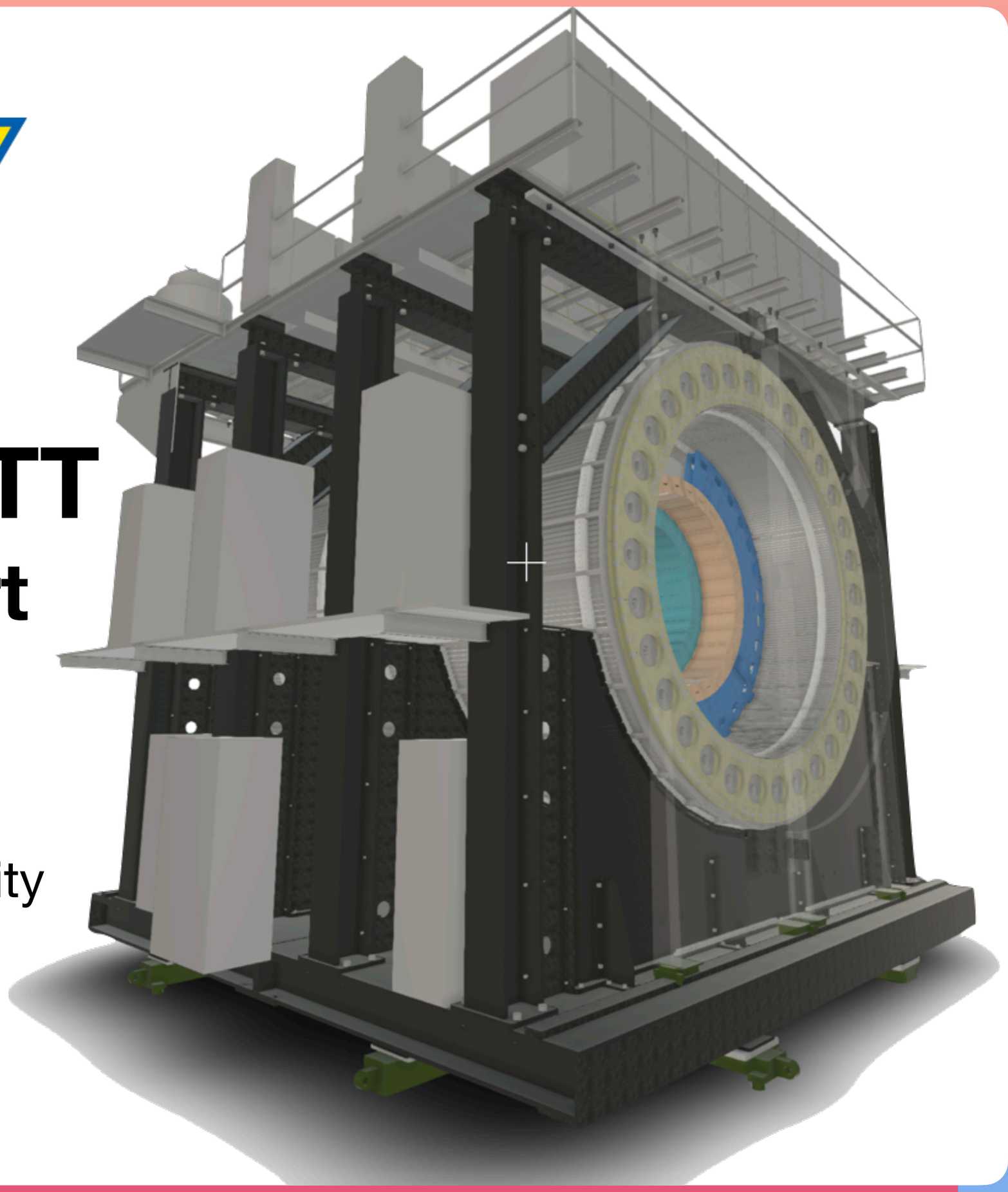
sPHENIX INTT - Weekly Report

Cheng-Wei Shih,
Chia-Ming Kuo

National Central University

2021/10/8

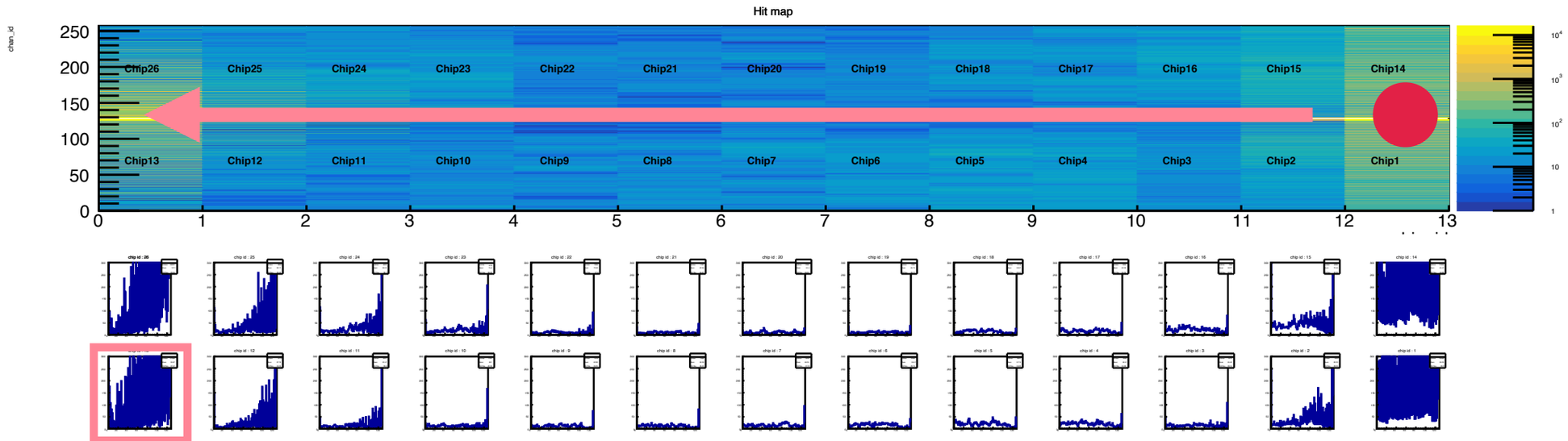


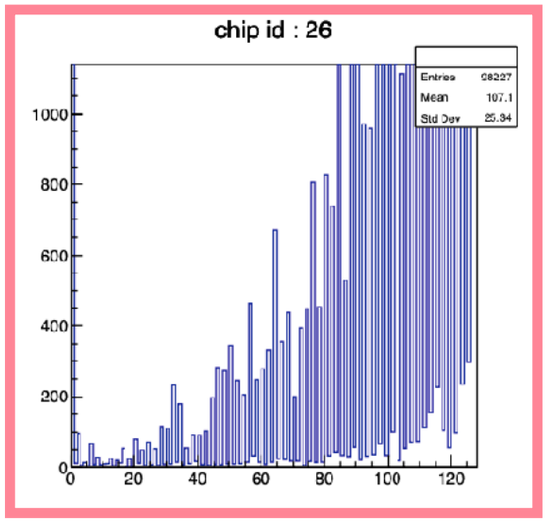
Source test result

- Silicon faces up
- External-trigger mode
