ALICE resistivity measurements

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Resistivity scans

- 2 resistivity scans:

  1) 15th January 2020

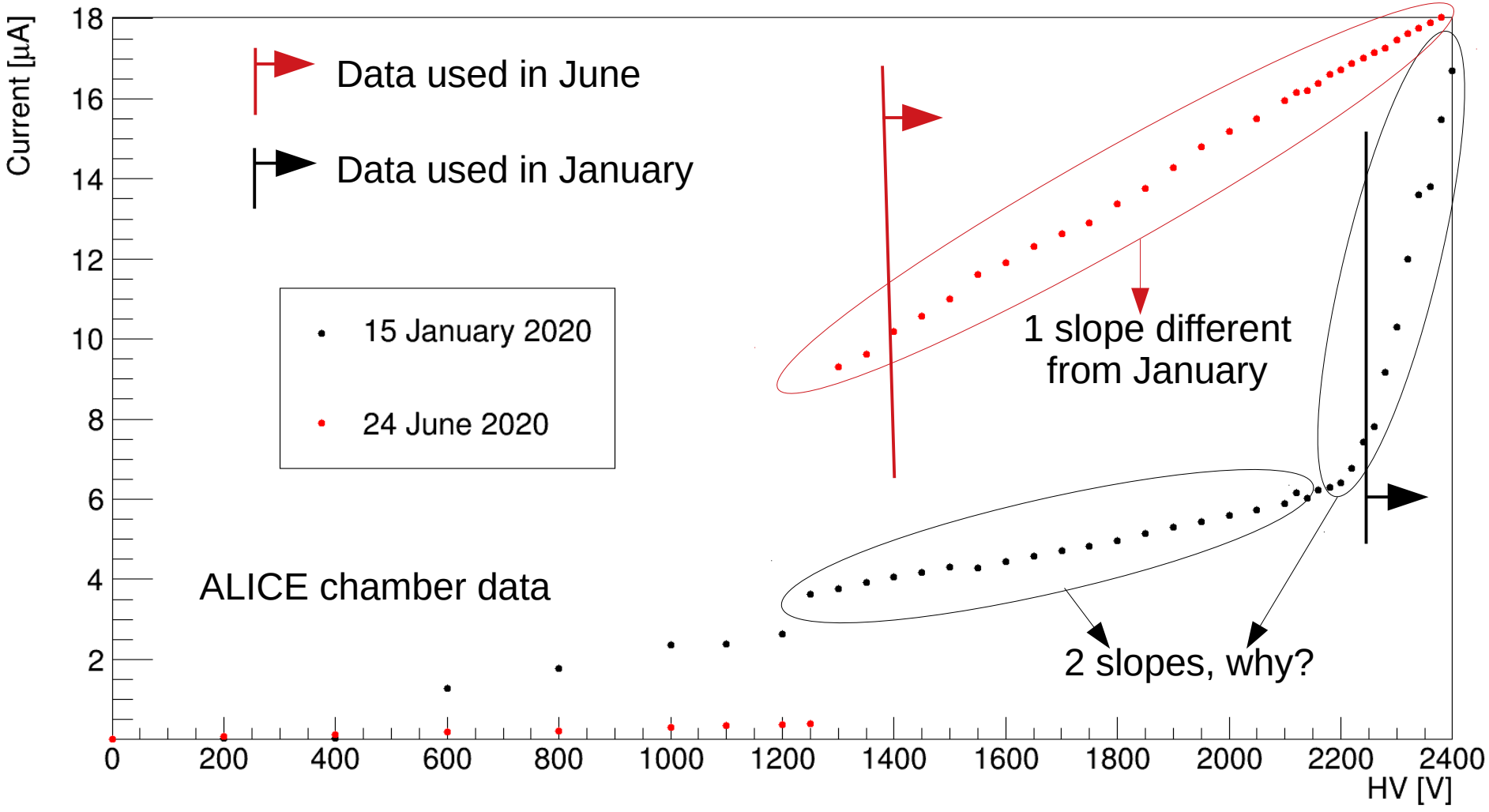
  2) 24th June 2020

Chamber	15/01/2020	23/06/2020
ALICE	16.50	82.01
CMS-K-TOP	16.80	38.19
CMS-K-BOT	14.50	26.08
CMS-GT-TOP	9.86	8.18
CMS-GT-BOT	8.96	12.05
EPDT	10.70	

Factor 4 increase

Why such an increase?

Let’s take a closer look



What can we observe?

