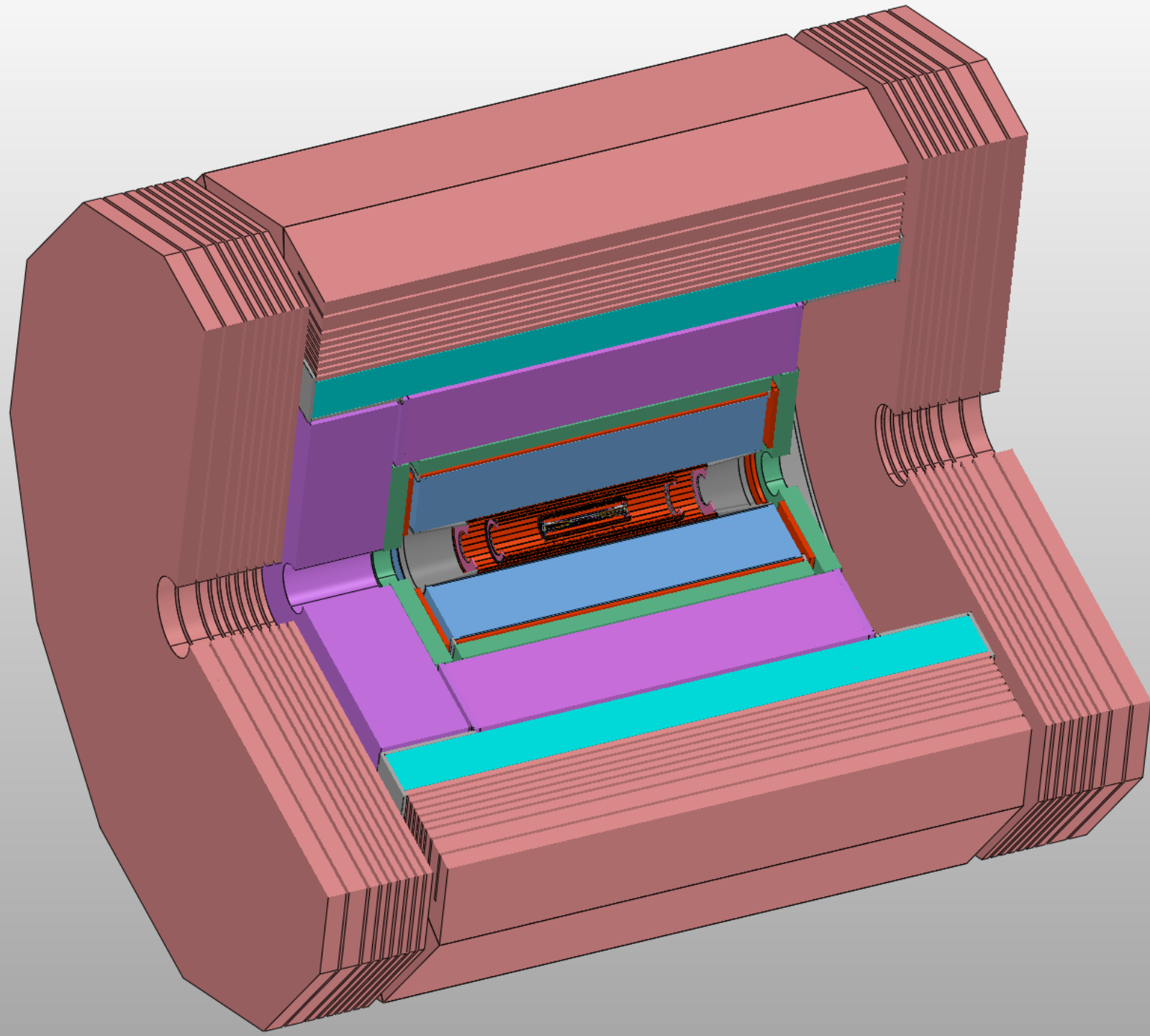


Progress in mechanical design of CEPC **detector** TDR

Ji Quan
Apr 2, 2024

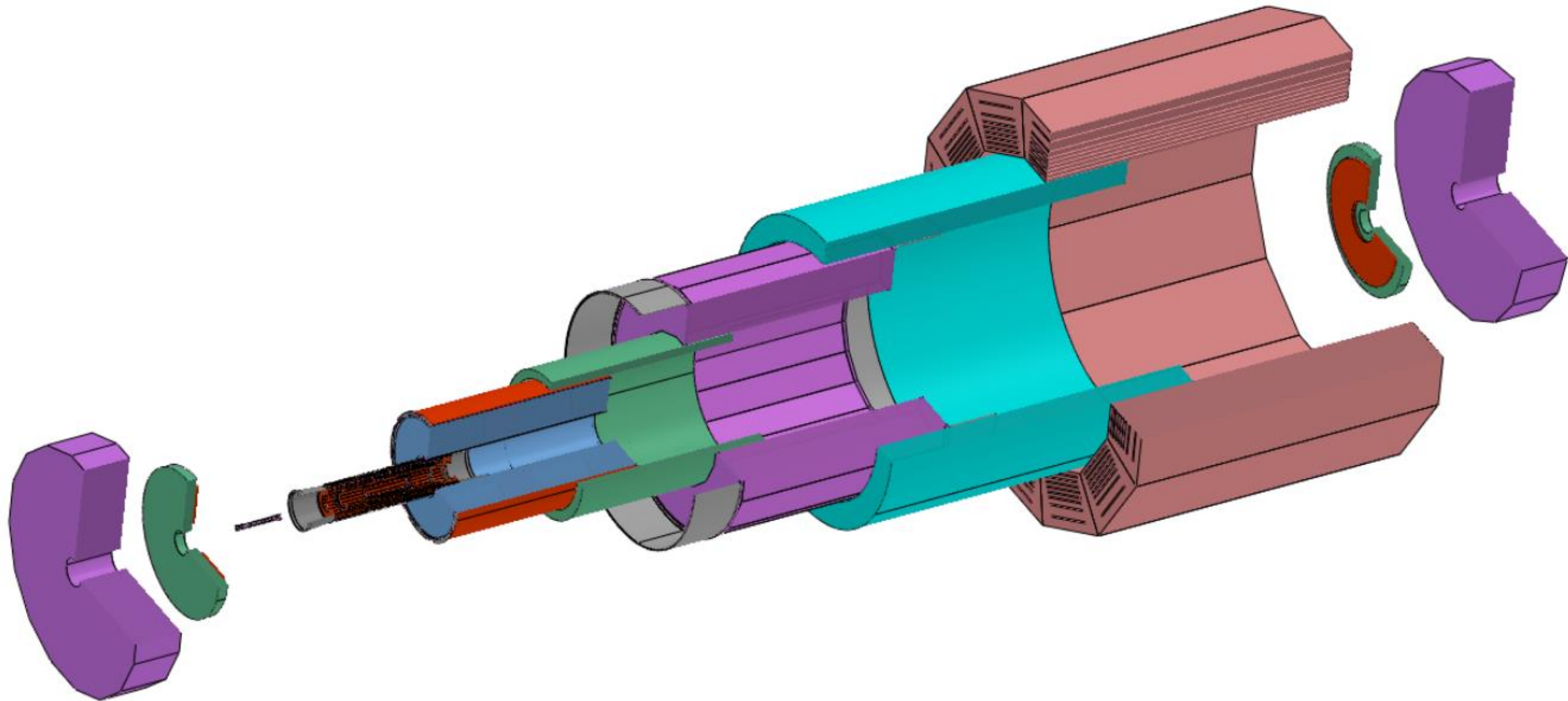
Content:

1. General Drawing
2. Detailed discuss



三维效果图

装配关系爆炸图



2. Detailed discuss --- MDI boundary

Channel boundaries under detection angle constraints

consists of 4 segments of channels:

