

Status of the FTMv4t2 foil characterization in Ghent

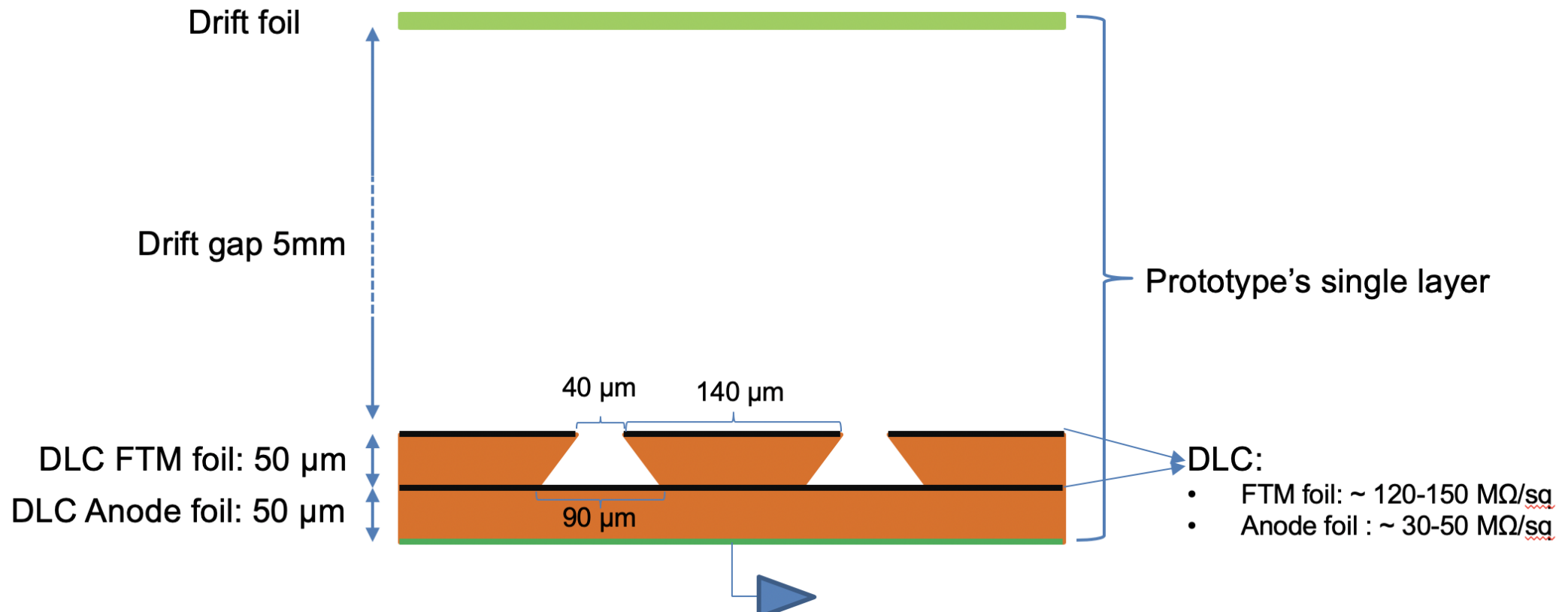
Christos Roskas

So far

- Linearity of collected current on the Anode wrt to X-ray flux
- Effective gain measurement attempts, 2 setups
 - Keithley 6487 Pico-ammeter
 - High-res power supply CAEN 1471H
- Performed simulations with ANSYS & Garfield++

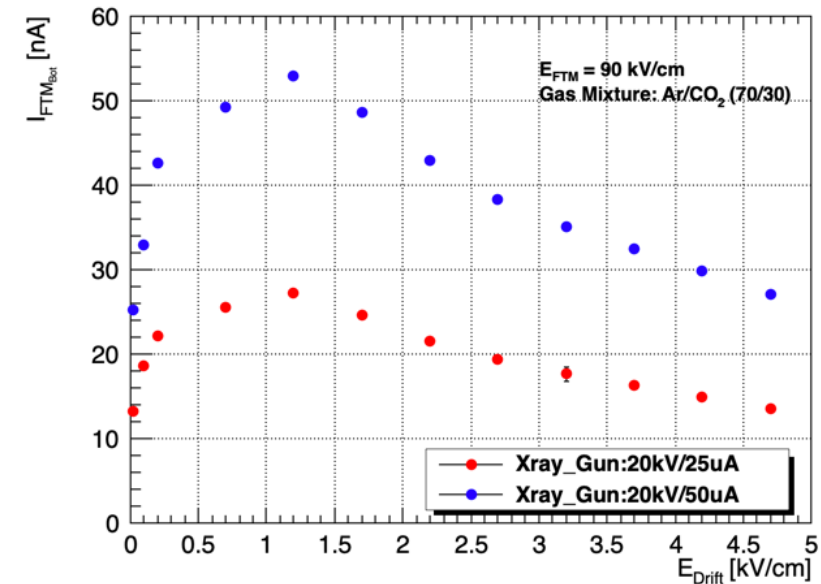
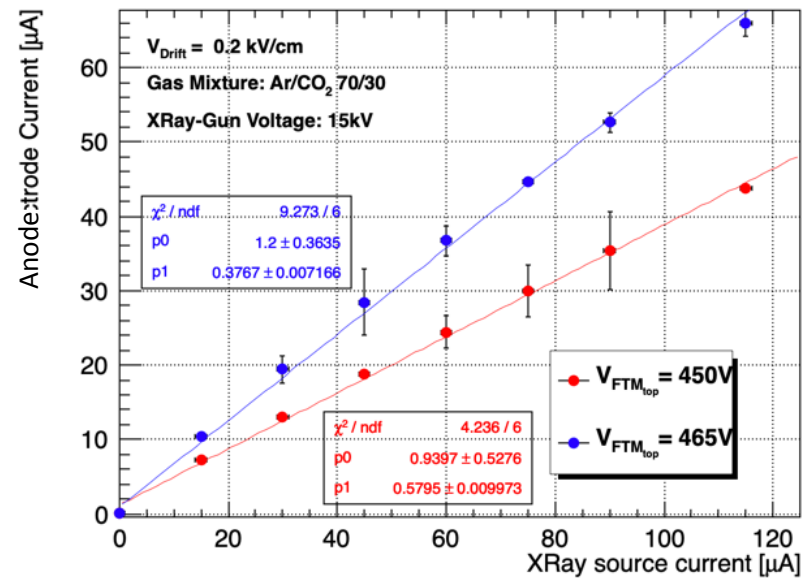
To re-cap – Prototype design

