

## Module 1 assembled at UniGe

Module completion on 15 Dec 2009

### List of hybrids used:

- H0 and H1 glued on the top side of the module
- H2 and H3 glued on the bottom side of the module

**NB:** - H0 and H1 got the SMD components and the bridge assembled at UniGe  
- H2 and H3 got the SMD components and the bridge assembled in Japan (industry)

### Historical problems when wire bonding the following hybrids (Gaby & Javier):

#### H0 :

- Wire bonding problem around the HV capacitors (double stage) → Fixed by moving capacitors
- Samtec connector got delaminated → Rework by Gaby + glue drops on the side of the connectors
- E9 chip got a short circuit TK top & TK top → After testing the hybrid looks OK

#### H1:

- Wire bonding problem on M32 and around → It was suspected that the mechanical contact in this area was not done properly on the jig → Solved when a rubber sheet was placed between the hybrid and the sucking jig (also used for the other hybrids)

**H2 :** Some occurrences of wire bonding problem on the gold metallization

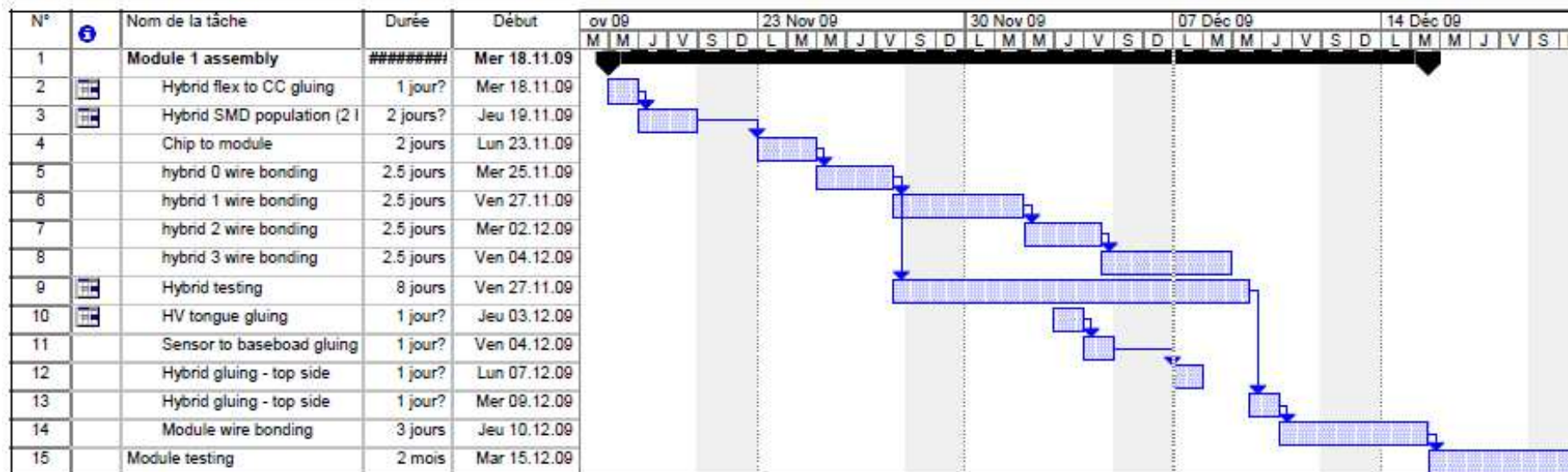
**H3 :** Also problems found to solder on the gold metallization: 1 GND bond missing on chip S98.

