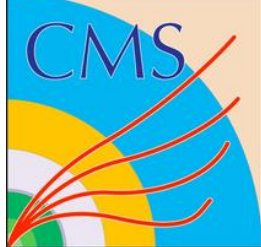




CMS-RPC ecogas studies

Ecogas meeting
17/05/2019

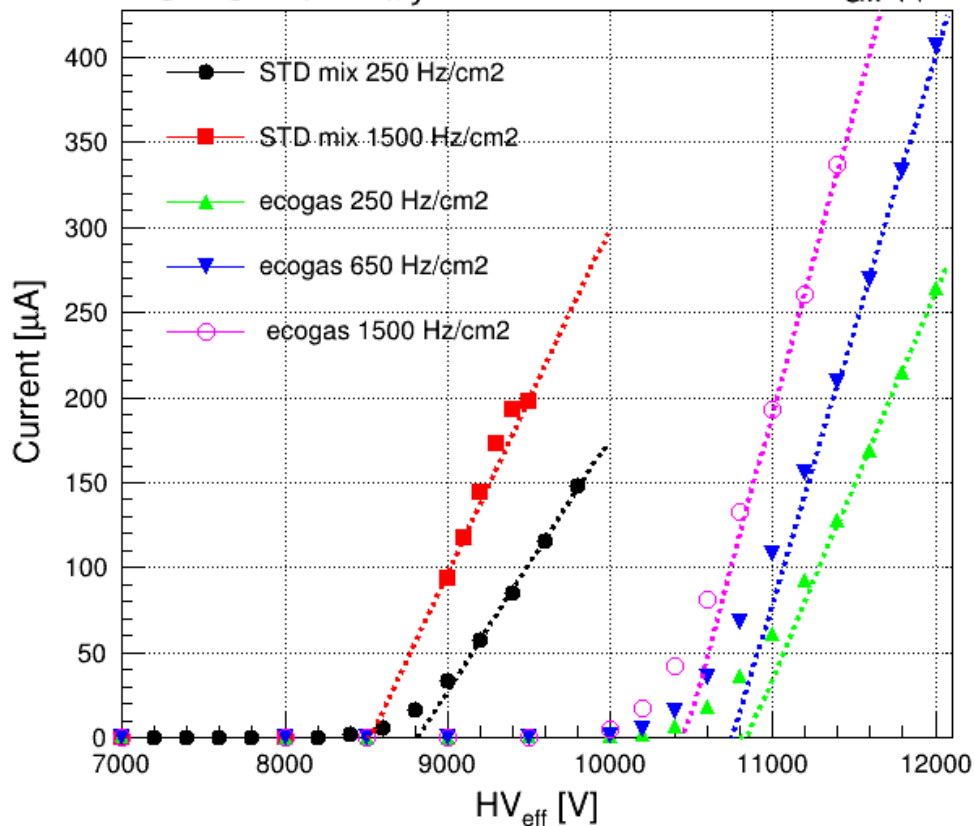


CMS 2mm



CMS Preliminary

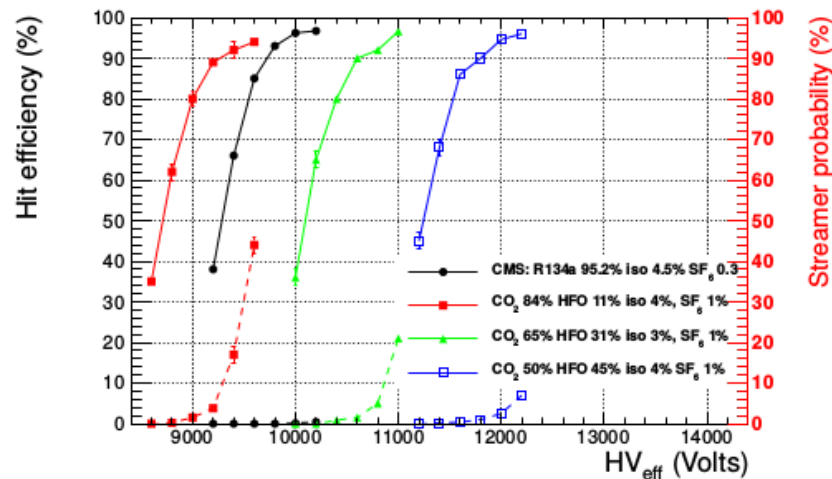
GIF++



STD mix dV @ I0 between ABS 2.2 and 22: 300V

ECOGAS dV @ I0 between ABS 2.2 and 22: 380V

dV between STD mix and ECOGAS is approx 2 kV as reported in CMS-MUON TDR (same gas mixture)

