



**SAPIENZA**  
UNIVERSITÀ DI ROMA



Istituto Nazionale di Fisica Nucleare

# Conclusions (so far)

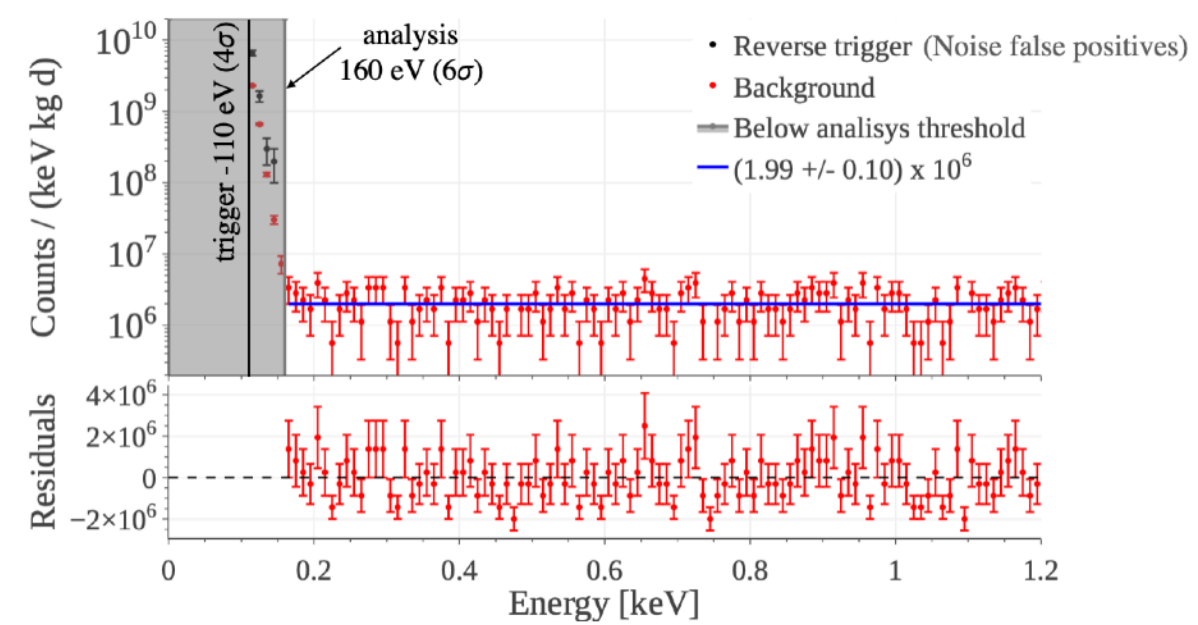
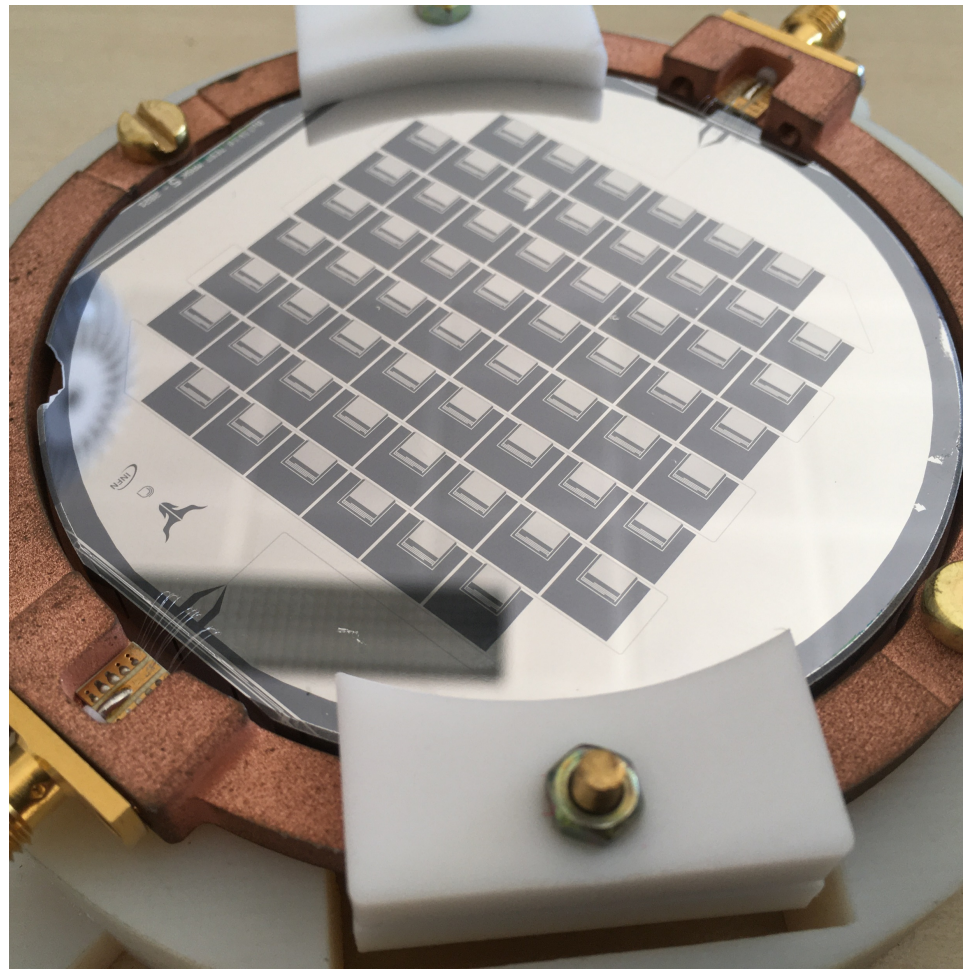
Marco Vignati, LNGS, 20 March 2024



# **We have solid foundations**

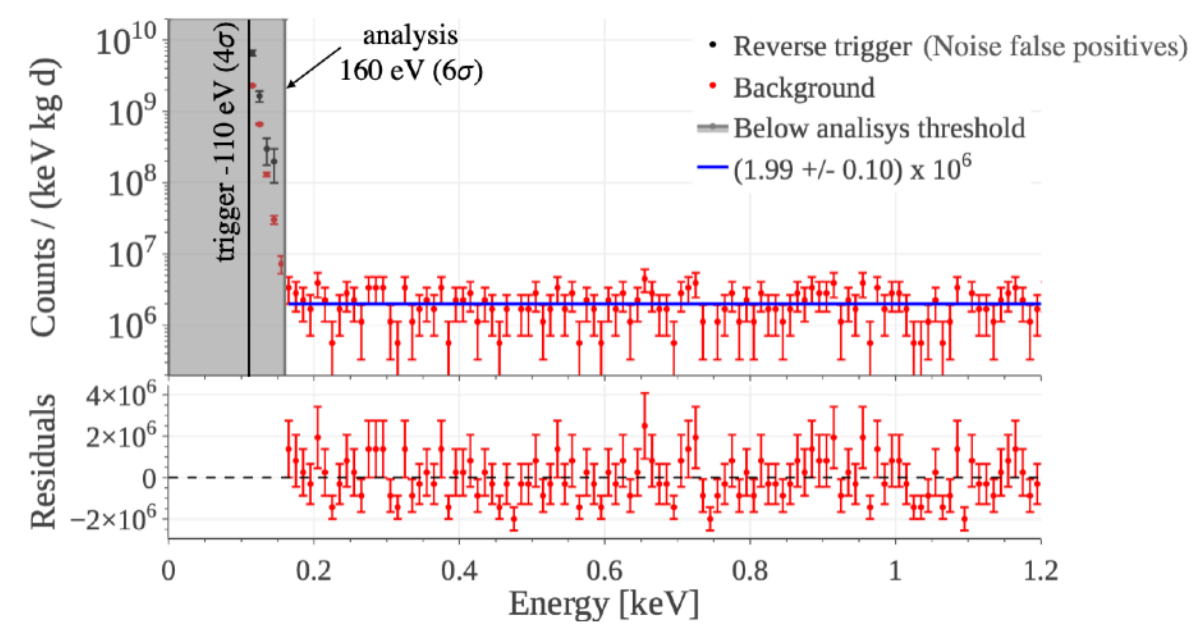
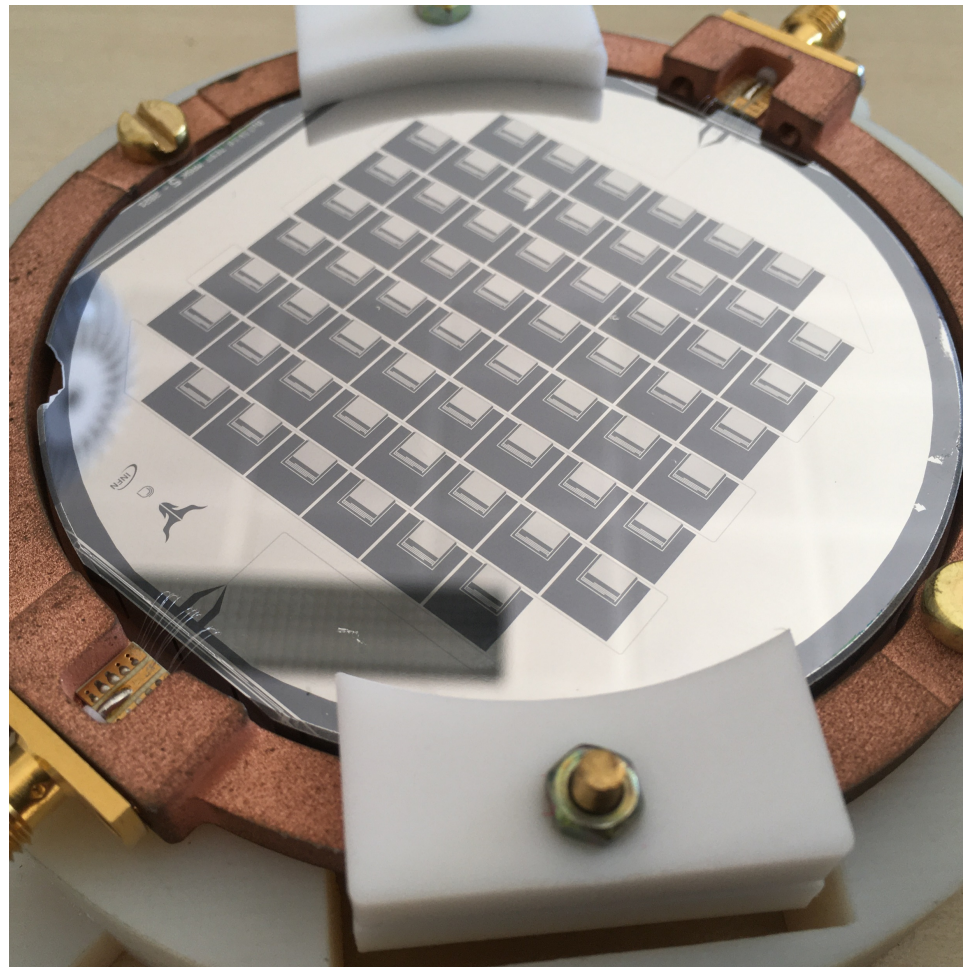
# We have solid foundations

