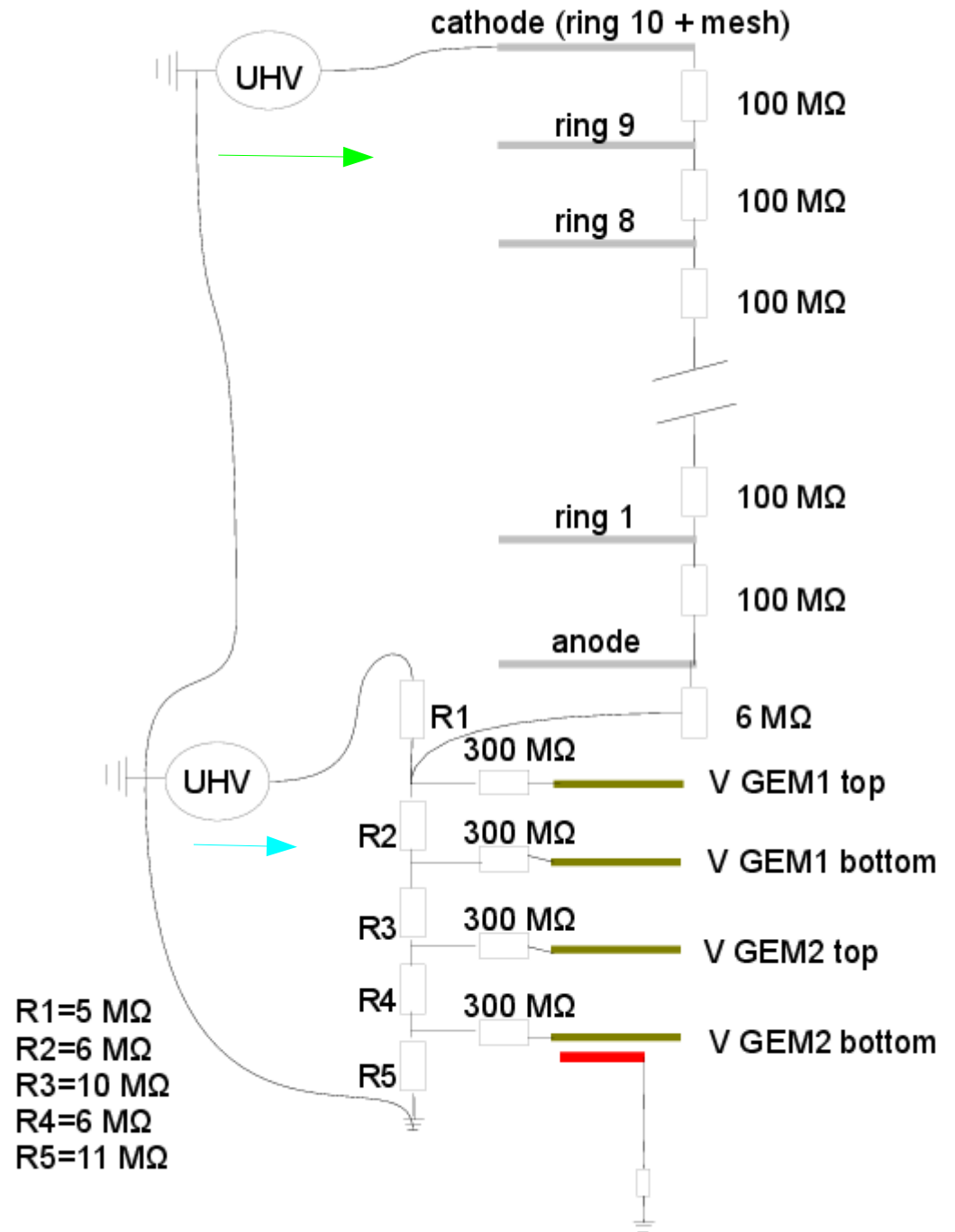


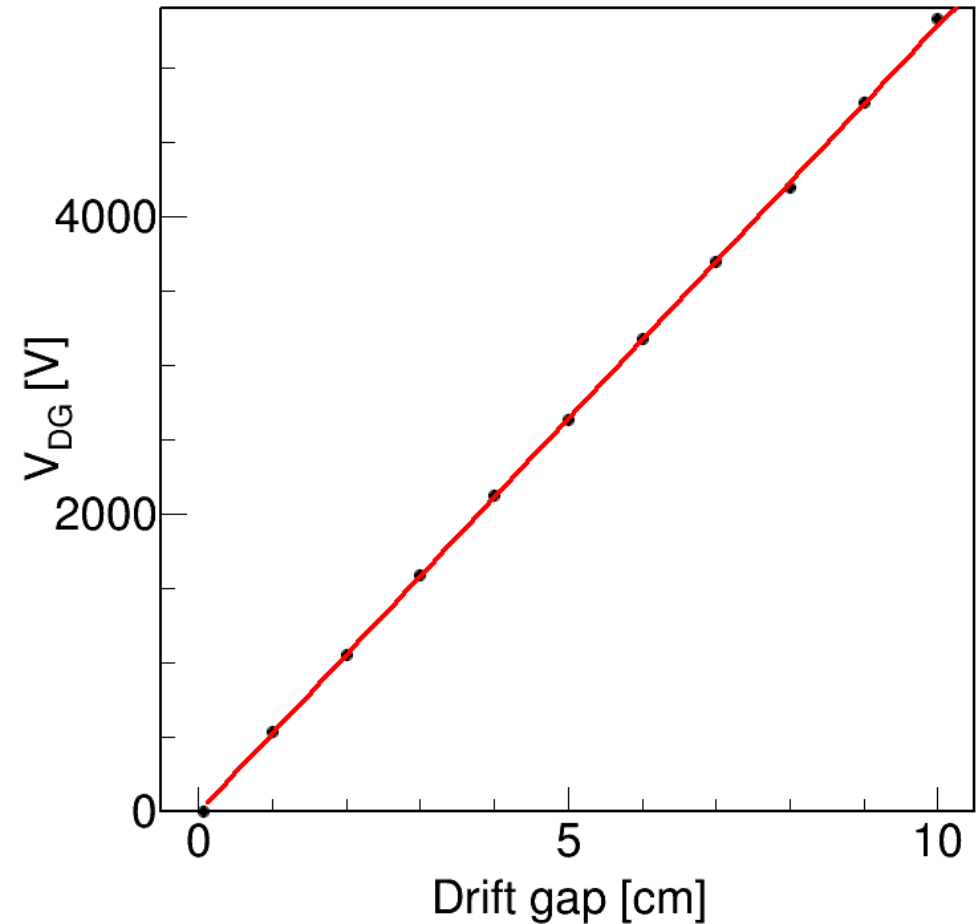
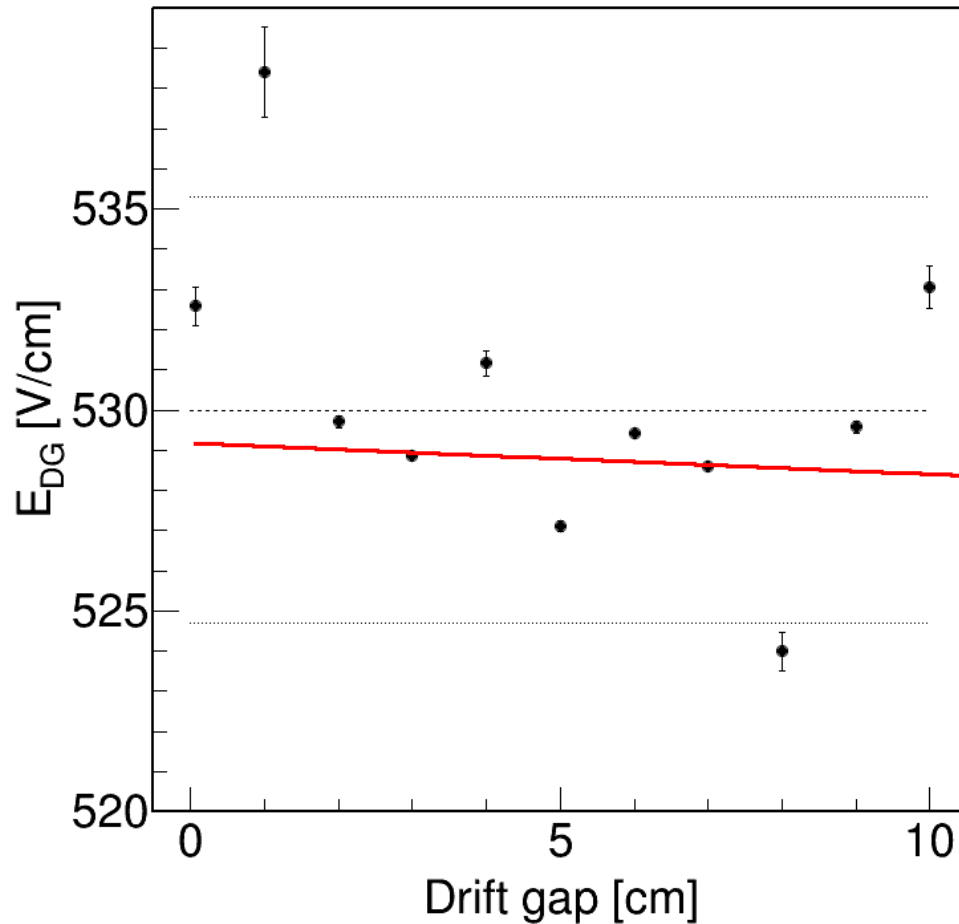
HV voltage and FC circuits with dual currents

Circuits schematic

- Through hole resistors
- Tolerance measured < 2%
- Unknown Voltage Coefficient [ppm/V]
(eg 5 ppm/V = 0.5%/kV)

