

Backward Ecal / EEEMCal

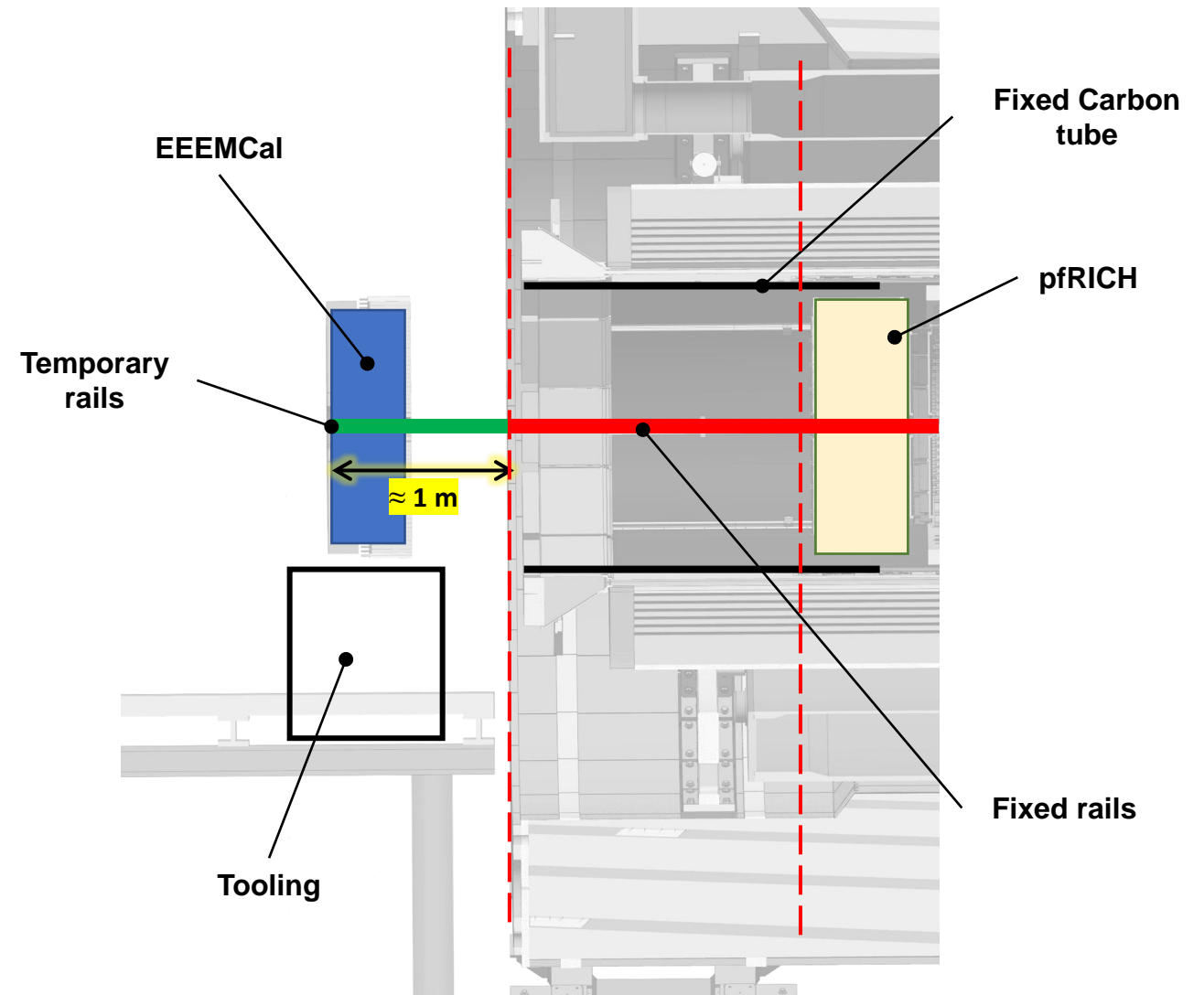
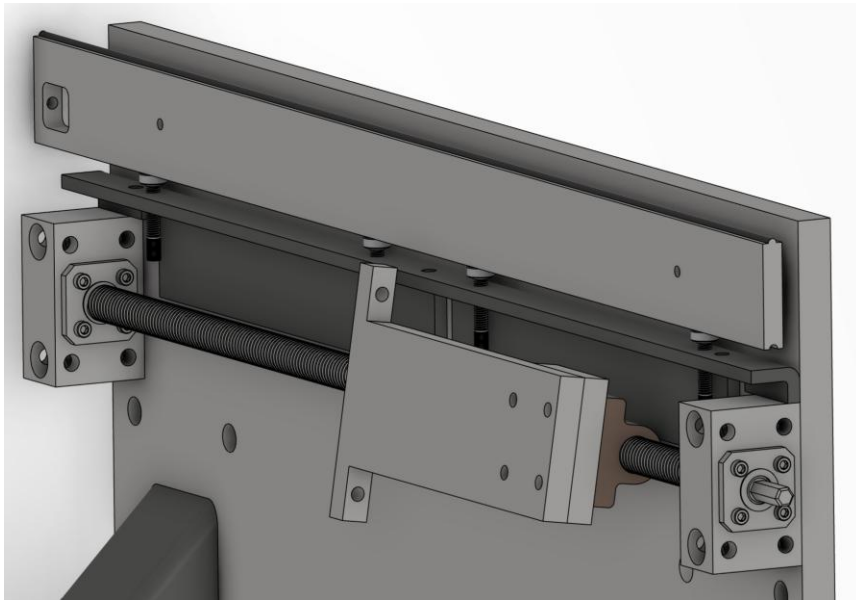
Triple I Engineering Meeting Update (08/06/2026)