The prototype right now is a fully resistive μ RWELL



Re-cap

- Linearity plot and the first drift scan

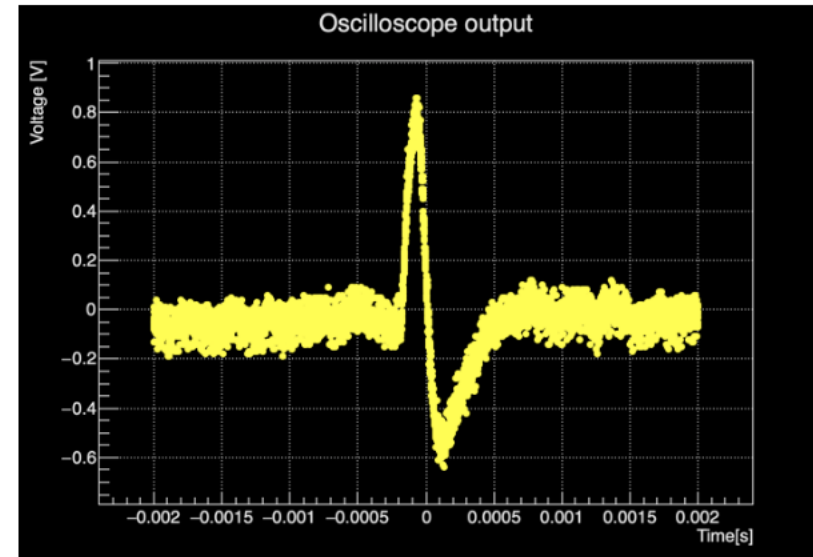
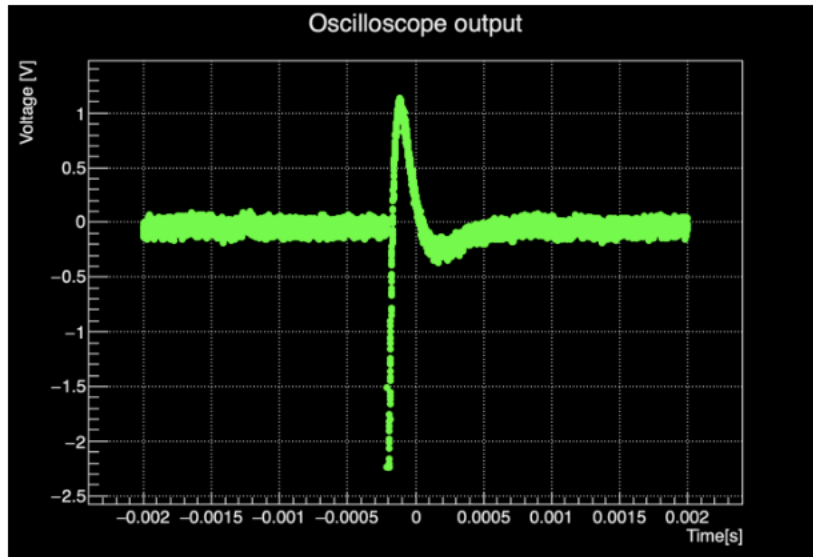


Linearity observed.

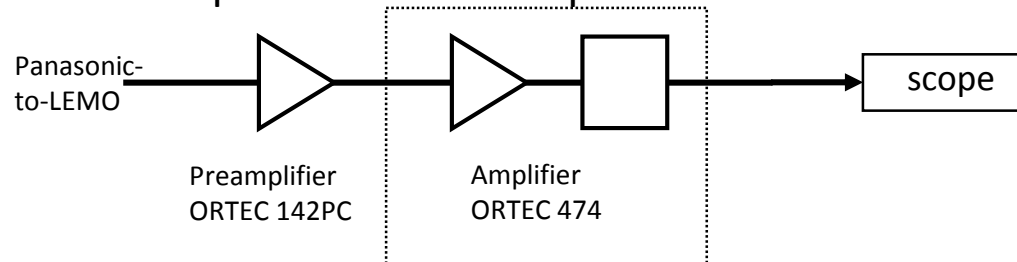
Proceeded to signal observation

Effective gain measurement.

