



Detection of nuclear recoil events with SF6 gas

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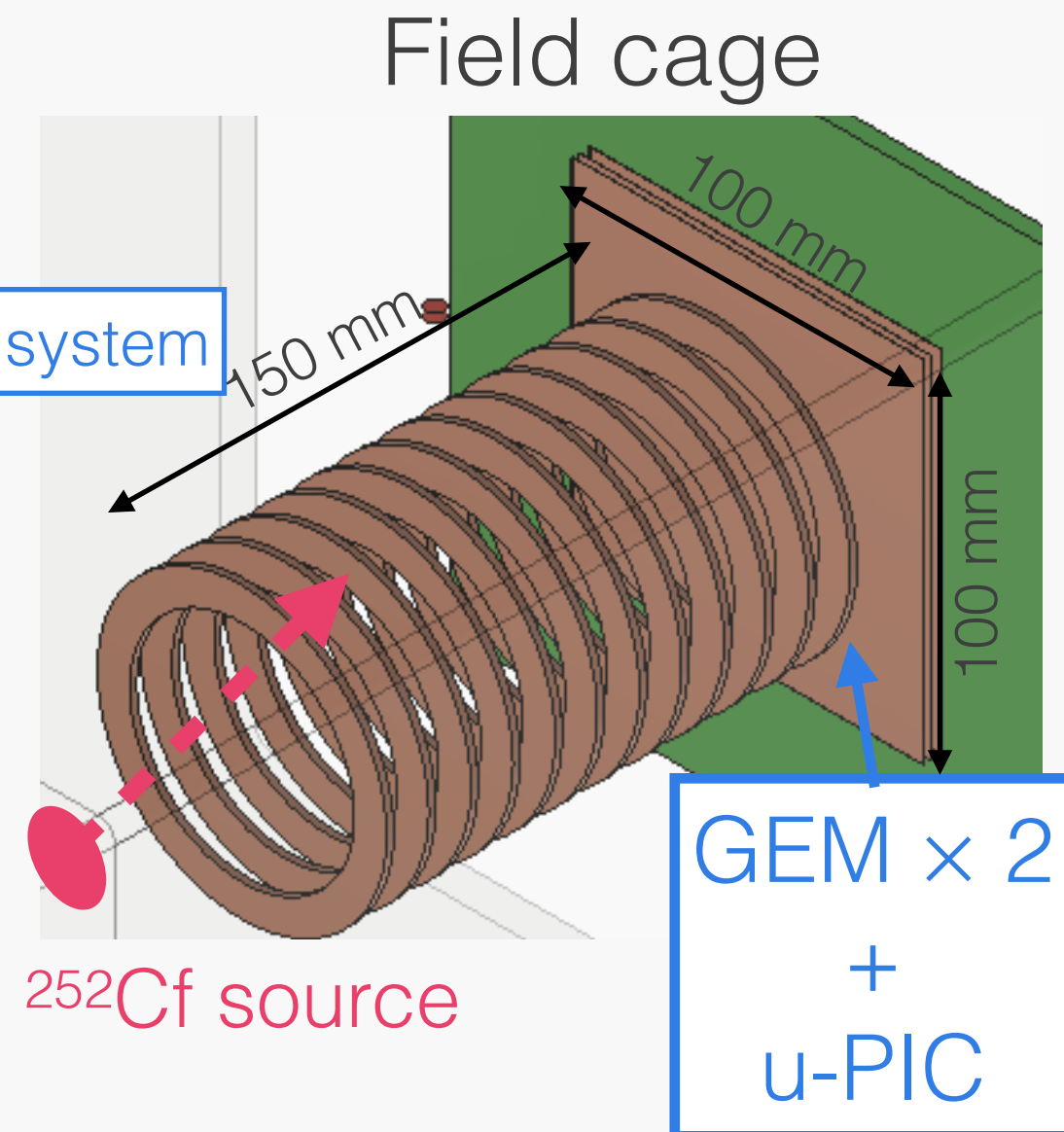
