Status of reference measurements with 10x10 GEM used in Outgassing test

Rémi Pacaud
Marco Meyer

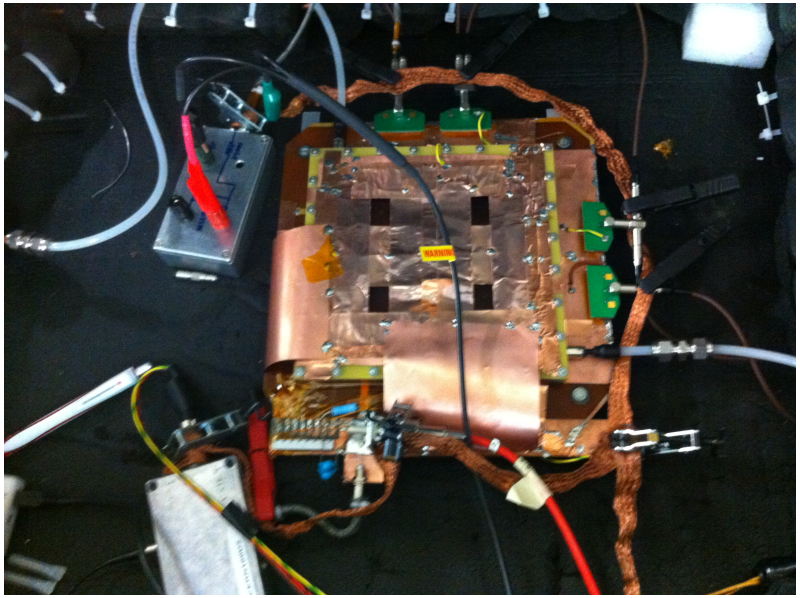
→ many thanks to ←
Jérémie Merlin
Alejandro Puig-Baranac

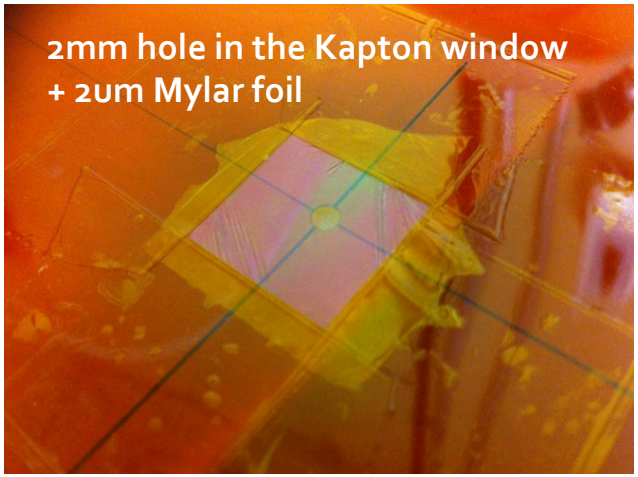
On Behalf of the CMS GEM collaboration

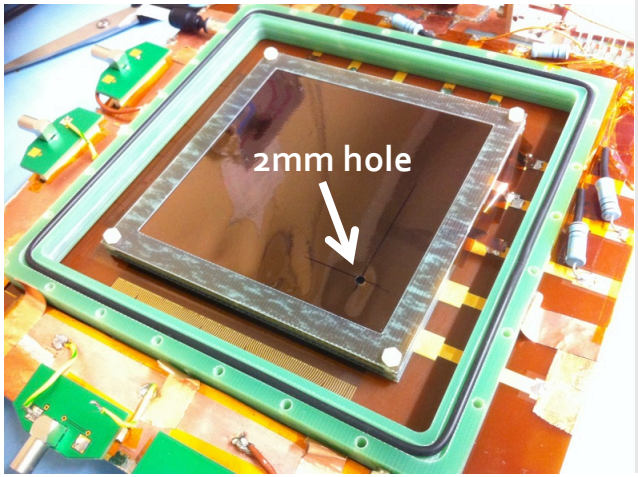
Detector under test :

