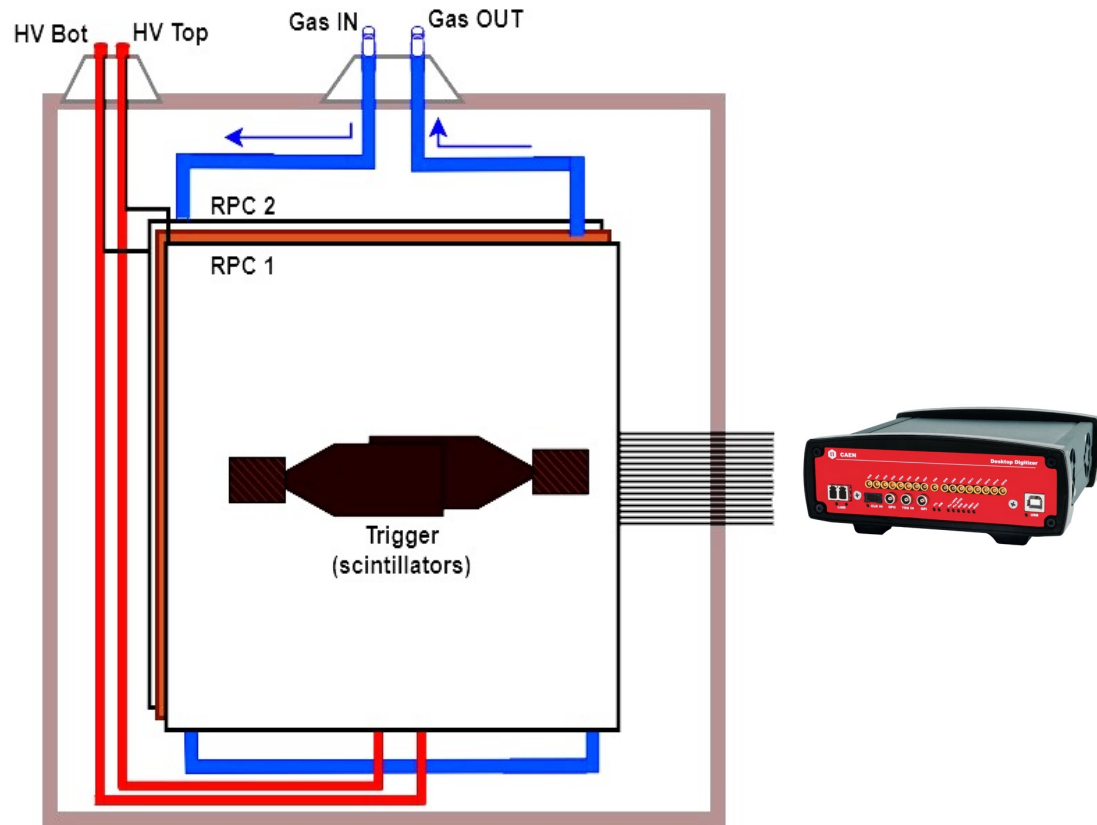


thin-RPC 0.5 mm gas

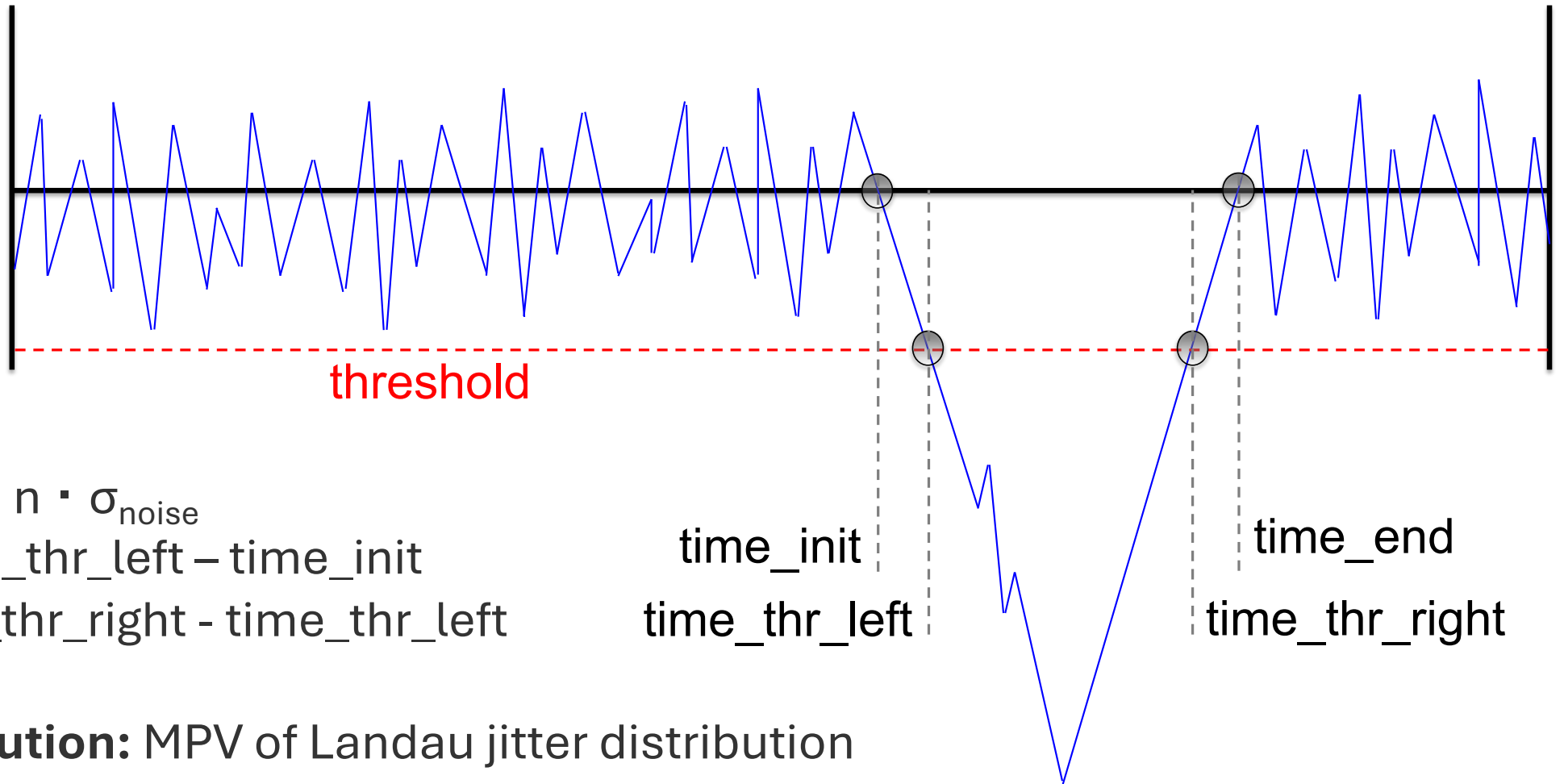
Dayron Ramos

Chamber and setup



- **Double gap** with strip readout panel in between (KODEL-G0p5-01 -> TOP, KODEL-G0p5-02 -> BOT)
 - Soda-lime glass electrodes: 1.1 mm thickness
 - Gas gap: 500 μm thickness
 - Resistivity: $10^{12} \Omega \cdot \text{cm}$ at 20 C
 - Strip width: 5 mm - single readout (strips terminated with 50 Ω)
- Signal readout: [CAEN Digitizer DT5742](#)
 - 16 Ch + Fast trigger @ 5Gs/s
- Cosmic trigger with 2 scintillators in coincidence
 - Geometrical acceptance: 7 x 15 cm^2