**BULLKID works**

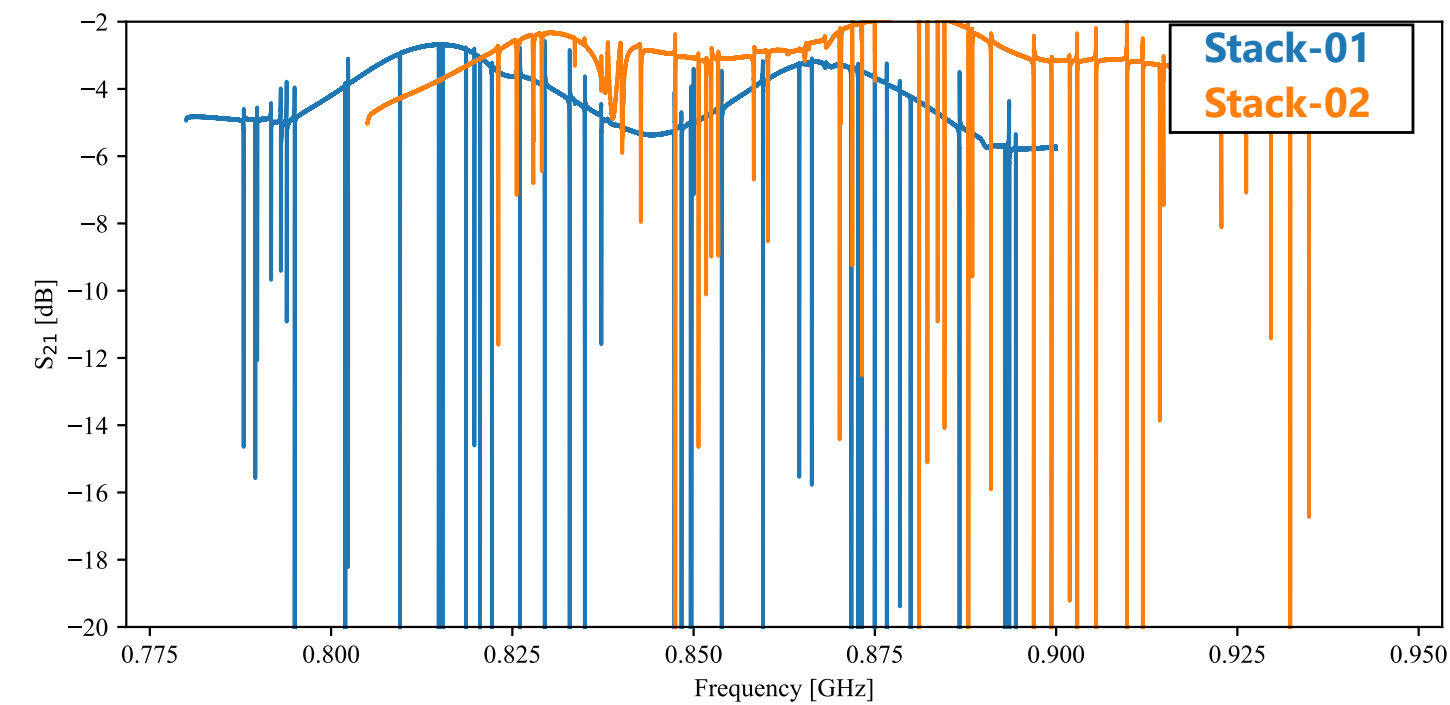
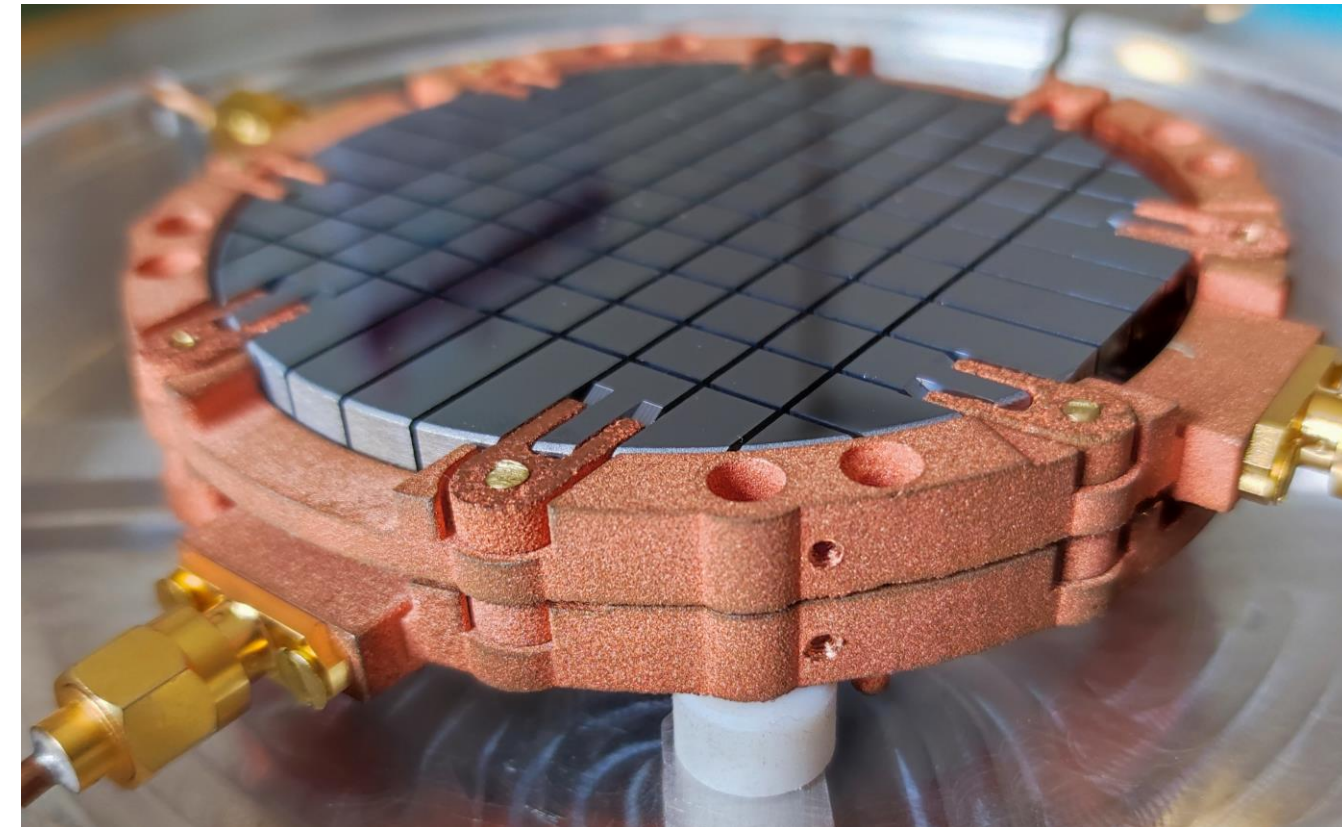


# We have solid foundations

## BULLKID works

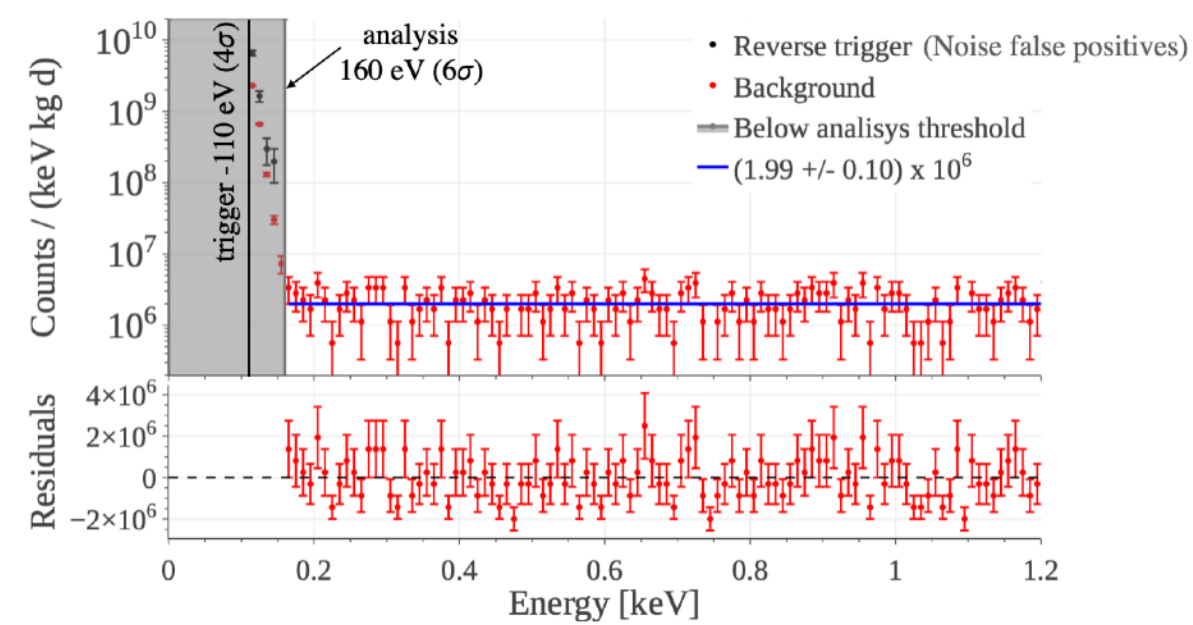
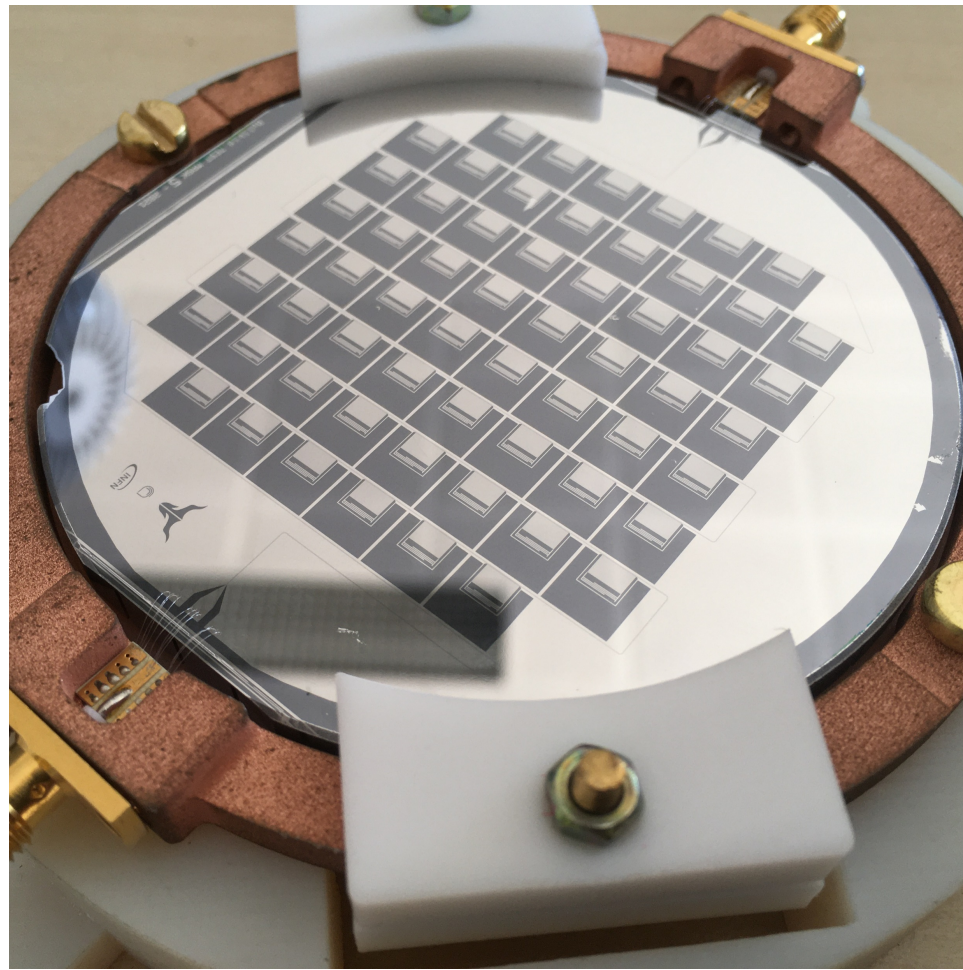


