

# Saturation of GEM amplification measurement

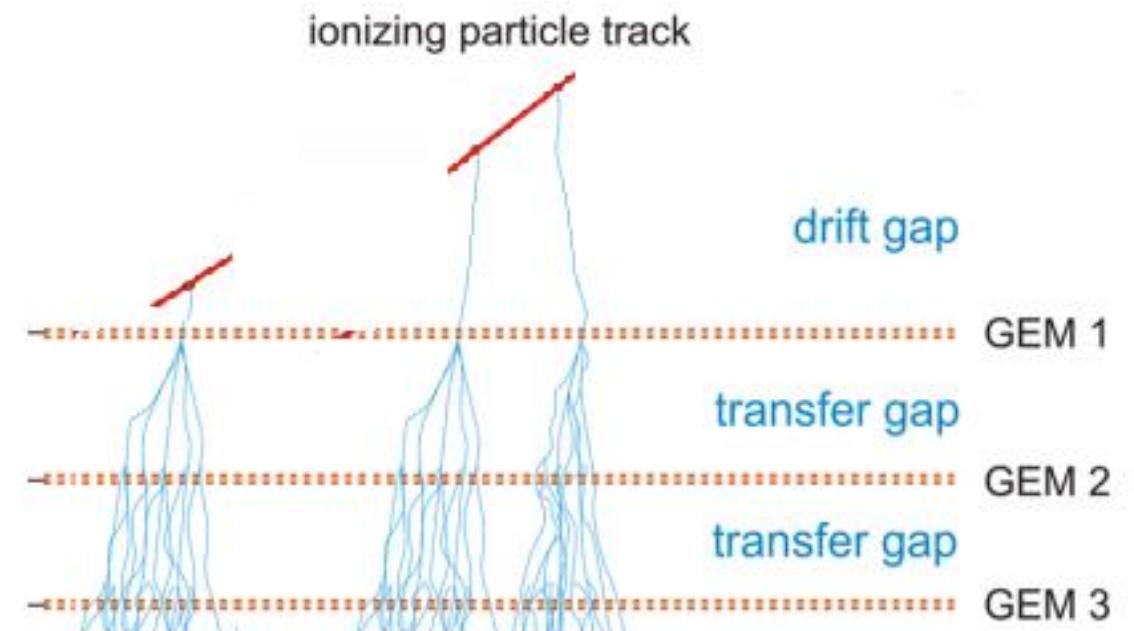
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CYGNOS weekly meeting

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# Previous observations

- Higher signal for more distanced tracks



# What we did

Measurement of the signal from radioactive source of  $2^\circ$  and  $3^\circ$  GEM's layer

