

Update on the fabrication of arrays for the demonstrator

12/11/2025 – BULLKID-DM Meeting – Online

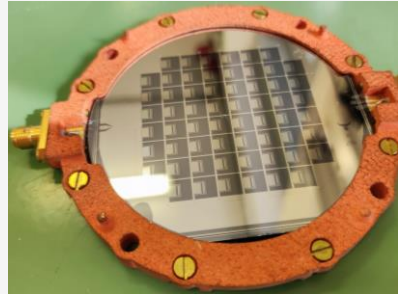
Daniele Delicato



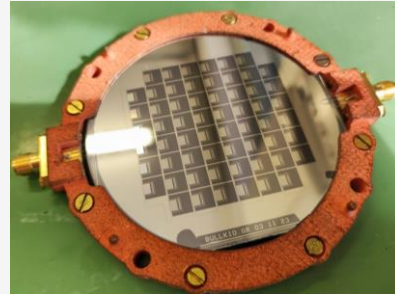
SAPIENZA
UNIVERSITÀ DI ROMA



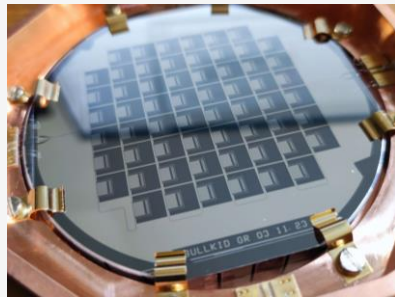
Current status of the 3-wafer demonstrator



STACK-01



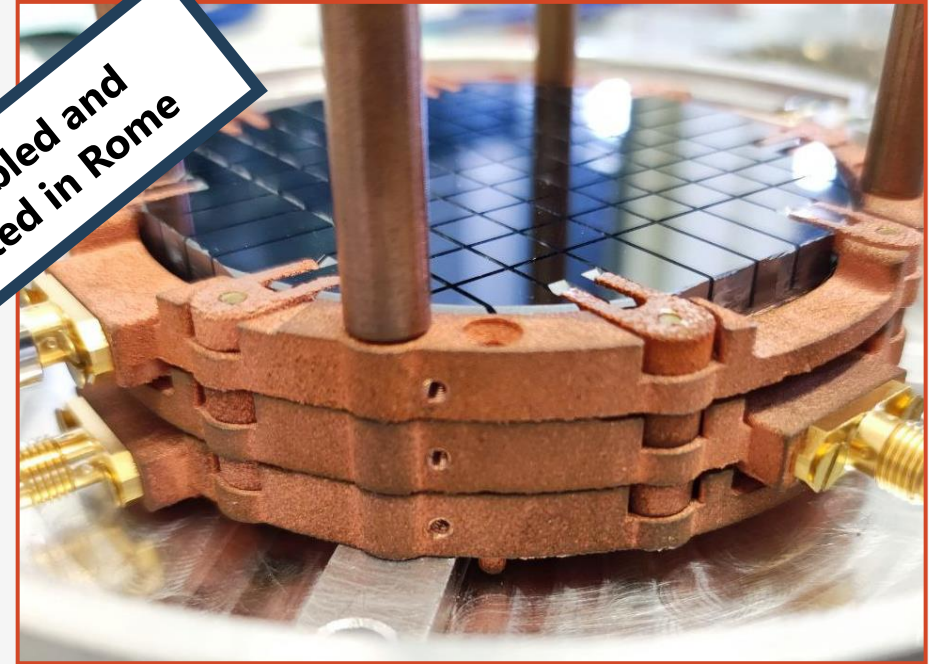
STACK-02



STACK-04

- STACK-01 has poor baseline resolution
- STACK-02 has low Q_i
- Both have poor KID count ($< 75\%$)