## Stacking works

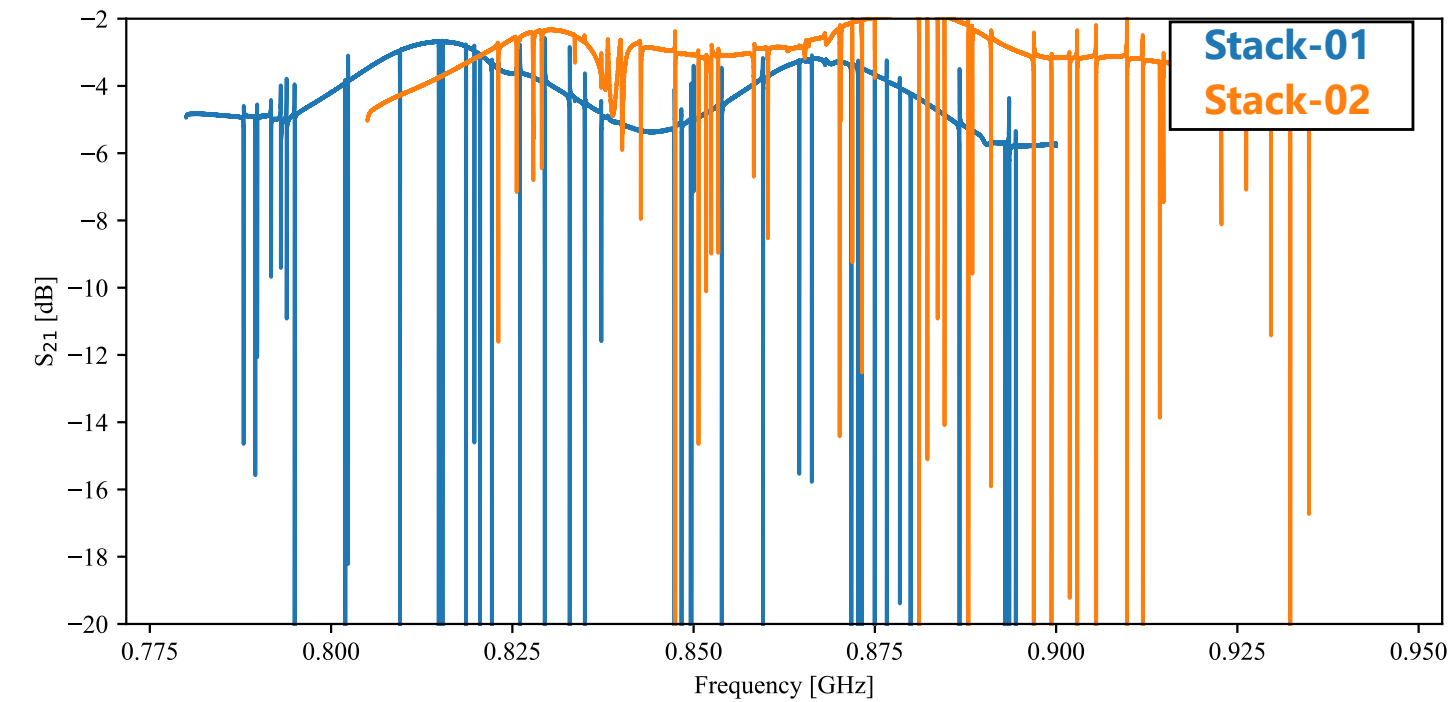
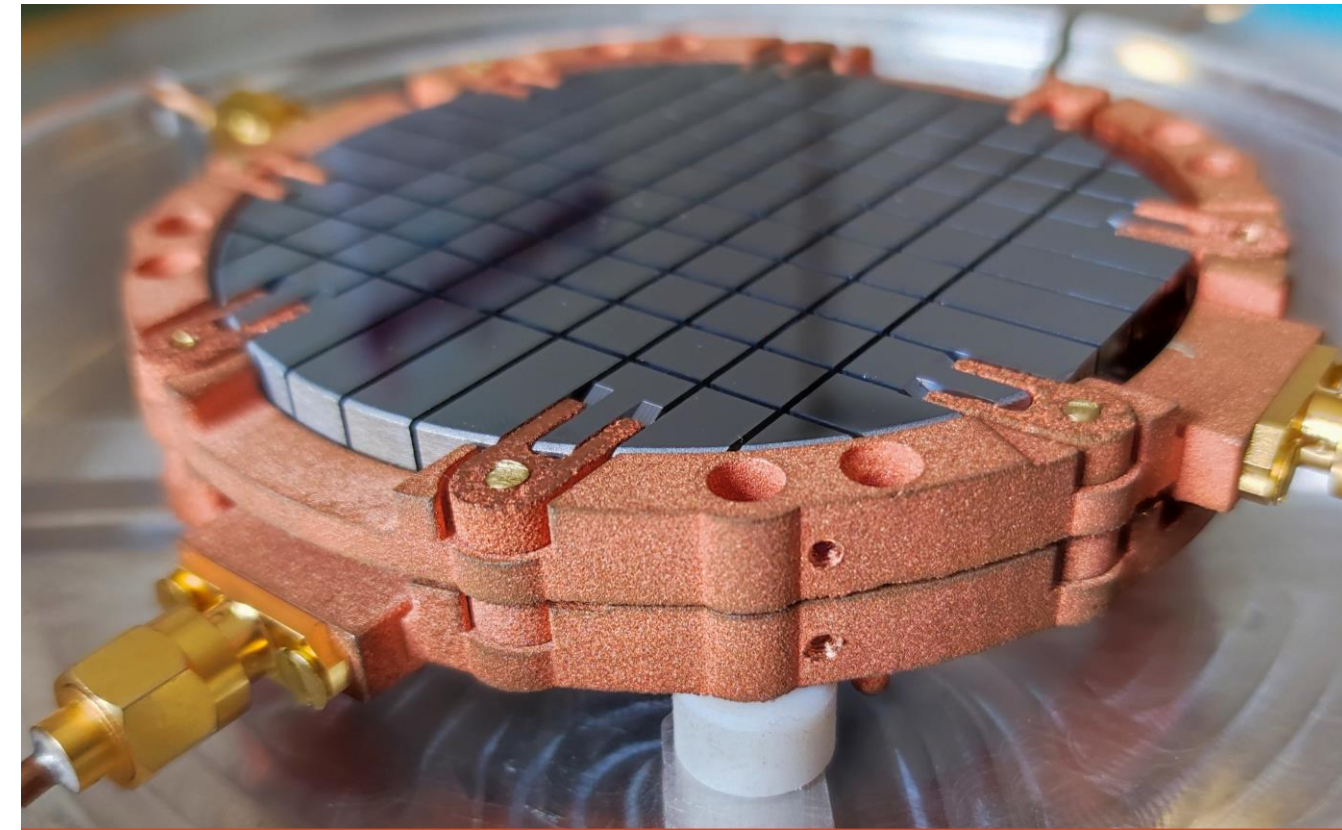


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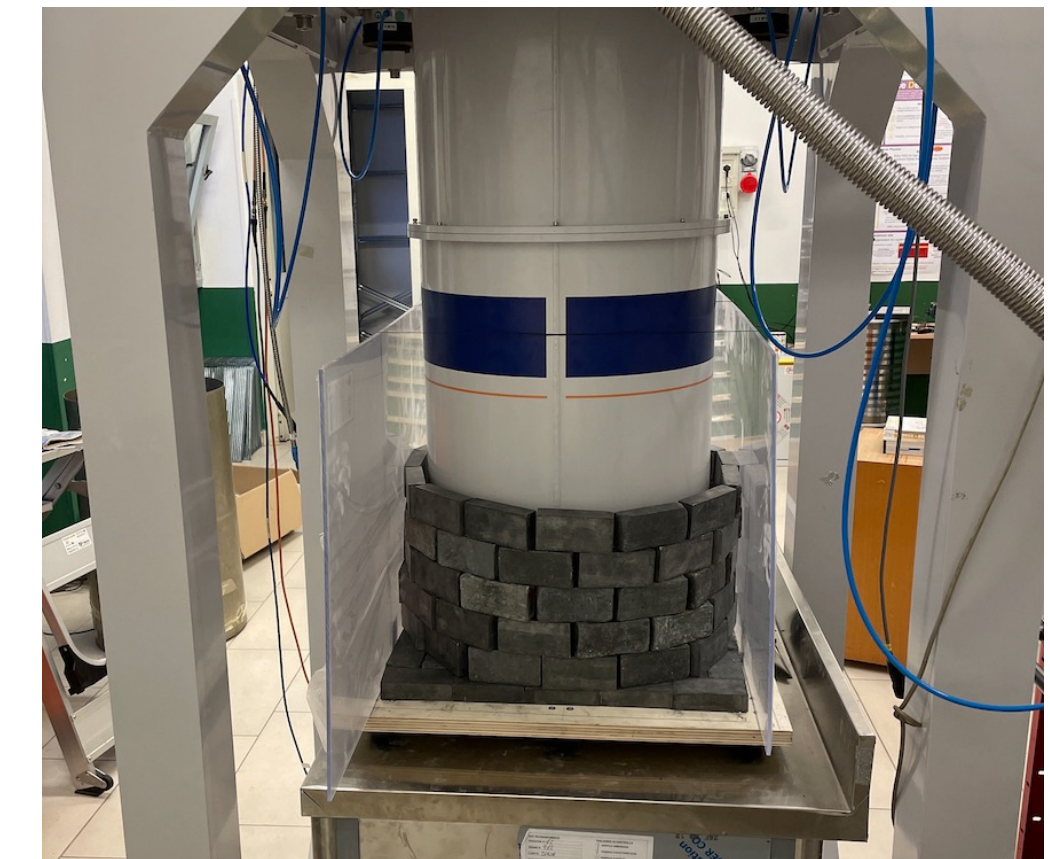
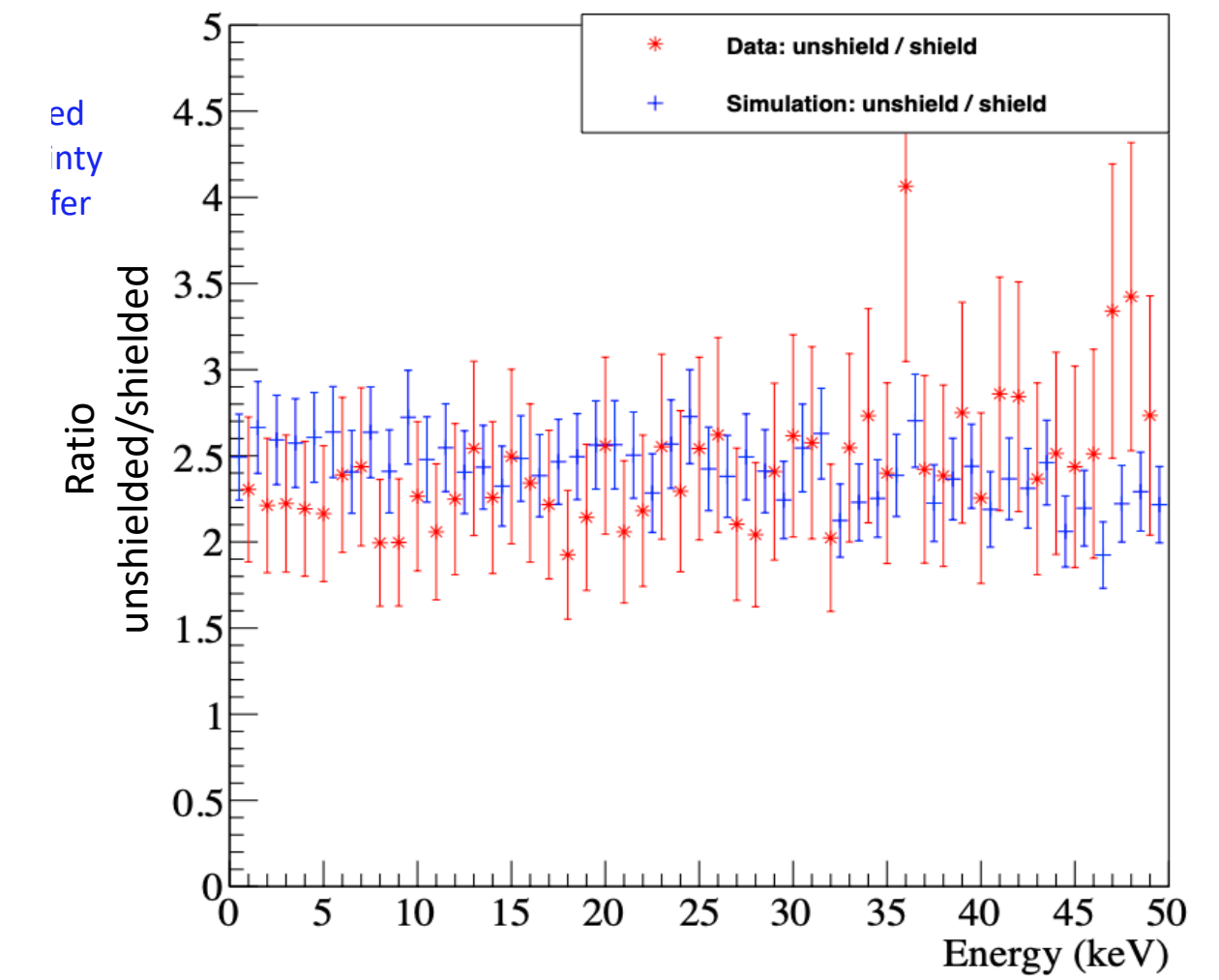
## BULLKID works



