

# Mechanical Integration and developments

**Various ideas and changes have been studied, produced, tested**

- 1 Flexi connectors from Silicon detectors**
- 2 Flexi connectors for CsI**
- 3 Flexi connector extensions**
- 4 Plastic adapter to match smaller Hamamatsu PD's**
- 5 New Detector support plate (included in the discussion on thin pads)**
- 6 Back wall: produced (LPC), to be mounted (Florence)**
- 7 H-feet: to be produced more; easy, cheap**
- 8 Ergal CsI cross supports: to be produced more? Difficult, expensive**

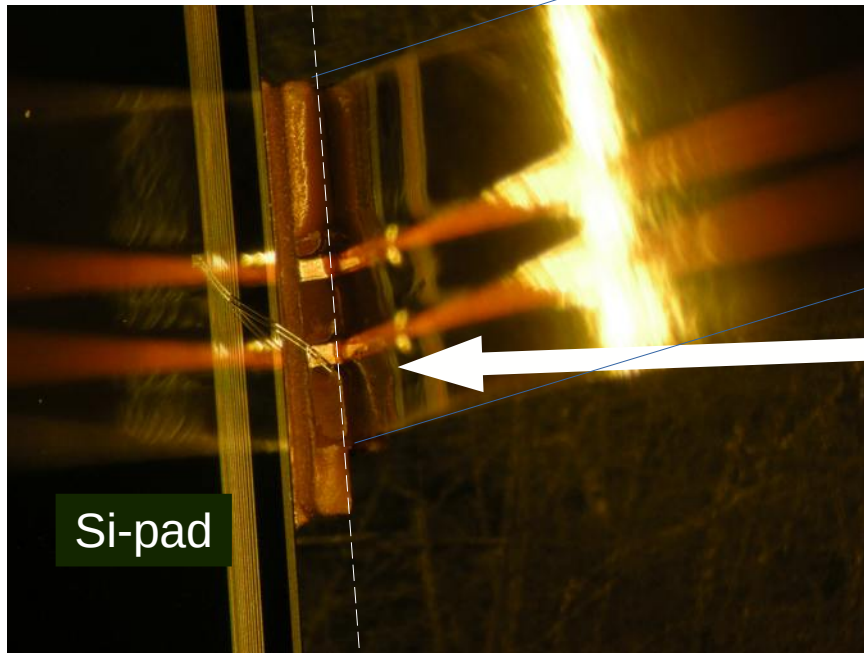


FaziaDays 2023 Villa Galileo in Arcetri



# Flexi connectors from Si-detectors

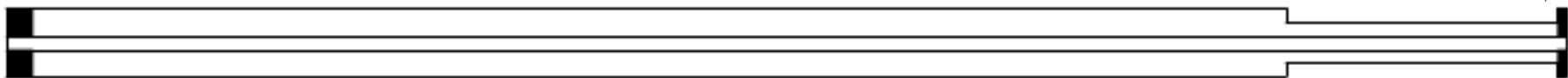
With clean-room technicians decided modified polyimide connectors to overcome some wirebonding troubles due to the lack of room for the wire-needle