- adc0 : 25
- W/o support GND connection

- Too noisy

Source move along the HDI



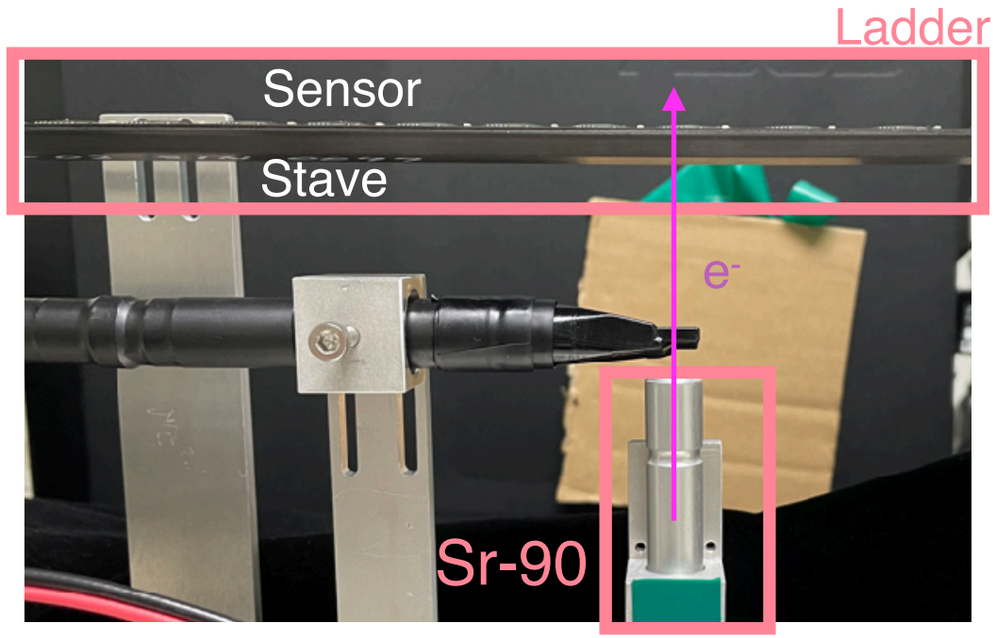


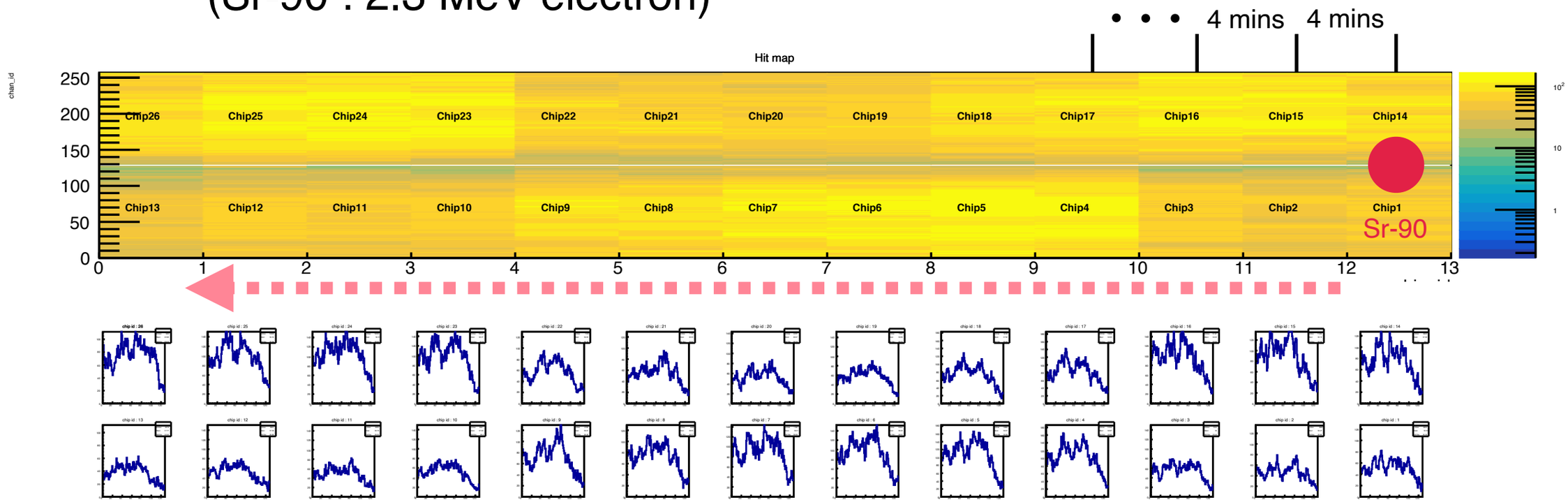
Fishbone behavior

Source test result

- Silicon faces up
- External-trigger mode
- adc0 : 15
- W/ support GND connection

