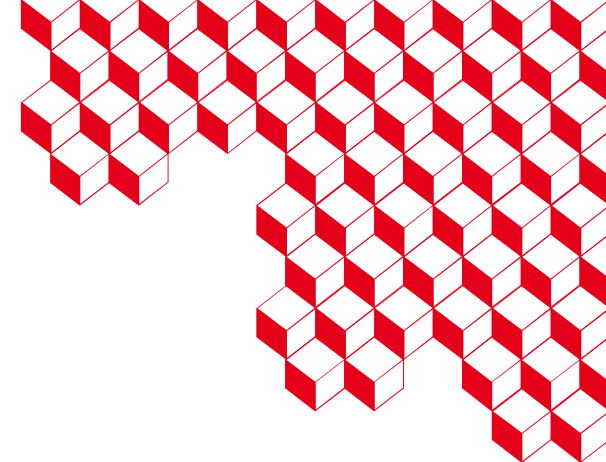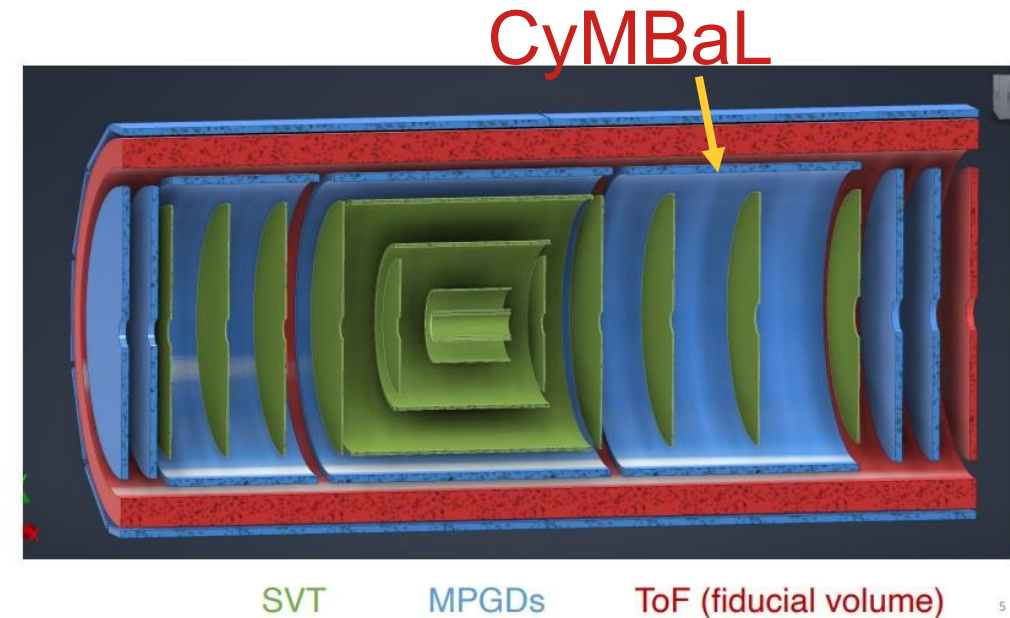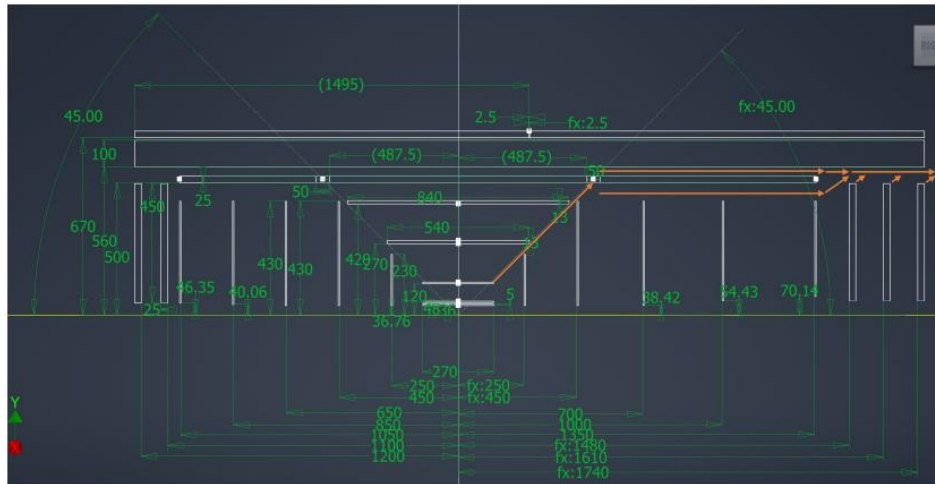# CyMBaL – status

