ILD_G3

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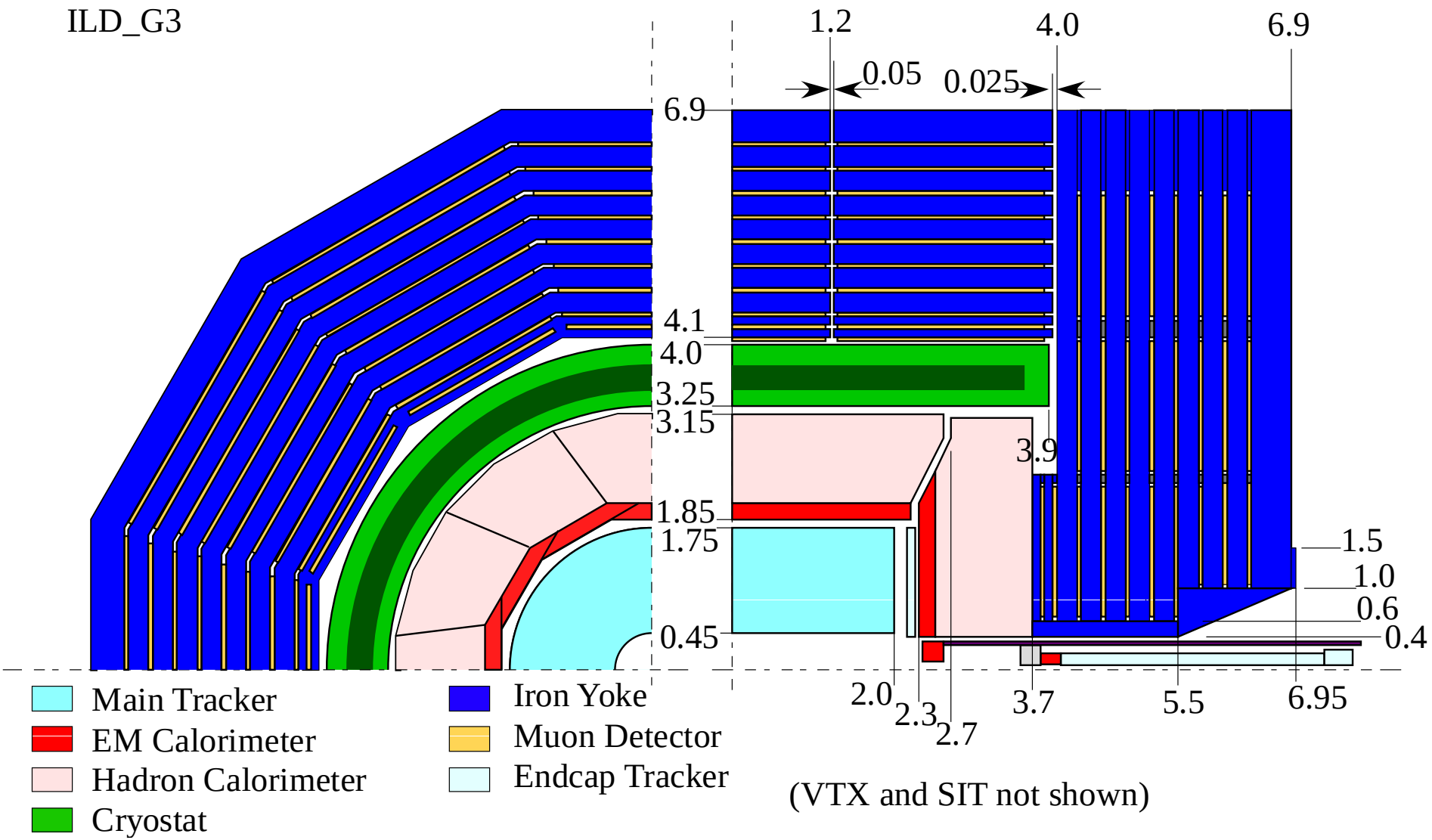
Modification from ILD_G1

- Coil and the cryostat thickness
- Thin (10cm) Fe plates for the tail-catcher
- CAL shape
- Larger end-cap opening : 1.6m for ILD_G1
  ➔ 2m for ILD_G3

