



# Status of Beam Telescope and Striplets Modules

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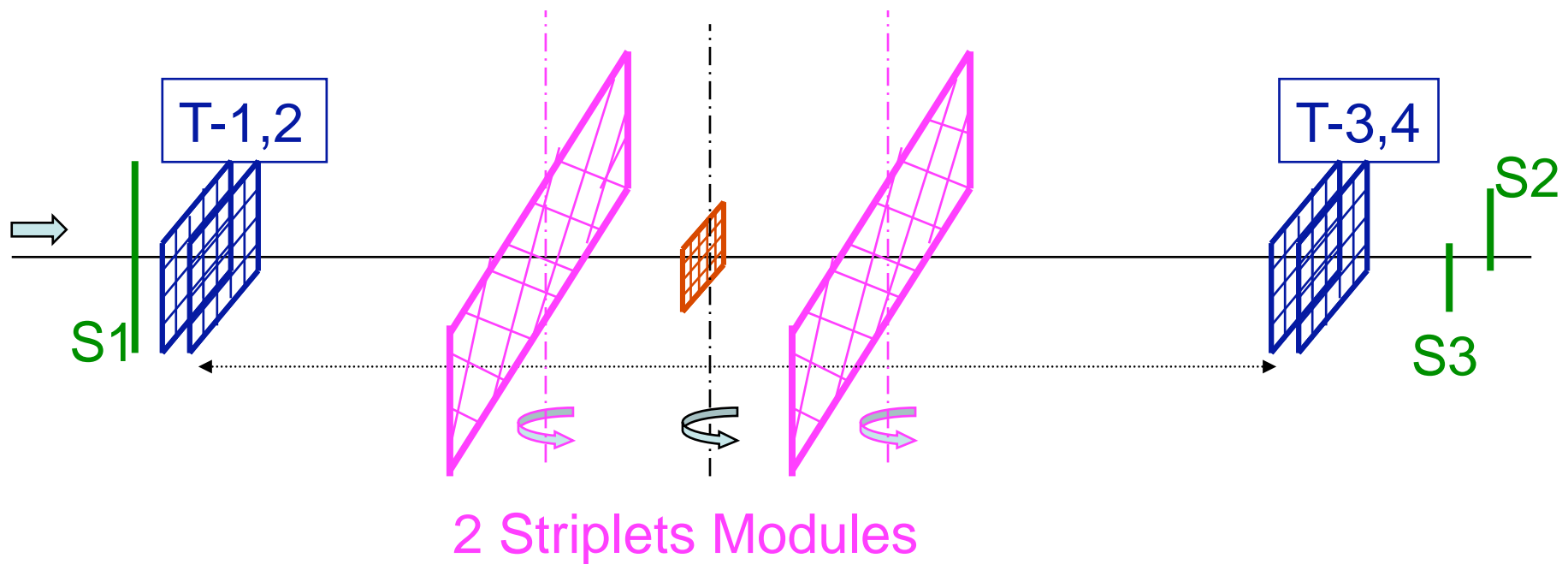
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+ Electr. & Mech. Labs @ INFN Trieste

# Outline

- Recall SLIM5 Demonstrator
  - 4 telescope modules (+ 2 spares)
  - 2 triplets modules (+ 1 spare)
- Readout chain with FSSR2 chip
  - Completed tasks
  - Ongoing work