Flexi strip



NEW



NEGATIVE COVERLAY

Status: under production 150 pairs, delivery this week



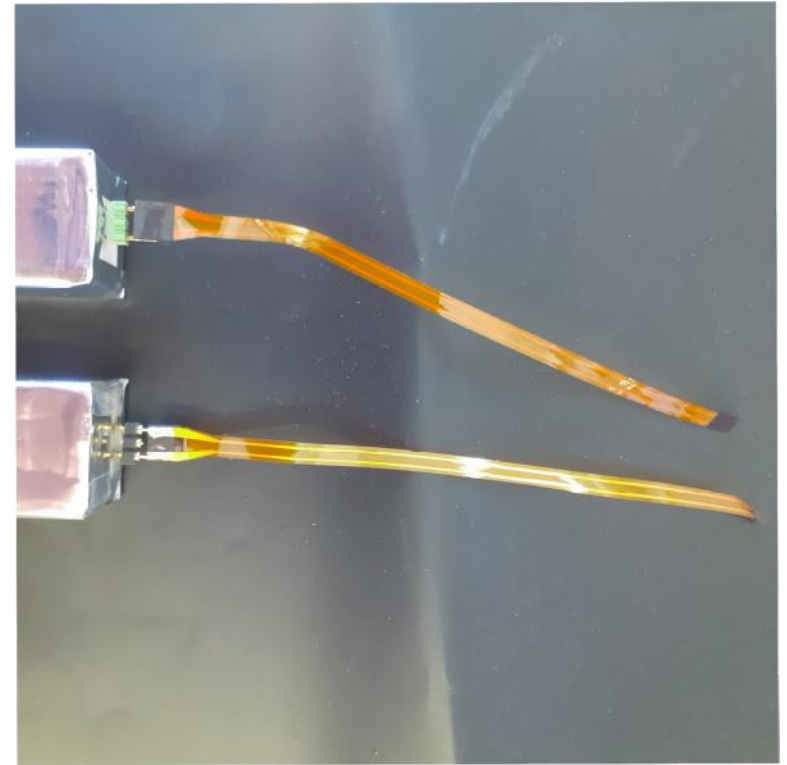
FaziaDays 2023 Villa Galileo in Arcetri



# Flexi connectors from Csl-PD

Many versions made during years. Always some problems. Now adopted (since 2019) thinner and more flexible strip w.o. copper plate covering on the back side.

For each new Csl detector or after any change or crystal control, the old strip is substituted



Status: available and used since 2020

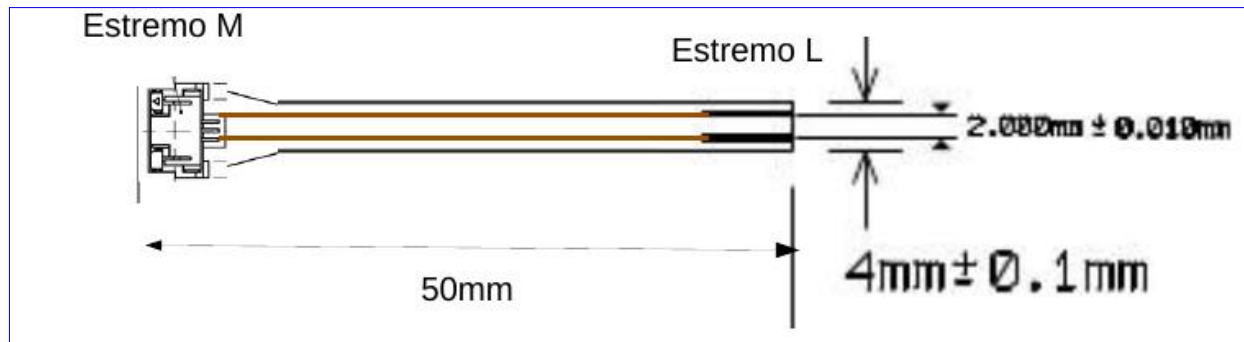


FaziaDays 2023 Villa Galileo in Arcetri



# Flexi connector extensions (FLE2MOL)

The final coupling of 48 detector channel strips to MOLEX on the FEEs is a boring, delicate and relatively complex phase. Also due to the topology and orientation, the strips are finally tilted and compressed causing some connection problems. In order to ease the mounting we produced extensions (fle2mol = flexi to molex)



These extensions will be used -and their success verified- in next DET replacements, assembling or changes.

Status: available still not used.



