

HI-LUMI



Pre-mixed gas: Ar/CO₂/CF₄=45%/15%/40%

TEST BEAM at CERN SPS North Area H8: 14 – 28 June 2023 has been completed

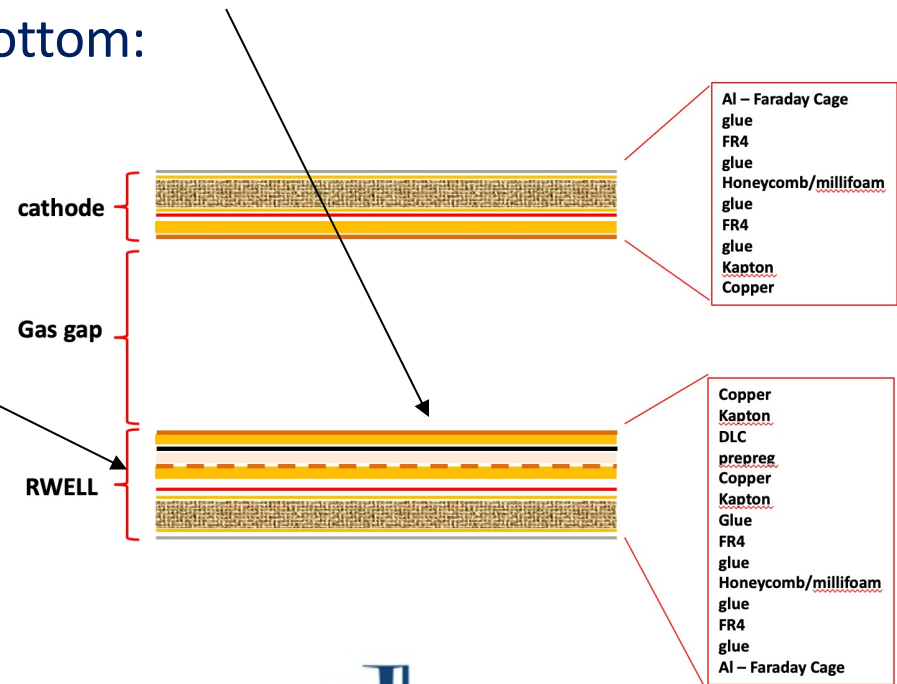
2D – readout: step by step approach

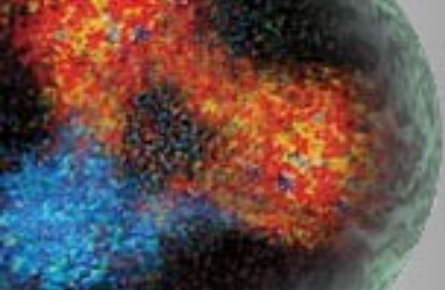
1. One prototype reads the 2-nd coordinate on the “top” copper layer

Same readout geometry on the top and the bottom:

- 780 mm pitch
- 300 mm width
- 10 x 10 cm² active surface
- 128 channels

The effect charge collection on the «top» layer is the object of investigation.





