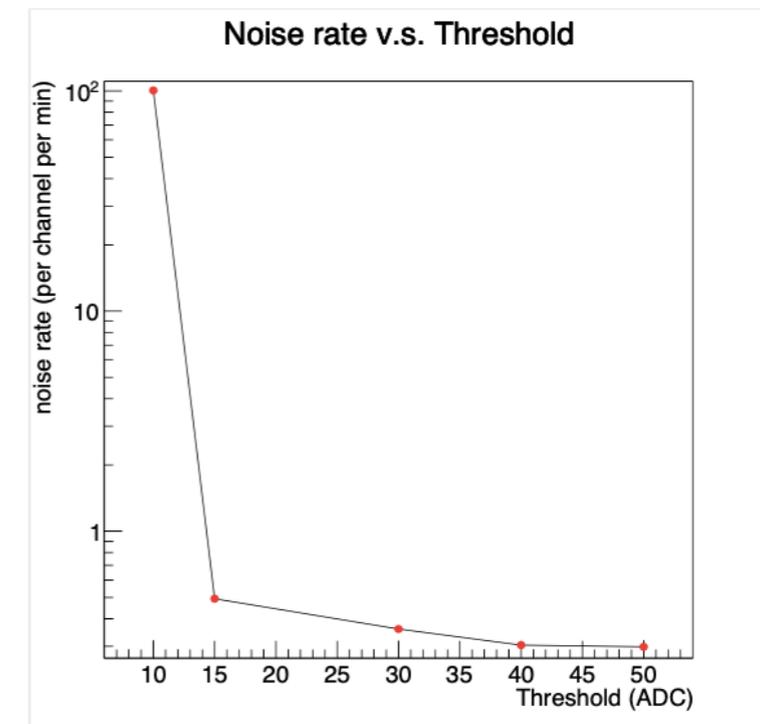
**Cheng-Wei Shih**  
**National Central University**

2022/3/11



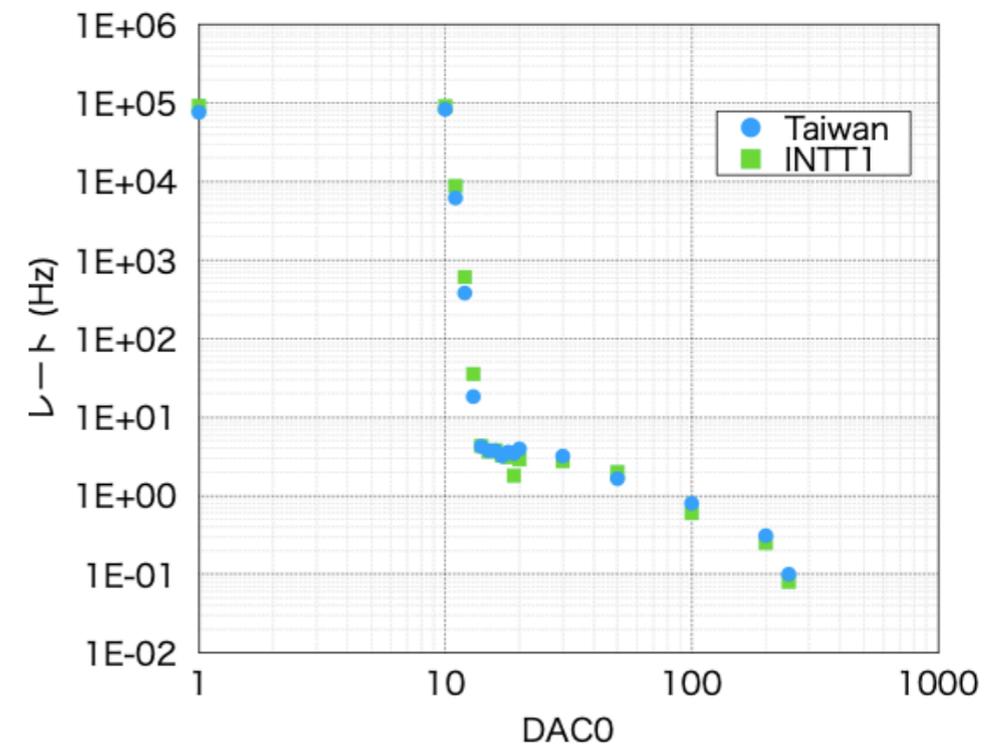
# // Noise rate v.s. Threshold

| Threshold (ADC) | rate (per channel per min) |              |
|-----------------|----------------------------|--------------|
| 10              | 100.515                    | $\pm 0.086$  |
| 15              | 0.493                      | $\pm 0.0065$ |
| 30              | 0.359                      | $\pm 0.0045$ |
| 40              | 0.304                      | $\pm 0.0042$ |
| 50              | 0.298                      | $\pm 0.004$  |