FaziaDays 2023 Villa Galileo in Arcetri

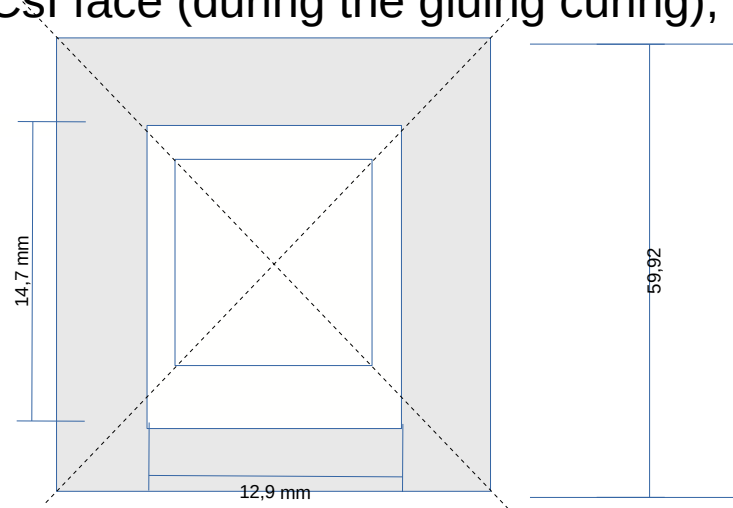


# Plastic PD adapters

Initial PD were custom designed fitting the 22x22mm<sup>2</sup> back side of the FAZIA CsI. Due to the ageing of those PD (FBK and CIS companies) and the lack of new similar sensors (too expensive, too long production process), all recent replacements and new mounting were made with Hamamatsu 10x10mm<sup>2</sup> sensors. They are rather cheap (70-80euros), robust, very well tested.

To better match the PD area with the larger CsI face (during the gluing curing), small square adapters have been produced.

Status: available and used since 2022



Various new or refurbished CsI feature these plastic adapter. However their real benefit is still uncertain. Mounting and reproducibility checks are on going.



FaziaDays 2023 Villa Galileo in Arcetri



# What else?



FaziaDays 2023 Villa Galileo in Arcetri





# Parts of the project and situation

In view of the new Korean (complete) blocks and other (borning) activities **we need a complete common review of alls the parts from the first detector to the last screw**

**Remind in the MoU it is written: 16 exsisting BLKs and 4 new korean BLKs**

To reach this goal the main items are now

- 1 Detectors Si1
- 2 Detectors Si2 (decide thickness for exps in Korea)
- 3 Detectors Csl
- 4 Quartetto supports
- 5 BLK detectors plates
- 6 BLK fixing holders (H-feet)
- 7 Support and cooling Copper plates
- 8 Lateral plates, BLK-backwalls
- 9 FEE and BLK cards
- 10 48V power supply
- 11 REBO
- 12 Optical fibers
- 13 Flanges, feedthrough
- 14 Several jigs and mounting tools

**A fully detailed and shared websheet should be used from now on to count parts, detect missing items, control the overall budget**



FaziaDays 2023 Villa Galileo in Arcetri



# Parts of the project and situation

- 1 Csl mounted in quartettos ready to mount: 11 quartettos= 44 Csl (almost 3 BLK)
- 2 New original Csl: about 50
- 3 Csl in the lab, various states: about 10
- 4 Si1 quartetto 300micron ready for DETS: 9 (I choice)+3(II choice)
- 5 Si2 qua 500micron ready for DETS: 16 (I choice) + 3 (II choice)
- 6 Si2 qua 750micron ready for DETS: 2 (I choice) + 1 (II choice)
- 7 Si1 300micron pads free
- 8 Si2 500micron pads free
- 9 Si2 750micron pads free
- 10 Quartetto support 300 ready
- 11 Quartetto supports 500 ready
- 12 Quartetto supports 750 ready
- 13 Ergal Csl holders to be done
- 14 Det support plates to to be done
- 15 H-foot supports to be done
- 16 Copper Plates for 4 BLKs
- 17 Lateral plates for 4 BLKs
- 18 Backwalls 10

**A fully detailed and shared websheet  
should be used from now on to count  
parts, detect missing items, control the  
overall budget**



FaziaDays 2023 Villa Galileo in Arcetri





# In view of new BLK completion

## DETECTOR SIDE

- 1 CsI no problem: ready for 3 BLK. Crystals for other 4 BLK.
- 2 Si1 quartetto 300 : ready for 2 BLK
- 3 Si2 quartetto 500: ready for 4 BLK
- 4 Si2 quartetto 750: ready half BLK perhaps up to 2/3 BLK