Hybrids

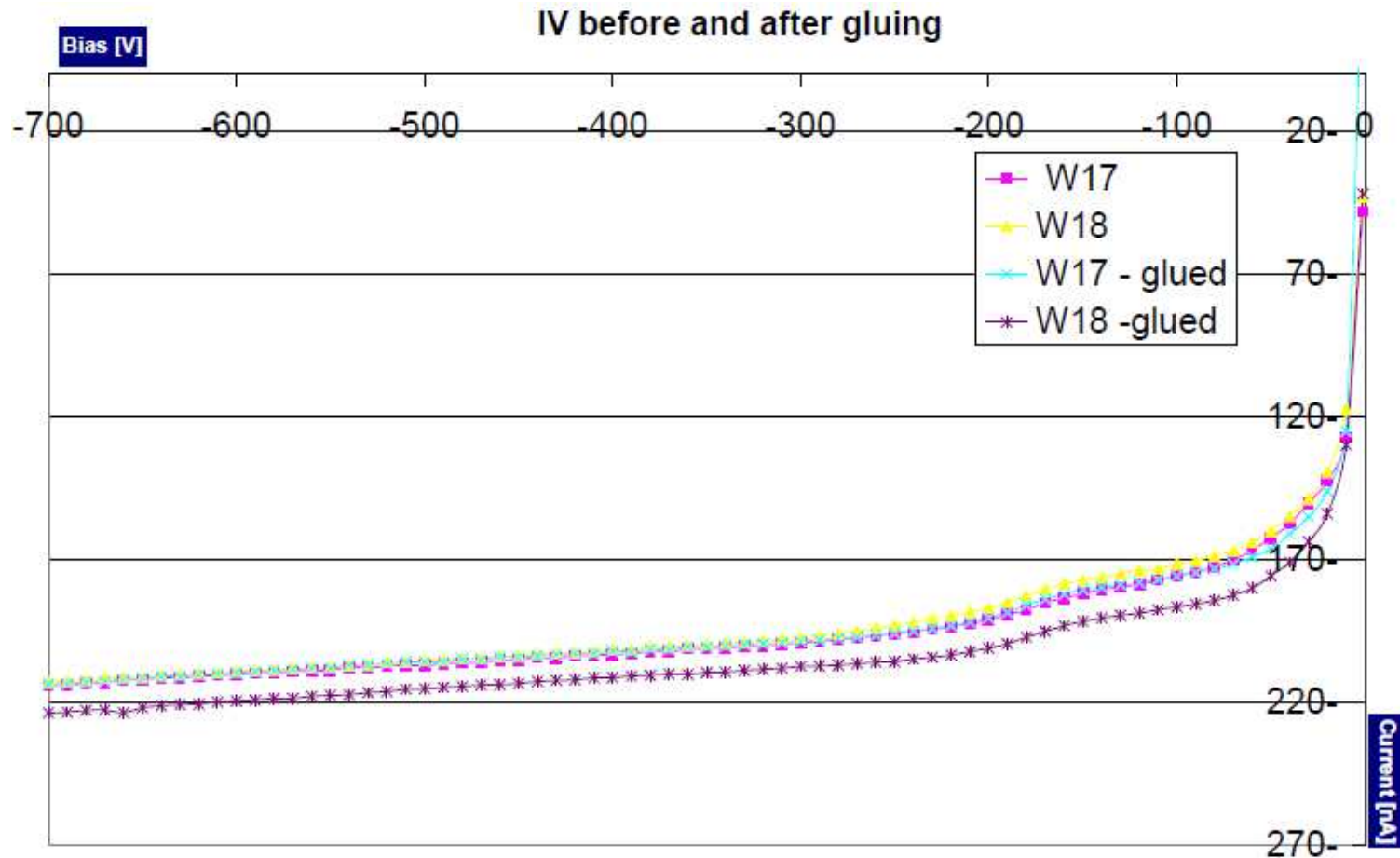
Baseboard

- **Detectors from Series 1 FZ1** W17(top) and W18(Bottom) glued to baseboard
- **TPG not coated** → decided to do parylen coating for the next TPG
- **HV tongue wire bonded** (no electrical conductive glue)

