



QUAD development/ Testbox



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Nikhef/Bonn LepCol meeting
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Simplified overview production

QUAD	started	Mech. assy	Wire bonded	DAQ/HV test	Ready	Remarks
10	X	X	X	-		DEMO, not electrically working
11	X	X	X	X	X	~30 um alignment error
12	X	X	X	X		~30 um alignment error
13	X	X	X	X		
14	X	X	X	X/-		2 chips not operational (flex damage)
15	X	X	X	X		
16	X	X	X	X		
17	X	X	X	X		
18	X	X	X	-		Presently not working, Bas is looking at it
19	X	X	X	X		
20	X	X	X	X		
21	X	X	X	X		
22	X	X	/			
23	X	X	/			
24	X	X	/			

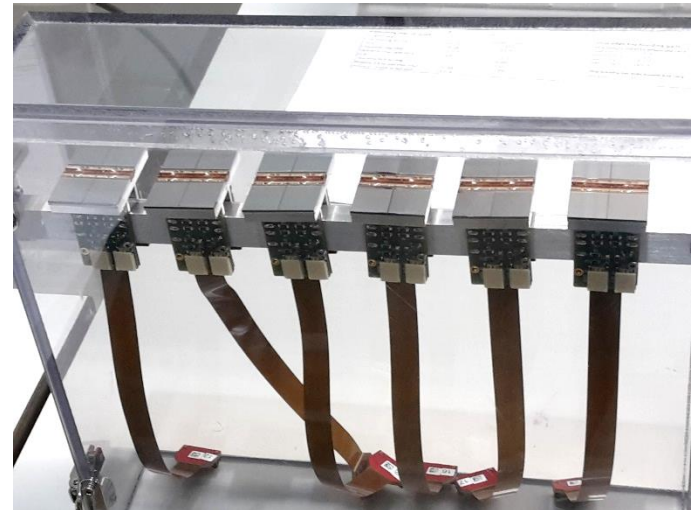
Production status

- QUAD18 cannot be read out
 - Solvable?
 - Not cause yet found

- Guard electrodes this week?

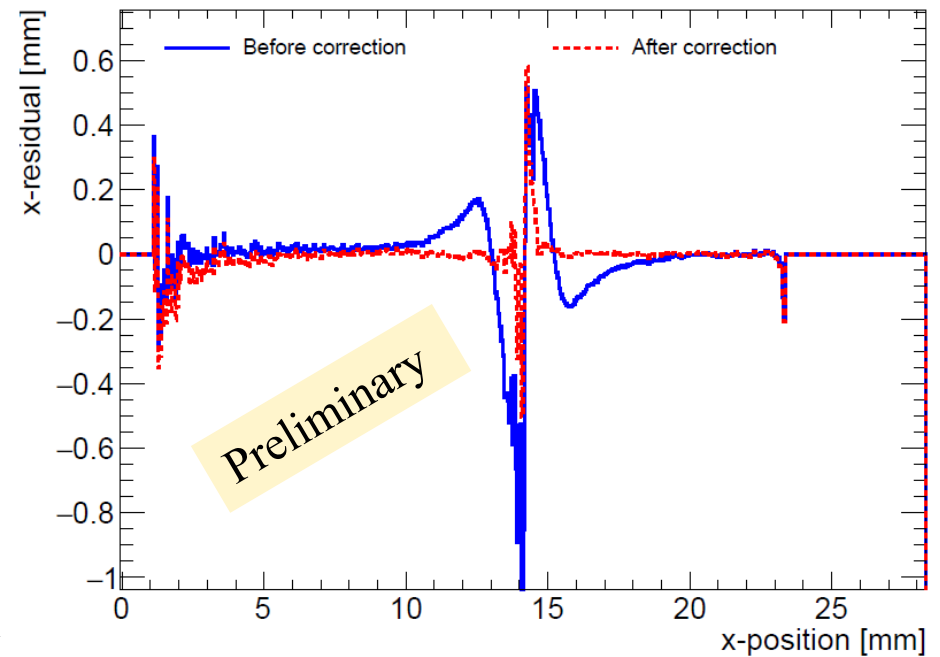
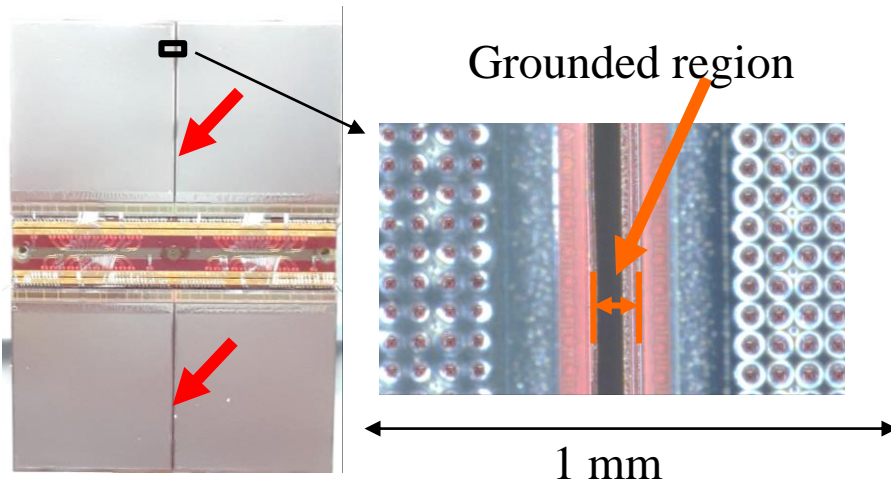
- All QUADs have chips now
 - 3 need wirebonding