- In January → 2 slopes can be observed:

  1) the first one looks like a ohmic leakage current, not passing through the gas

  2) the second one is due to Ar ionization

- In June → 1 slope:

  1) it looks like the same ohmic leakage current but higher

- The gap around 1.2 kV in June → we don’t know yet

Ideas and plans for the future

- A ohmic leakage current is present in both scans → increases in June wrt January

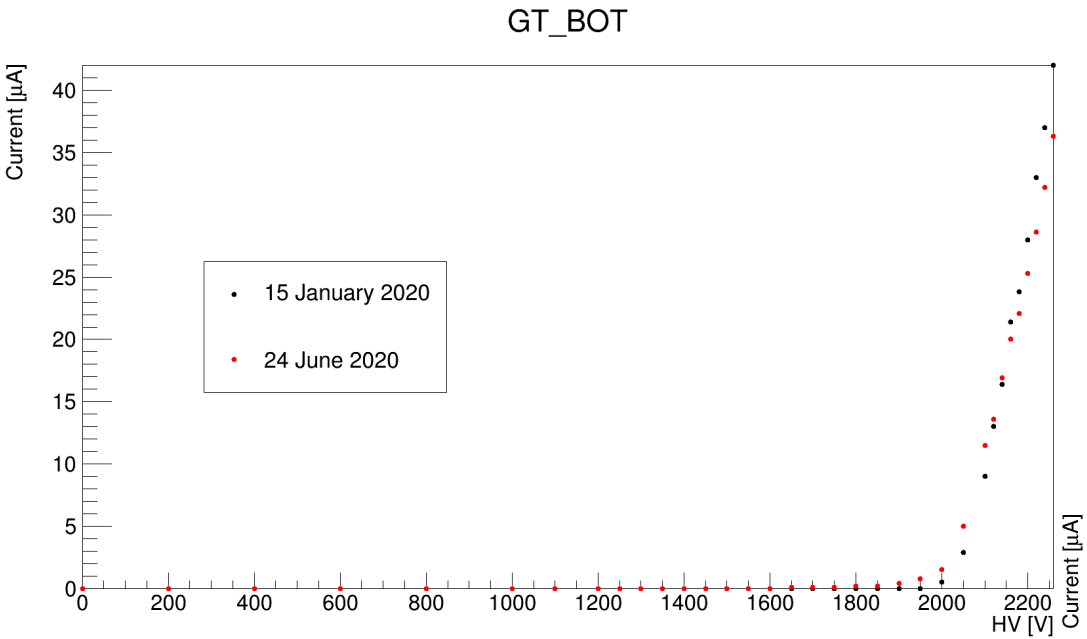
- It looks like there is a parallel resistance to the gas → maybe due to some isolation issue, already present in Janaury and worse in June

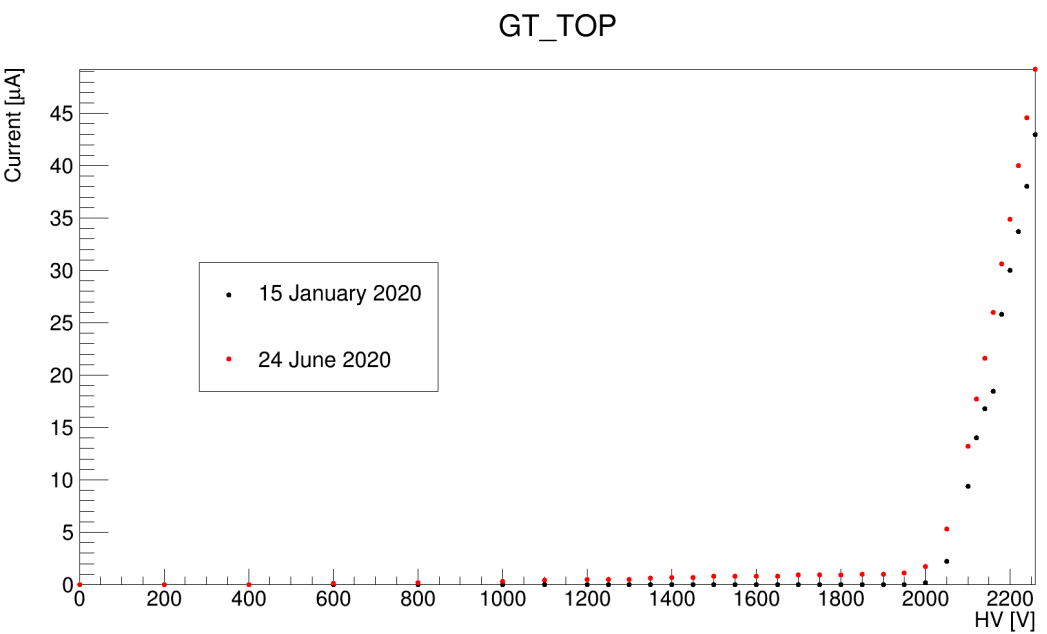
- The current flowing in the parallel resistance reduces the effective HV applied to the gas gap → we don’t reach ionization voltage → we don’t see the discharge