## Stacking works



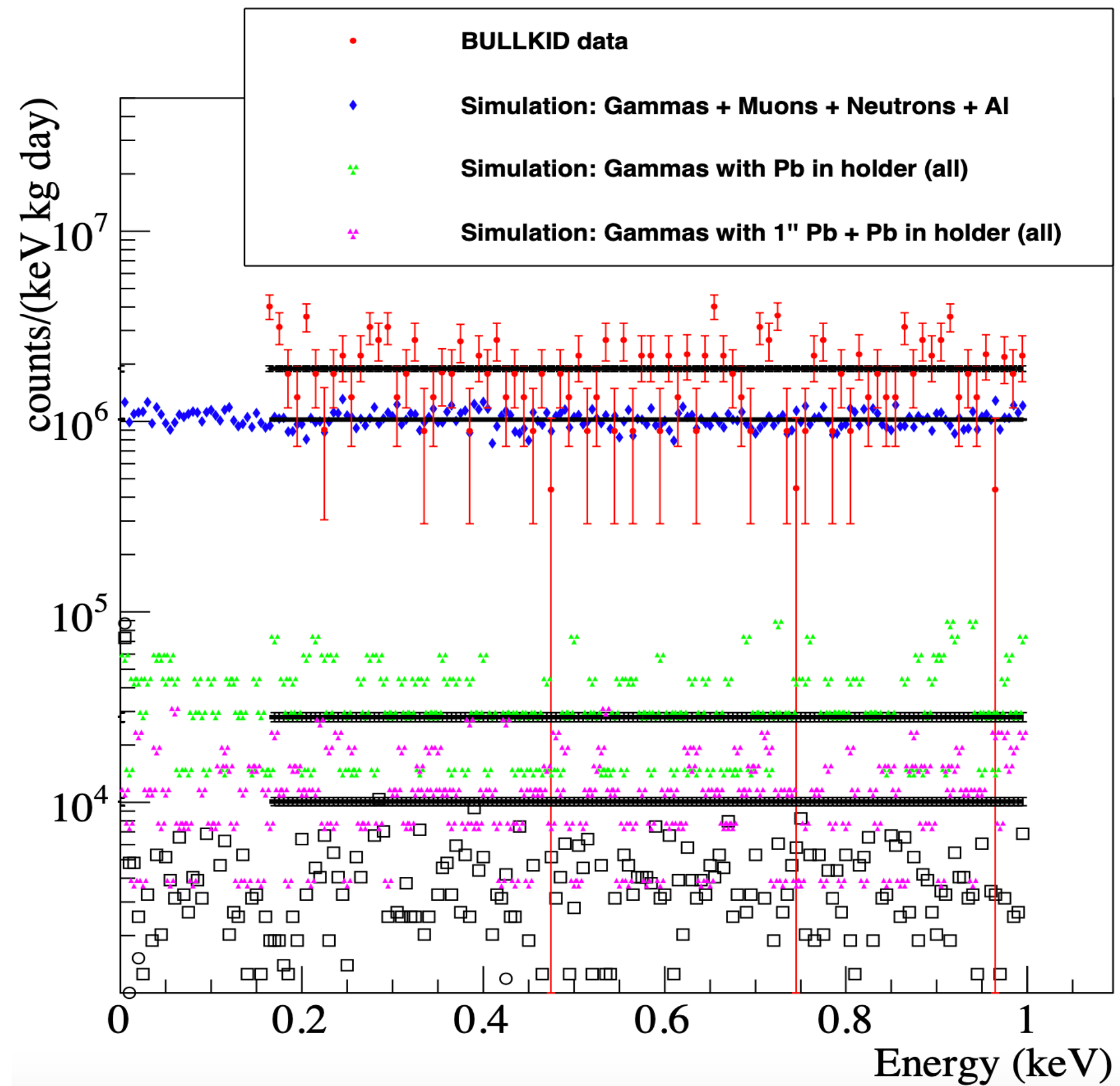
## Agreement with simulations



# Backgrounds, bkggs, bkggs at Sapienza

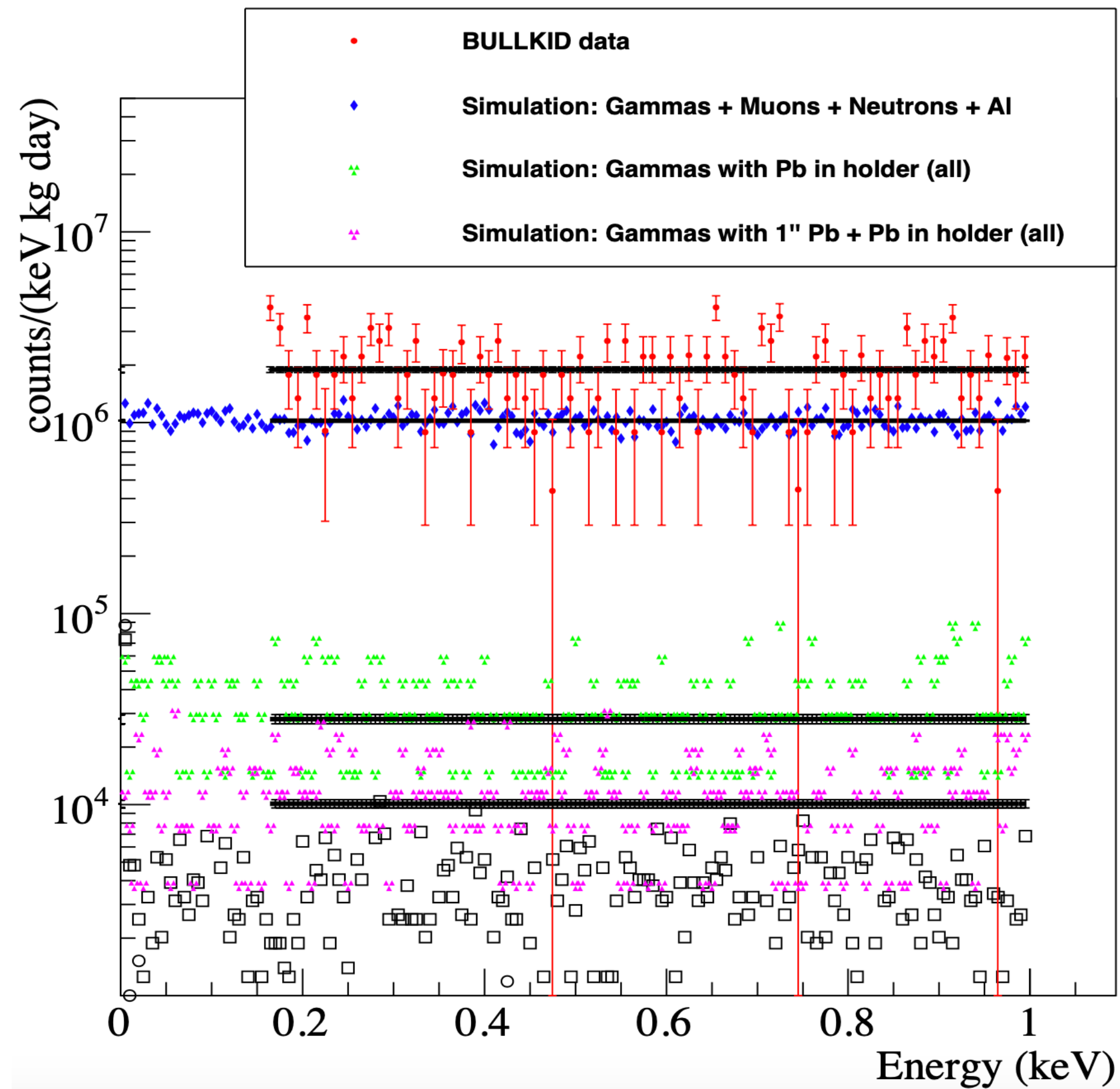
# Backgrounds, bkg, bkg at Sapienza

Short term:  $10^4$  DRU with mild shielding

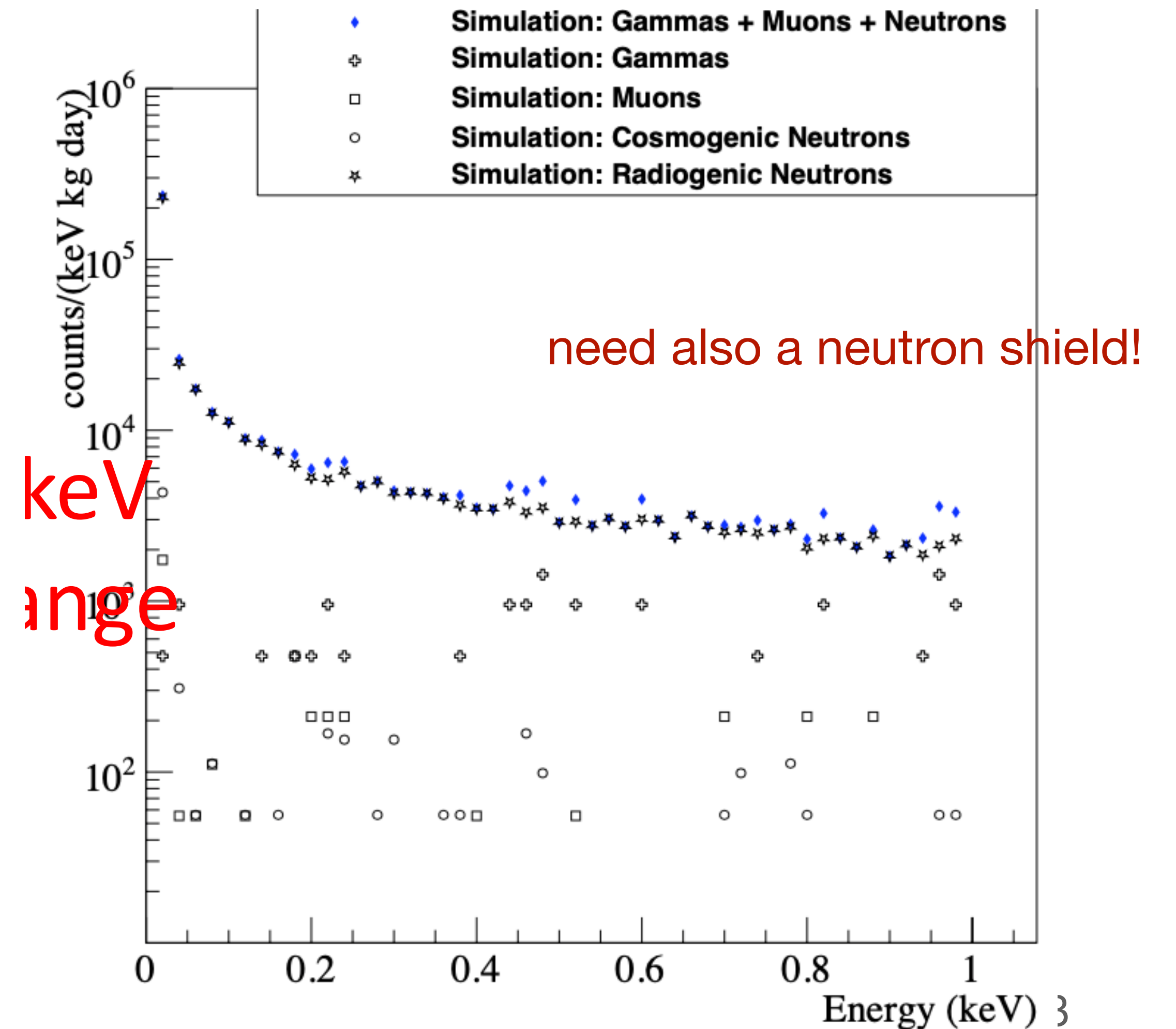


# Backgrounds, bkg, bkg at Sapienza

Short term:  $10^4$  DRU with mild shielding



Long term:  $10^{2-3}$  DRU with active veto (new cryo)

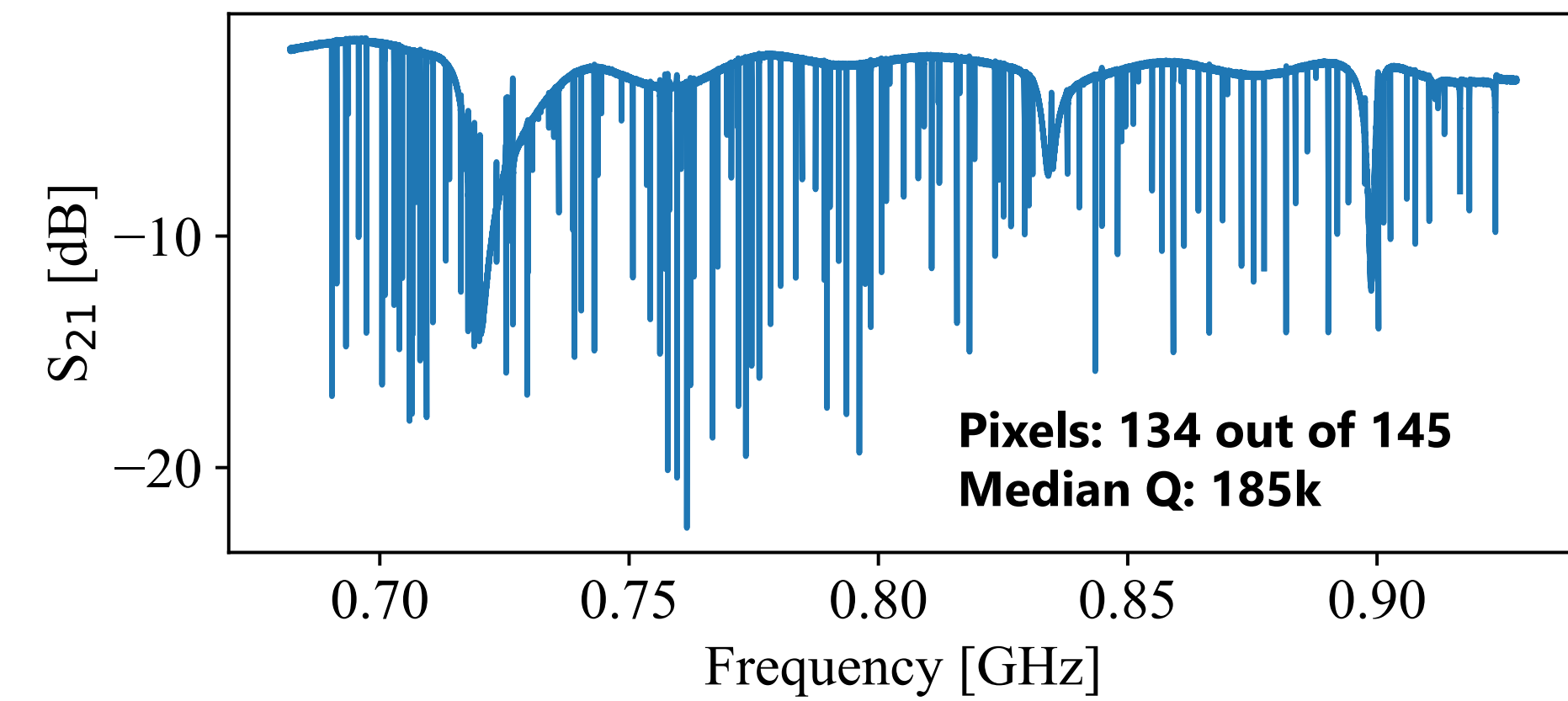
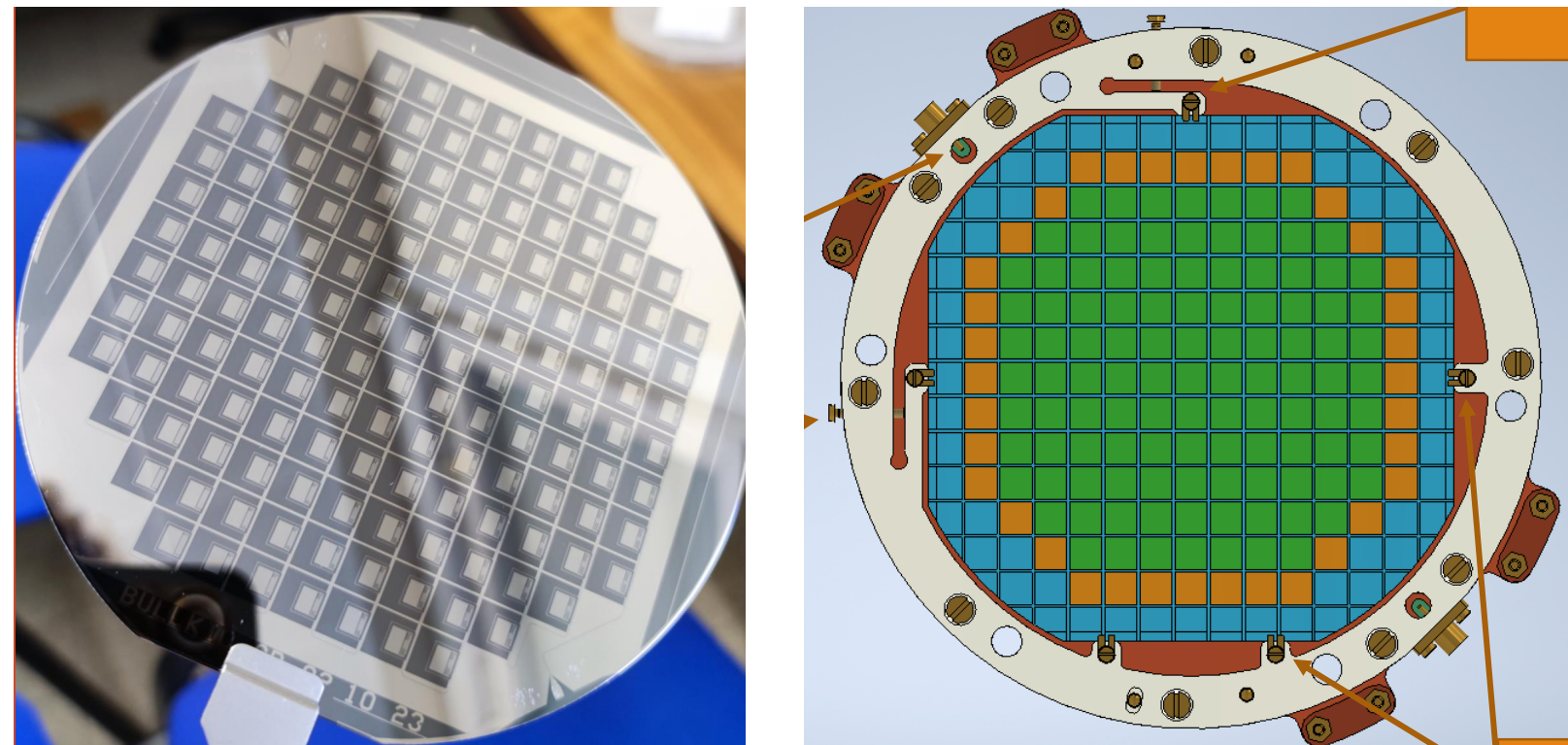




