



# QUAD development

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Nikhef/Bonn LepCol meeting  
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# Status

## ■ Mechanical QUAD completed

- Broken type F chips
- Damaged grids (pickup tests)
- Stump not positioned precisely
- Not gastight
- Chips not precisely positioned
- Wire bonded



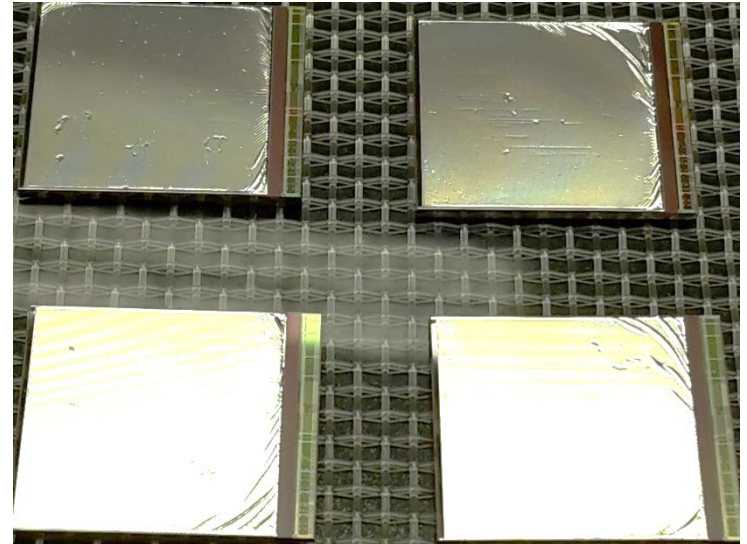
## ■ Electrical QUAD completed

- Class D chips
- Poor grids (wrinkled)
  - One grid damaged
- Stump better positioned (jig)
- Chips not precisely positioned
  - Caused by pressing them into the attachment tape, improper dimensions wirebond board
- Waiting for DAQ tests (Bas)
- Gastight (not verified)
- Some chips may operate in gas at proper grid voltage



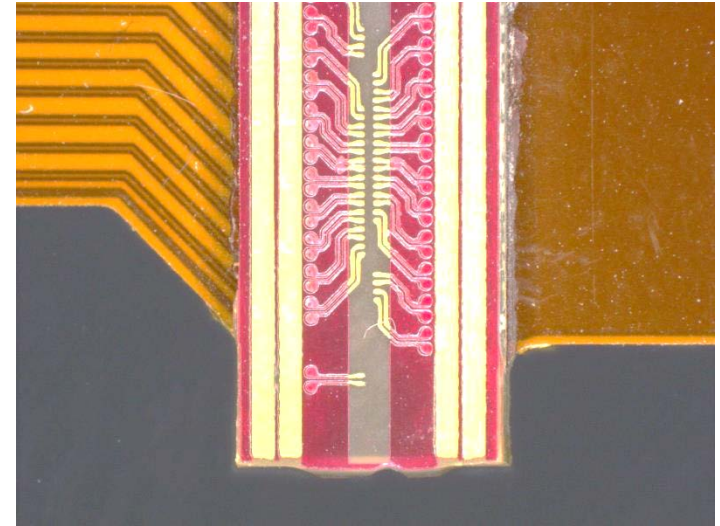
# Next electrical QUAD

- We have still two proper PCBs / flexes (third one damaged during re-machining)
  - Revised mechanics produced (coca, stump)
  - And well machined wirebond board (today?)
  - (hopefully) better aligned chips
  - Suited for performance test in gas
  - To be completed in second half September
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- Which chips to be put on?
    - Existing class D chips with wrinkled grid (still 5 available)
    - Or better grids / class A/B chips



