

Update from Pavia Lab

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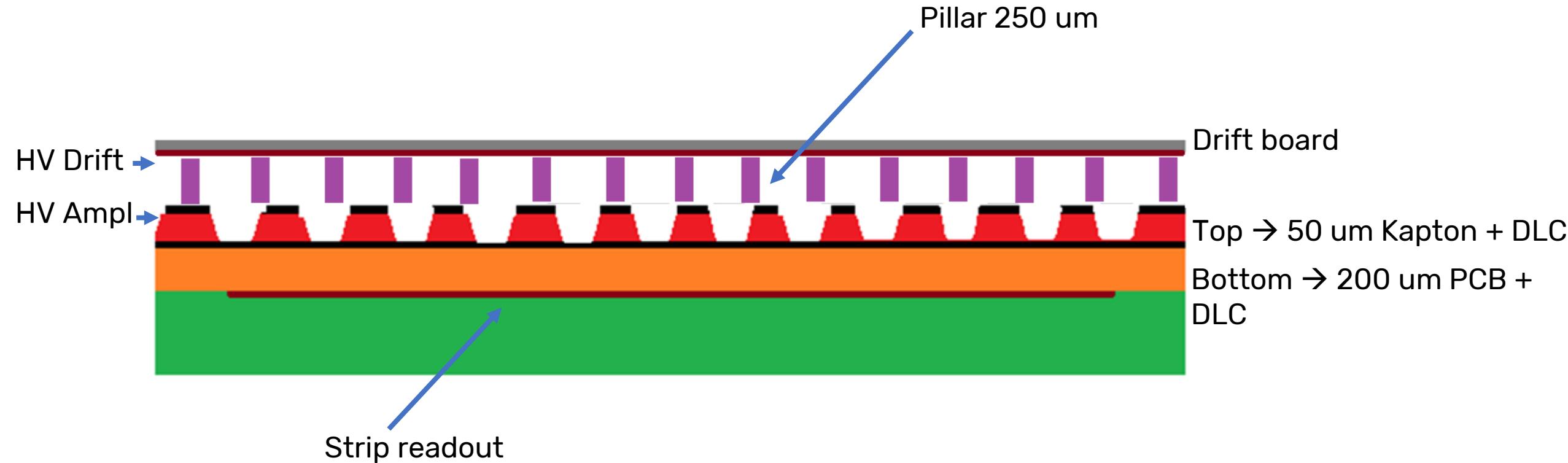


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FTM - Initial structure



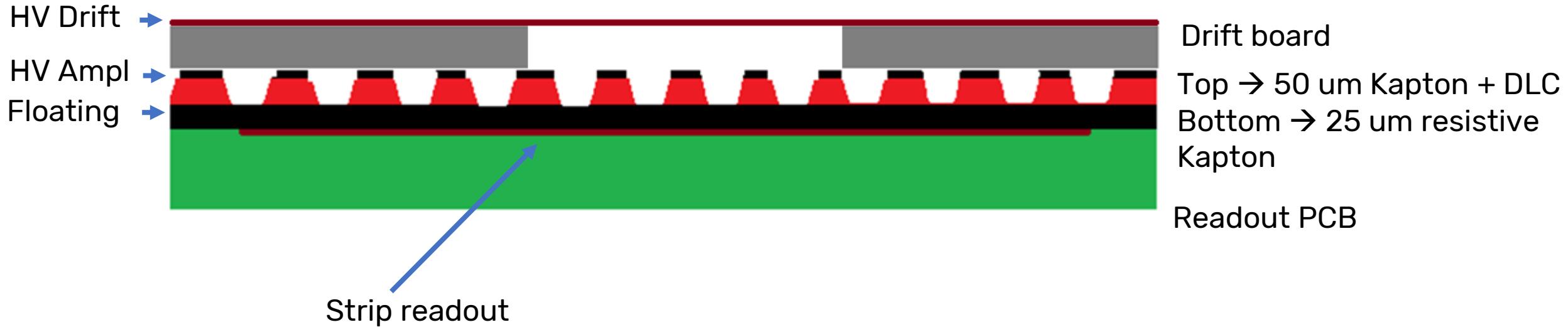
No signal or current detected with sources or cosmics.