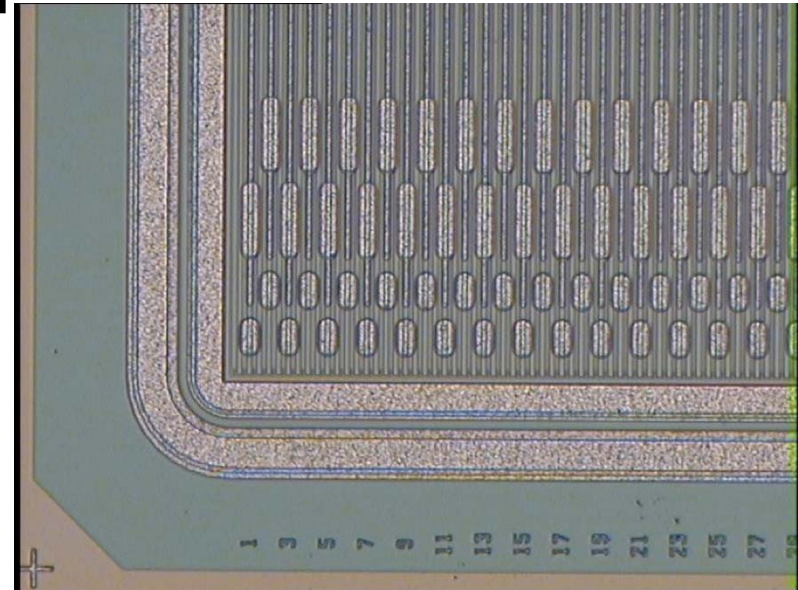
# SLIM5 Demonstrator



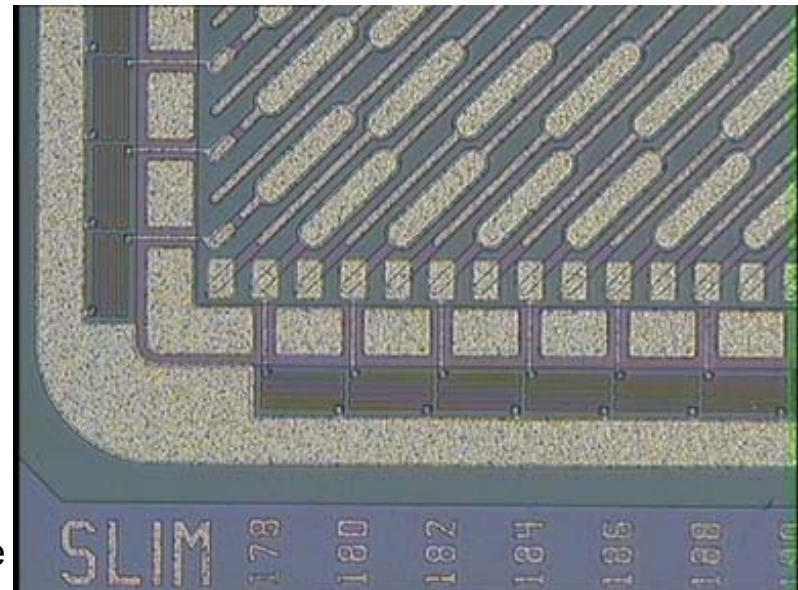
T-1,2,3,4 :  
Telescope modules

# Telescope and Striplets detectors

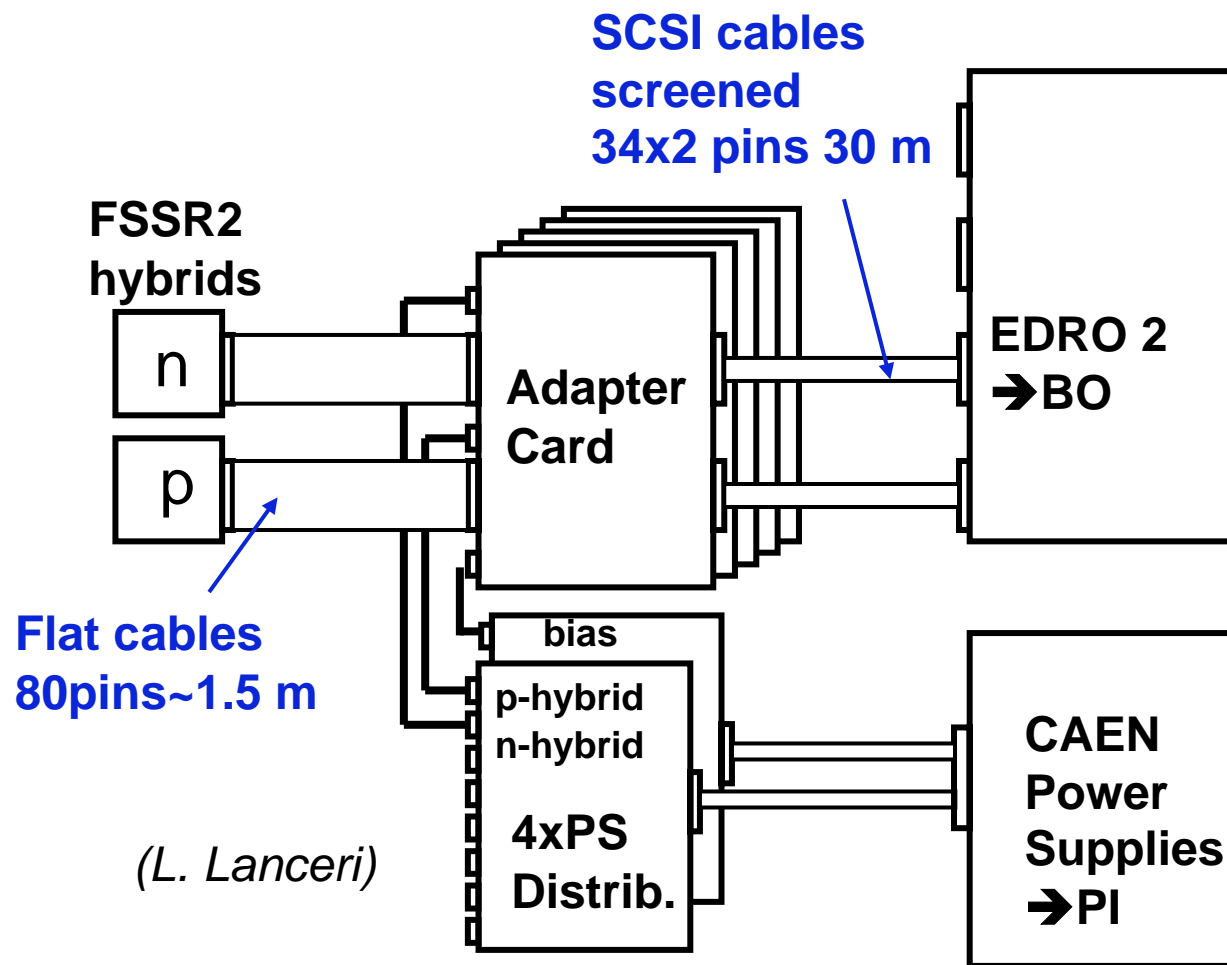
Telescope detectors test ✓  
Active area ~ 17 x 17 mm<sup>2</sup>  
300 μm thick double sided  
AC-coupled  
25 μm pitch on p-side  
    read-out strip pitch: 50 μm  
50 μm pitch on n-side



Striplets sensors: test ✓  
Active area ~ 27 x 12.9 mm<sup>2</sup>  
200 μm thick double sided  
AC-coupled to metal electrode  
±45° oriented strips  
50 μm pitch on p-side  
50 μm pitch on n-side



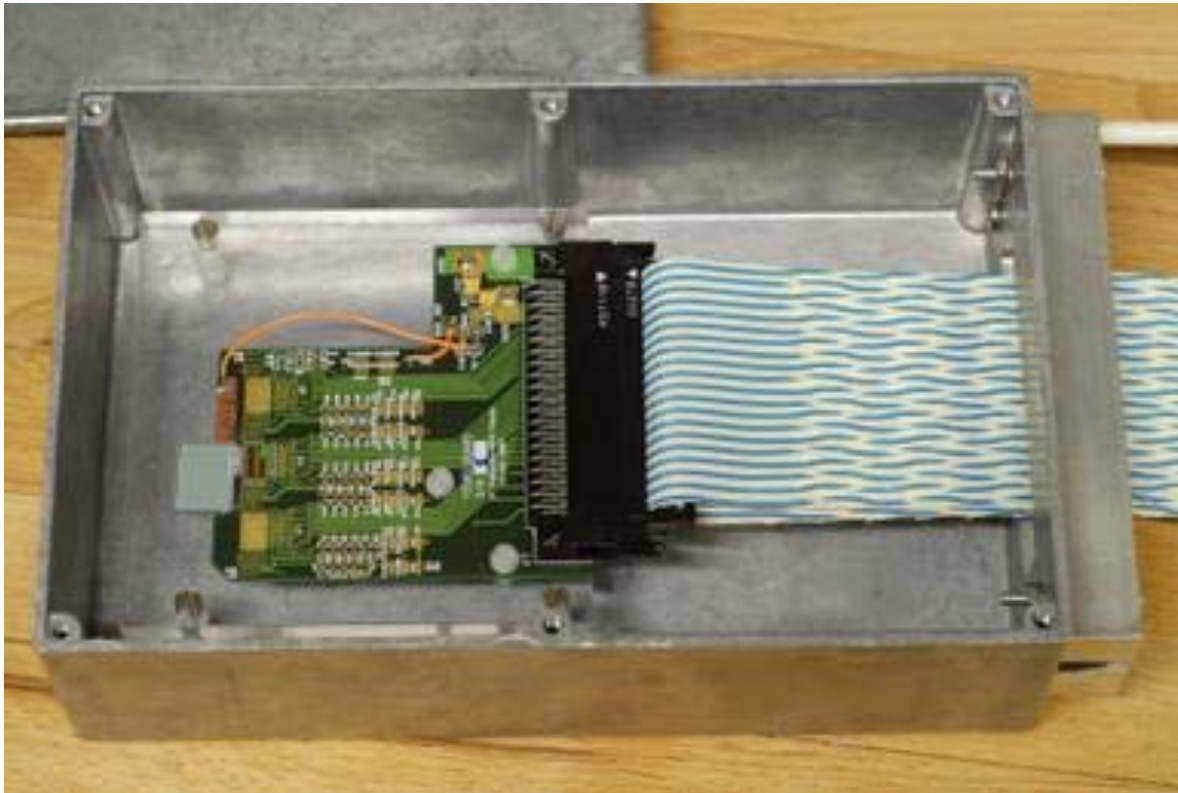
# Readout chain with FSSR2 chips



Each DSSD is bonded to two hybrids. Each hybrid is equipped with 3 FSSR2 chips = 384 channels. Two hybrids are connected to one adapter card.

Same for the telescope and the striplets demonstrator.

