

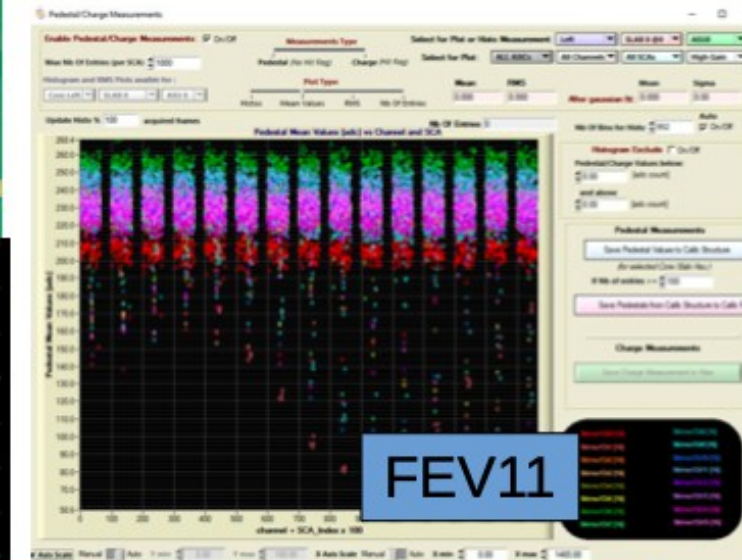
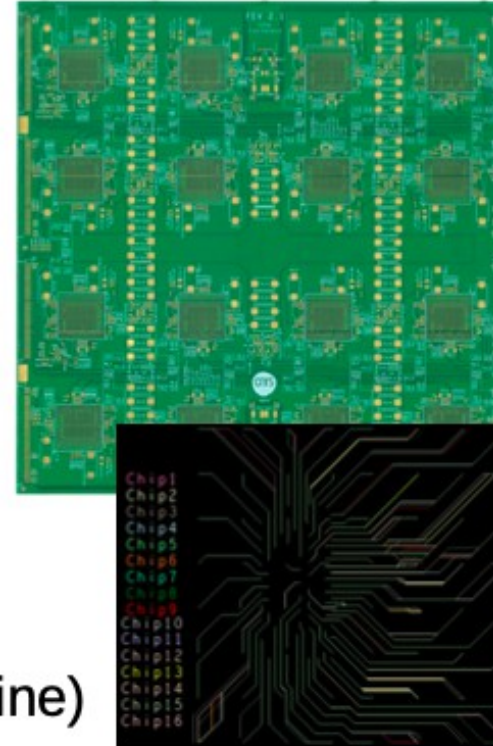
## New FE boards

### Improvements:

- Power distributions
  - Local power regulation
  - Local High Voltage filtering & Supply
- Signal distribution (buffering), data paths
- Monitoring (single ID, temp, probe analogue line)
- ASIC shielding/routing

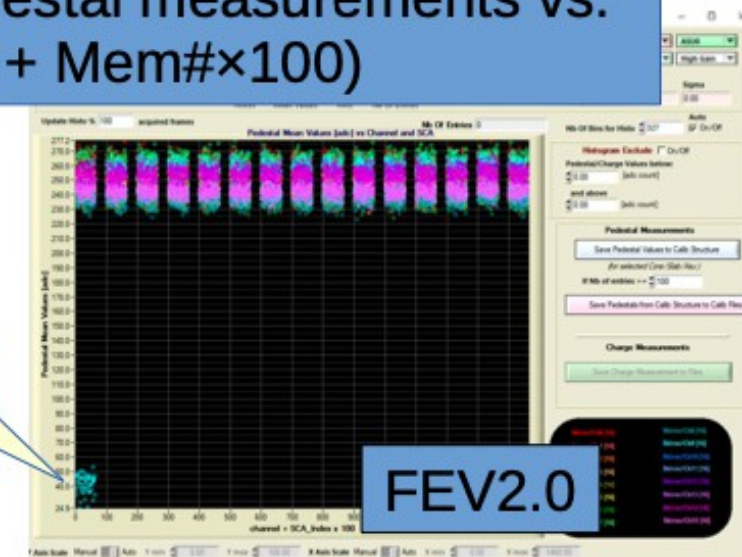
### Status:

- pre-version 2.0 tested, minor corrections needed
  - Noise uniformity dramatically improved (ex: outliers in thr. / 20 !)
- version 2.1 produced, ... in metrology
  - before cabling, 2<sup>nd</sup> metrology, gluing, ...
  - All material available : ASICs being tested



FEV11

Pedestal measurements vs.  
Ch# + Mem#×100)