Standard 10x10
GEM CERN foils
(double mask)

→ New foils
→ Gaps : 3/1/2/1
→ Gas : Ar/CO2:70/30
→ Ceramic divider + 0.6M
→ 500pF on GEM 3 bottom



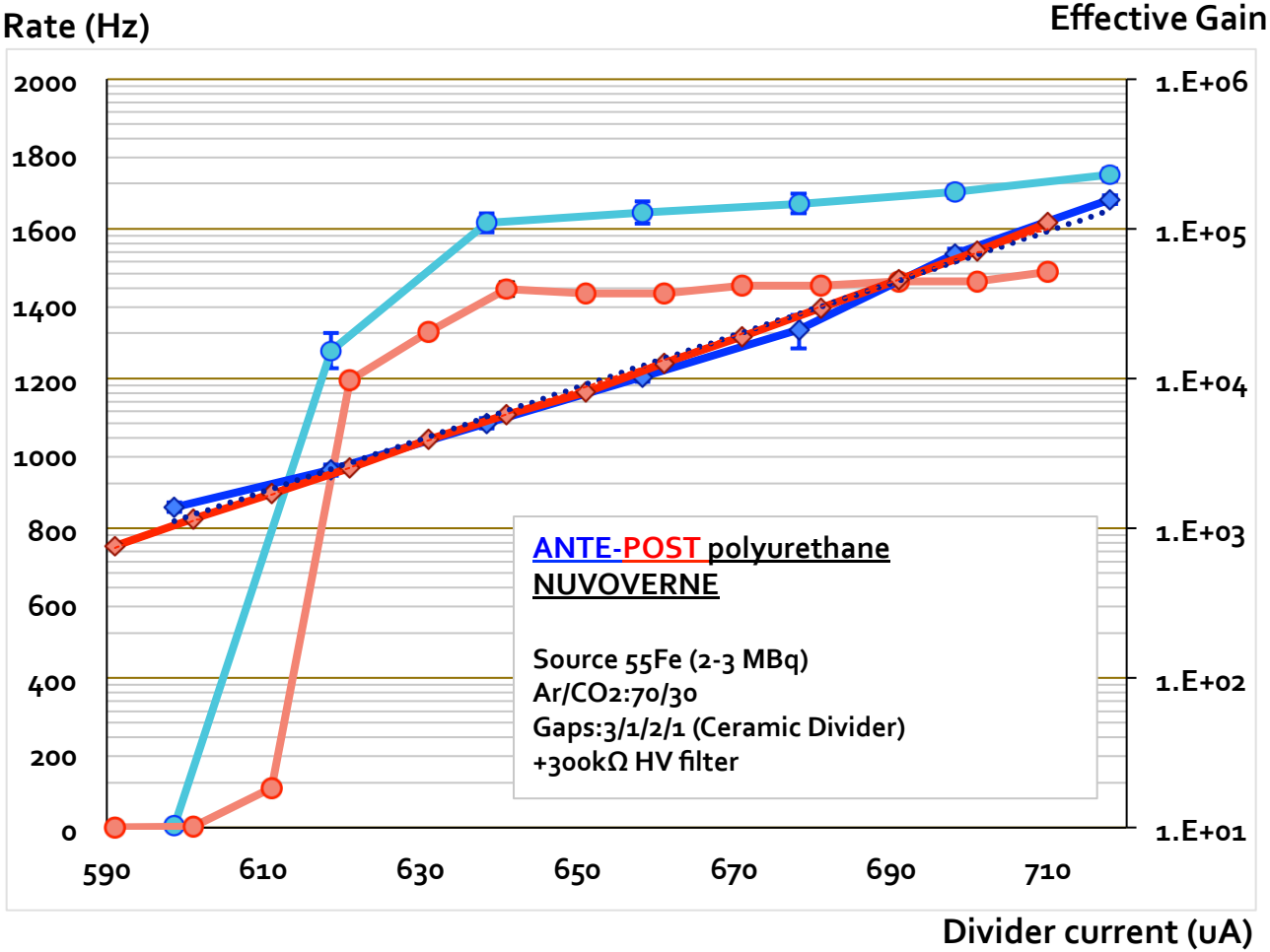




Rémi Pacaud – Marco Meyer
On behalf of the CMS GEM collaboration