# FSSR2 hybrid & adapter



May 31 2008

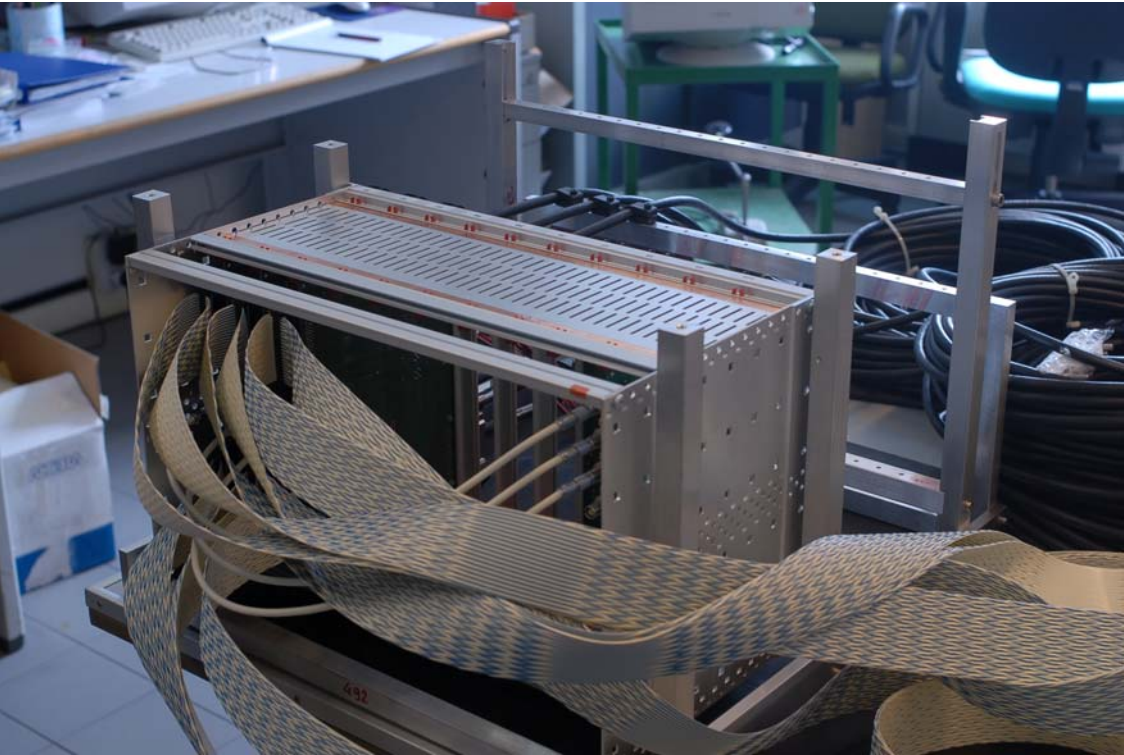
Lorenzo Vitale

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# List of the completed tasks

- 19 FE PCB for the chips “FSSR2 Hybrids”:
  - Designed, mounted and tested in Trieste  $19=2 \times (4+2) + 2 \times (2+1) + 1$  ✓
  - Gluing/Bonding FSSR2 to the hybrids (18x3 chips) ✓ (done in Trieste)
  - Detailed tests with chip calibration: 9/19
- 16 Flat cables FSSR2 Board - Adapter Board (Trieste) ✓
- 6+2+1 spare Adapter Boards (Trieste) ✓
- 2+1+1 spare LV distribution boards (Trieste) from PS A521 (Pisa) ✓
- 1+1 spare bias distribution boards from A519/A520 ✓
- 8+4+2(MAPS)+spare (tot.20) Cables SCSI Ultra 320 68 pins ✓
- A mini-crate to host the boards (adapter/distribution) ✓, together with 9 front panels ✓ (Trieste)
- 8+4+2 Cables to connect mini-crate and boards adapter/distribution for LV adapter ✓
- 4+2+2 for bias ✓

# Mini-crate





# Ongoing

- **Mechanical support** (Stesalite\* + Al frame)
  - Design Telescope modules ✓
  - All stesalite supports ✓
  - Design Striplets modules: to be finalized
- **Assembling** modules (Trieste): (first ✓ on May 29)
- **Bonding** detectors: first assembled module will be sent to Pisa asap; next ones will be delivered every few days

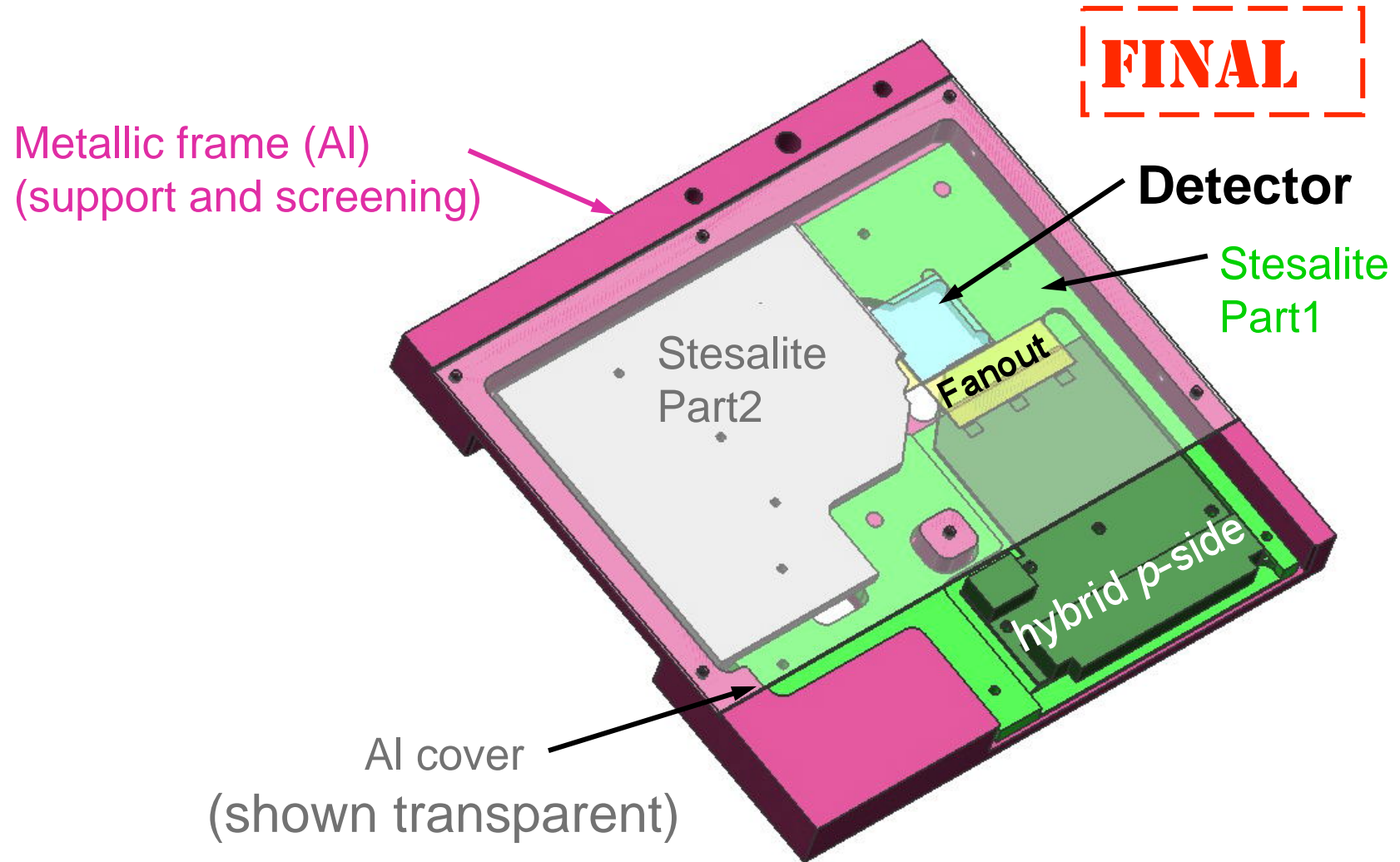
## TESTS and VALIDATIONS

- **Striplets sensors: more tests (arrived on May 8)**
- Pitch adapters tests (arrived on May 28) ✓
- Hybrids: finalizing detailed tests with chip calibrations 10/19
- More tests on FSSR2
  - external pulser,
  - system setup validation
  - $^{241}\text{Am}$ ,  $\beta$  sources
  - Temperature monitoring

\*Stesalite = Fiberglass+epoxy material; high surface resistivity, stiff, but relatively easy to be shaped