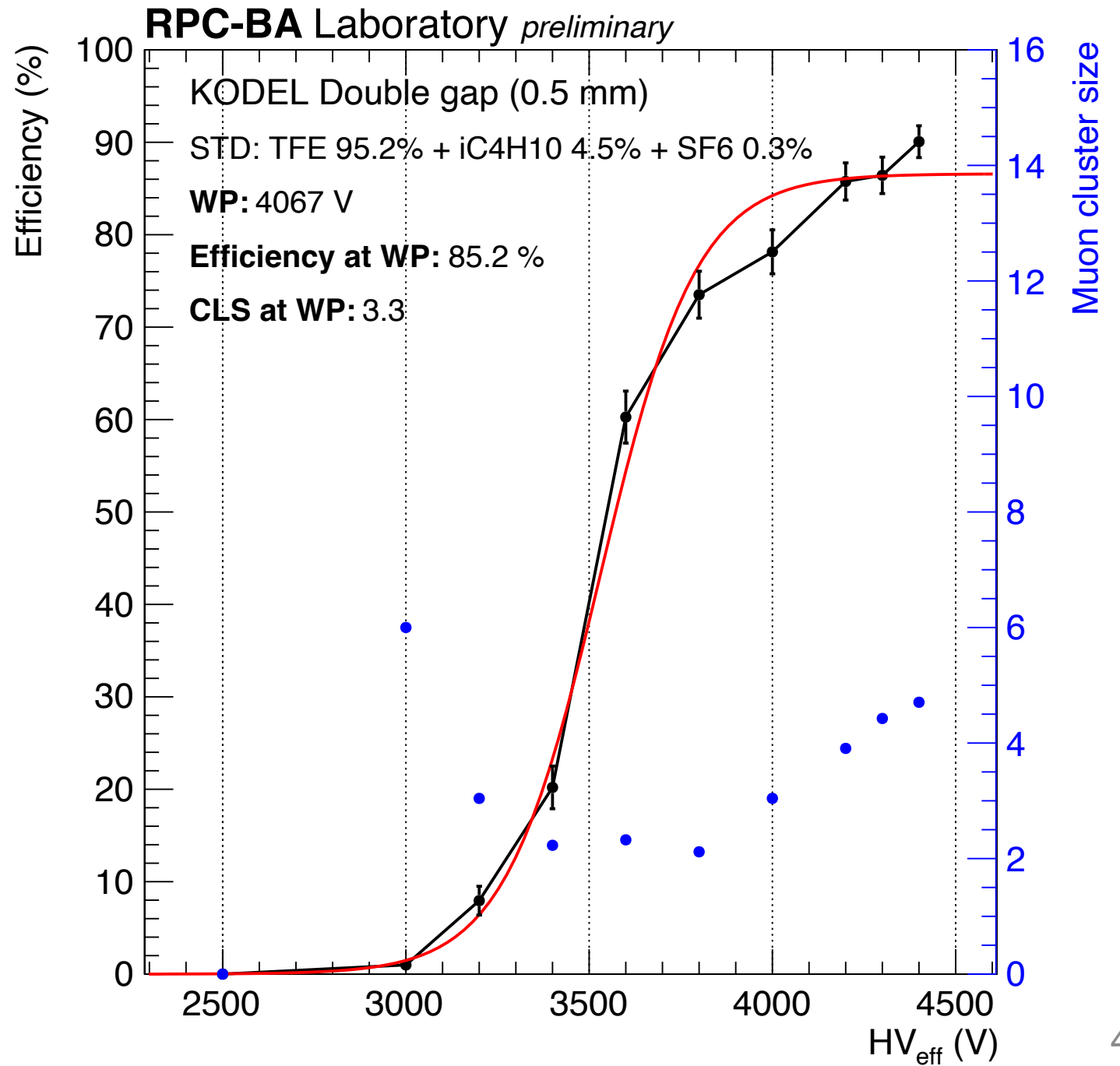
Signal analysis



- $\text{threshold} = n \cdot \sigma_{\text{noise}}$
- $\text{jitter} = \text{time_thr_left} - \text{time_init}$