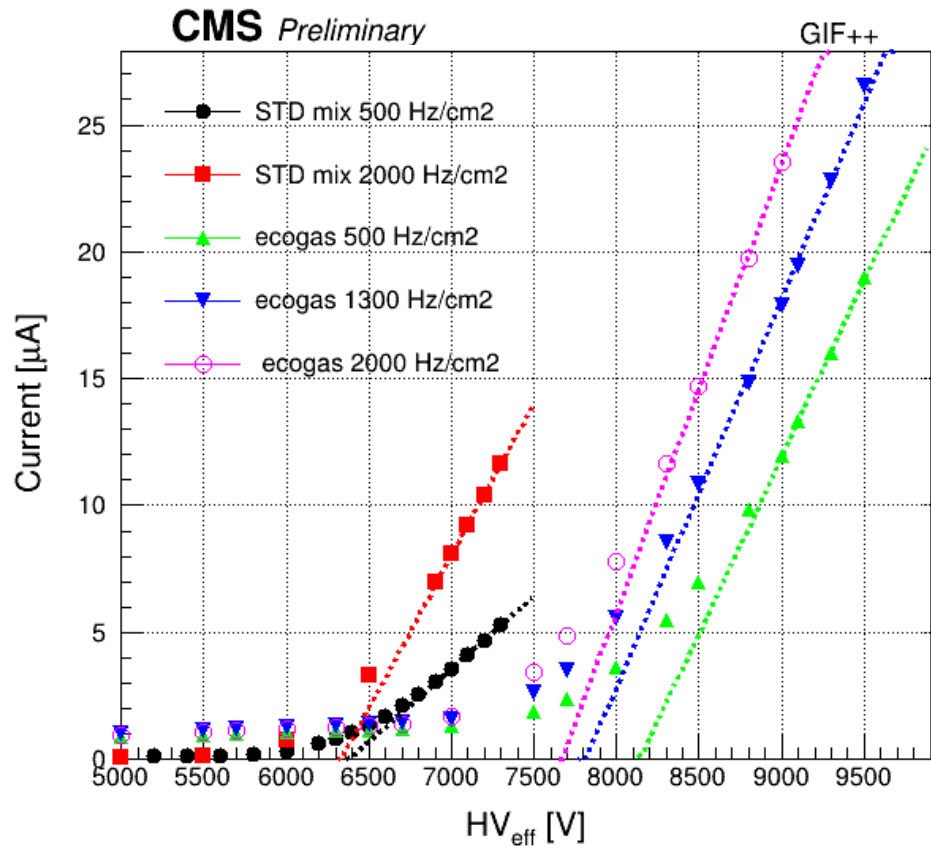


STD mix 250 Hz/cm2 HV0 = 8817.69428611
 STD mix 1500 Hz/cm2 HV0 = 8527.82849567

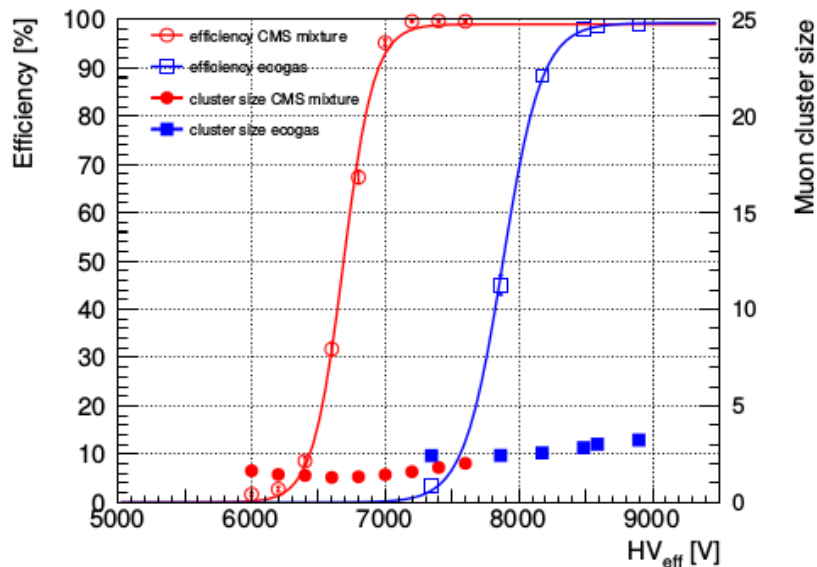
ecogas 250 Hz/cm2 HV0 = 10843.1266246
 ecogas 650 Hz/cm2 HV0 = 10751.5630507
 ecogas 1500 Hz/cm2 HV0 = 10459.7606084