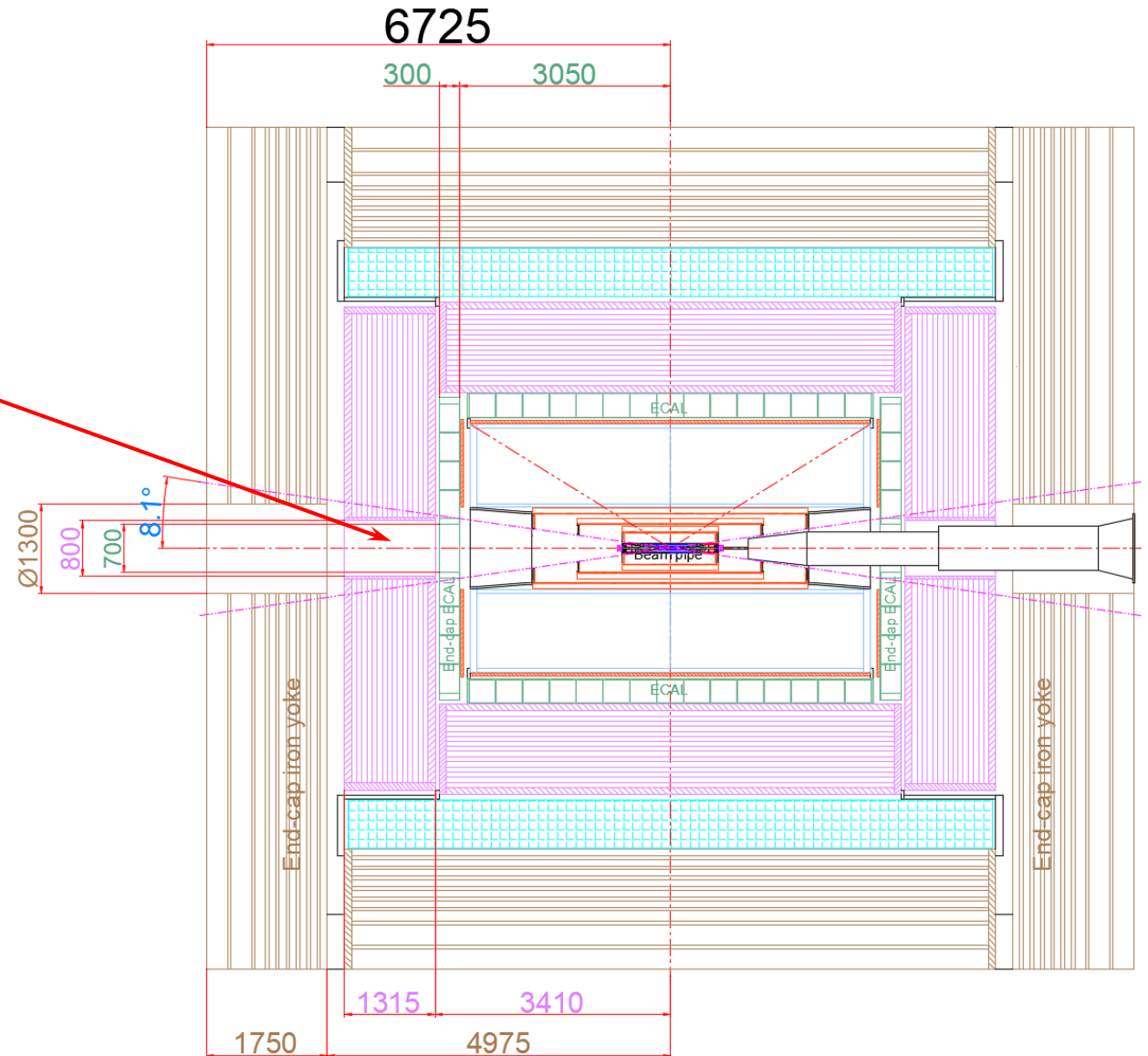
Detection angle : 8.1° ($\arccos 0.99$)
(Before ECAL)

(After ECAL)