- $\text{ToT} = \text{time_thr_right} - \text{time_thr_left}$
- **Time resolution:** MPV of Landau jitter distribution

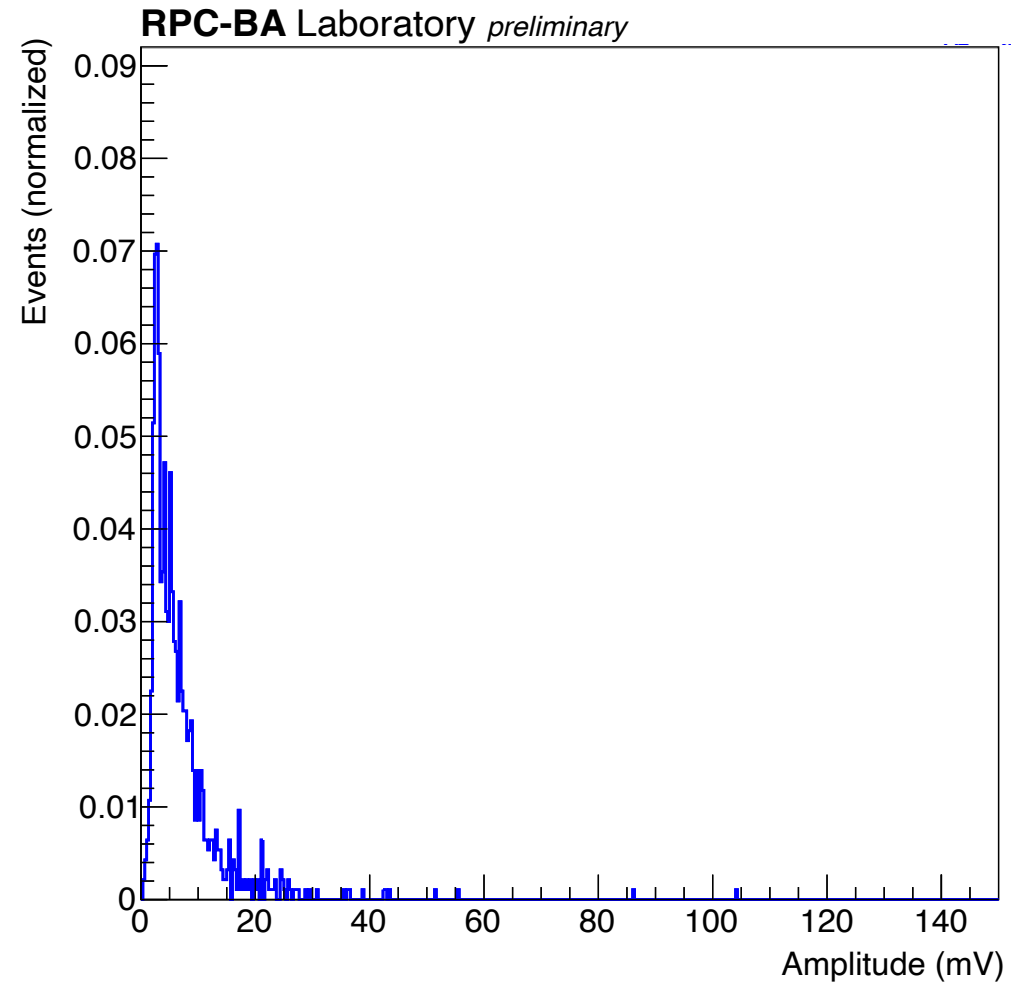
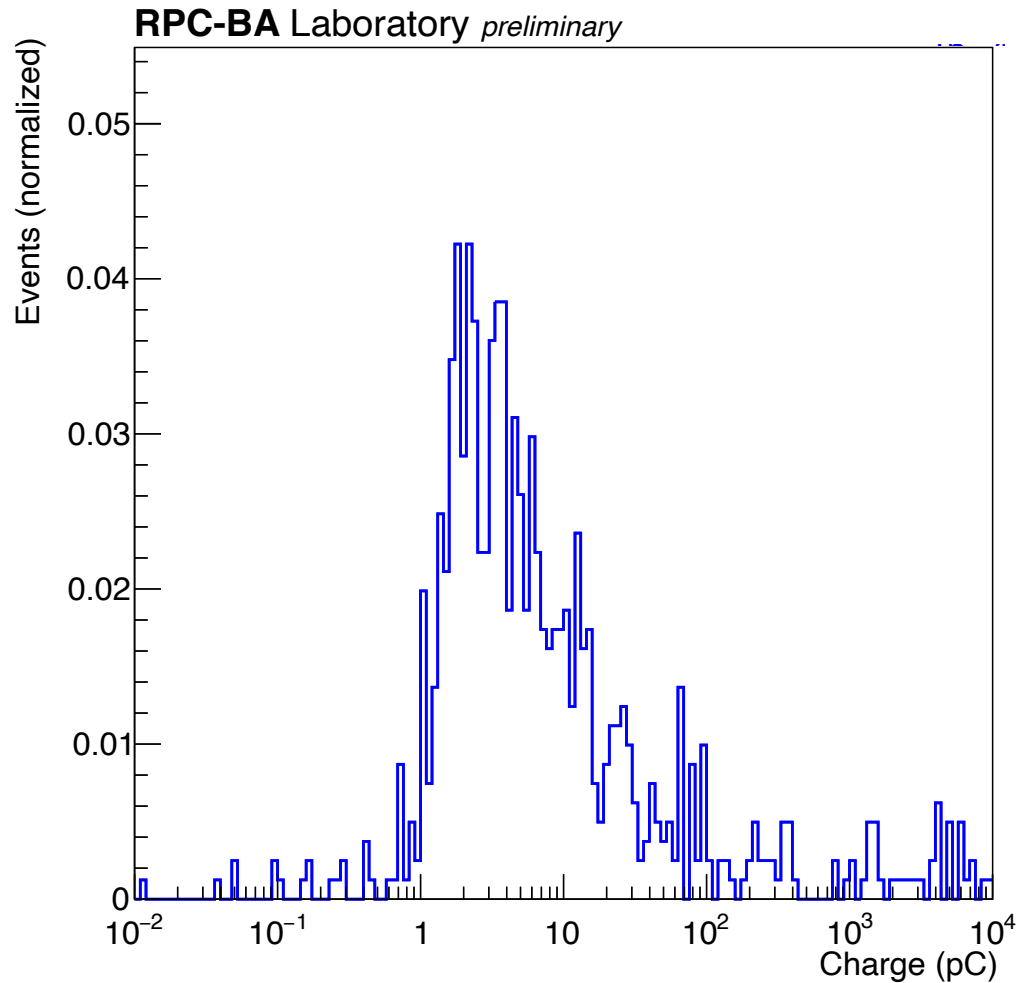
Preliminary results