# Towards the final experiment

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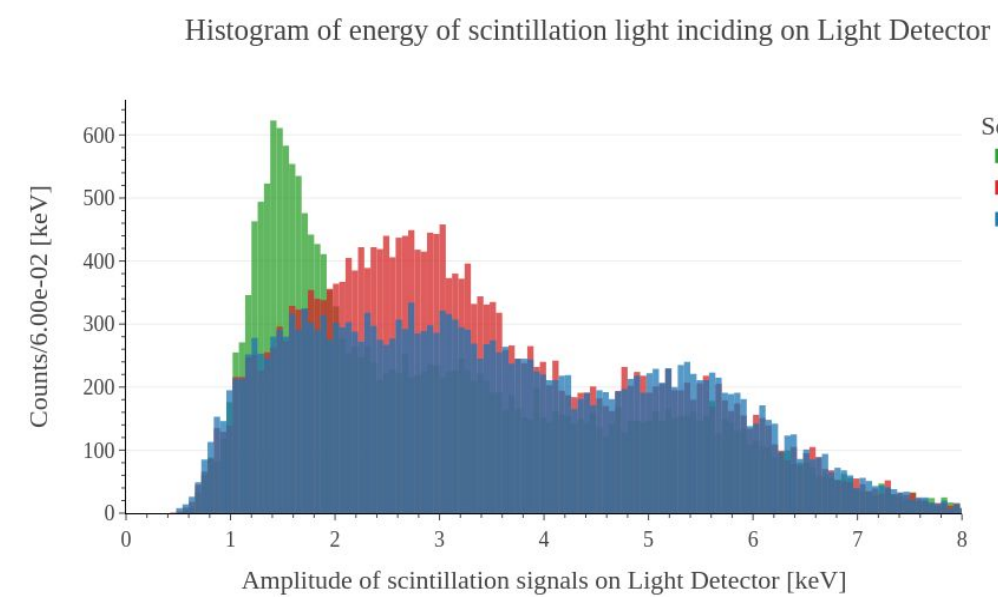
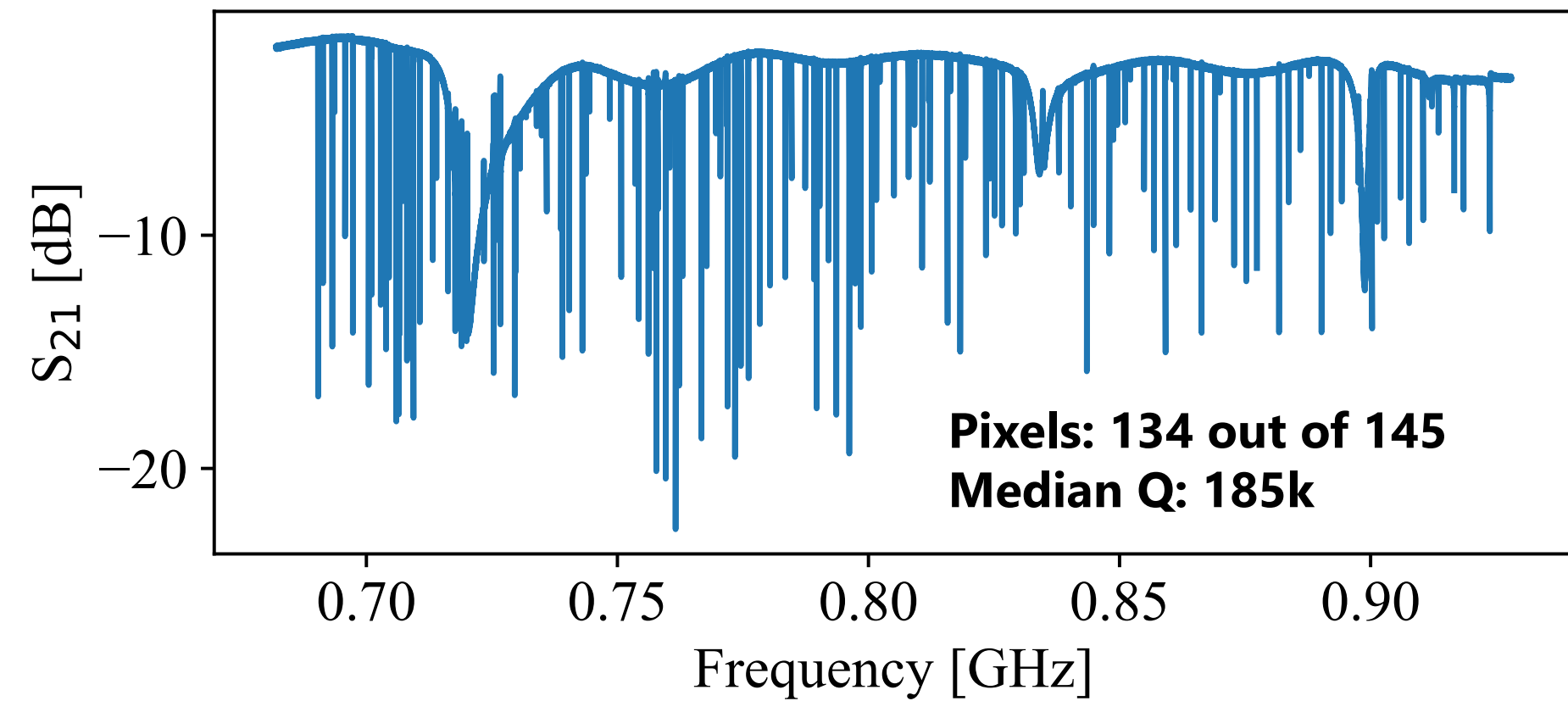
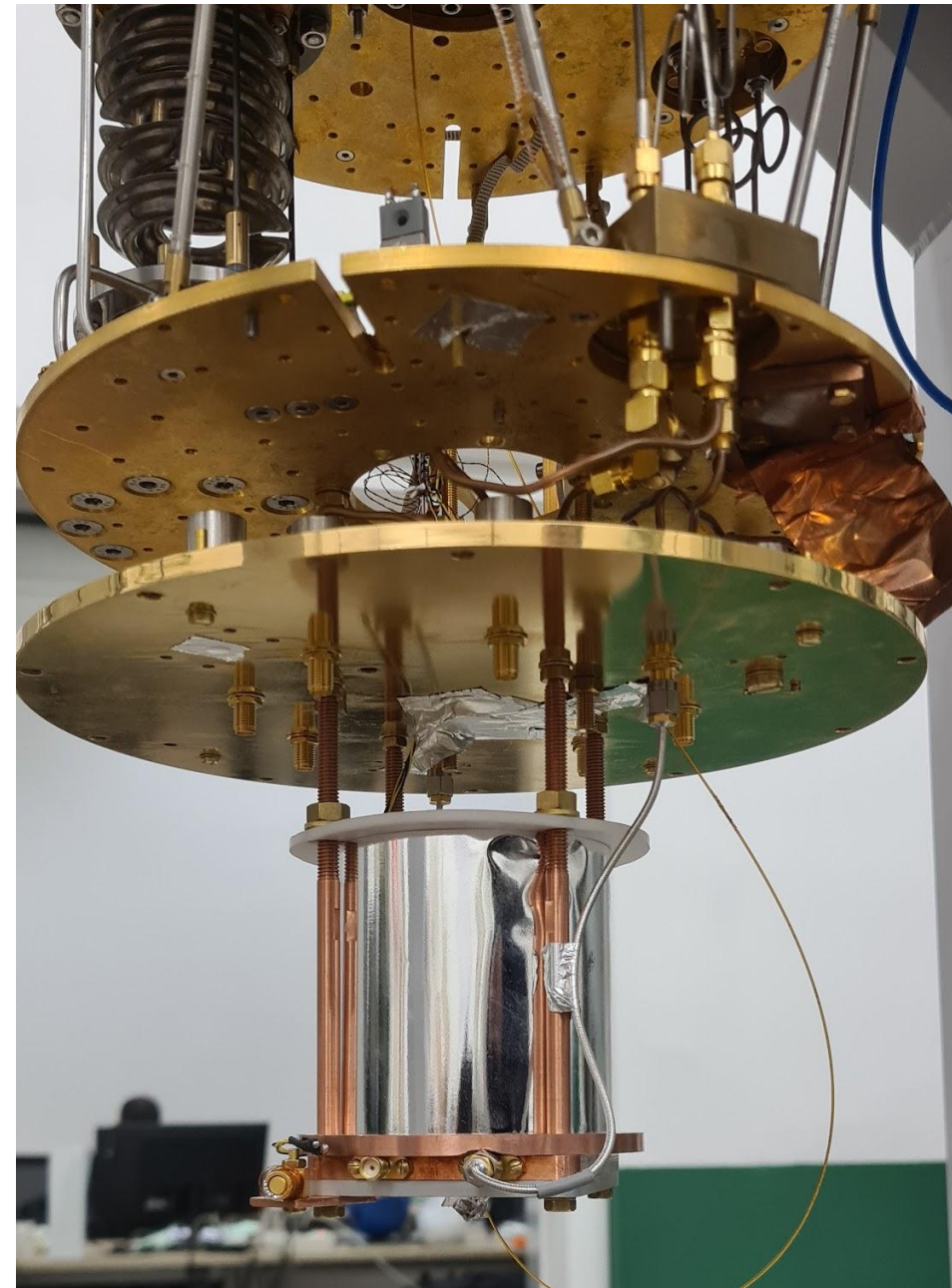
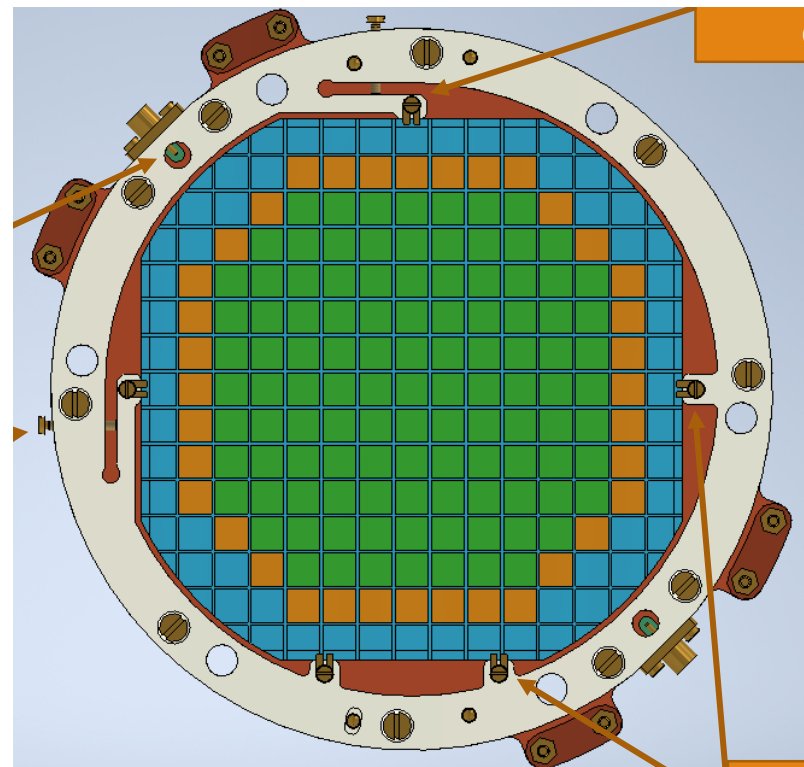
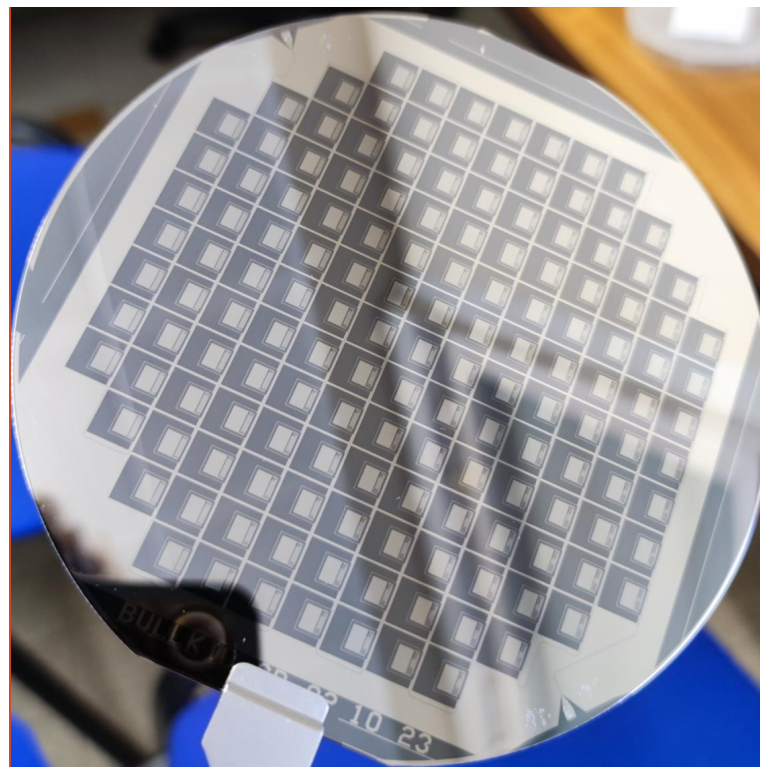
10 cm wafers on track