DAC0 を変えたときのセルフトリガーレート

|       |             | Ratio of noise rate |
|-------|-------------|---------------------|
| Genki | @30V / @15V | 0.753               |
|       | @50V / @15V | 0.548               |
| CW    | @30V / @15V | 0.728               |
|       | @50V / @15V | 0.604               |

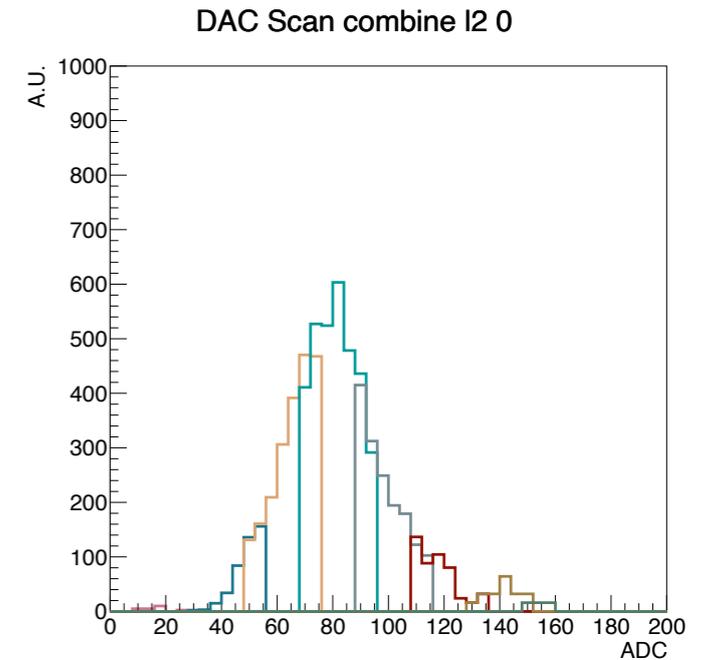
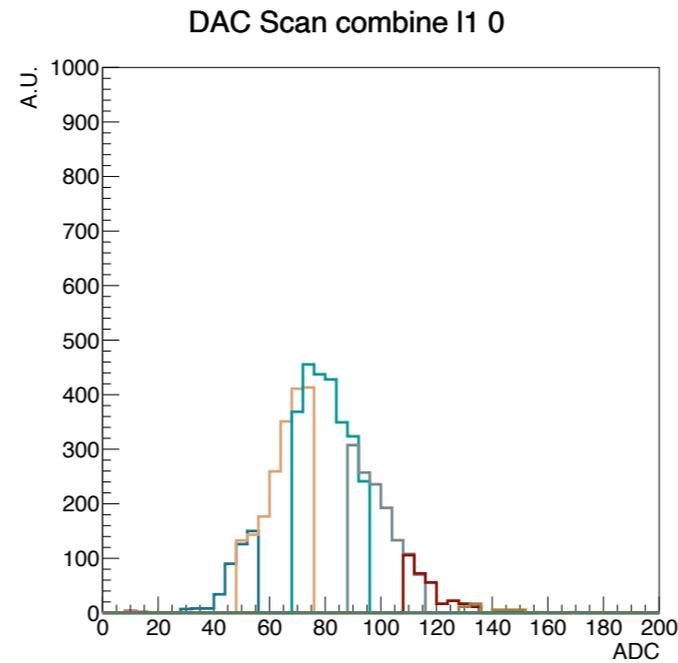
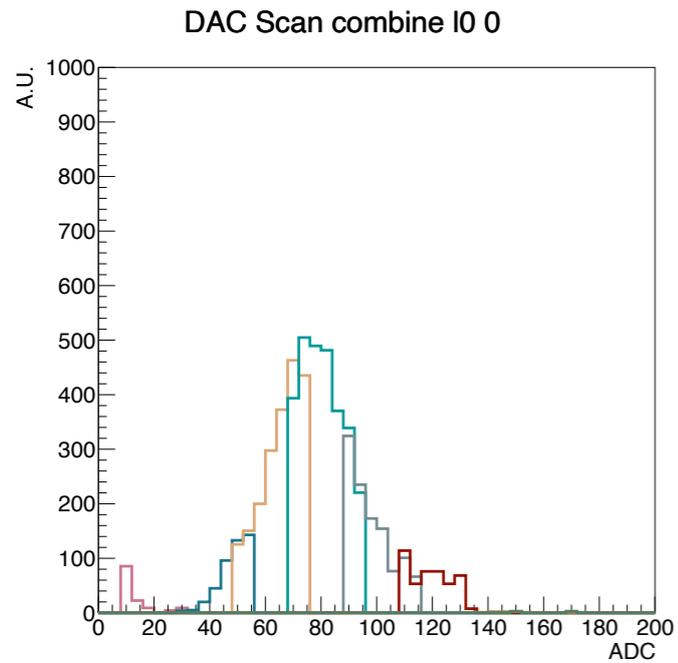


