

Test Beam July report

Eco-gas meeting RPC ATLAS+CMS+EPDT+LCHb/Ship

22/Jul/2021

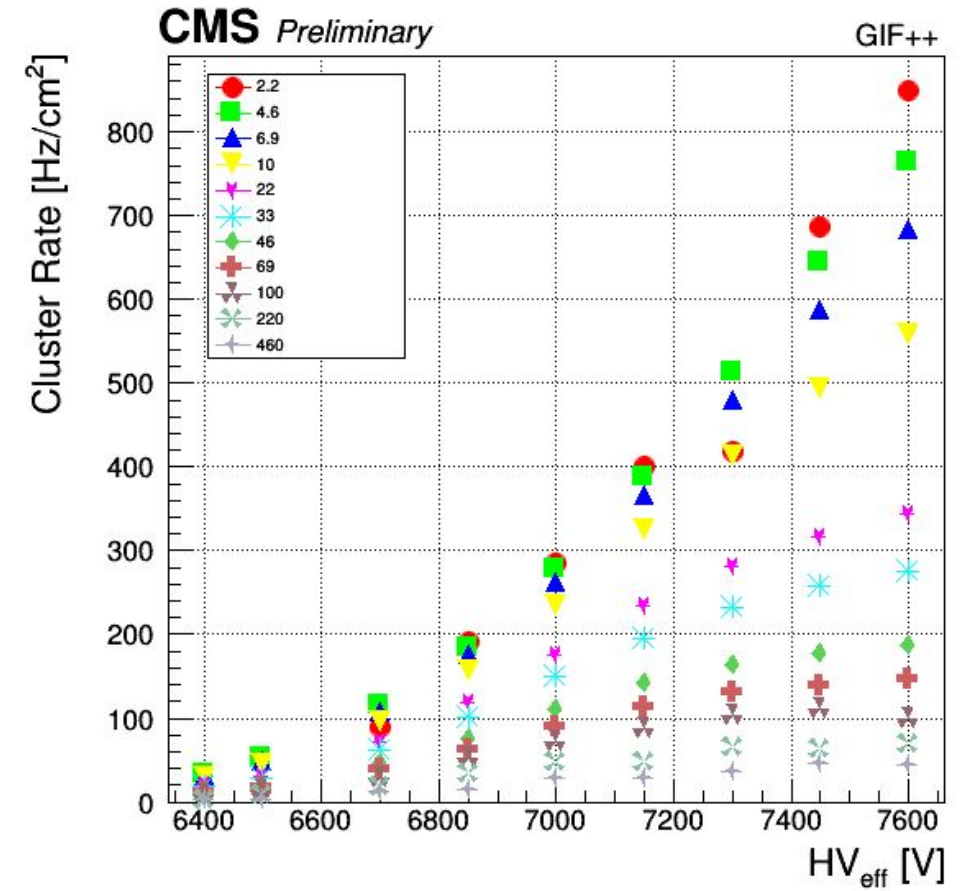
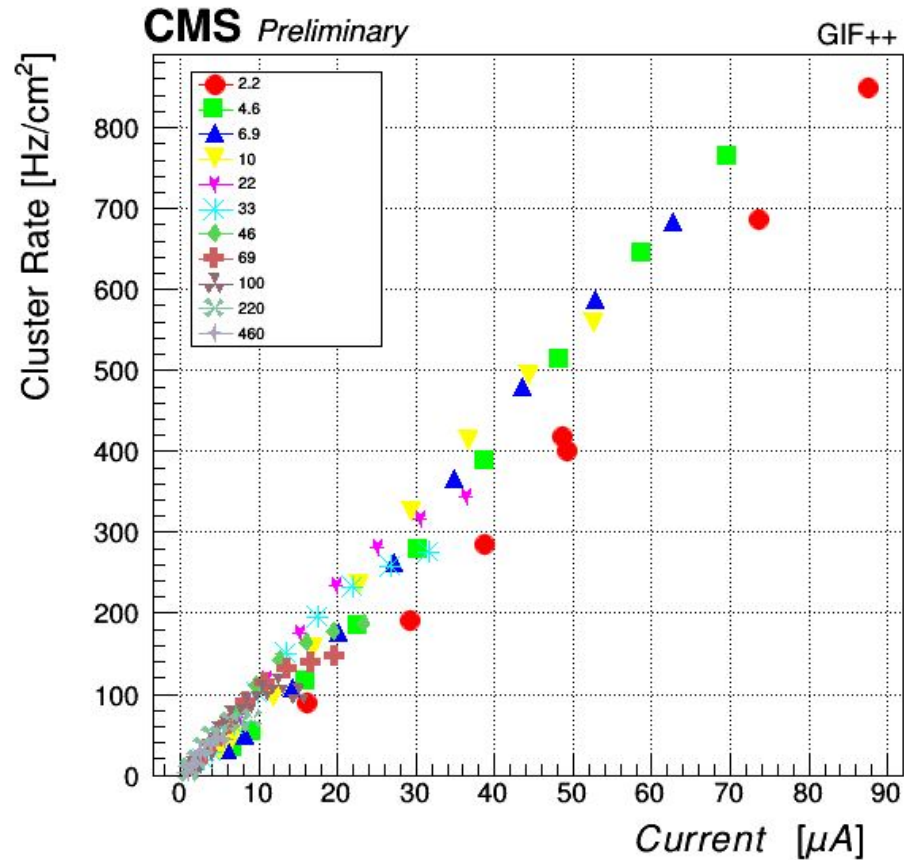
Kodel C - Standard gas scans summary