CMS-KODEL 1.4mm



dV between STD mix and ECOGAS is approx 1.5 kV as reported in the CMS-MUON TDR (similar gas mix: 50% HFO, 4.5% isobutane, 0.3% SF6, 45.2% CO2)

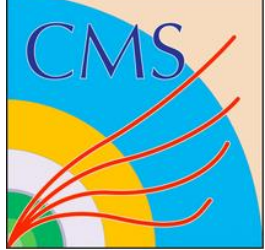


STD mix dV @ I0 between ABS 2.2 and 22: 50V

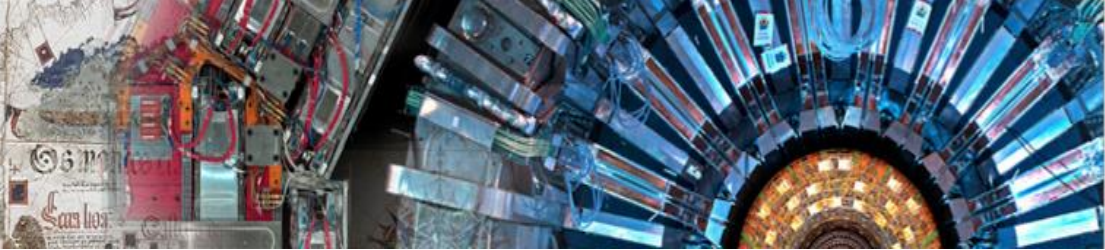
STD mix 500 Hz/cm2 $HV_0 = 6378.02420517$
 STD mix 2000 Hz/cm2 $HV_0 = 6331.73263376$

ECOGAS dV @ I0 between ABS 2.2 and 22: 465V

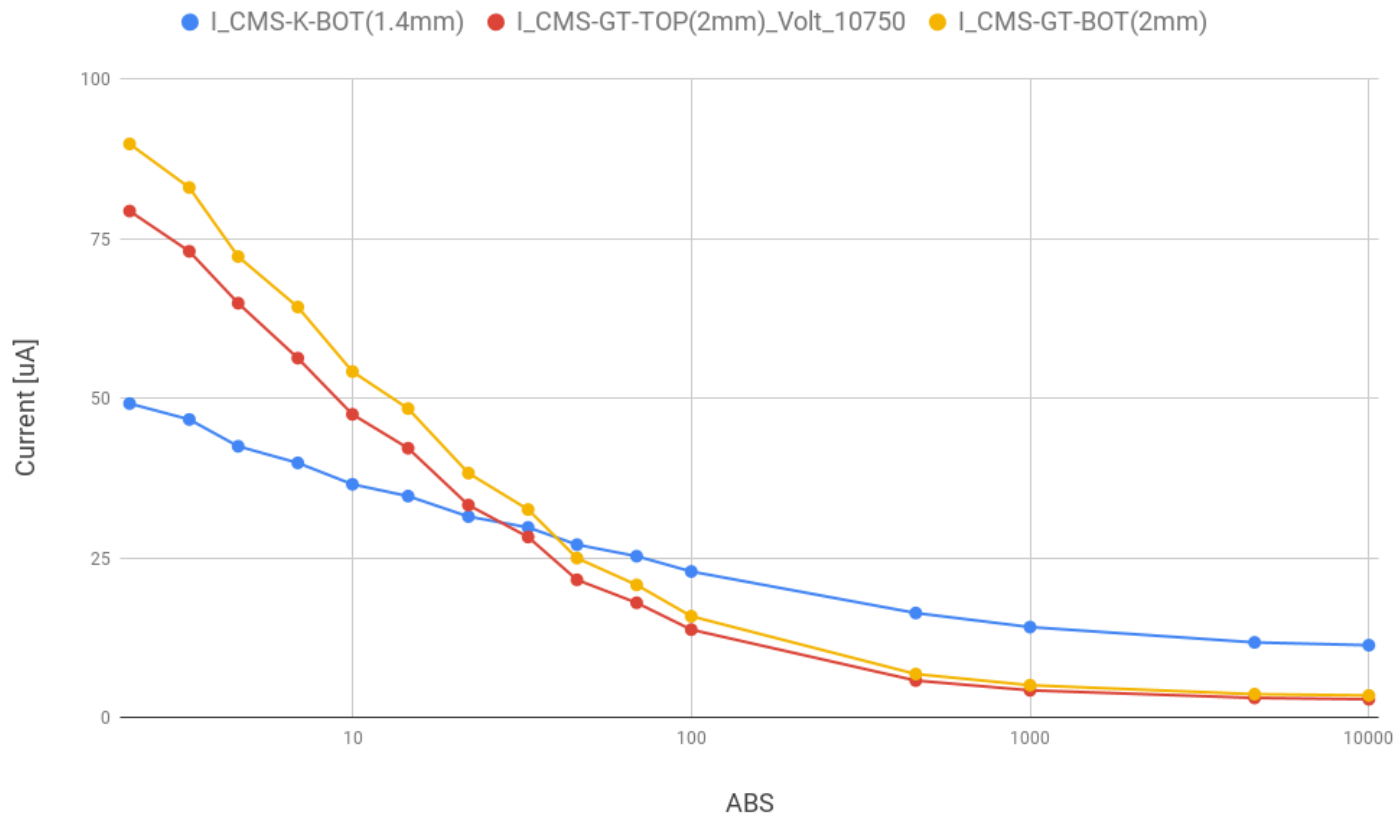
ecogas 500 Hz/cm2 $HV_0 = 8143.01532385$
 ecogas 1300 Hz/cm2 $HV_0 = 7813.51547024$
 ecogas 2000 Hz/cm2 $HV_0 = 7669.54989725$