F. Bossù for the Saclay group

MPGD-DSC meeting, Dec 7th 2023

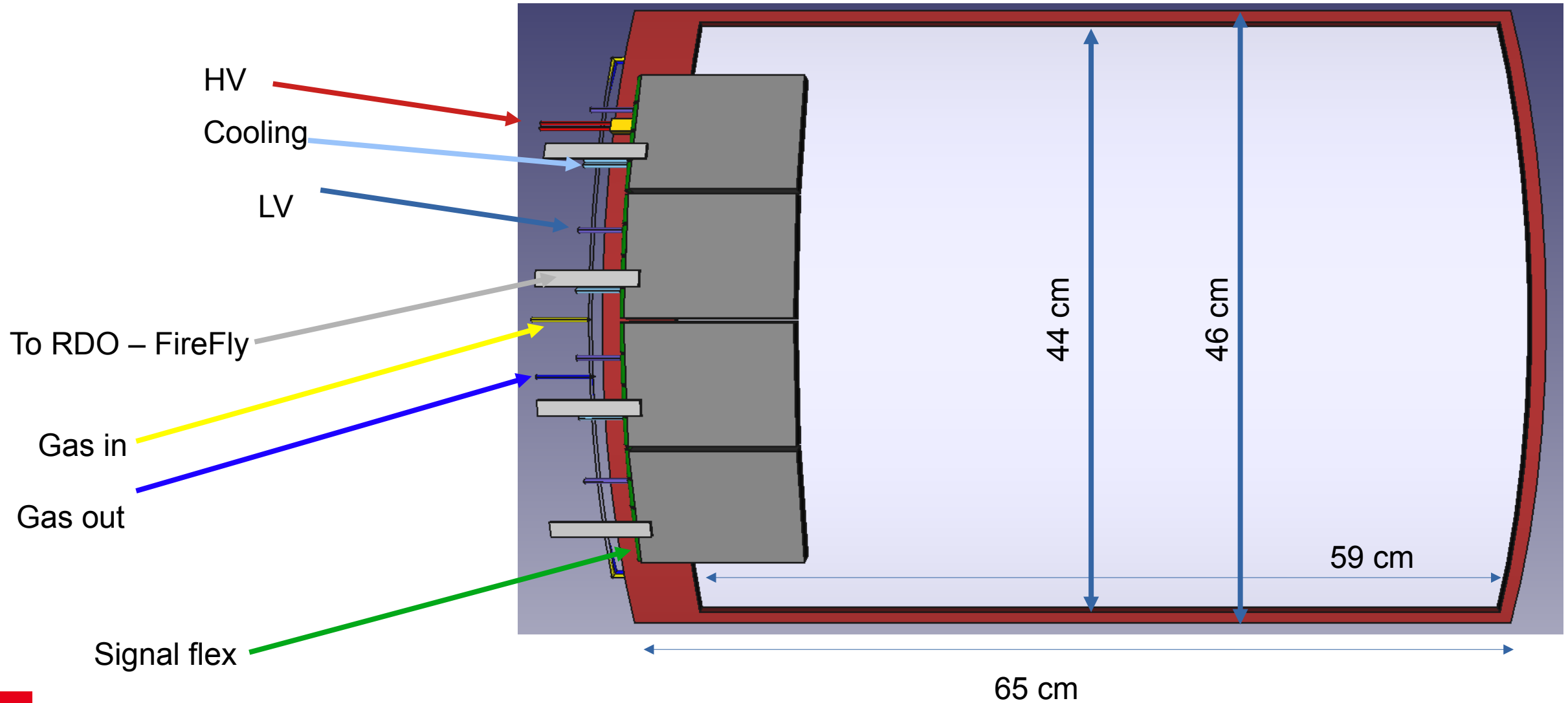# Cylindircal Micromegas Barrel Layer (CyMBaL)

CyMBaL : a single layer of curved 2D Micromegas modules

- Technology: evolution of the CLAS12 Micromegas, 1D → 2D

- Use a single module design to reduce manufacturing and assembly
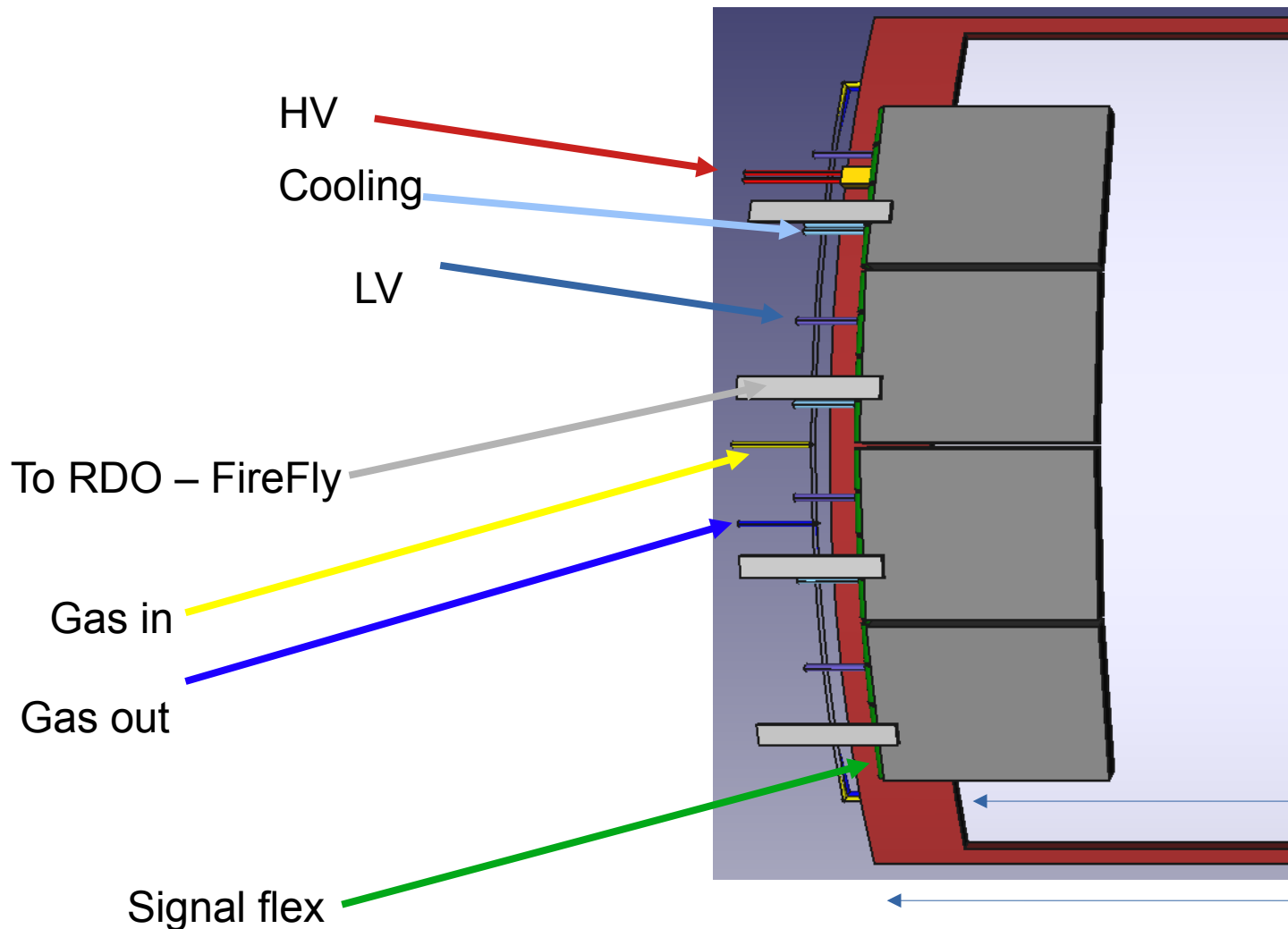
- Be hermetic in phi and z