- WP = 4067, $\varepsilon(\text{WP}) = 85.2$ V (not best fit and acceptance to check)
- Mean cluster size (CLS) @ WP: 3.3 strips $\rightarrow \sim 2$ cm (strip pitch ~ 6.25 mm)



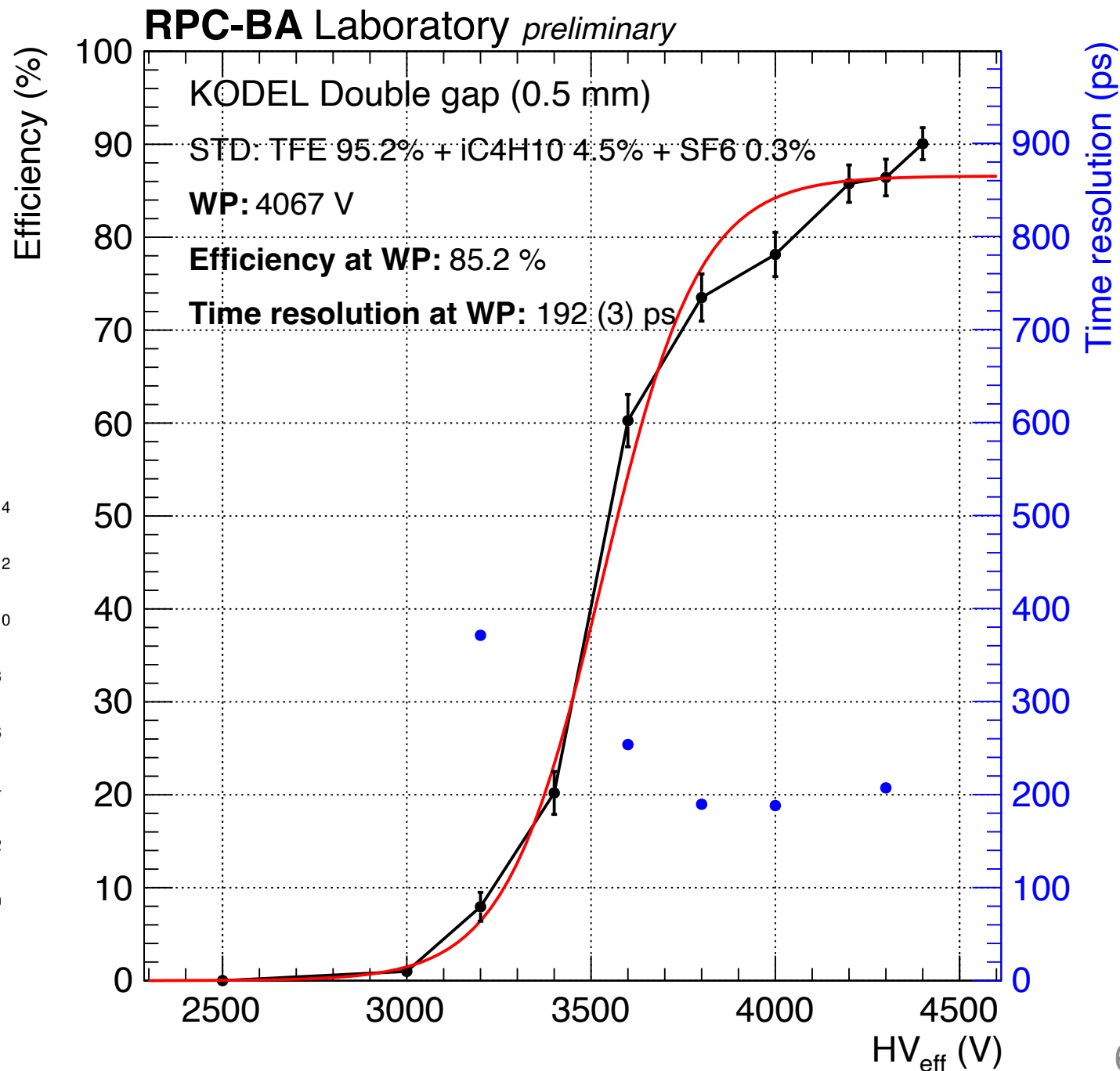
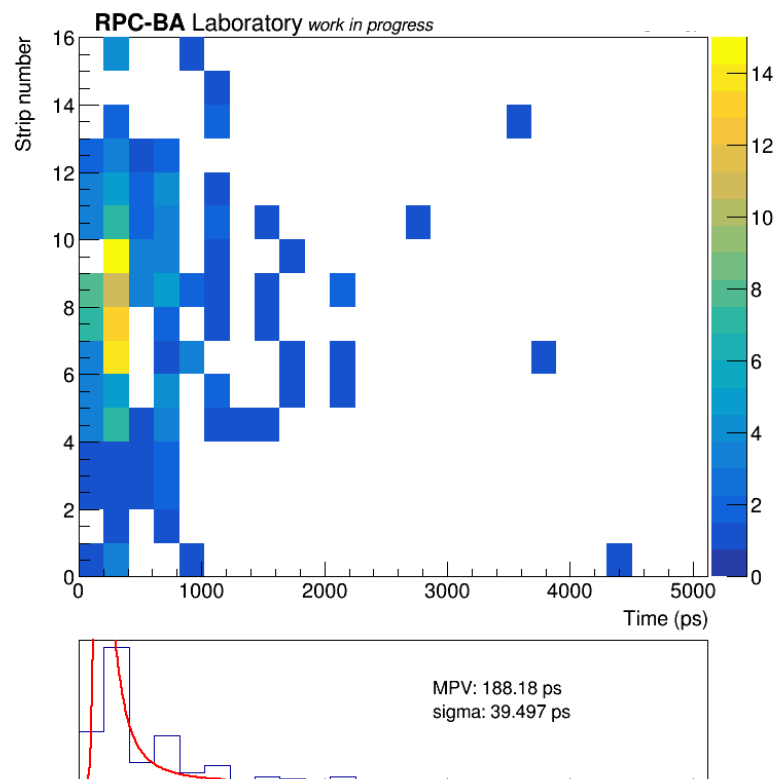
Preliminary results

