# TIGER Simulation

FCC-Bo meeting

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Simulation

- Simulates μ-Rwell response to a charged particle

- Compares Monte-Carlo information with those reconstructed by TIGER

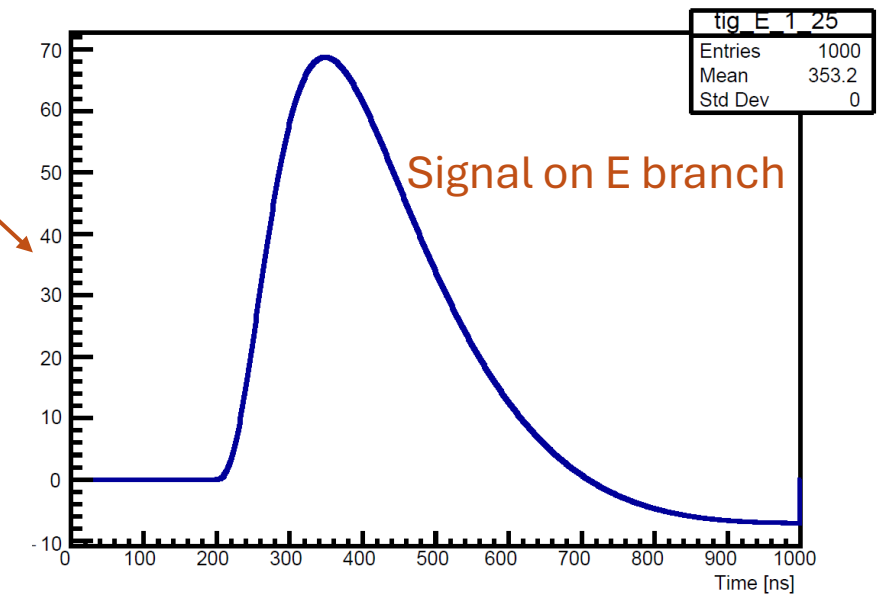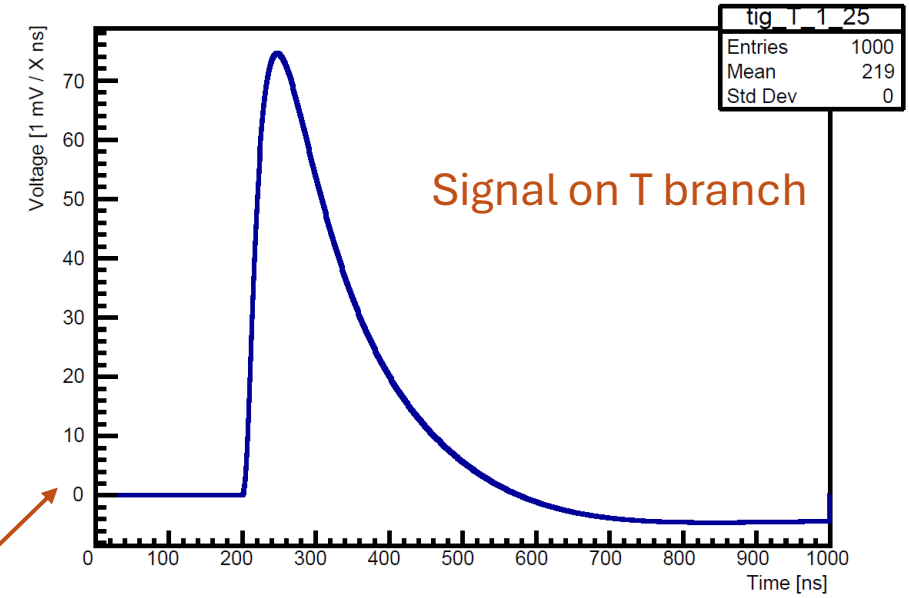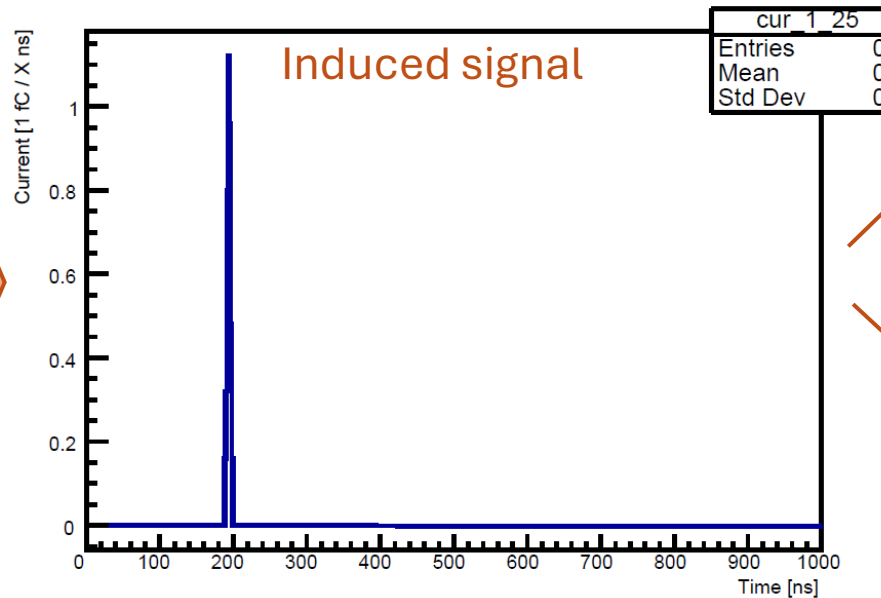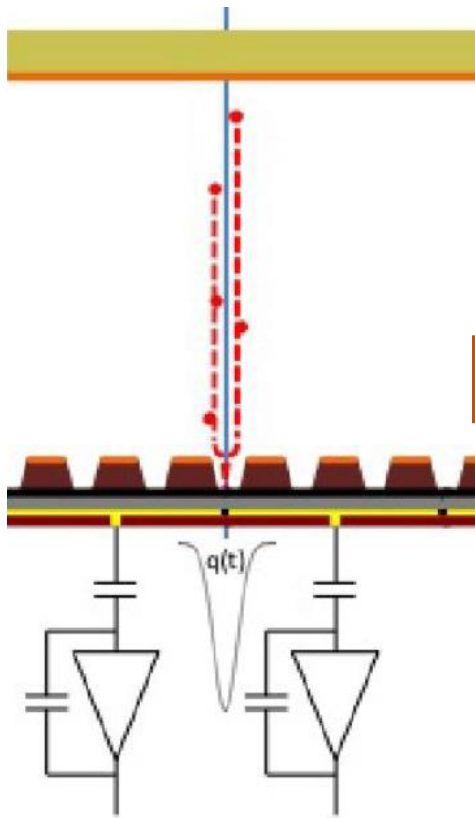- For the moment only **vertical** tracks are simulated