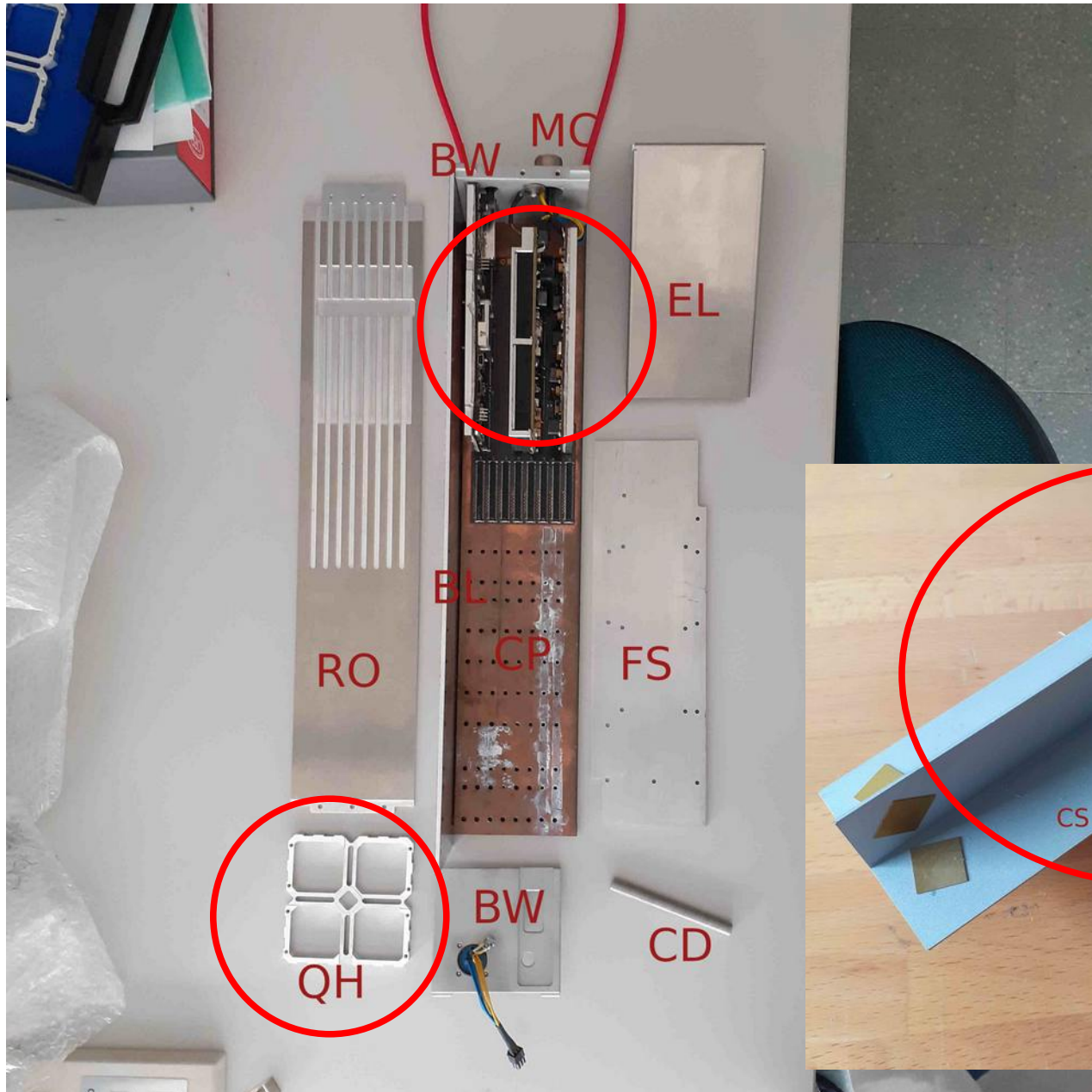
## TO BE DECIDED TO AIM AT A PRECISE BUDGET:

- 1 BLK change for (hoped) next GANIL experiment in 2024 (1-2?)
- 2 How many BLK in Korea and with which configuration (300-500-750)?
- 3 How many BLK spare ready for other experiments?
- 4 How many BLK aimed at testing subparts (i.e. very thin pads, 150-1000micron pads... )?
- 5 Confirmation about a less tight mounting mechanics also suitable for the new thin sensors?
- 6 Other points...



FaziaDays 2023 Villa Galileo in Arcetri





FaziaDays 2023 Villa Galileo in Arcetri