LITTLE UPDATE ON NEGATIVE IONS
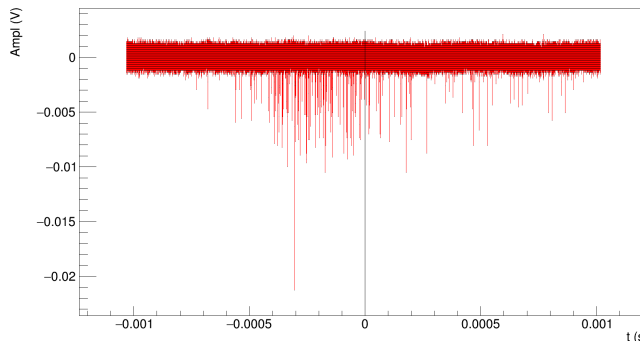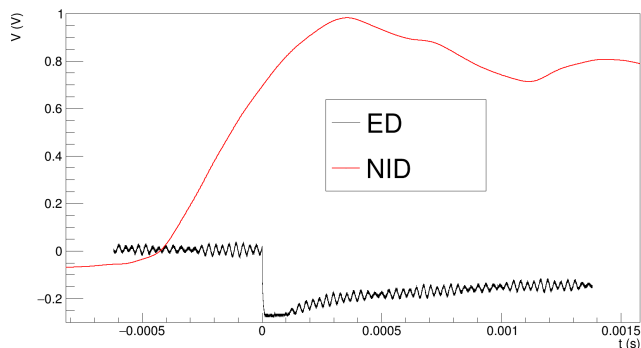
G. Dho, E. Baracchini, D. Marques
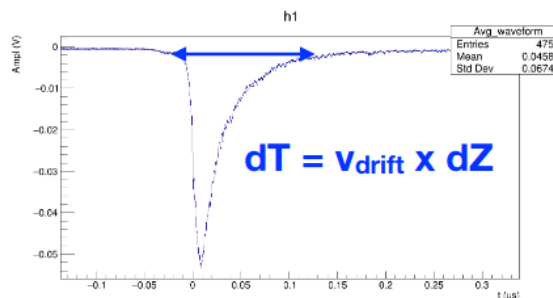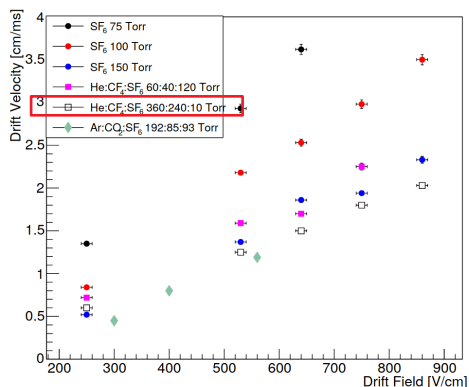
- NID data was taken of GEM signal connected to preamplifier and PMT waveforms

Clear difference in signal shape for both type of waveforms

- We wanted to crosscheck the drift velocity to an older NITEC publication

$$dT = v_{drift} \times dZ$$

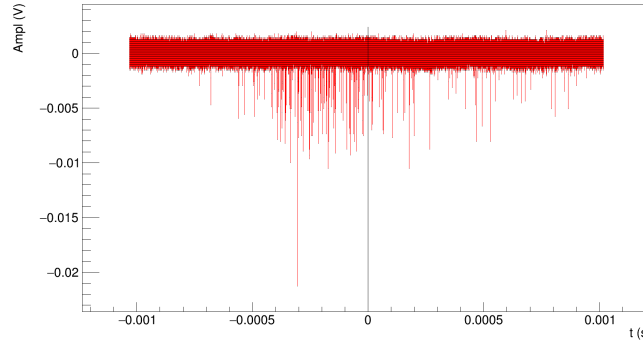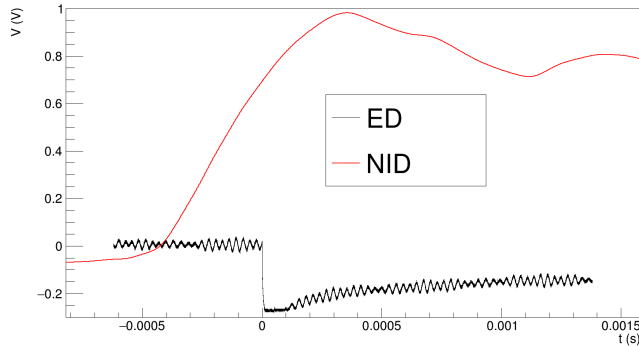Average space traveled by alpha evaluated from ED as