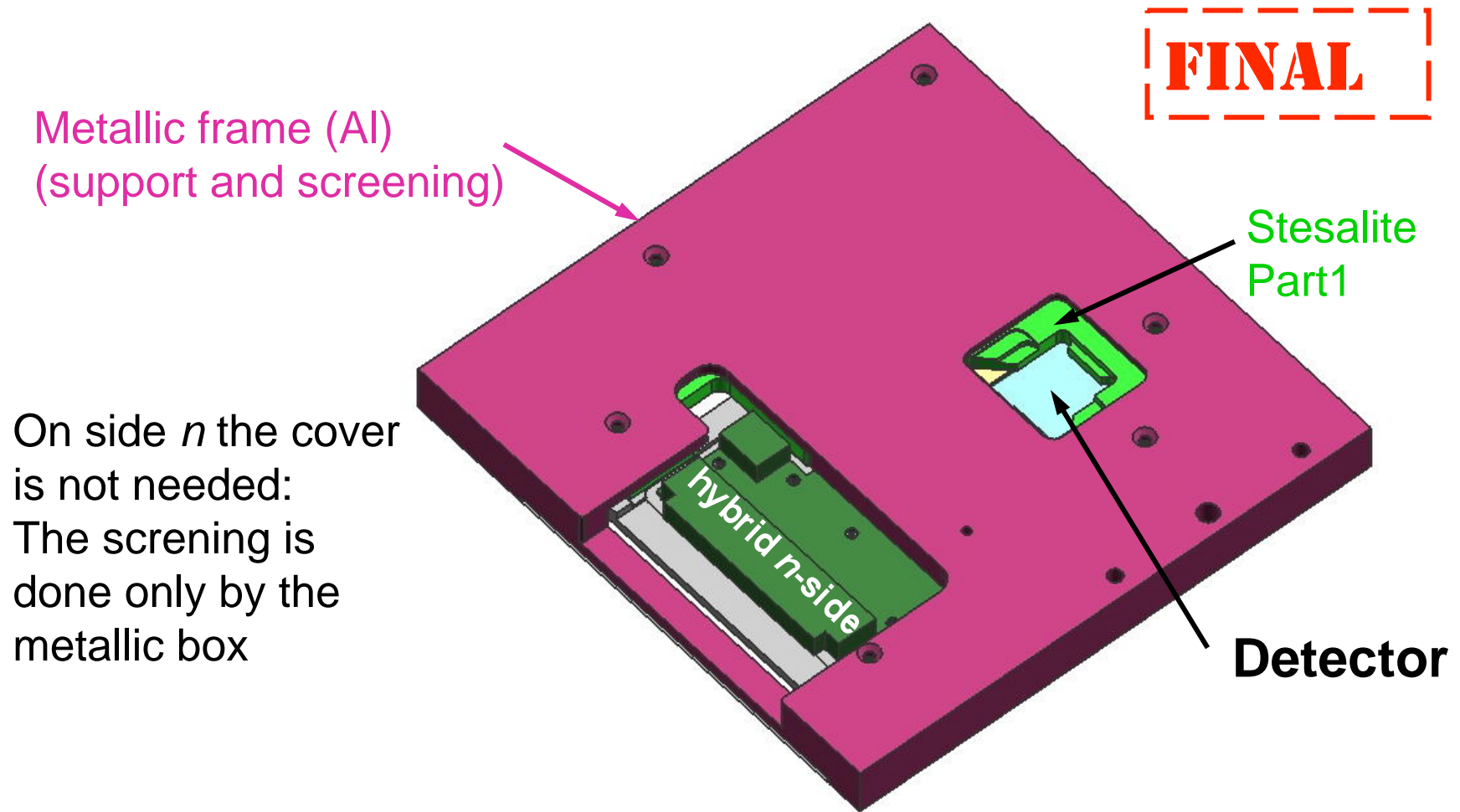
# Support for Telescope Detectors

Side “*p*” view, together with metallic frame

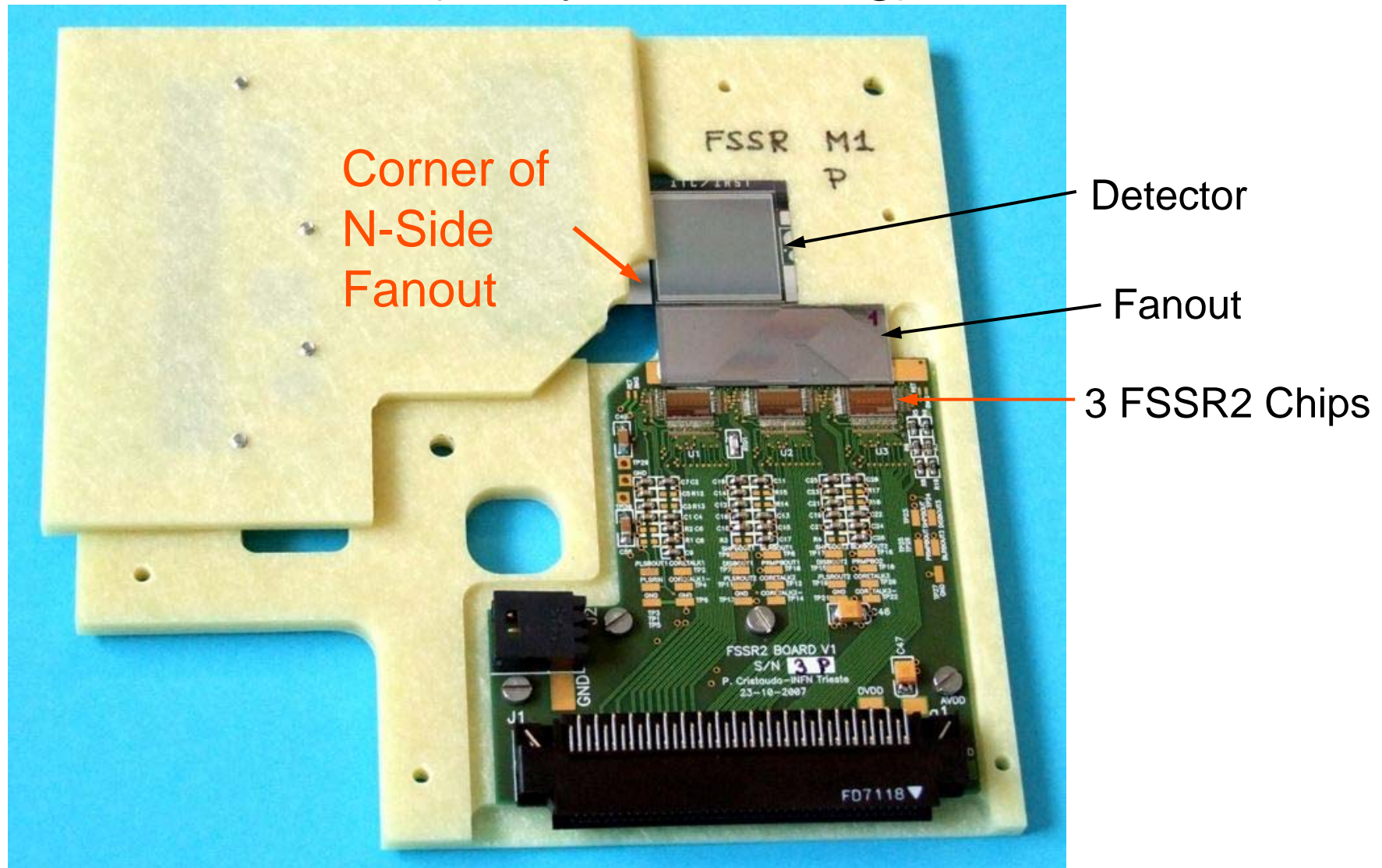


# Support for Telescope Detectors

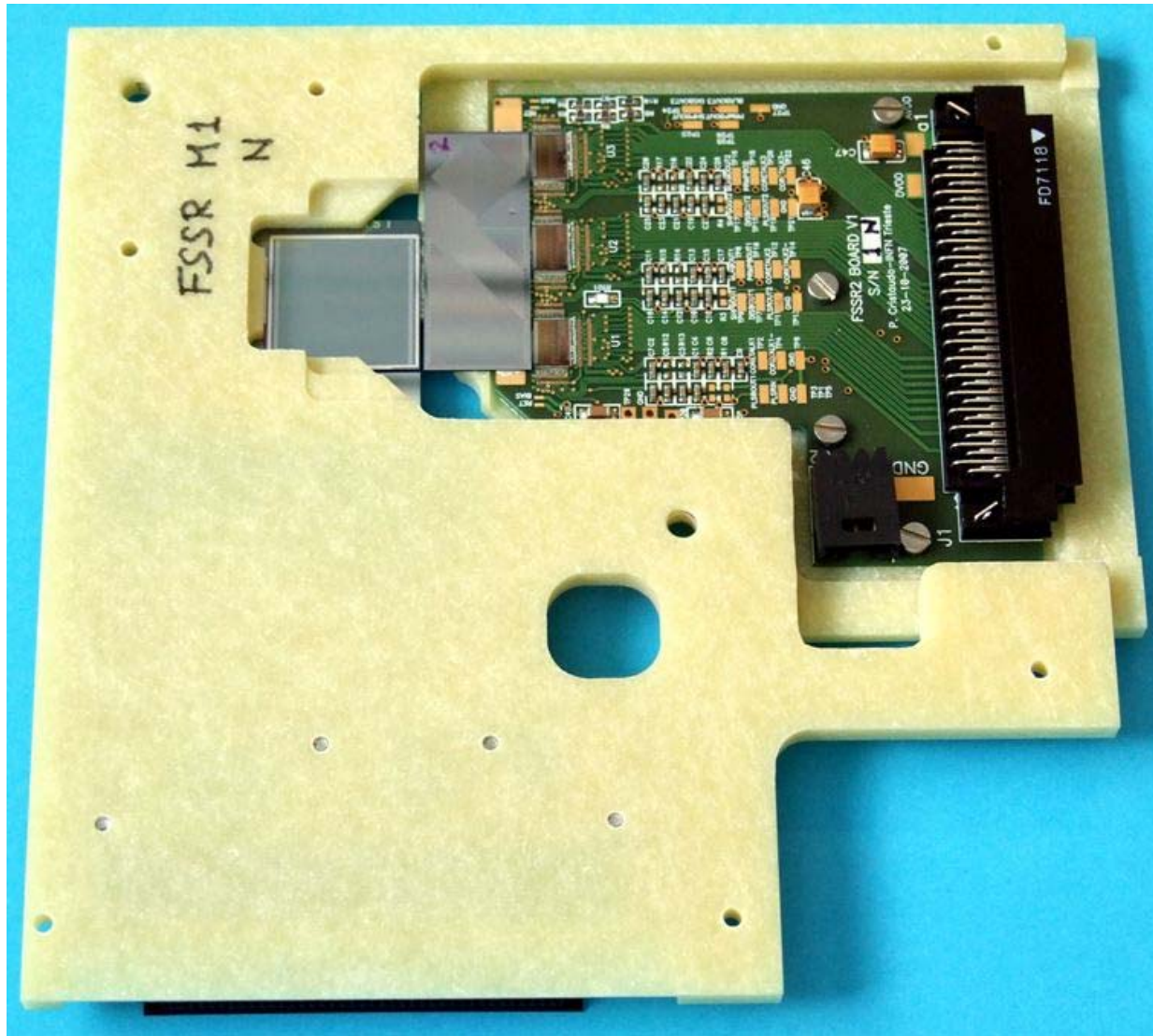