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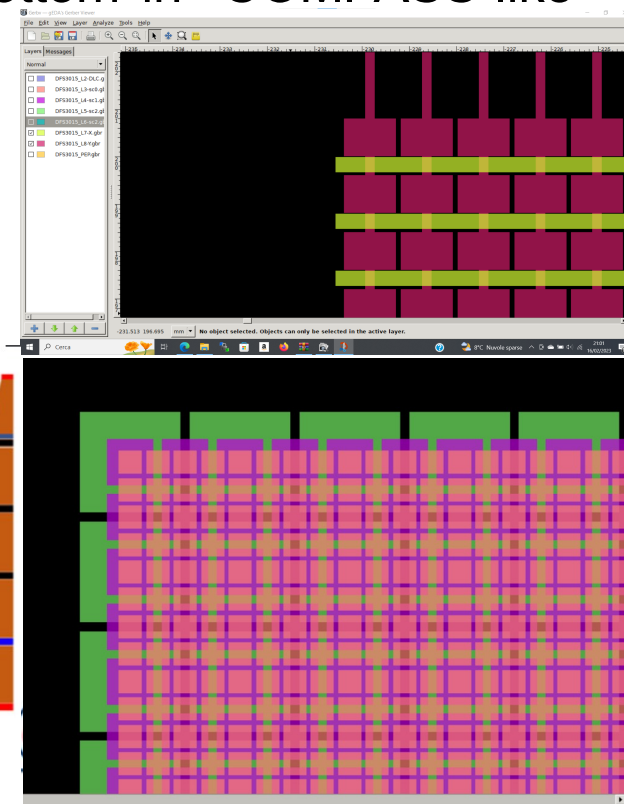
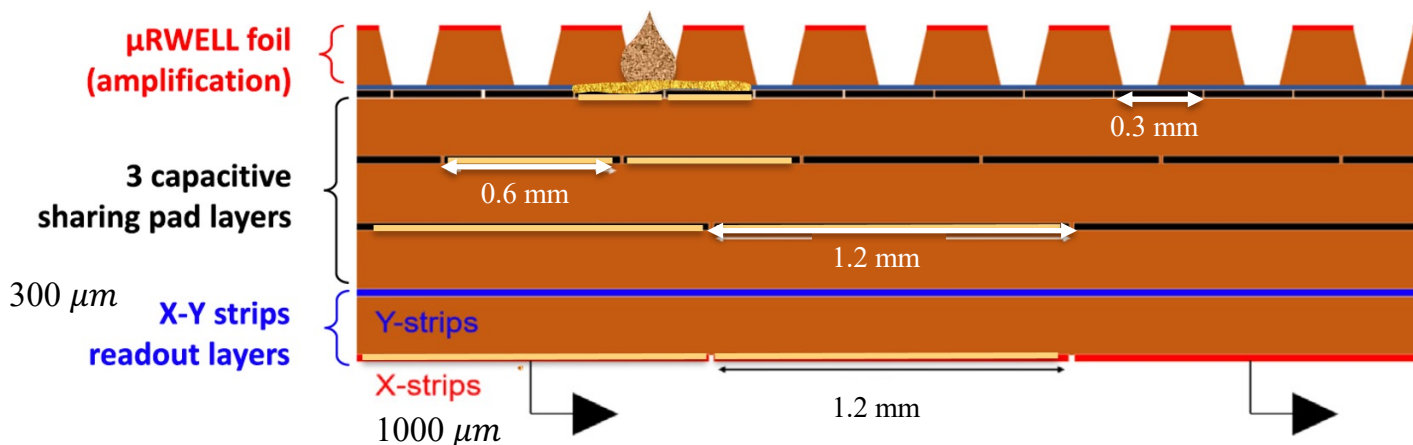
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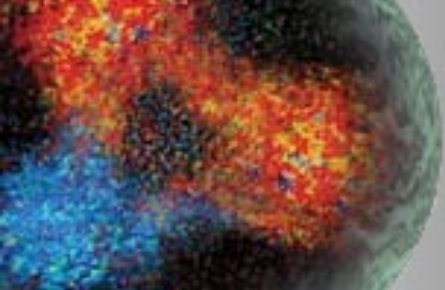
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2D – readout: step by step approach

2. A second prototype reads both coordinates on the bottom in “COMPASS-like” strips configuration with capacity sharing read-out:

- 1200 μm pitch
- 300 μm vs 1000 μm strips width
- 10 x 10 cm² active surface
- 83 channels