SVT   MPGDs   ToF (fiducial volume)

- Tight radial space: ~6cm of space
- Almost 2.5 m in length

Basic module: a tile

Basic module: a tile

HV

Cooling

LV

To RDO – FireFly

Gas in

Gas out

Signal flex

Dimensions:
- Size: 65 x 46 cm^2
- Active area: 59x44 cm^2
- ~1 mm pitch in both directions
- 1024 strips per tile
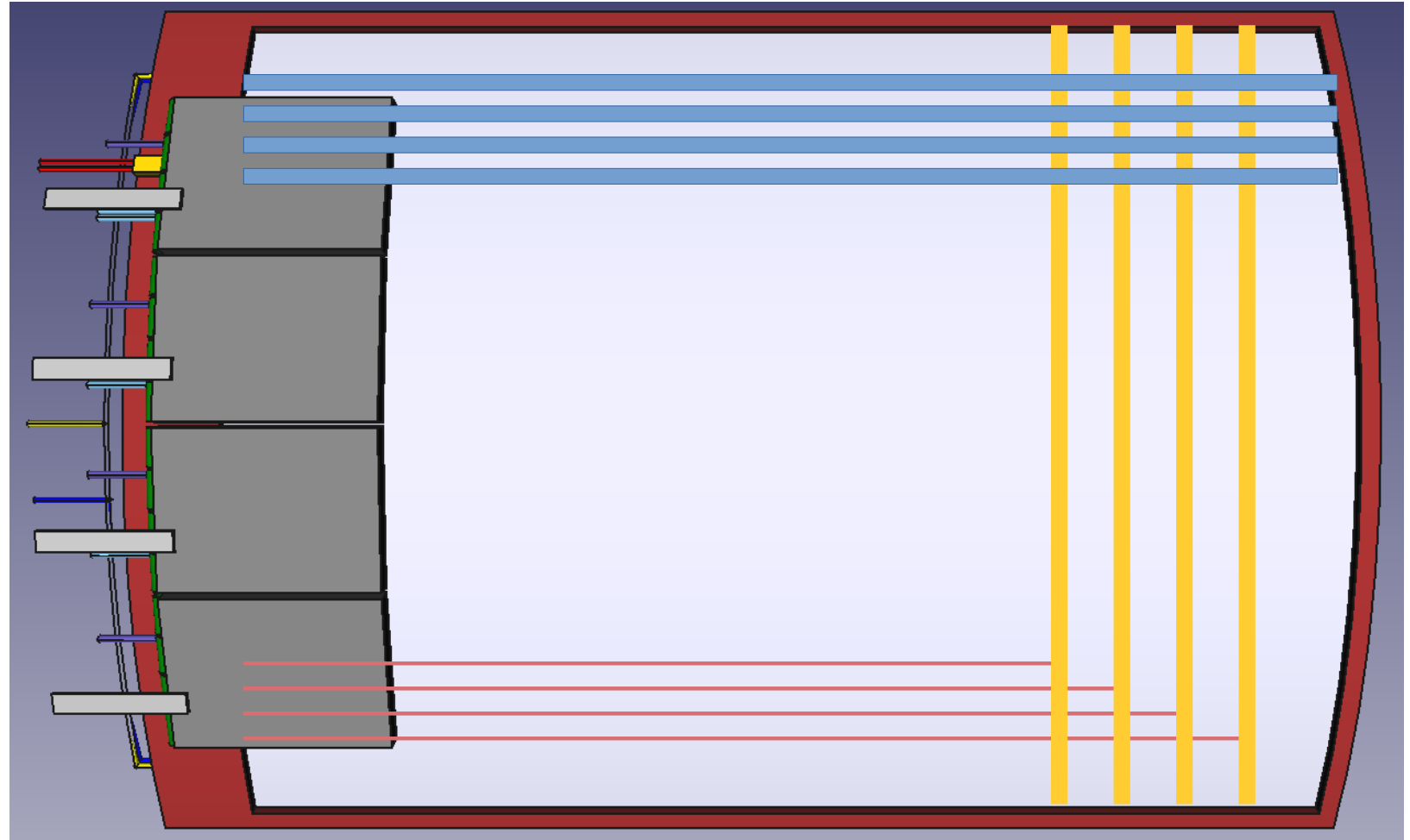- 32 channels per connector→ 32 connectors

