Hybridization - progresses Double face tests

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GENERALITAT

VALENCIANA

Universitats, Ciència

i Societat Digital

MATTER AND TECHNOLOGY





- 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









Tape-PCB alignment requires some extra thinking.

How do we deal with air-bubbles?

The PCB was sent to IJCLab





- Test with dummy pieces (dummy FTD discs...)
 - Test of the curing in the oven at $80^{\circ} \rightarrow$ no effects after visual/manual inspection

2nd double-face tape tests







- 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
- \rightarrow all kept in a dry cabinet

						Dry Cabinet II:	
Temperature ^{°C} 78.∞↑		٩	Humidity		Sockets	Setup	Door statistics Opened
65.00			45.00		A		Total open time
\$2.00			40.00		8		Det
39.00			35.00				Temperature
28.00			33.00				Actual
13.00			25.00				Average Z
			15.00				Actual
							A
-36.00			6.00				
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Irles A.,

Visit to Rompal

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- 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/...