- In function of source position
- In function of HV GEM's  $1^\circ$  layer

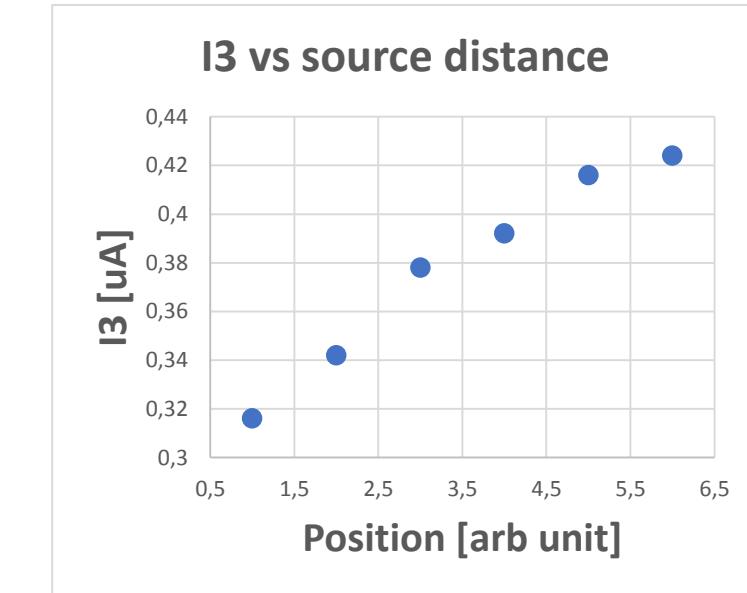