The results are consistent !

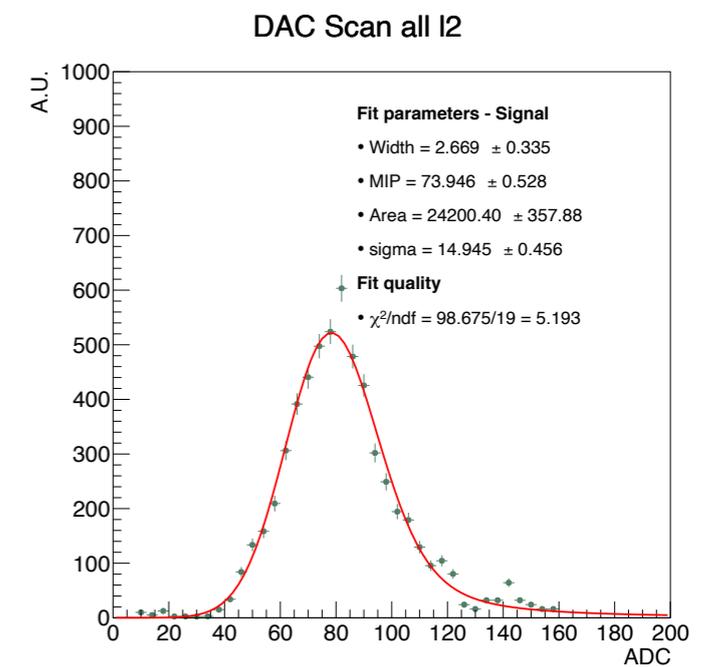
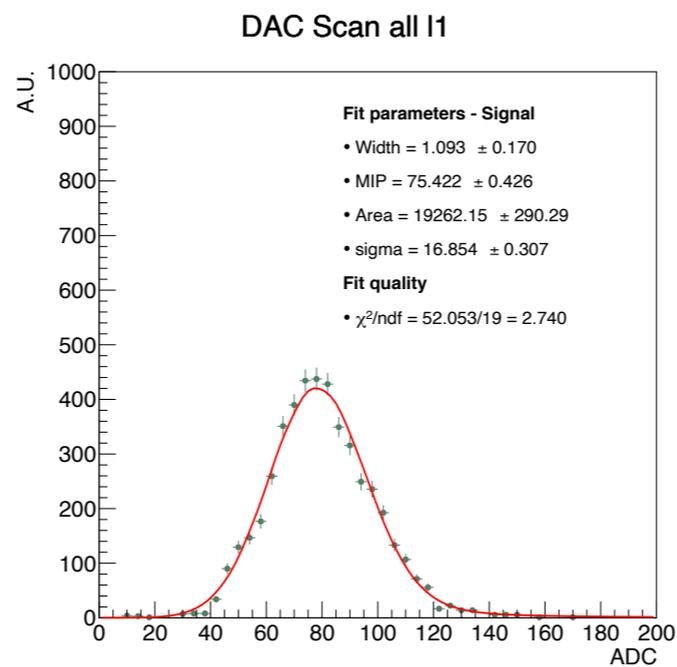
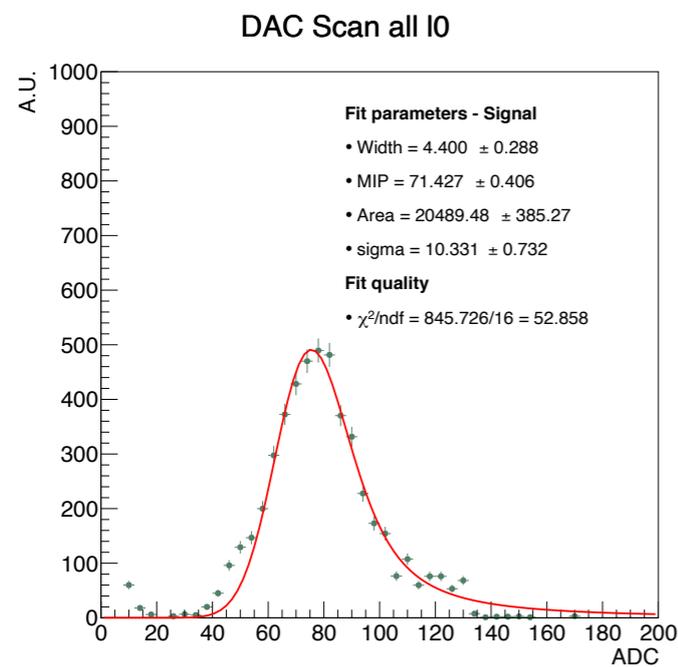
# // DAC scan