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FTM - First modification



Post modification:

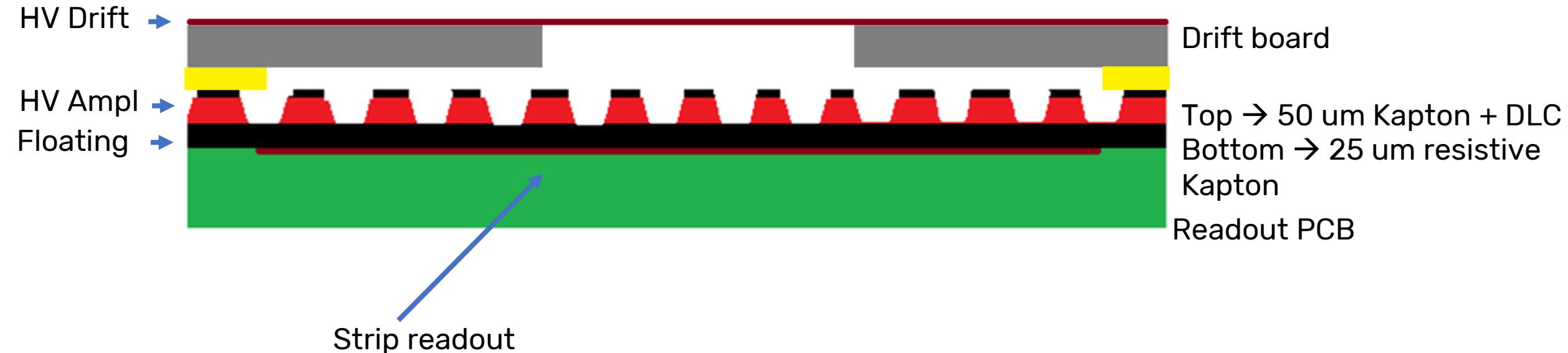
1. Drift gap increased from 250 um to 2 mm → new drift foil glued on a 2 mm-PCB → **identified problem with gas ricirculation: the grey PCB in figure is a ring which closes completely the sensitive area from the outside and the gas cannot enter**



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FTM - Second modification



Post modification:

2. Drift gap from 2 to 3 mm → to improve gas flow we add 1 mm washers between the kapton foil and the drift board, to lift the drift board

N.B. The washers in yellow are placed only in correspondence of the screws used for foil tensioning → much more space for gas ricirculation

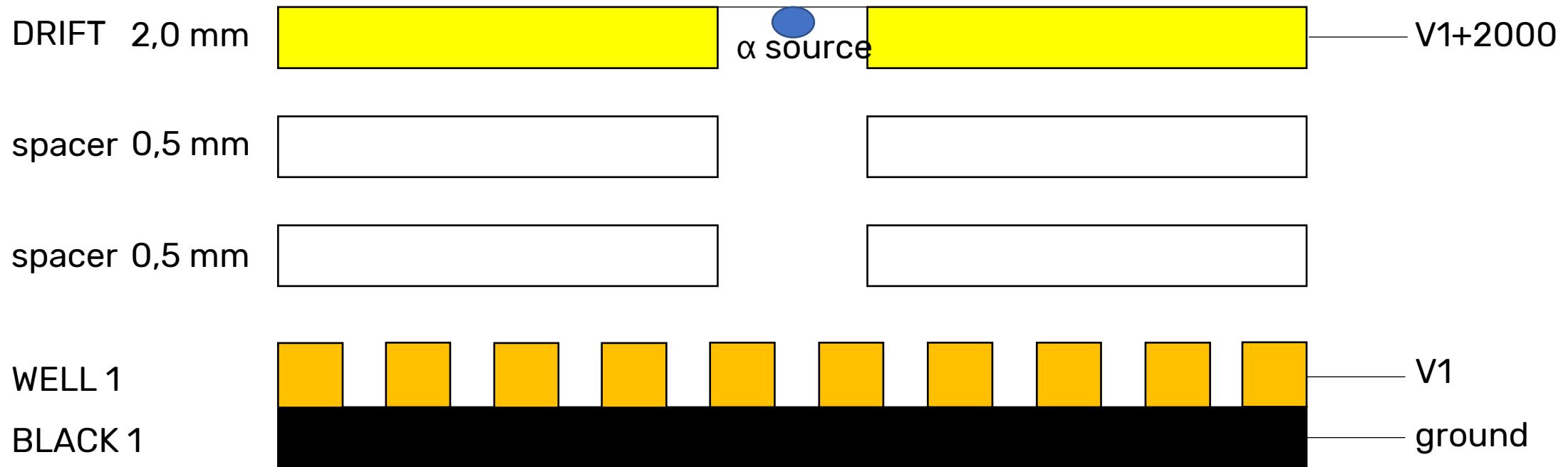
Still no signal or current detected with sources (other than alpha) or cosmics.