Services:
- HV: 2 channels (drift and resistive layer)
- Gas: 2 tubes (in and out)
  - Two tiles can be in series
- 4 FEB per tile
- If 4 ASICs per FEB:
  - 1x8ch FireFly per FEB to the RDO
  - 2 short flex cables per ASIC
  - LV
  - Cooling in and out, possibly in series
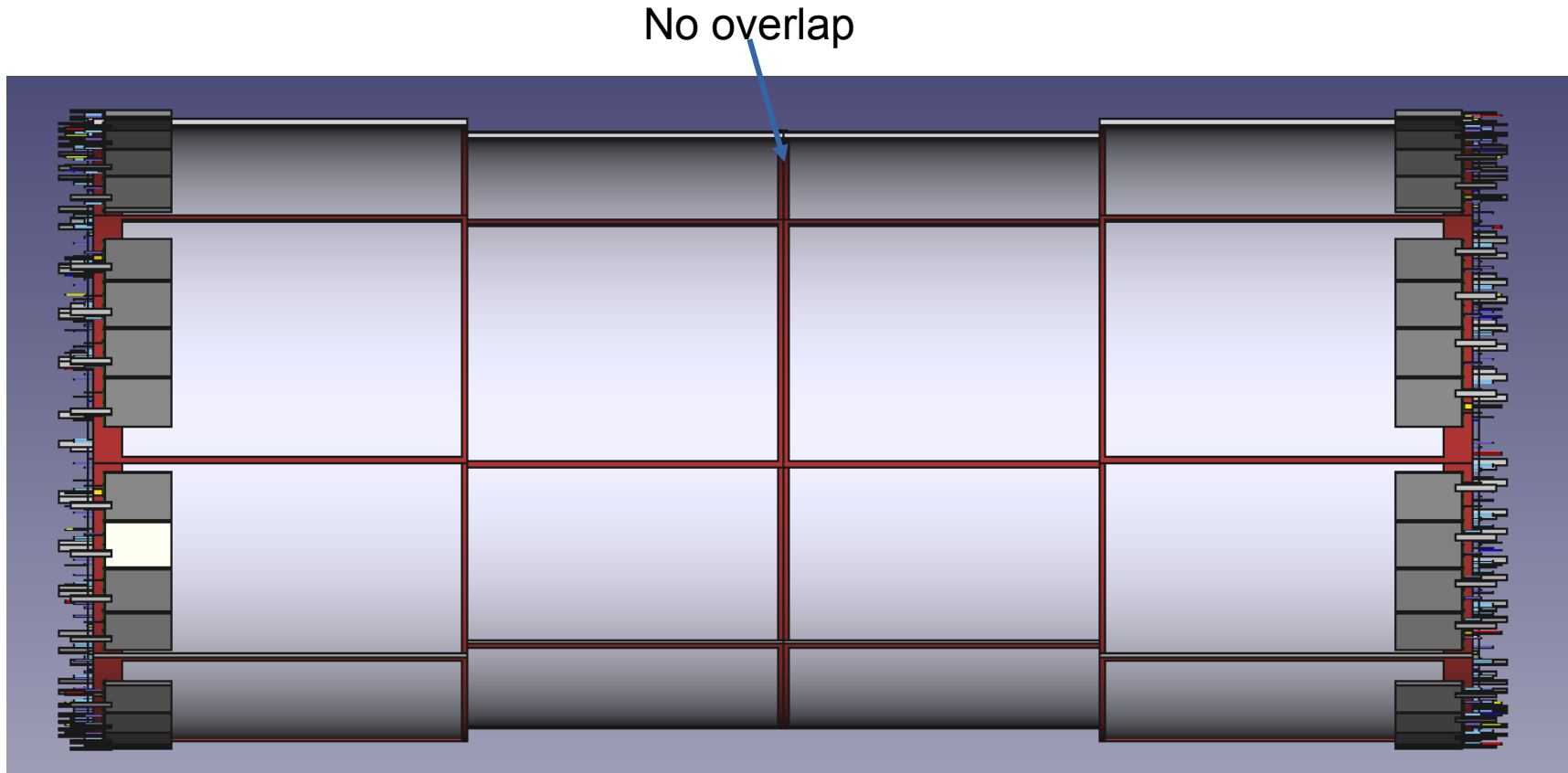
Basic module: a tile; readout routing