- Event profile has to be 111
- single hit for each layer only
- Clone groups in one INTT trigger event are deleted

## Histogram matching

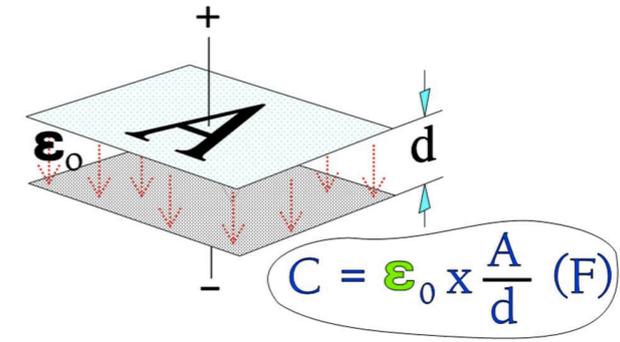


## Fitting function : Landau convolute with Gaussian



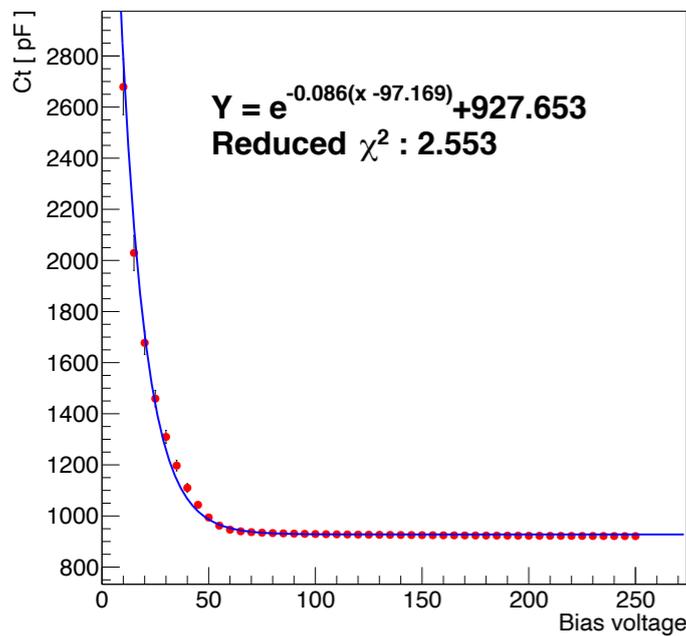
# // DAC scan

- Based on 148 sets of sensors

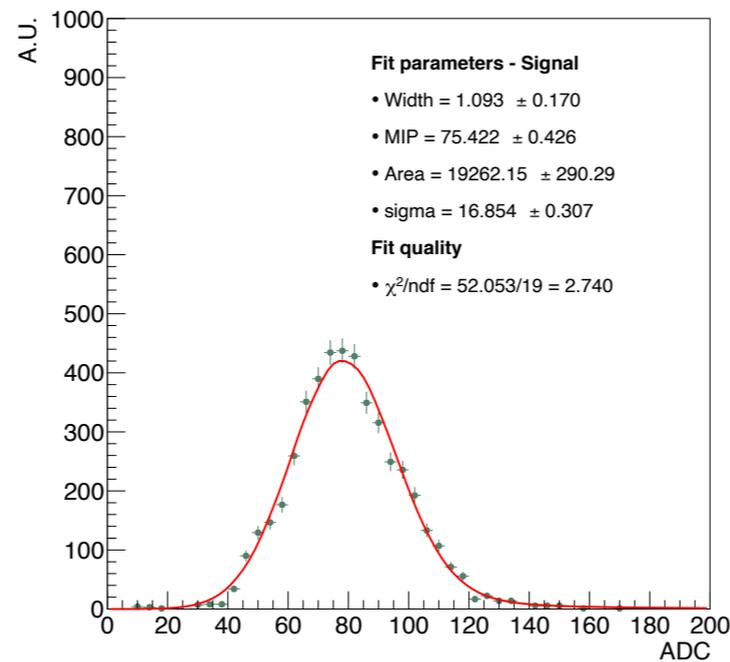


|                 | @24.35 V (from fit) | @ 50 V          | @ 100 V         | ratio (24.35 V/100 V) | ratio (50 V/100 V) |
|-----------------|---------------------|-----------------|-----------------|-----------------------|--------------------|
| Type A, Ct [pF] | 1465.42             | 994.149 ± 9.453 | 929.325 ± 1.613 | 1.577                 | 1.069 ± 0.0128     |
| Type B, Ct [pF] |                     | 774.764 ± 7.547 | 723.023 ± 1.362 |                       | 1.071 ± 0.0128     |
| Testbeam, edep  |                     | 75.422 ± 0.426  | 118.91 ± 0.65   |                       | 1.577 ± 0.017      |

