Backward Ecal / EEEMCal

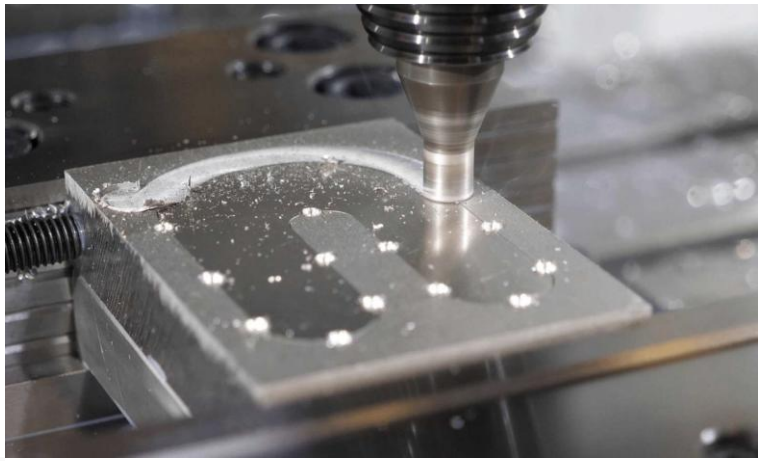
Triple I Engineering Meeting Update (28/04/2025)

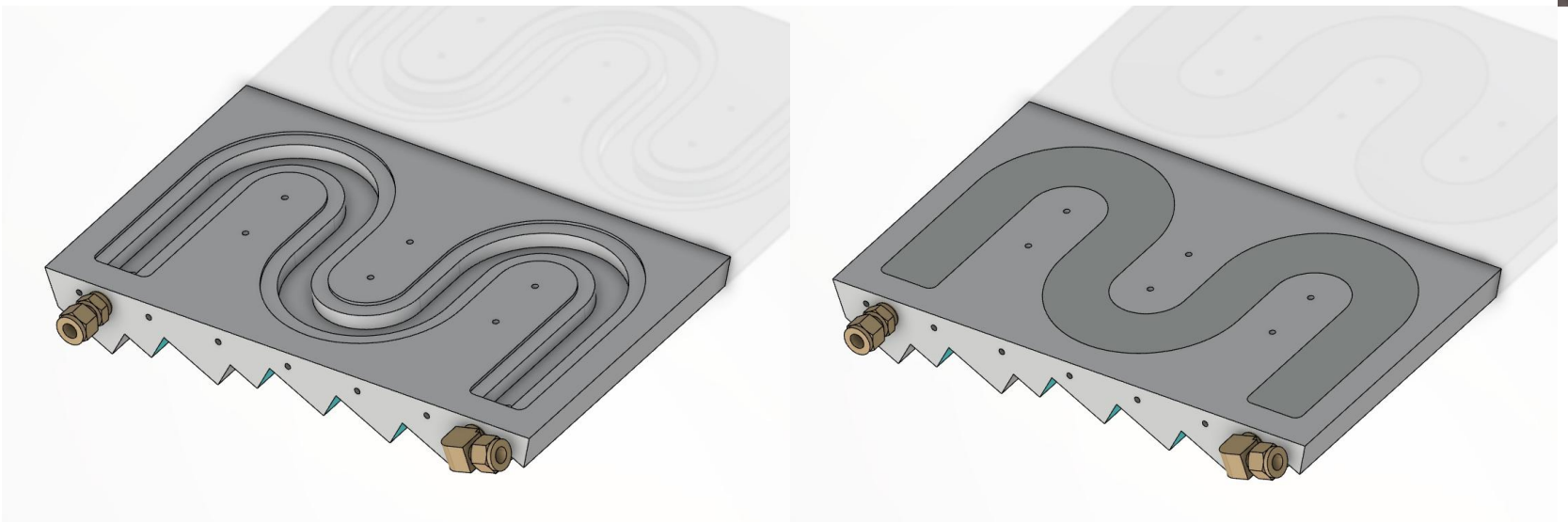
Julien Bettane

Prototype External structure (1/12) – FSW

- Prototype to check the efficiency of the cooling
- **Test the Friction Stir Welding (FSW) technology**
- Good watertightness and good for the pressure
- Quote received → Very expensive !!
- Technicaly possible for the entire structure but probably too expensive