- System is stable (low noise)
- Multi-peak distribution
  - Too much material ?
    (Sr-90 : 2.3 MeV electron)



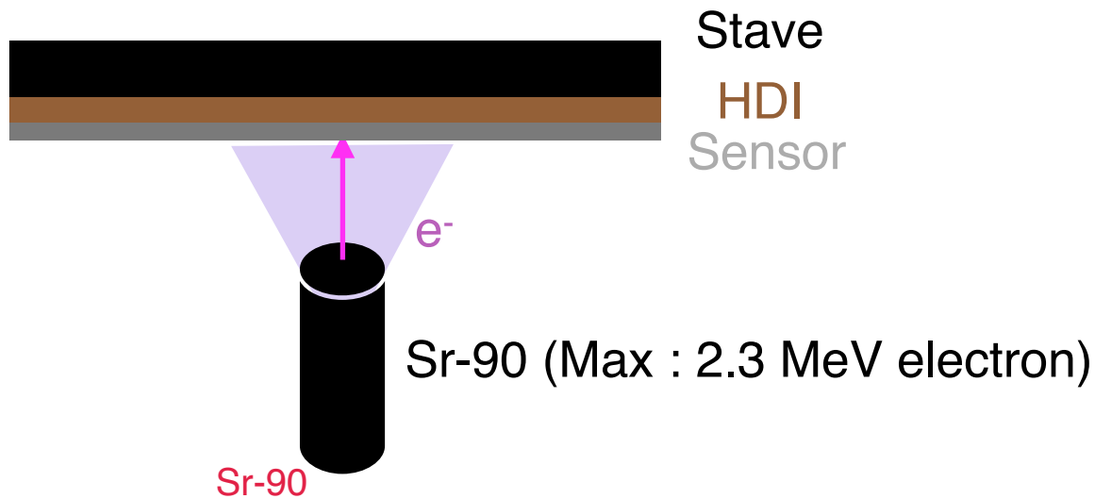


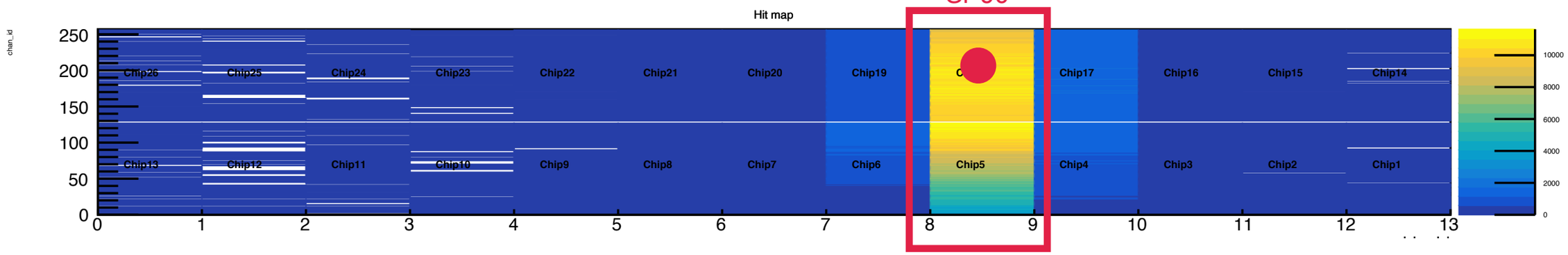
For 4 mins measurement, each channel can have at least 1 signal