Objective :

1. Debug μ-Rwell + TIGER simulation to make it as realistic as possible, allowing point 2)

2. optimize TIGER parameters for μ-Rwell readout
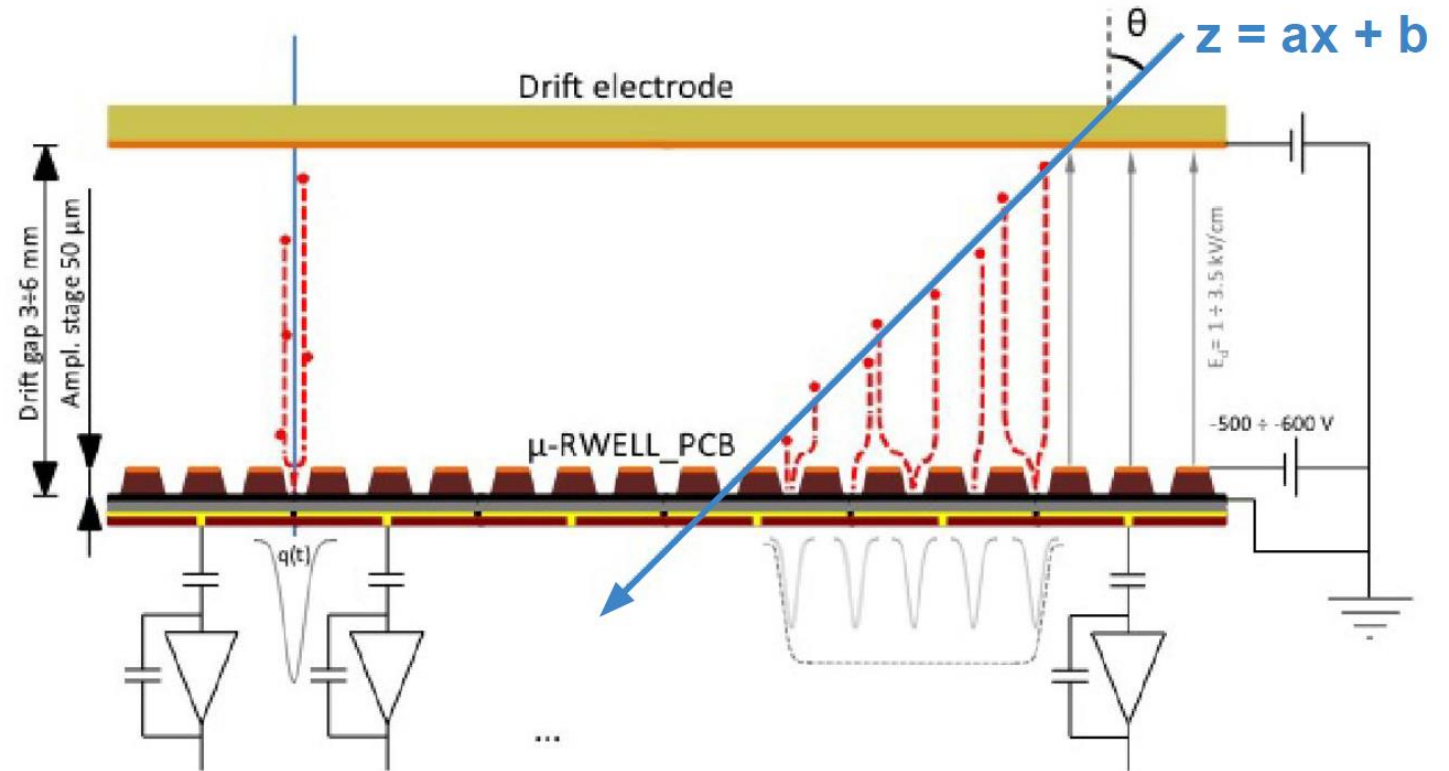
PARSIFAL