→ Discussions with the company this week

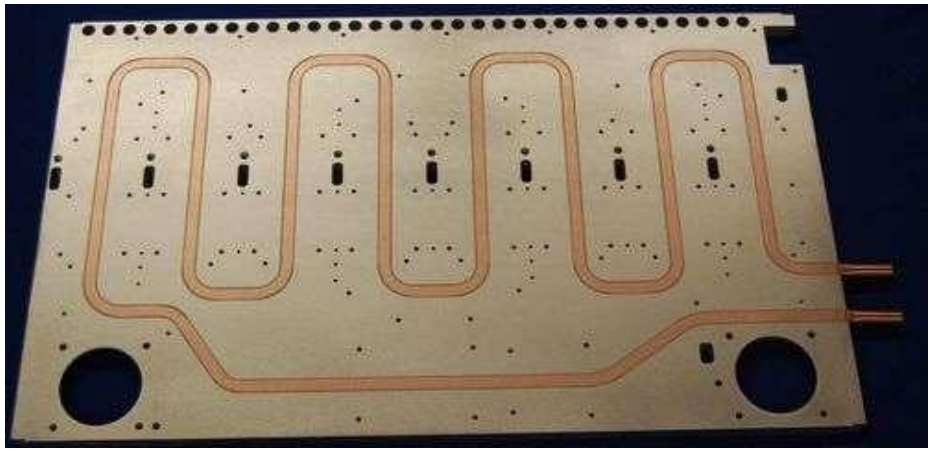


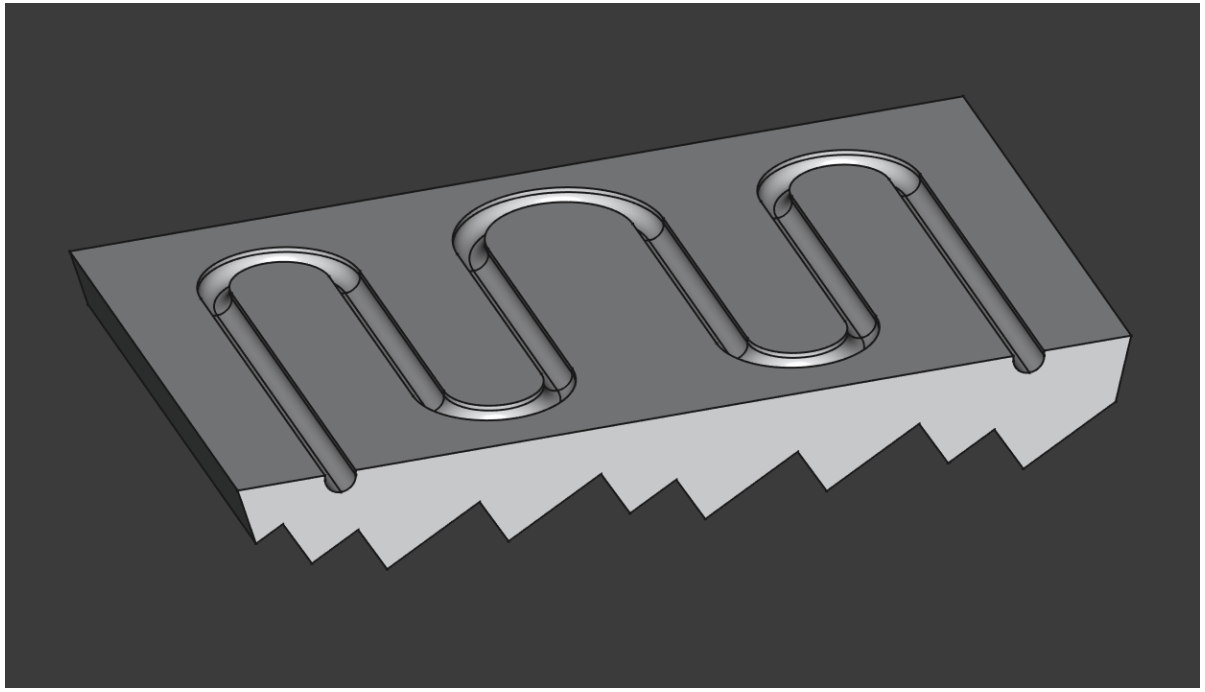


Prototype External structure (1/12) – Copper tubes