# Towards the final experiment

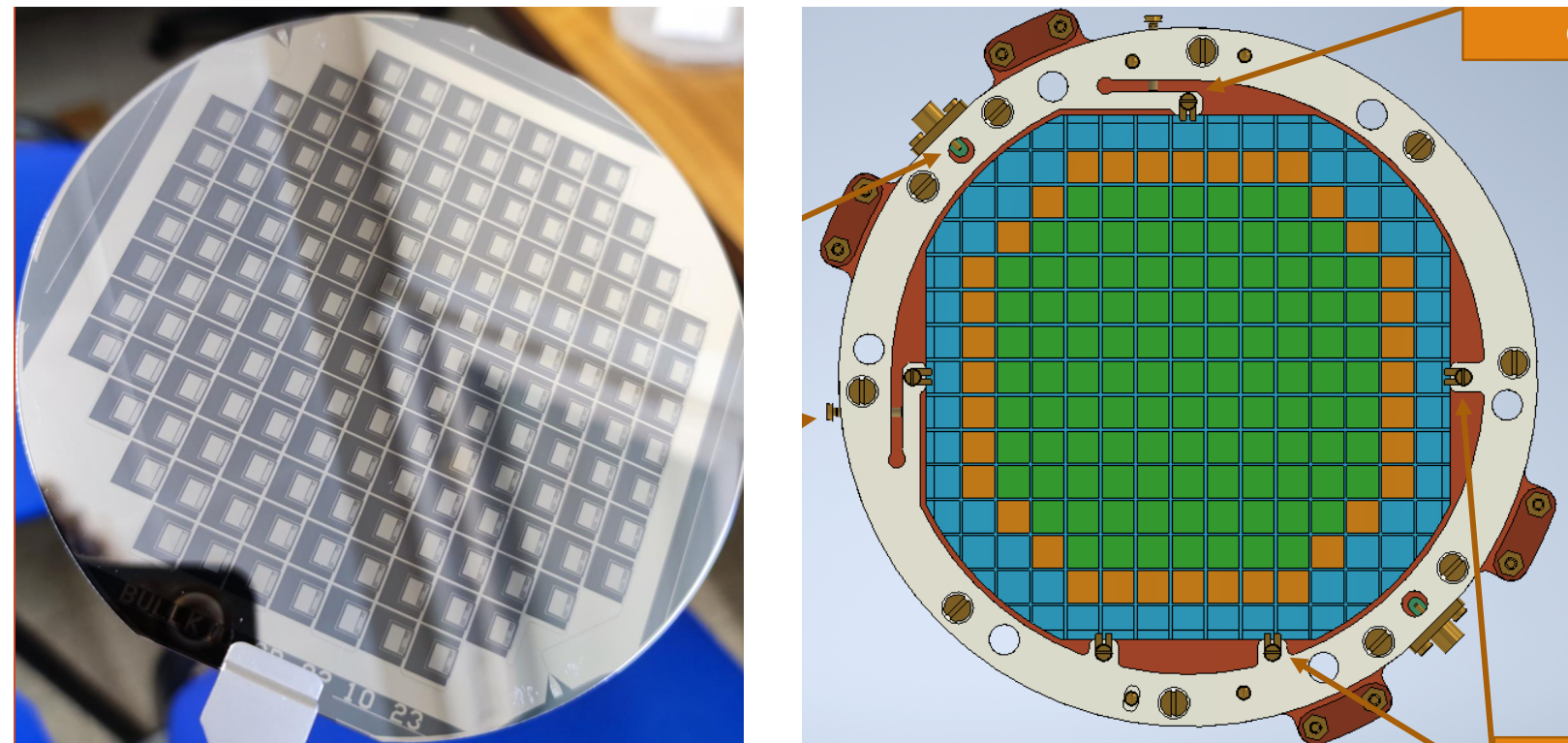
10 cm wafers on track

Veto 8x less threshold  
need R&D

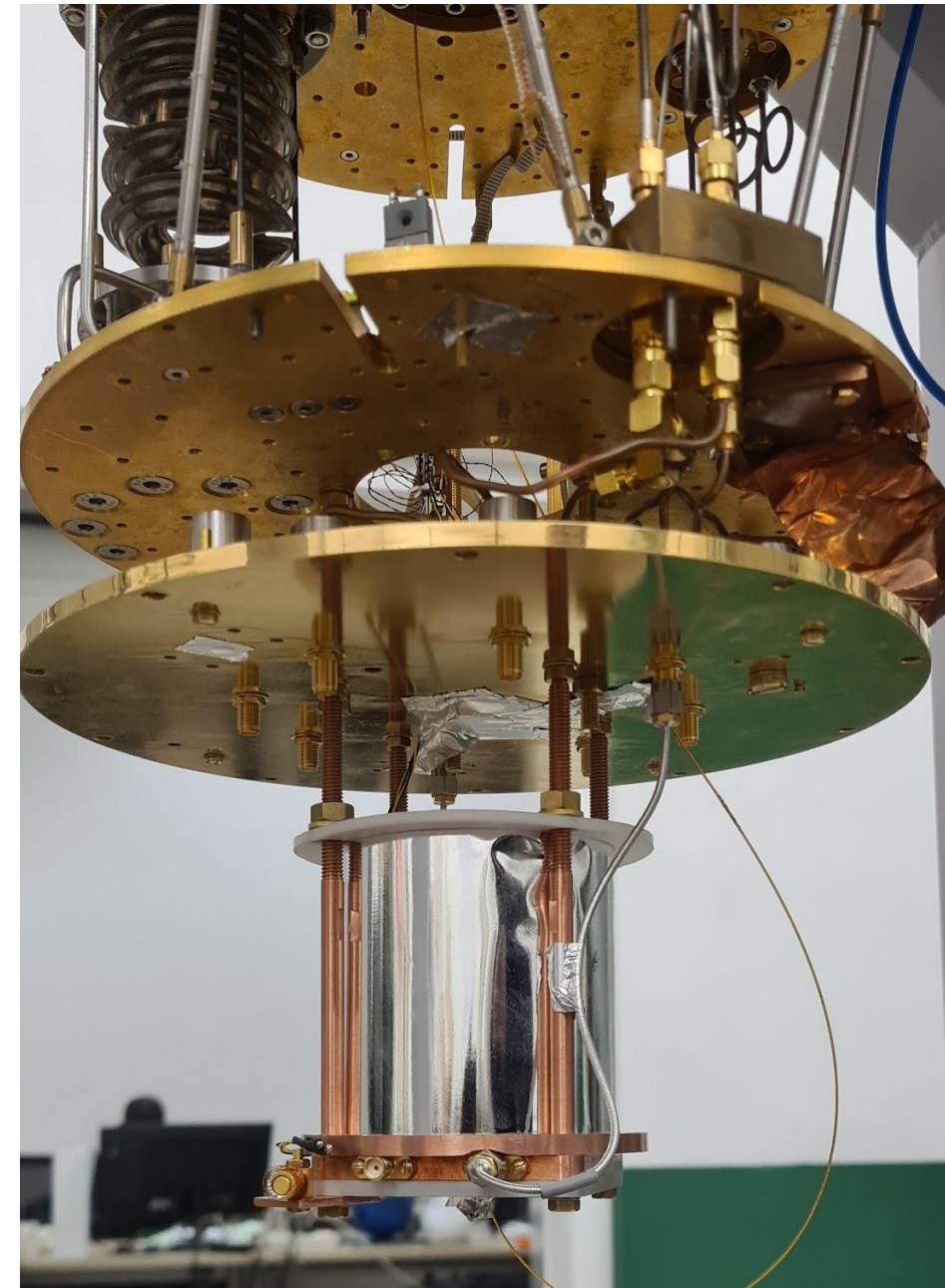


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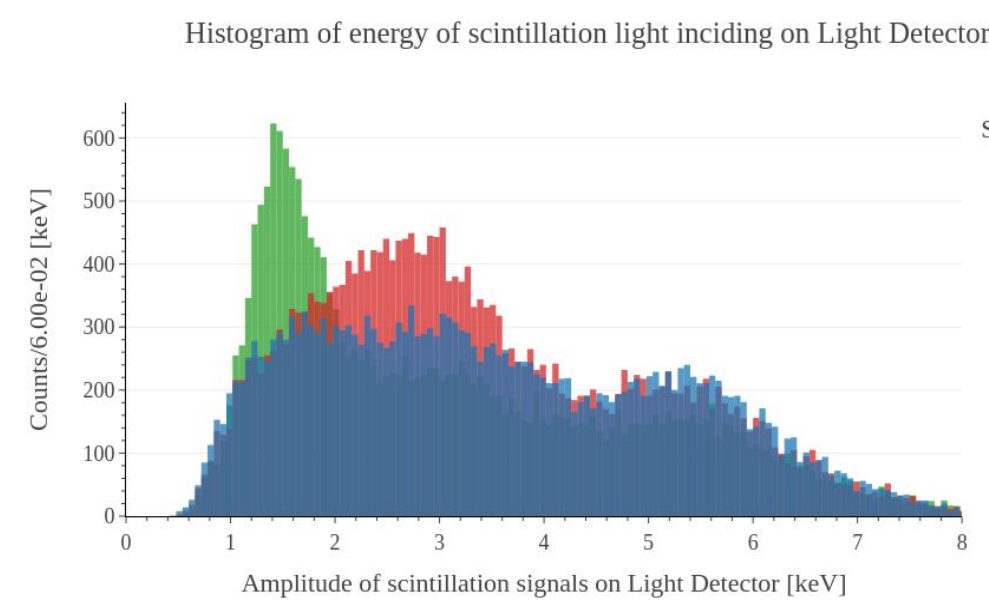
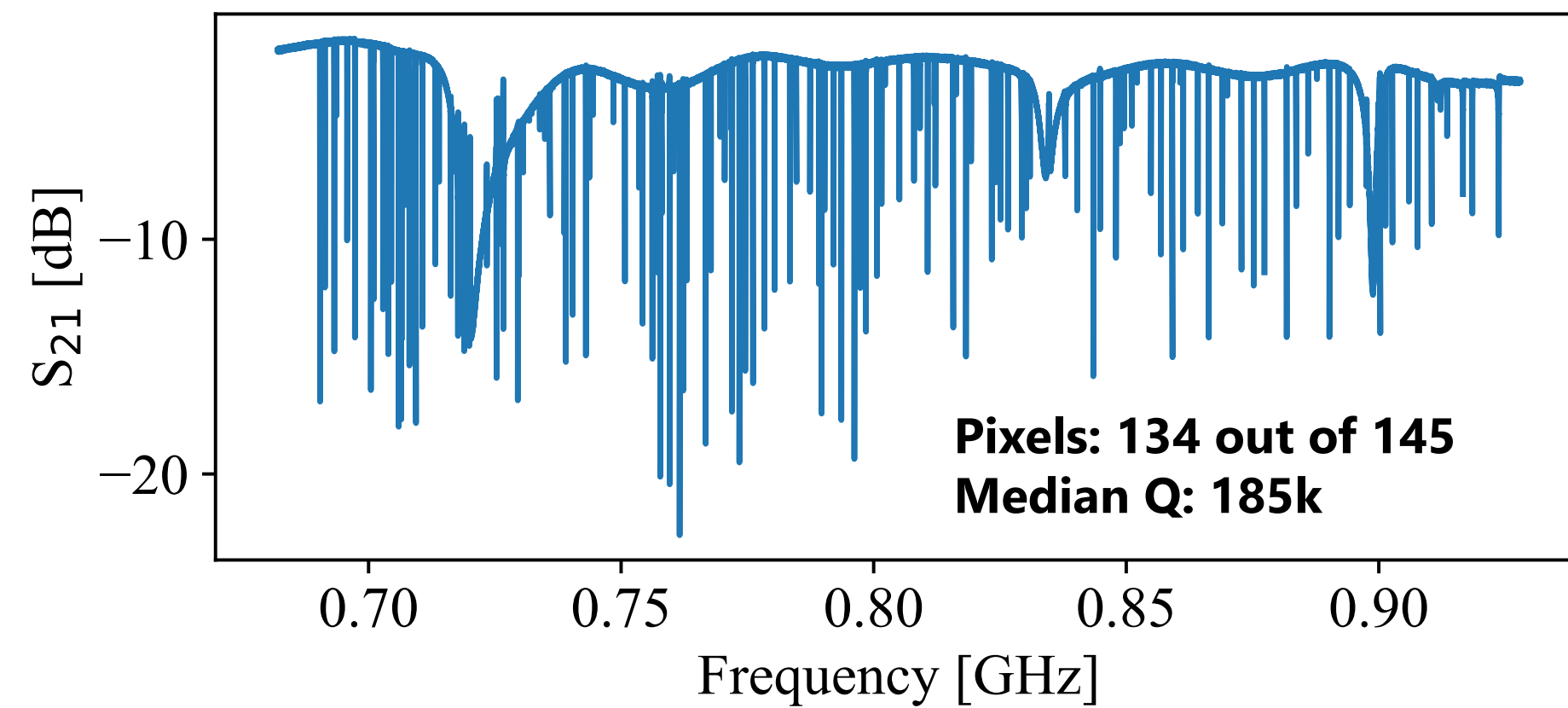