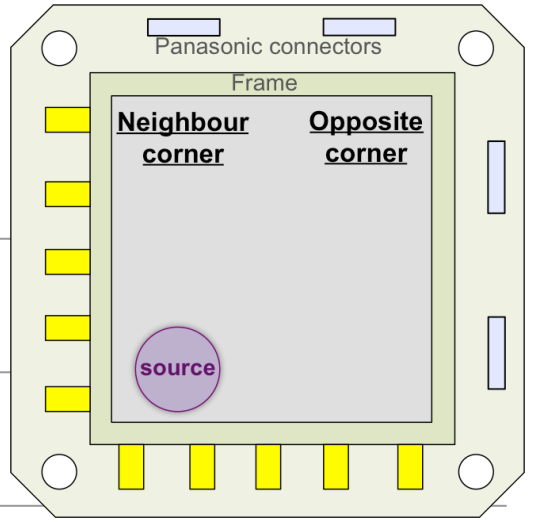
Long-term operation
Outgassing study

Gain Calibration



Long-term operation
Outgassing study

Charging Up
(region non irradiated)



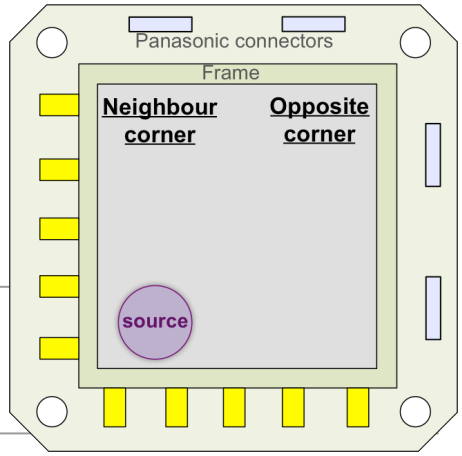
Rémi Pacaud – Marco Meyer
On behalf of the CMS GEM collaboration