Signal observation – Failed



The setup used for this output was



- Not able to observe rate
- Not able to observe spectrum
- Not able to justify the bipolar character



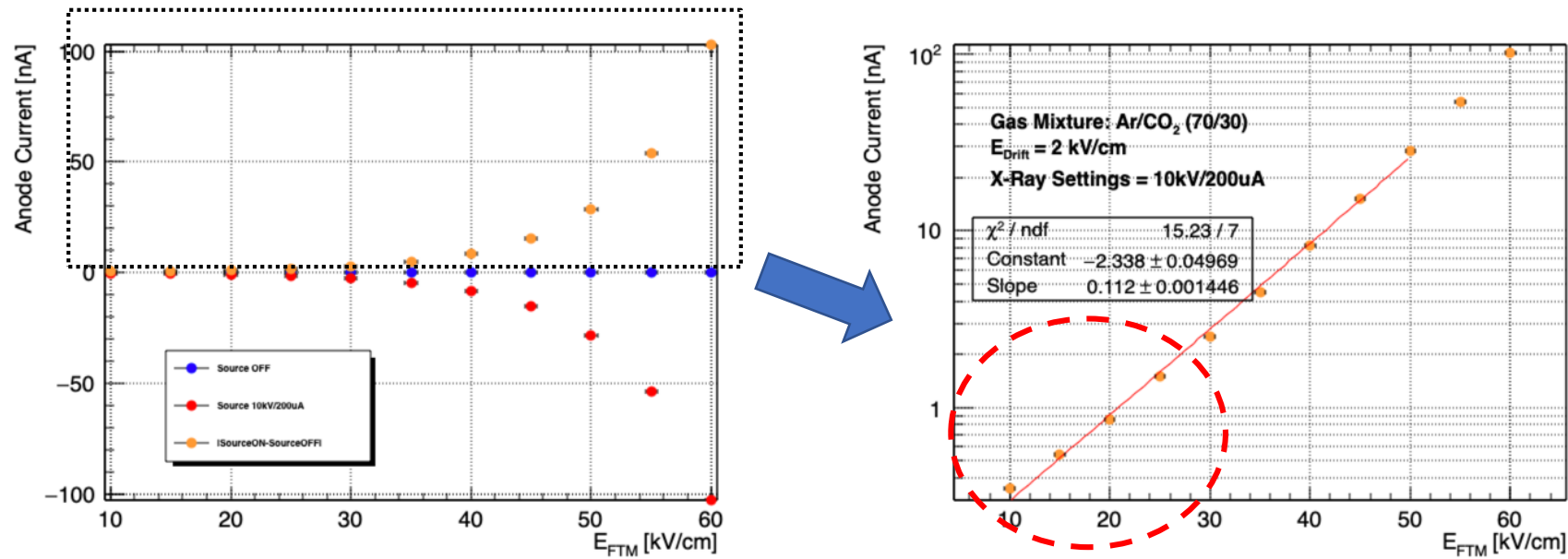
Possibly amplified reflections

Gain measurements

- First attempts and measurements failed as the gun was too far away from the prototype $\sim 1\text{m}$
- Placed the gun closer
- Kept track of the Anode current in the beginning