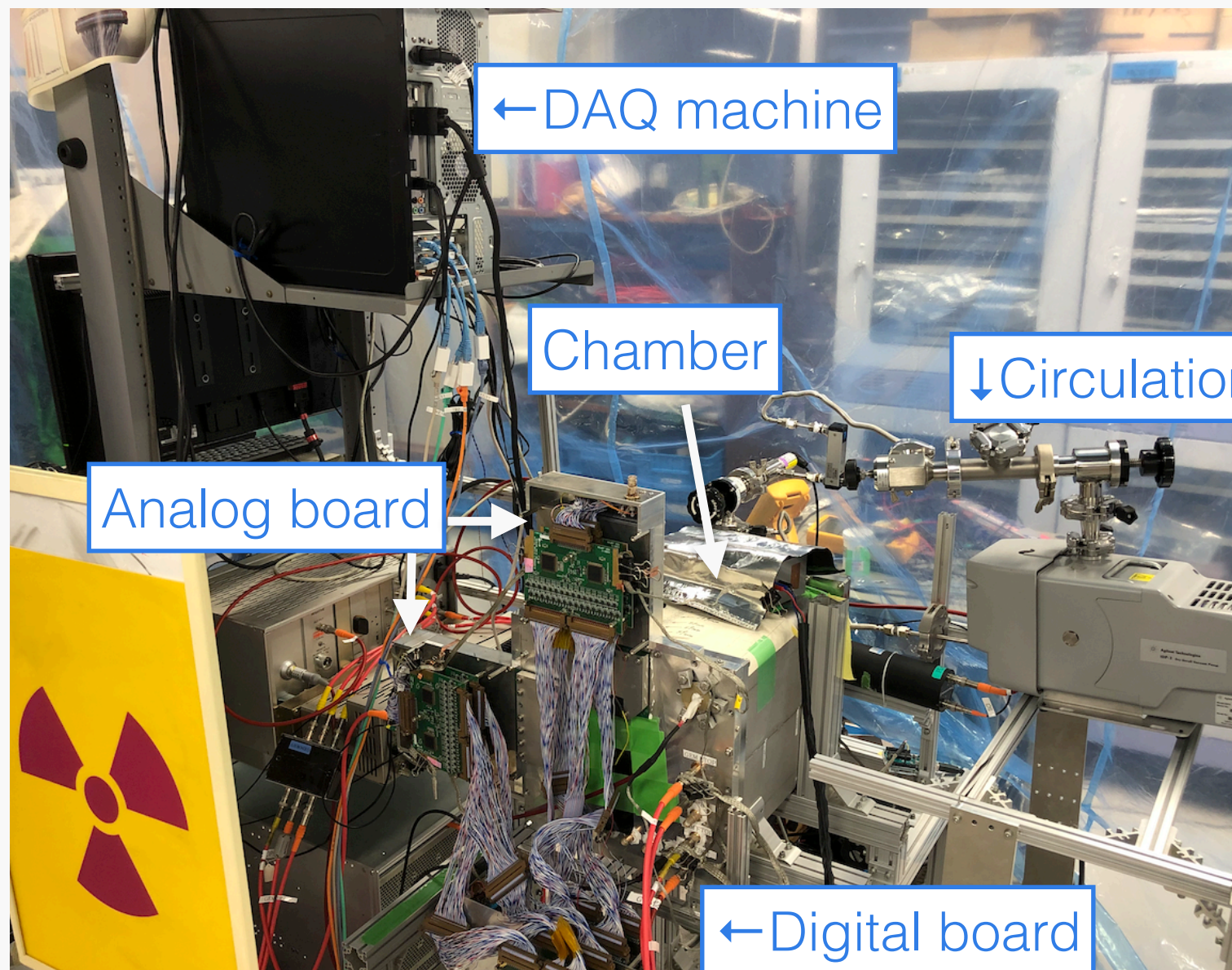
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Introduction