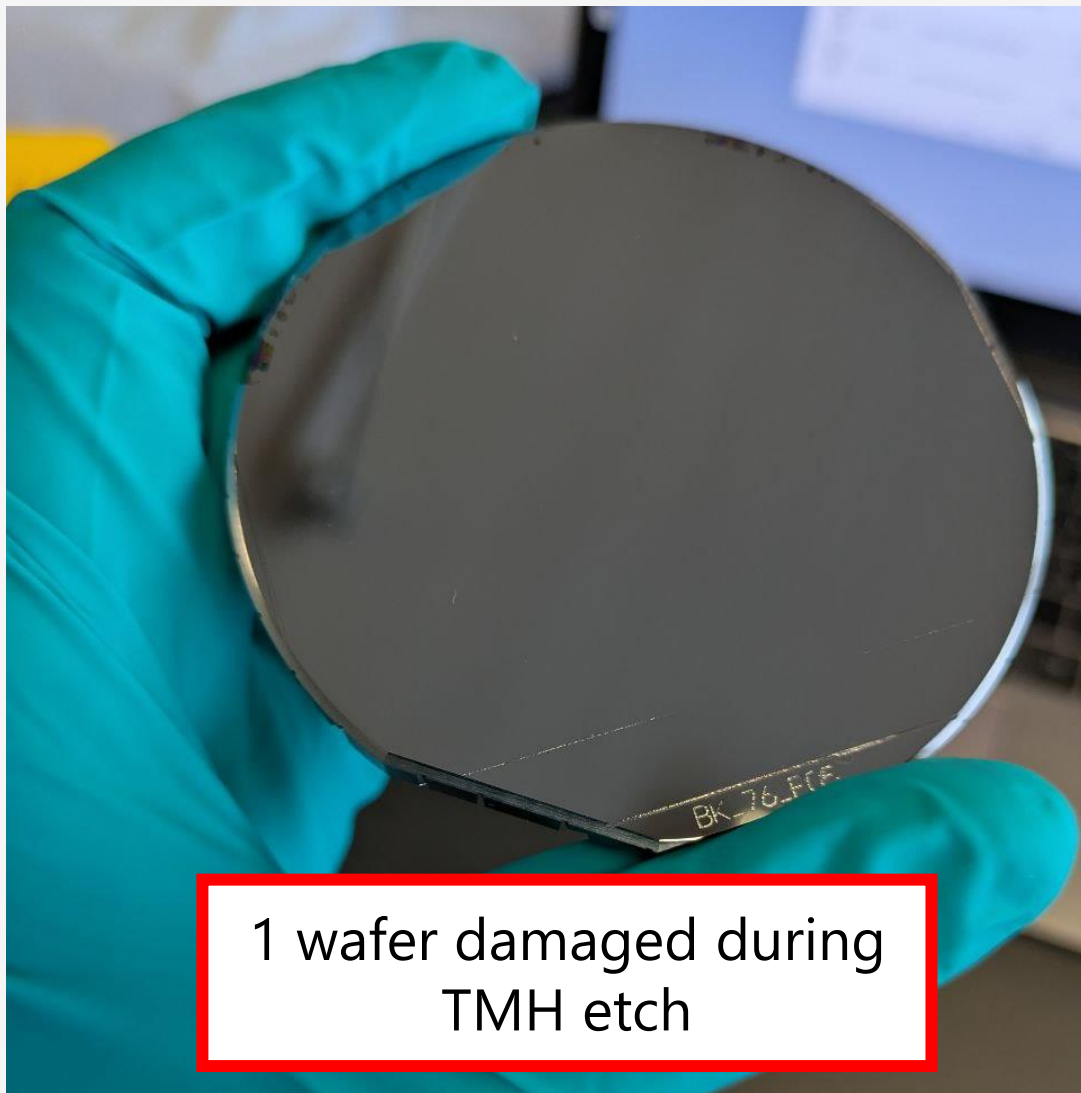
Assembled and
operated in Rome



- STACK-04 has satisfactory resolution and 57 / 60 KIDs:

Used for **background with mild shield** acquisition

4 Wafers diced in Ferrara collected in May



Fabrication plan: dual band mask v8

- Separate **“LOW”** and **“HIGH”** bands to eliminate coupling among KIDs **on different wafers**
- **Scattering** of the resonance order to eliminate coupling among KIDs **on the same wafer**
- **Increased Q_c** from $\sim 150k$ **to $\sim 250k$** to **reduce readout power** required per KID