Legend:
- Z; (r phi) — blue
- C; (z) — yellow
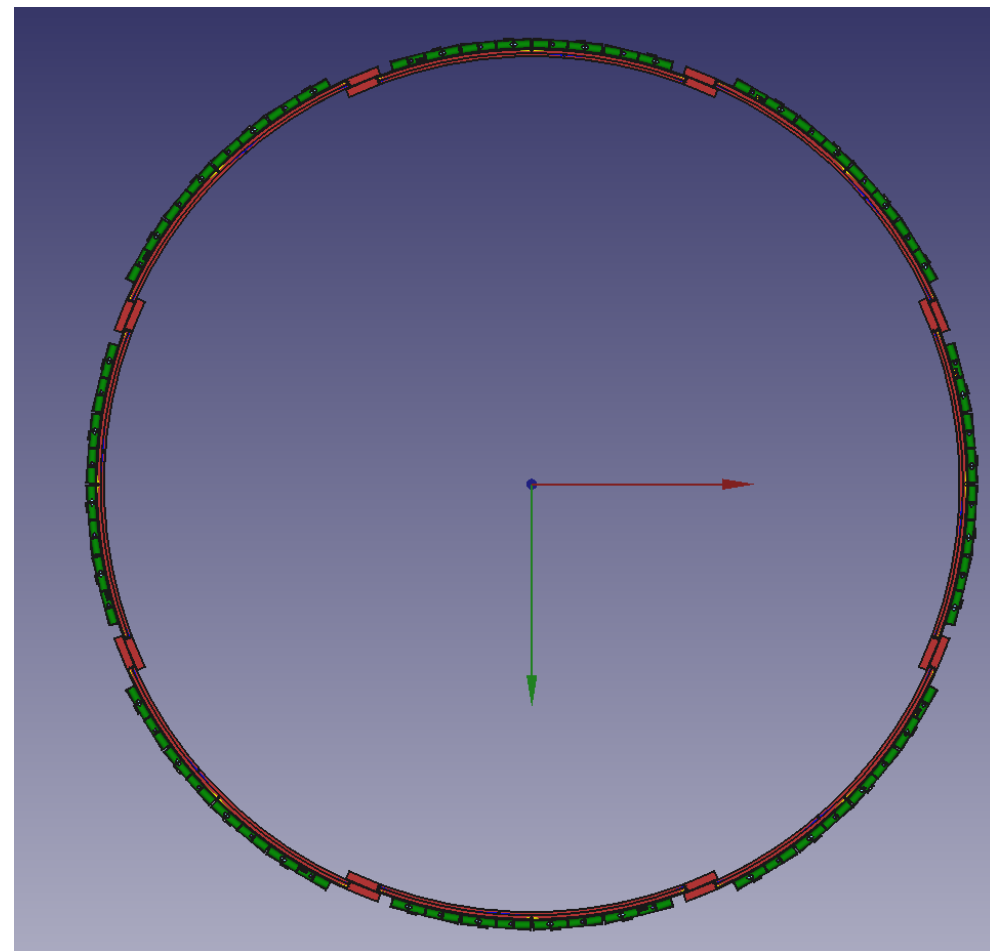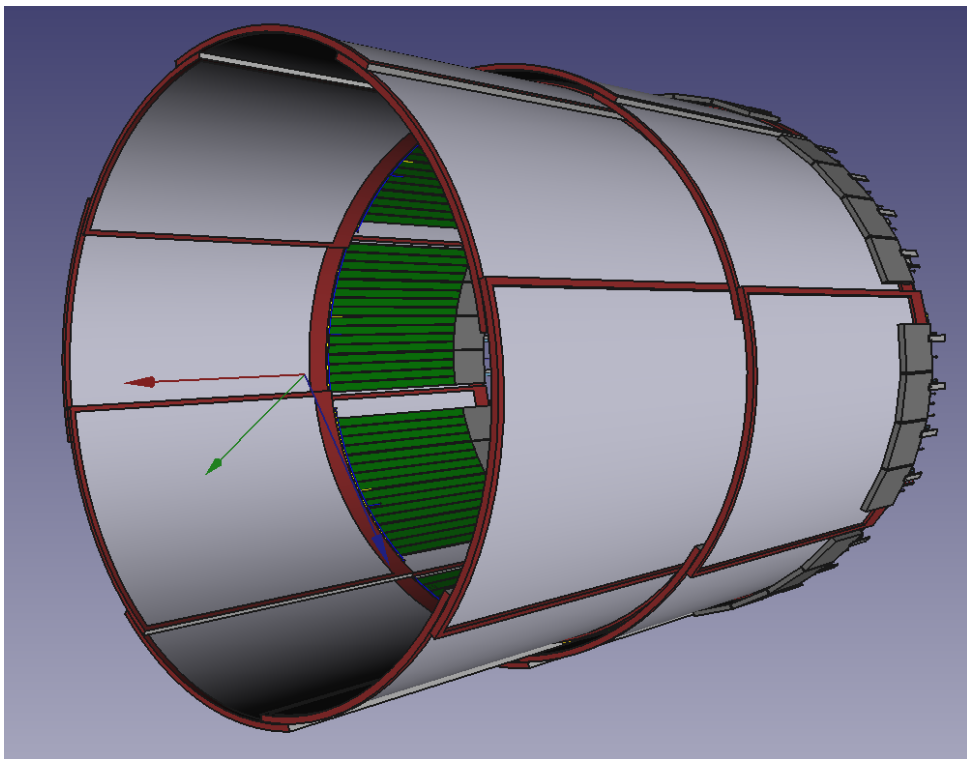- return trail for C strips — red