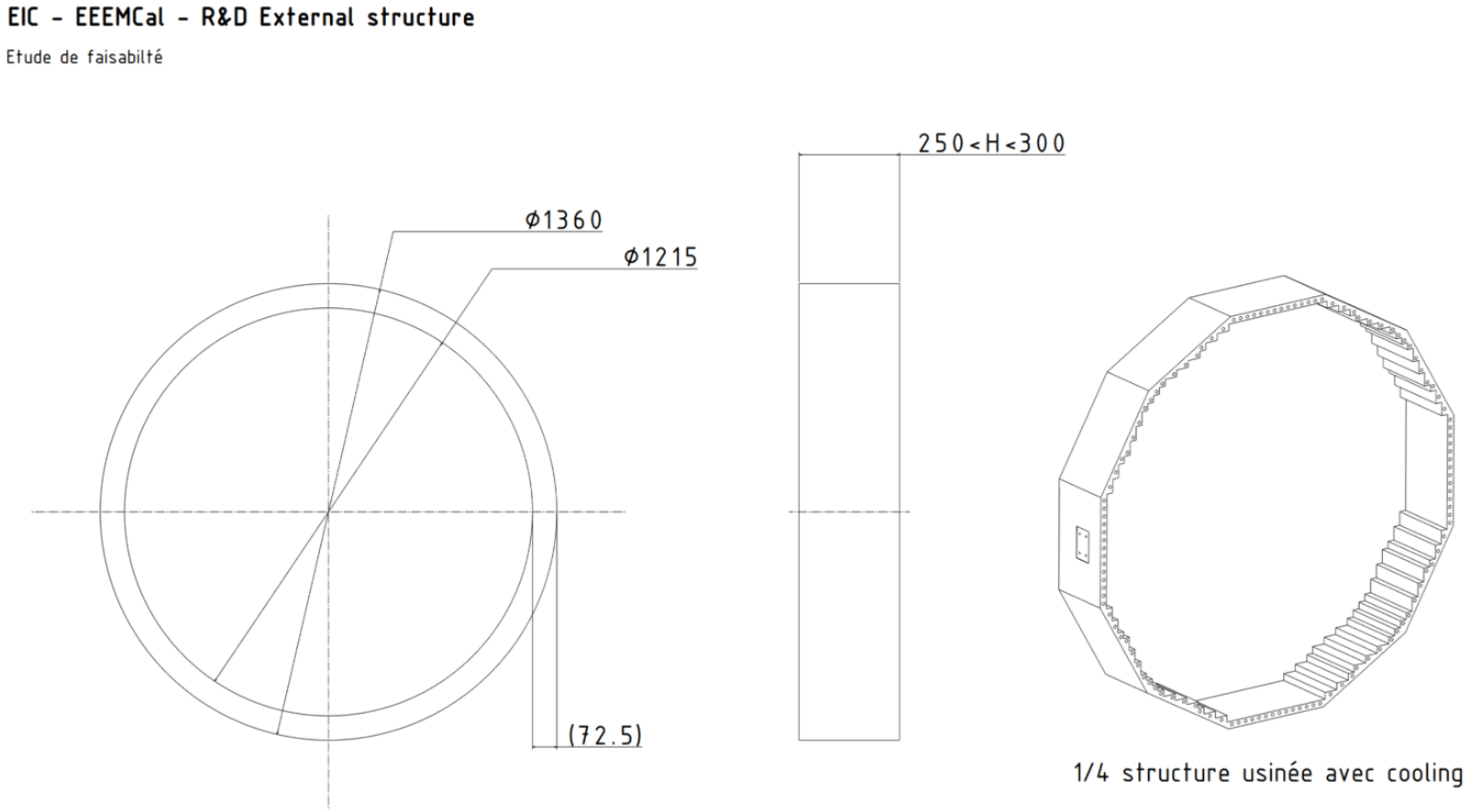
- ❑ Prototype with copper tubes
- ❑ Technology not applicable to the entire structure because of the size