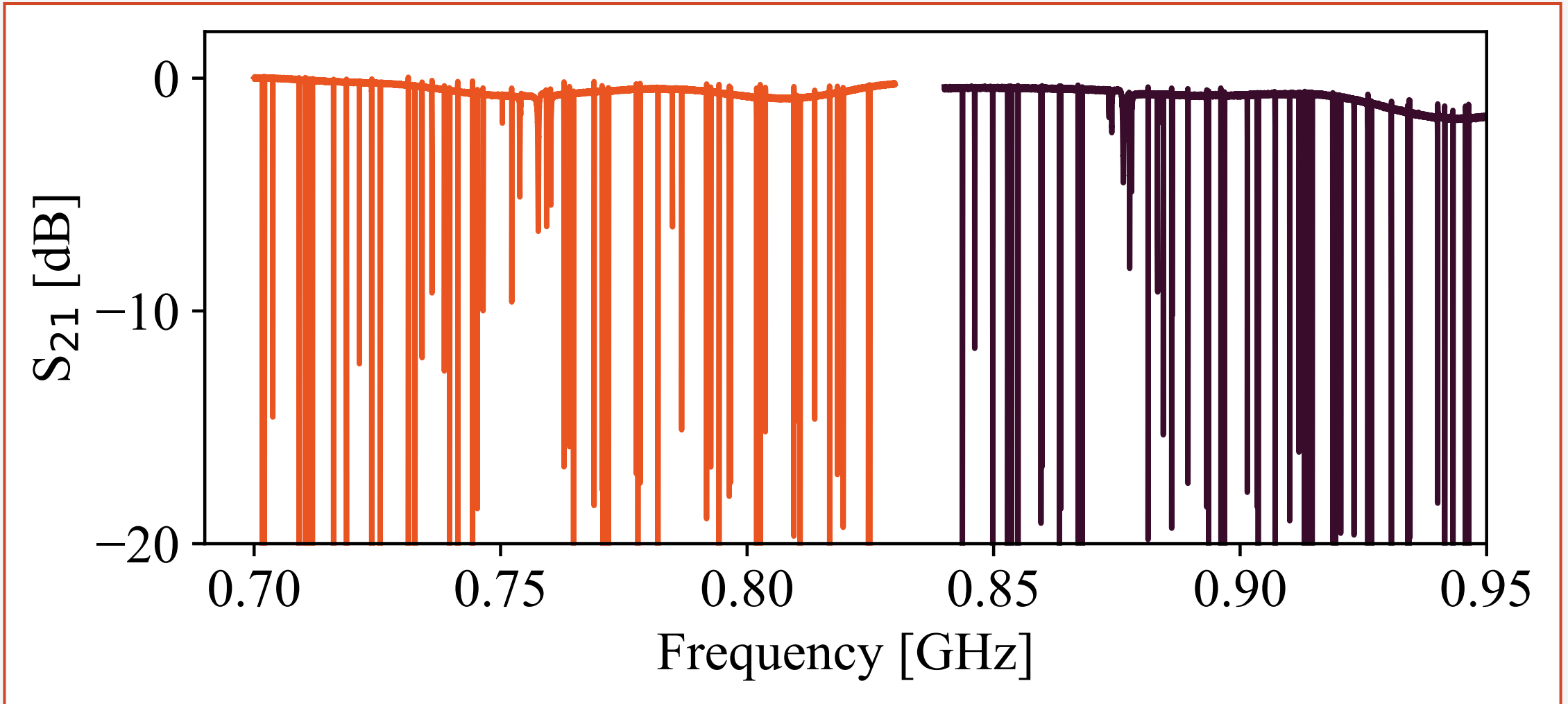
		1	2	3	4	5	
13	12	11	10	8	7	9	6
14	15		16	17	18		19
27	26	25	24	23	22	21	20
29	28	30	31	32	33	34	35
43	42	41	40	39	38	36	37
44	45	46	47	48	49	50	51
	57	56	55	54	53	52	