## Planning for the assembly of Module 1



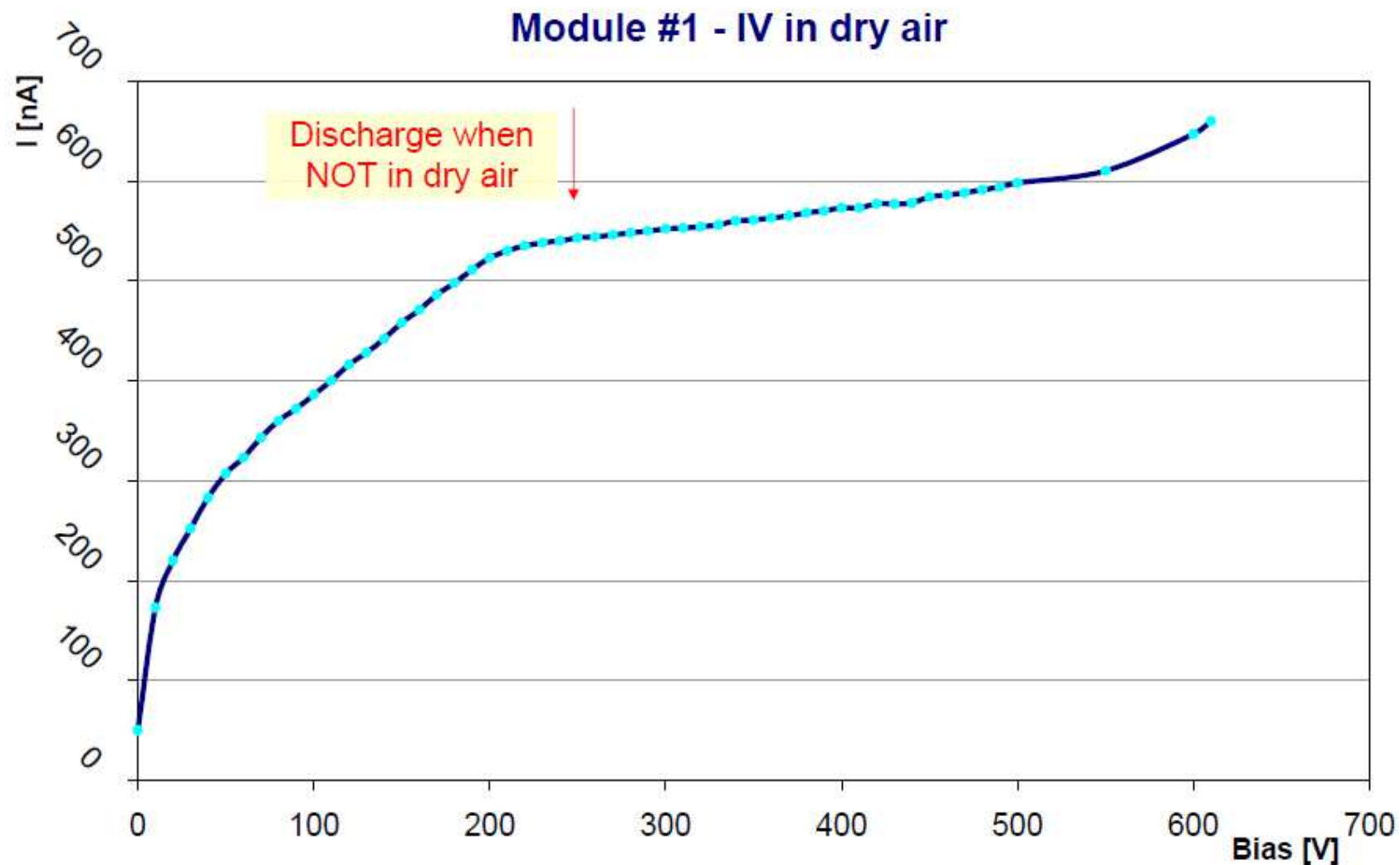
## Detector IVs



### NB:

- *W18 start to leak around 750V.* This detector was already problematic before gluing!
- **Once hybrid glued discharge is observed around 300V** on W18 (We are not sure it is intrinsic to the detector)
- W17 (top side) is fine up to 1000V all along the assembly

## Detector IV – Module 1 fully bonded



### NB:

- Tested at CERN with K6517A on Dec 16th 2009 at room temperature and flushed with dry air
- When no dry air then discharges start to be seen around 250V