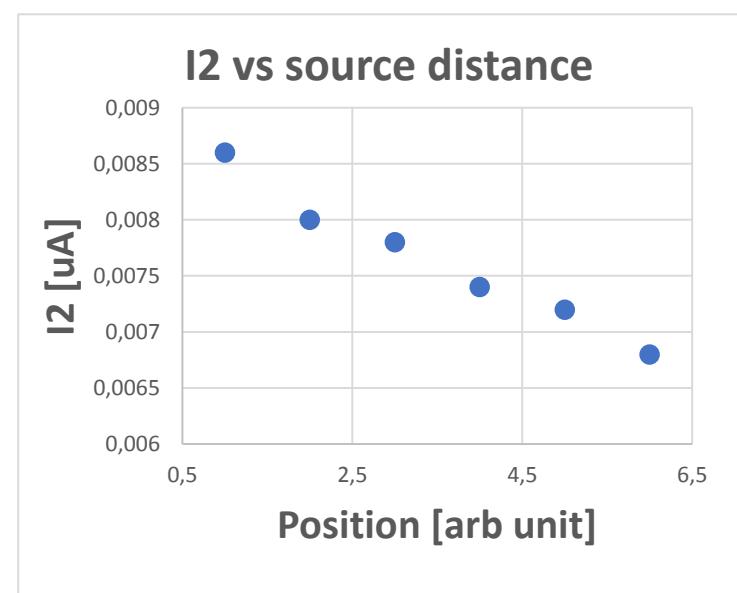
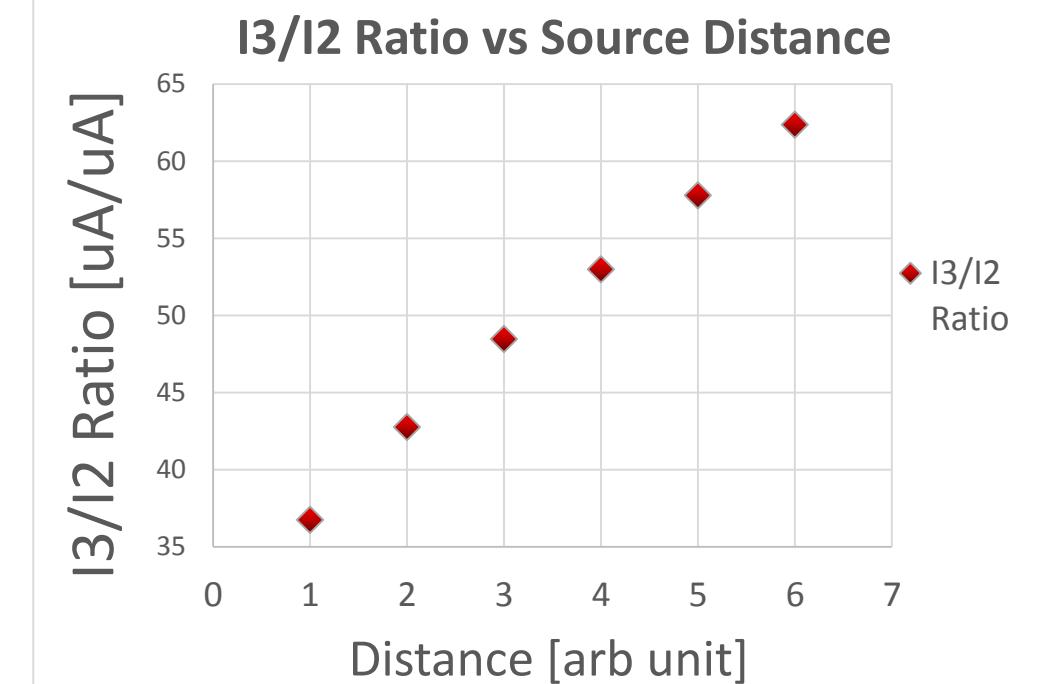
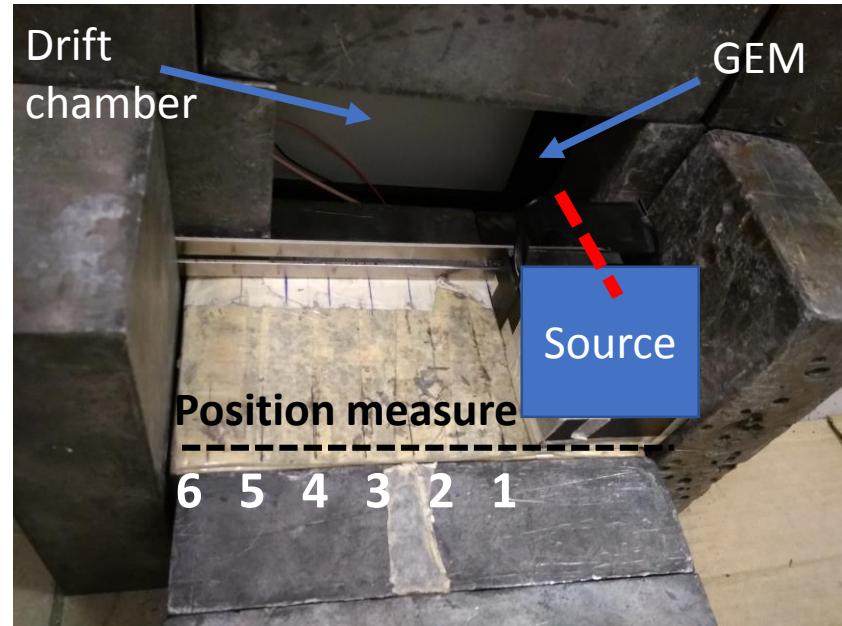
We expect:

$$I_3 \sim G_1 * G_2 * G_3$$

$$I_2 \sim G_1 * G_2$$

**Gain of GEM  $3^\circ$  layer :  $I_3/I_2 \sim G_3$**

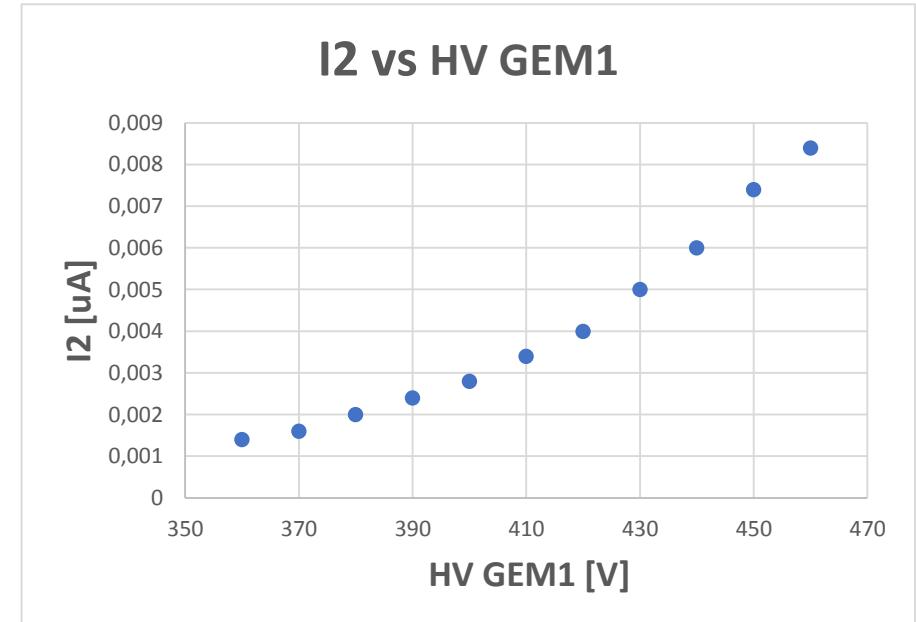
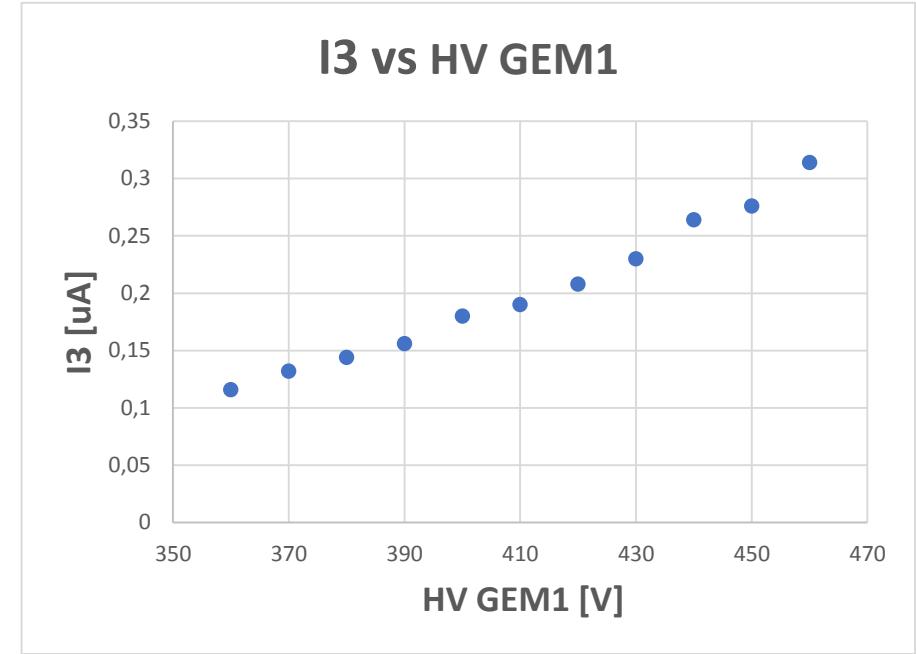
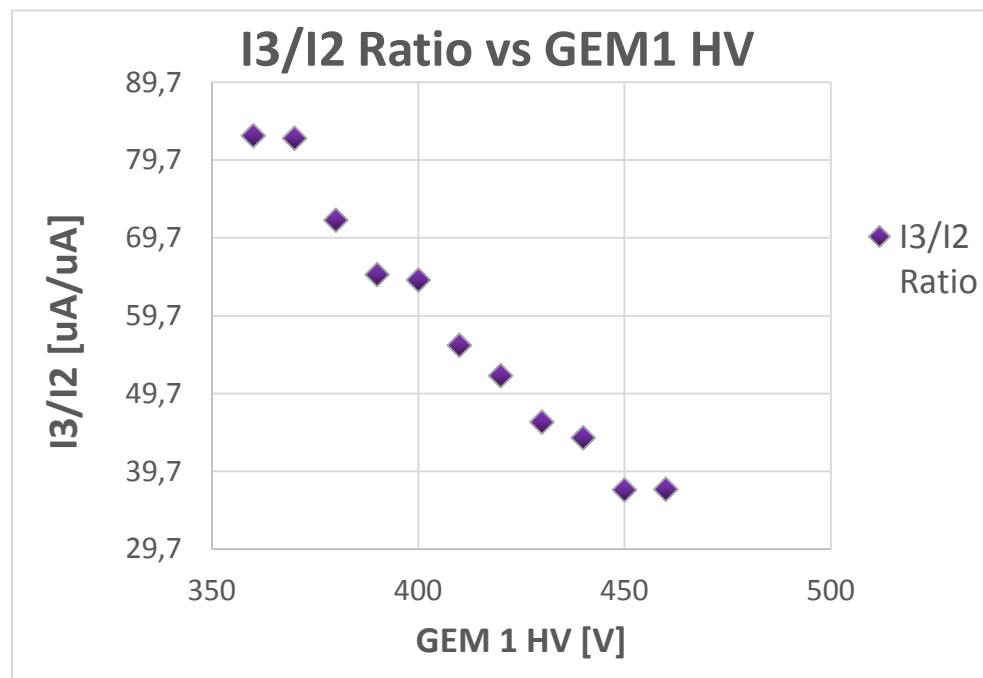
# Position measurement