→ Need to design an assembly of 12 cold plates





Fabrication of the External structure

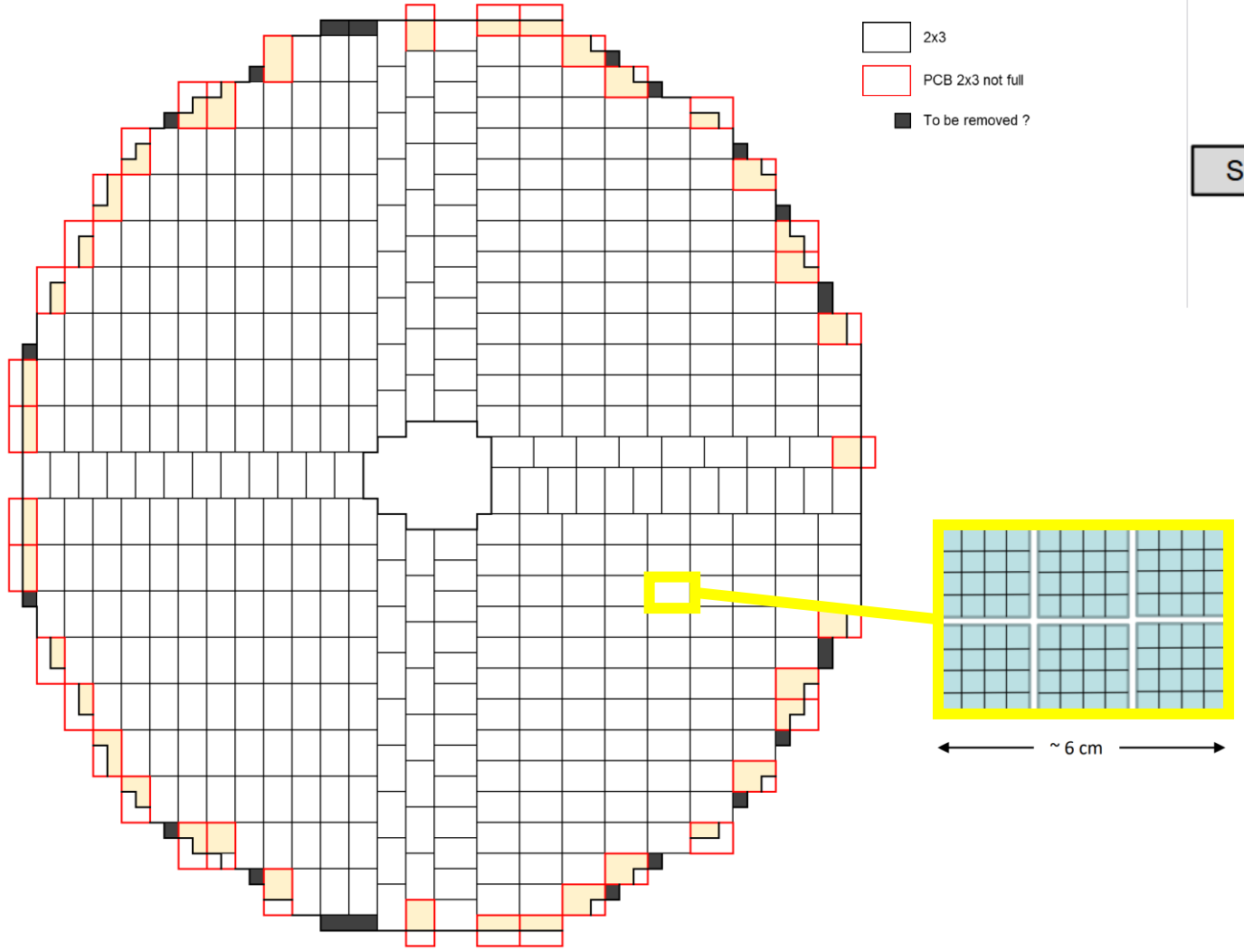


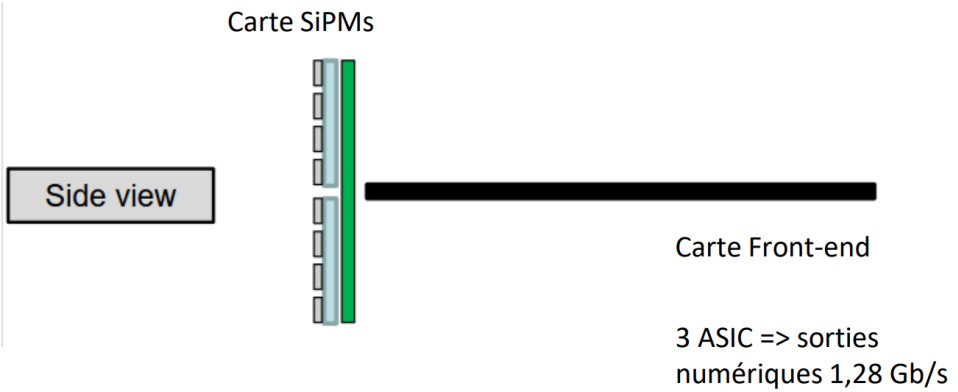
- ❑ External structure in one bloc
- ❑ Good for the deflection & the stress
- ❑ Good for the tolerances and the positioning of the crystals
- ❑ Machining possible
- ❑ Expensive
- ❑ Problem with the Eddy currents