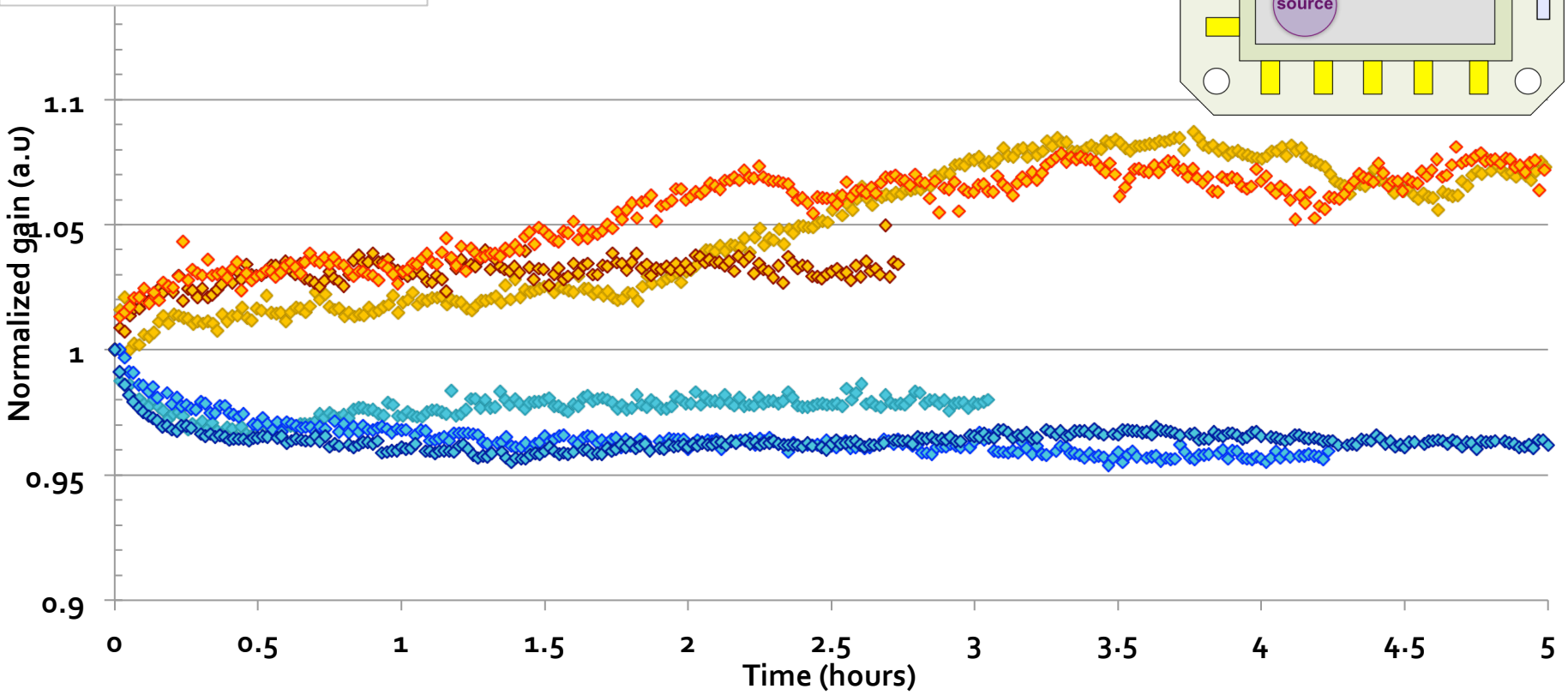
Long-term operation
Outgassing study

ANTE-POST polyurethane
NUVOVERNE

Source 55Fe (2-3MBq)
Ar/CO2:70/30
Gaps:3/1/2/1 (Ceramic Divider)
+300kΩ HV filter
Gain @ 678 uA

Charging Up
(region irradiated during outgassing test)