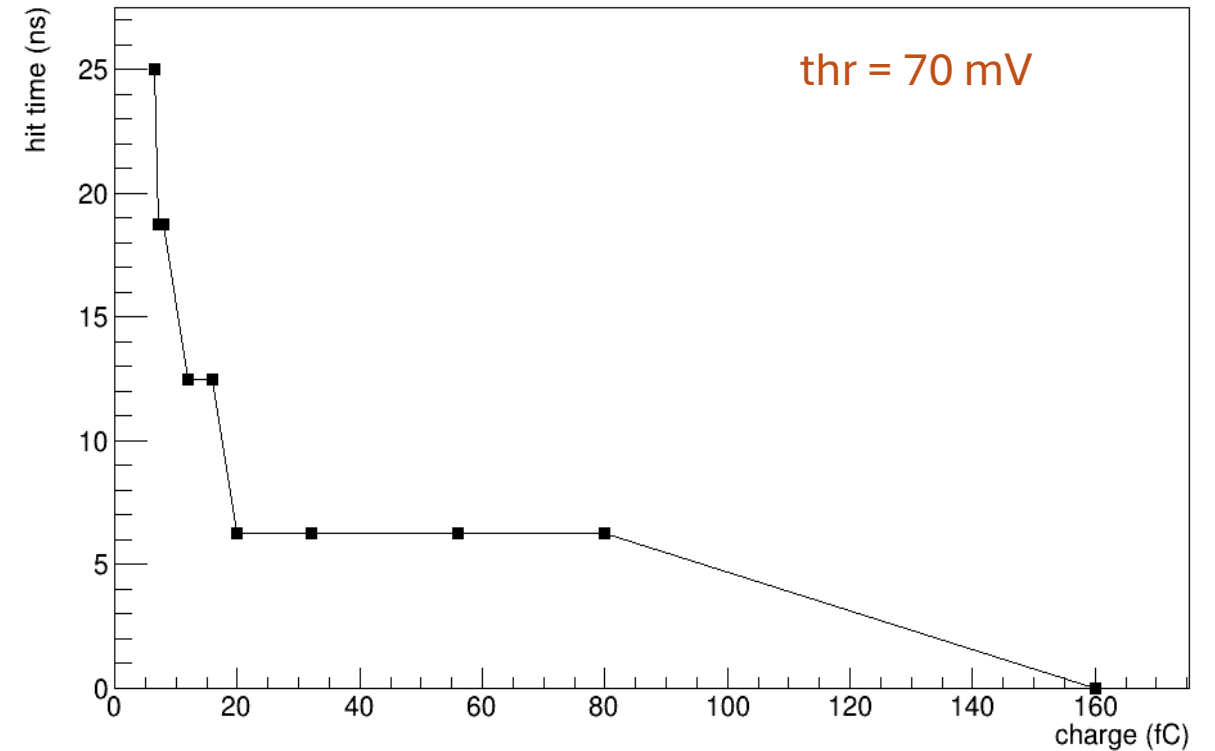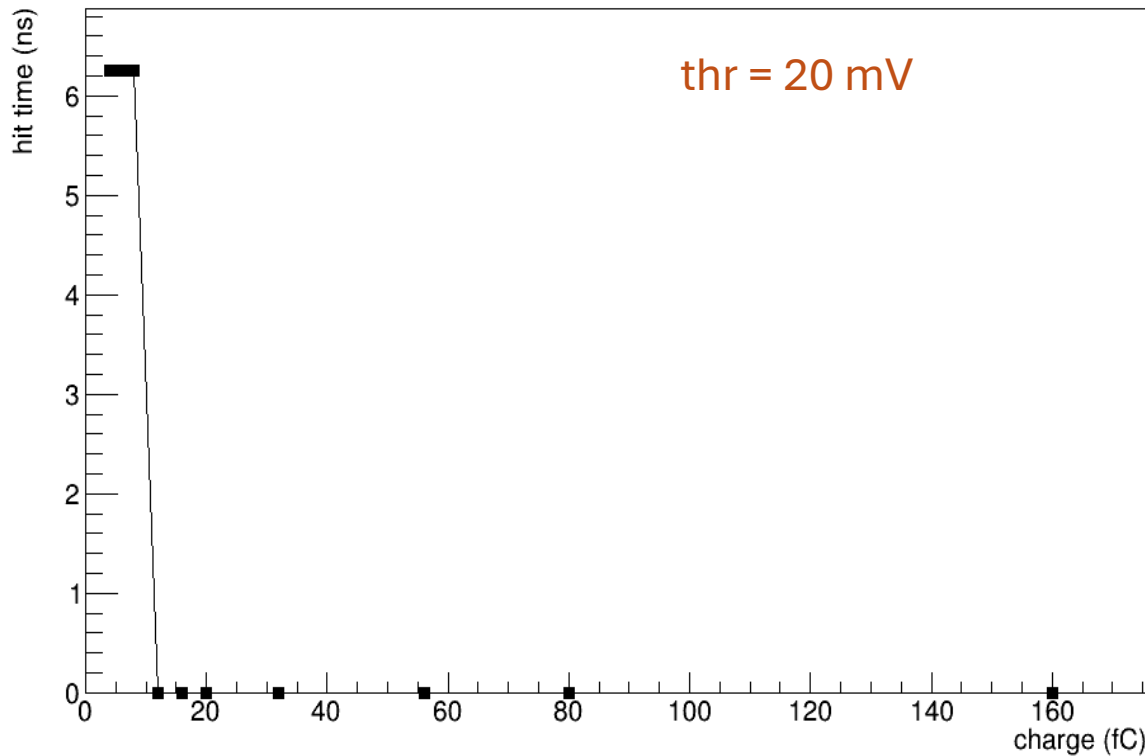- Delta function to simulate induced signal form vertical track