Side “ $n$ ” view, together with metallic frame



# Telescope Module #1 - p-side (ready for bonding)



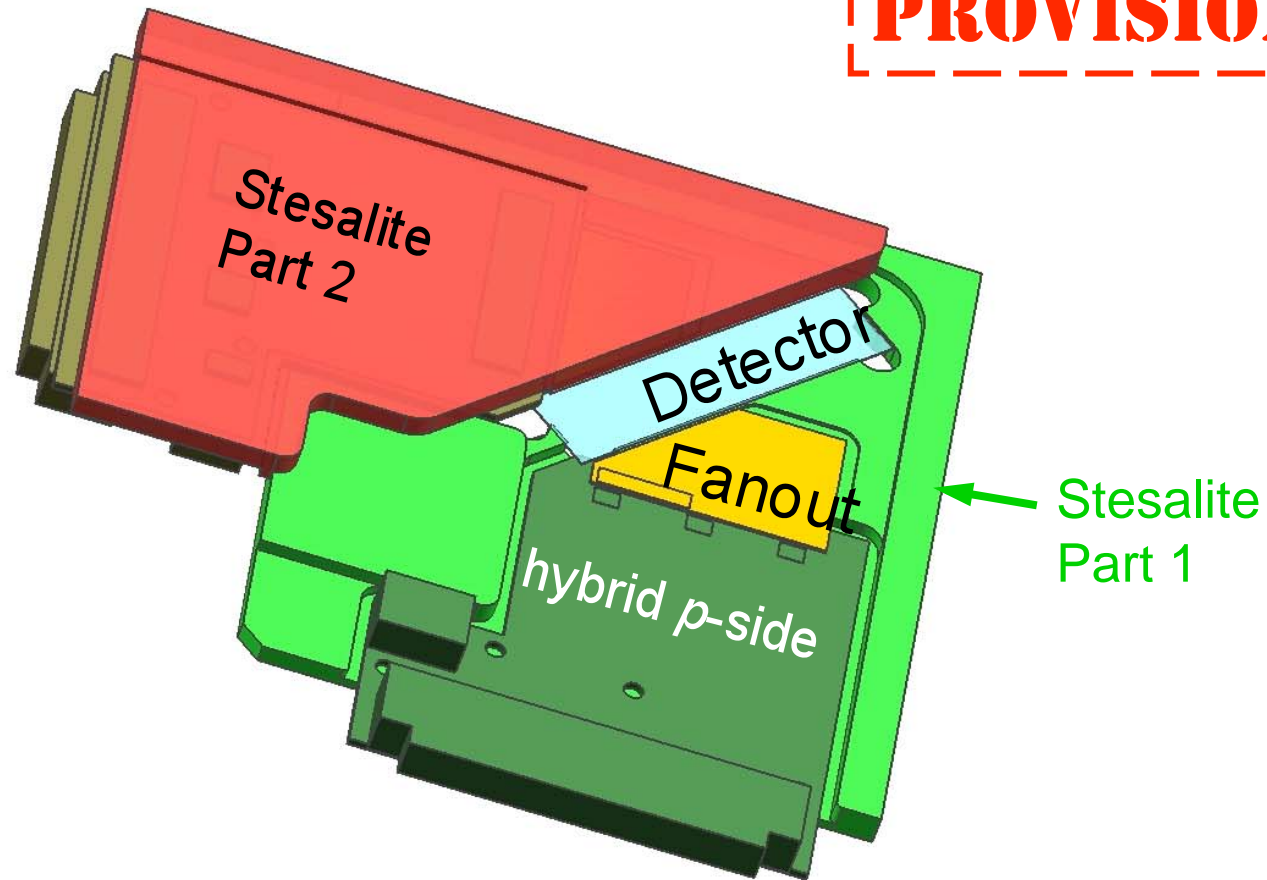
# Telescope Module #1 - n-side (ready for bonding)