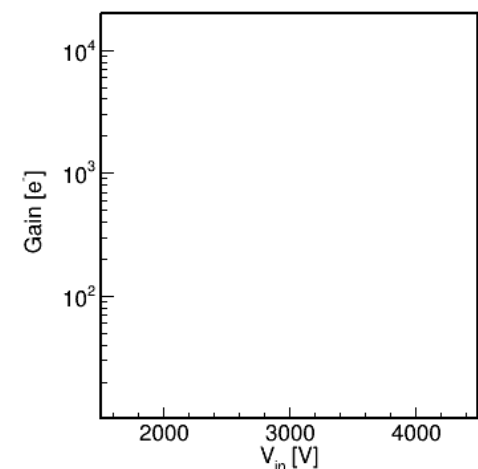
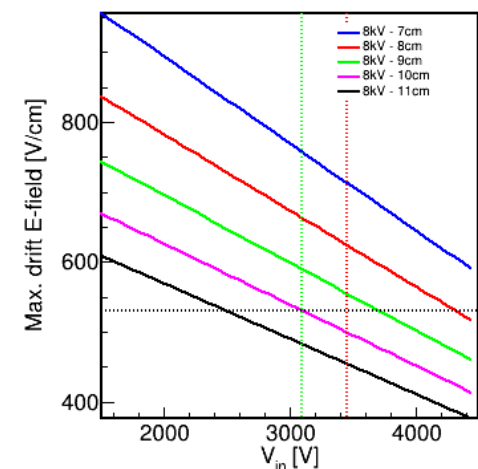
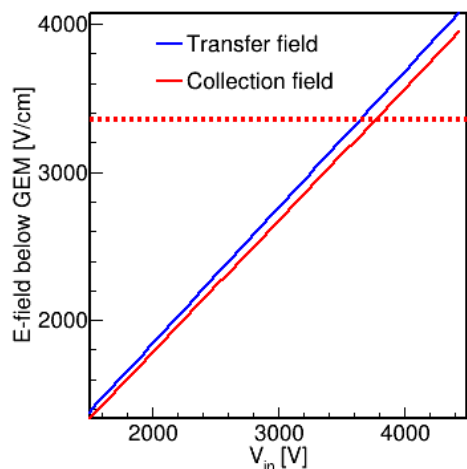
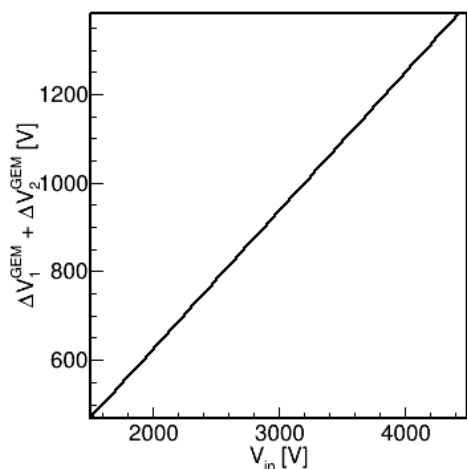
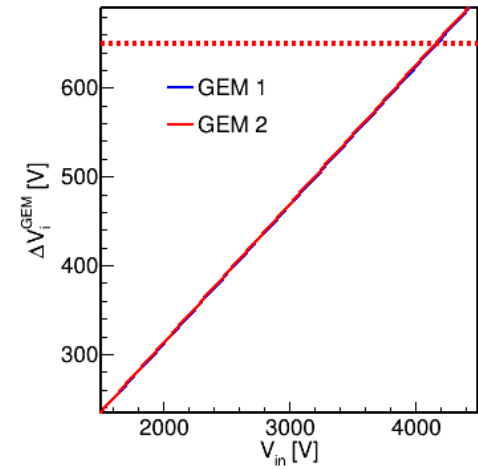
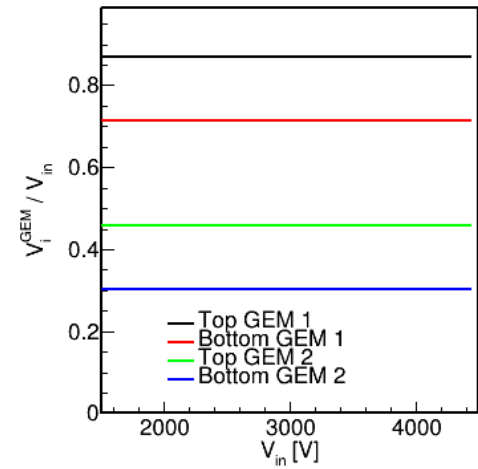
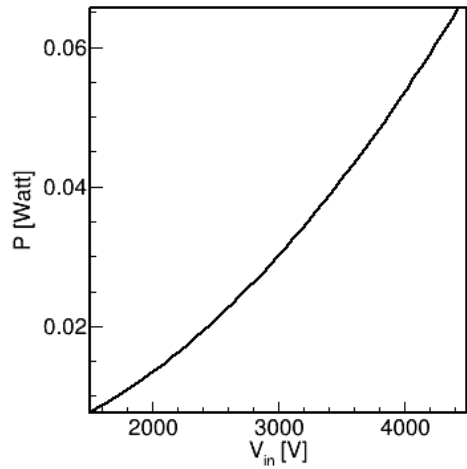
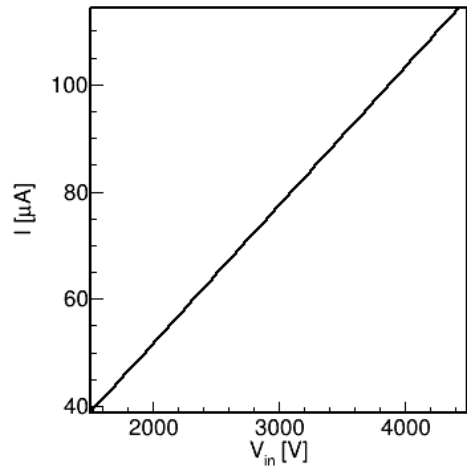


Efield and V behavior



- Using resistors measured values, we can determine Efield and V dropping of FC
- Error bar = measurement variance