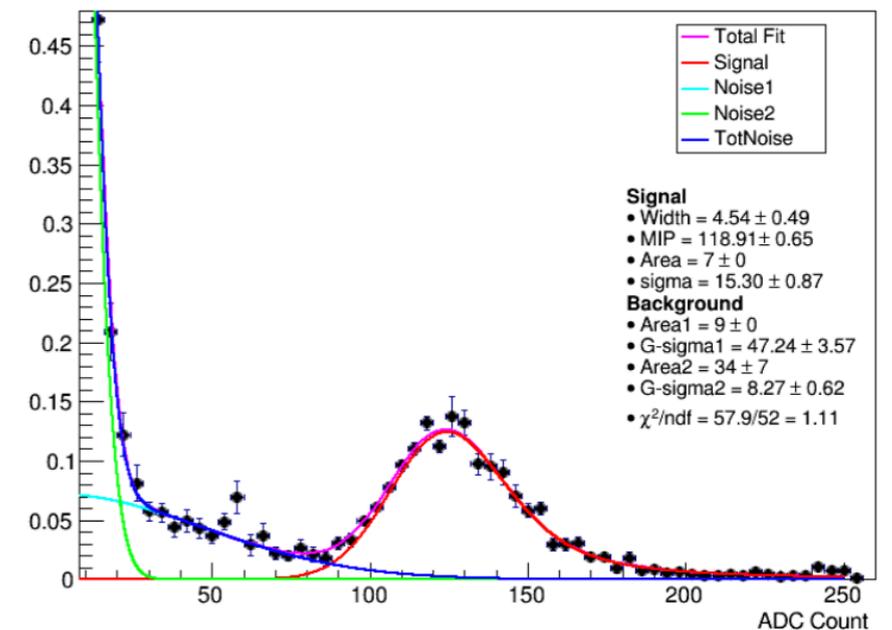
INTT Type-A sensor, CV curve



DAC Scan all I1



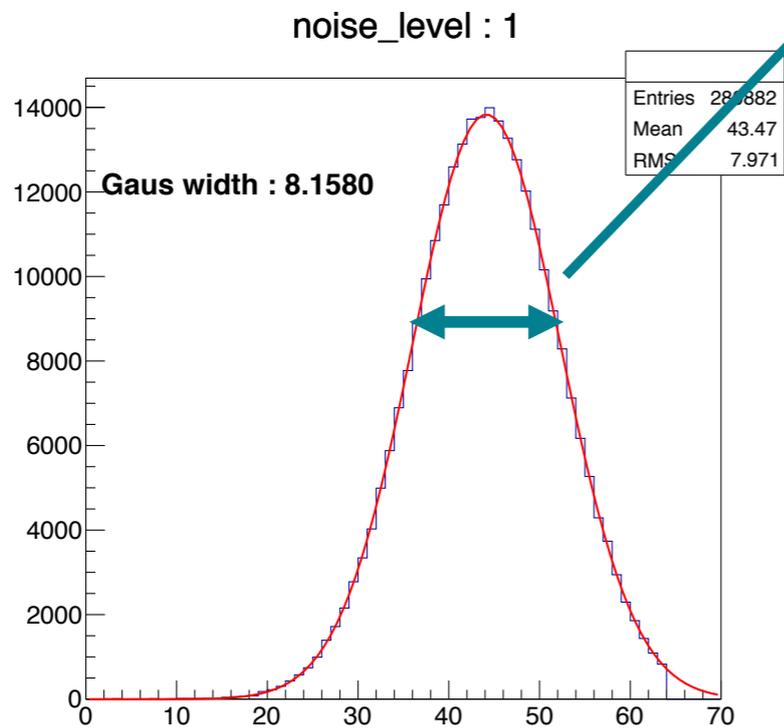
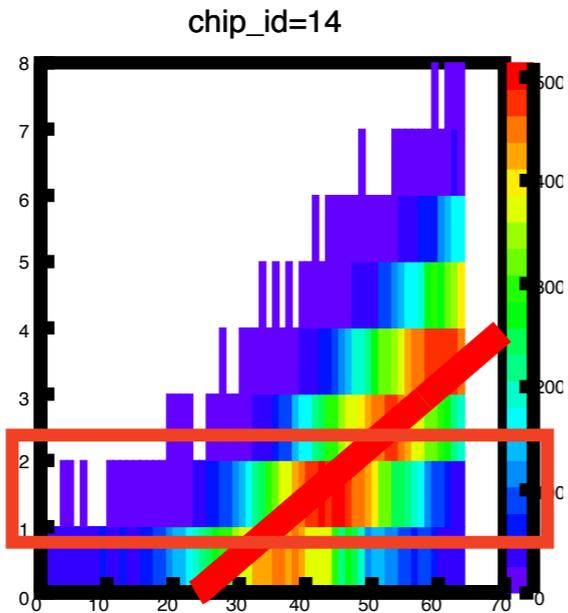
ifem=1 chip=45



