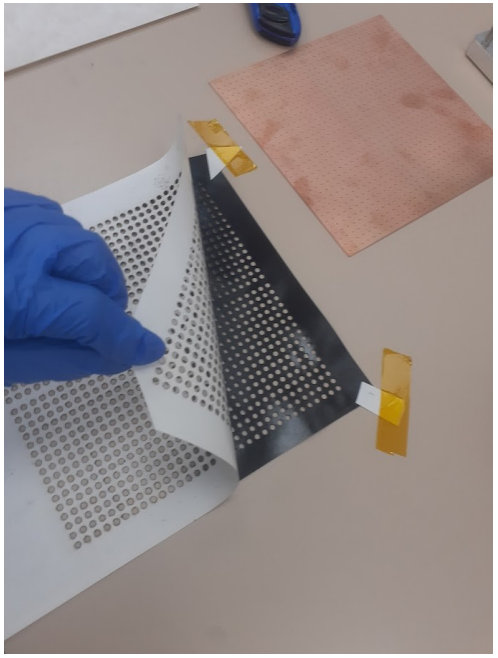
Hybridization – progresses
Double face tests

Adrián Irles

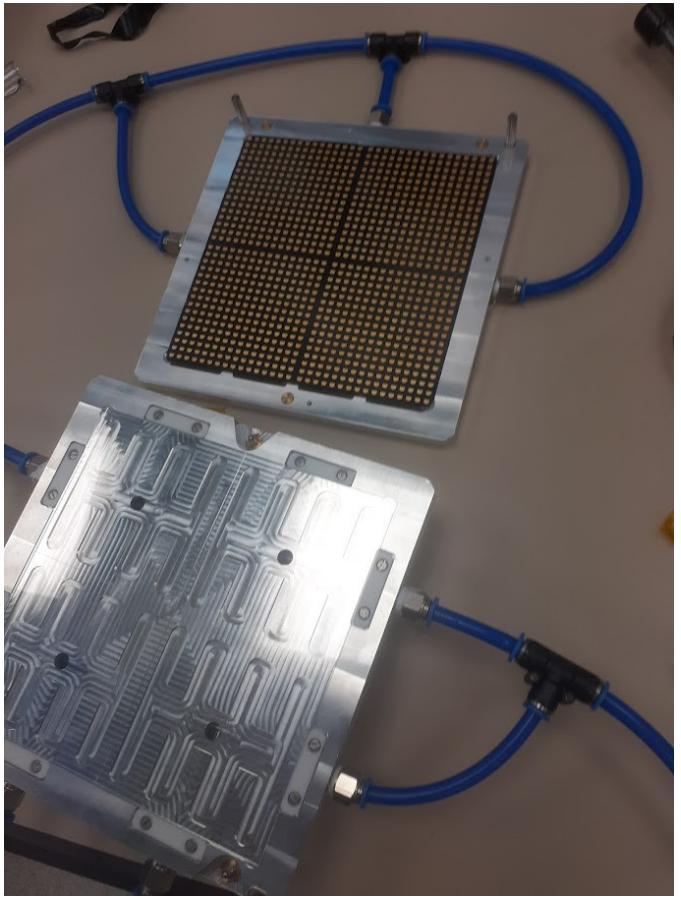
***AITANA group at IFIC – CSIC/UV**

Double-face tape tests

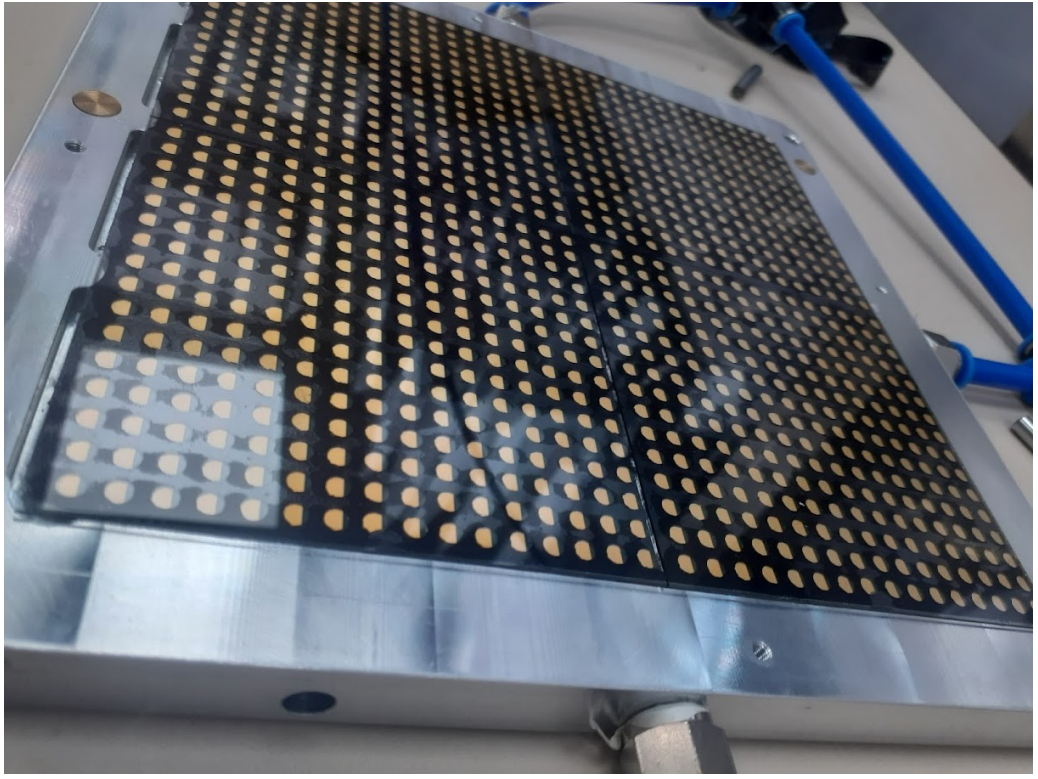


- Perforation made with a laser drill
  - 5h of work, requires fine-tunning