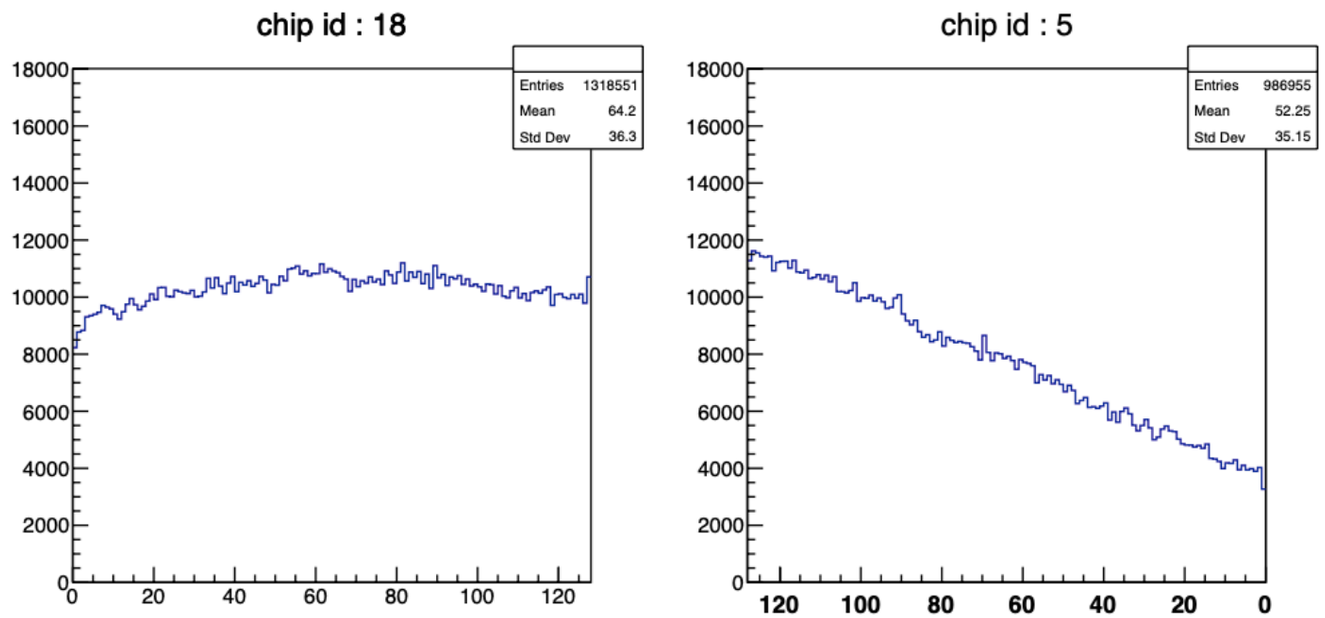
Source test result

- Silicon faces down
- Self-trigger mode
- adc0 : 40
- W/ support GND connection

- Distribution seems to be reasonable



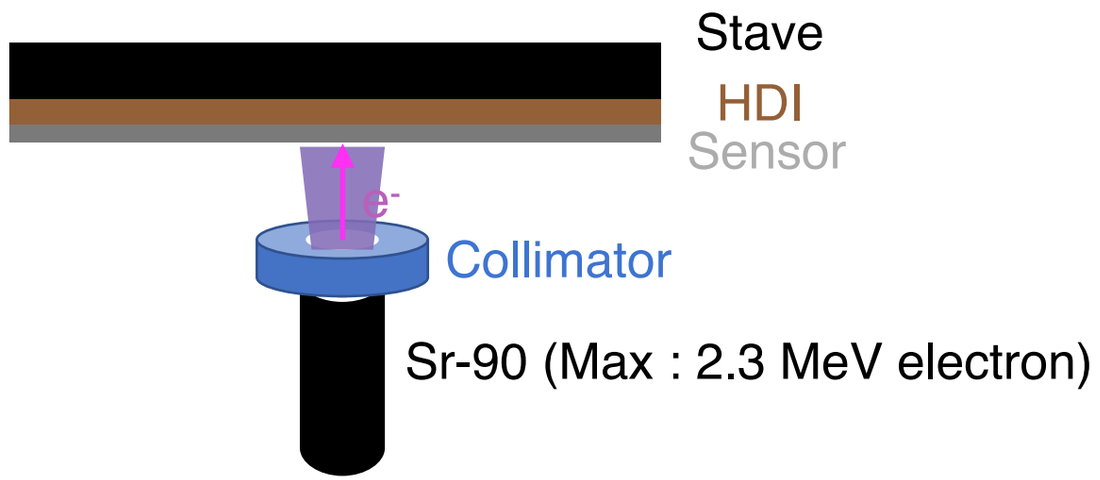




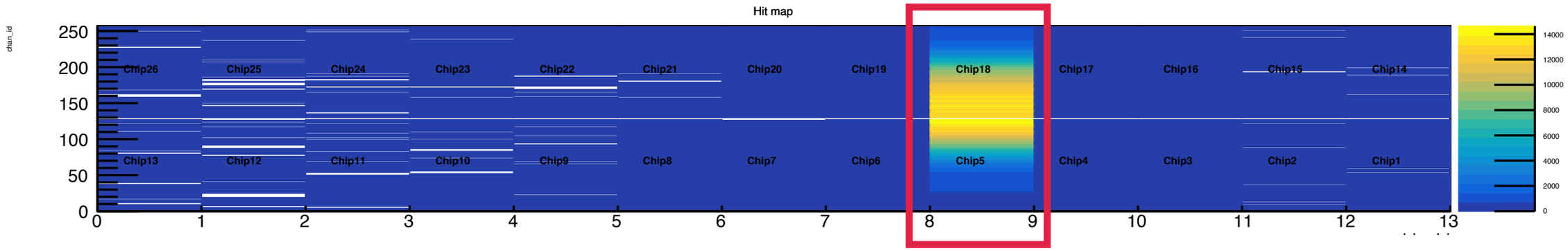
Measurement : 10 mins
Total event of U18 : 1318551
→ 1030 event per channel per min