Gain measurements

- Moved the source as close as possible to the prototype

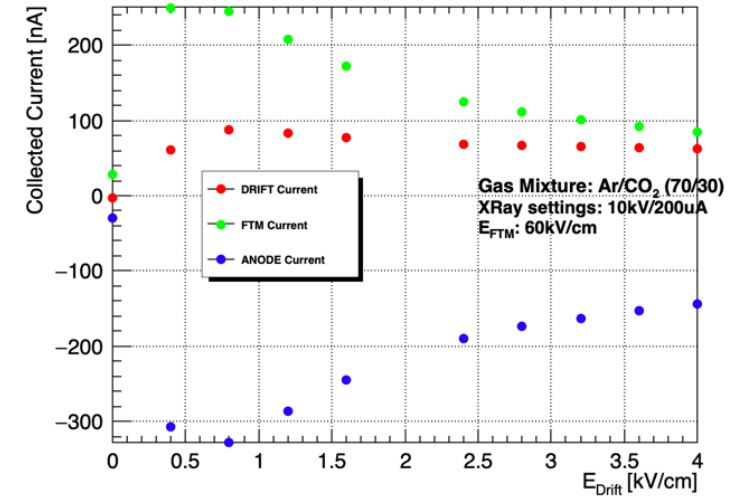
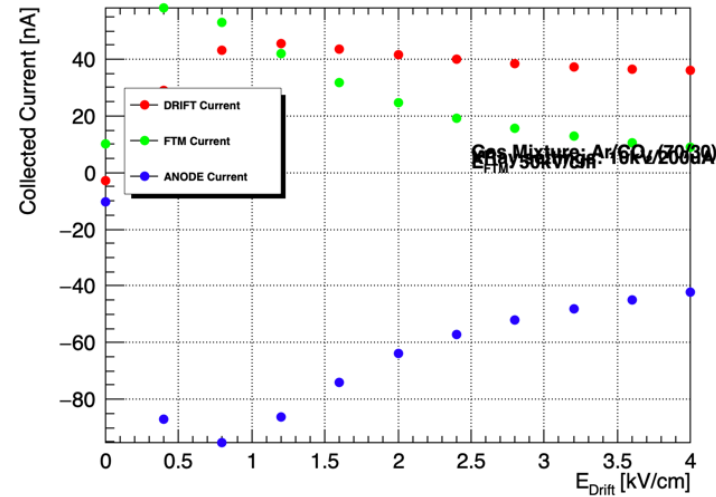
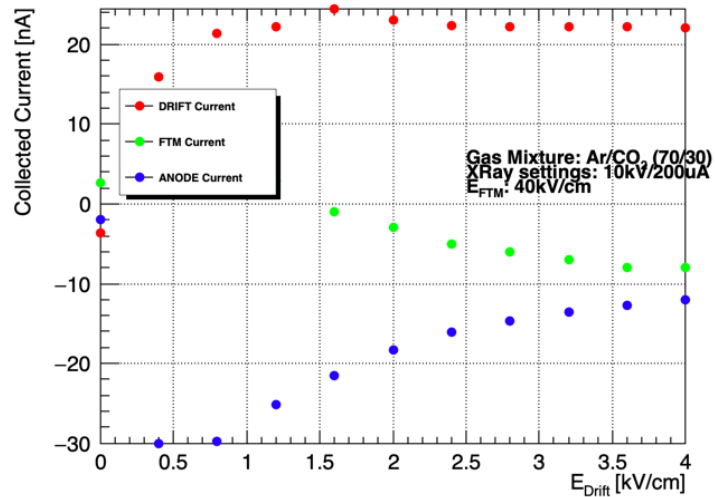
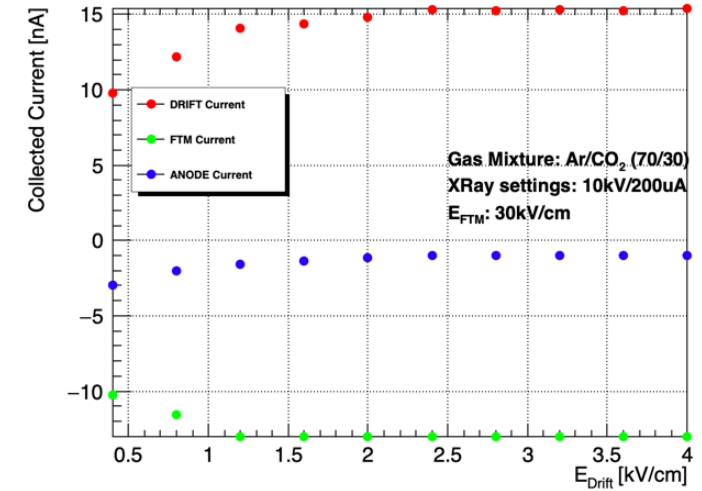
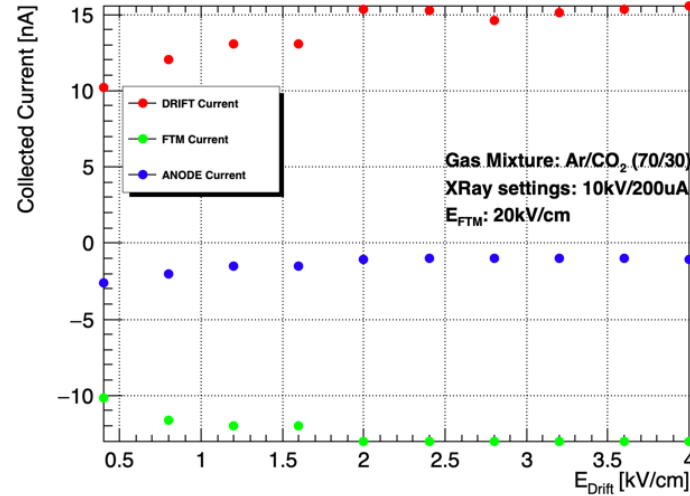
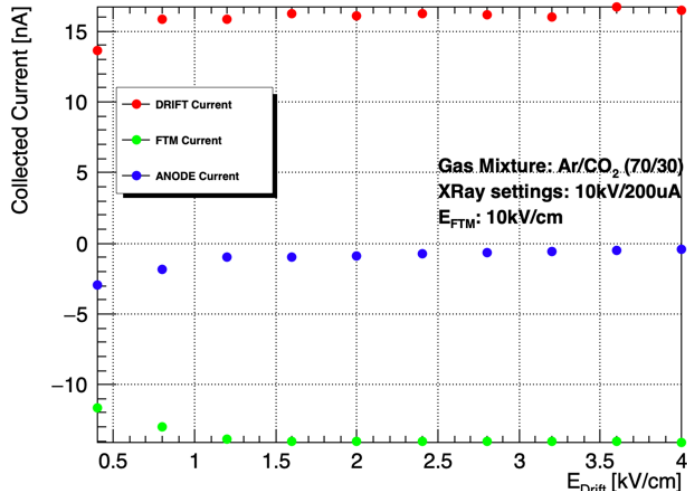


Compared to previous work i.e. *Federica's work in Bari*
We expect a flatter region – an ionization region.
Does not seem to be the case...