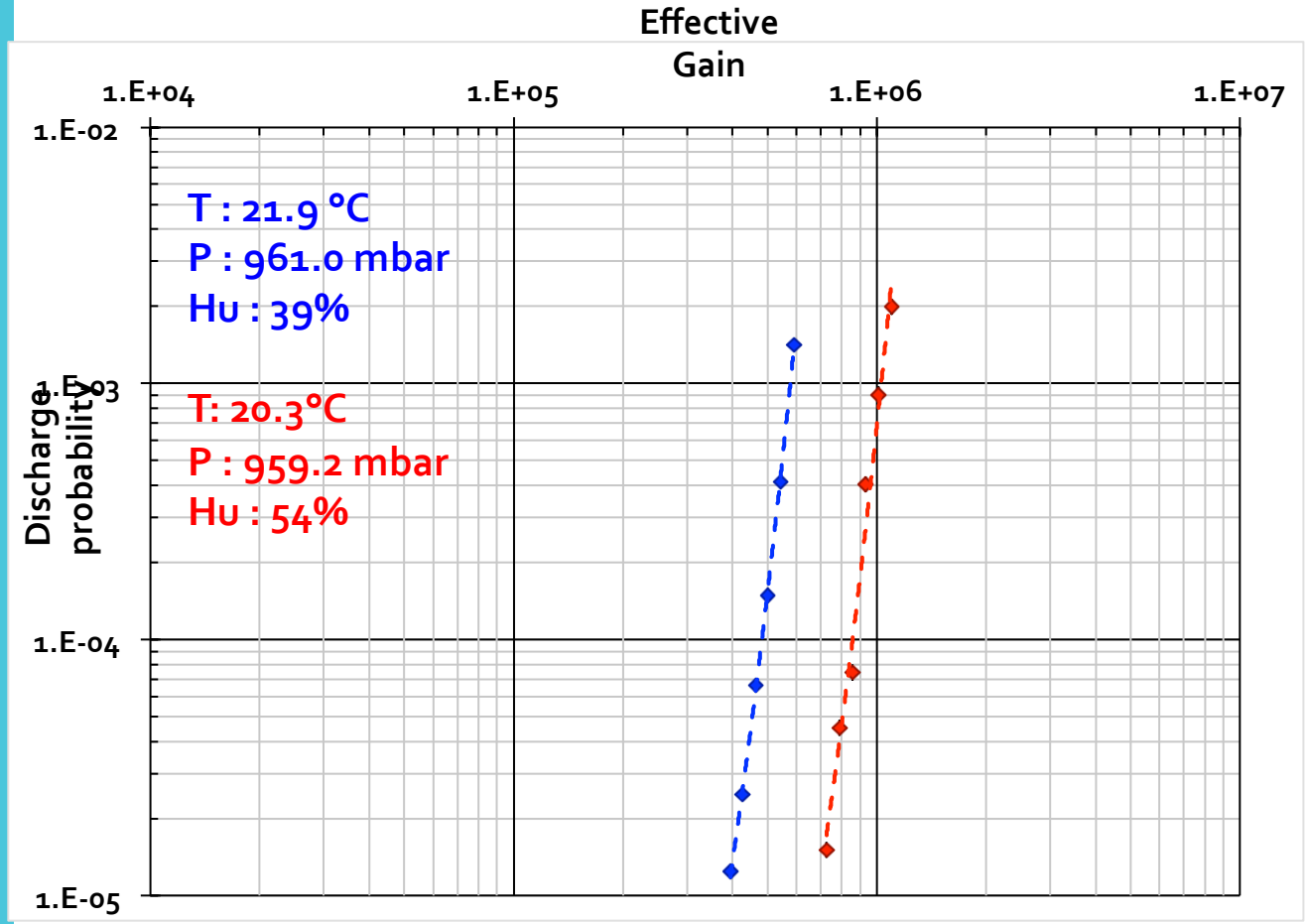
Rémi Pacaud – Marco Meyer
On behalf of the CMS GEM collaboration