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Test with alpha source



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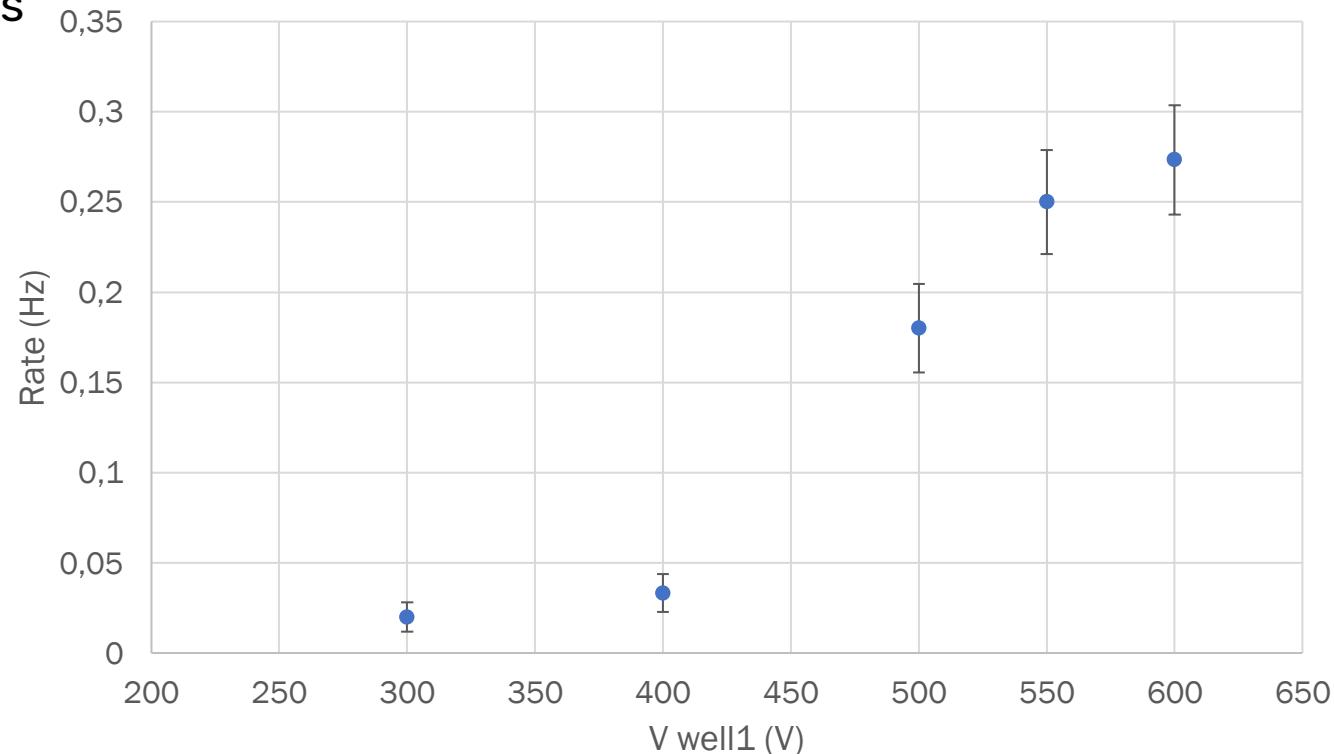
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Rate measurement with alpha



Observations:

- $V_{well1} = 600 \text{ V}$ → current drawn by the channel fluctuates between 200 e 400 nA
- $V_{well1} > 650 \text{ V}$ → current higher than 1 uA