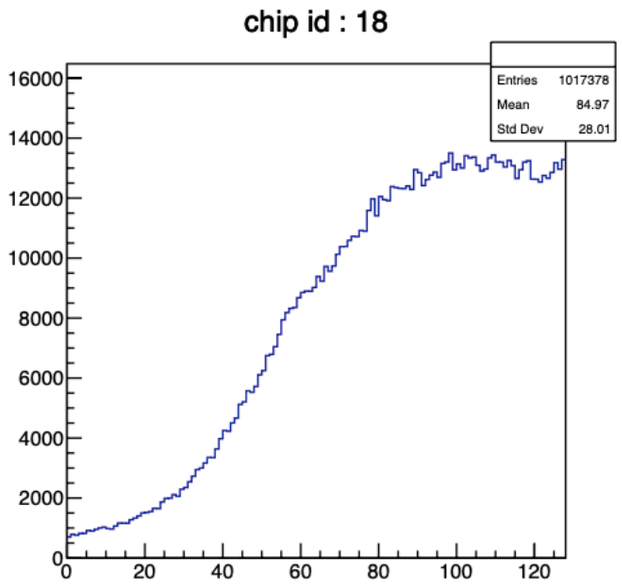
Source test result

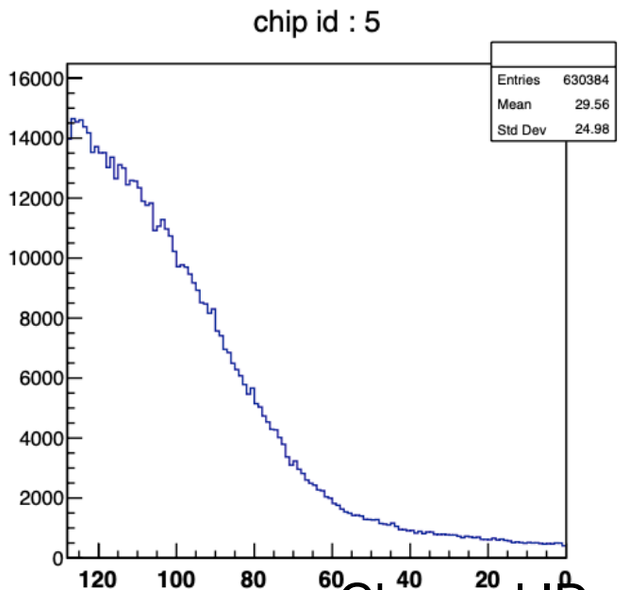
- Silicon faces down
- Self-trigger mode
- adc0 : 40
- W/ support GND connection
- W/ Collimator, to constrain beam spot



- Distribution seems to be reasonable







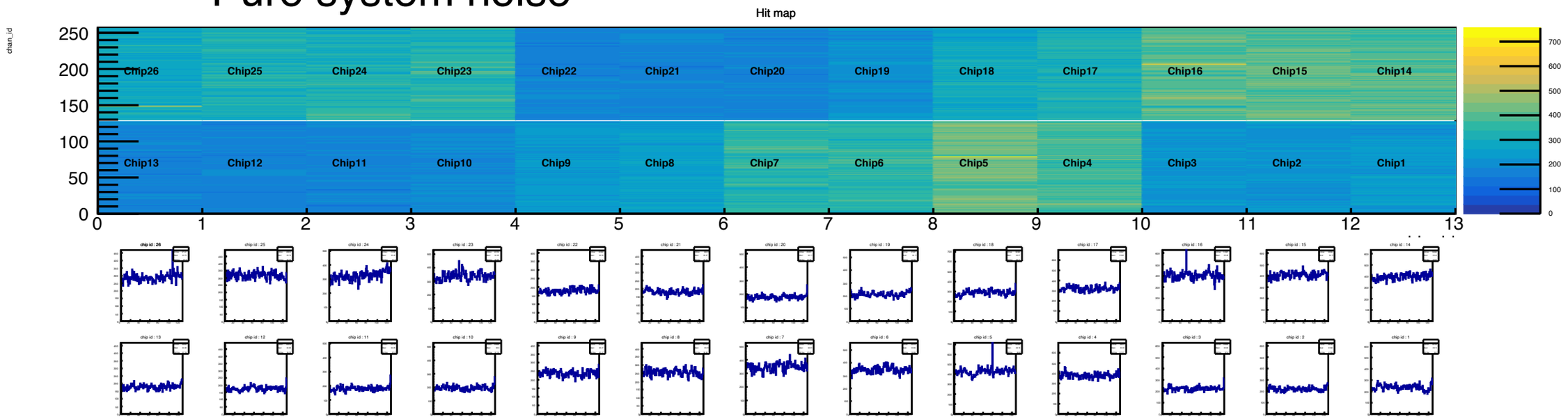
Source test result, noise study

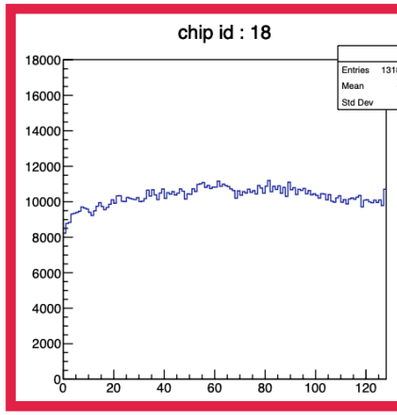
- Silicon faces down
- Self-trigger mode
- adc0 : 40
- W/ support GND connection
- W/o source