ILD_G3


ILD_G3
1.2
4.0
6.9
0.05
0.025
6.9
4.1
4.0
3.25
3.15
3.9
1.85
1.75
0.45
1.5
1.0
0.6
0.4
2.0
2.3
2.7
3.7
5.5
6.95
Main Tracker
EM Calorimeter
Hadron Calorimeter
Cryostat
Iron Yoke
Muon Detector
Endcap Tracker
(VTX and SIT not shown)

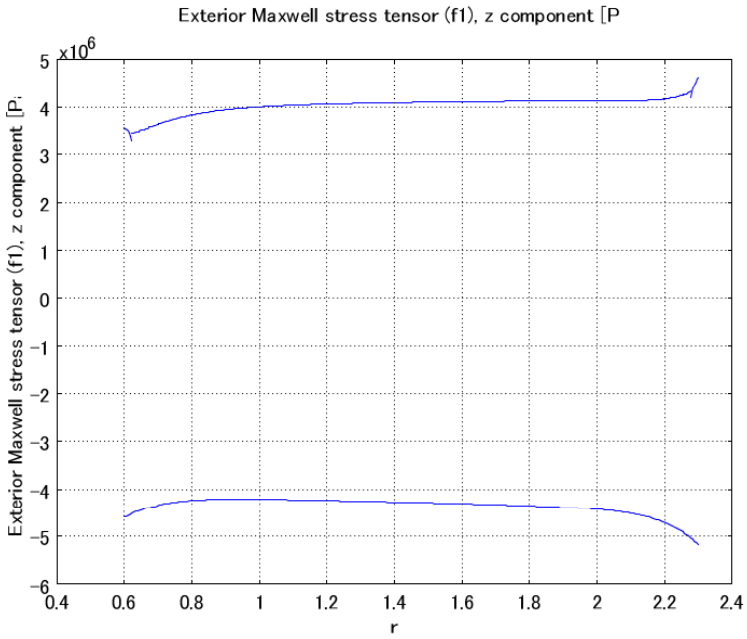
Coil thickness

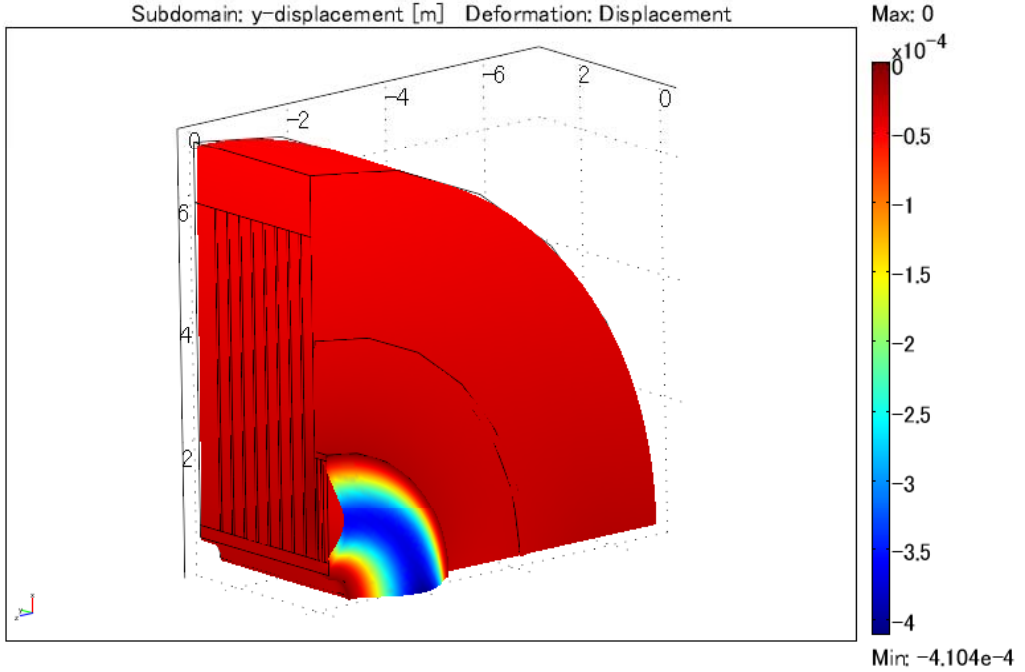
- E/M should be less than ~12 kJ/kg (A.Yamamoto)
- For E=1.7GJ, M~140ton
- For R=3.6m, L=7.2m, and ρ=2.7g/cm^3 (Al), the thickness of the coil t=32cm
- A plausible cryostat thickness;
  - 6 cm wall x2 + 32 cm coil + 15.5 cm others x2 = 75 cm