FEV2.0

Single channel →  
the fault on the  
ASIC/package

Four boards are meanwhile fully cabled and subject to first tests  
Goal: build 15 layer stack for 2024 based on these Boards

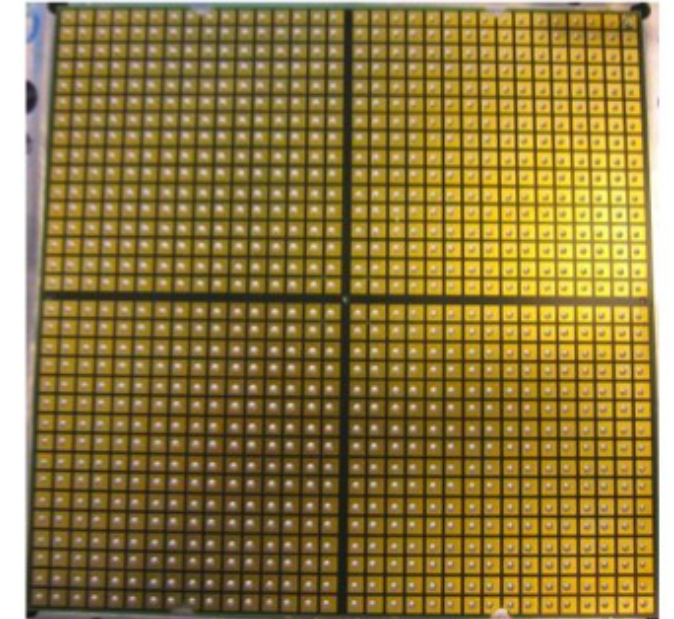
### Metrology and PCB Deformation

DESY, CNRS-IJCLab, CNRS-LLR, FZU, JGU

- Setup of a device to measure the flatness of the PCB at different stages
- PCBs will be out into cabling machine and dimensions will be monitored before and afterwards

### Glue – Alternative agents and procedures

- After discussion with Astronomy Institute of Paris and Epotek
- Test glue of type H20E as alternative to Epotek J2189
  - Should have higher mechanical stability
- Use EPOTEK 301-2 as underfill for mechanical stabilisation (proposal of Epotek)
  - This underfill has low viscosity that ensures mechanical stability by capillary effect
  - First tests promising – underfill flows across the PCB, need to control polymerisation
- Alternative proposal EPOTEK 353ND-T
  - Epoxy for gluing electrical component, could be used to stabilise glued sensor at sensor boundaries
- Alternative with double sided scotch about to be studied
- 25 sheets arrived last week, 10 on their way to IFIC
- Further contact with Technacol, a lab specialised on polymers for technology transfer to industry