- Operation is manageable using latex gloves and keeping the white paper-protection after the perforation process
  - Not trivial.. some times it gets damaged

Double-face tape tests



Double-face tape tests

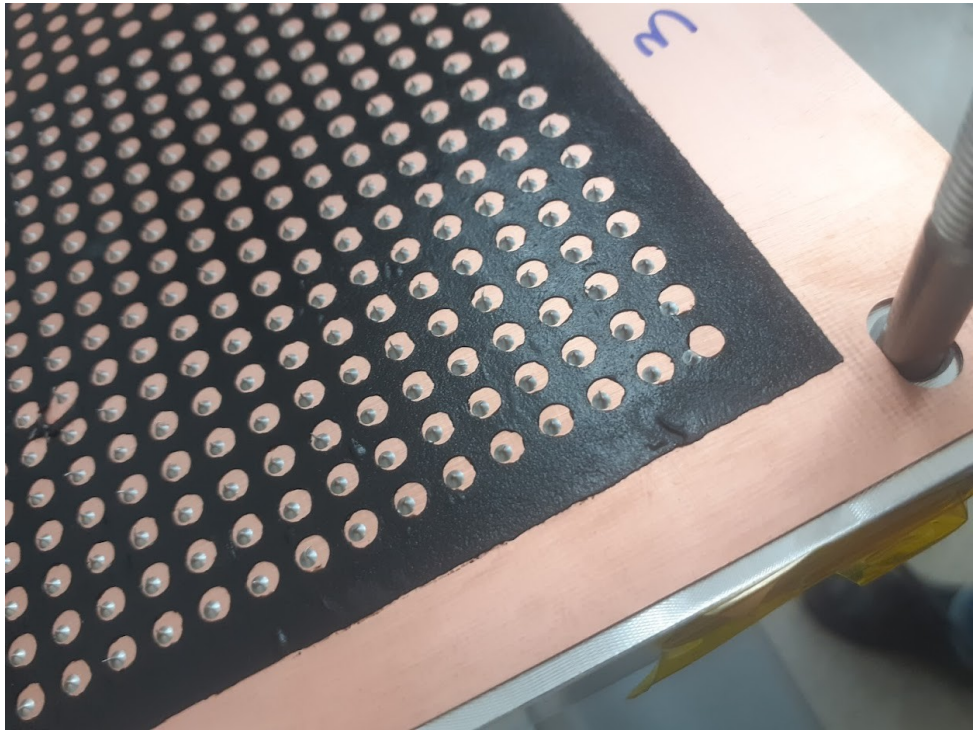


- Tape-PCB alignment requires some extra thinking.
- **How do we deal with air-bubbles?**
- The PCB was sent to IJCLab