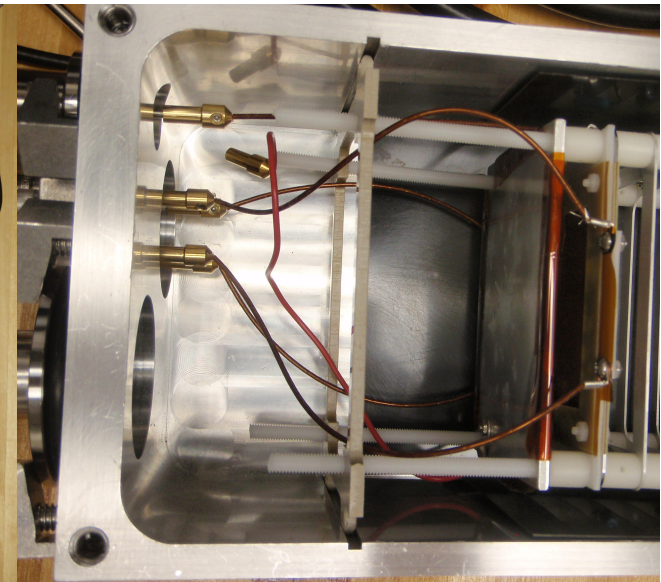
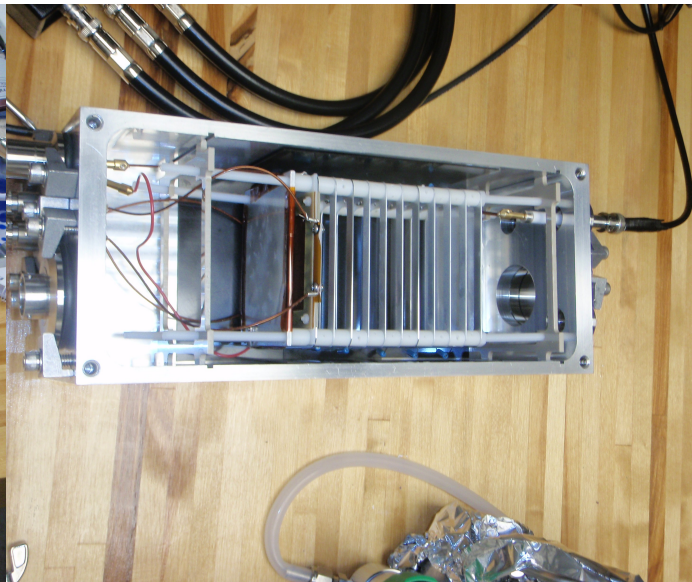
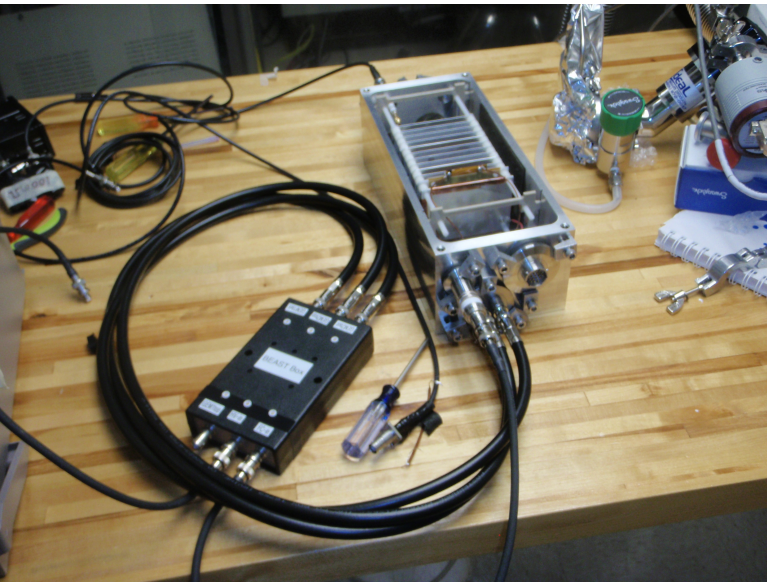
Box behavior