Long-term operation
Outgassing study

Discharge probability

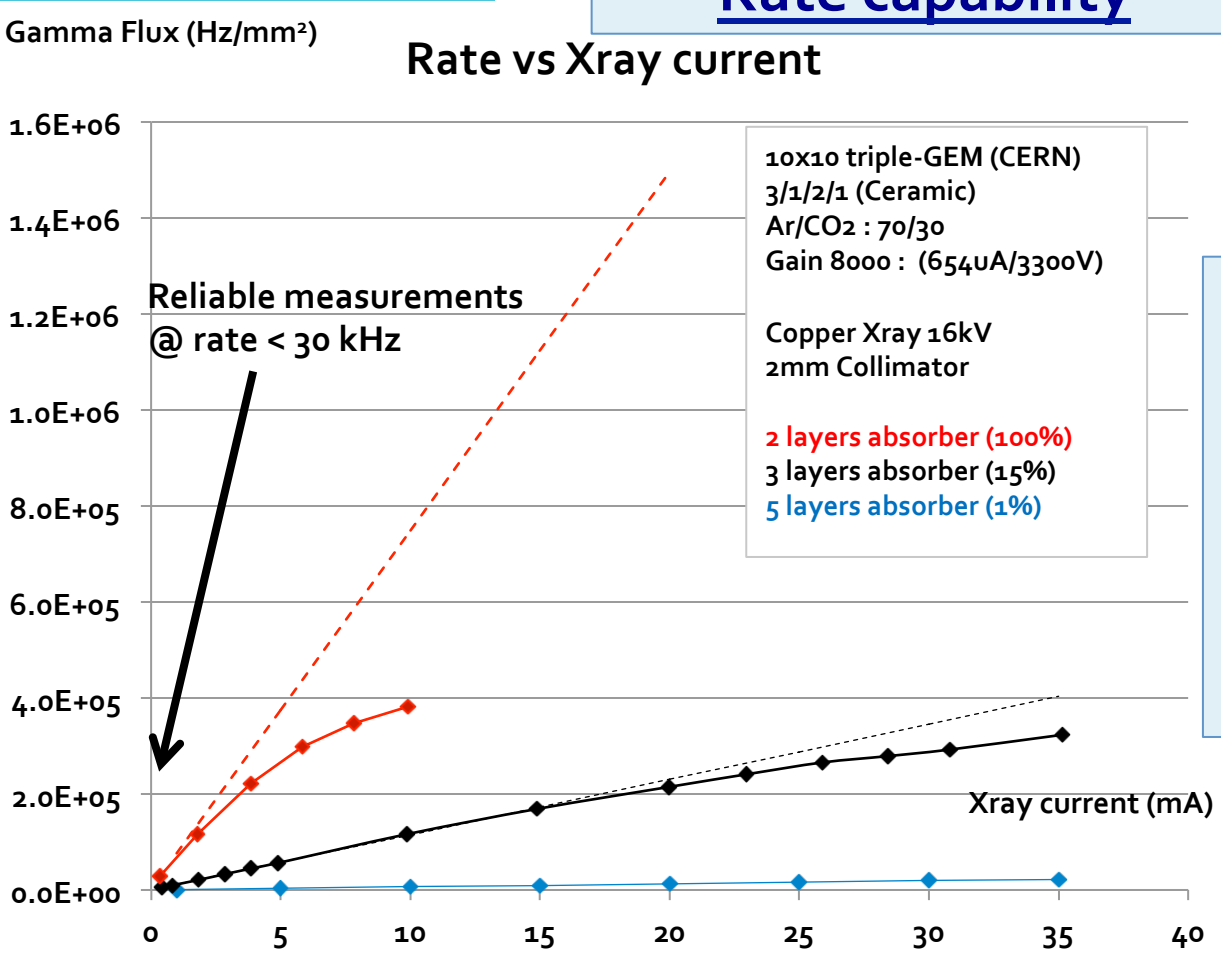
ANTE-POST polyurethane
NUVOVERNE

Source 241Am (150Hz)
Ar/CO2:70/30
Gaps:3/1/2/1 (Ceramic Divider)
+300kΩ HV filter



Long-term operation
Outgassing study

Rate capability



Configuration :

-> GEM detector in front of the Xray Gun (d=few mm)

Monitoring :

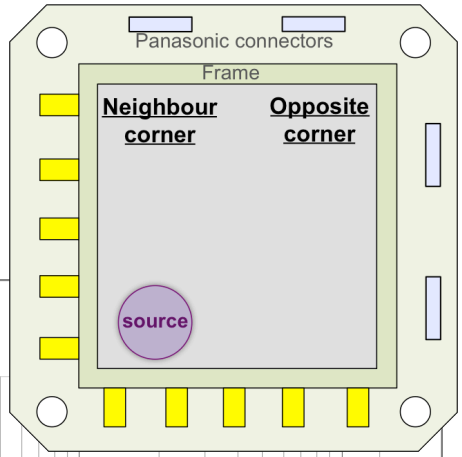
- GEM Readout current
- Count rate & spectra
- Xray voltage & current