# Hybrid tests & Assembly

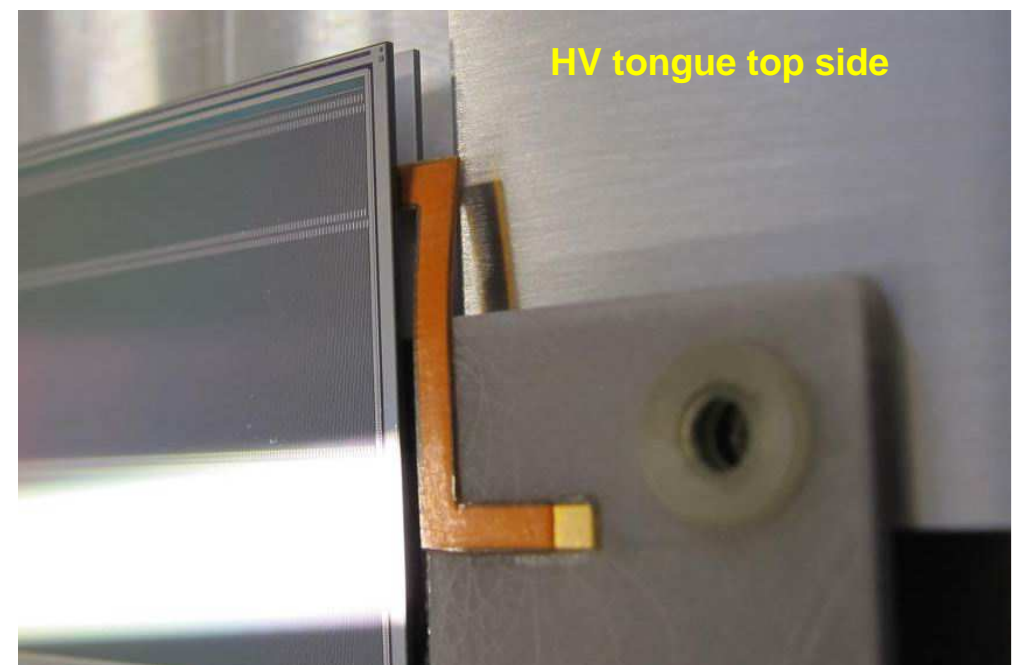
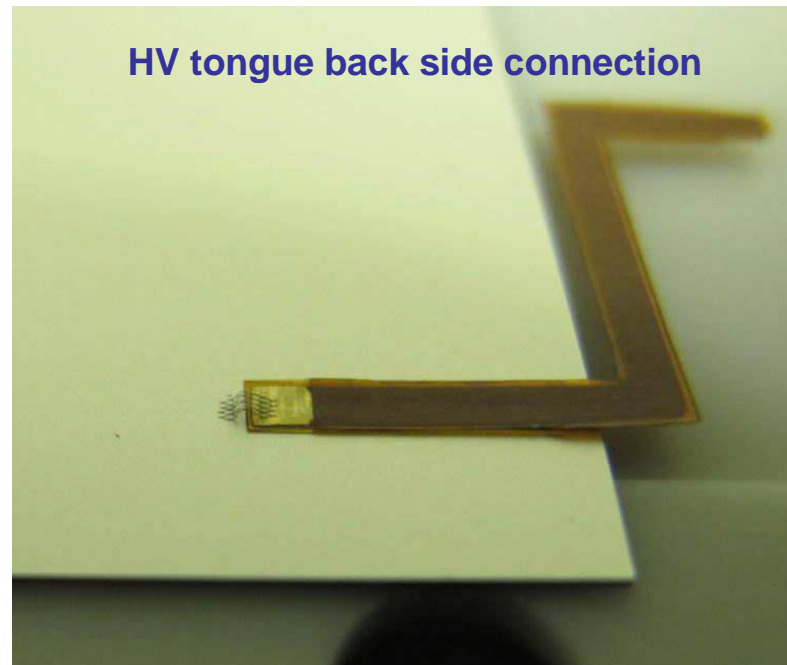
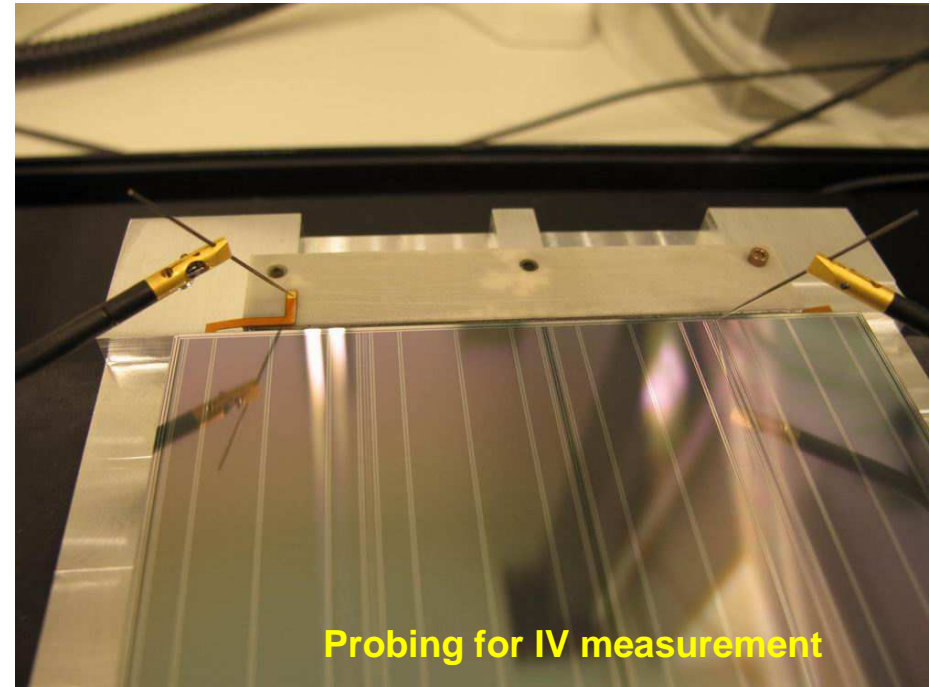
## Hybrid test after chip to hybrid bonding:

- **All the 1st 3 hybrids: H0, H1 and H2 was working fine** as soon as plugged in!
  - **H3:**
    - First one chip did not respond at all on column: **6th chip from Master dead** (no digital response)
    - Second several chips was very noisy when doing a threshold scan! After strobe delay test and changing the Cal\_Delay to ~7 instead of ~12 the hybrid could work well except the bad chip.
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## Hybrid assembly:

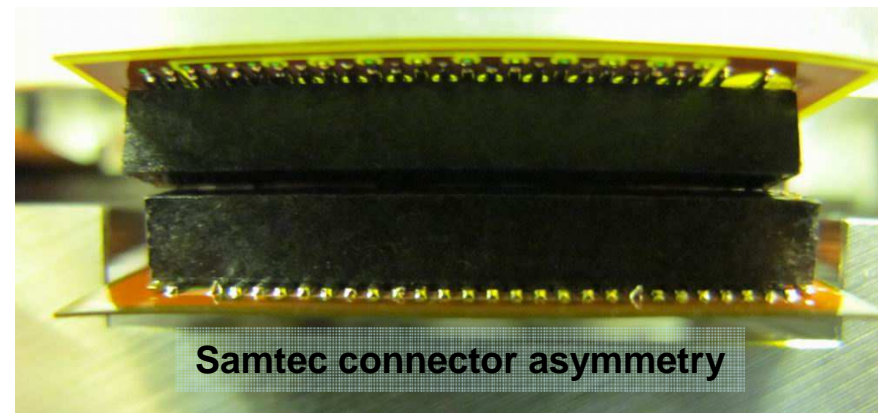
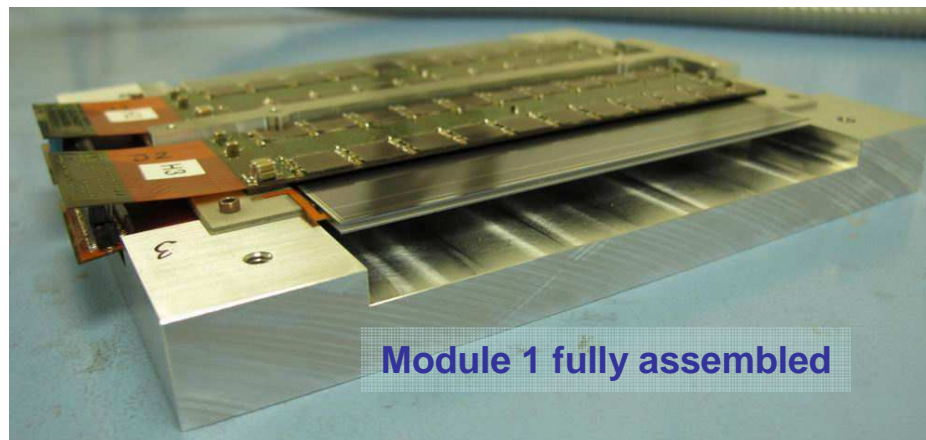
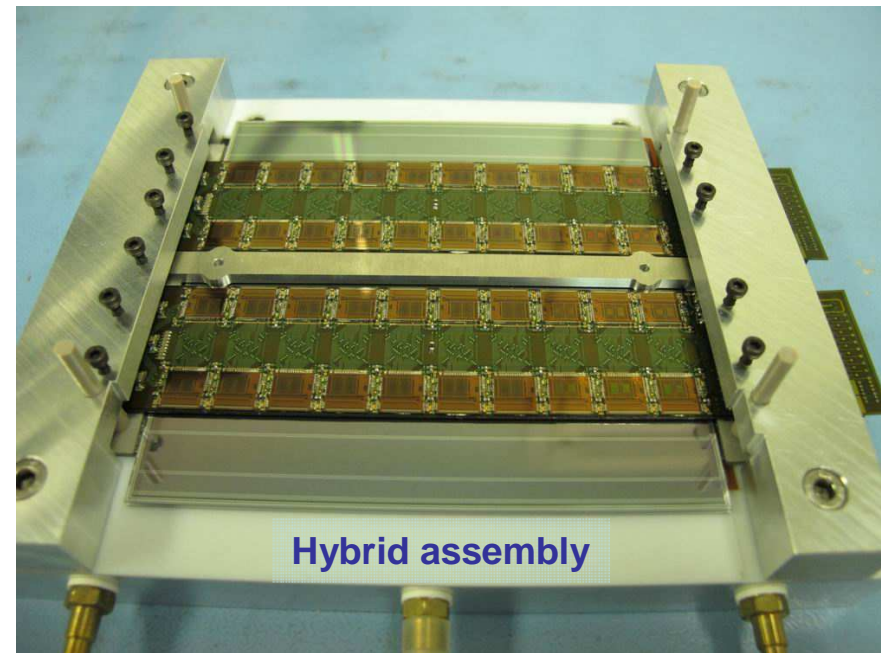
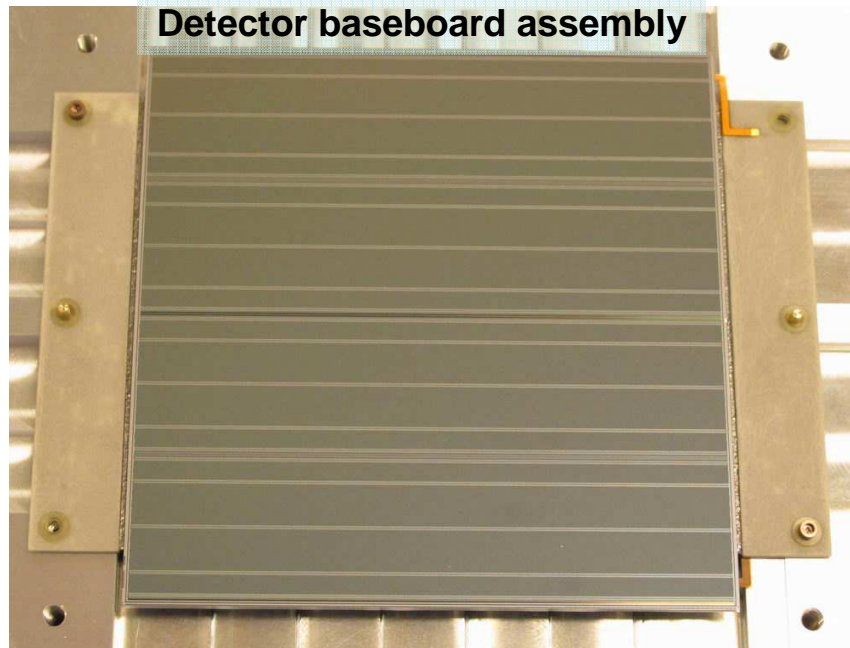
Problem notice only when the bottom side hybrids were glued. Samtec connectors are not centered on the pigtail → Bottom side and top side connectors are offset by ~1mm → lead to connection problem to module adaptor since there the connector are placed symmetrically!