roughly 0,7 cm

This is obtained from the average waveform and the z has a distribution which can induce errors.

We want to improve the definition of z, collimating source and positioning it tilted
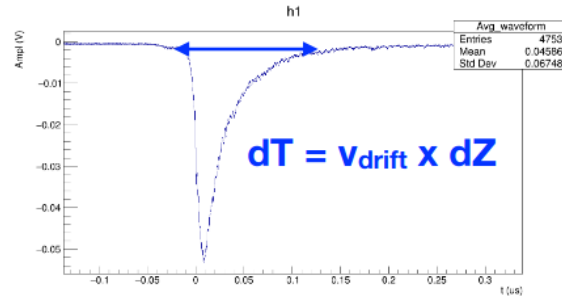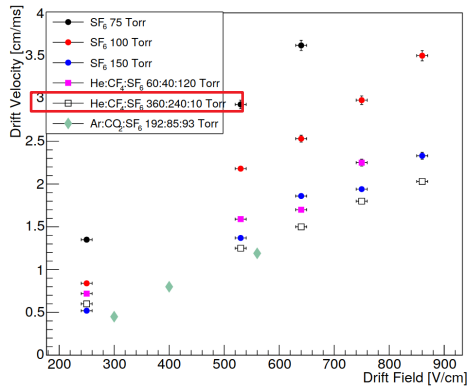
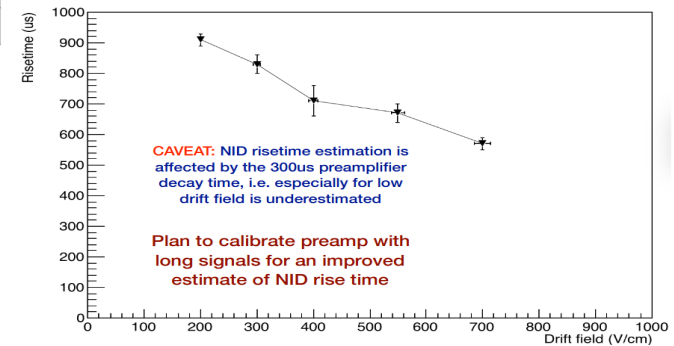- NID data was taken of GEM signal connected to preamplifier and PMT waveforms

Clear difference in signal shape
for both type of waveforms

- We wanted to crosscheck the drift velocity to an older NITEC publication

$$dT = v_{drift} \times dZ$$

Average space traveled by alpha evaluated from ED as

roughly 0,7 cm

CAVEAT: NID risetime estimation is affected by the 300us preamplifier decay time, i.e. especially for low drift field is underestimated

Plan to calibrate preamp with long signals for an improved estimate of NID rise time