FILTER SCAN



Filter scans @ different ABS @ fix HV



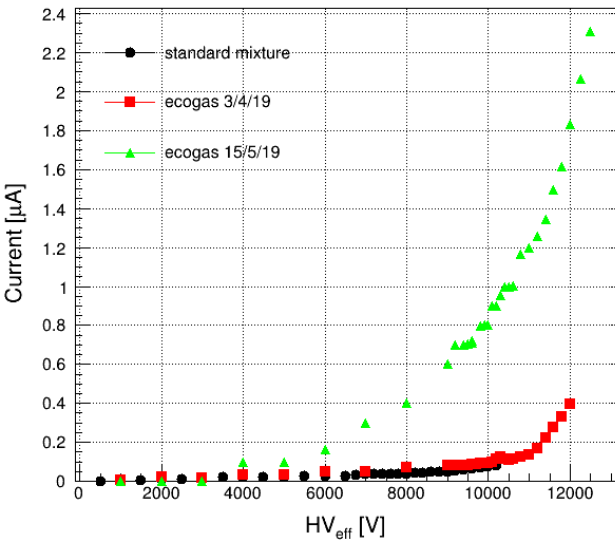
HV GT 2mm :
10.75 kV

HV KODEL 1.4 mm :
10 kV

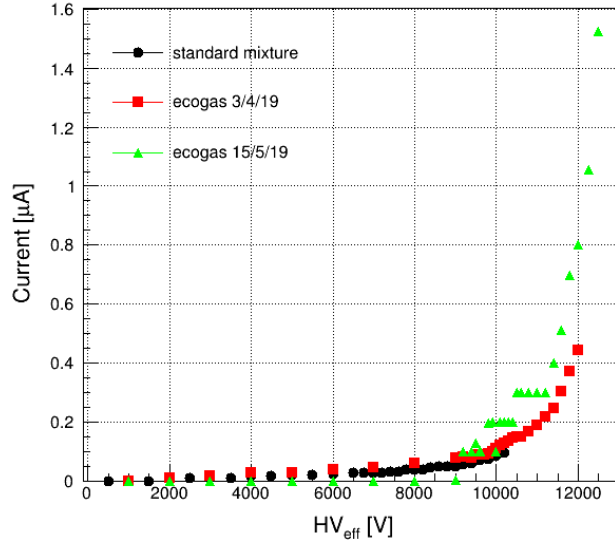


Source OFF monitoring:

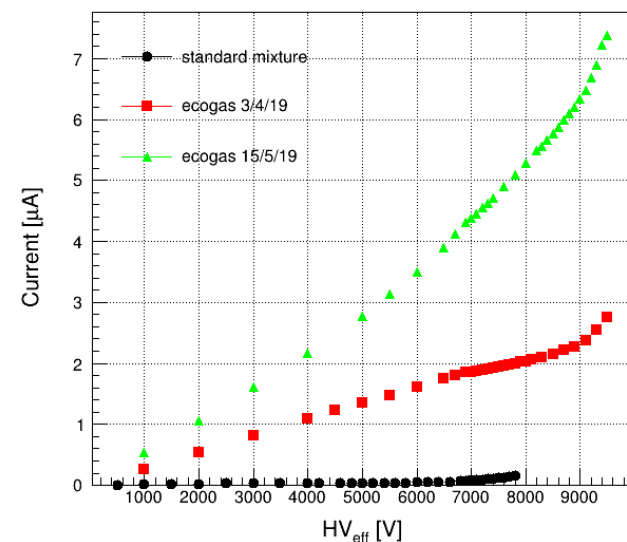
CMS-GT-2-0-BOT



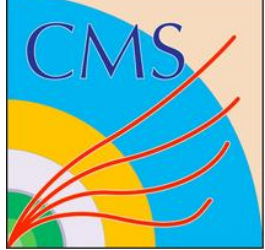
CMS-GT-2-0-TOP



CMS-KODEL_1-4-BOT



Dark current increase for all detectors



STABILITY

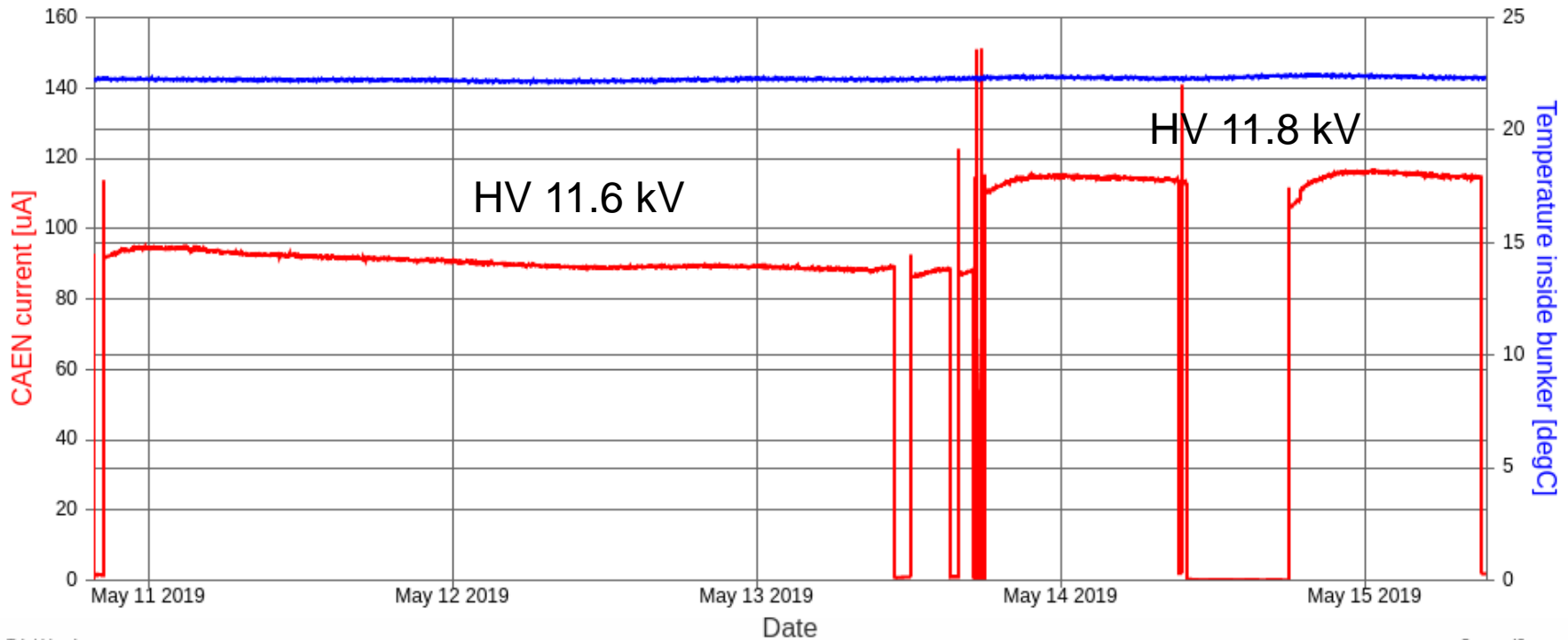


1^o stability run with ecogas @ ABS 22 ~ 250 Hz/cm²
started 2nd run @ ABS 2.2 ~ 1500 Hz/cm²