• Using resistors measured values, we can determine quantities above

Setup

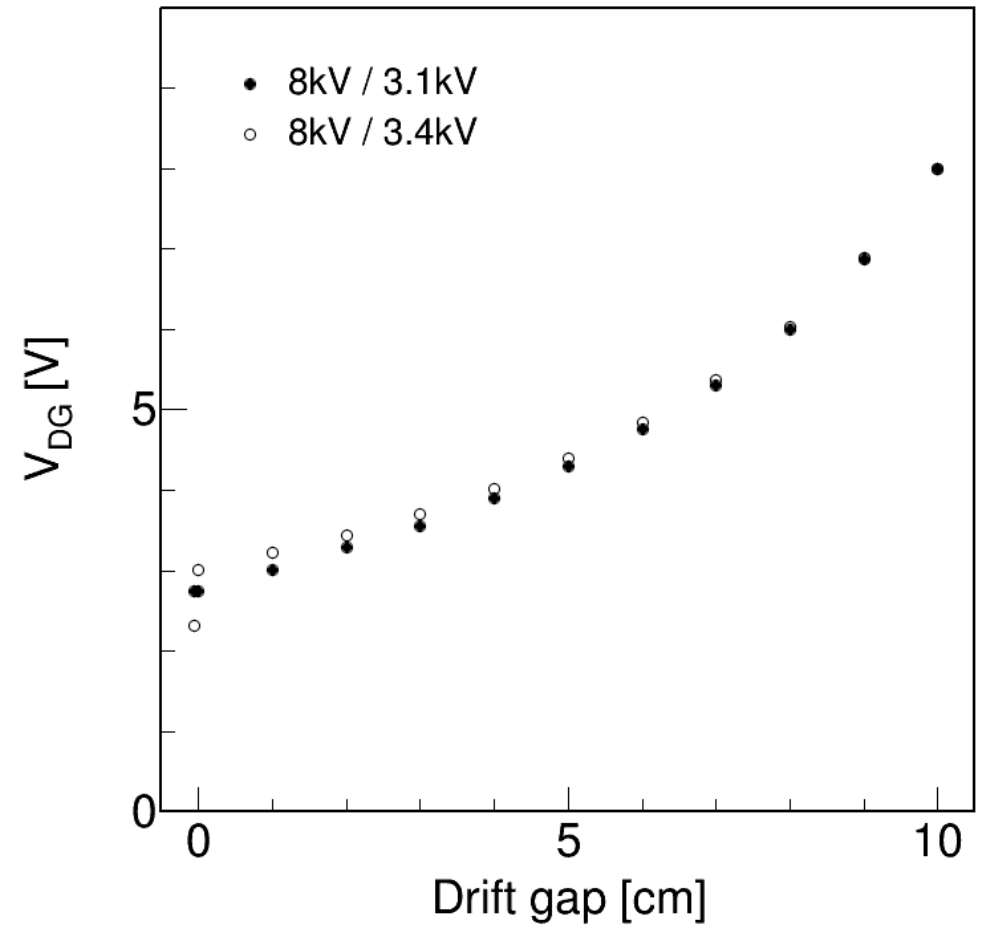
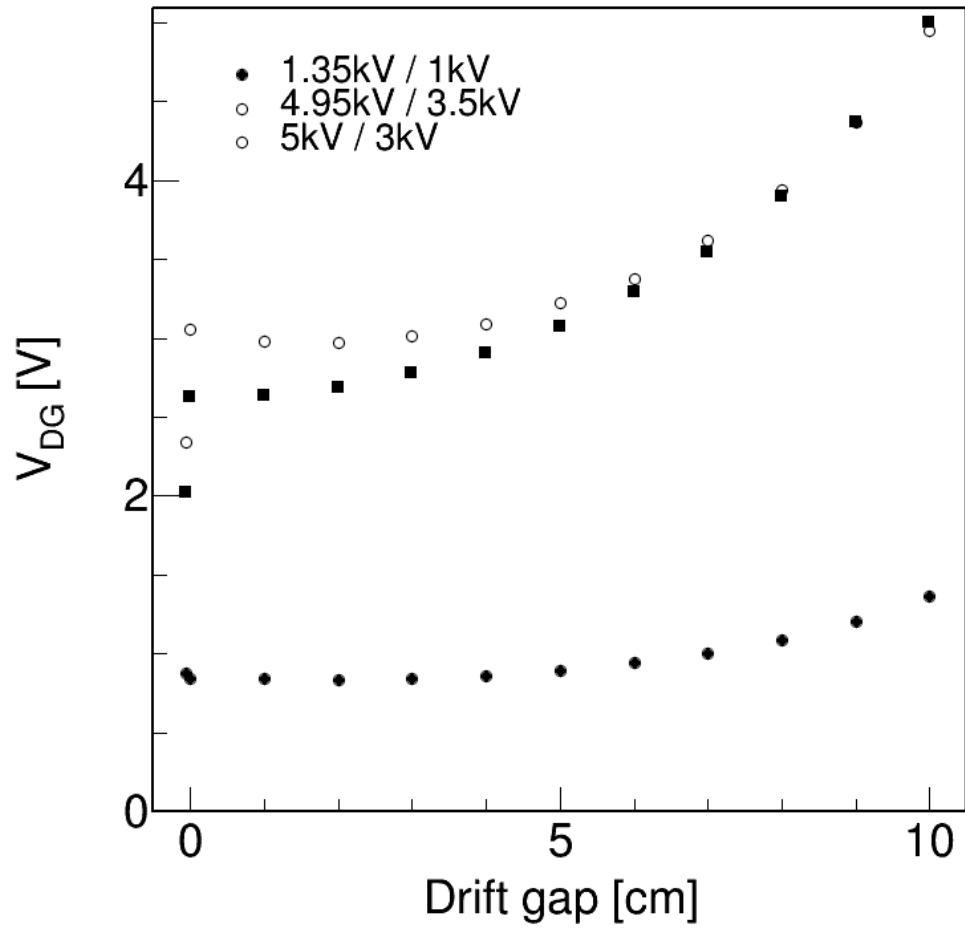
- Setup 1
 - ◆ 2 x 5kV (1 channel) HV power supply
 - ◆ Box
 - ◆ FC+GEMs mounted inside vessel
- Setup 2
 - ◆ 1 x 8kV (4 channels) HV power supply
 - ◆ Box
 - ◆ FC+GEMs mounted inside vessel