Standard Gas									
ABS upstream	ABS downstream	Rate (Hz/cm ²)	Cluster rate (Hz/cm ²)	Working point (V)	Efficiency	Cluster size @ WP (V)	I _{top} @ WP (V)	I _{bot} @ WP (V)	I _{total} @ WP (V)
2.2	46000	1869.1	1335.07	7956.4	97.6	1.4	144.68	103.74	248.42
4.6	46000	1061.5	707.67	7745.4	96.4	1.5	94.94	68.45	163.39
6.9	46000	968.2	691.57	7630.7	87.9	1.4	76.47	55.22	131.69
10	46000	690.4	460.27	7478.1	89.8	1.5	53.84	39.32	93.16
22	46000	399.3	249.56	7368.2	94.7	1.6	32.43	24.61	57.04
33	46000	335.5	197.35	7350.6	95	1.7	26.99	20.77	47.76
46	46000	247.6	145.65	7298.5	97.5	1.7	18.78	14.72	33.5
69	46000	202.6	112.56	7270.5	97.9	1.8	15.02	11.84	26.86
100	46000	144.5	80.28	7249.7	97.1	1.8	10.93	8.6	19.53
220	46000	80.6	36.64	7235	98.8	2.2	6.73	4.98	11.71
Source OFF	Source OFF	2.2	1	7203.8	98.7	2.2	1.98	0.34	2.32

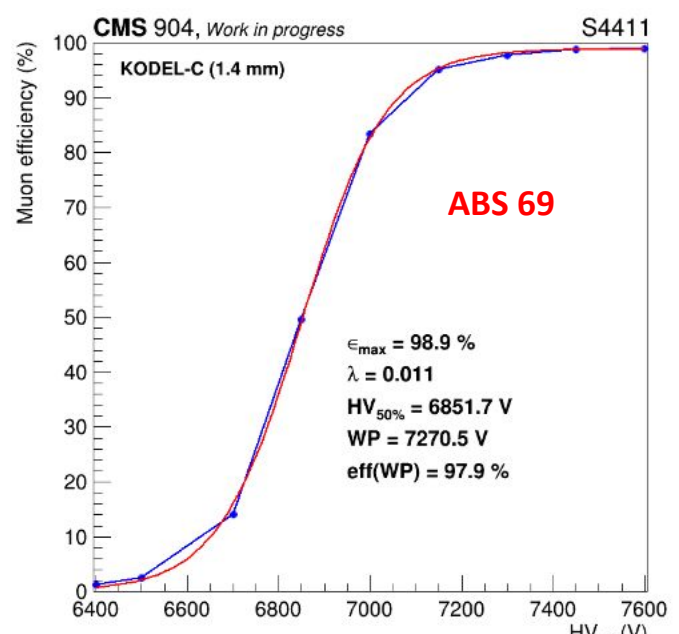
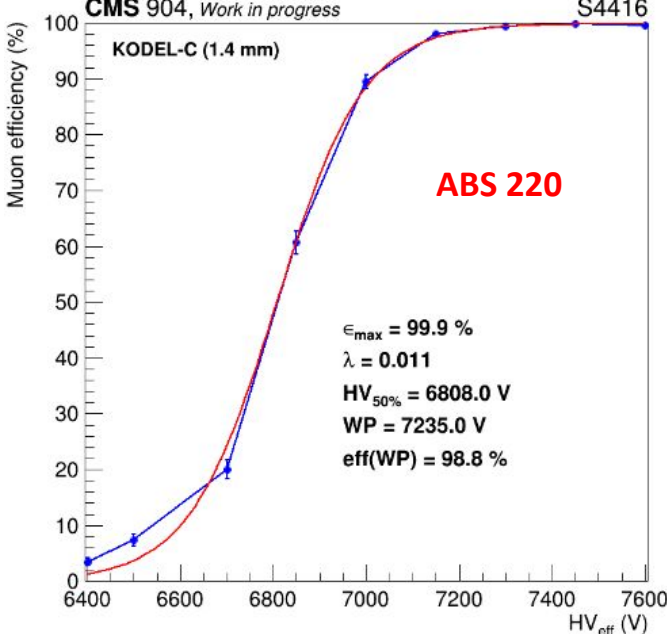
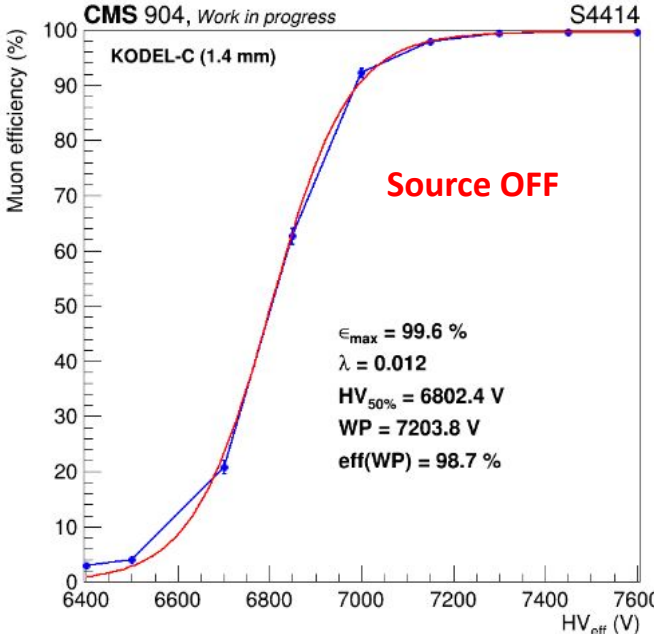
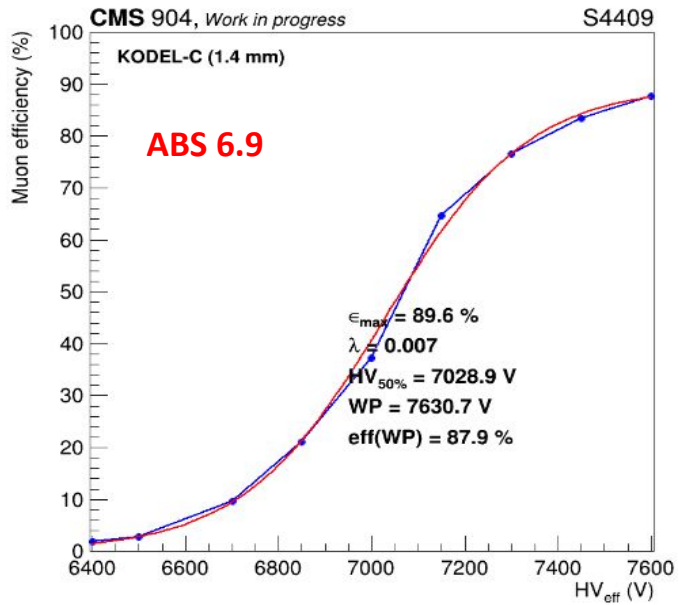
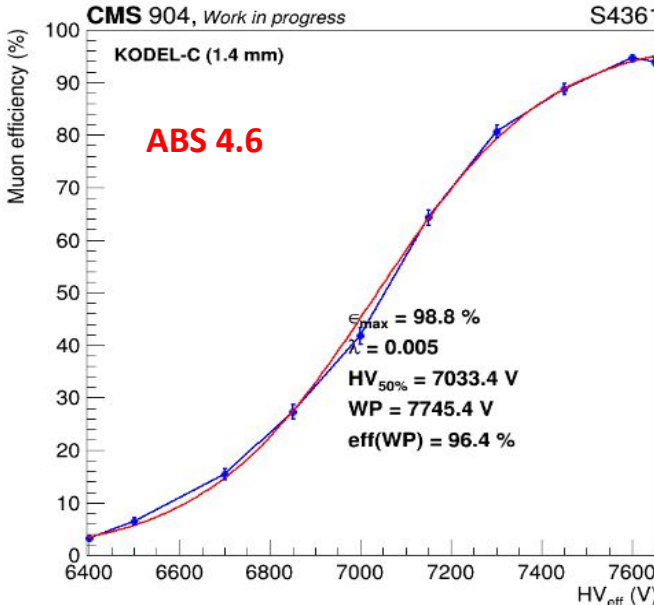
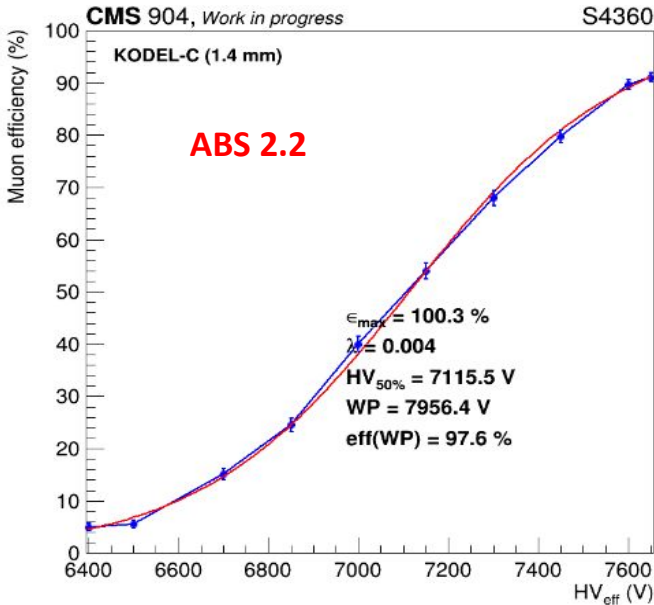
Kodel C: Standard gas mixture - Rate scans