- Charge and amplitude distribution @ 4kV



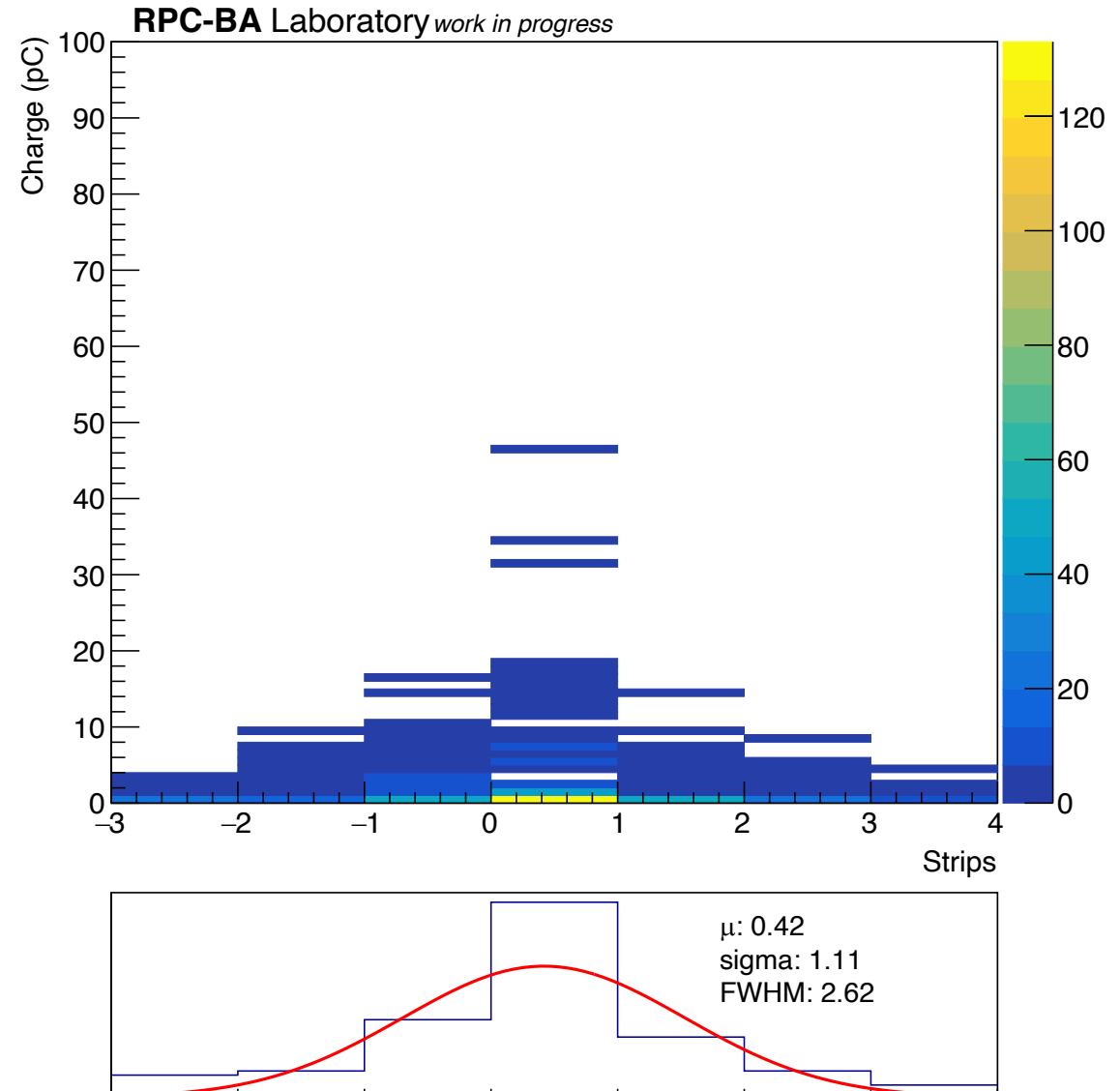
Preliminary results

- Time resolution @ WP: 192 ps
- Jitter distribution @ 4 kV



Preliminary results

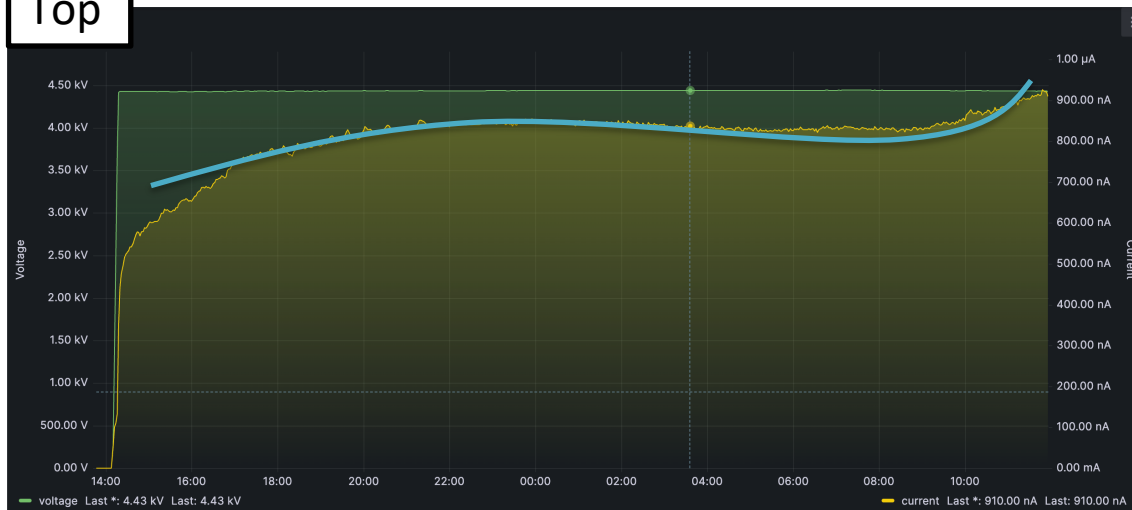
- Cluster charge centroid analysis (very very preliminary)
- Distribution @ 4kV $\rightarrow \sigma = 1.1$ strip