Induced signal

Signal on T branch
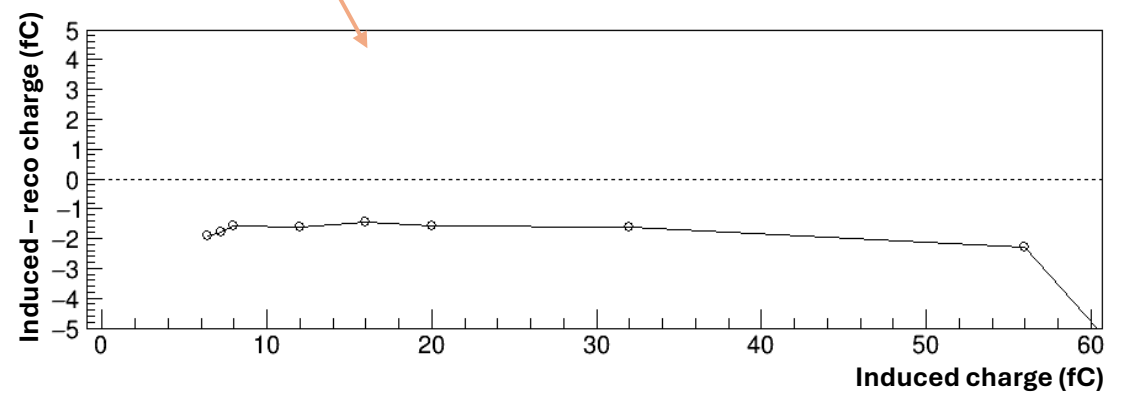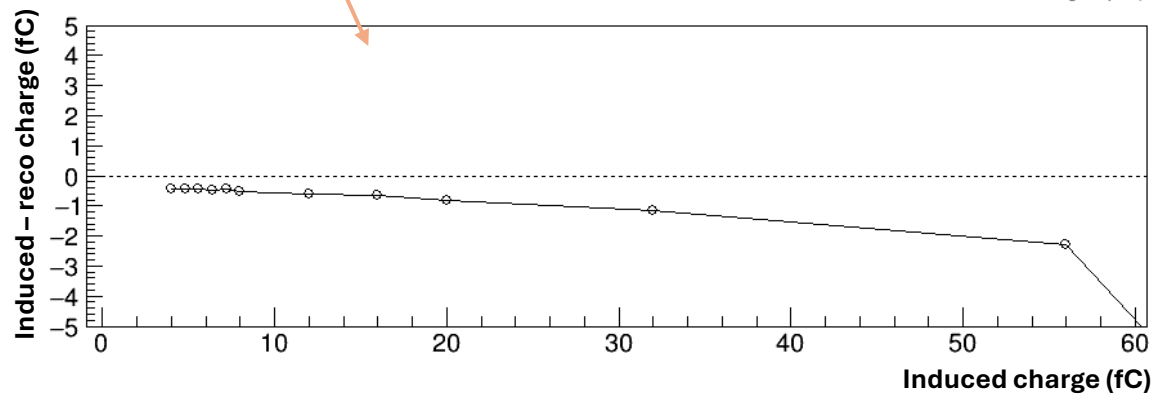
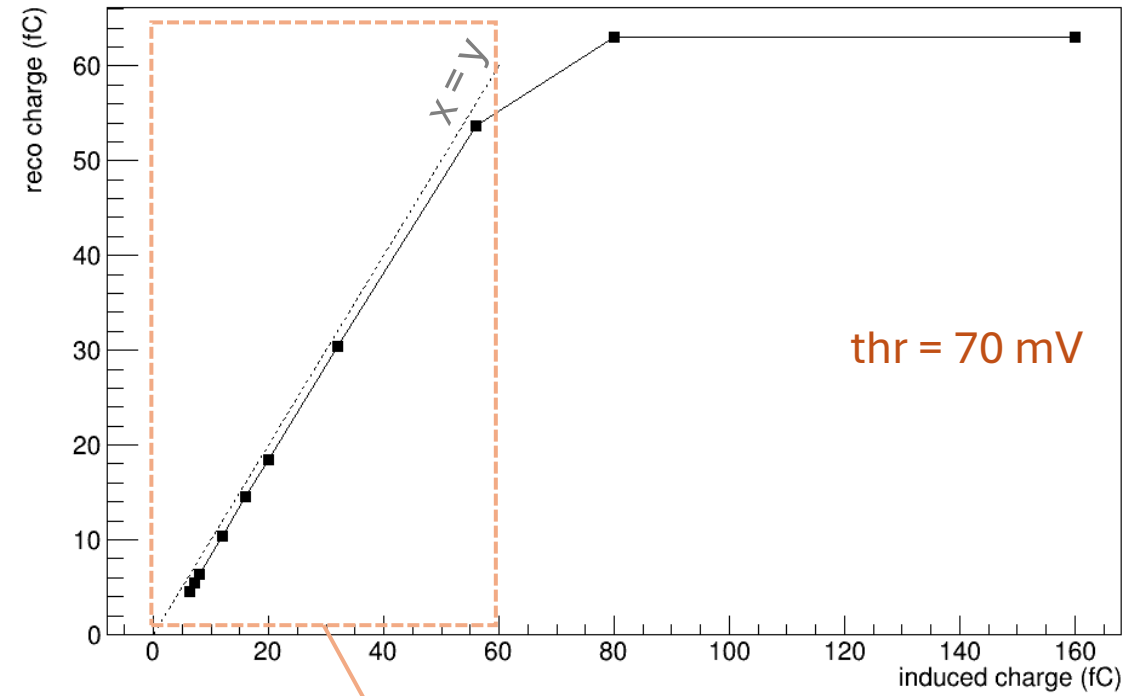Signal on E branch