- We had developed a test chamber to test SF₆ gas as the target of DM
- Experiment was carried out last week
 - **Detailed talk will be at the next meeting!**
 - Short introduction today

Detector

- 400 μm pitch 2D strip readout (u-PIC) with double GEM amplification
- $\sim 100 \times 100 \times 150 \text{ mm}^3$ drift volume
 - only 64 ch $\times$ 32 ch (25.4 mm $\times$ 12.8 mm) readout is used in this test



DAQ

- “LTARS2018” ASIC’s (amplifier) are used
 - ~ 4 us peaking time, good S/N and dynamic range
- 2.5 MHz sampling flash ADC

ASIC: LTARS2018_K06B

ADC + FPGA

Ethernet

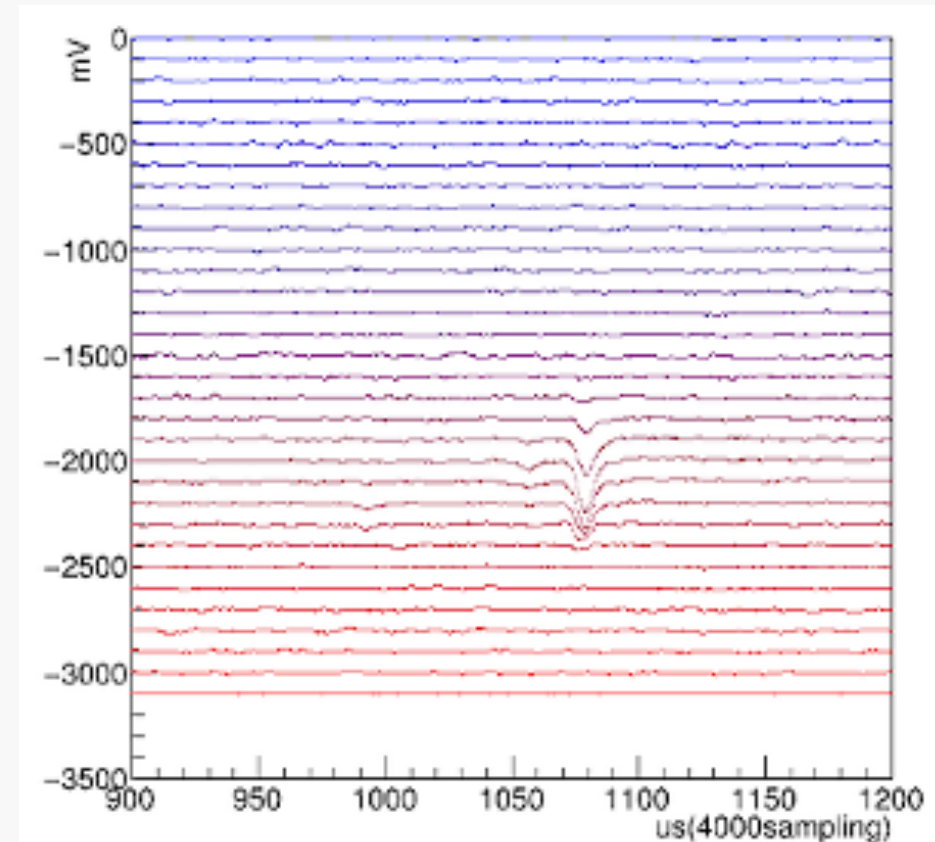
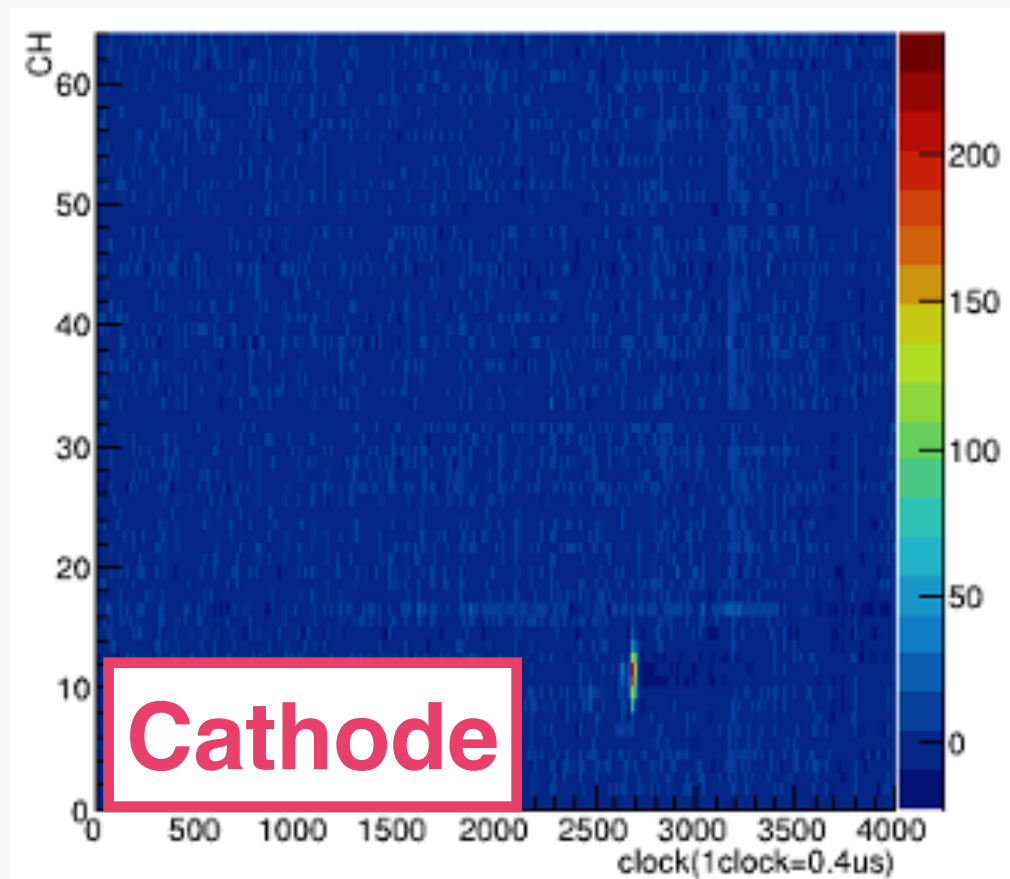
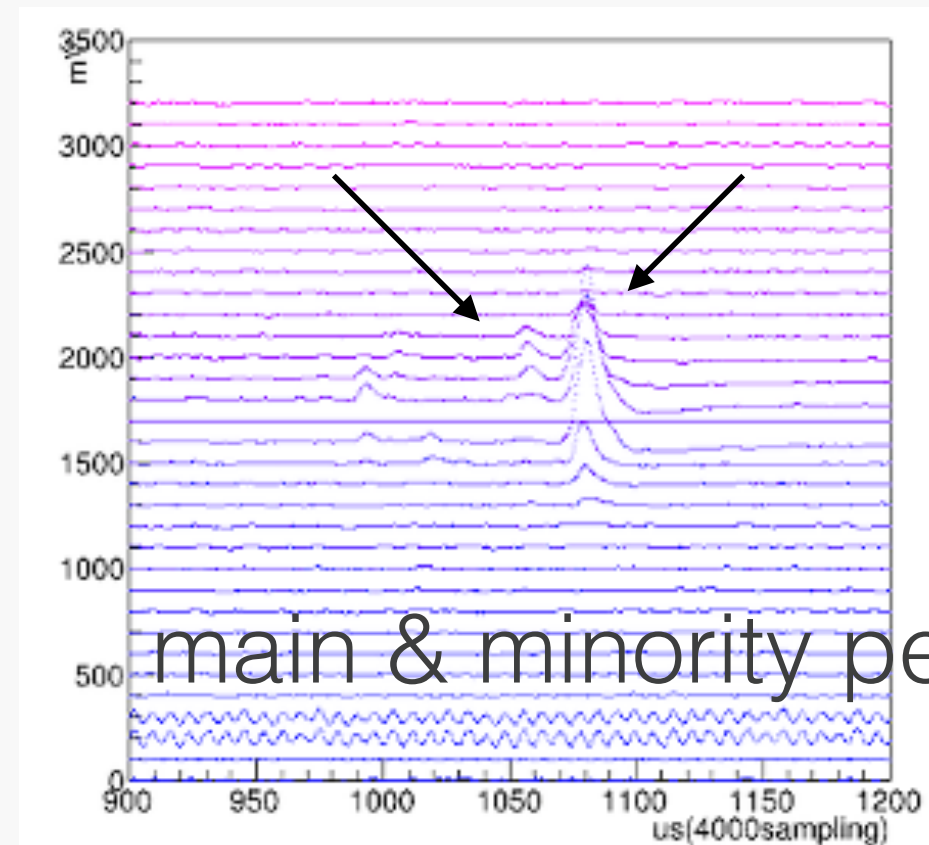
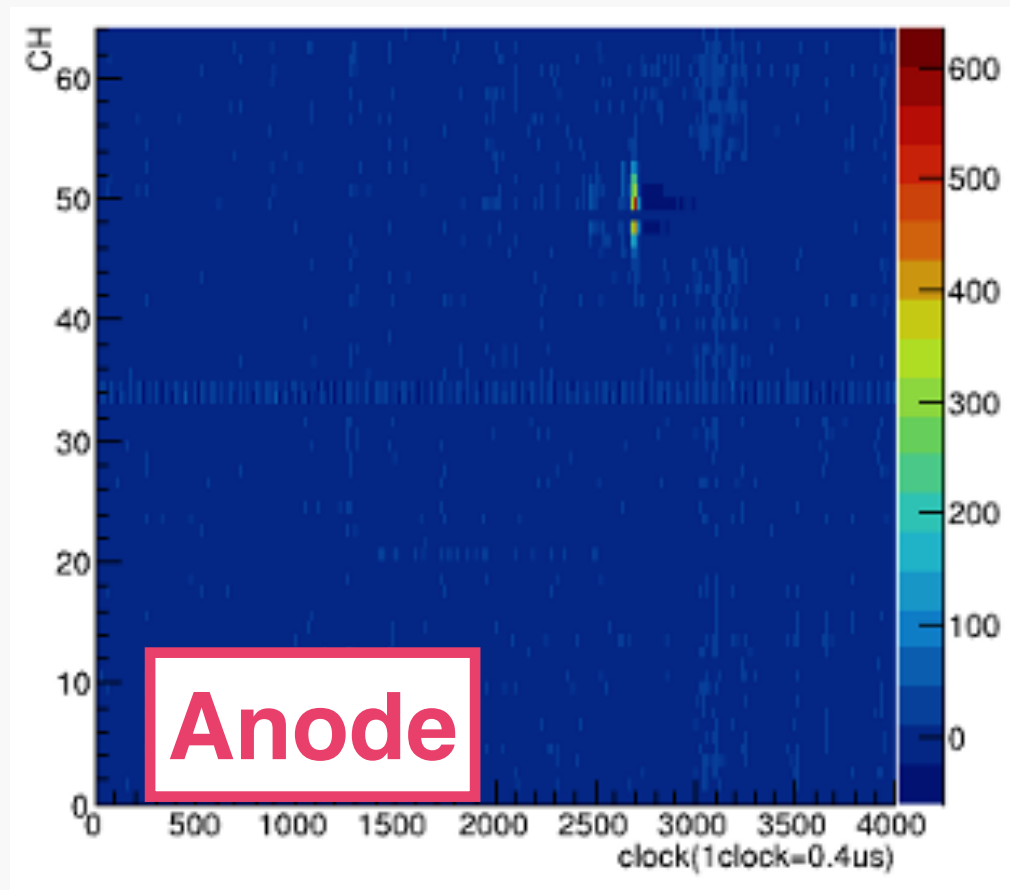
Analog

Analog

NEWAGE2018RO
board

DELTA V2
board

Nuclear recoil? (previous measurement)



Summary

- In the previous measurement, statistics was very limited due to a DAQ issue
 - ➔ For this reason we could only check waveforms event by event
 - ➔ The problem is already fixed
- Additional measurement was carried out last week
 - ➔ Analysis is ongoing!