Deformation of Fe plates

- Deformation of 10cm Fe plate (field shaping plate) due to magnetic force was estimated by
  - B-field calculation by FEA (COMSOL)
  - The sum of magnetic force on the front- and the rear-surface of the 1st plate was obtained as a function of R
  - This force is used as an input to another FEA simulation to get the deformation

Deformation of Fe plates

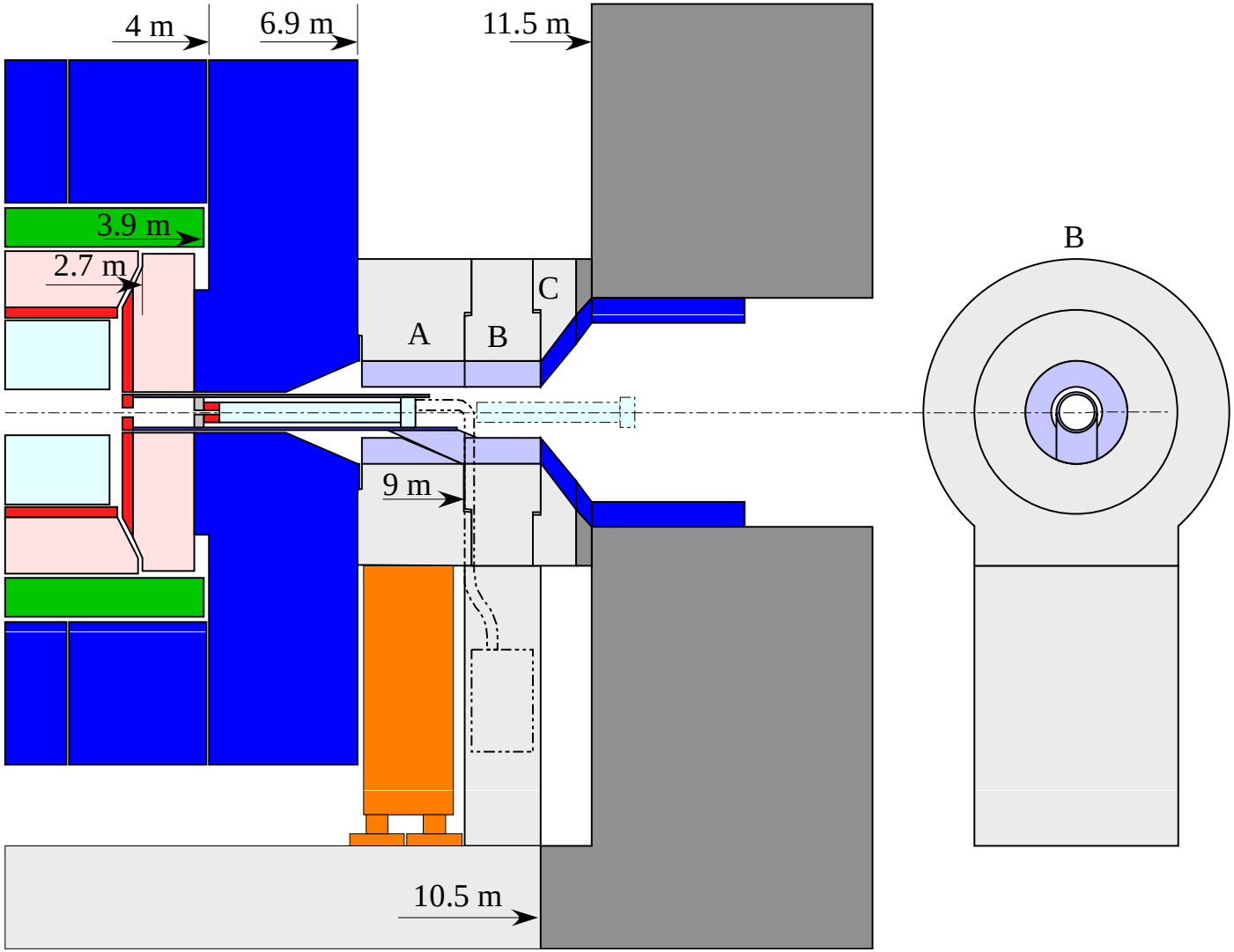




- Maximum (relative) deformation ~ 400 μm
  ➔ 10 cm Fe plate is OK for the FSP

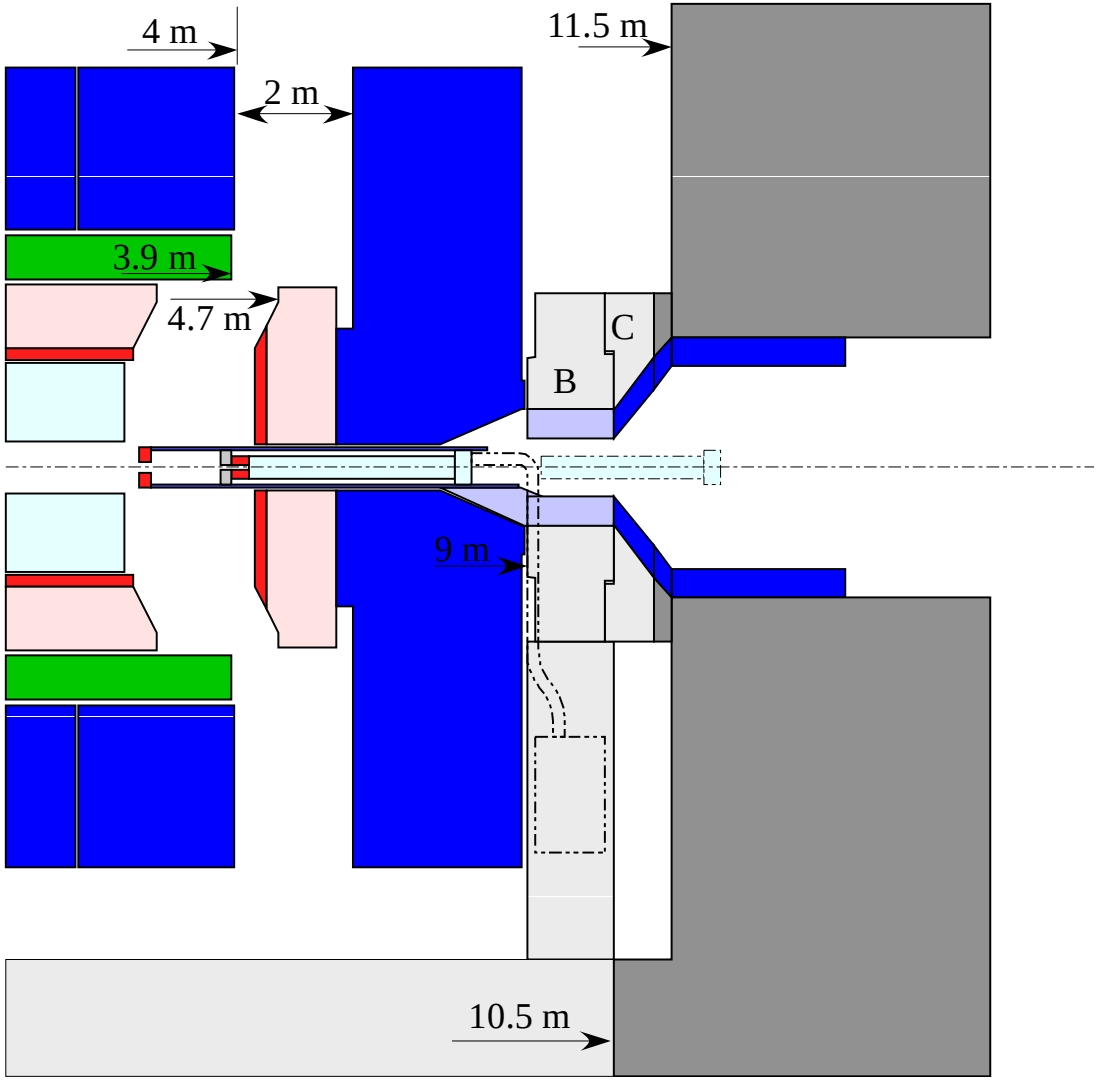
End-cap Opening

- End-cap closed