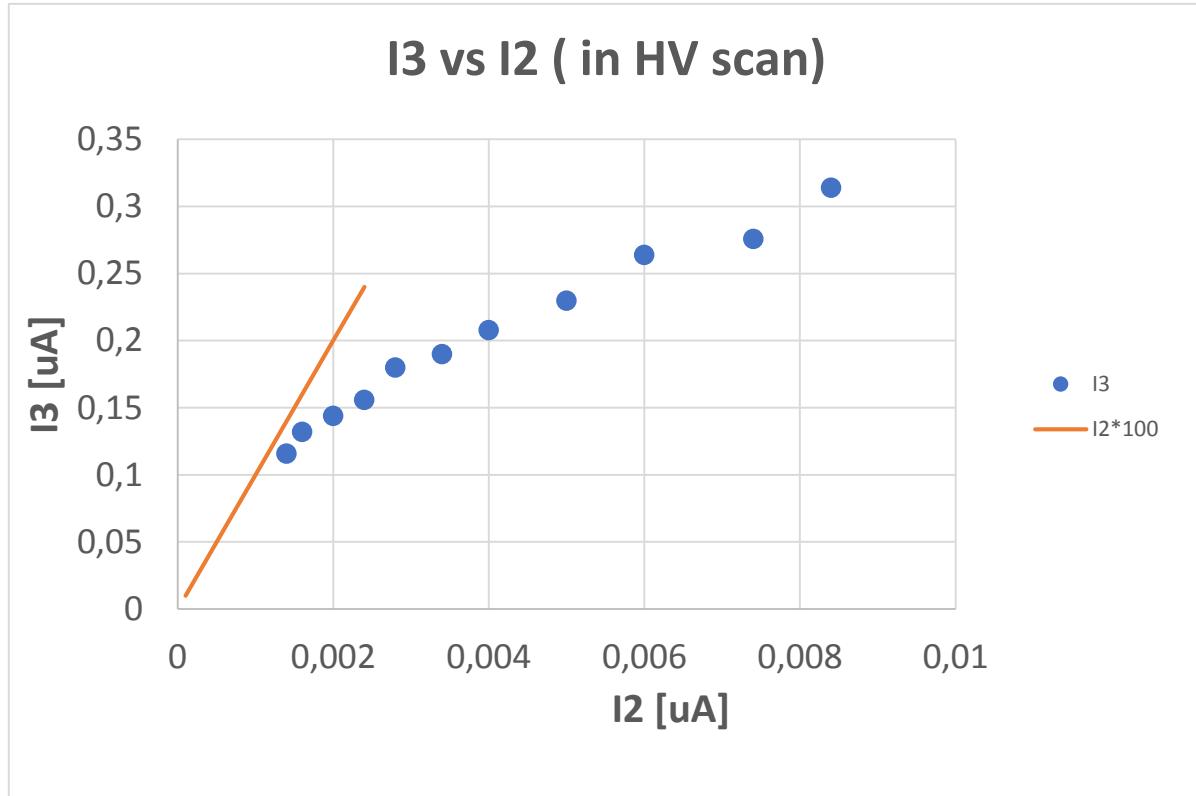
# Measurement in function of GEM's 1° layer

Measurement of signal from GEM2 (U2), GEM3 (U3)

- fixed position of source (pos 1)
- Scan of HV applied to GEM1
- Ratio U3/U2 is decreasing/saturating with increase of HV GEM1



# Non-linearity, $I_3$ vs $I_2$



- to do: measurements at different HV3 to understand where saturation starts