ABS: 2.2, 4.6, 6.9, 10, 22, 33, 46, 69, 100, 220, 460

Scans IDs: 4429, 4430, 4431, 4432, 4316, 4426, 4317, 4373, 4427, 4428, 4417



Kodel C: Standard gas mixture - Efficiency scans



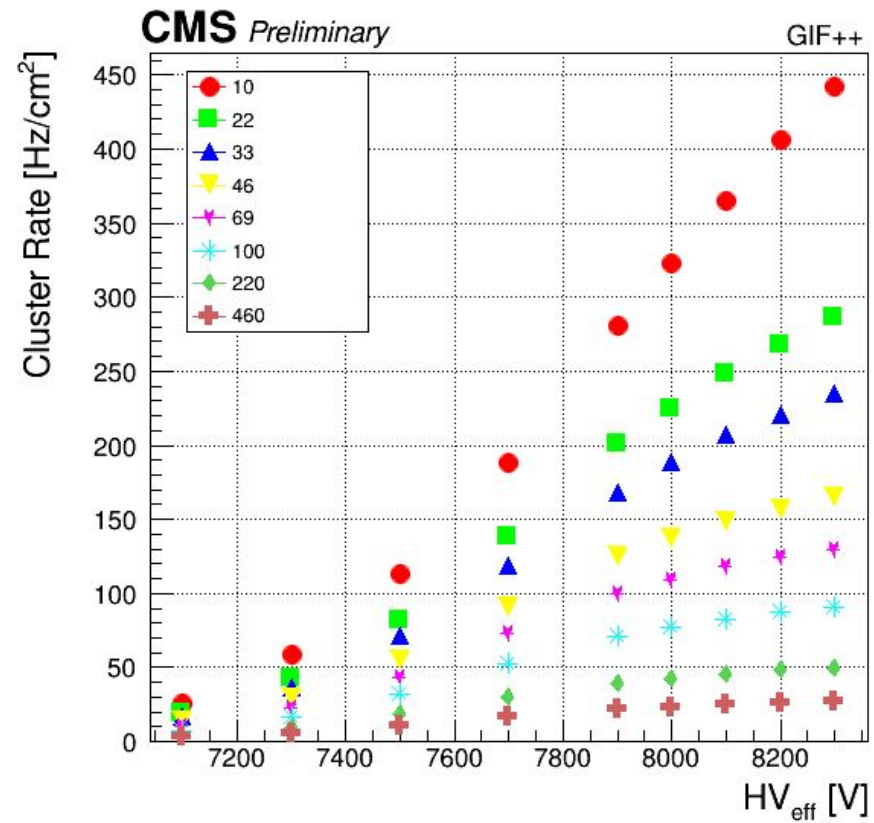
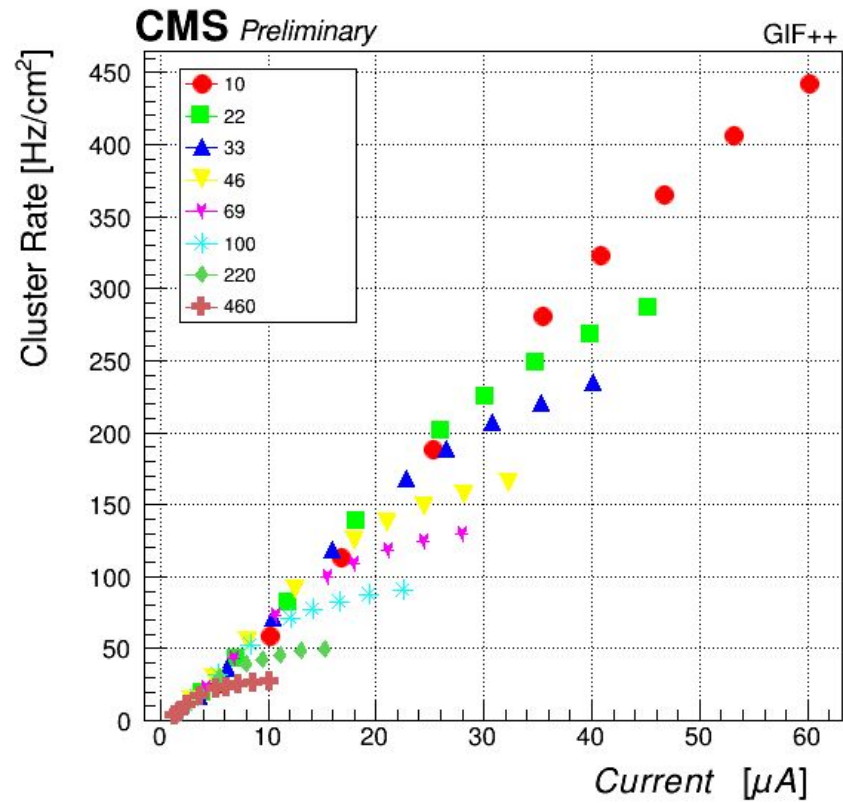
Kodel C - Ecomix2 summary

ECOGAS2 (60 % HFO, 35 % CO2, 4 % iC4H10, 1 % SF6)									
ABS upstream	ABS downstream	Rate (Hz/cm ²)	Cluster rate (Hz/cm ²)	Working point (V)	Efficiency	Cluster size @ WP (V)	Itop @ WP (V)	Ibot @ WP (V)	Itotal @ WP (V)
10	22	618.5	412.33	8363.9	88.8	1.5	75.55	54.36	129.91
22	22	430.8	269.25	8267.5	92.6	1.6	50.12	37.12	87.24
33	22	368.1	216.53	8228	92.9	1.7	41.5	31.15	72.65
46	46	250.1	138.94	8175.1	94.5	1.8	30.4	23.58	53.98
69	22	206.3	114.61	8131.9	95.1	1.8	24.3	19.31	43.61
100	22	153	76.50	8114.2	95.9	2	18.58	15.18	33.76
220	22	69.8	34.90	8056.2	96.5	2	11.17	9.54	20.71
460	22	39.7	19.85	8044.9	96.7	2	7.48	6.22	13.7
Source OFF	Source OFF	no scan	no scan	8018.8	97.6	2	3.23	0.81	4.04