Stability - Run ID 0020

Summary Run config Log file Monitoring Plots CMS-GT-2-0-BOT

CAEN current Temperature inside bunker plot





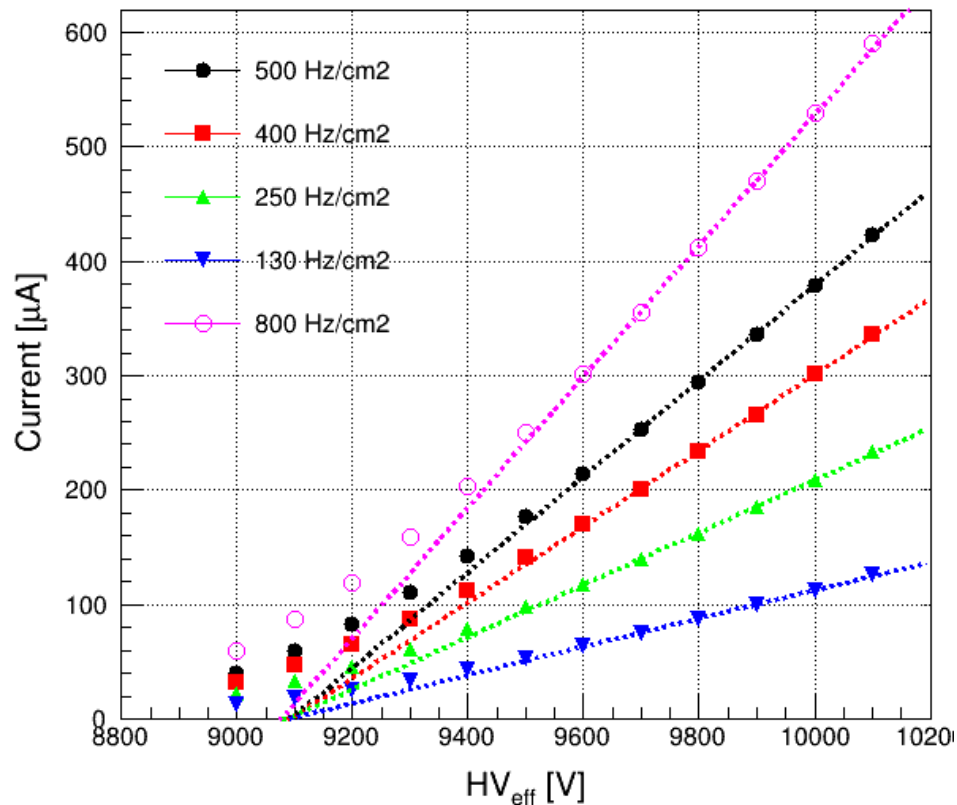
CMS-RPC with STD mixture

$$\begin{aligned}HV0 &= HV @ i=0\mu A \\dV &= WP - HV0\end{aligned}$$

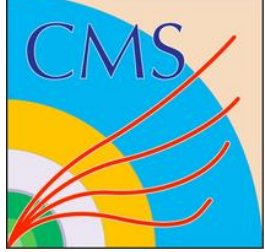


BARC-8

RE2-2-NPD-BARC-8

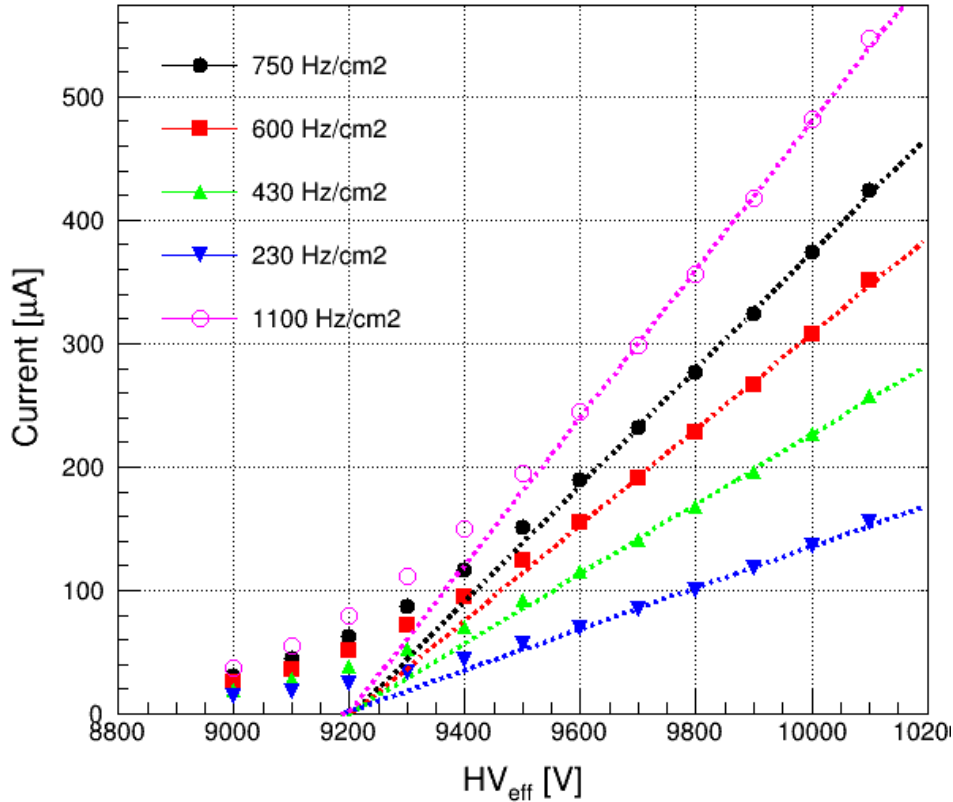


500 Hz/cm² $HV_0 = 9092.94055412$ dV 695.68944588
400 Hz/cm² $HV_0 = 9092.19988971$ dV 699.510110285
250 Hz/cm² $HV_0 = 9086.14942033$ dV 684.390579666
130 Hz/cm² $HV_0 = 9087.53508813$ dV 676.264911866
800 Hz/cm² $HV_0 = 9076.26947424$ dV 754.07052576