- Perform another Ar scan (possibly today, July 15th) reaching higher voltages to see if we can reach Ar ionization and measure bakelite resistivity

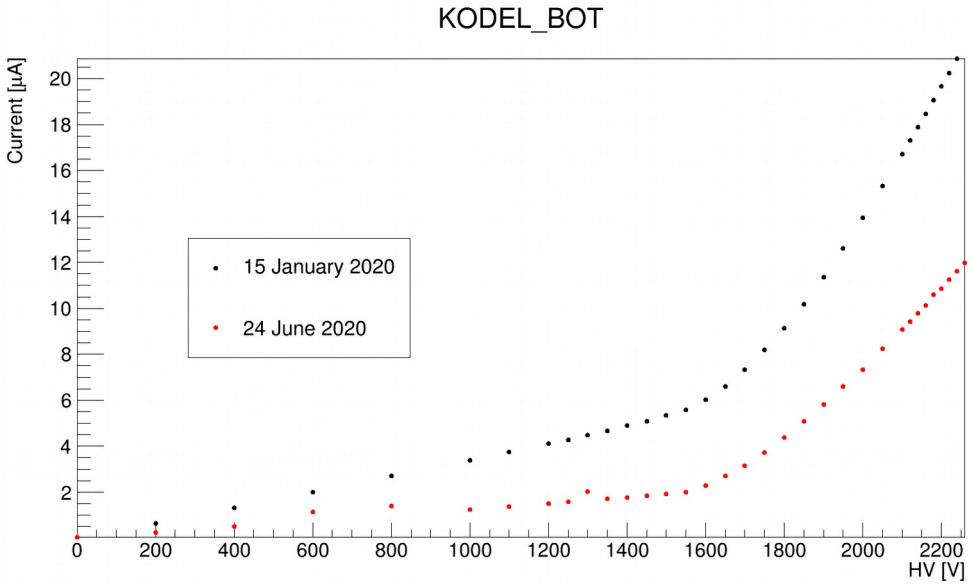
Backup

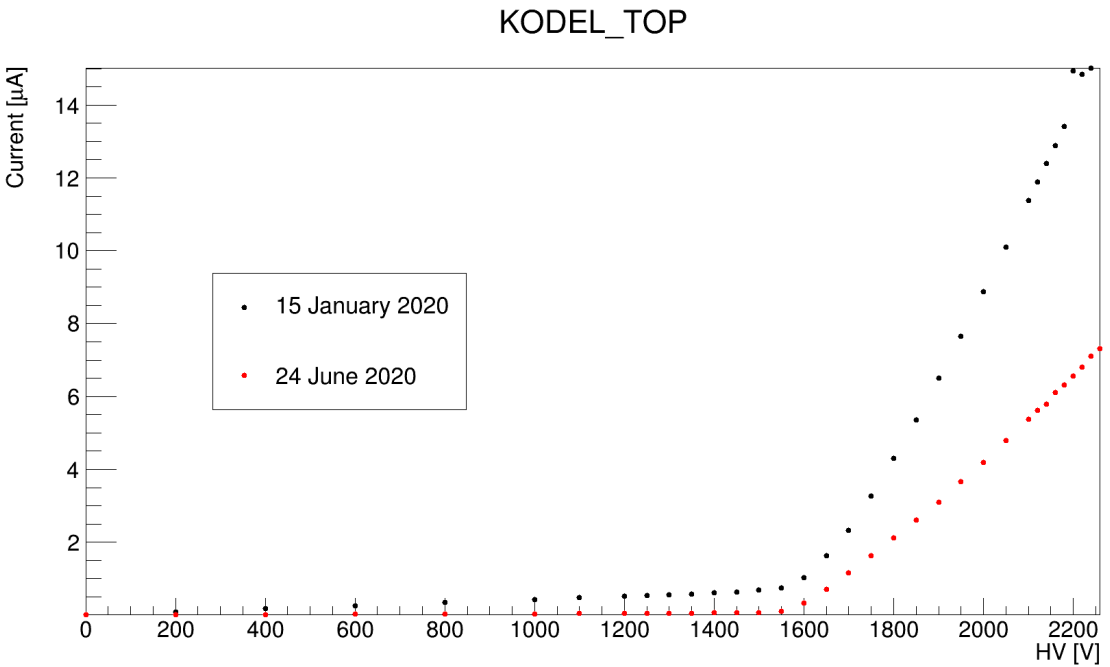
CMS GT


GT_BOT
Current [µA]
HV [V]
15 January 2020
24 June 2020
0
5
10
15
20
25
30
35
40
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200