Preamp Risetime Failure

- Some waveforms of the preamplifier were taken while connecting a wave generator with know signal length and triggered from the EXT.TRG of the wave generator
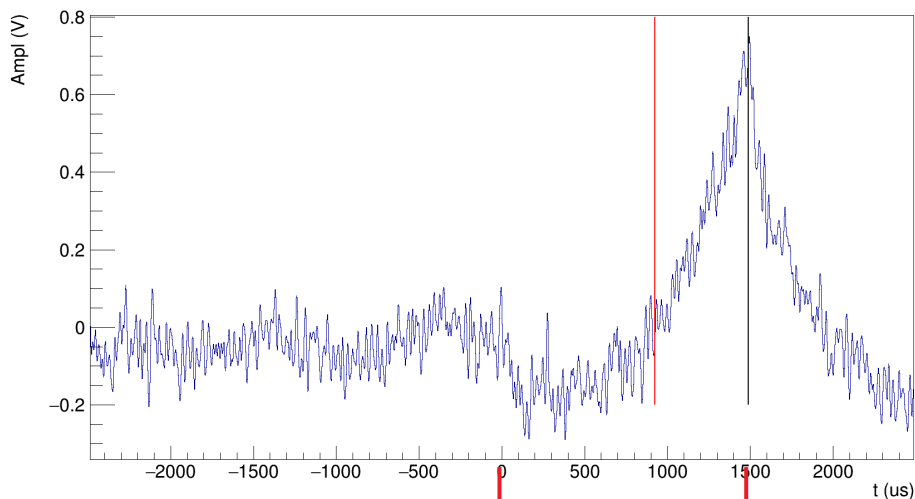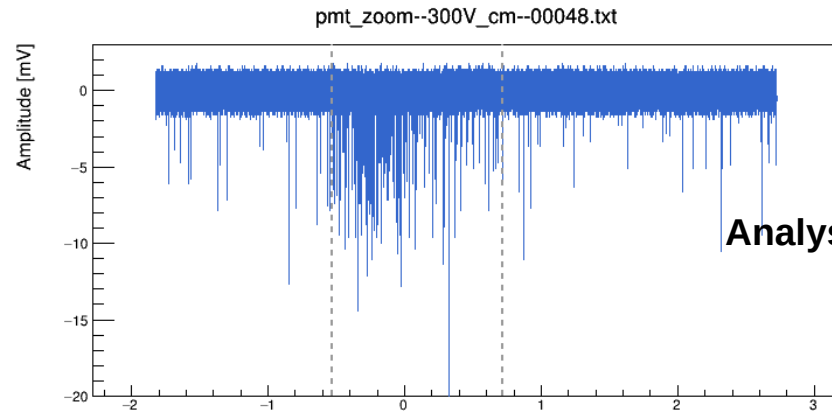

Original time duration 1,5 ms

- The algorithm fails, but the early part of the signal is hidden in the baseline