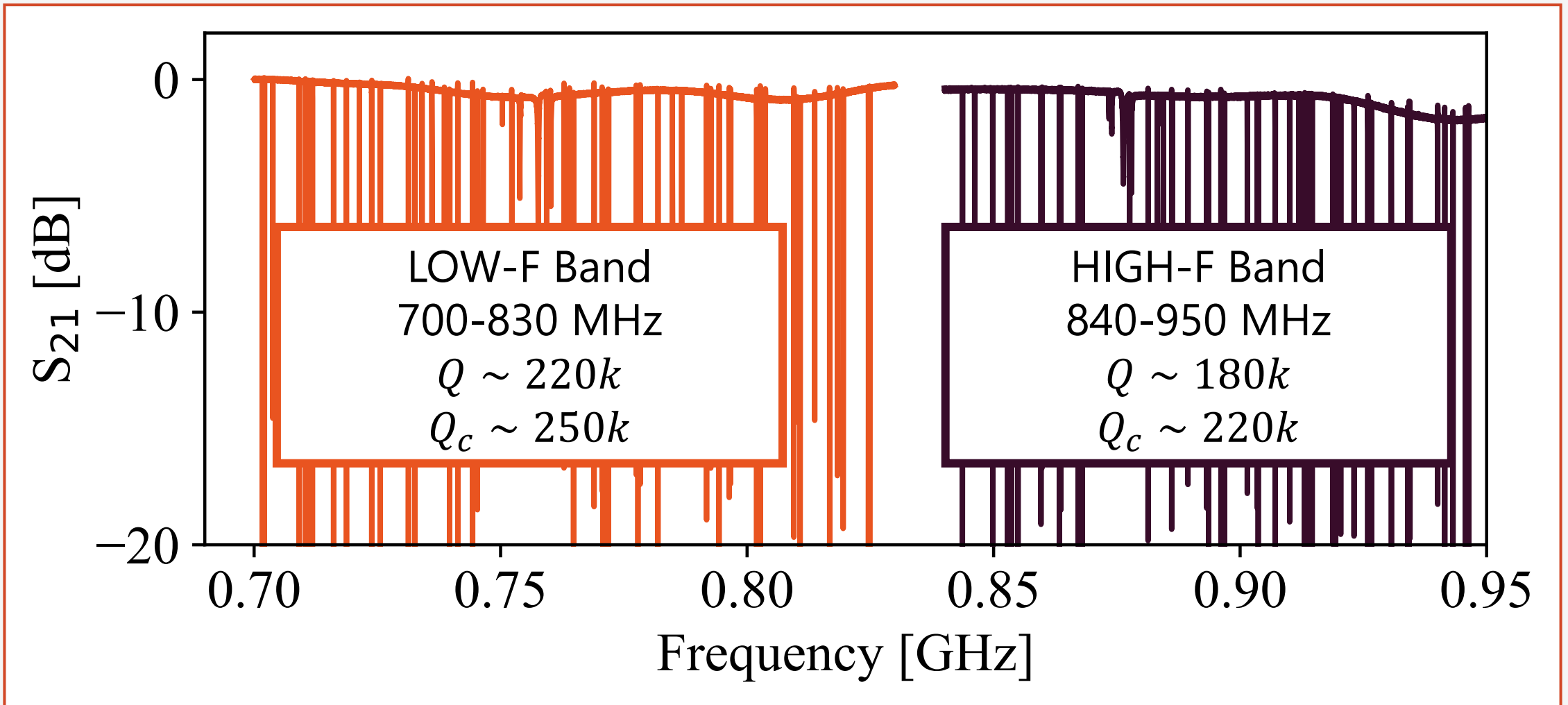
----- KID LAYOUT -----

X	4	8	12	1	5	9	X
15	19	23	27	16	20	24	28
31	35	39	43	32	36	40	44
47	50	54	58	48	51	55	59
2	6	10	13	3	7	11	14
17	21	25	29	18	22	26	30
33	37	41	45	34	38	42	46
X	52	56	60	49	53	57	