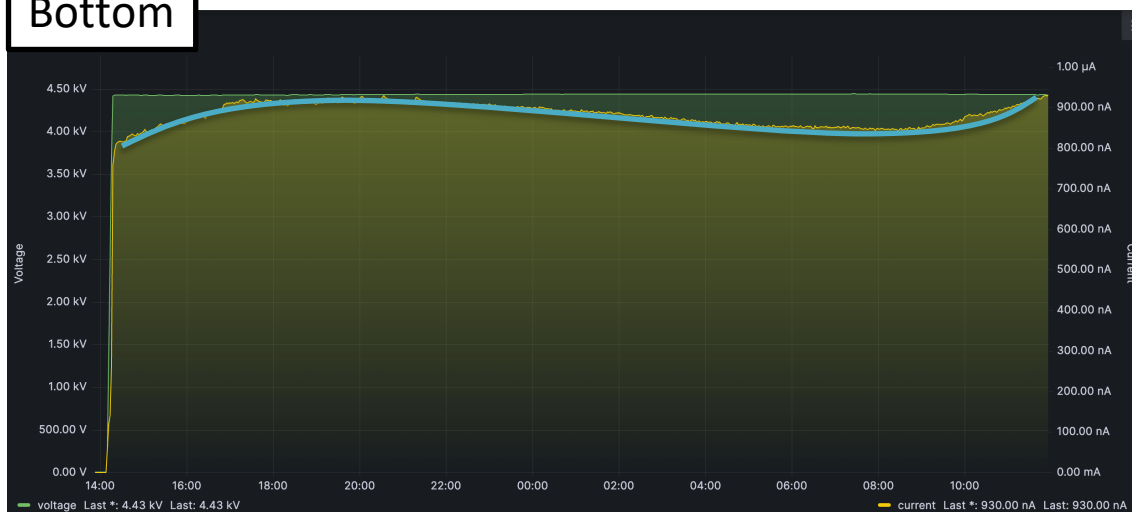
Currents

I/HV vs time

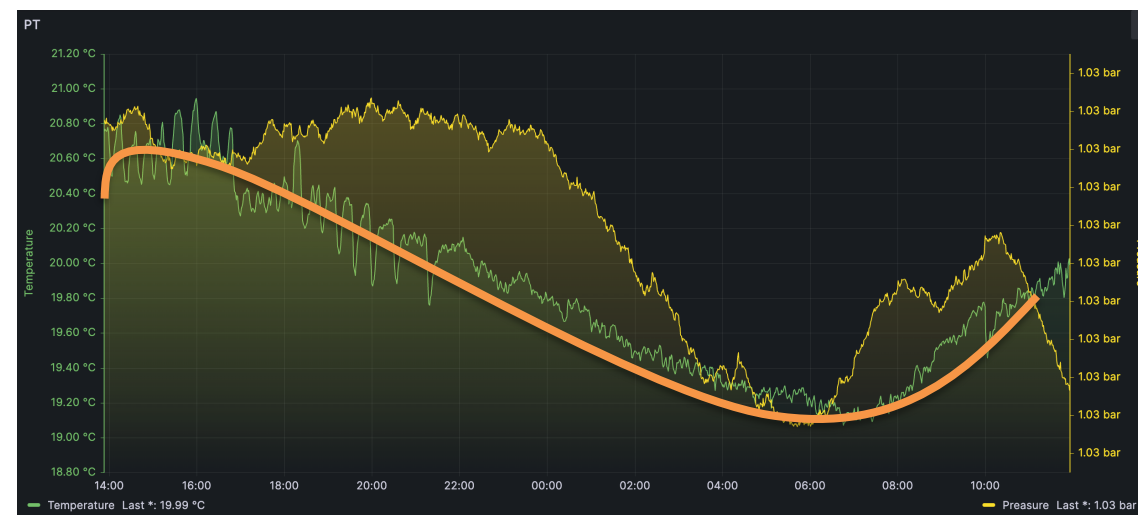
Top



Bottom



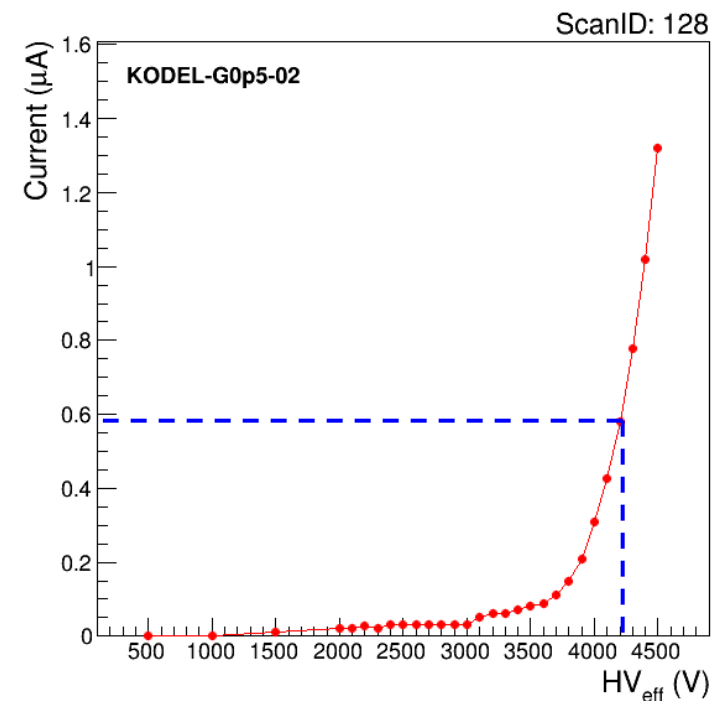
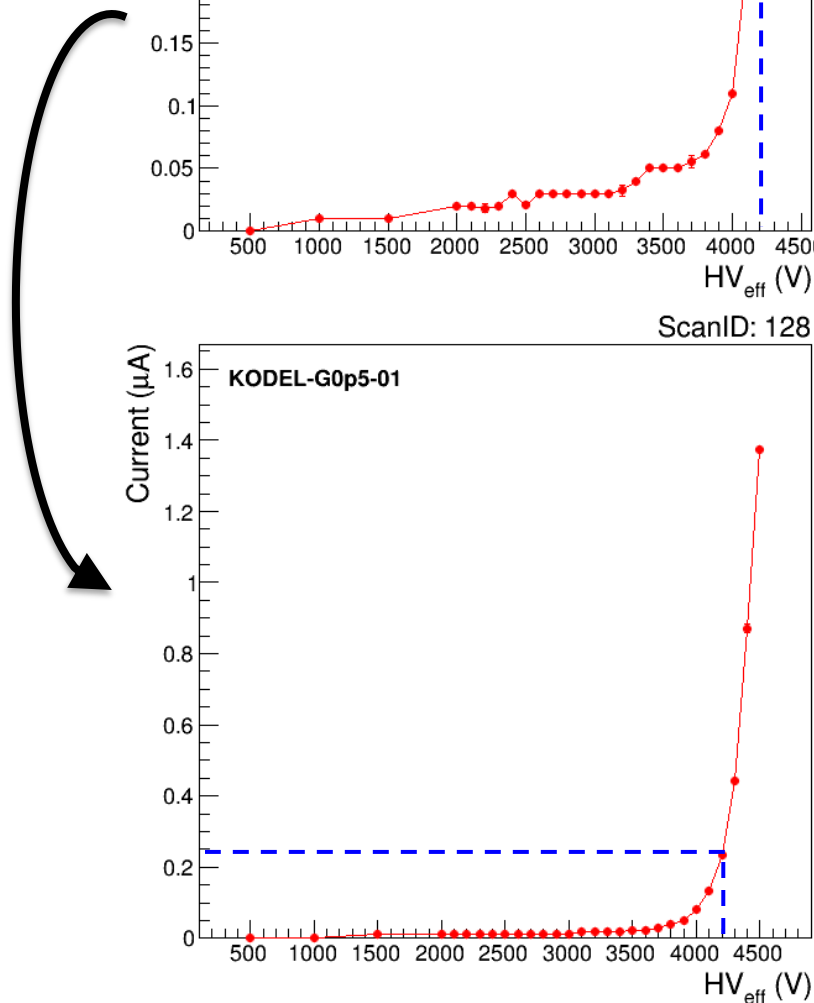
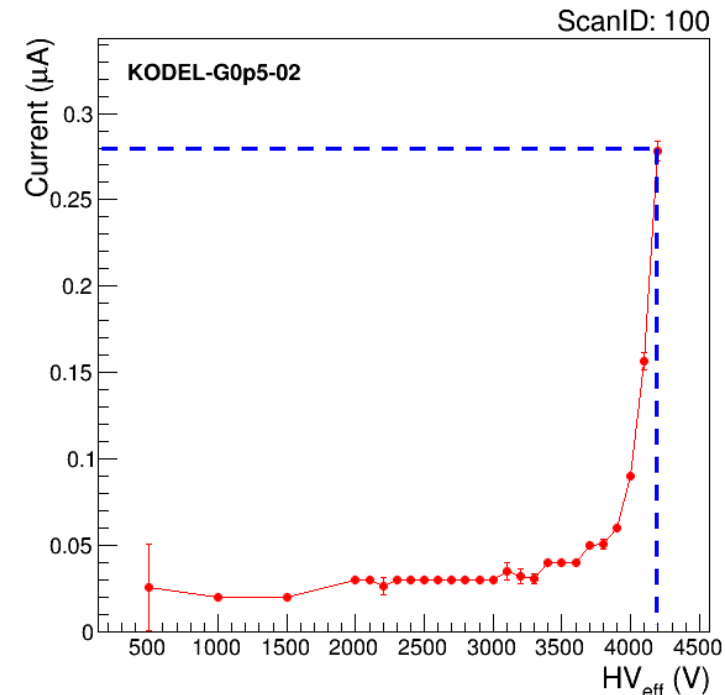
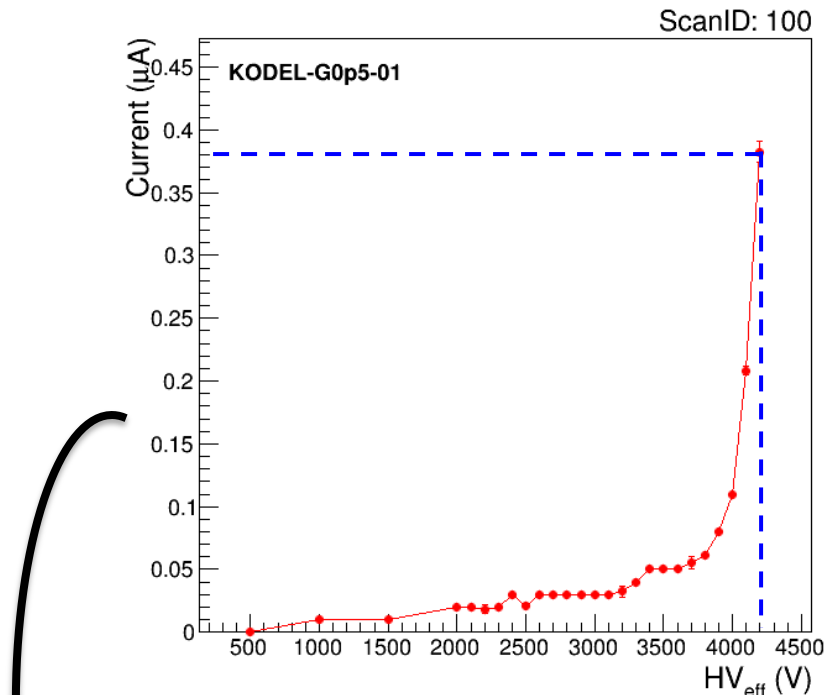
I/HV vs time



- Temperature oscillation: ~ 1.5 °C
- Current following the temperature behavior, HV always corrected by PT
→ Strong dependency R-Temperature

Currents

- 1 month btw scans ID 100 and 128 with long data taking periods (~22 hrs per HV point during data taking)



Coming

- Algo. to estimate cluster position inside the strip by charge analysis
- High statistic run @ WP with STD
- Ar resistivity scan
- Study with fast timing mixture: TFE 85% + iC_4H_{10} 10% + SF_6 5%
- Study with HFO + iC_4H_{10} + SF_6 (No CO_2)



Thanks!



Backup slides