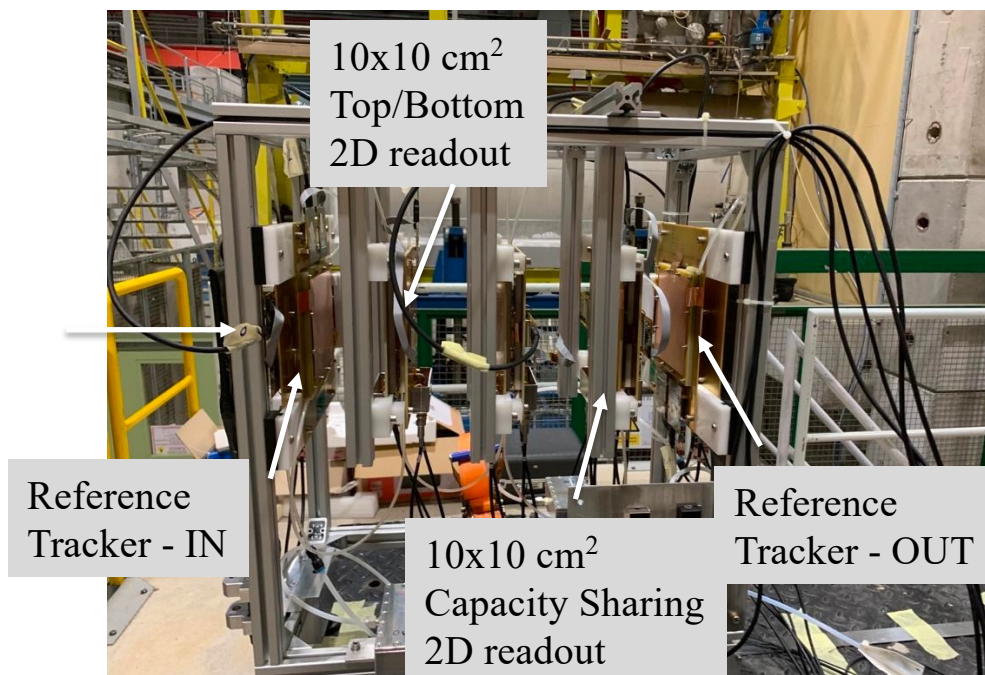
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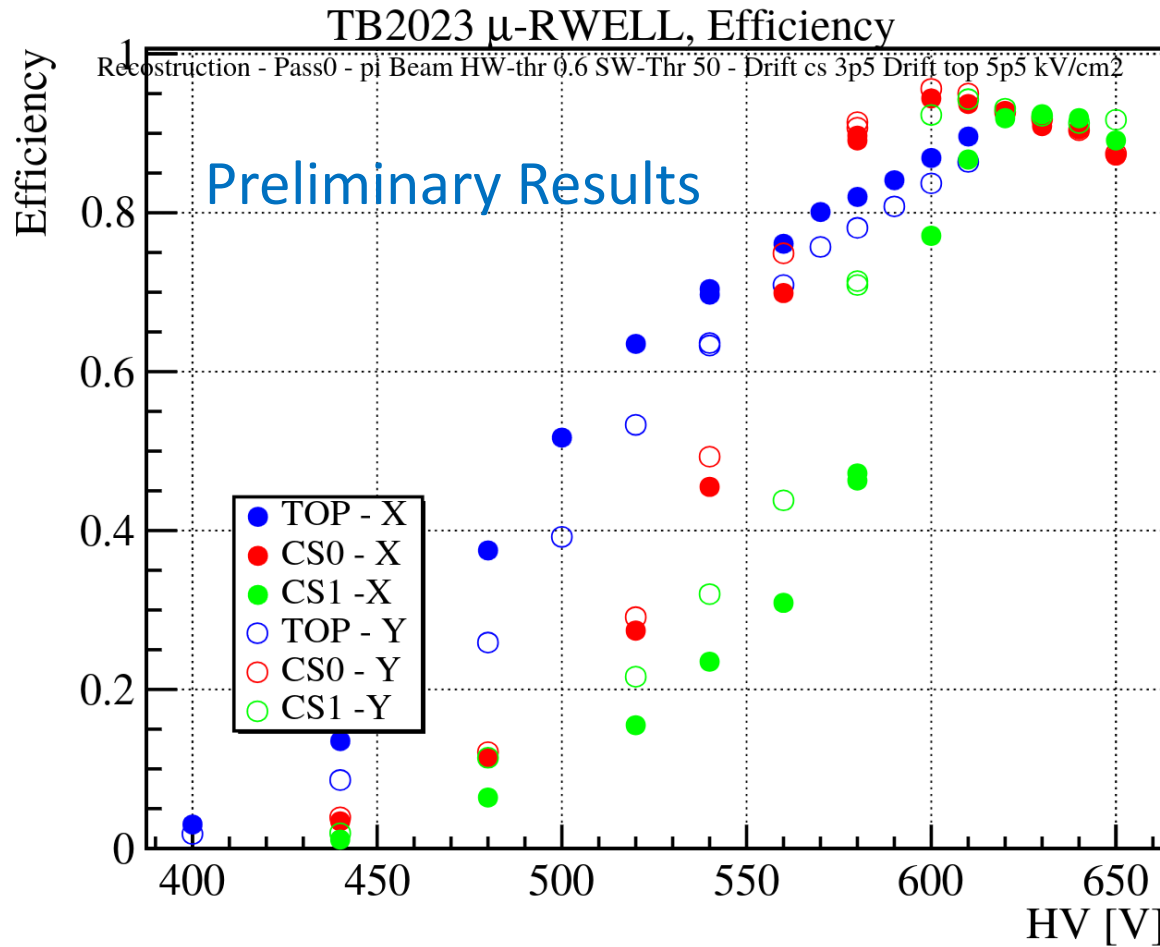
Progress since last meeting.