CyMBaL

- The length in z will be covered with 4 modules
- Two different radii, 50 and 52.5 cm
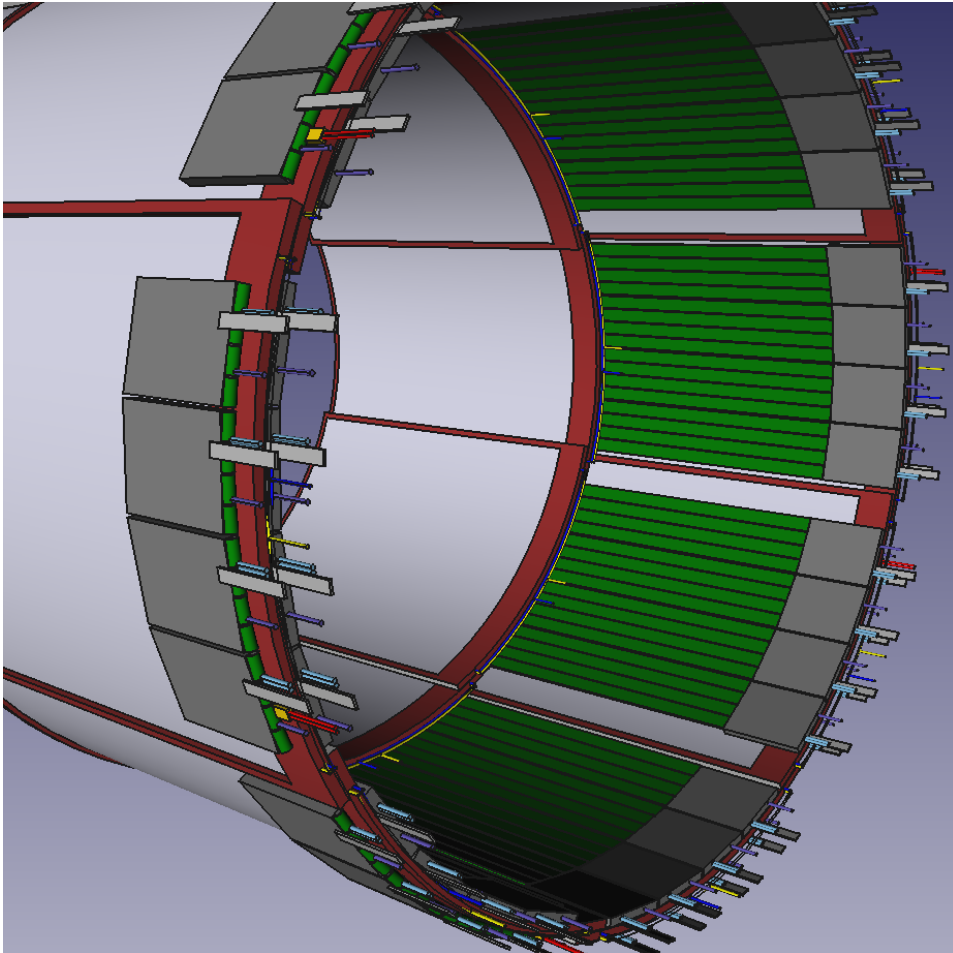- No overlap in the middle: not needed as there will be support disks at the same location

No overlap

CyMBaL

- 8 modules in phi
- Alternated layout at two slightly different radii

CyMBaL – FEB locations

- FEB on the extremities of the system to avoid too much material in the active region

- The inner modules will need longer flex cables (~50cm) to bring the signals to the FEB

- Under discussion:

  - If space is available, the FEBs could be located just outside the detectors,

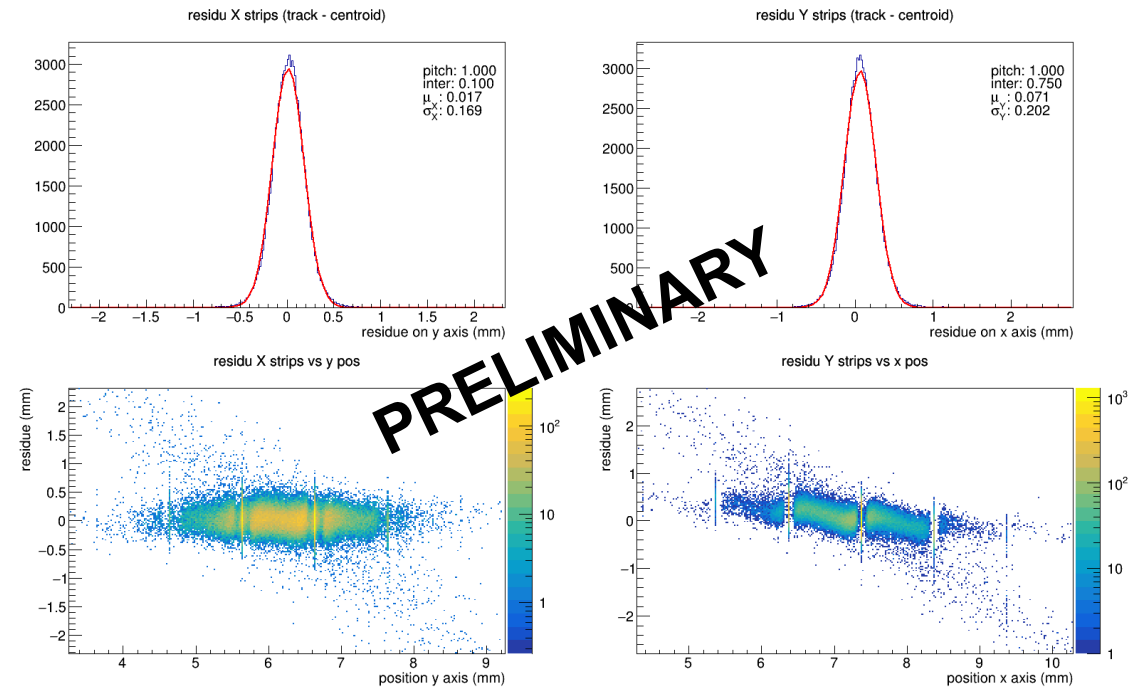 - This could help saving ~1cm in radial space