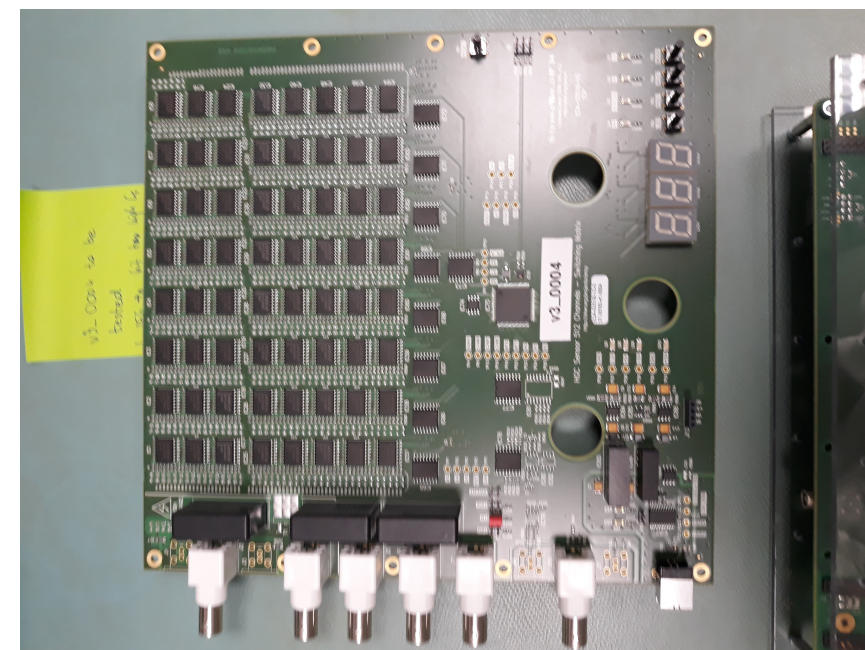


### Pull tests

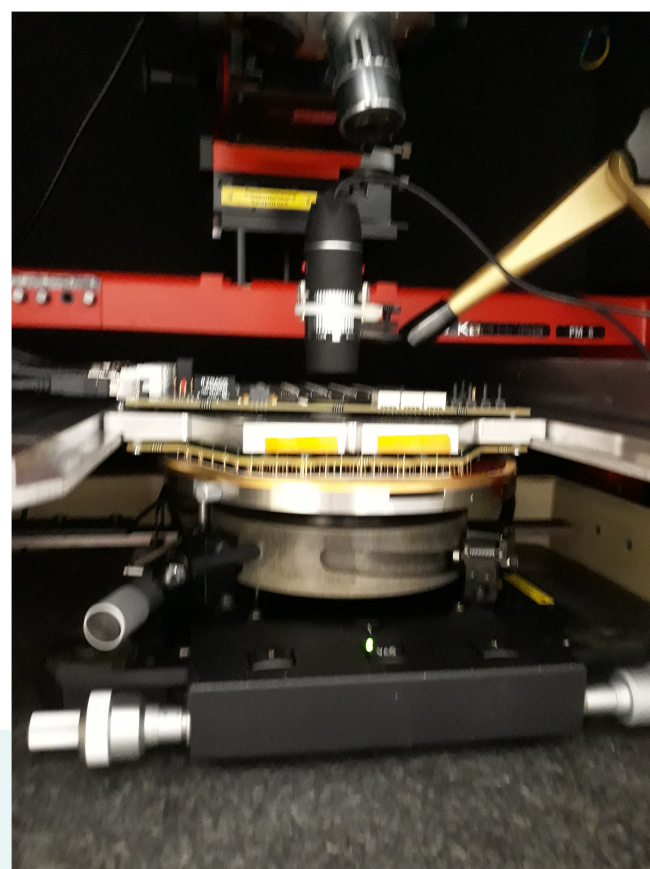
- IJCLab prepares pull tests in order to get a quantitative picture of the mechanical stability of the glue



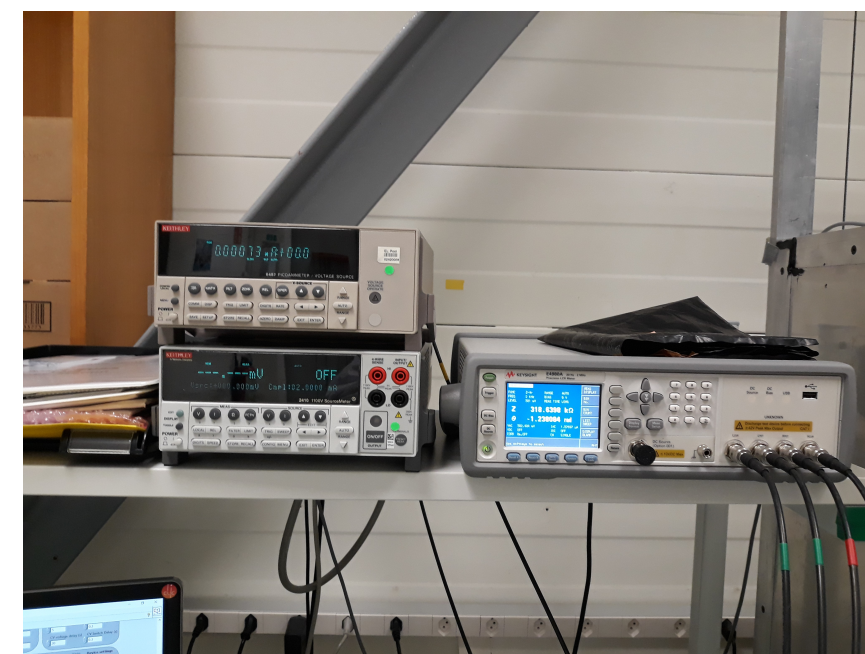
- **Inventory of sensors at IJCLab**
  - 12/12 in good shape after visual inspection by Jimmy and myself
  - Stored under controlled conditions in IJCLab pixel lab
- **Sensor testing**
  - R.P. Paid visit to CERN (CMS-Lab) on 14/6/23
  - Sensor testing can be done at CERN
  - Need PCB adapted to our sensor size and shape
  - Depends on availability of CERN electronics workshop
- **Inventory of HV Kaptons**
  - 8 Kaptons available but they are not well plied
  - Are they still useful?
  - Conclusion meeting 17/7/23: Better buy now adequate HV kaptons
- **Cost estimate for cupboard to store layers under controlled conditions**
  - Up to 9kEUR



“Universal card”



Sensor in  
Probe station



HV supply  
I meas.  
Frequency  
generator