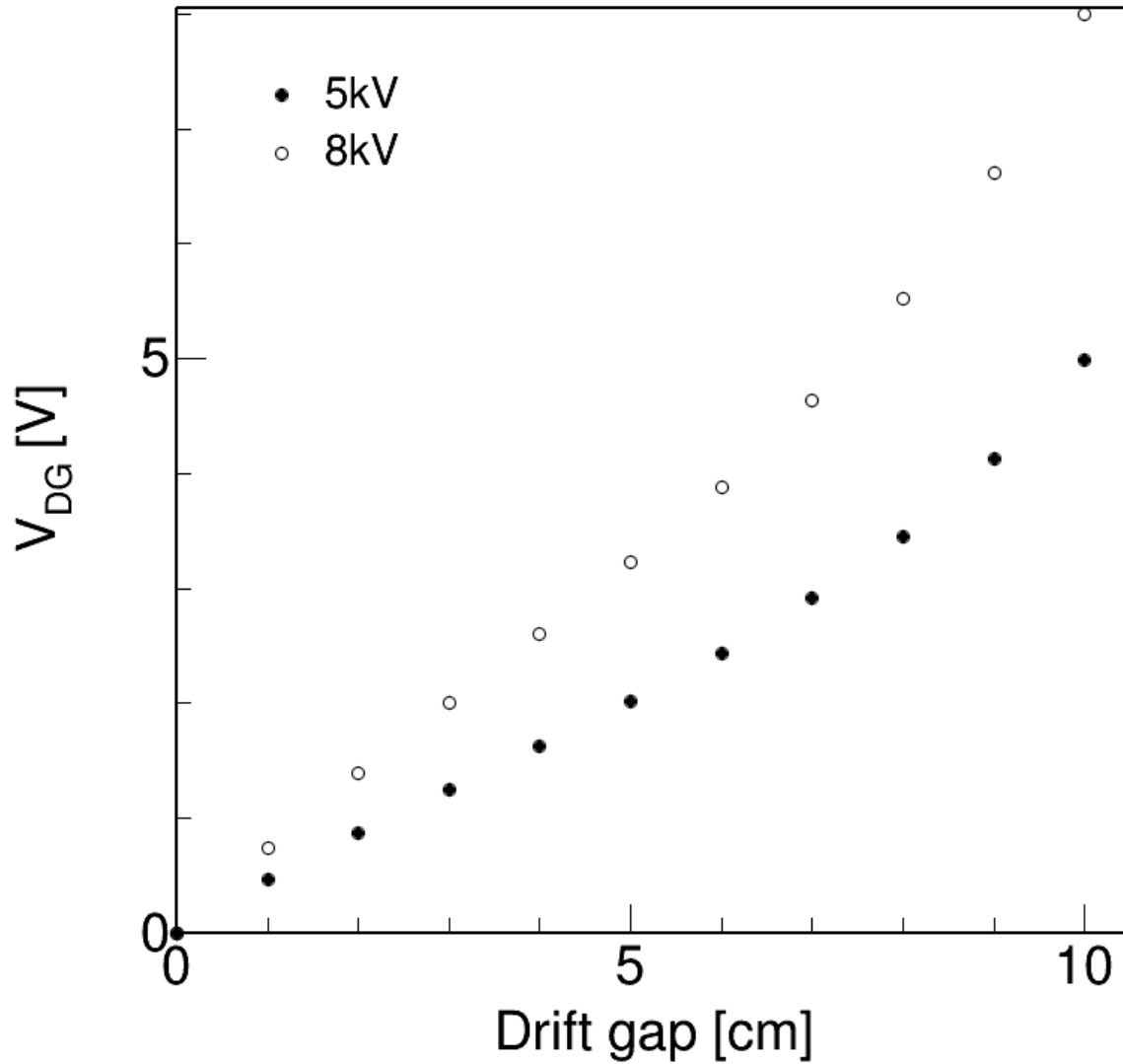
All connection are working properly

- GEM1: 500 V \rightarrow 5nA
- GEM2: 500 V \rightarrow 0.4nA

2 HV feed in

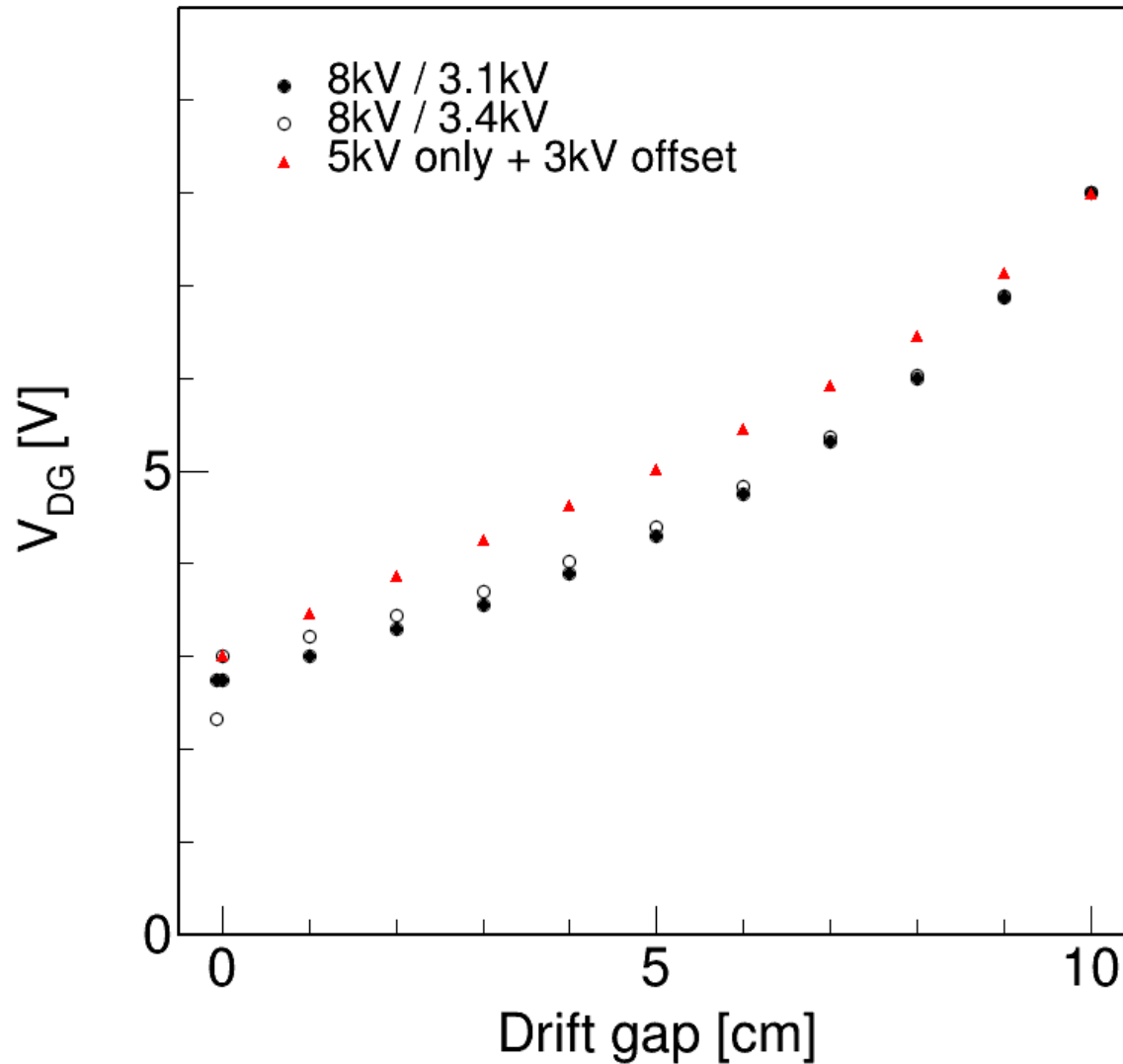


FC only: cathode at HV / anode at GND



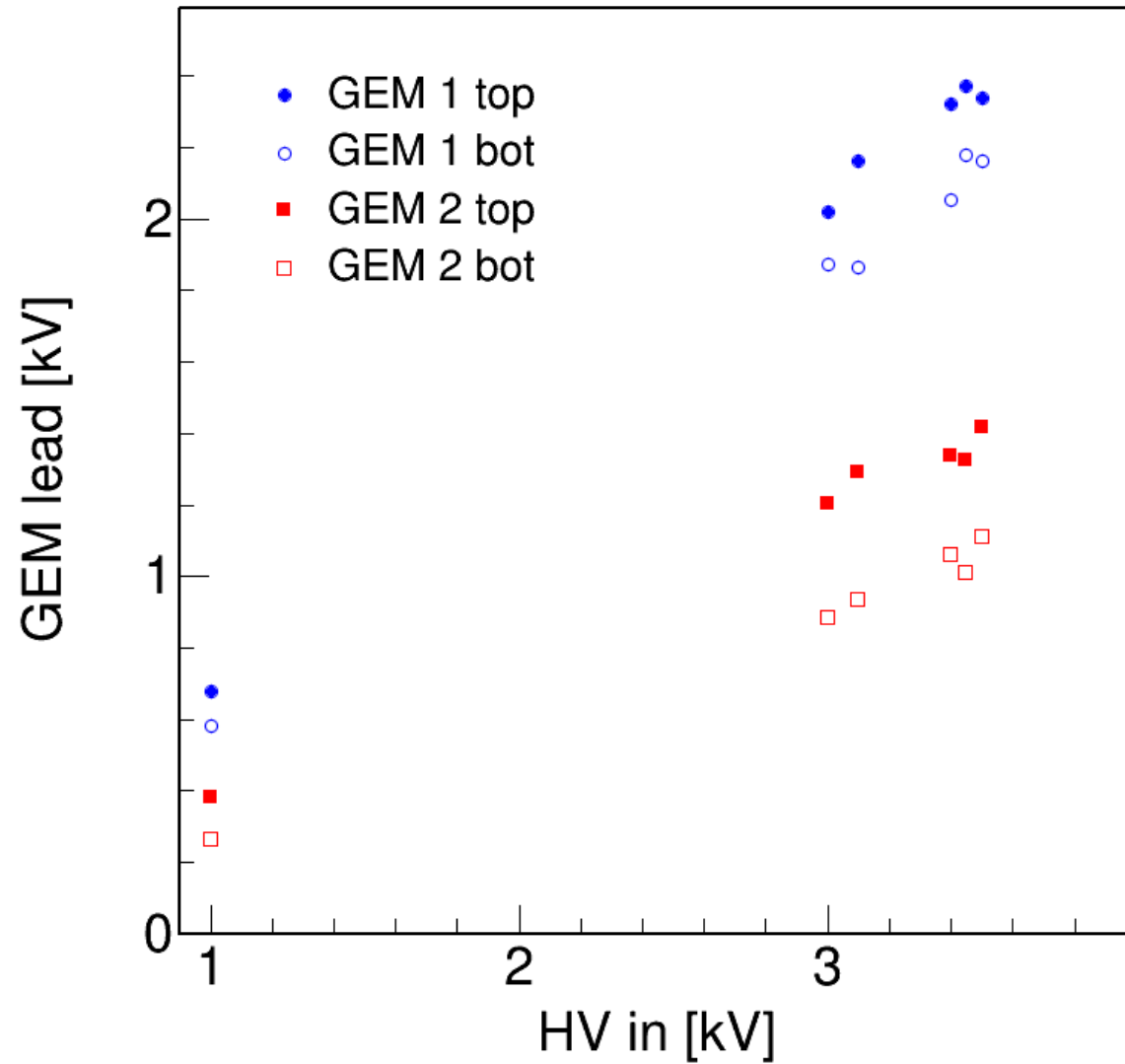