F. Chiapponi

Some benchmark...

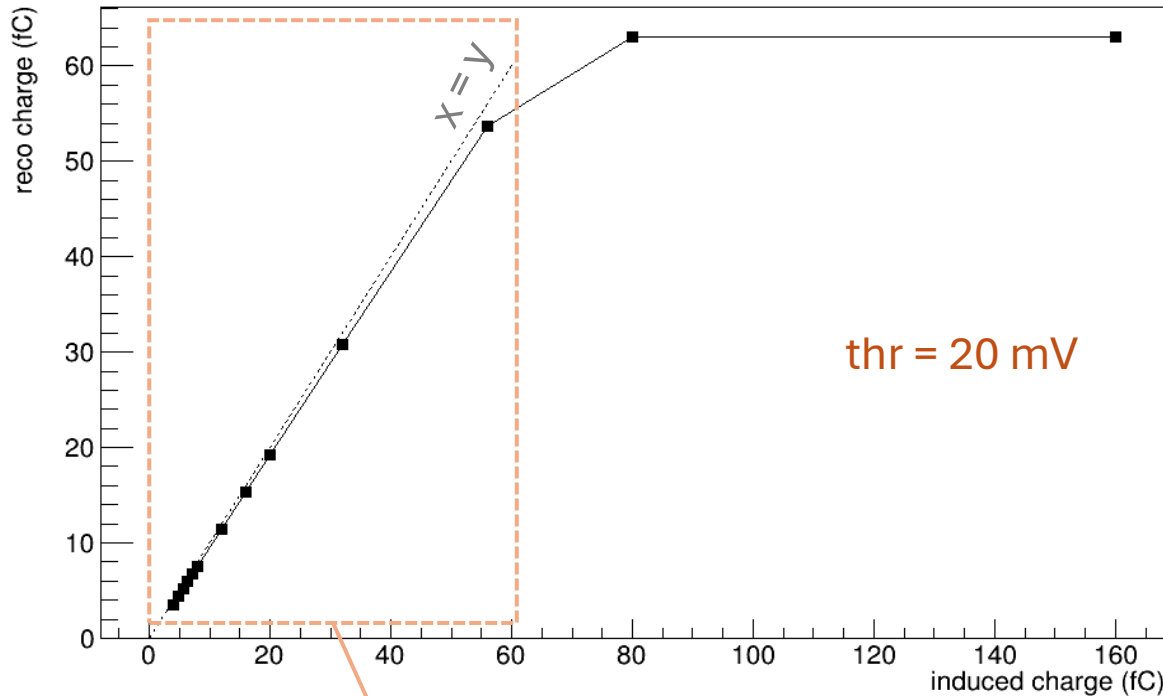- Time-Walk vs induced charge
- Reconstructed vs induced charge
- Cluster size vs induced charge