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MCA spectra

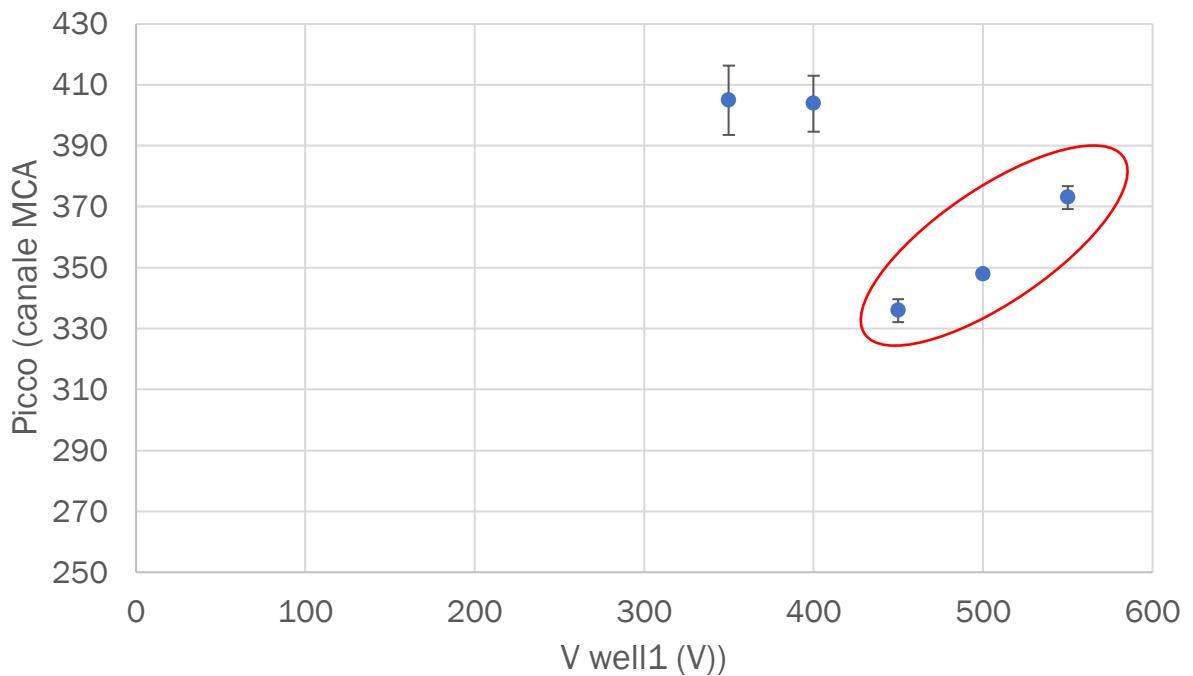


- Gain: x4
- Diff: 50
- Int: 50
- inv

V well1 (V)	Peak (channel)	FWHM
350	404,9	11,3
400	403,8	9,2
450	335,9	3,8
500	347,8	1,1
550	373	3,8

Observations:

- For low values of V well1 spectra are very noisy



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FTM - Third modification



Post modification:

3. Second layer added → Drift gap for top layer is 3 mm, while it's just 1 mm for bottom layer

Still no signal or current detected with sources (other than alpha) or cosmics.



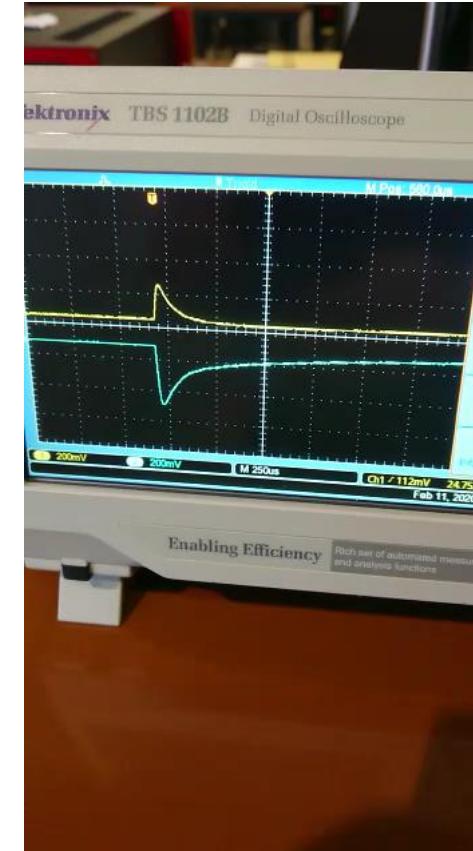
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Latest configuration

Channel	Voltage (V)	Current (uA)
Drift	2450	0.0083
Top 2 (Well 2)	1050	0.01245
Bottom 2 (Black 2)	560	0.17150
Top 1 (Well 1)	500	-0.05805

Signal read from bottom strips and from a pad placed on the top of the detector.



Discharges?



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Summary

- When the detector is in a stable HV condition, no signal can be observed or current measured with a picoammeter.
- When the HV is really high, big signals similar to discharges can be observed.
- The only source which gave us some results was the alpha source, which is depositing a huge amount of charge directly in the gap.