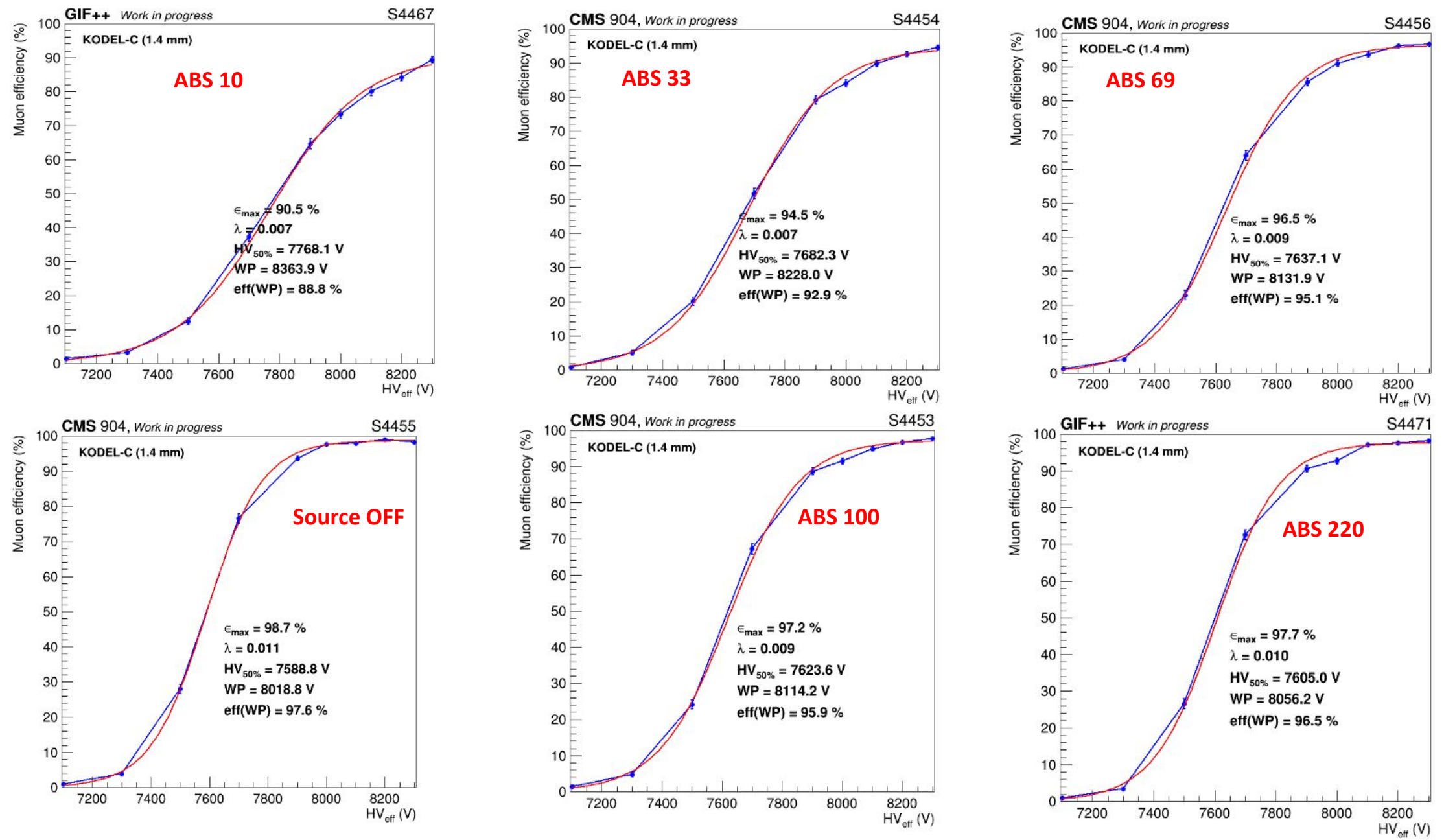
Kodel C: Ecomix-2- Rate scans

ABS: 10, 22, 33, 46, 69, 100, 220, 460

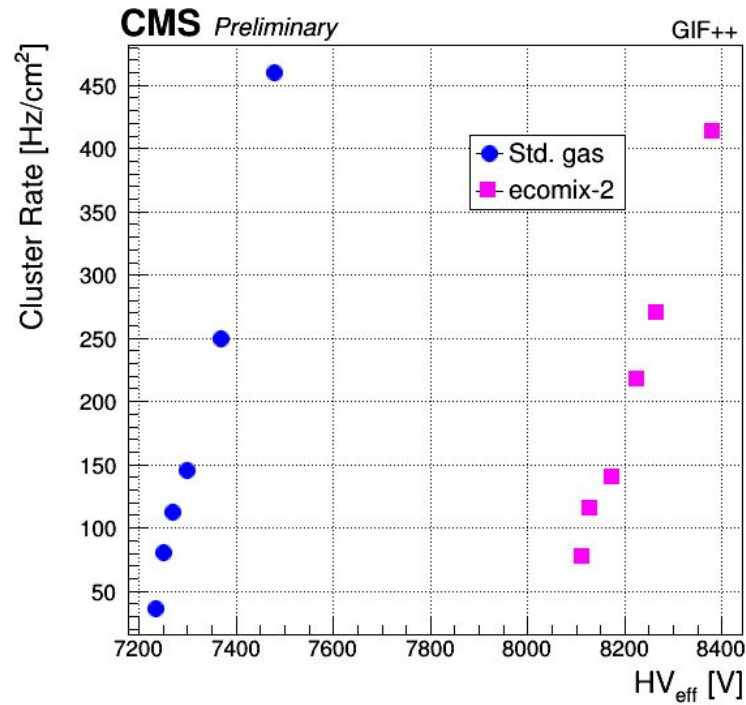
Scans IDs: 4474, 4475, 4476, 4466, 4477, 4478, 4479, 4473