→ The design depends on the technology used

→ Alternative solution: an assembly of 12 cold plates

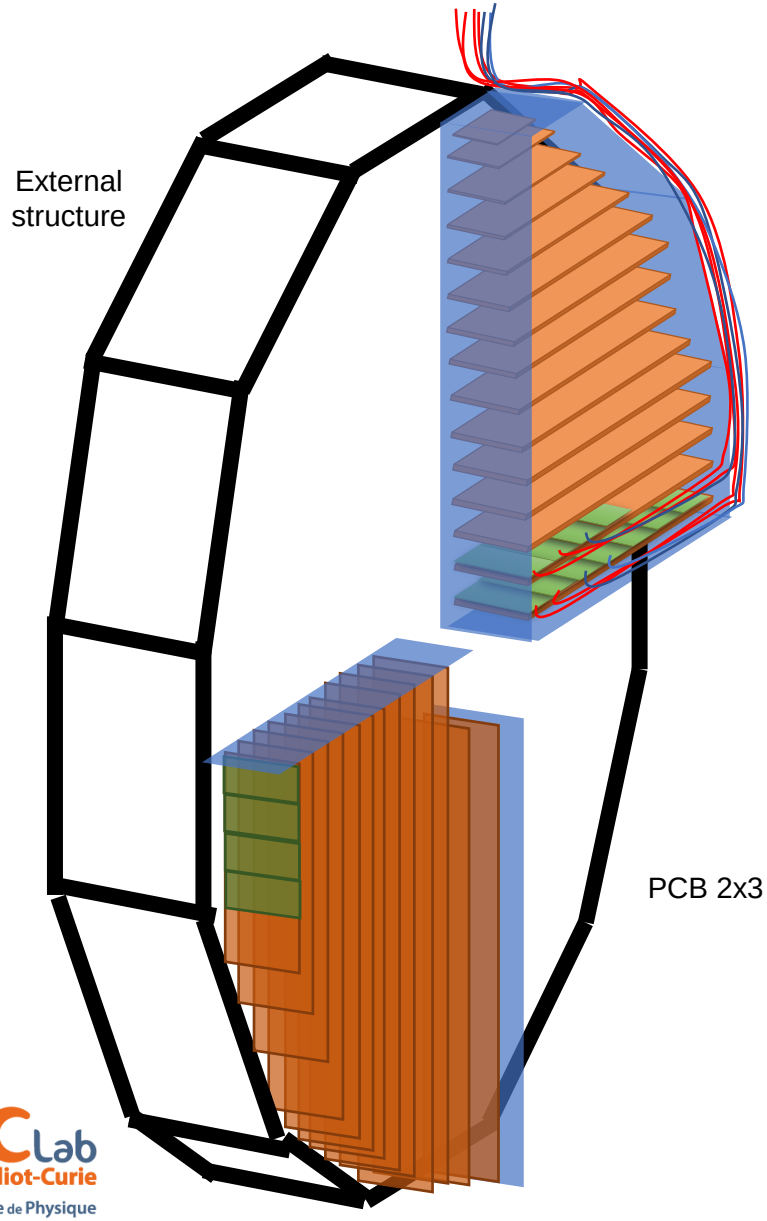
Design of the Front End Board

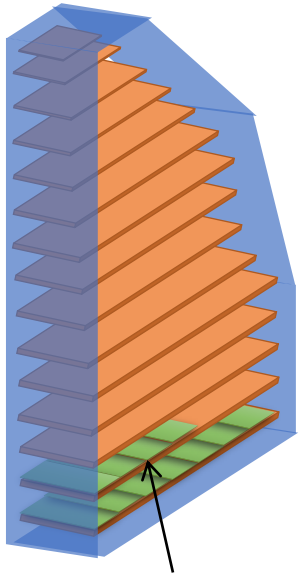


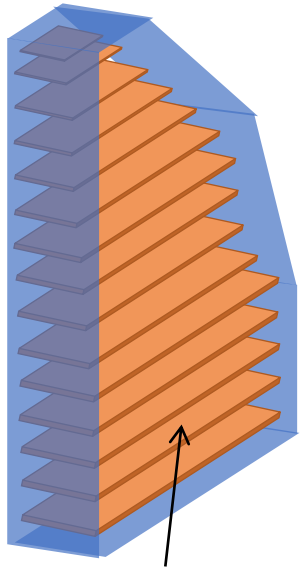


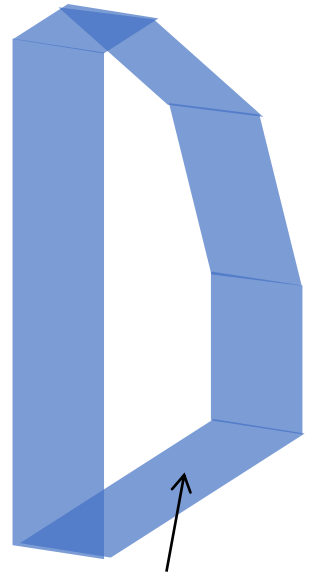
- ❑ 1 FEB for 6 crystals
- ❑ FEB plugged on a PCB adapter
- ❑ Possible to « map » the entire detector
- ❑ Based on the optimum for the Asics → 1 lpGBT for 3 EICROC (OMEGA, IN2P3)