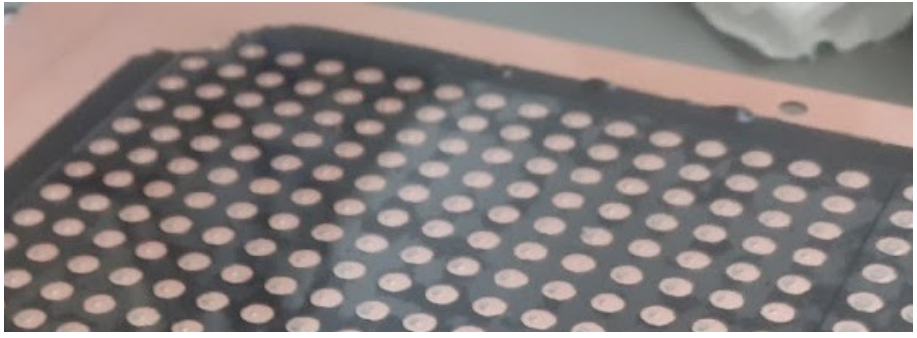
Double-face tape tests

- Test with dummy pieces (dummy FTD discs…)
  - Test of the curing in the oven at 80º → no effects after visual/manual inspection

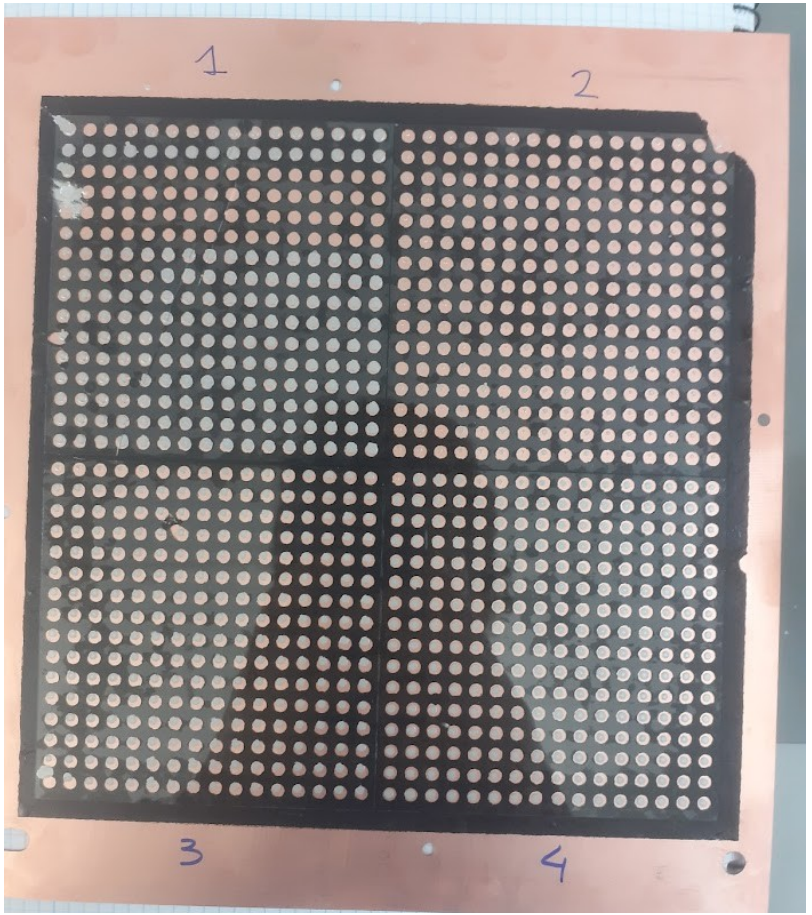
2nd double-face tape tests



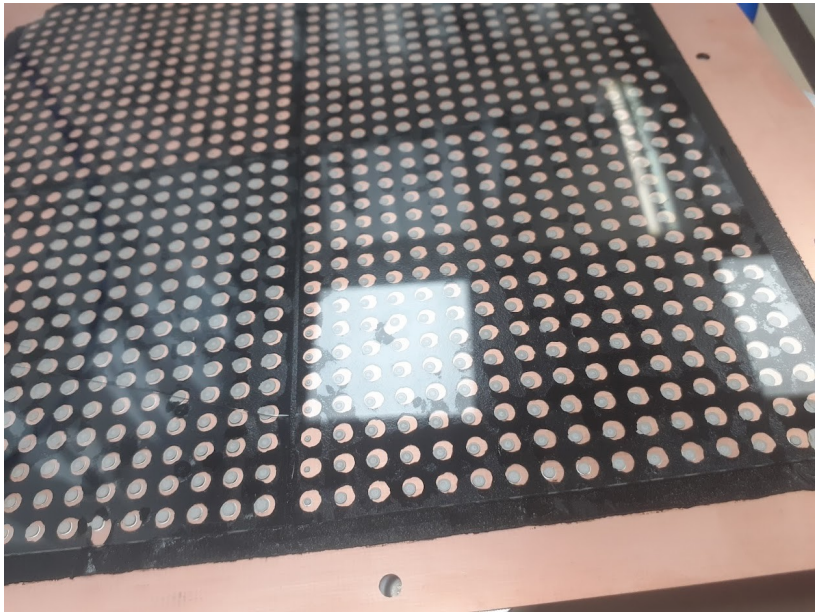
- A 2nd piece was produced
  - Not the same results → the laser machine uses a foam “bed” to support the devices under machining
  - In our case, this bed gets damaged quite quickly and requires replacement after every production.
  - The white-protection got damaged and the technician had to use a new one
- Glued to a 0.5mm fake PCB (flat and very flexible!)



2nd double-face tape tests



- 4 fake wafers glued (using the sandwich maker device)
- For each sector, I played with the deposition settings.



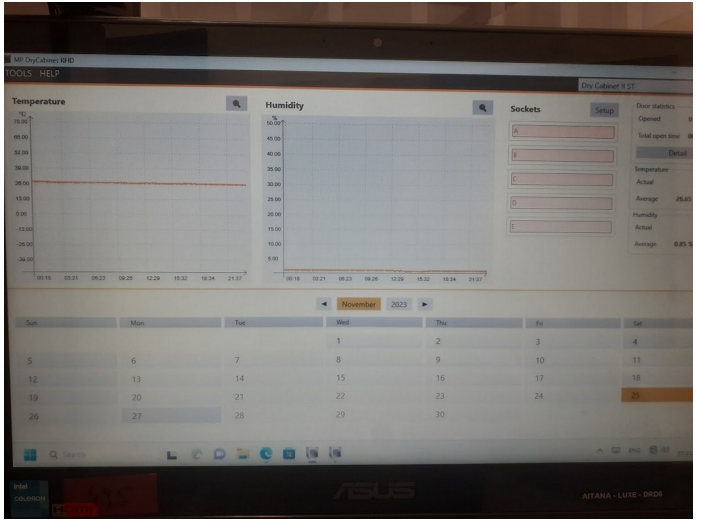
Summary

- Proof of concept with fake wafers/pcbs succesfull
- Robot has been tuned for H20
  - It requires lots of practicing. Using a different glue will require a full retraining.
  - I am focusing now in getting very thin dots → for the compact ECAL (ECAL-p LUXE)
- No more glue/serynges/etc available. Fiscal year is closed in Spain. A new order should be done in late January or February
- To obtain a good reproducibility of the perforation requires some extra thinking / practice.
  - Maybe we should find a company that does it for us ?
  - 3M Spain hasn't been too reactive…
- XY alignment is still a bit tricky
  - 3M and PCB alignment done by hand… optimization is required
  - PCB-wafers is done in the "sandwich maker" → what are the precision? Maybe enough for small prototyping. Tests with real FEV2s are required. If a better system is needed… who could do it?

next steps

- ~February
  - Order of glues missing components
- ~March – April
  - Install the probe station (with travels to CERN to validate the procedure…)
  - Repeat some tests
- ~May
  - Glue 4 real wafers in one/two FEV2.? → one with tape & one with underfill ?

- Inventory
  - 8 fake wafers
  - Only 1 naked FEV12
  - 1 FEV2. With components
  - → all kept in a dry cabinet



Visit to Rompal

- https://rompal.es/
- That size of PCB deformations seem unavoidable.
- Best solution that they though is to use:
  - Large dot points (according to PCB deformations or large enough to cover the different deformations…)
  - Try with soldering paste instead of glue → but this should be done during component assembly (even though the assembly would be done in two times : one for the upper side and one for the lower side of the PCB components)
  - This could be done by them if we provide some tools → but it requires some involvement/visits to rompal/design of tools/…