- Possibly 12 QUADs may become operational
 - 8 Nikhef / 4 Bonn?



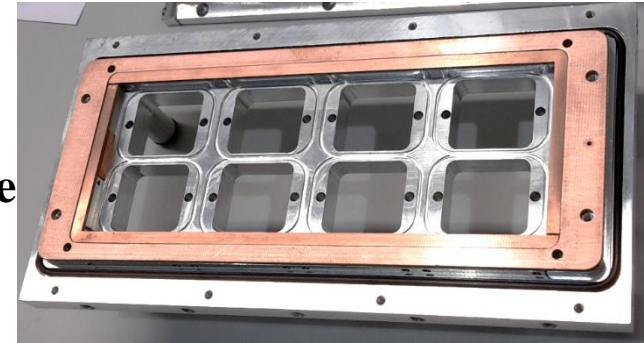
QUAD edge deformations

- Small deformations due to
 - Dead zone between chips
 - Grounded region between chips
- May be corrected by fitted correction function or adding proper guard electrode

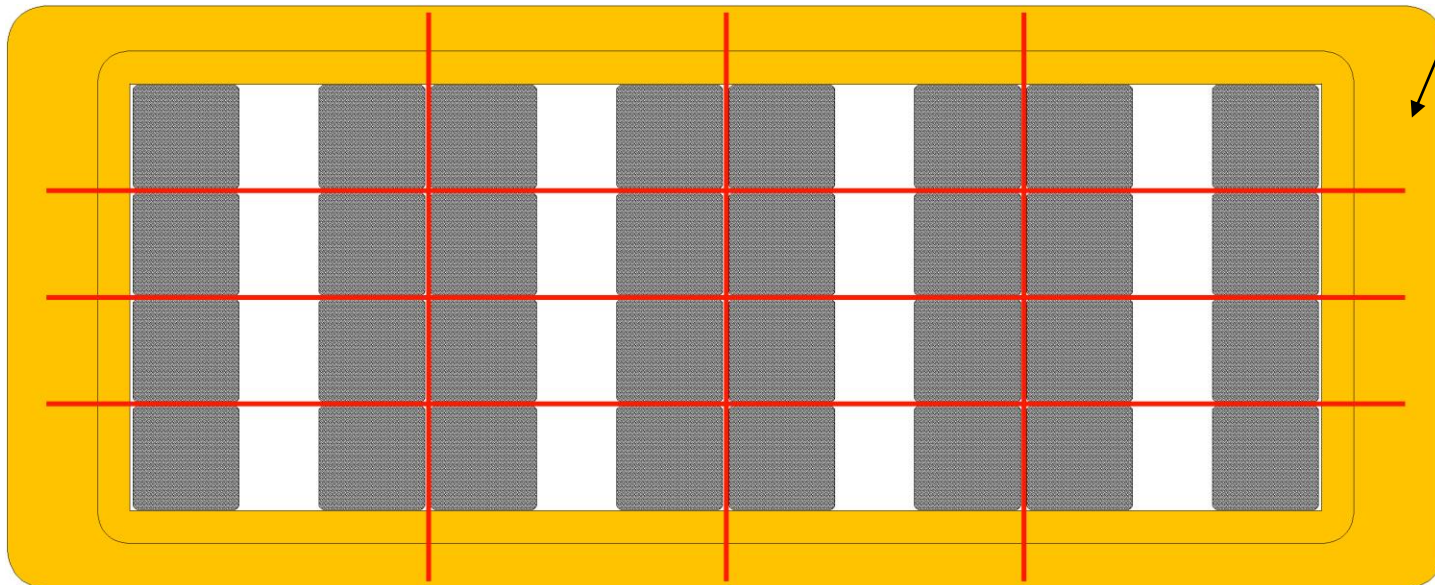


Guard idea

- Guard strip between side edges of two TPX3 chips should be 0.5 mm wide and 1 mm high
 - Probably too fragile to manufacture
 - => wire solution
- **Alternative: metal wires, attached to field cage frame**
 - Wires 1.1 mm above the grids
 - On potential of QUAD guard electrode
 - Other potentials may be also tried out (5th HV power supply)



Field cage frame

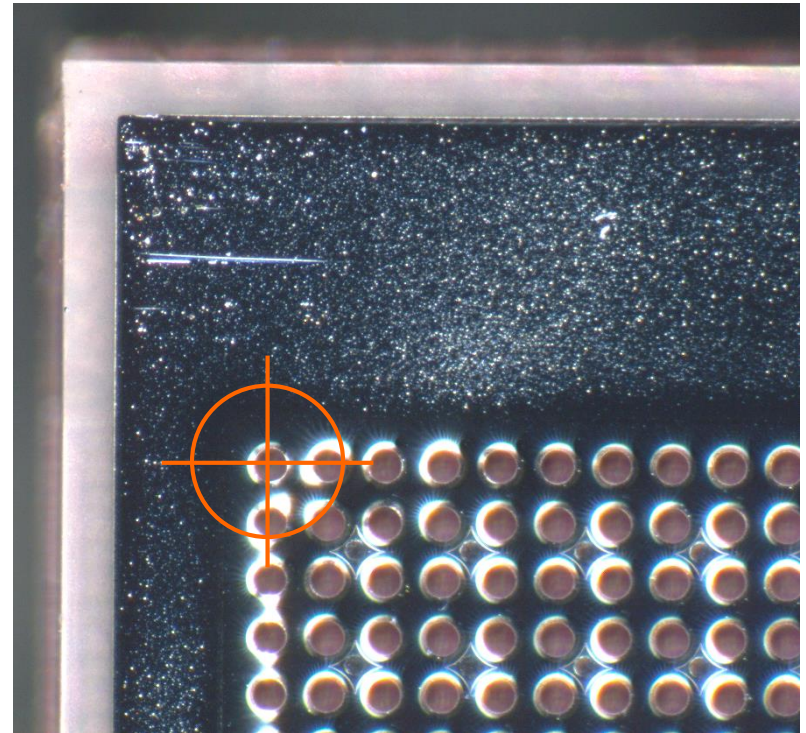


Chip position dataset

- For the completely assembled testbox we need a map with the X/Y/Z/ ϕ coordinates of all 32 chips
 - Characterize each chip by measuring 3 holes on the grid



No absolute measurements,
everything in relative units



Measuring chip position

- Use the alignment microscope with LabVIEW controlled XY stage
 - Stage range 100 x 100 mm => we have to do it in two steps with a number of points in overlap
- Use LabVIEW program to move to all measuring points
 - XY by manual fine adjustment, automatic coordinate recording
 - Z by autofocusing of microscope => **coordinate recording by hand!**
- Also measurement of guard height
- In total 96 + 16 (overlap) + 12 (guard) = 124 points to measure
- One point may take ~ 1 min