Gain Measurements

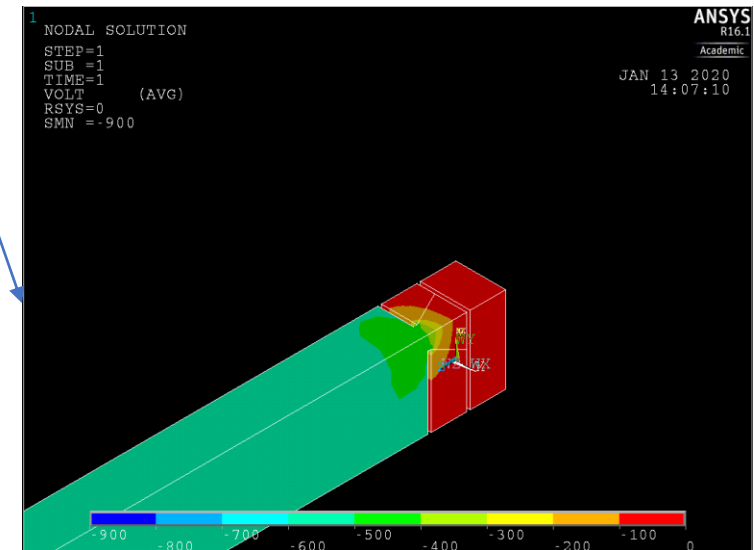
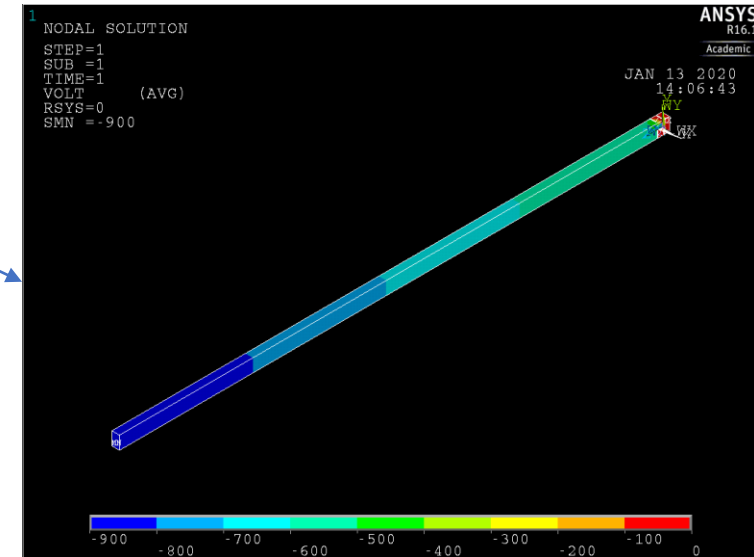
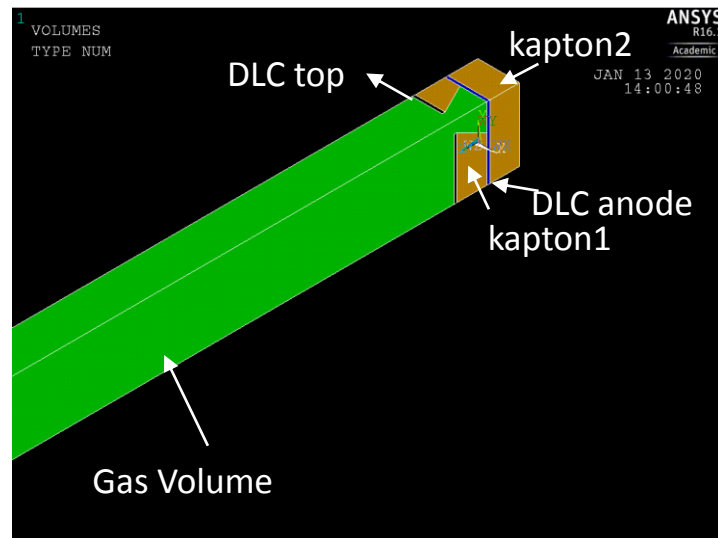
- Keep track of the current collected to all layers
 - Drift, FTM_{TOP} (DLC), Anode foil (DLC).
- Scanned the amplification voltages 10 – 60 kV/cm
 - Made use of the high-res PS as the pico-ammeter measurements were biased