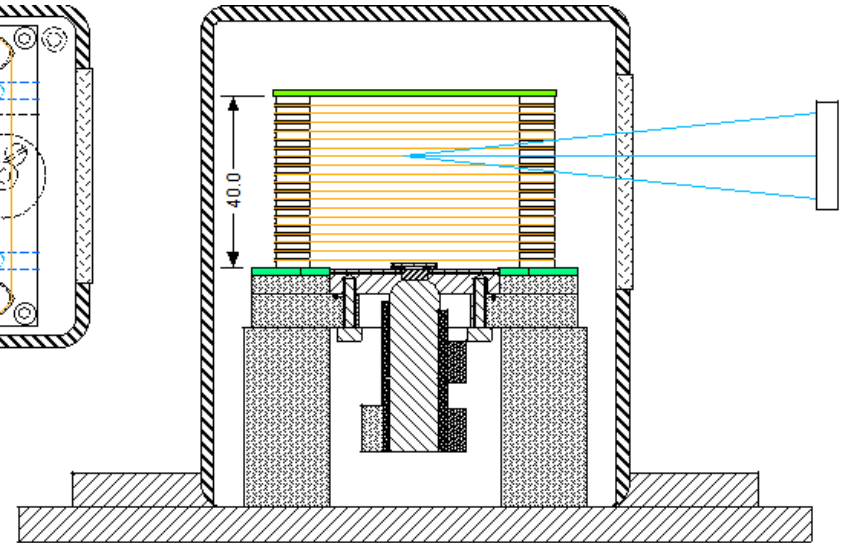
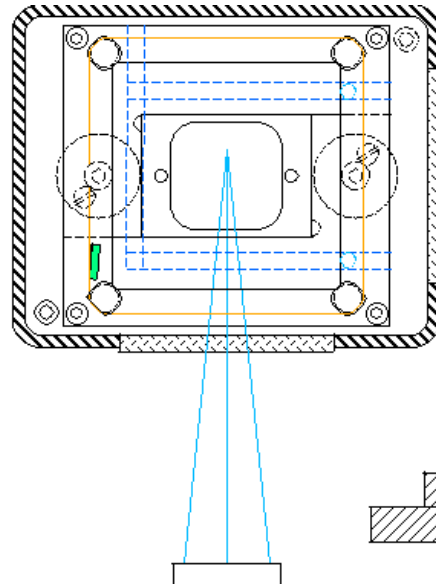
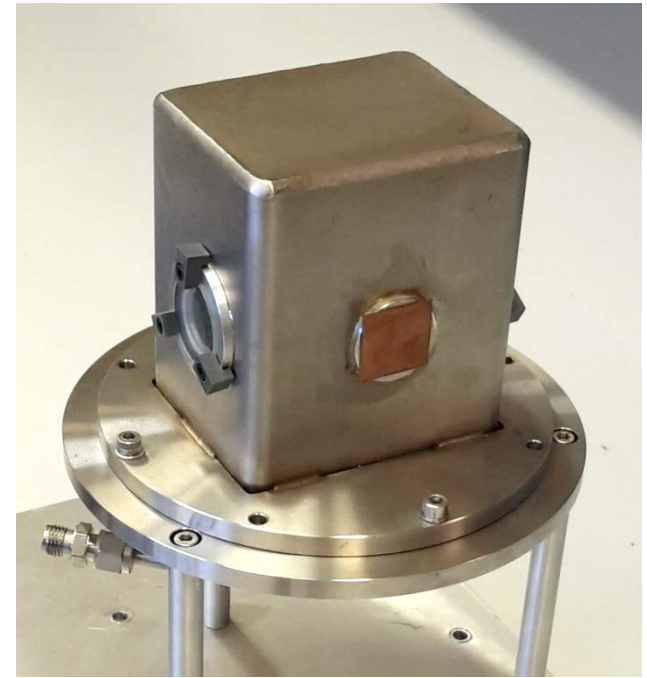
# Present activities

- Improving re-machining wirebond PCB
  - Flexible microscope needed
  - Next wirebond PCB to be machined using temporary microscope setup
- We will buy a surgical type microscope on a flexible arm