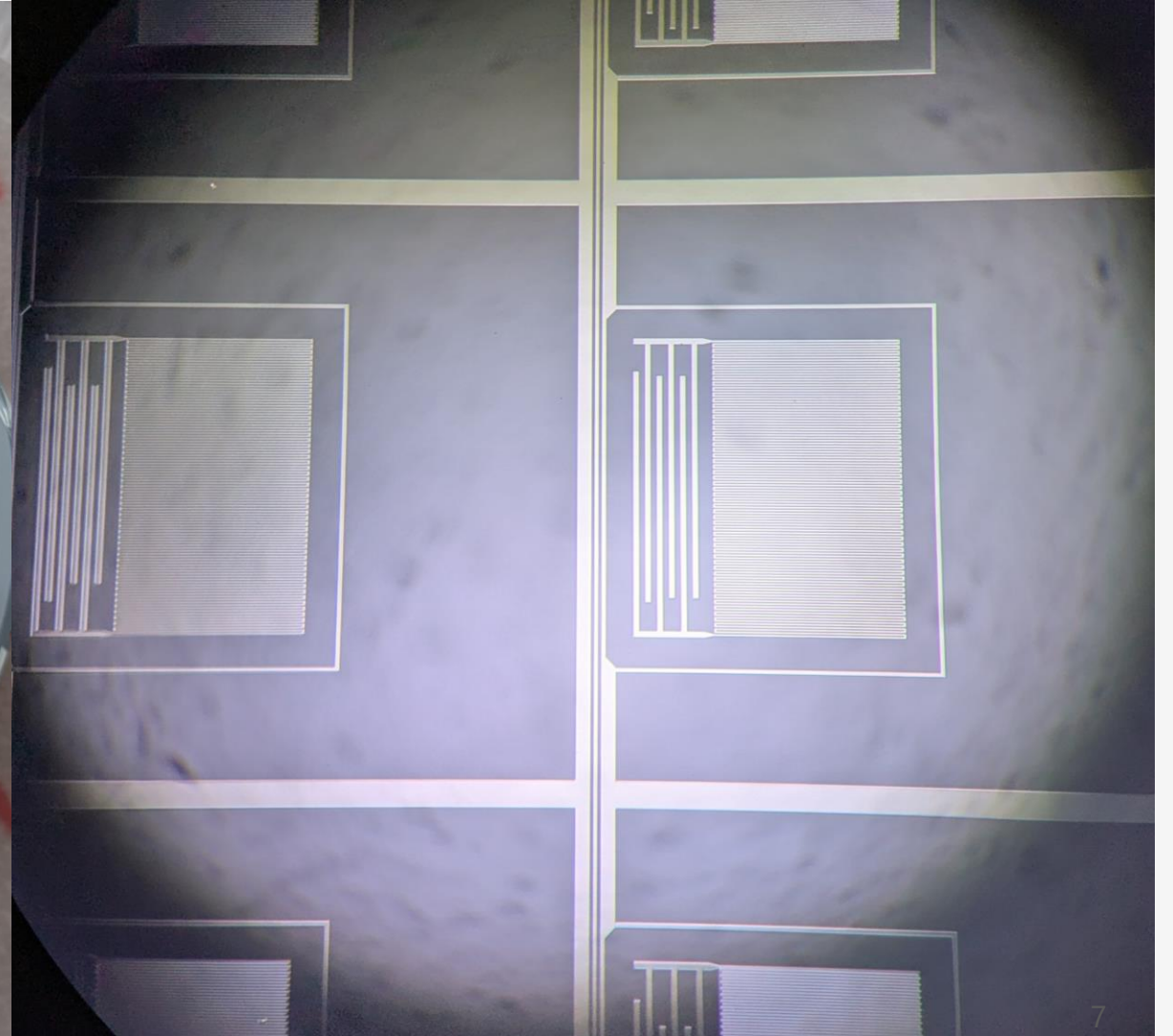