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Temporary tooling

- With guide rails fastened on the carbon tube
- With pushing insertion mechanism
- Adjustment in 3 directions (point of reference)

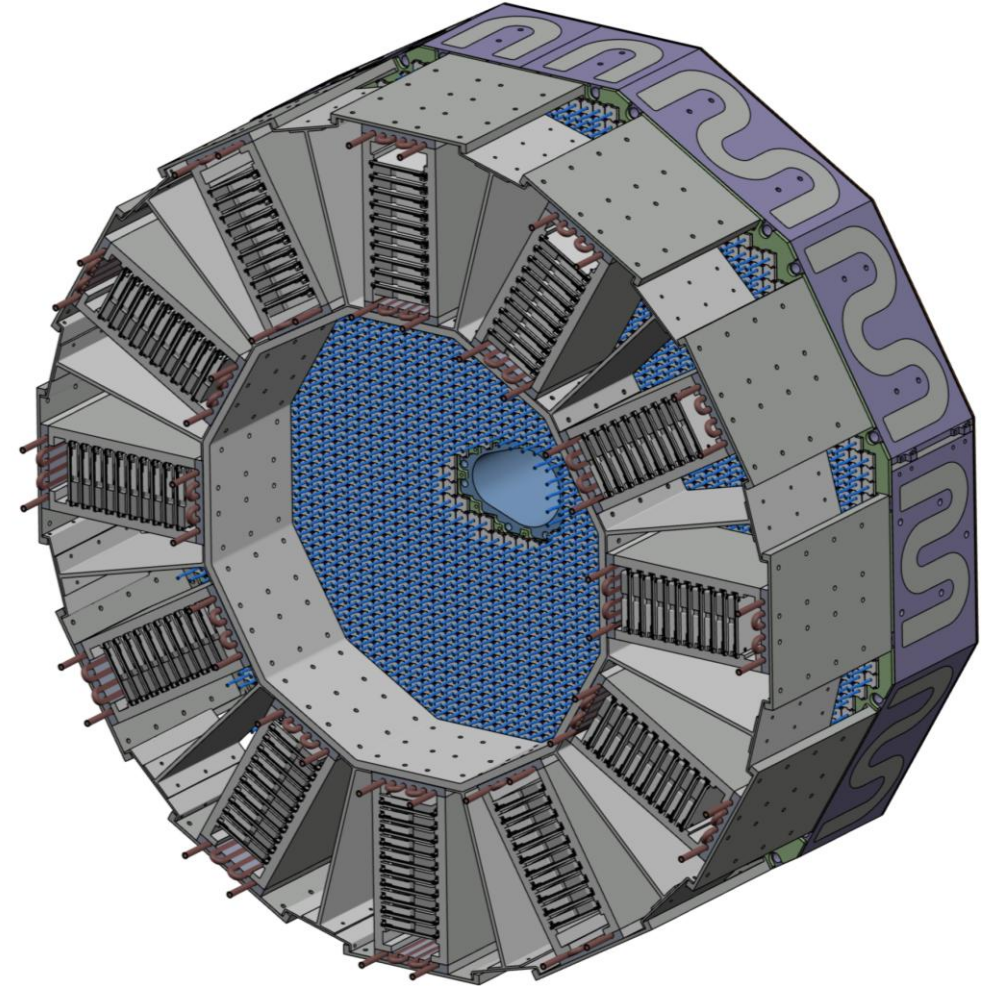


Crystals

- Requirements: $\pm 0,1^{\circ}\text{C}$
- About 100 W (\sim Variation of the temperature into the experimental room)
- Compatible with aluminum
- Independant cooling system

Electronics

- Requirements: dissipate the power of the electronics
- ≈ 350 W (discrete electronics)
- ≈ 1000 W (Asics)
- PCB are not in front of the crystals (placed on the external diameter)
- Global cooling system



IST Cooling system

- Power = 300 W
- Coolant: Novec 7200 ($C_4F_9OC_2H_5$)
- Non-corrosive for the materials
- → **Check the temperature stability**
- → **Check the piping (standard thin-wall 316 L)**