Bad behavior presumably due to bad VC

Bad VC vs. dual currents



8kV / 3.4kV = 5kV FC only + 3kV offset
Not the case:
Dual currents problem ?
FC problem ?

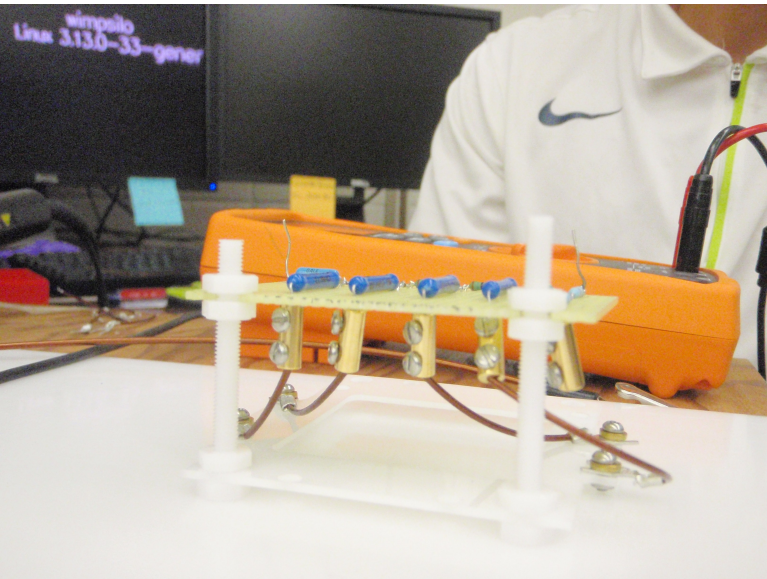
HV divider circuit



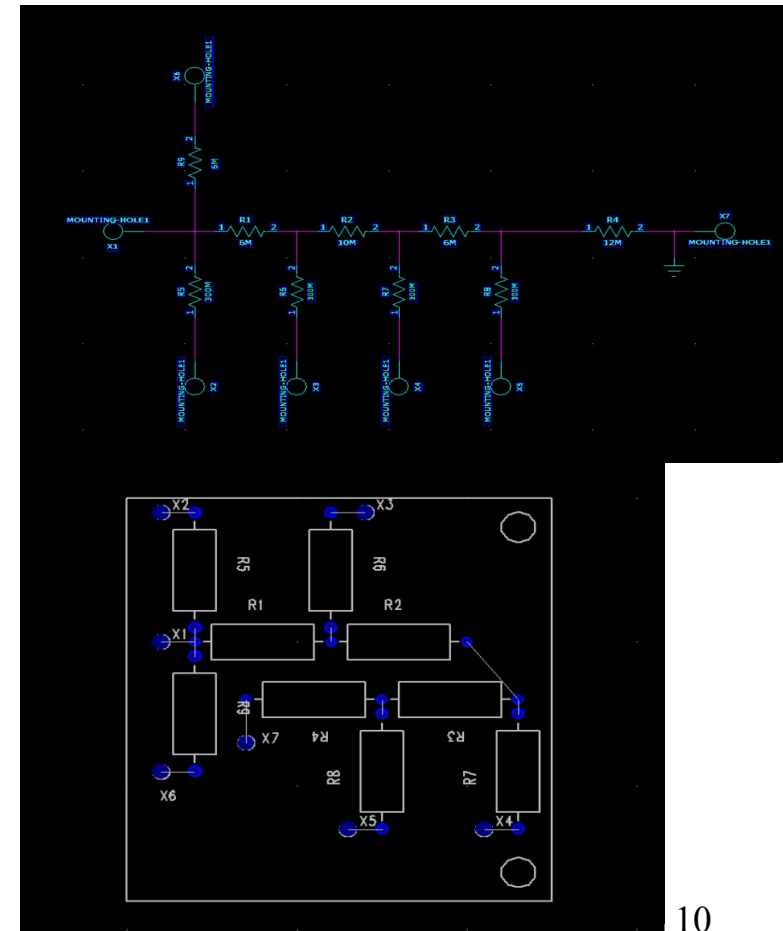
Behavior linear for a given HV power supply

Conclusion

- Order new 100M with VC of $< 5\text{ppm/V}$
- Not yet entirely clear if dual currents circuit can work
- New inside circuit design from bread board to PCB board



Igal Jaegle



Construction & Purchasing