CyMBaL – more views
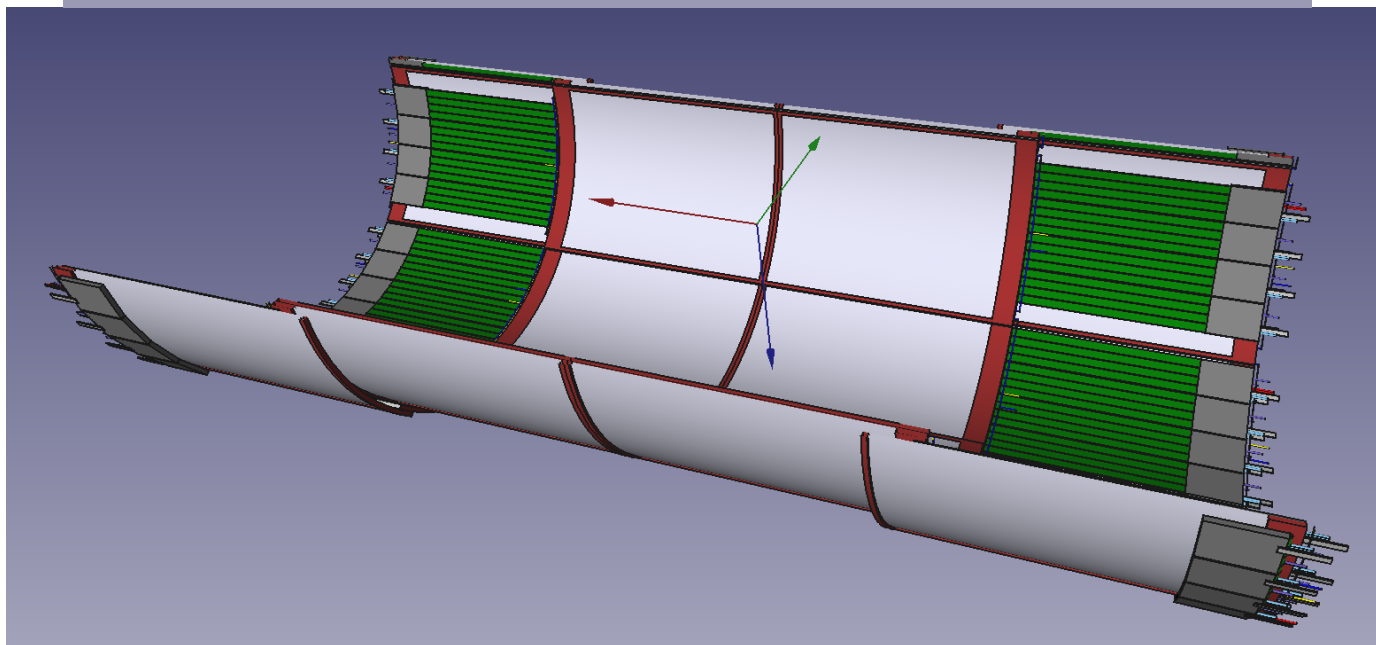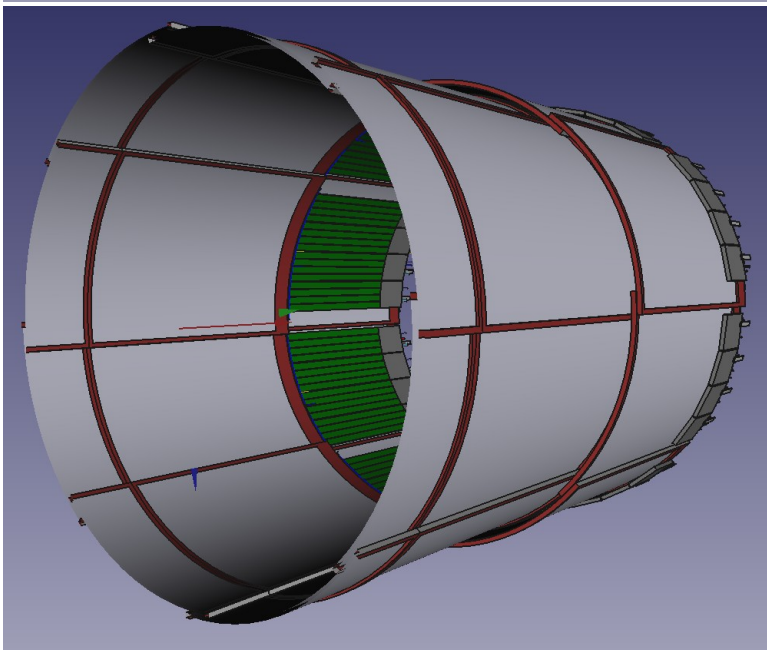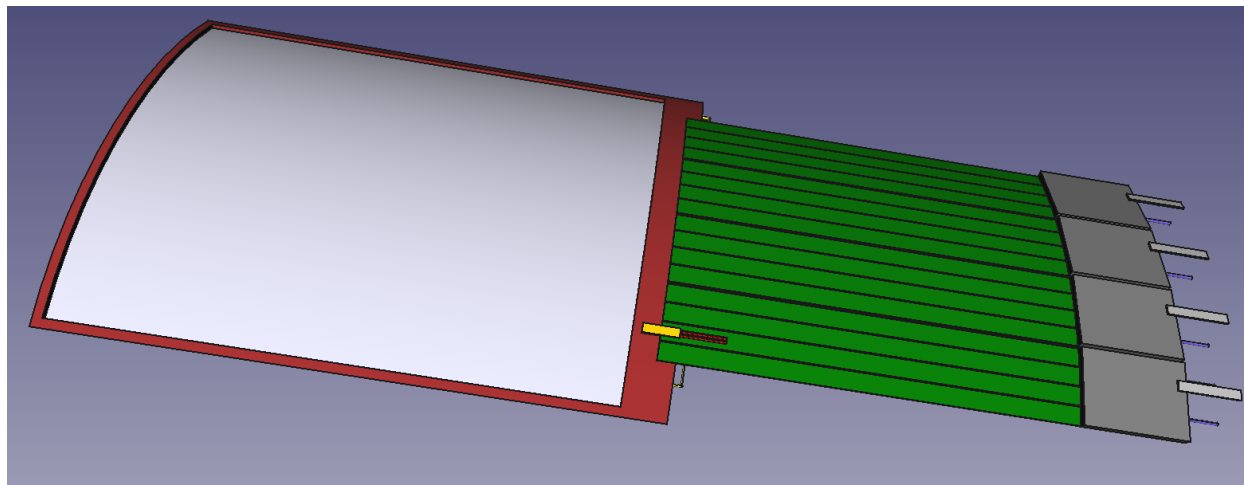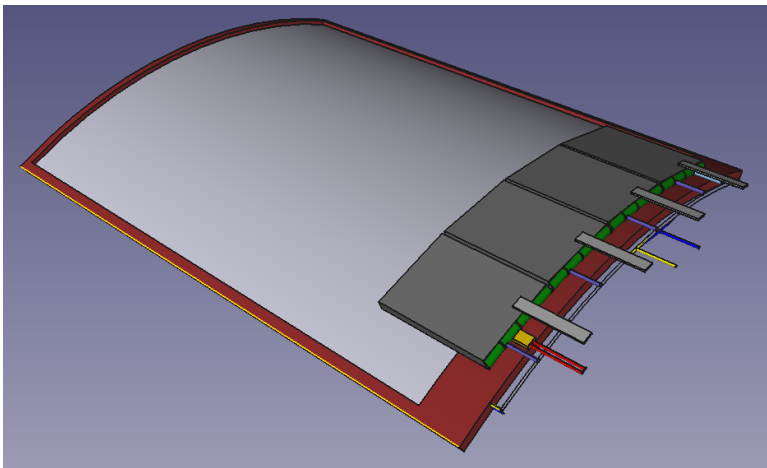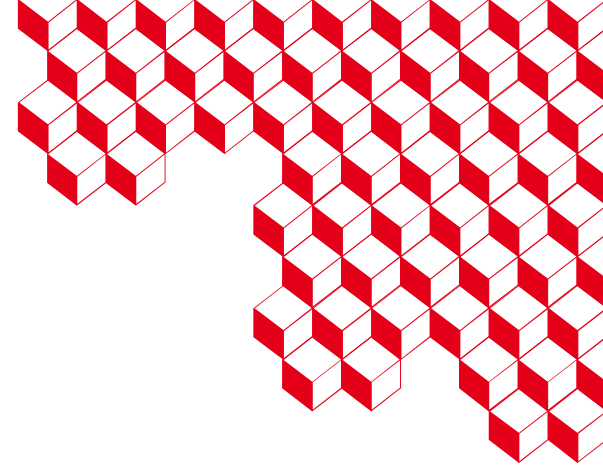
News from test beam analysis