Time-Walk vs induced charge

- Information from t_{fine} is missing
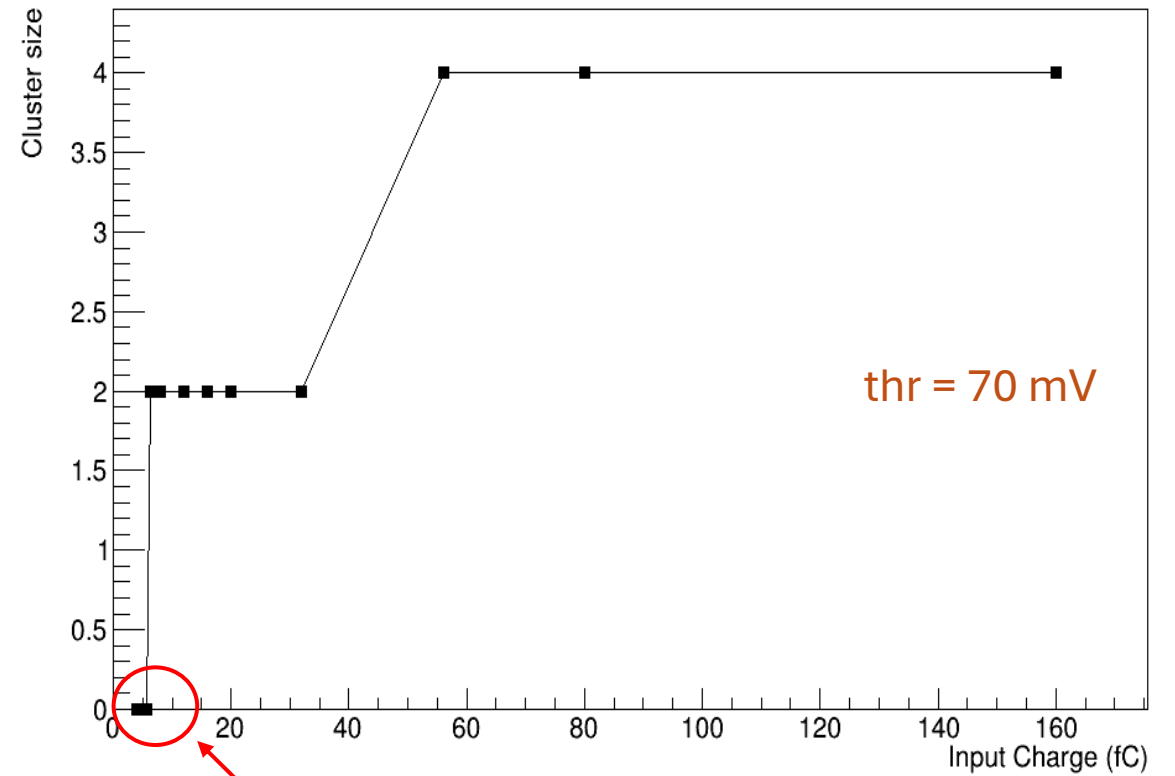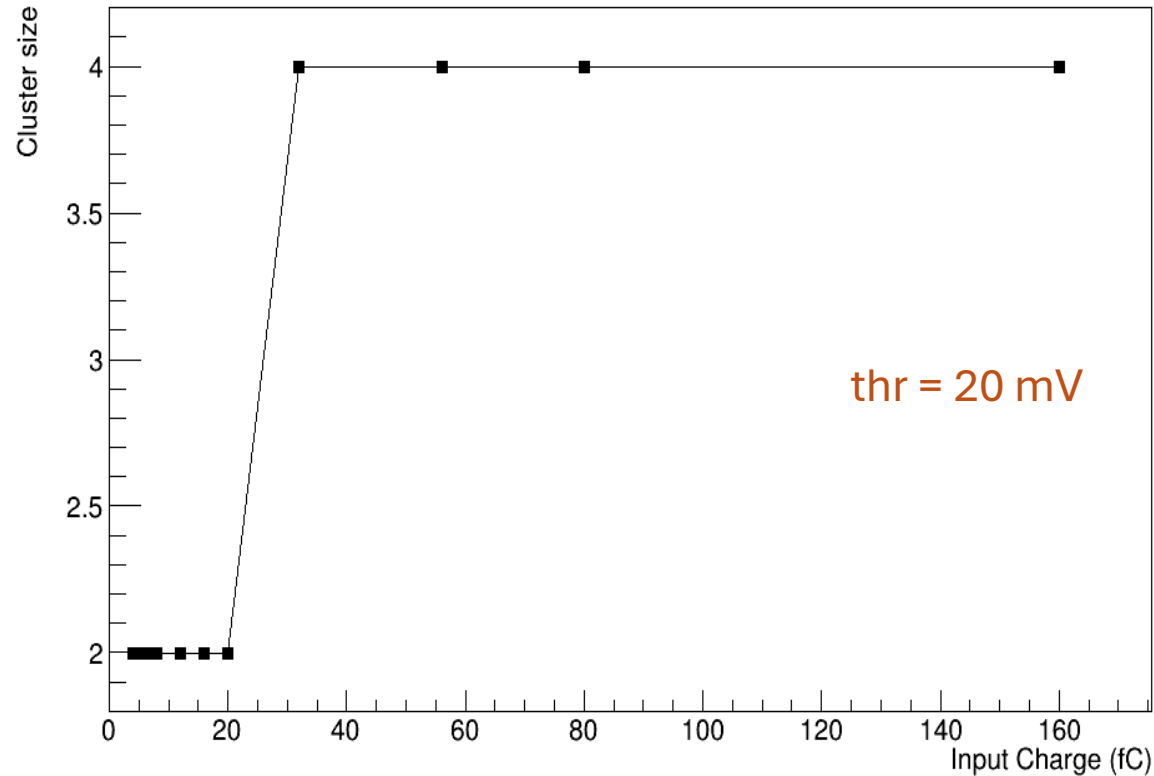- t_{corse} resolution is 6,25 ns (160 MHz clock)

thr = 20 mV

thr = 70 mV

Reconstructed vs induced charge

thr = 20 mV

thr = 70 mV

Cluster size vs induced charge

thr = 20 mV

thr = 70 mV

Signals below threshold

Next steps

- Complete the delta simulation with the latest code [September]

- Simulate a square wave induction signal [October]
    - Reconstructed charge vs signal duration
    - Time-walk vs signal duration

- Simulate μRWELL signal (tracks+ionization+amplification) [November-December]

- Study time and spatial resolution

- Optimize ASIC parameters to match requirements for μ-Rwell readout

Backup

TIGER

	TIGER
Number of channels	64
Clock frequency	160-200 MHz
Input capacitance	< 100 pF
Dynamic range	2-50 fC
Gain	12 mV/fC
ENC (energy branch)	< 1500 e^-
TDC binning	50 ps
Maximum event rate	60 MHz/ch *
Consumption	12 mW/ch