## Pictures – Module1 Assembly

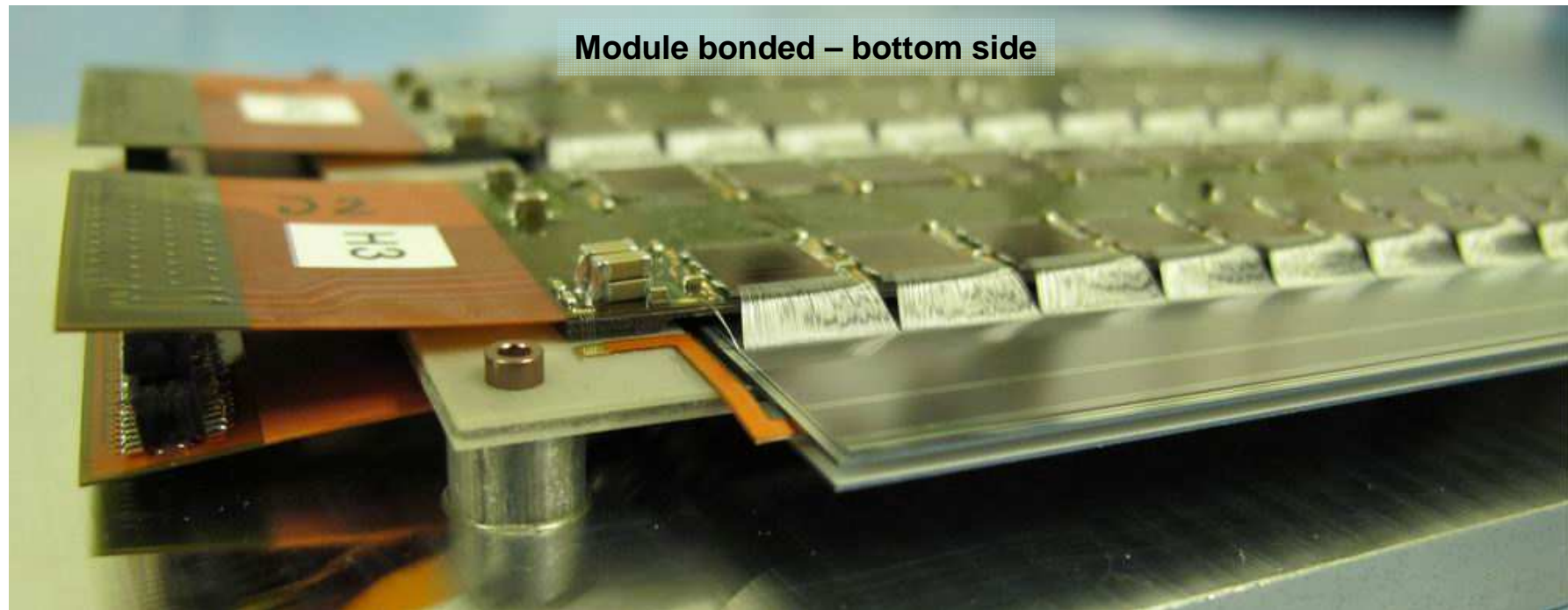
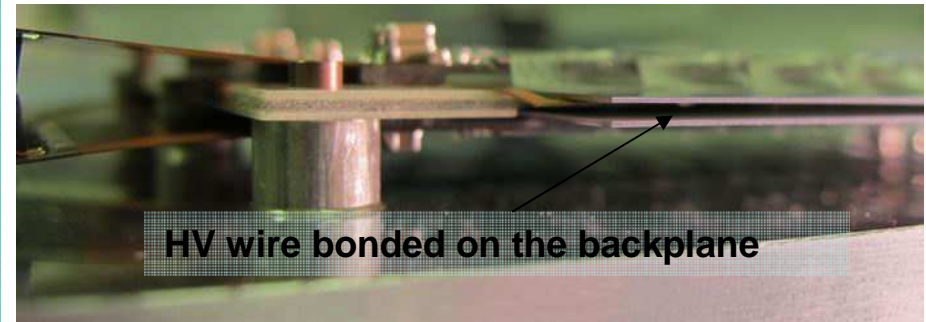
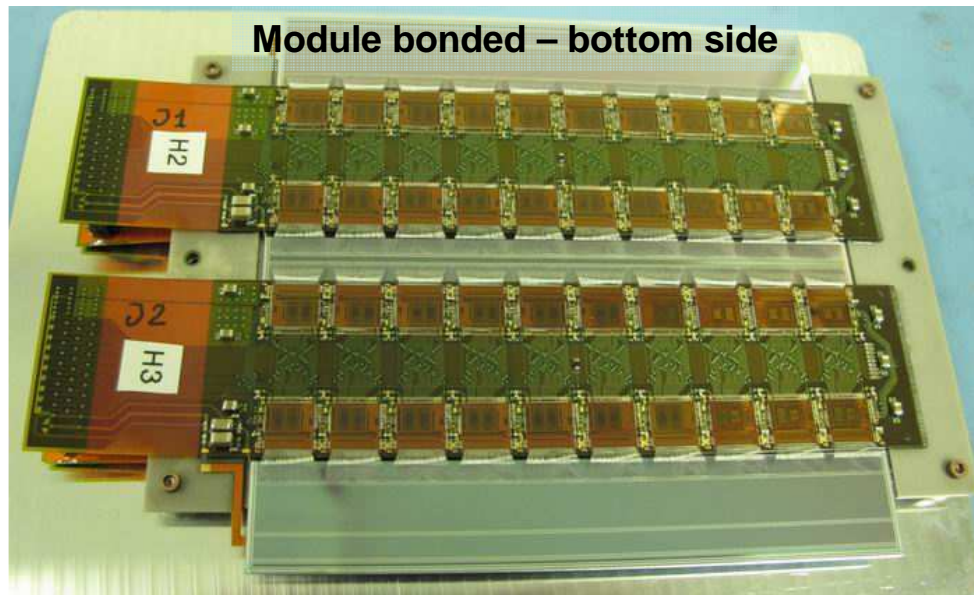