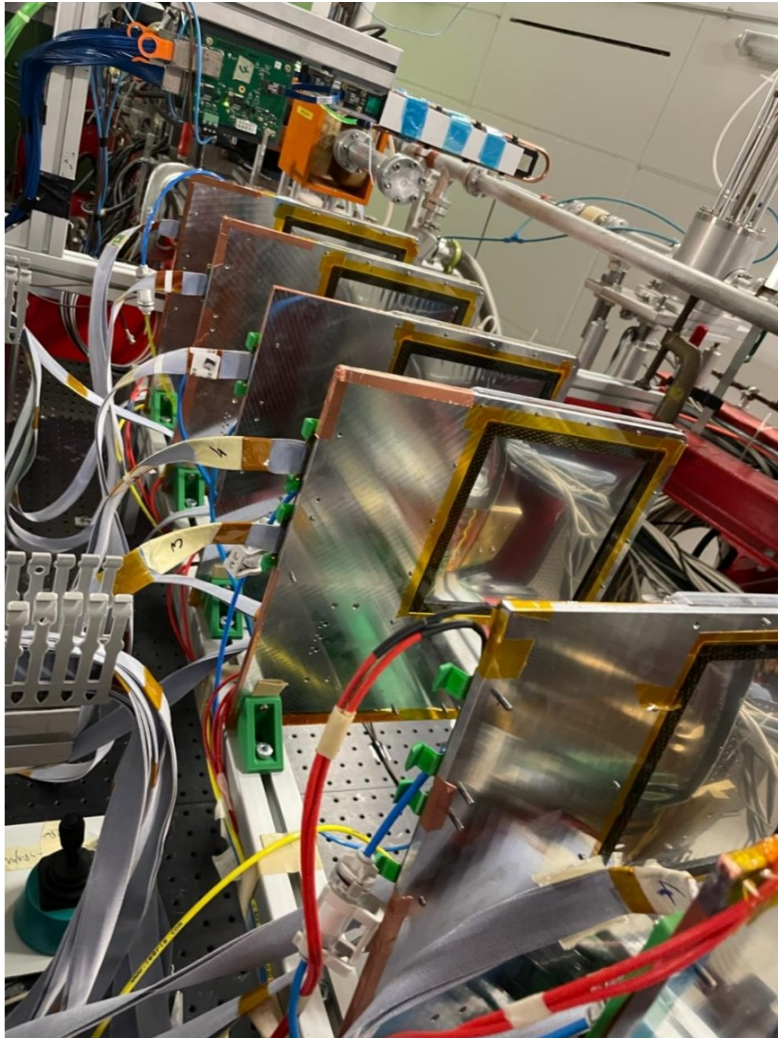
- Test beam at MAMI
- Electron beam 880 MeV
- Several 12x12cm2 prototypes
- Various combinations of x-y readout strip pitches and Asacusa-like patterns
- Analysis ongoing, Samy Polcher Rafael (PhD student in Saclay) is analyzing the data

Merci