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π/μ



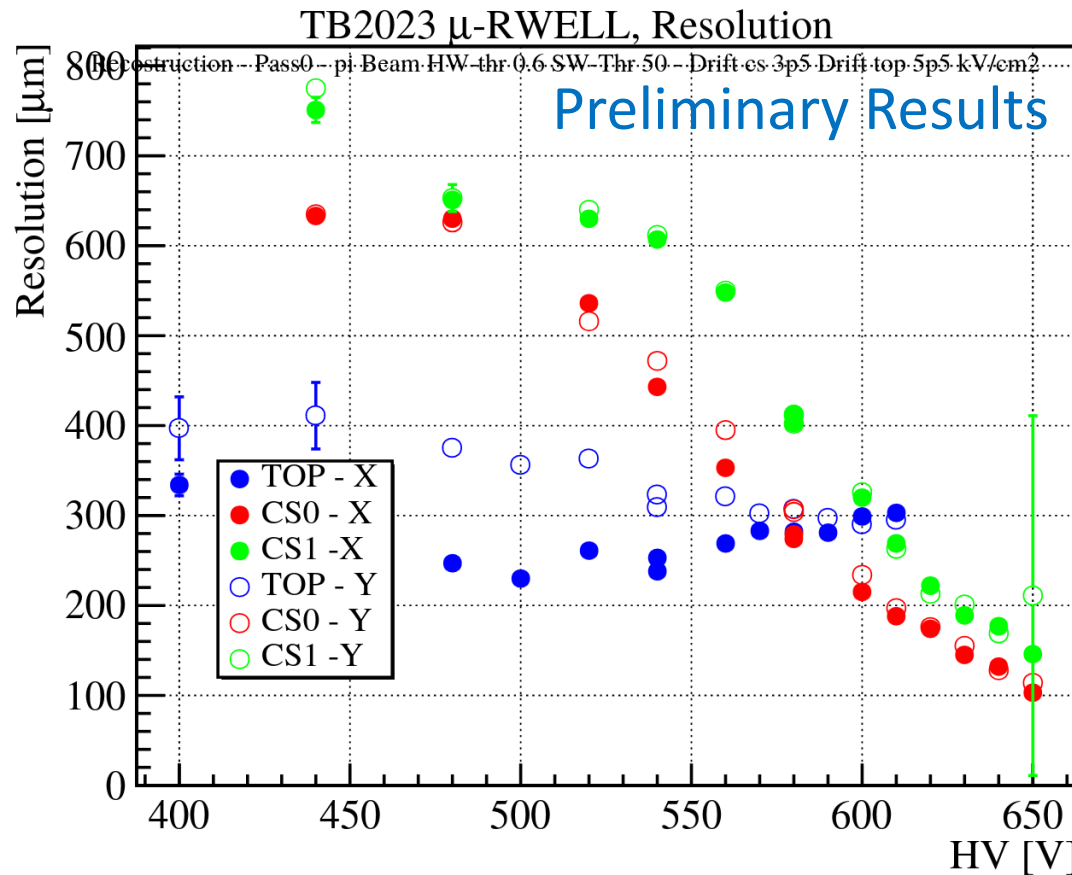
Set-up



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Efficiency

- CS readout reaches a plateau at higher HV values than standard readout scheme.
- TOP readout is not yet at plateau at 600 V (HV was chosen to be raised to higher values)