Gain Measurements



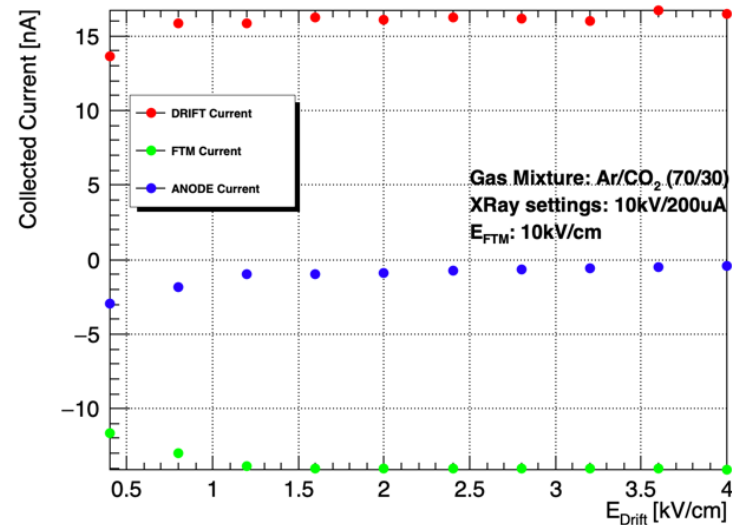
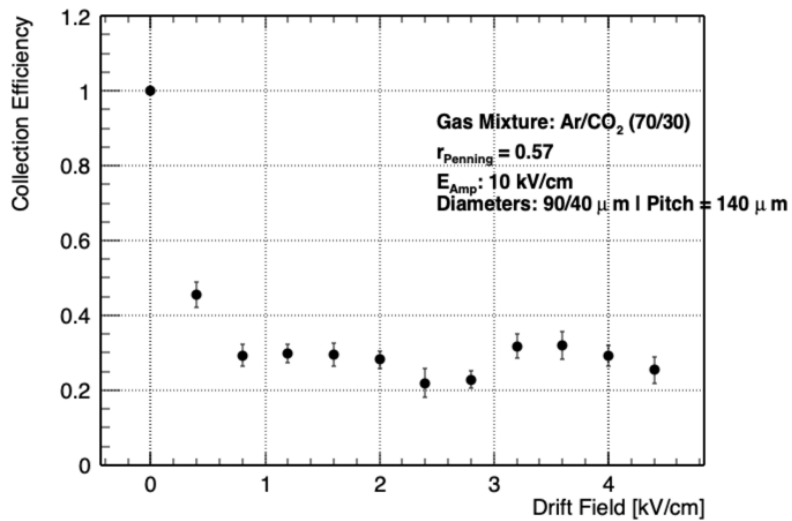
FTM – Prototype Simulation