# Support for Striplets Detectors

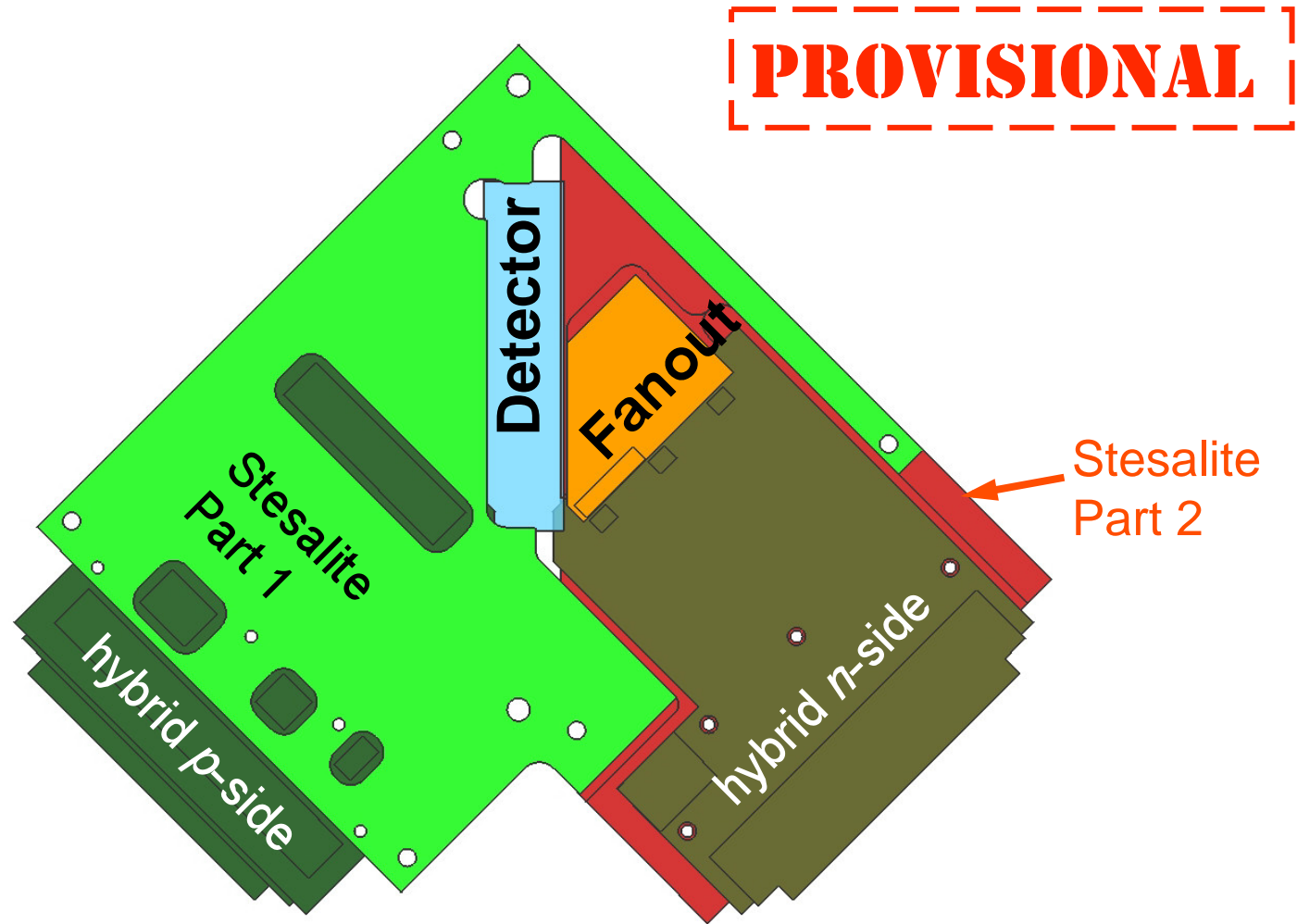
Side “*p*” view

**PROVISIONAL**

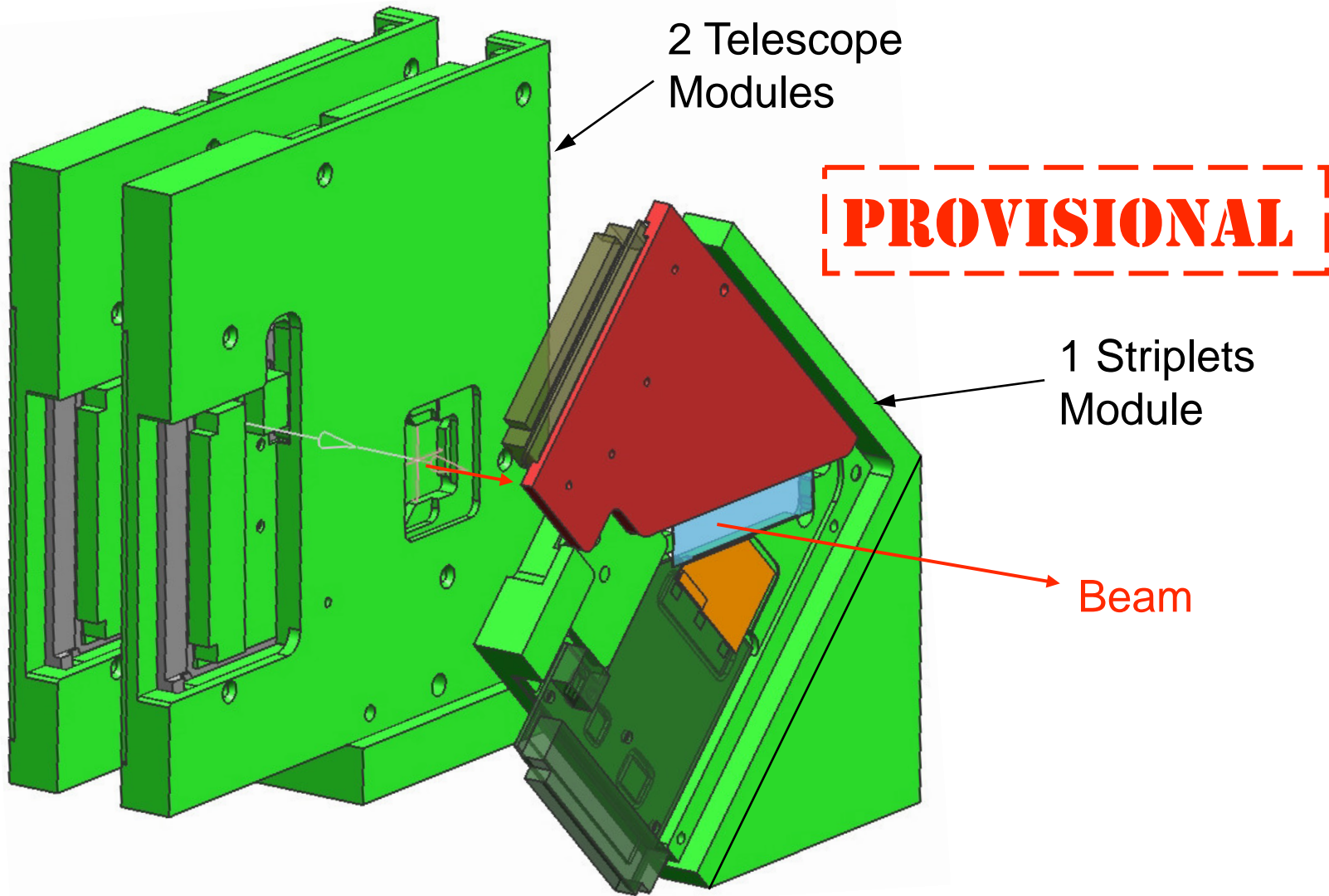


# Support for Triplets Detectors

Side “*n*” view

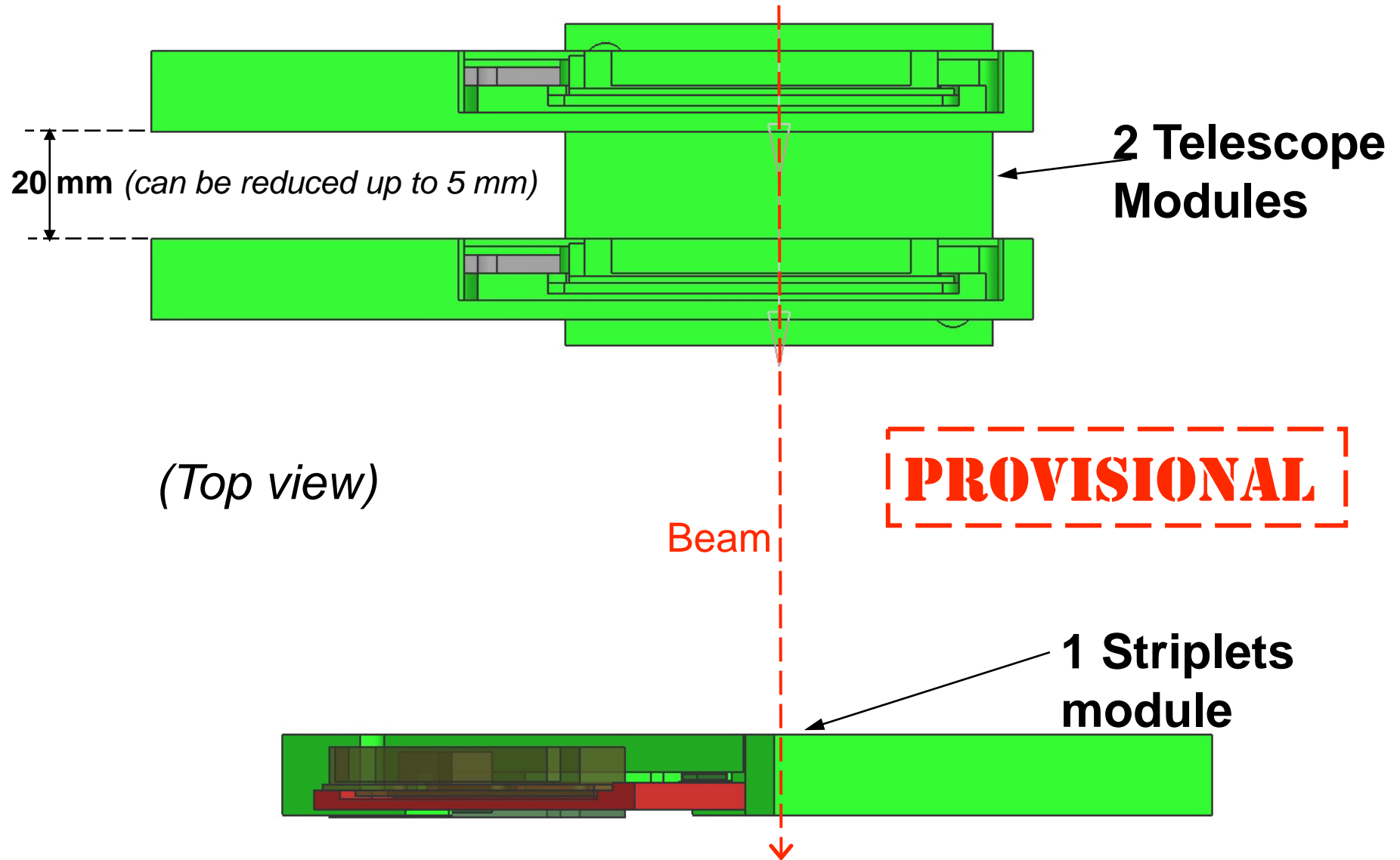


# Assembly Telescope and Striplets Modules

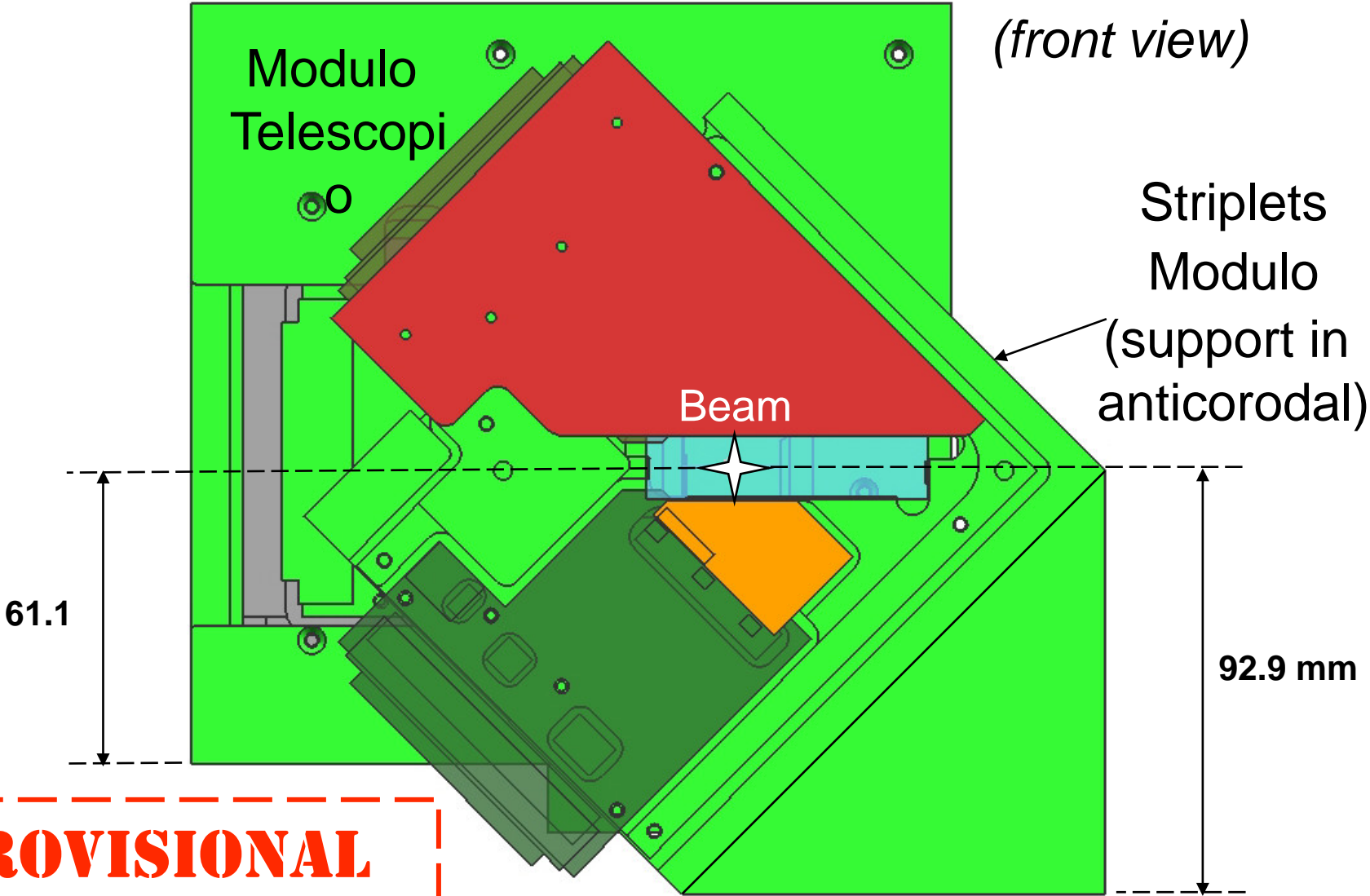