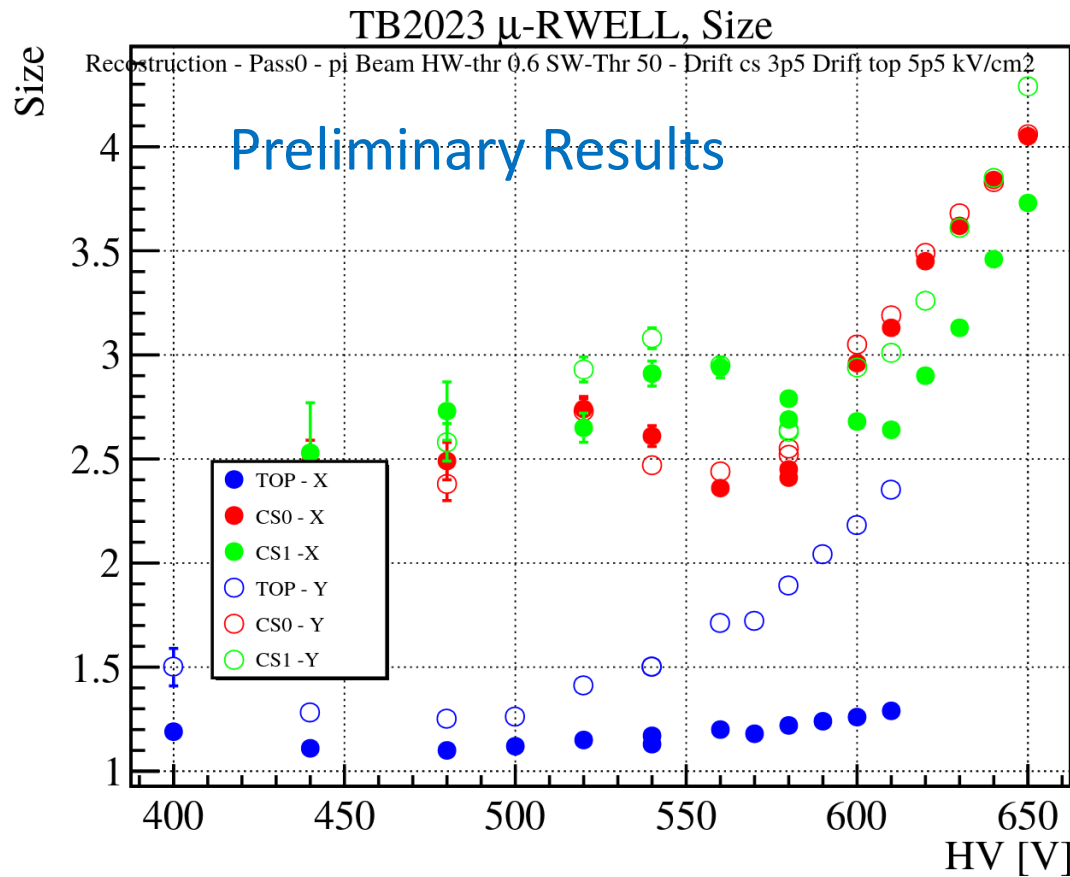


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Resolution

- CS readout reaches 100 μ m resolution at highest HV values (starting from 1200 μ m pitch)
- TOP readout resolution is fixed at 250-300 μ m (pitch is 780 μ m)

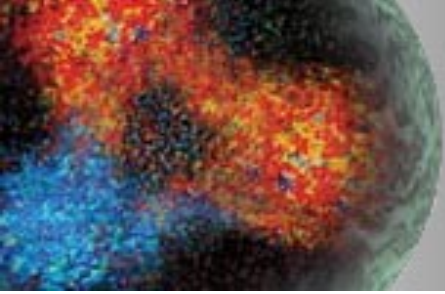
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Cluster Size

- CS readout Cluster Size is not lower than 2.5 strips and increases to 4 at higher HV.
- higher cluster size → better resolution
- TOP readout cluster size is fixed at 1.3
- Bottom readout cluster size increases from 1.5 to 2.3 with HV



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NEXT STEP

- Test the 40x46 cm² prototype!

with X-RAYS and cosmics