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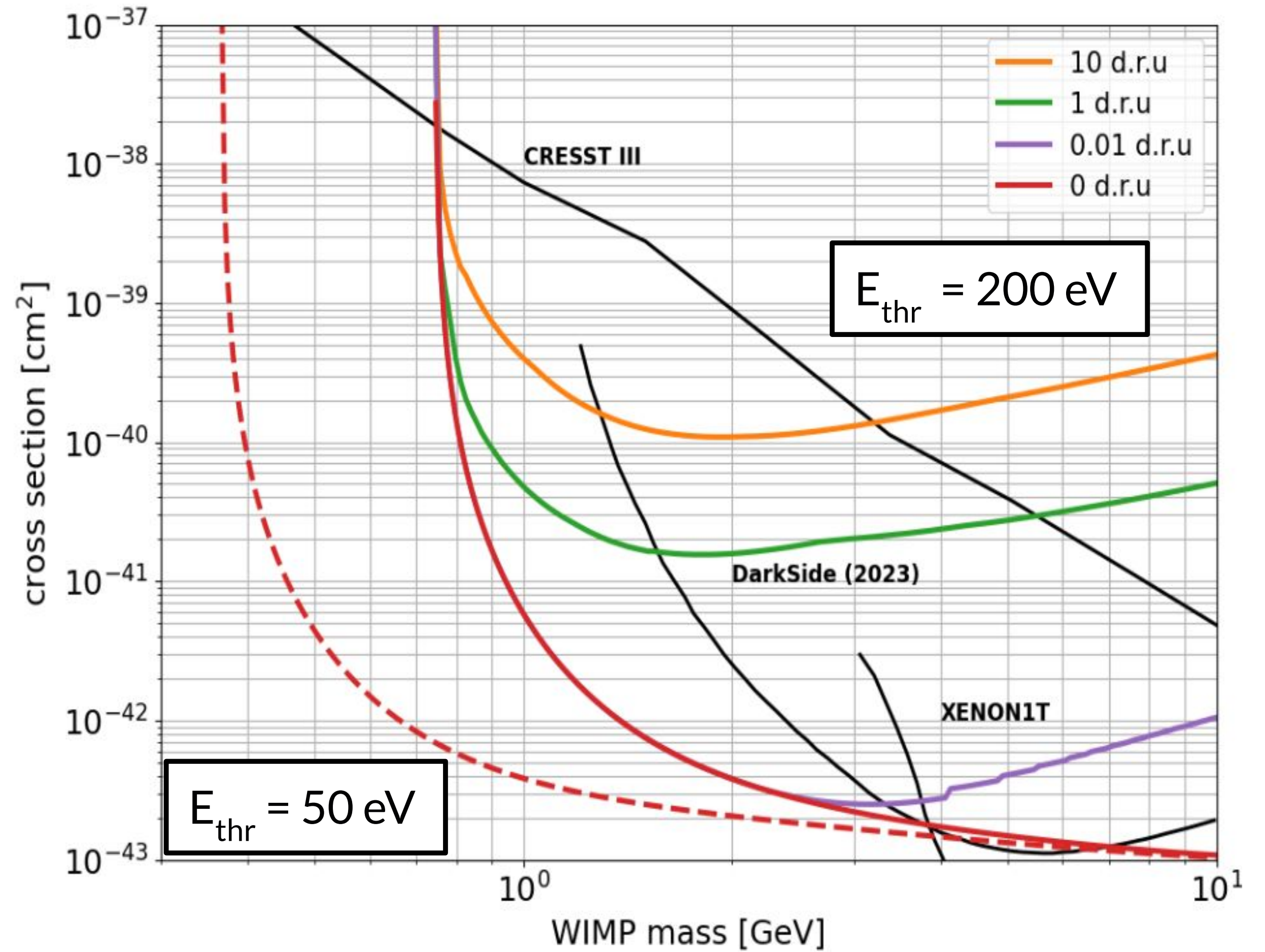
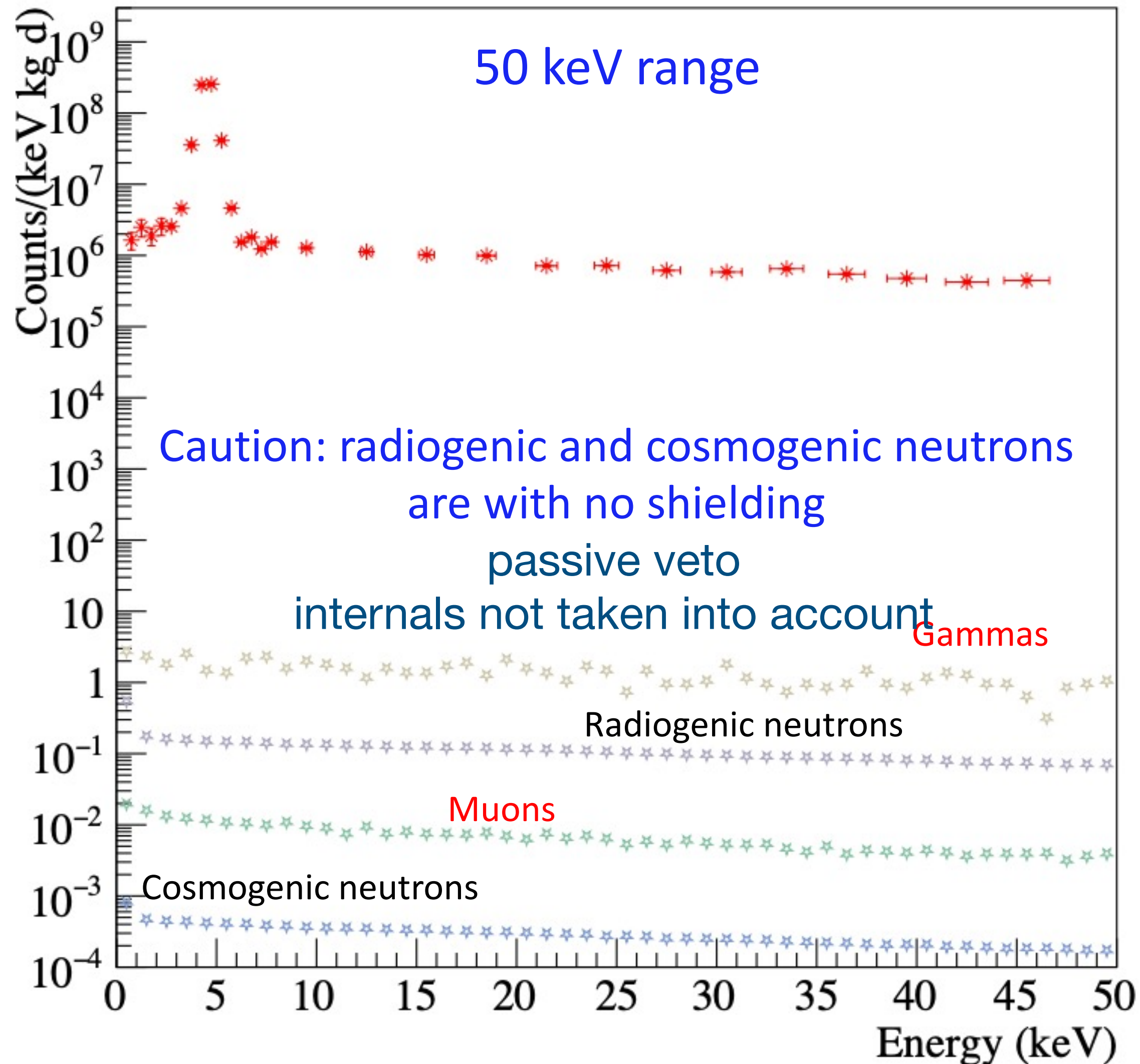


New electronics  
Tests will start tomorrow!



# Backgrounds and sensitivity at Gran Sasso

Target: 1-10<sup>-2</sup> DRU depending on threshold



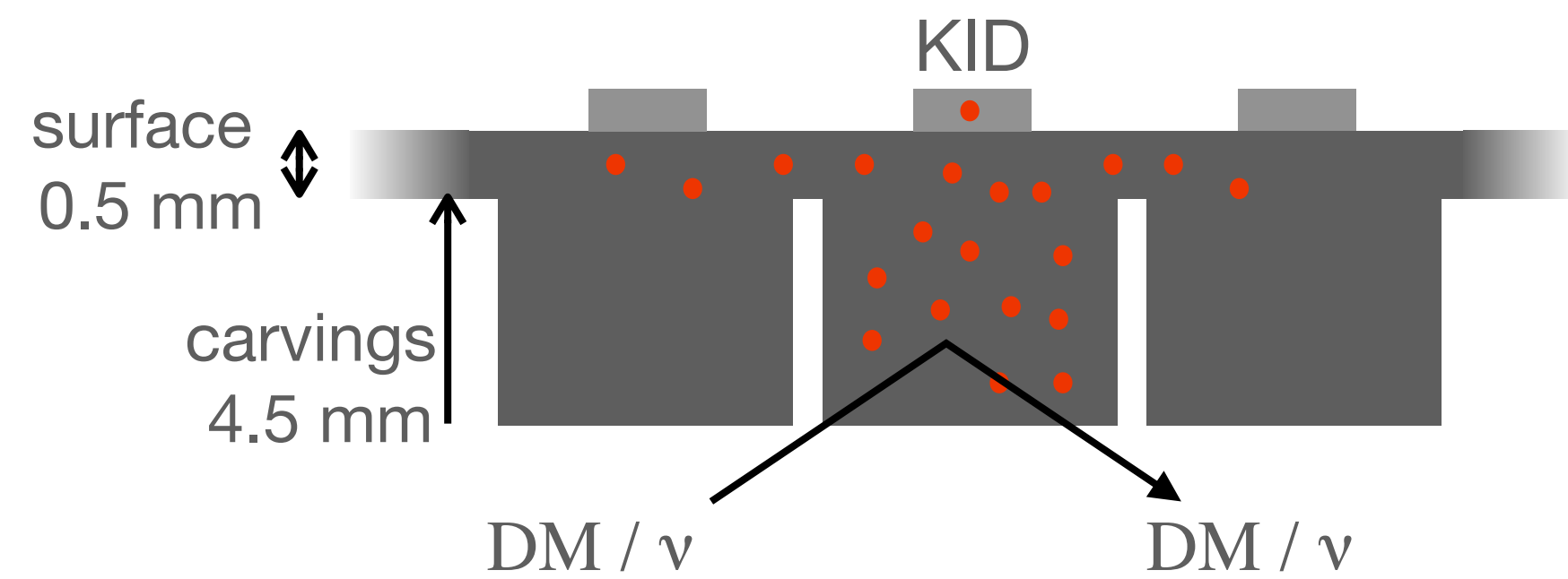
# R&D on BULL-KID?