# Developing testbox for single QUAD

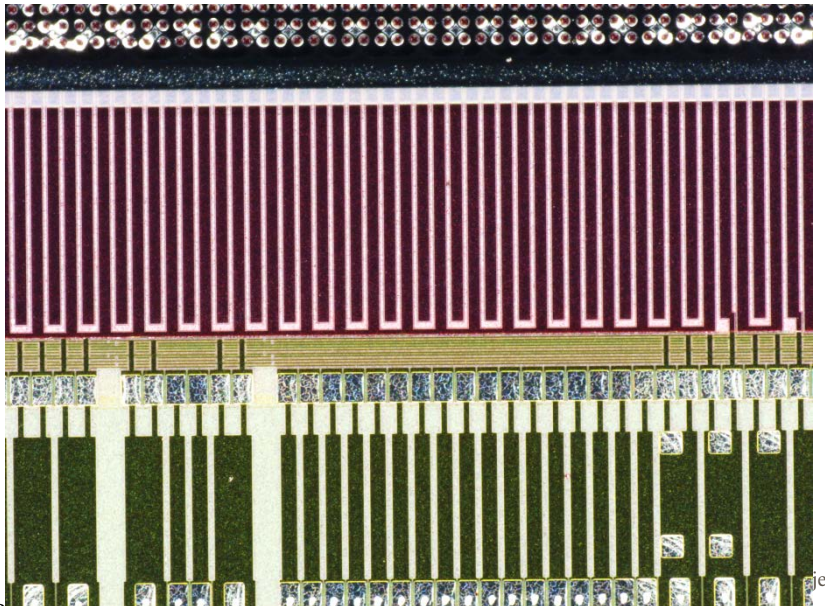
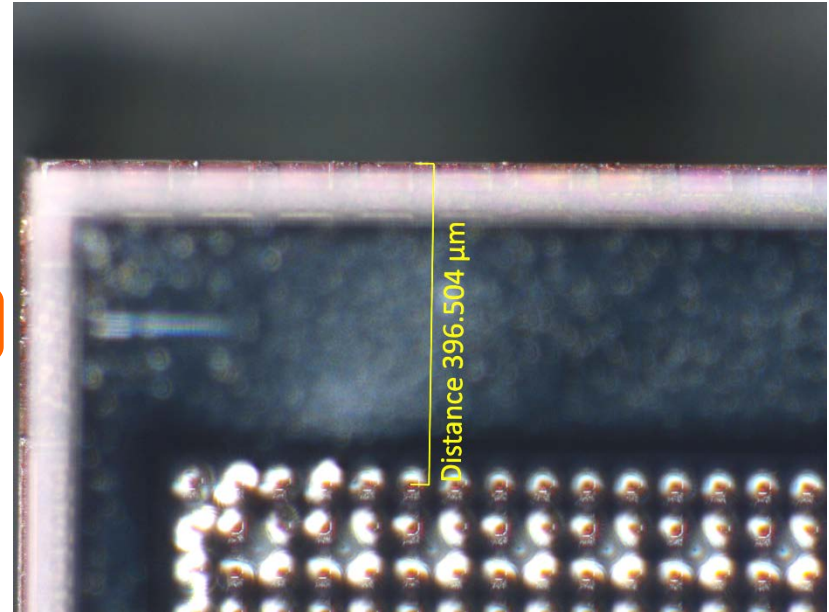
- Using existing gastight housing
- Design finished
- QUAD mounted on an 8 mm thick aluminium plate
  - Water cooled
- Field cage by wires
  - 40 mm high, 2 mm pitch
- Intended for UV laser measurements
  - We need two longer actuators(50 mm) and a longer stage to cover the full drift volume of the QUAD
    - (€5540, VAT incl)
- May be completed end September