- Simulate the foil FTMv4t2 created/used

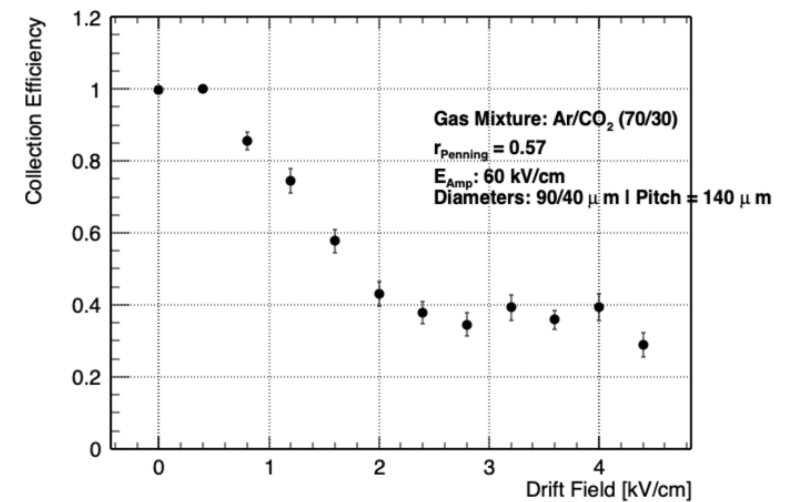
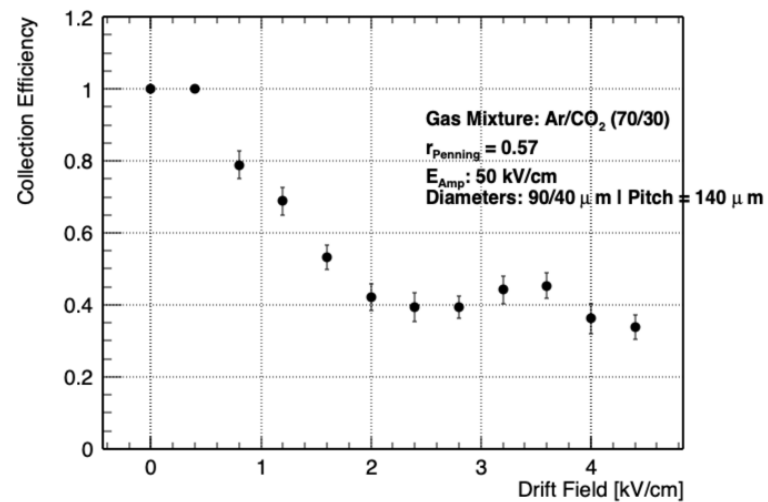
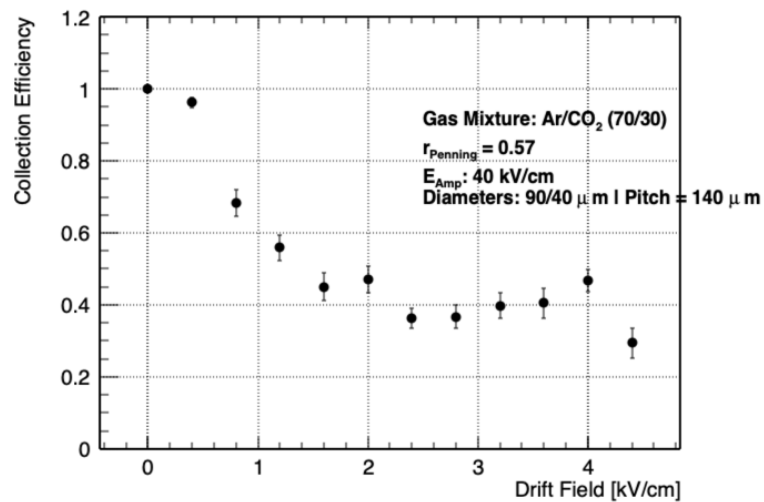
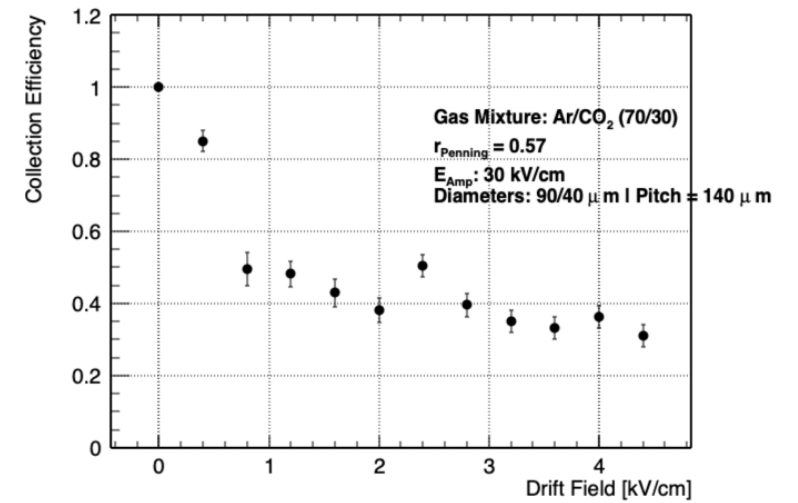
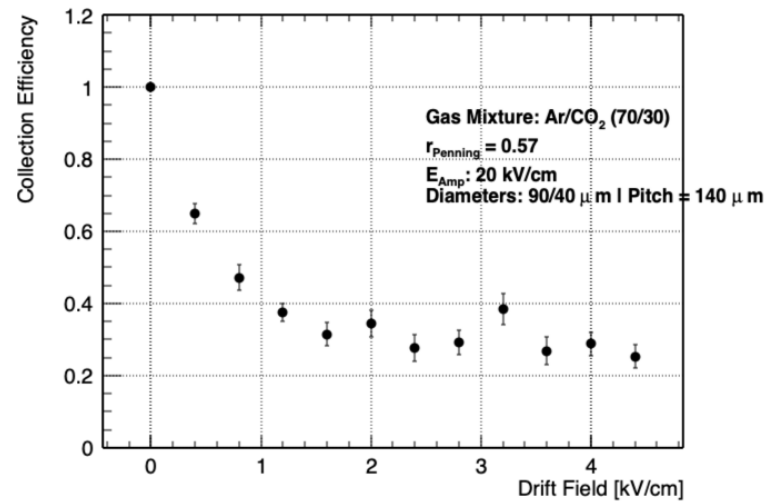
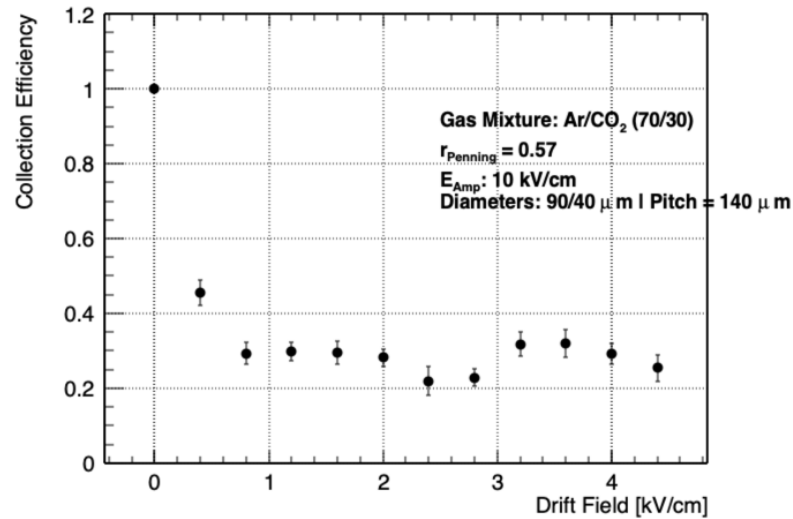