Baseline is secured but the lower the threshold the better

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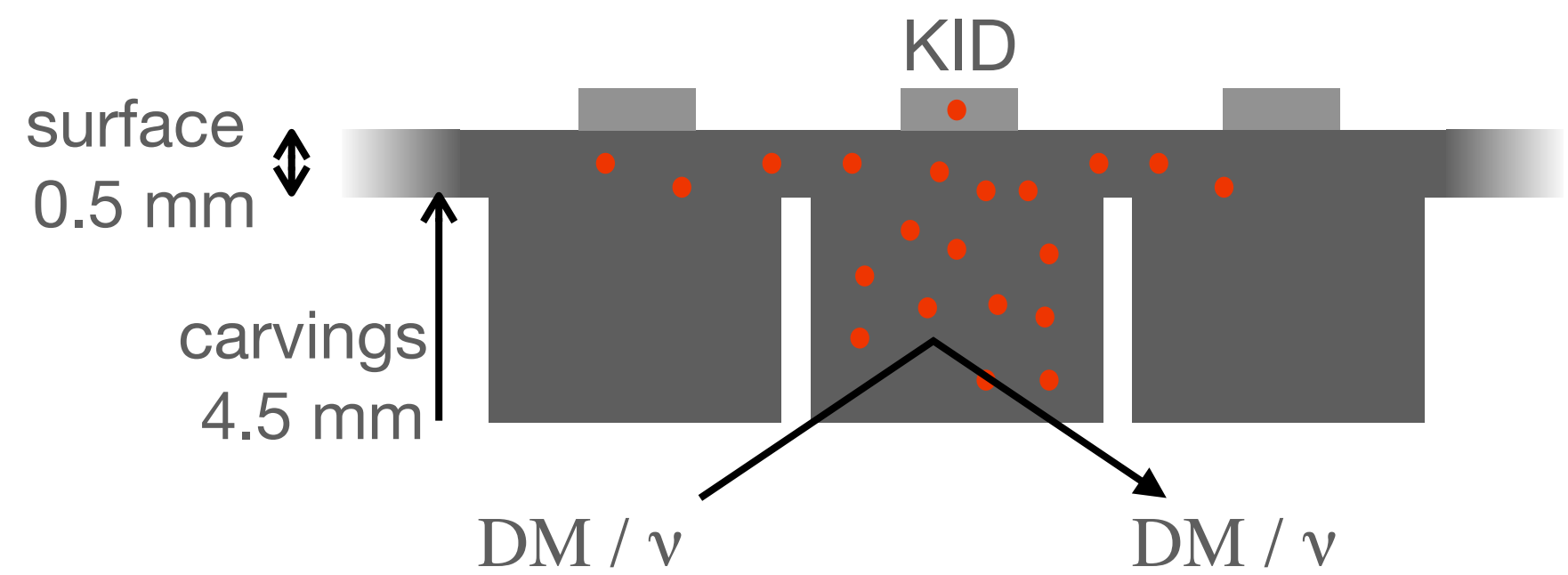
Deeper carvings:  
front blades?  
0.25 mm with etching?



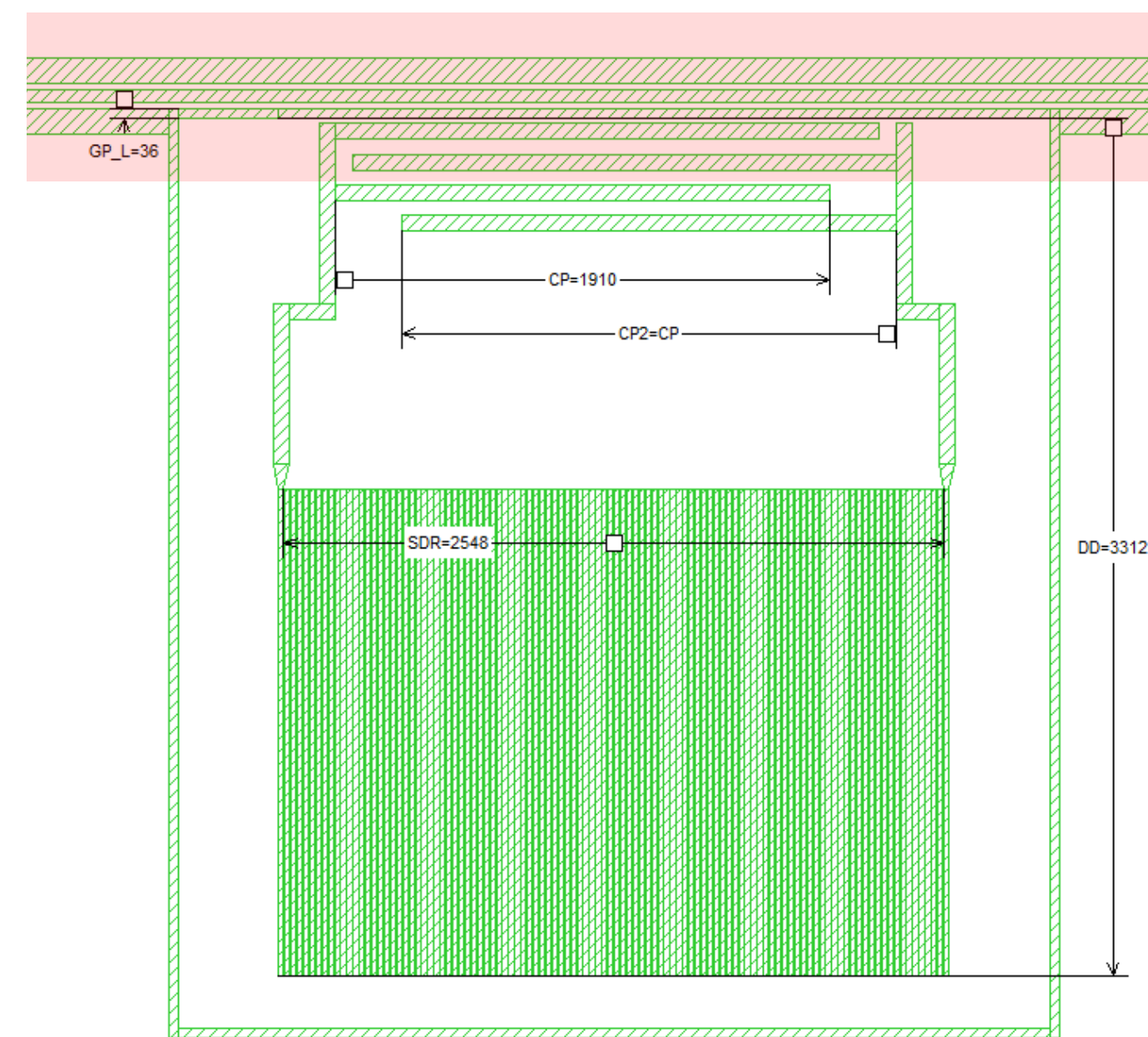
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New KID designs?  
Moving to AlTiAl?

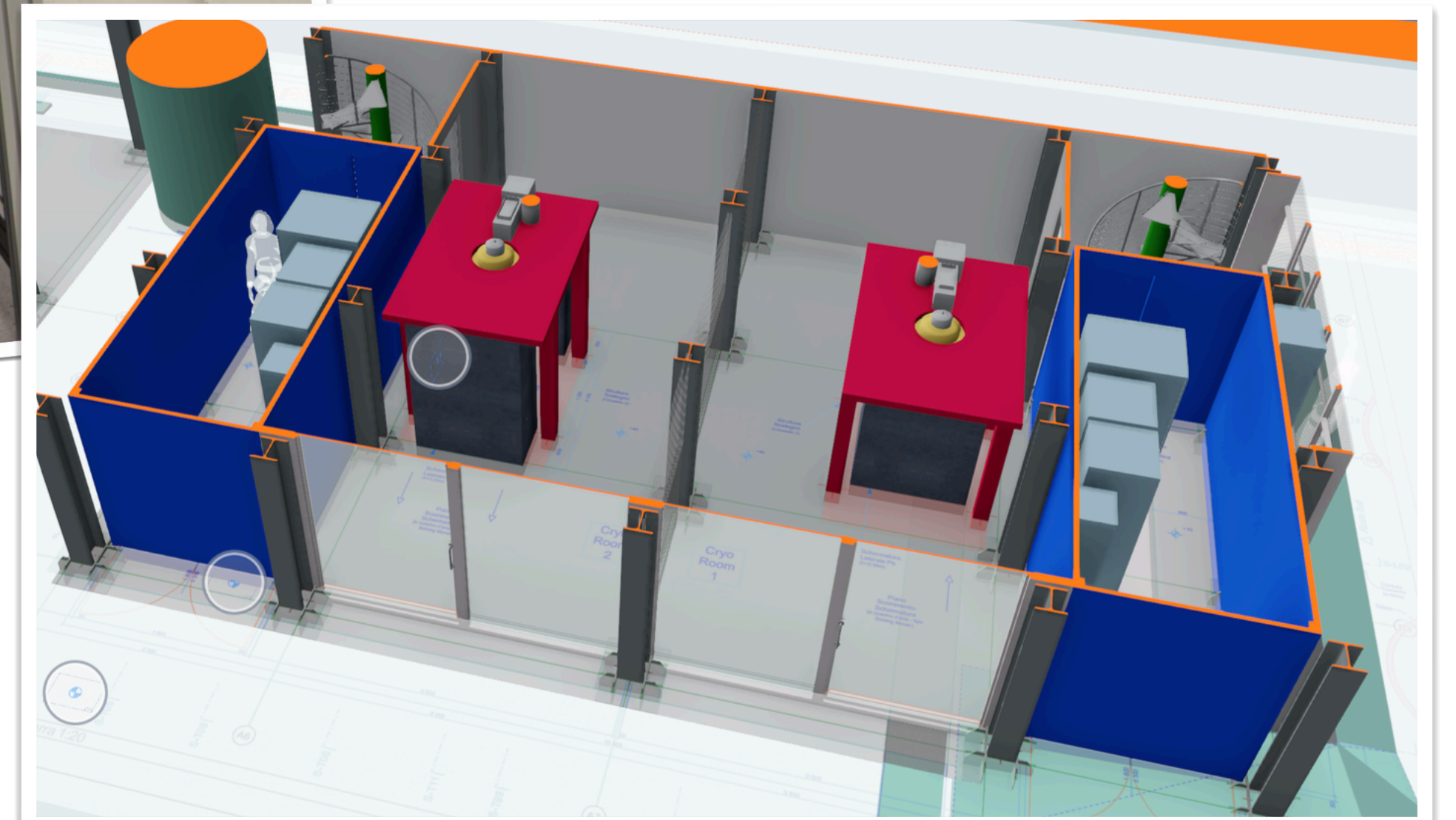




# Several cryostats...



...and more to come!



# Collaboration

Work packages

#	WP	2024		2025		2026	
		I	II	I	II	I	II
1	Collaboration	Meeting	CDR/Meeting				
2	Stack	Prototype assembly	4" test	Final assembly	Stack start building		
3	Demonstrator	Lead RM1			Tech, 10" DRU? LNGS		
4	Simulations	10" DRU	Under-ground			Validated	
5	Materials	Surface Sci. Impact			Full readout of demonstr.		
6	Ele/DAQ	1 wafer			Delivery/Shielding		
7	RM1 Cryo	Tender		Delivery?	Shielding	Tests	
8	LNGS Cryo			Project	Delivery		
9	Cryo veto	PoC			PoC		
10	Calibration						
11	KID R&D						
12	Computing						
13	Germanium						



- Questions:
  - Which objectives for the demonstrator?
  - Which background for the experiment?
- Schedule/strategy is becoming important:
  - By-monthly online update from all WGs
  - 8 May 3-5 PM**
  - Write the CDR -> Due in June
  - Meeting in September (week 38 in Pisa/ Elba?)
  - LNGS Scientific committee in October