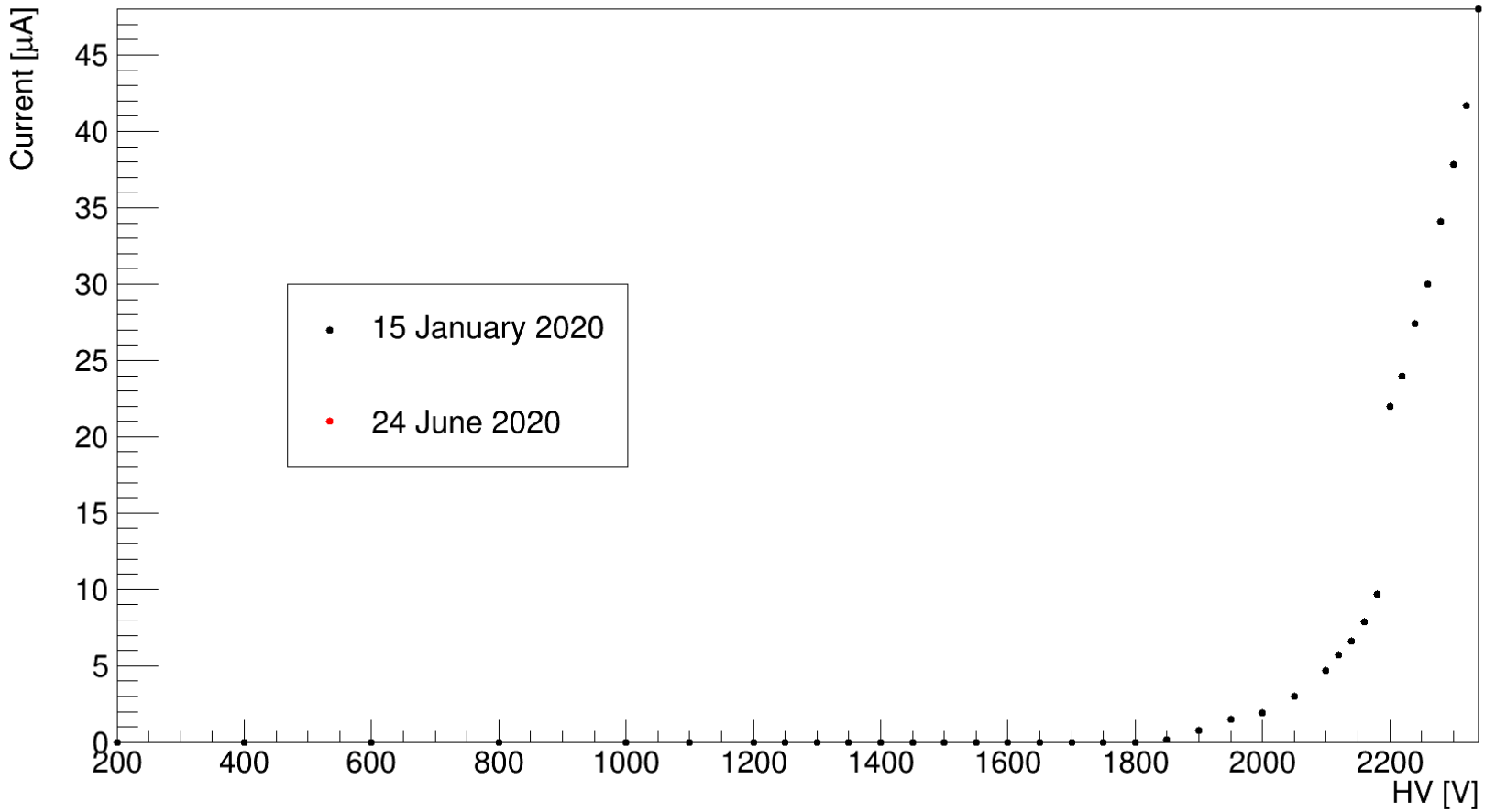

GT_TOP
Current [µA]
HV [V]
15 January 2020
24 June 2020
0
5
10
15
20
25
30
35
40
45
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200

CMS KODEL


KODEL_BOT
Current [μA]
HV [V]
15 January 2020
24 June 2020


KODEL_TOP
Current [μA]
HV [V]
15 January 2020
24 June 2020

EP-DT


Current [μA]
45
40
35
30
25
20
15
10
5
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
HV [V]
15 January 2020
24 June 2020