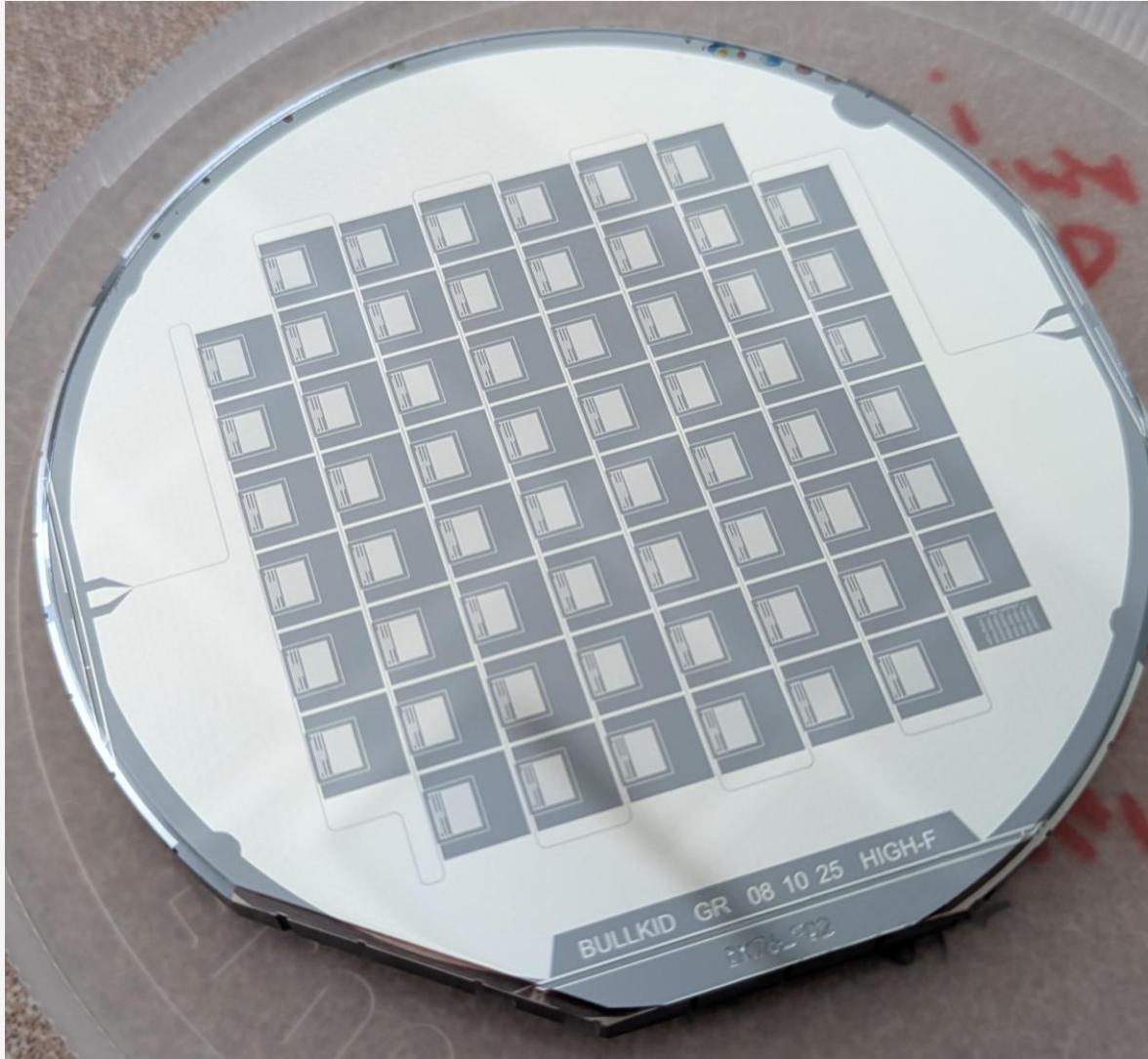
Test on thin wafers