Measurement : 1282 mins
Total event : 926089
→ 926089/(3328·1282)=0.217

→ 0.217 events per channel per mins

- Pure system noise





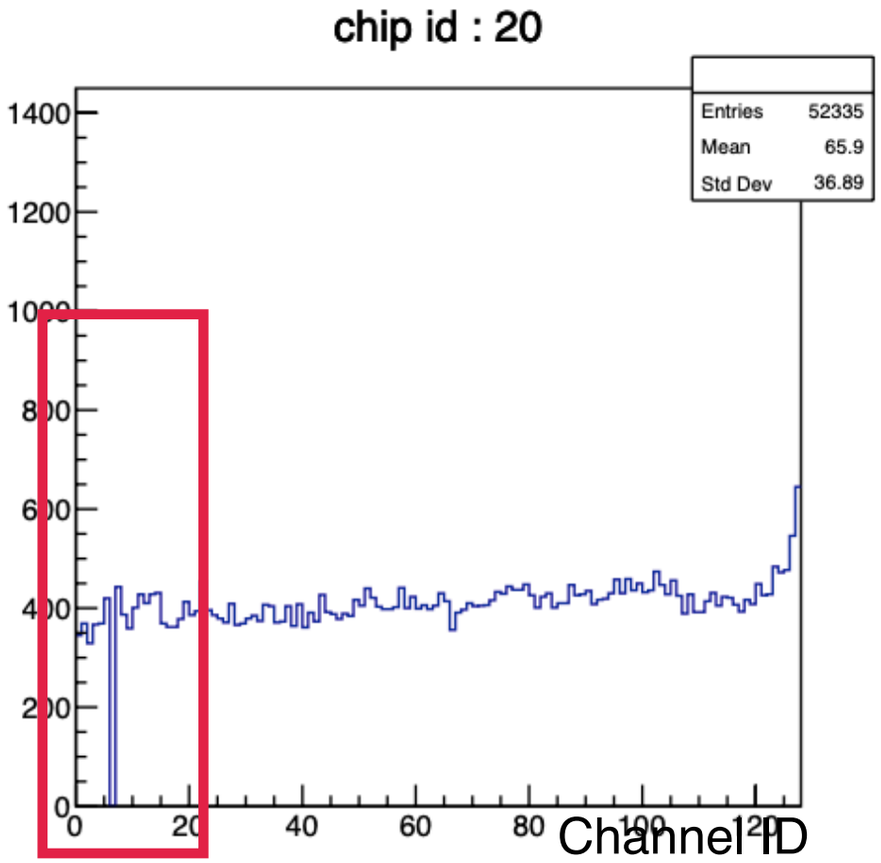
With source
Measurement : 10 mins
Total event of U18 : 1318551
→ 1030 events per channel per min

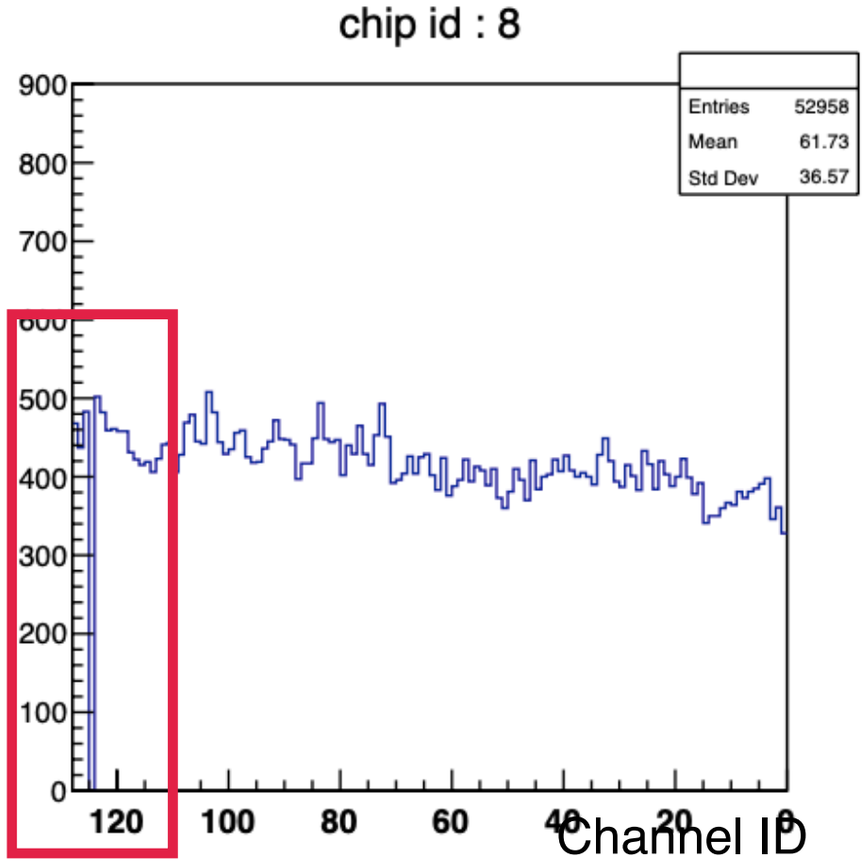
To verify Silicon, 1 mins is enough

Source test 2 min test

- Silicon faces down
- Self-trigger mode
- adc0 : 40
- W/ support GND connection
- 2 mins measurement

Another ladder 2 un-bonded channels : U8 C124, U20 C6





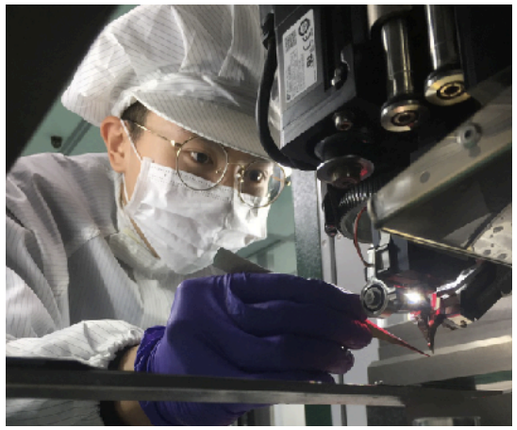
Un-bonded channel can be identified under 2 mins measurements

Source test proposal

- Silicon faces down
- Self-trigger mode
- High threshold (adc0 : 40)
- W/o collimator
- 2 mins measurement for each chip