- Preamp not sensitive enough to extra small charge
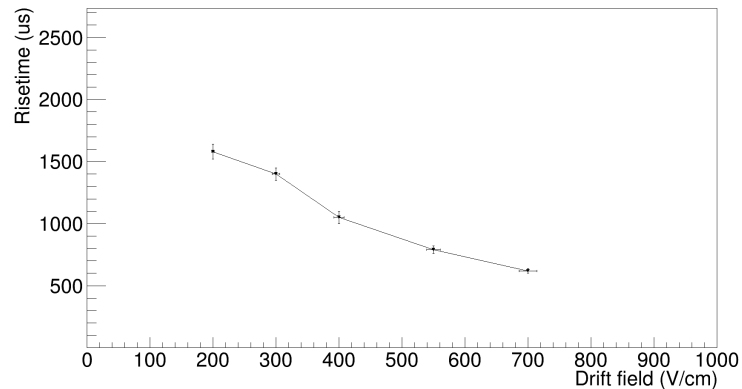
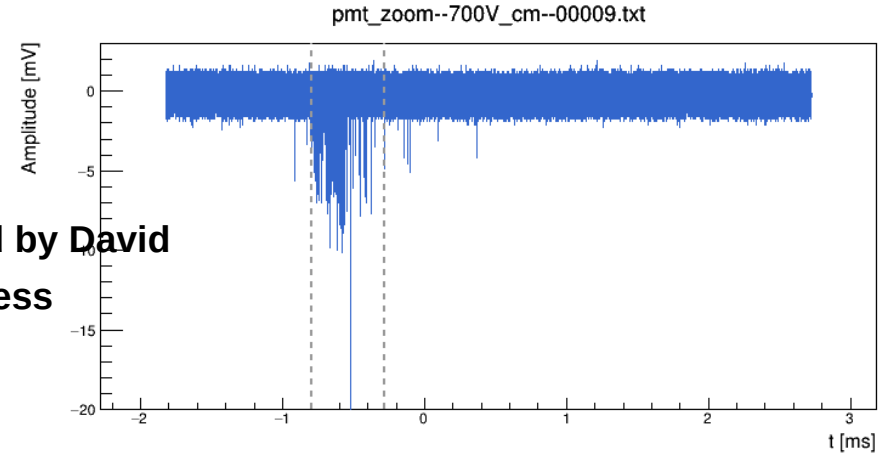- It seems true also in actual signal
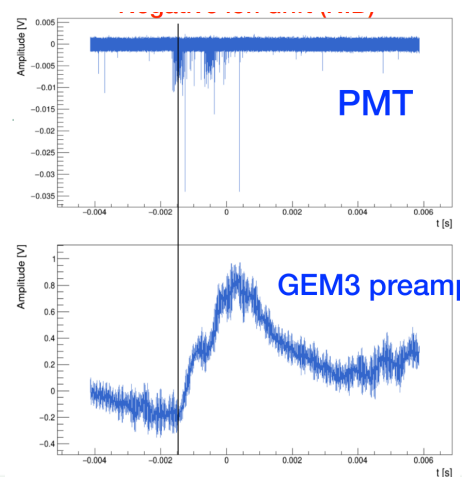
- We thought of using the time window length of the PMT, evaluated based on the density of the peaks of light

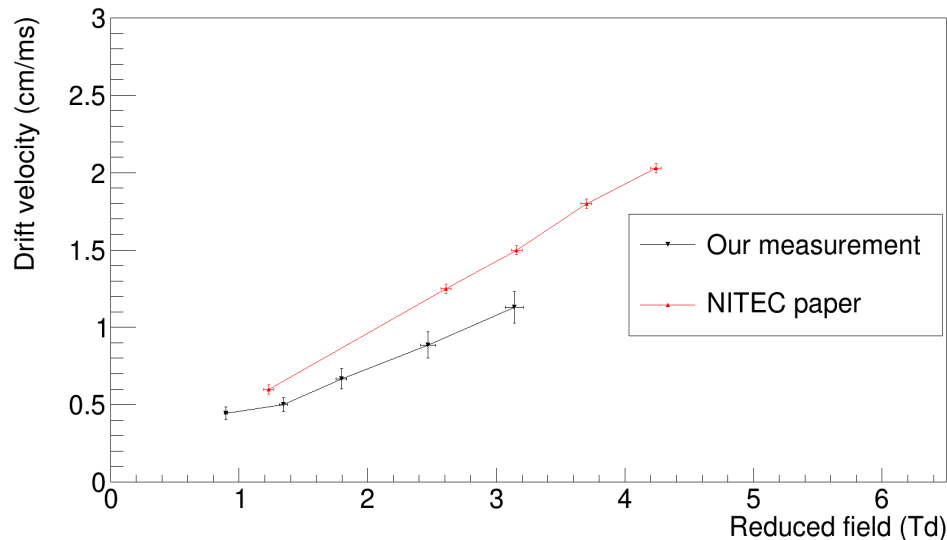**Analysis performed by David and in progress**

- We obtained consistent result, even though error bars are large due the experimental technique and low statistics

$$\frac{E}{N} = \frac{E}{p}\left(1.0354\,10^{-2}\,T\right)$$

Reduced field

$$K_0 = \frac{v_d}{E}\frac{1}{N_0}$$

Reduced mobility