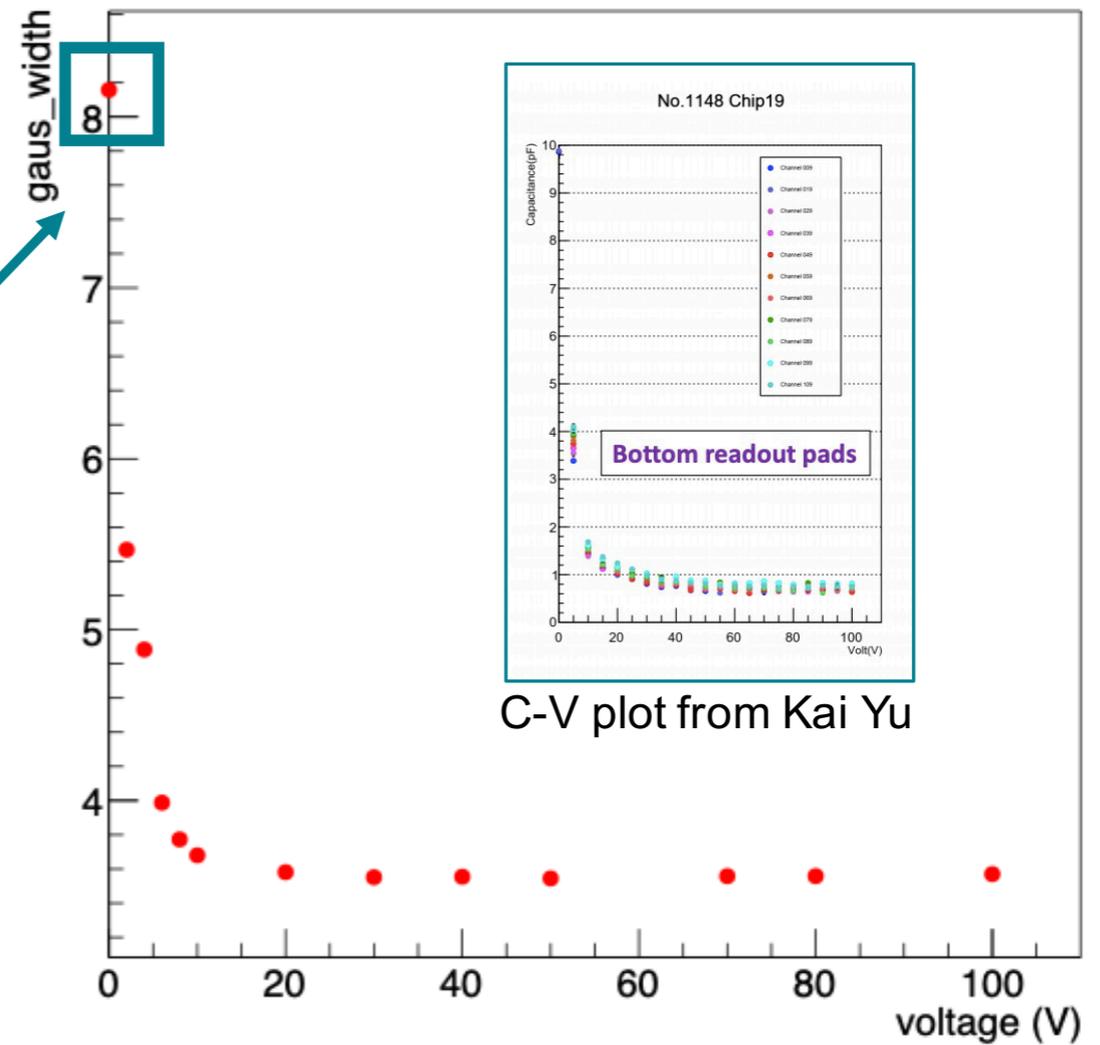
MIP of Testbeam2019 is based on the [link](#)

# DAC scan

Previous results, 2020/06/19



pre-Production-002, gaus\_width to V



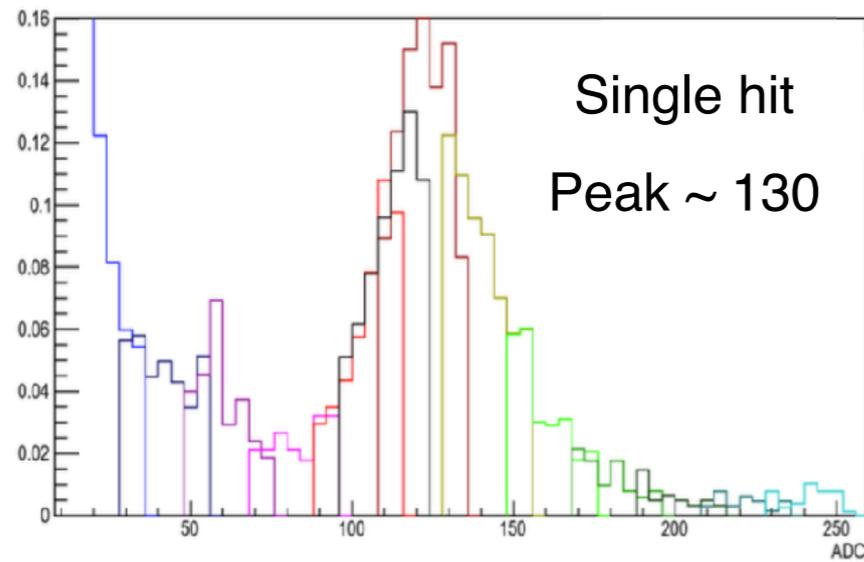
# // Summary

- The noise rate results seems to be consistent.
- Based on the CV curve interpolation, if we assume the bias voltage of Testbeam 2019 is 100V, the supply voltage of sensor in Testbeam 2021 is  $\sim 24.35$  V.
- To do :
  - Cross check the efficiency with Genki
  - Check the run with BEC
  - Scattering MC/data comparison