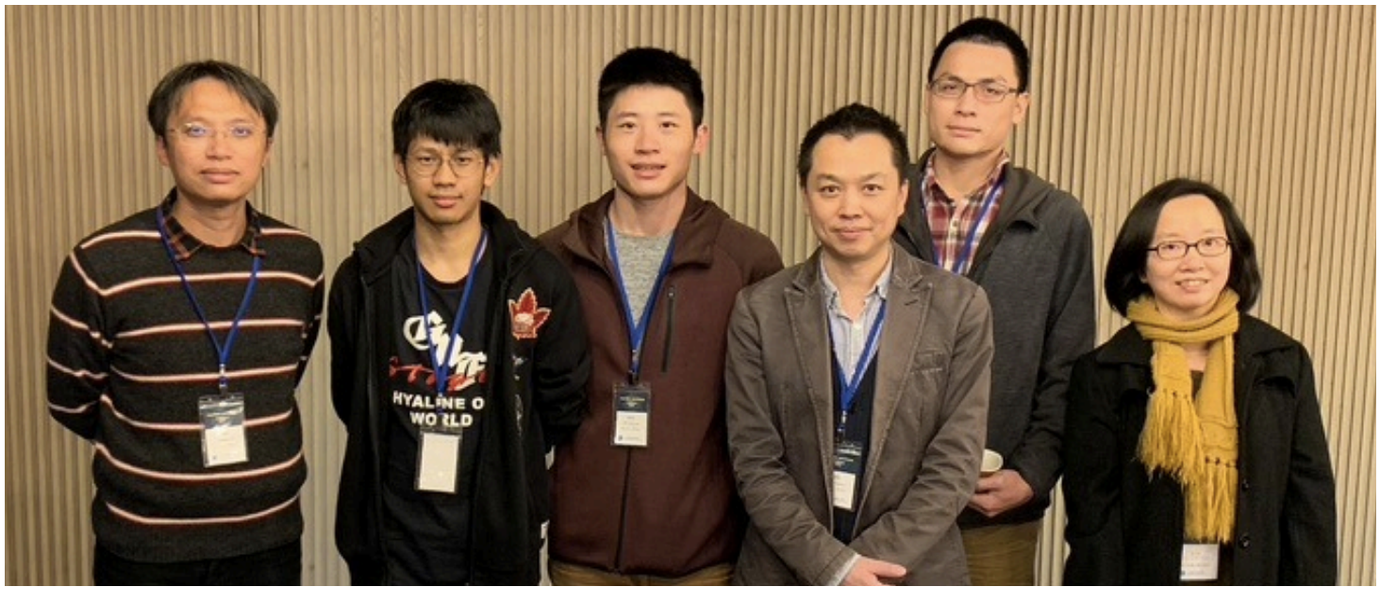
Back up

Taiwan INTT team



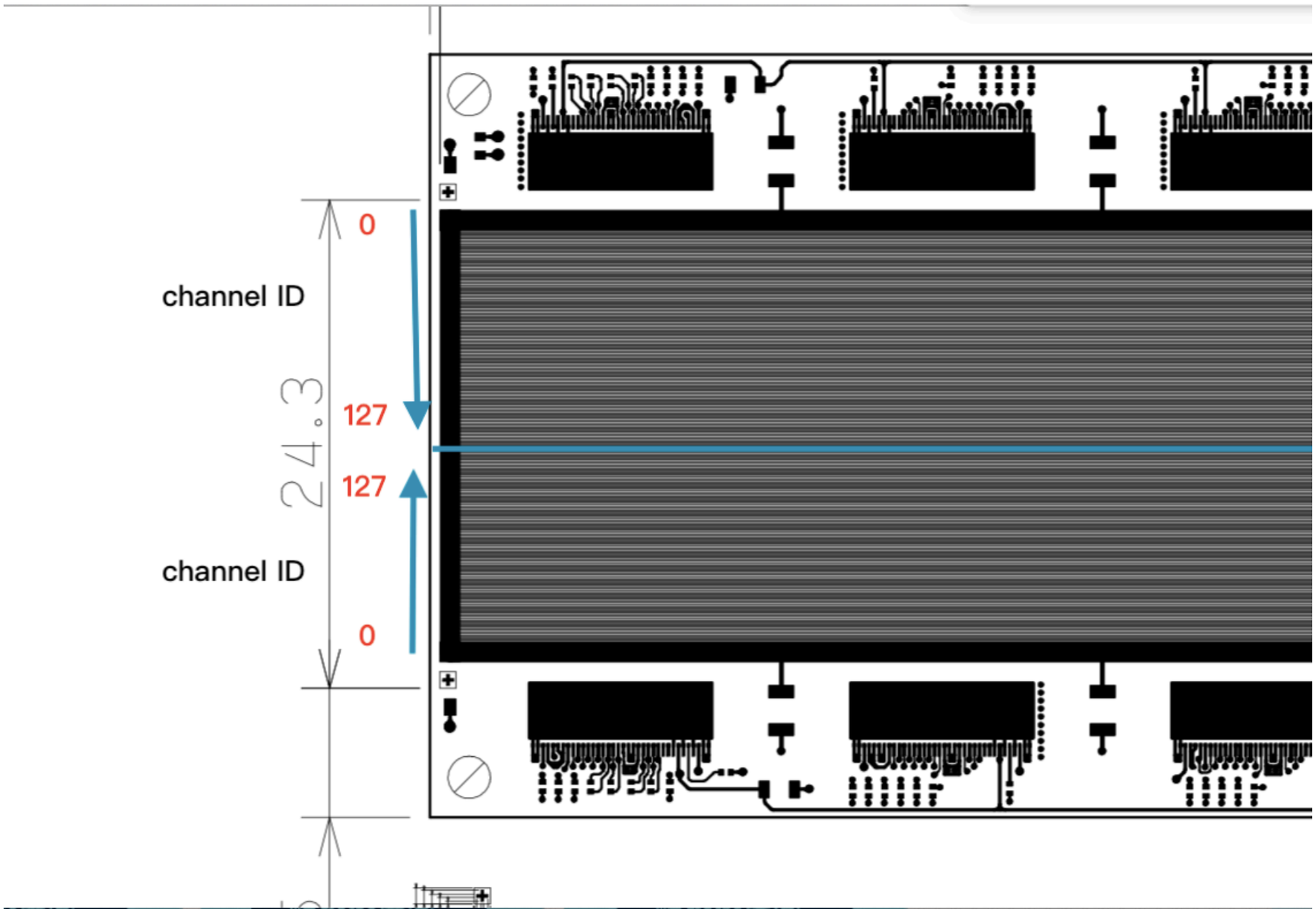
Ou-Wei Cheng

Kai-Yu Cheng



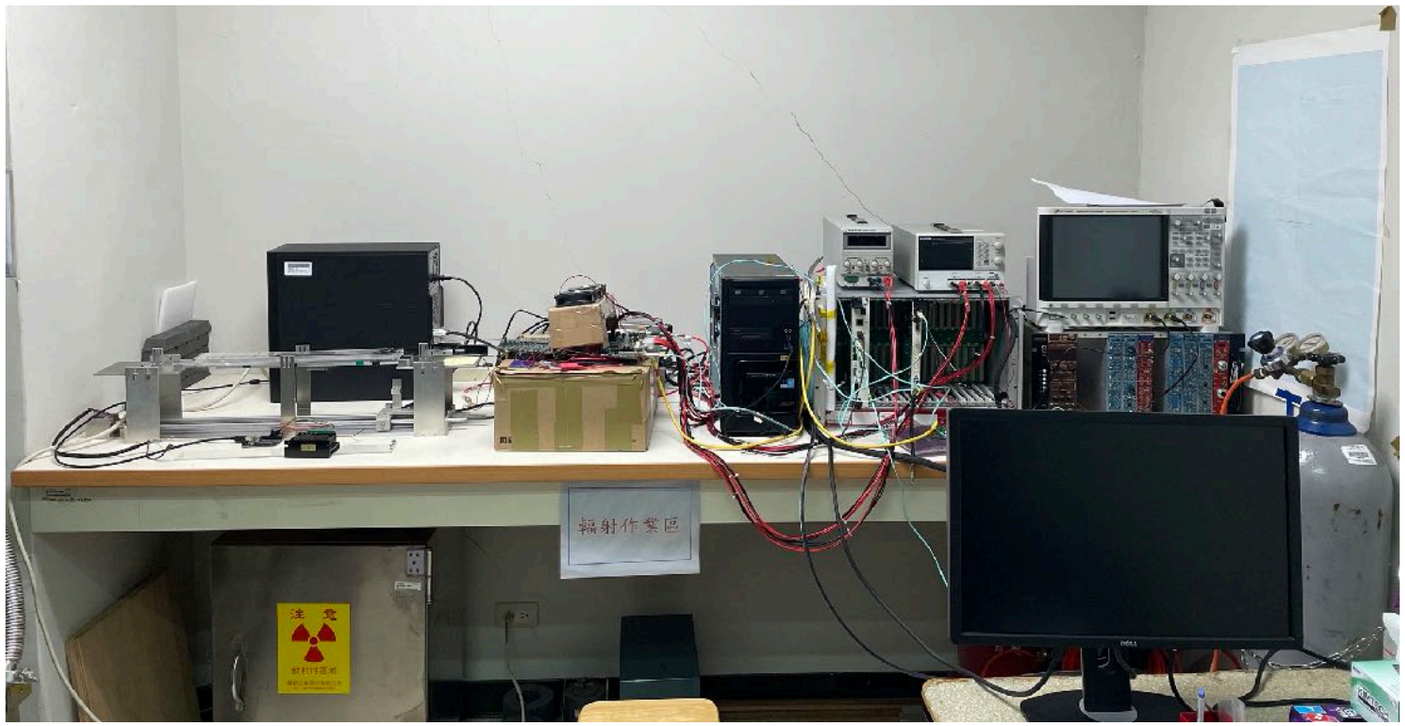
Chia-Ming Kuo Cheng-Wei Shih Lian-Sheng Tsai
Wei-Che Tang Rong-Shyang Lu Jenny Huang

channel ID map



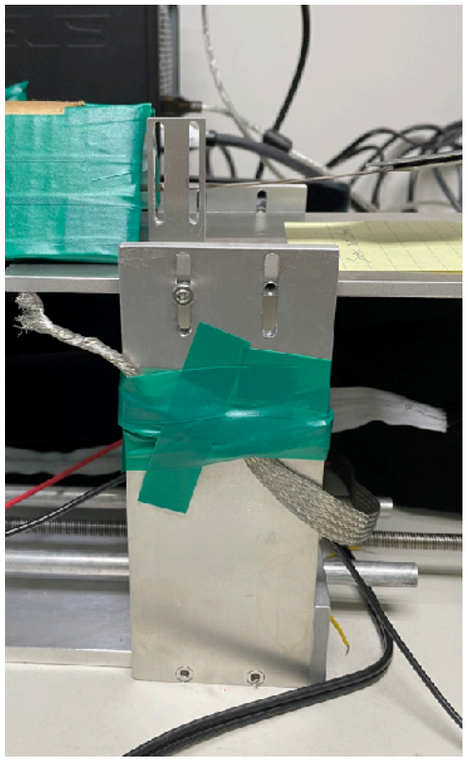
Testbench system in radiation lab

- The set up of Testbench system in radiation lab is finished.
  - The system can take source data with Sr-90 and calibration data.



External trigger mode

GND cable on support



By switching FEM-IB, PCIE cable and PC, we can have 2 Testbench systems, one in 923 (calibration test) & one in radiation lab (source test)