# Assembly Telescope and Striplets Modules



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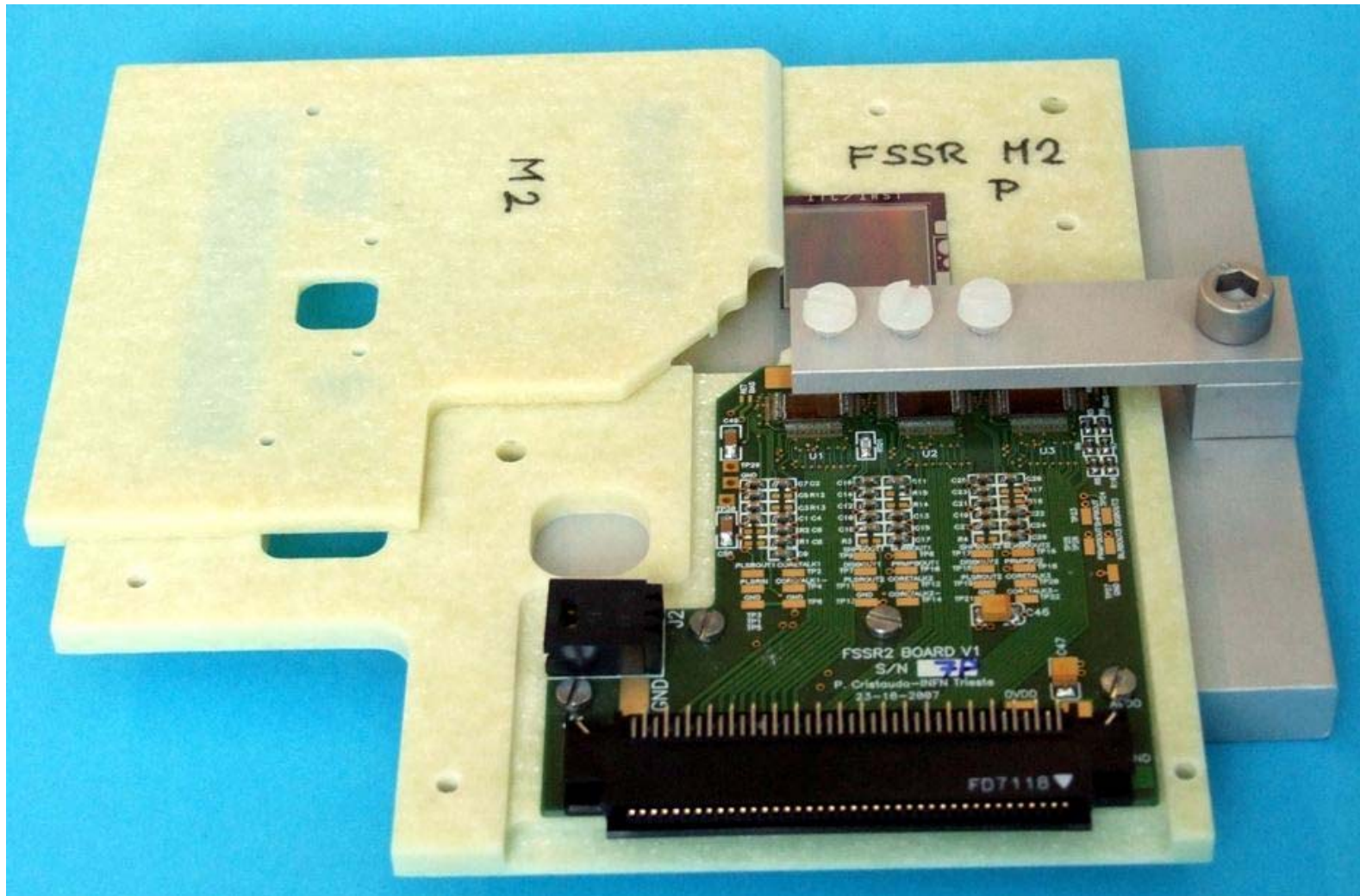
**PROVISIONAL**

# Conclusions

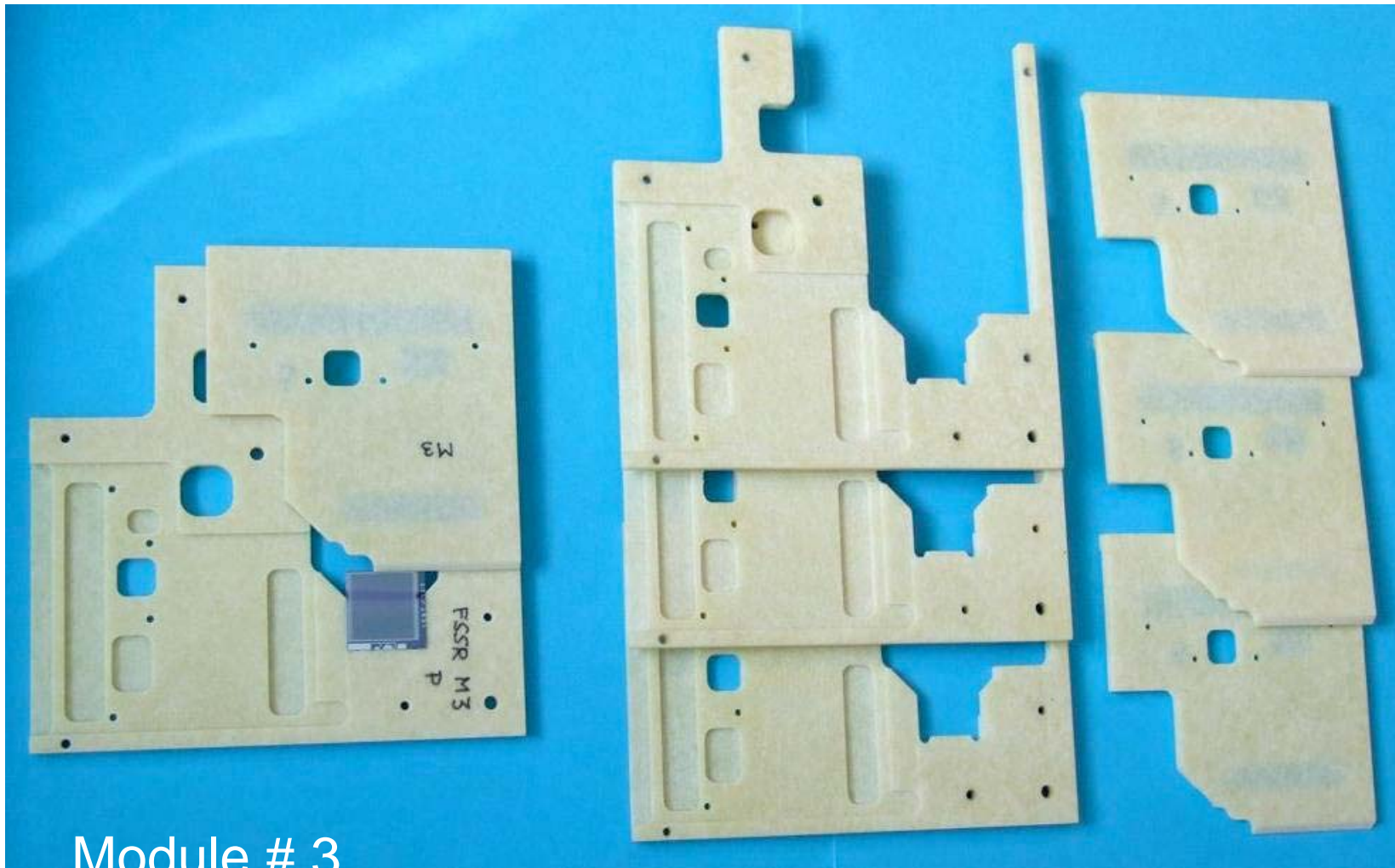
- FE electronics is ready
- Supports/Assembly/Tests are proceeding well
- We are on track for the beam test in September, both for the telescope and the triplets

# **EXTRA SLIDES**

# Telescope Module # 2 (hybrid being glued on p-side)



# Telescope Modules # 3 - 6



Module # 3

(detector glued,  
waiting for hybrids)

Supports for Modules # 4, 5, 6  
(machining completed,  
detectors being glued)