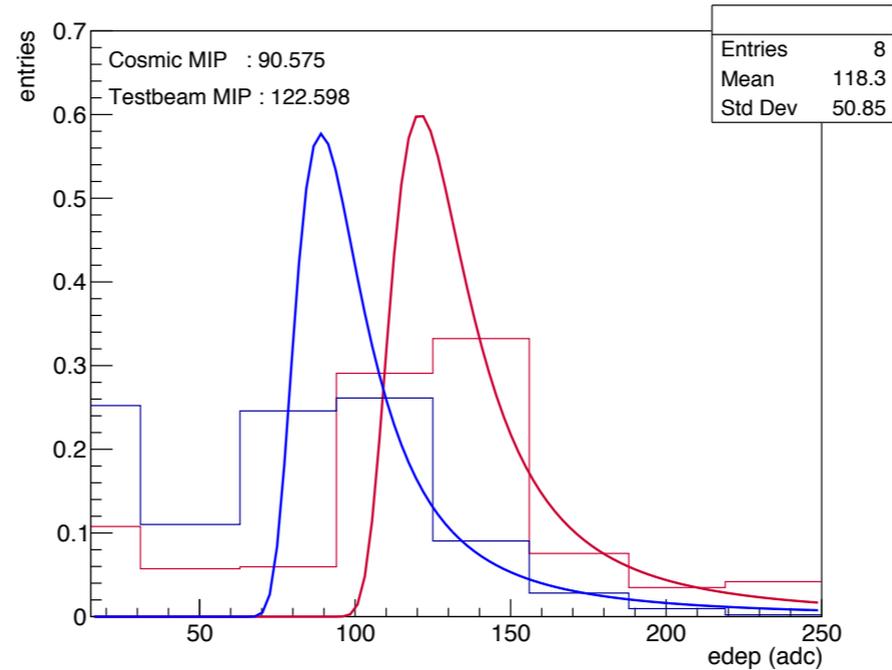
**Back up**

# // DAC scan - comparison

TestBeam2019

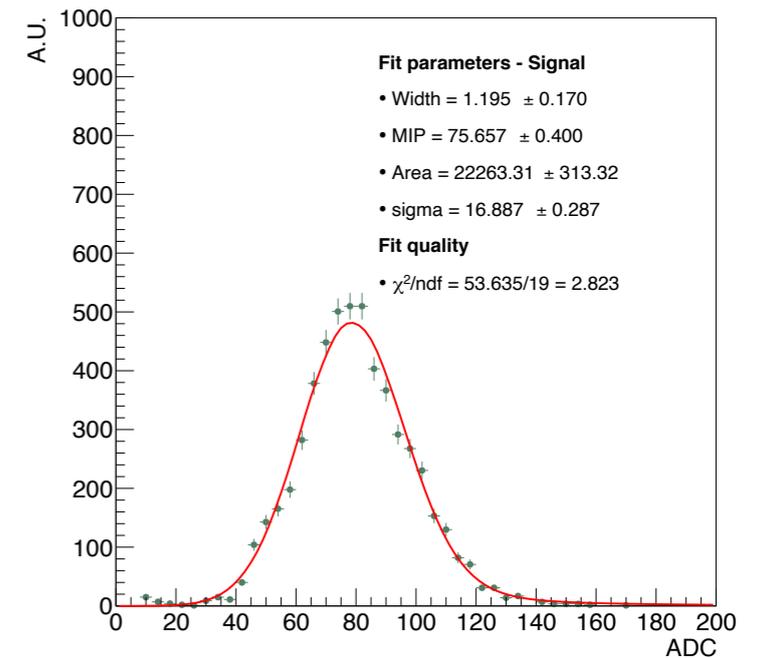


— Cosmic  
— Testbeam2019



Cosmic MPV : 90.58  
Testbeam : 122.598

DAC Scan all I1



Bias voltage : 50V  
MPV : 75.7