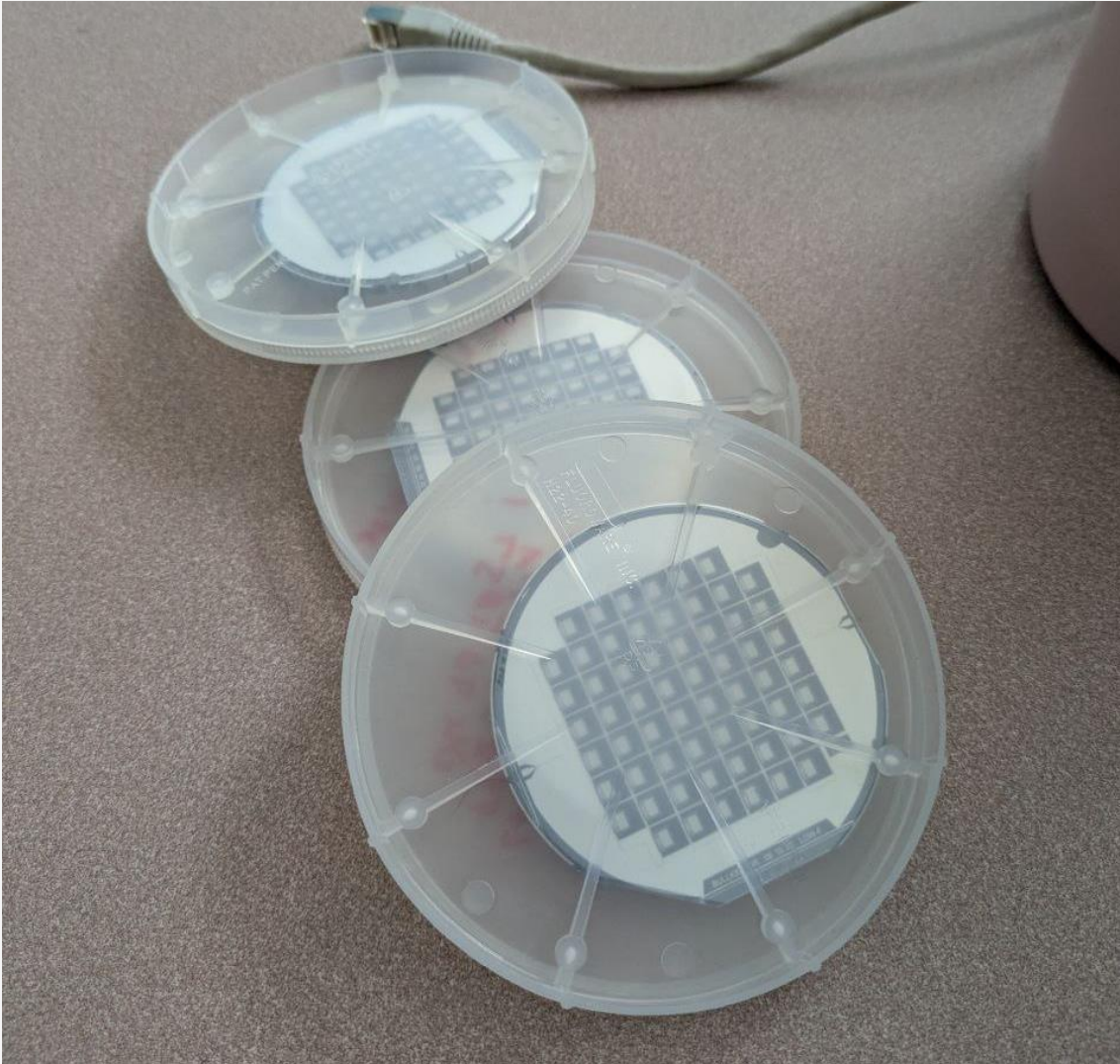
Test on thin wafers



Fabrication on 3 diced wafers, very clean surface



Conclusion



1. Test and **calibration** of the new arrays
(1x HIGH-F and 2x LOW-F)
2. **Replace** the low performance elements of the demonstrator
(STACK-01 and STACK-02)
3. Preparation for **commissioning** of demonstrator at **Gran Sasso**