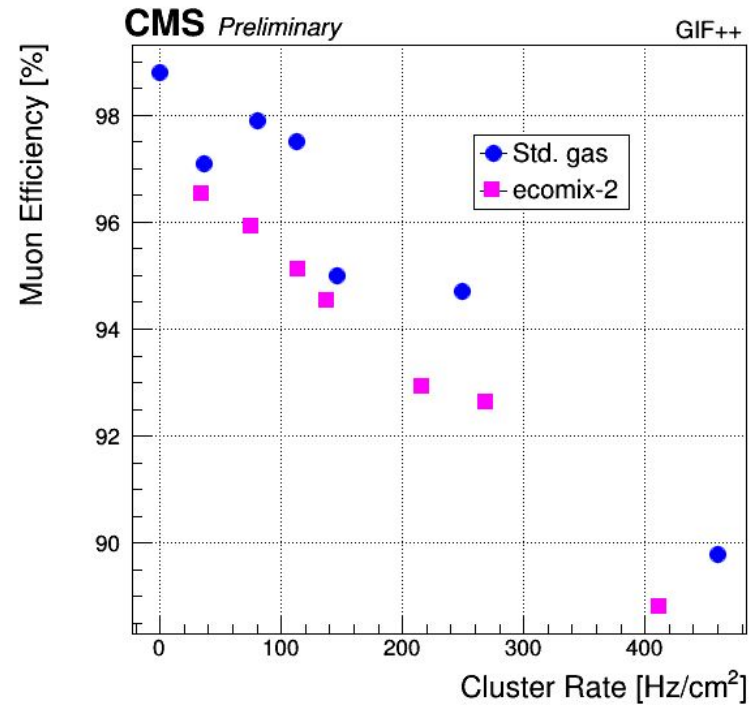
Kodel C: Ecomix-2- Efficiency scans



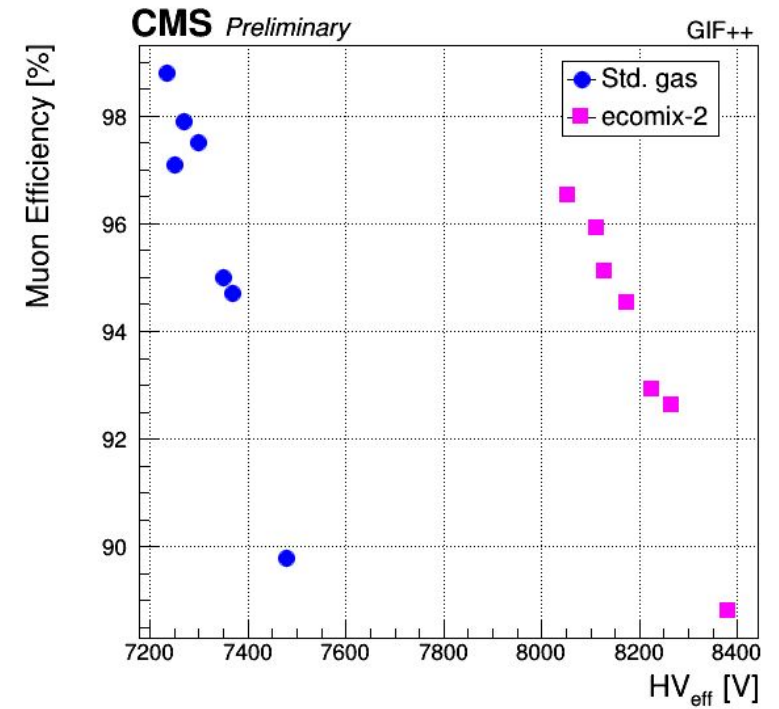
Kodel C: Standard gas x ecogas



Average Working point shift: ~ **870 V**



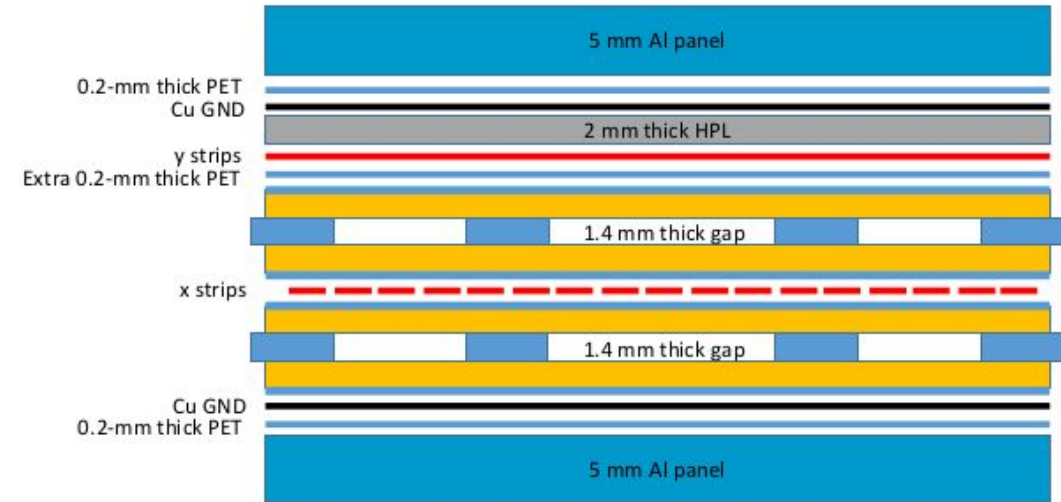
Average difference: ~ **-2 %**



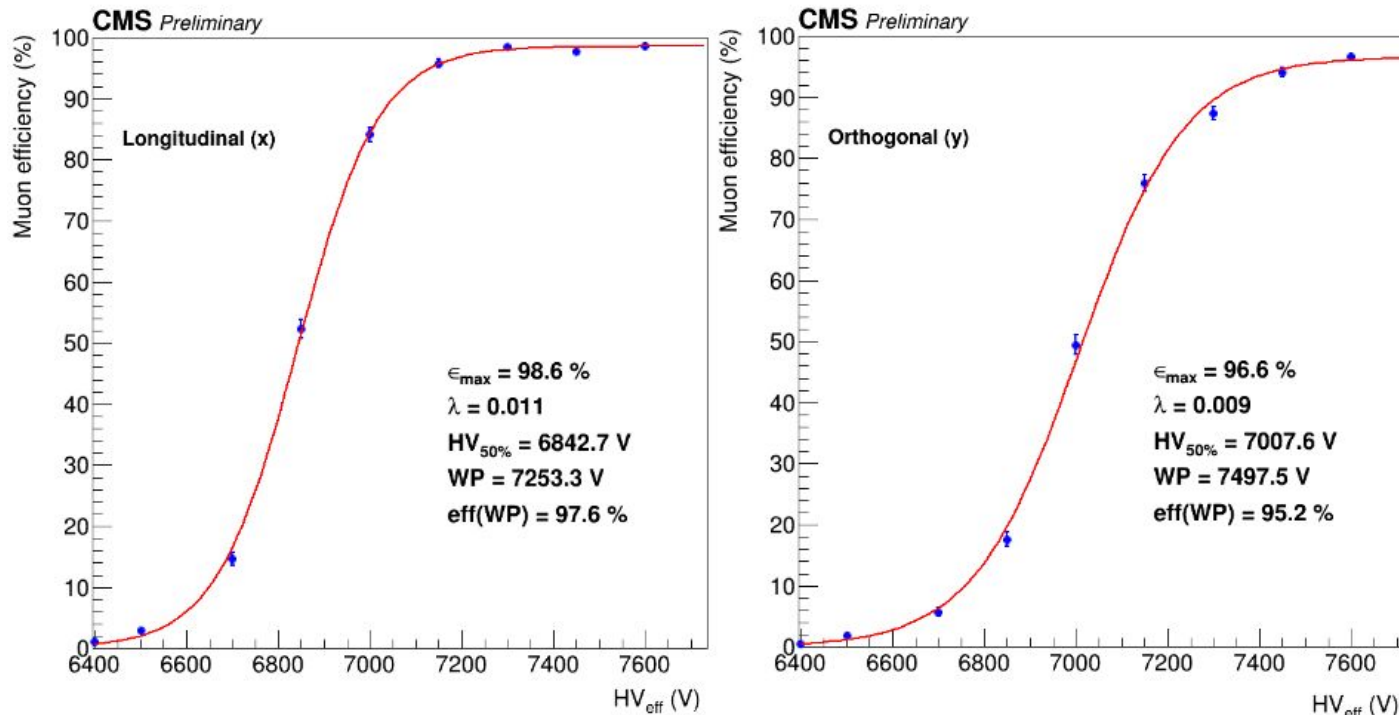
Eff (%) x HV (V)