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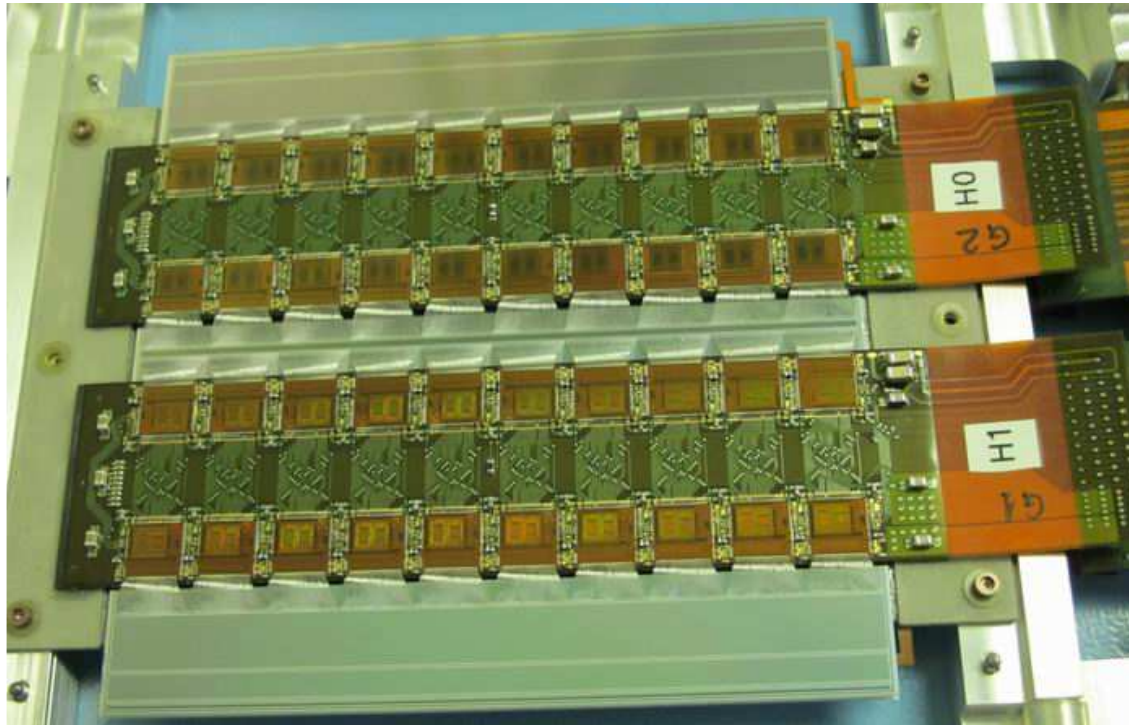


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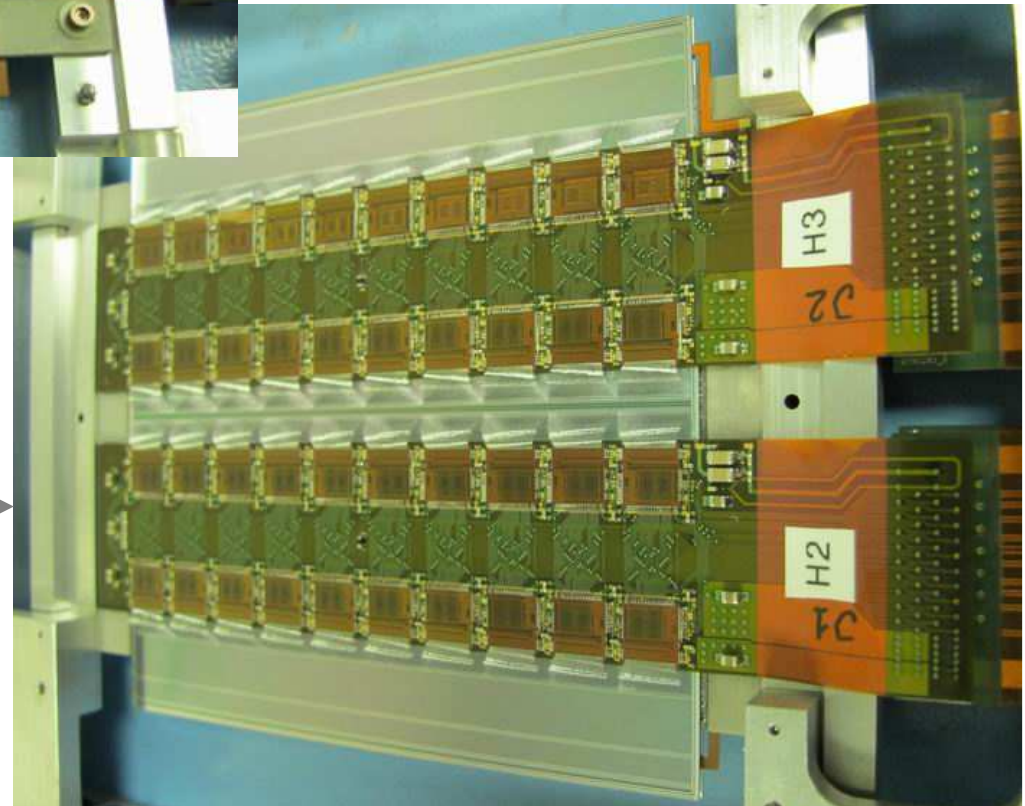




## Pictures – Module1 Assembly



Top Side



Bottom Side