Design & Cooling for the FEB



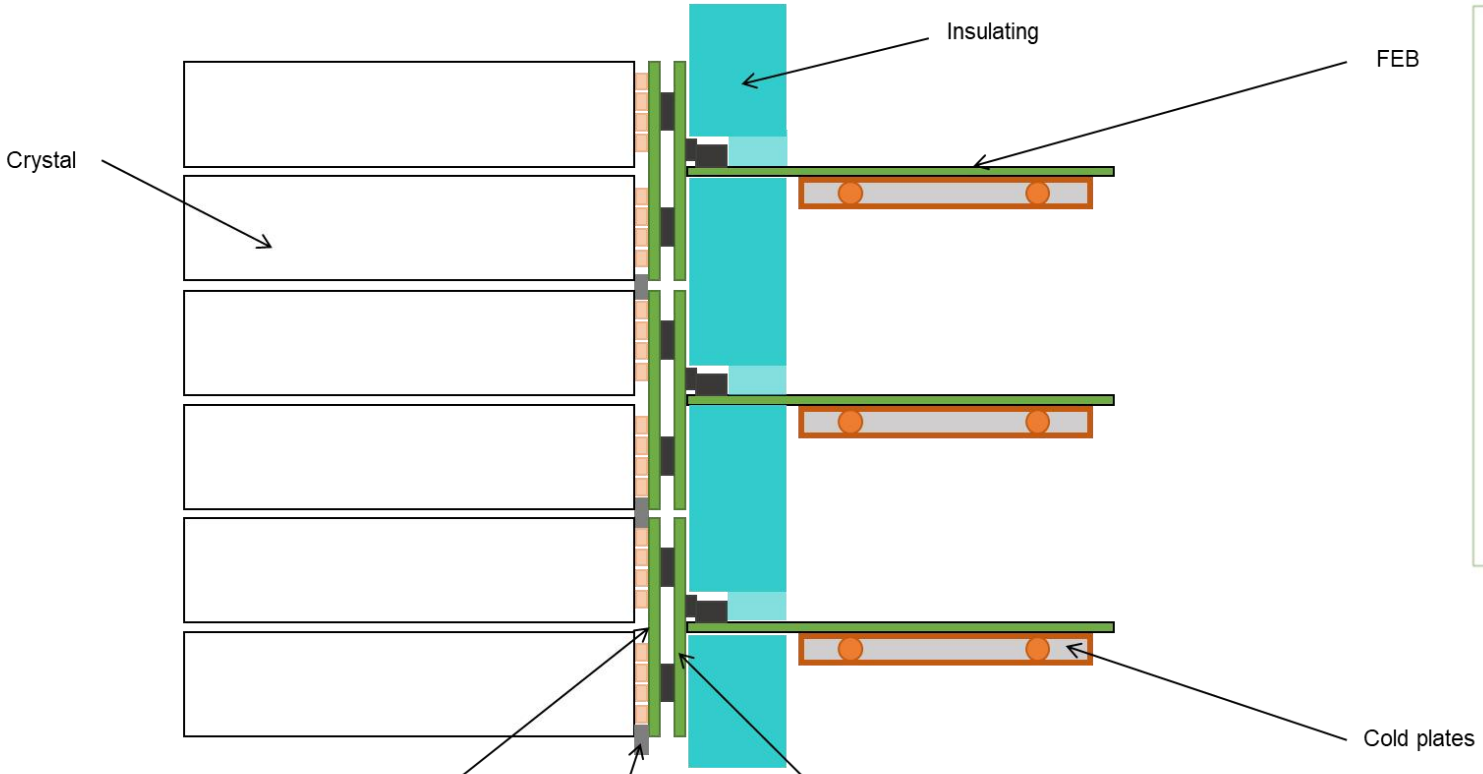

FEB fastened on the cold plates

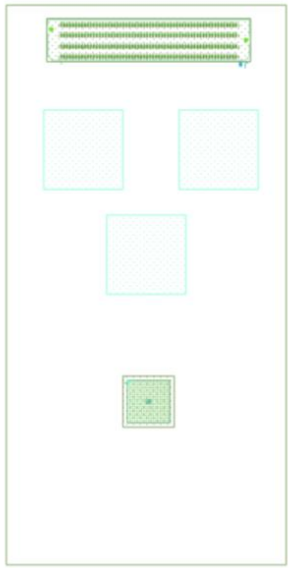

Cold plates fastened on the structure

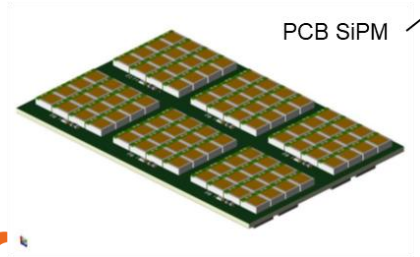

Structure

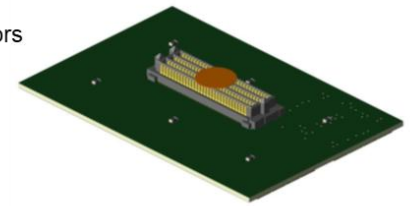
→ Work in progress

FEB Assembly









→ Work in progress