Kodel 2D: Only standard gas mixture - Efficiency scans

- This is a x and y chamber (70 cm x 40 cm))with 1.4 mm double gap.
- This is a double gap chamber divided into orthogonal plan strips.
- 32 channels for x and 32 channels for y
- Strip pitches: 10 mm for x and 20 mm for y.
- Purpose in testbeam: For tracking studies (work ongoing)



Reference scans

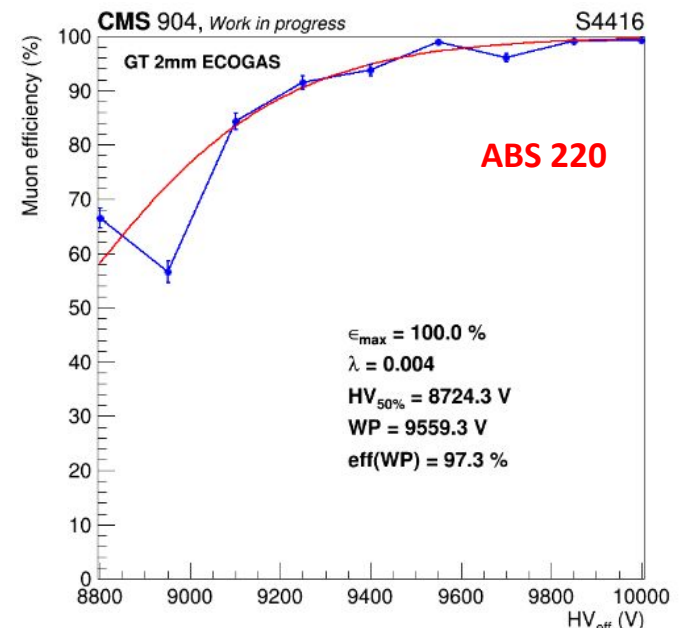
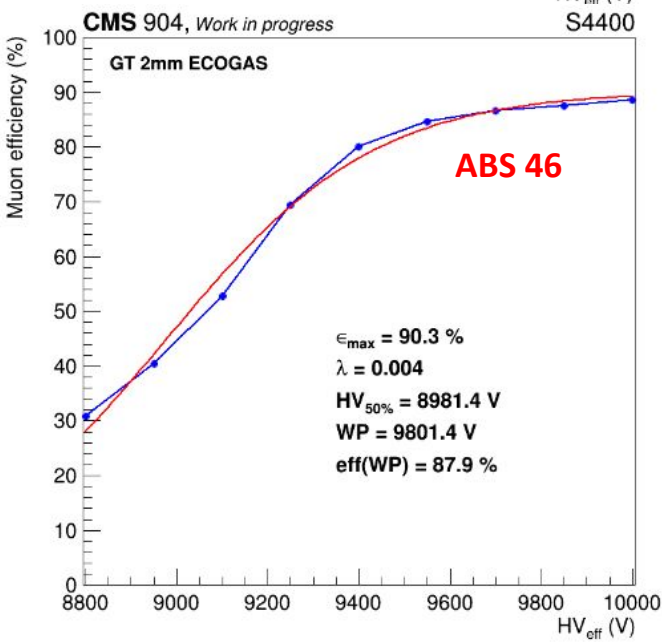
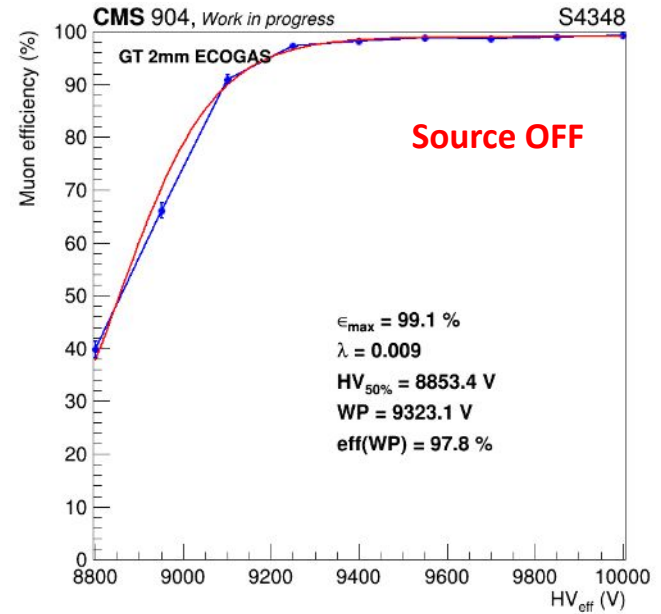
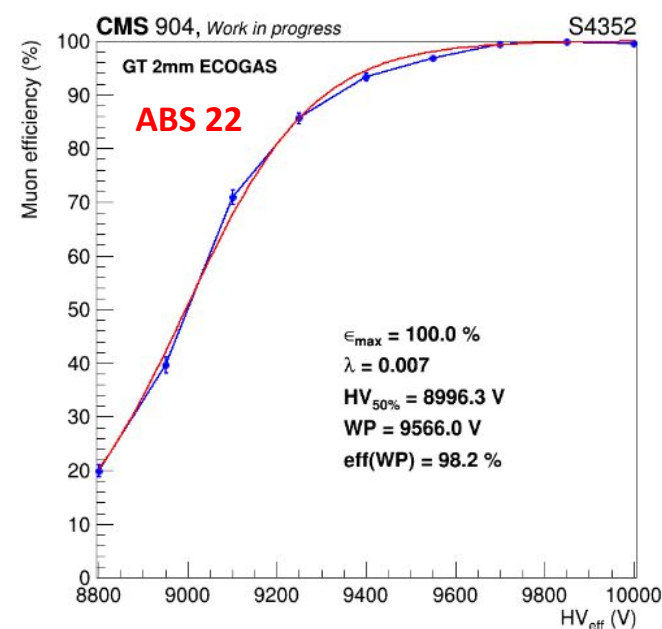
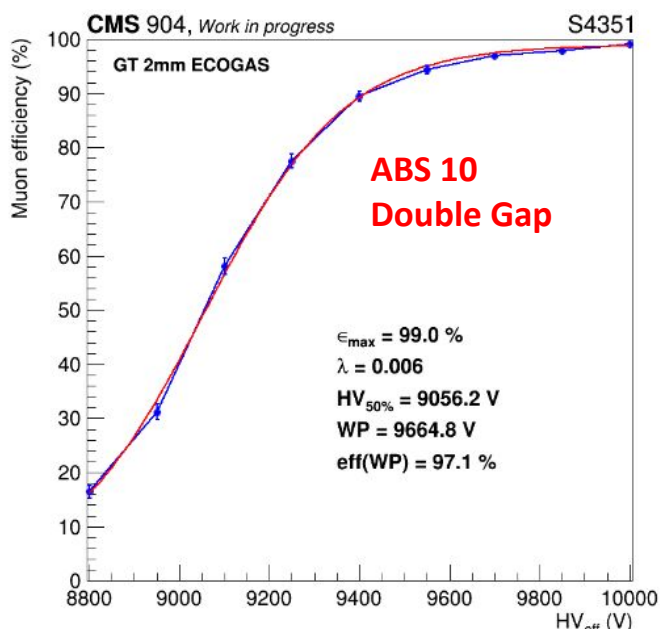
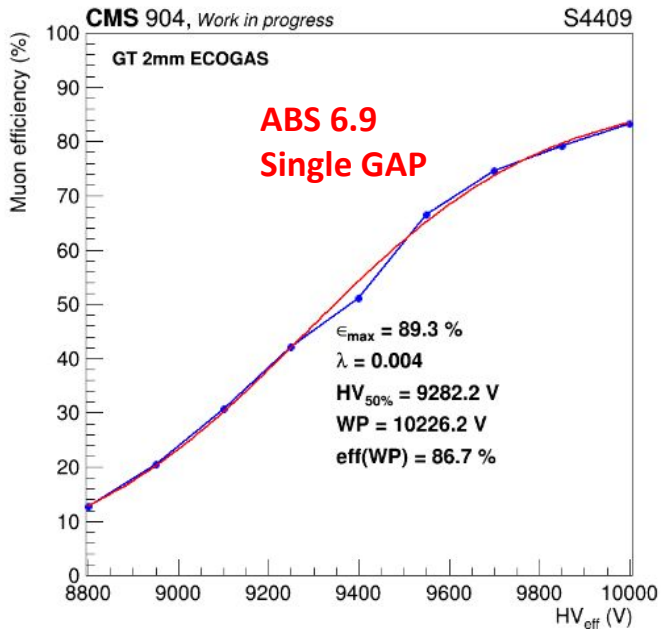


CMS-GT-2-0: Standard gas scans summary

Standard Gas									
ABS upstream	ABS downstream	Rate (Hz/cm ²)	Cluster Rate (Hz/cm ²)	Working point (V)	Efficiency	Cluster size @ WP (V)	I _{top} @ WP (V)	I _{bot} @ WP (V)	I _{total} @ WP (V)
6.9	46000	1707.8	776.27	10226.2	86.7	2.2	154.99	OFF	154.99
10	46000	1520	690.91	9664.8	91.1	2.2	79.99	101.08	181.07
22	46000	856.6	356.92	9566	98.2	2.4	54.43	78.17	132.6
46	46000	660.9	264.36	9801.4	87.9	2.5	54.12	OFF	54.12
69	46000	no scan	no scan	9704.5	86.5	2.4	44.33	OFF	44.33
100	46000	98	46.67	9418	95.7	2.1	27.25	84.6	111.85
220	46000	76.7	28.82	9559.3	97.3	3.4	27.87	50.31	78.18

- At some point the BOT gap was tripping for ABS larger than 100 .
- The efficiency found for the single gap configuration drops considerably.
- After switching to ecogas the chamber was kept single gap for all runs.
- The runs for ecogas weren't good. I need to discuss offline to understand it better

CMS-GT-2-0: Standard gas - Efficiency scans



CMS-GT-2-0: Ecomix 2: Bad efficiency scans