Table 1: Load and Environmental conditions

IST Stave Power (all 24 staves)	269.1 W (nominal) 345.6 W (max)
Fluid Temperature	20 C
Maximum Ambient Temperature (2012 run)	83 F / 28.3 C [4]
Maximum Dewpoint Temperature (2012 run)	63 F / 17.2 C [4]

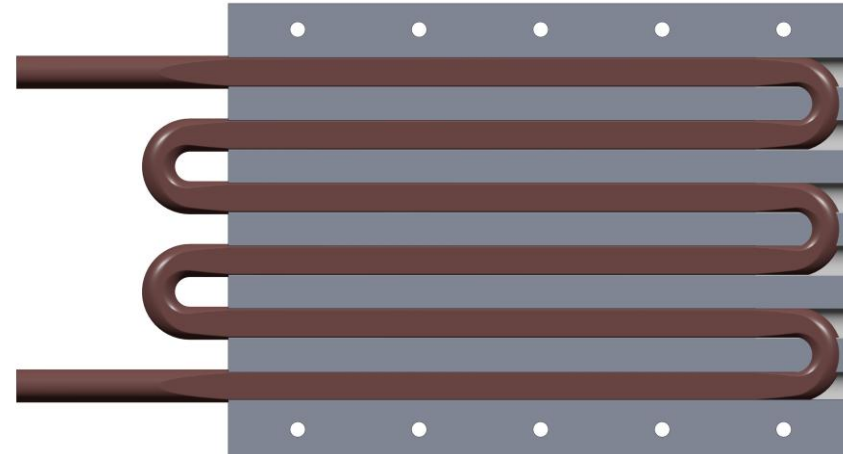


System

- BNL global cooling system unit
- Not specific temperature stability required
- Compatible with copper tubes

Drop pressure (2,5 bars max)

- 12 blocks → 24 cold plates
- **Cold plate:**
 - 5 « U-turn »
 - 6 lines 20 cm = 120 cm
 - 5 bends 180°
 - Diameter of the copper tube = 8 mm
- **Between each cold plates:**
 - 22 bends 90°
 - Copper tube = 2 x 11 x 20 cm ≈ 5 m
- **From the cooling system to the detector:**
 - Length ≈ 5 m



- Preliminary considerations
- Interfaces:
 - Distributors
 - Pipe, hose
- Location of interfaces
- Maintenance