Measured collection efficiency and Eff. Gain

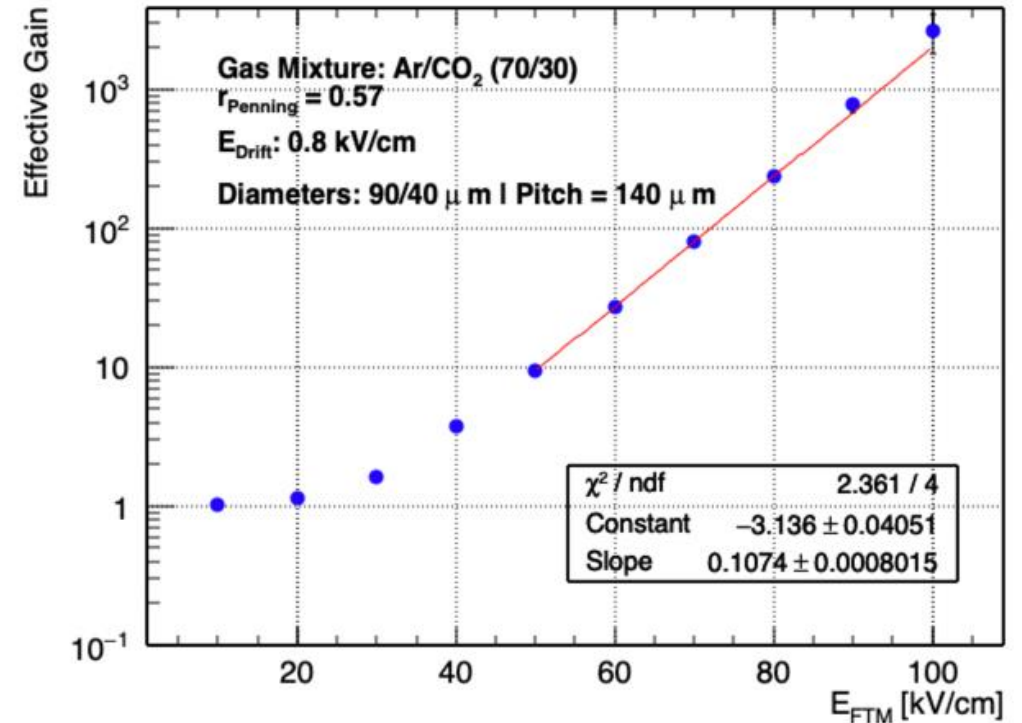
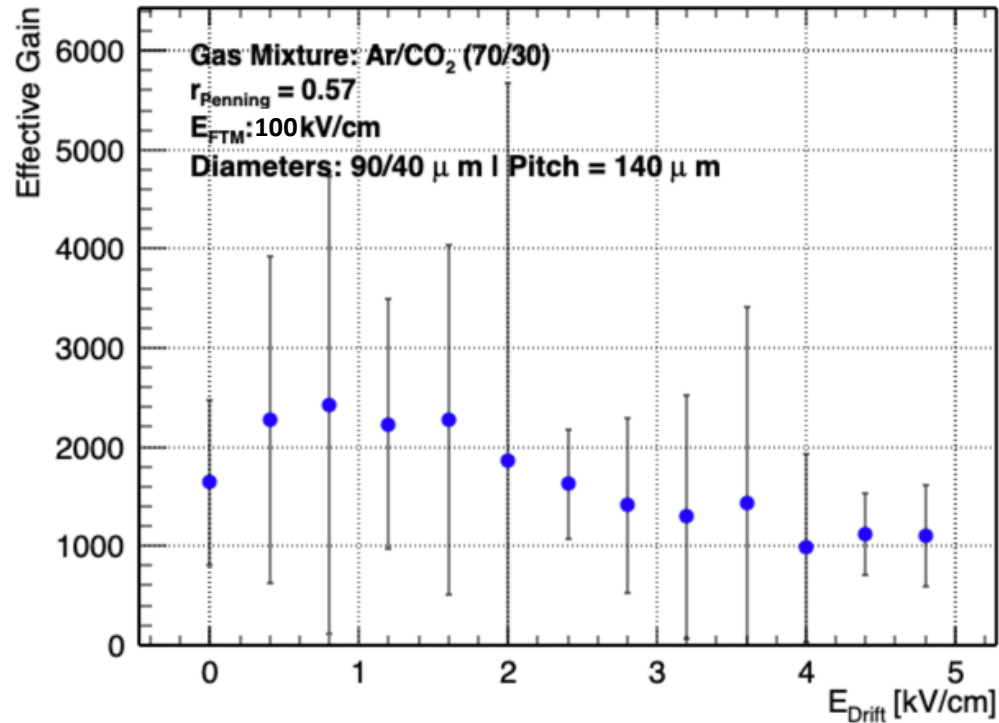
- Compare the collection efficiency with the data for the Current collected on the layers



Measured Collection efficiency and Eff. Gain



Measured Collection efficiency and Eff. Gain



Future plans

- I will be at CERN for the RD51 week (present the work there maybe ?)
- We still have a Cu cladded WELL foil which was not tested (50 μ m – 100 μ m diameters)