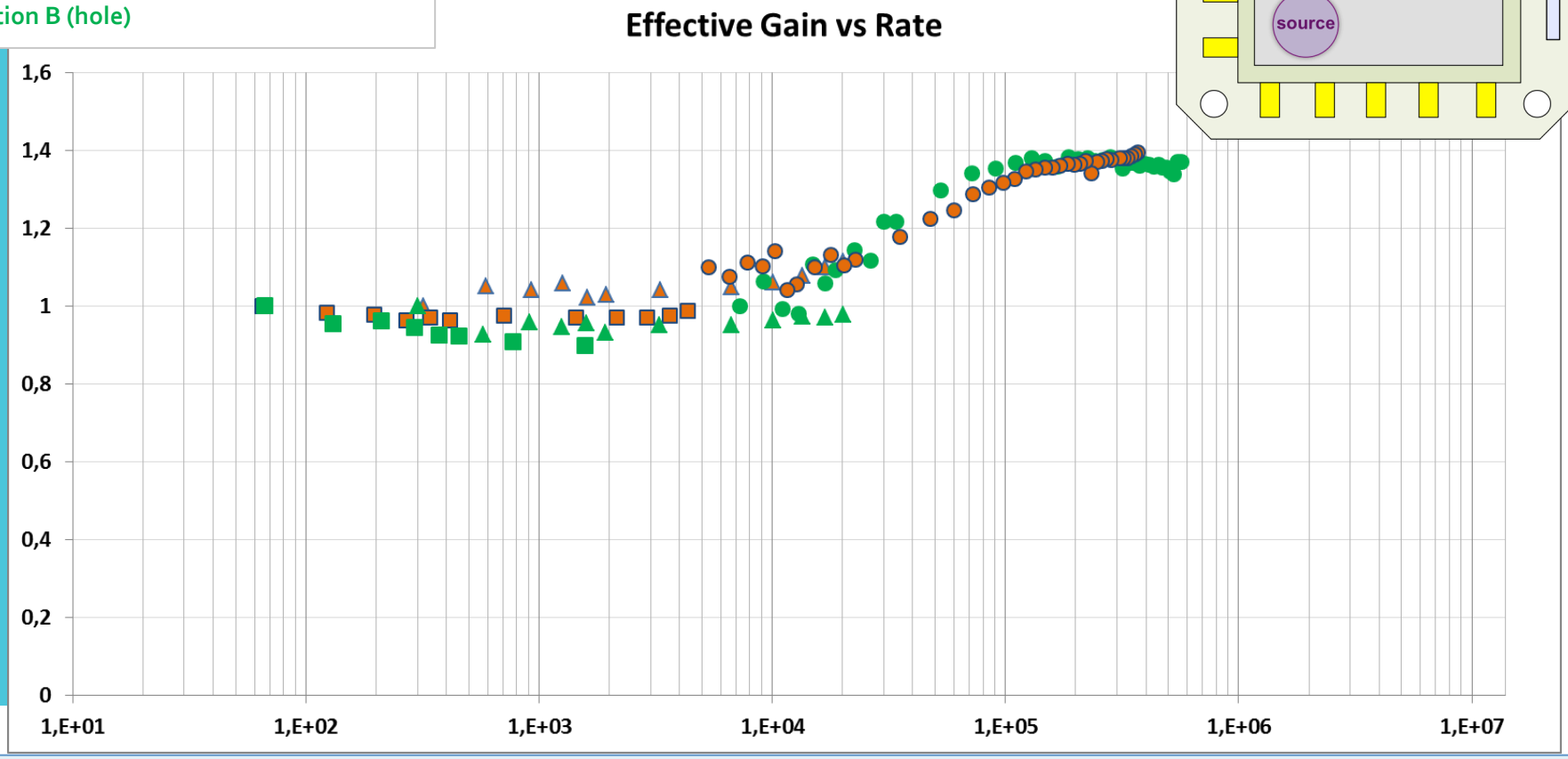
Long-term operation
Outgassing study

10x10 triple-GEM (CERN)
3/1/2/1 (Ceramic)
Ar/CO2 : 70/30
Gain : 8000 (654uA/3300V)

Copper Xray 16kV
2mm Colimator
Position D (no hole)
Position B (hole)

Rate capability





Rémi Pacaud – Marco Meyer
On behalf of the CMS GEM collaboration

Suggestions ? Comments ?

Thanks