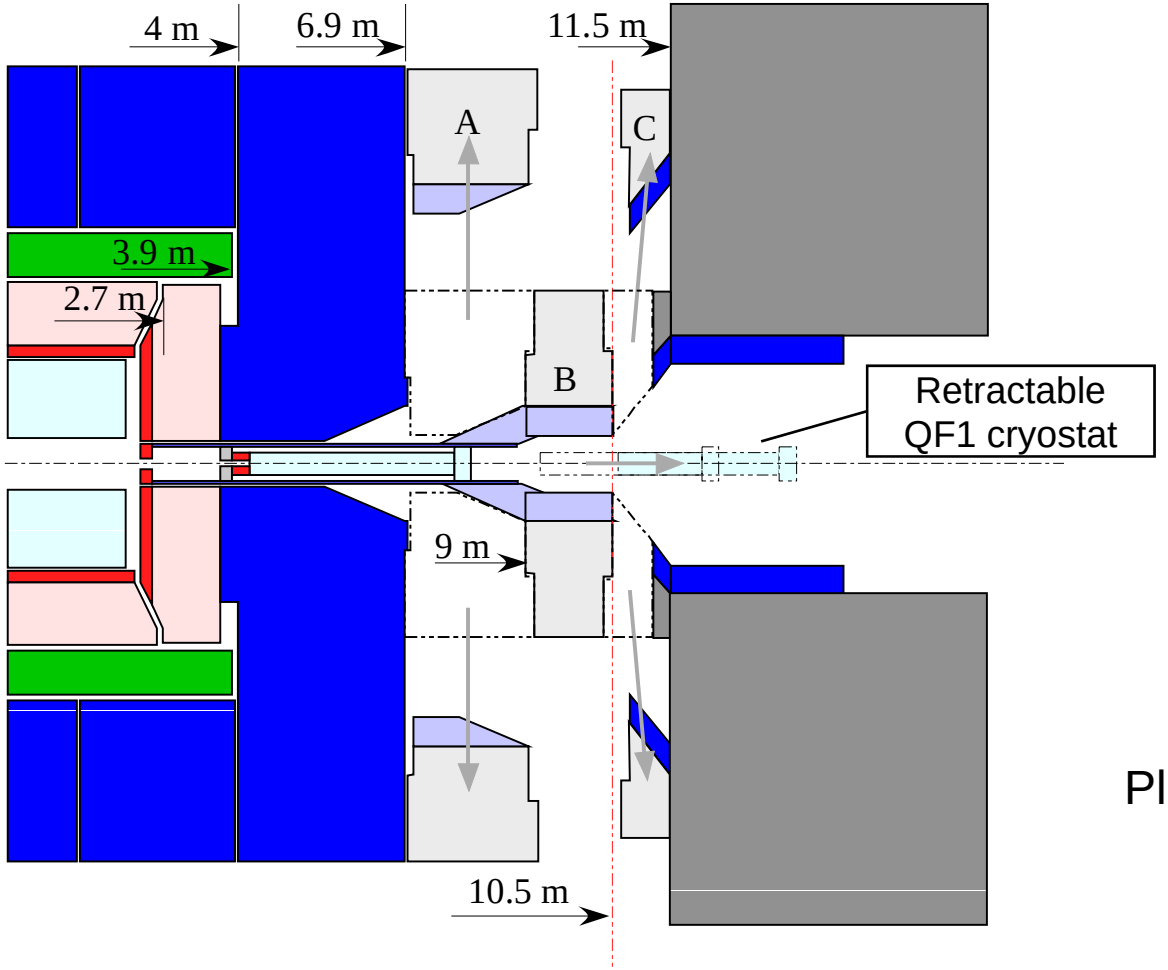
End-cap Opening

- End-cap open



End-cap Opening

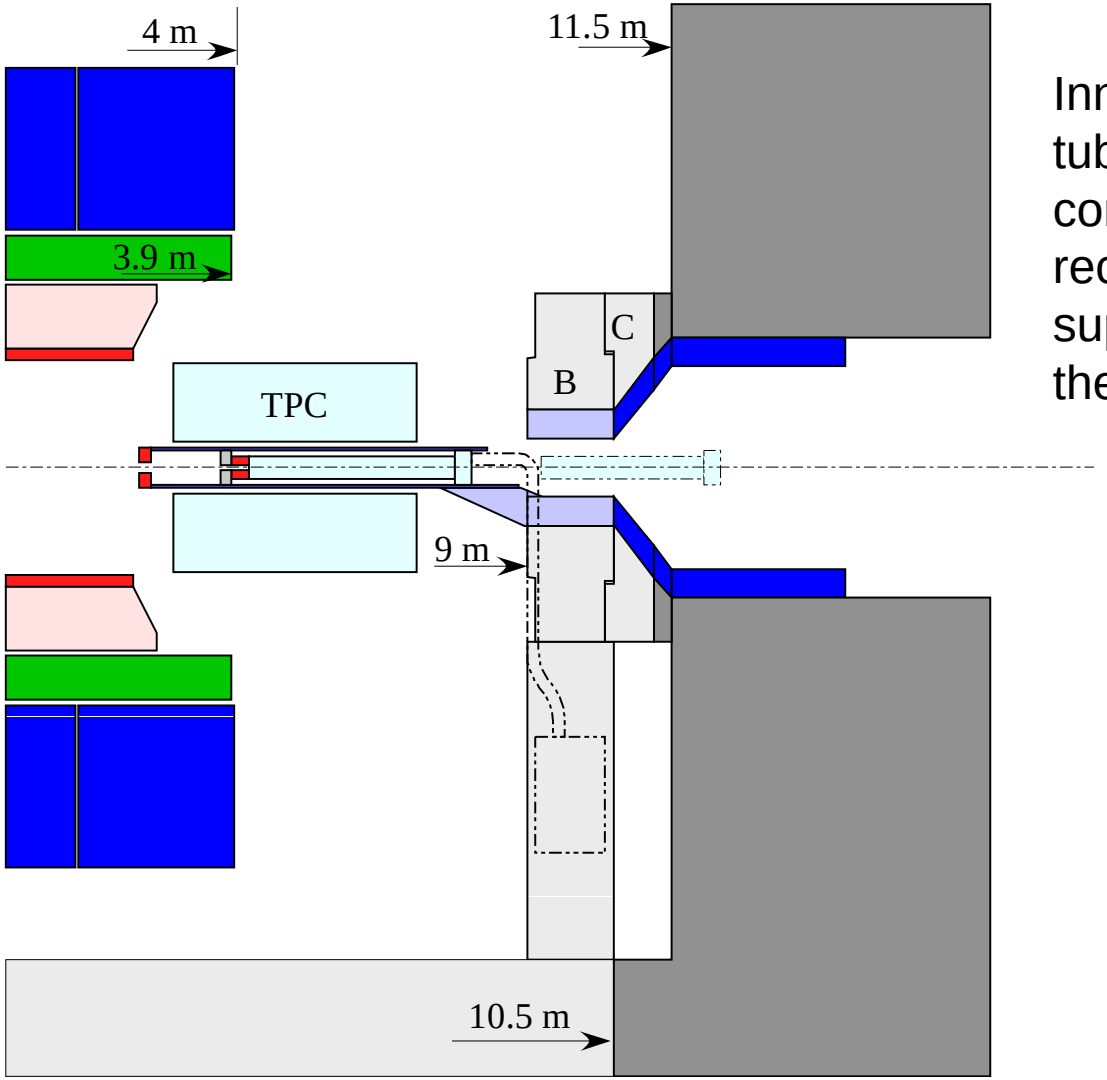
- Push-pull operation



Plan view

End-cap Opening

- Access to inner trackers



Inner-tracker support tube is usually connected toTPC, and reconnected to QD0 support tube during the maintenance

Magnetic field property

- Stored energy ~ 1.7GJ
- Uniformity/Stray field : Almost same as ILD_G1 (GLDc)
- Global deformation of the end-cap : Almost same as ILD_G1

http://ilcagenda.linearcollider.org/getFile.py/access?contribId=2&sessionId=0&resId=0&materialId=slides&confId=2169