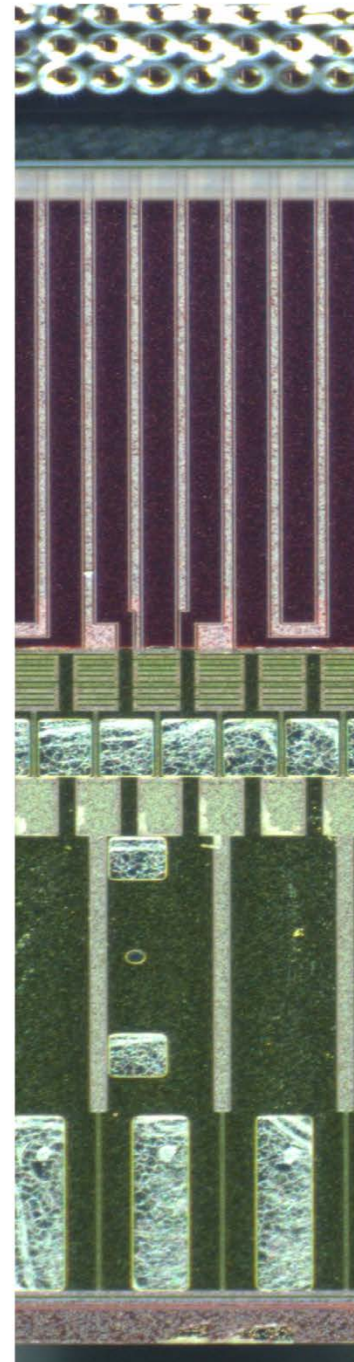
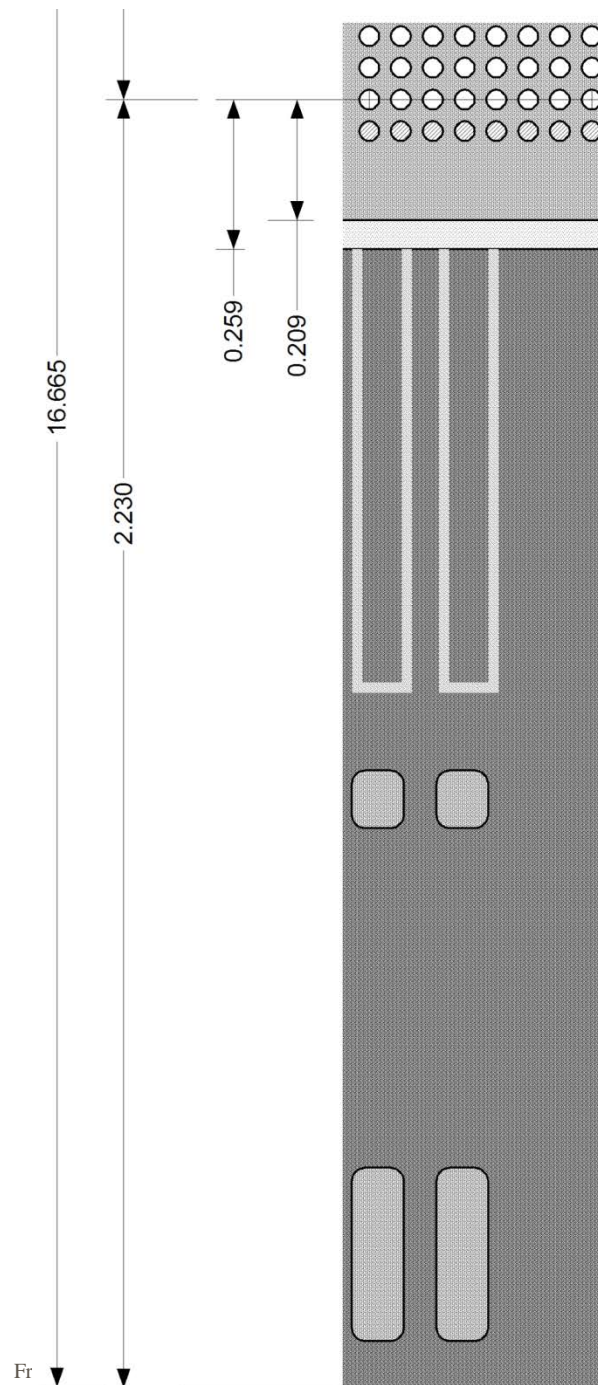
# Next months

- New PCB /flex production
  - New production may take ~ 10 weeks
  - We have to wait for the results of the DAQ tests by Bas
  - New PCBs at Christmas?
- Processing new TPX3 wafer
  - Modified dyke geometry
- New InGrid TPX3 chips also at Christmas?



# Much wider dyke at wirebond side

- There are **257** rows of holes in the grid
  - 1<sup>st</sup> row above dummy pixels
- Width of the dyke at wire bond side quite narrow: 204  $\mu\text{m}$  to first hole row
  - 50  $\mu\text{m}$  insulation path over SU8
- A wider dyke here would be very advantageous
  - Making the HV connection
  - For HV safety we need more insulation path to the wire bonds and chip electronics
- We can easily enlarge the dyke
  - 1 – 1.5 mm
  - Reducing wrinkles in the grid





# Assembly frame

- 25 x 25 mm holes
- Cooling by pipes in the frame
- Excellent thermal contact between chips and cooling channels