BARC-9

RE2-2-NPD-BARC-9

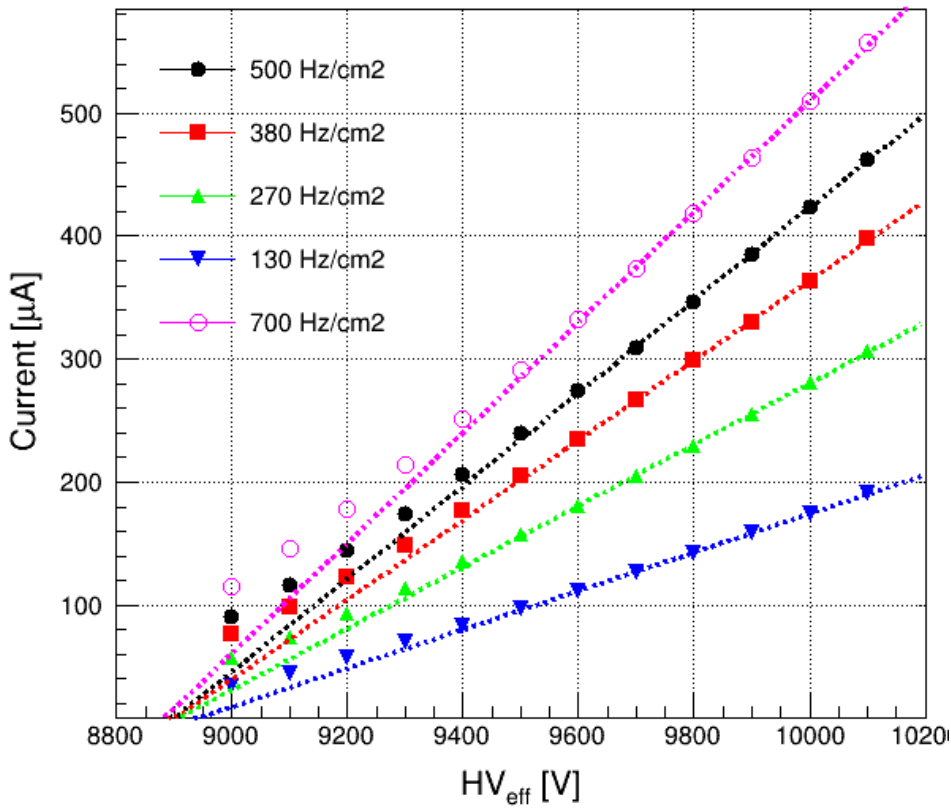


750 Hz/cm² HV₀ = 9205.36789353 dV 652.842106466
600 Hz/cm² HV₀ = 9203.65313488 dV 642.676865122
430 Hz/cm² HV₀ = 9197.04708827 dV 614.59291173
230 Hz/cm² HV₀ = 9186.50032263 dV 593.359677372
1100 Hz/cm² HV₀ = 9197.45682537 dV 749.073174631



CERN-165

RE4-2-CERN-165

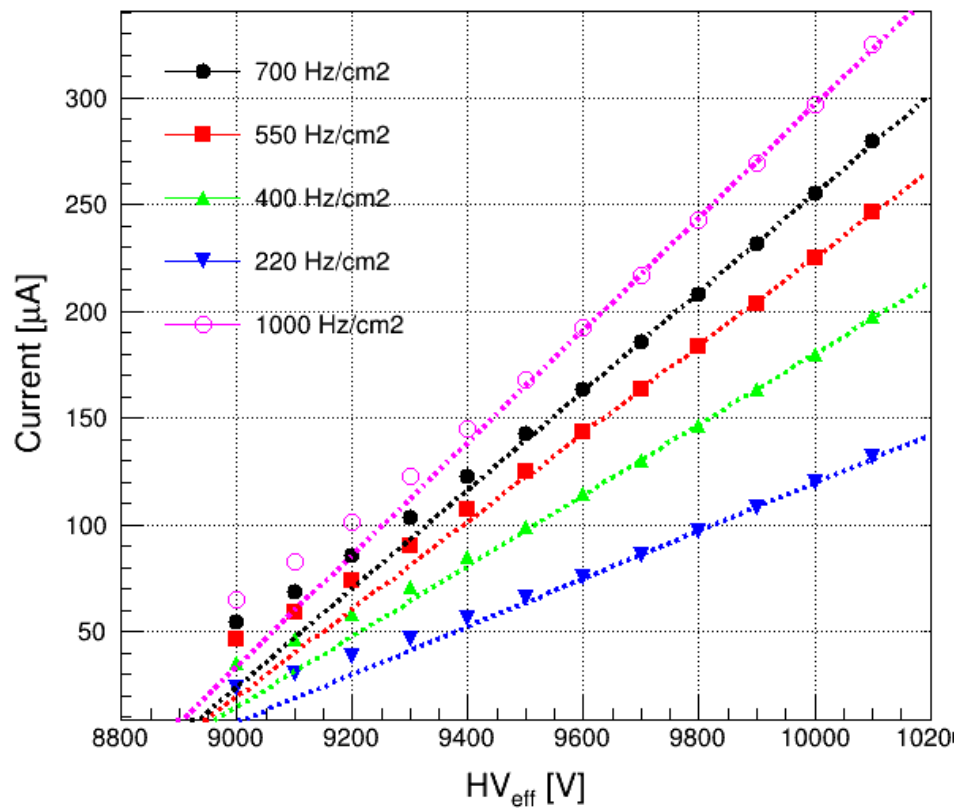


500 Hz/cm² HV0 = 8877.59560947 dV 967.014390534
380 Hz/cm² HV0 = 8877.0781415 dV 874.801858496
270 Hz/cm² HV0 = 8874.3702476 dV 785.869752396
130 Hz/cm² HV0 = 8888.63354624 dV 705.026453758
700 Hz/cm² HV0 = 8864.48934016 dV 1130.27065984



CERN-166

RE4-2-CERN-166



700 Hz/cm² HV₀ = 8895.34058782 dV 844.719412183
550 Hz/cm² HV₀ = 8904.66442256 dV 757.945577439
400 Hz/cm² HV₀ = 8910.53244823 dV 712.957551775
220 Hz/cm² HV₀ = 8930.98456349 dV 574.305436514
1000 Hz/cm² HV₀ = 8871.71123819 dV 1001.23876181