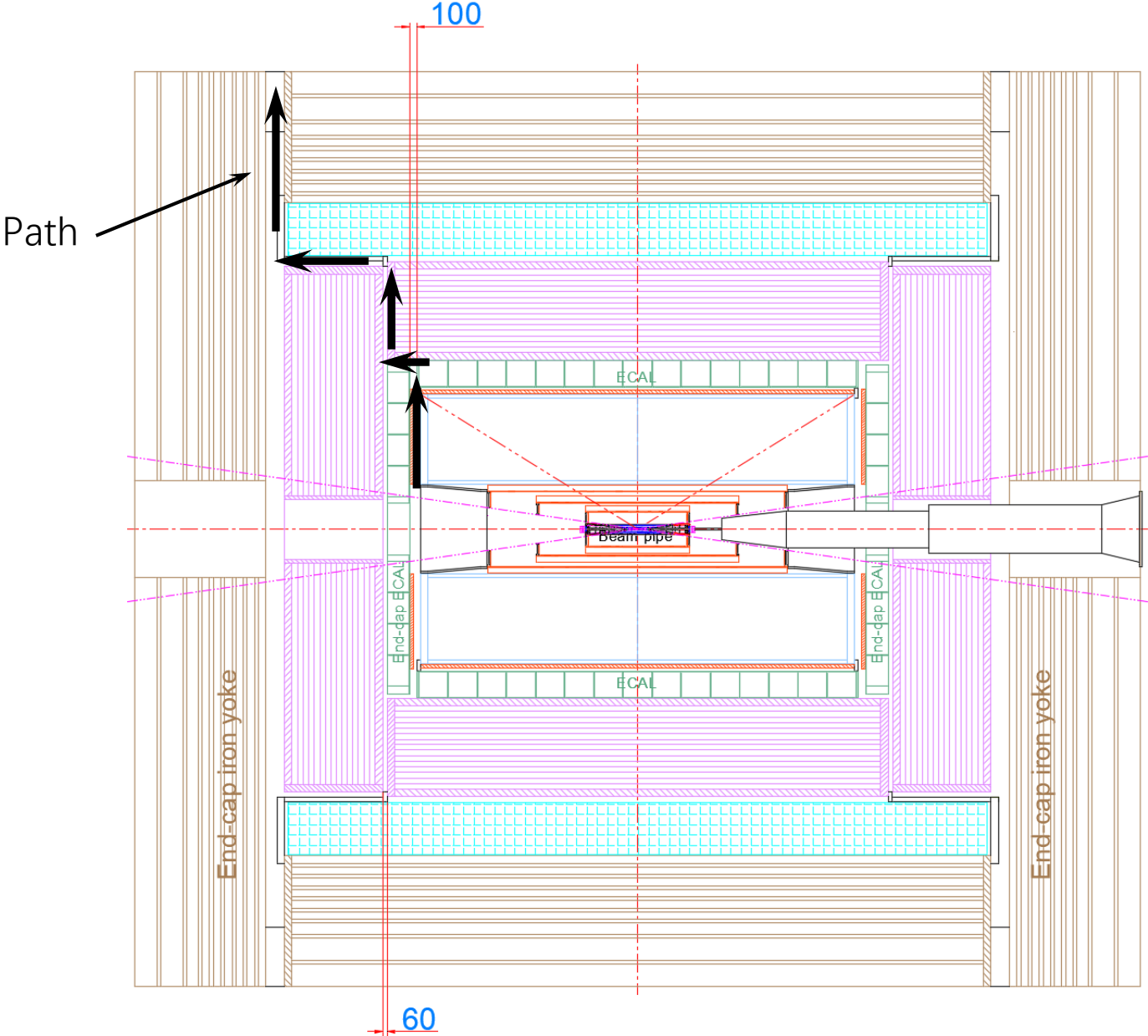
ECAL : 700 mm

HCAL : 800 mm

Yoke : $\varnothing 1300$ mm



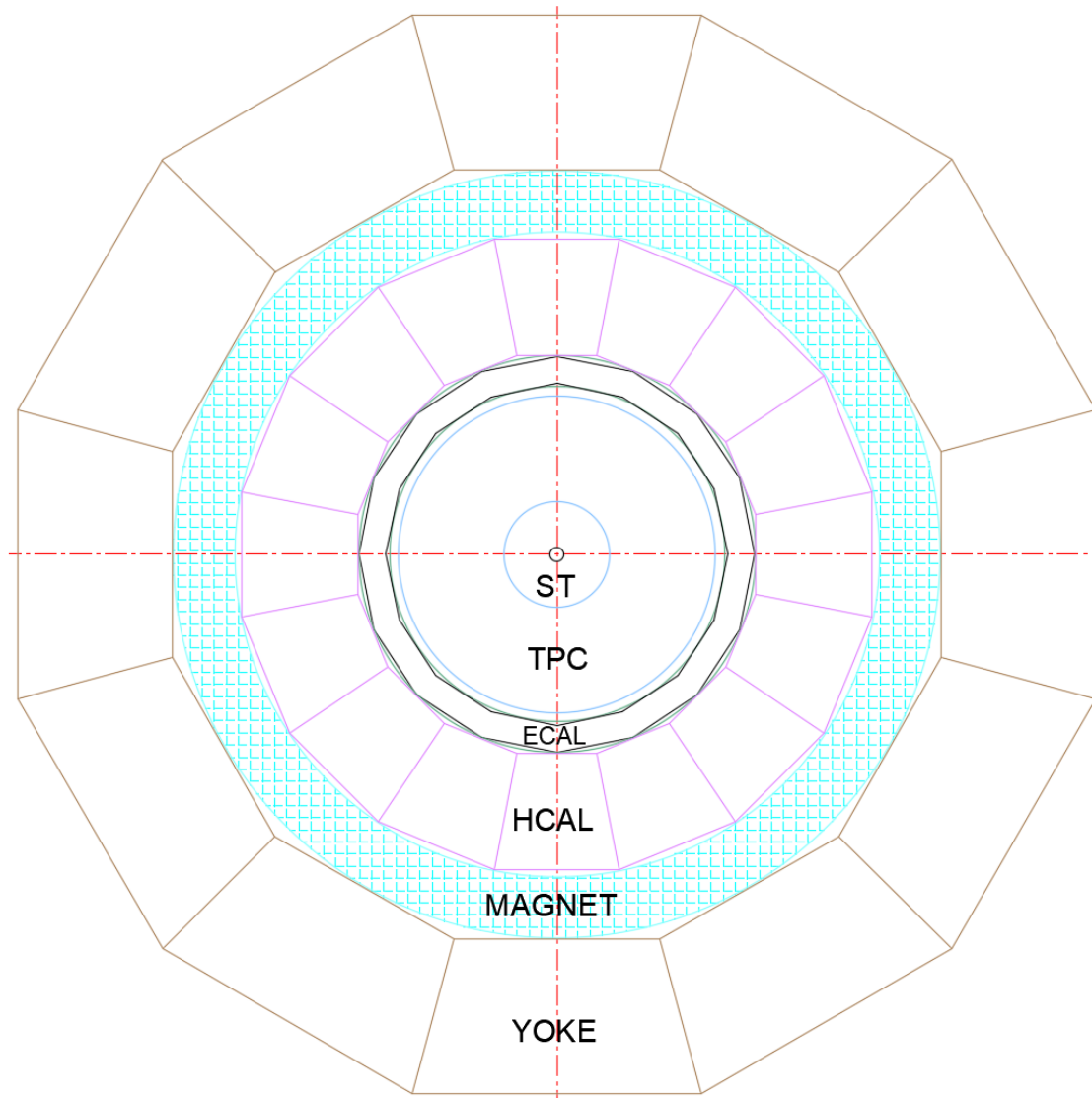
2. Detailed discuss --- Gap and Lead out cable path



Gap between barrel detectors:
Minimum 10 mm

Gap between end detectors:
ECAL 100 mm
HCAL 60 mm

2. Detailed discuss --- From outside to inside



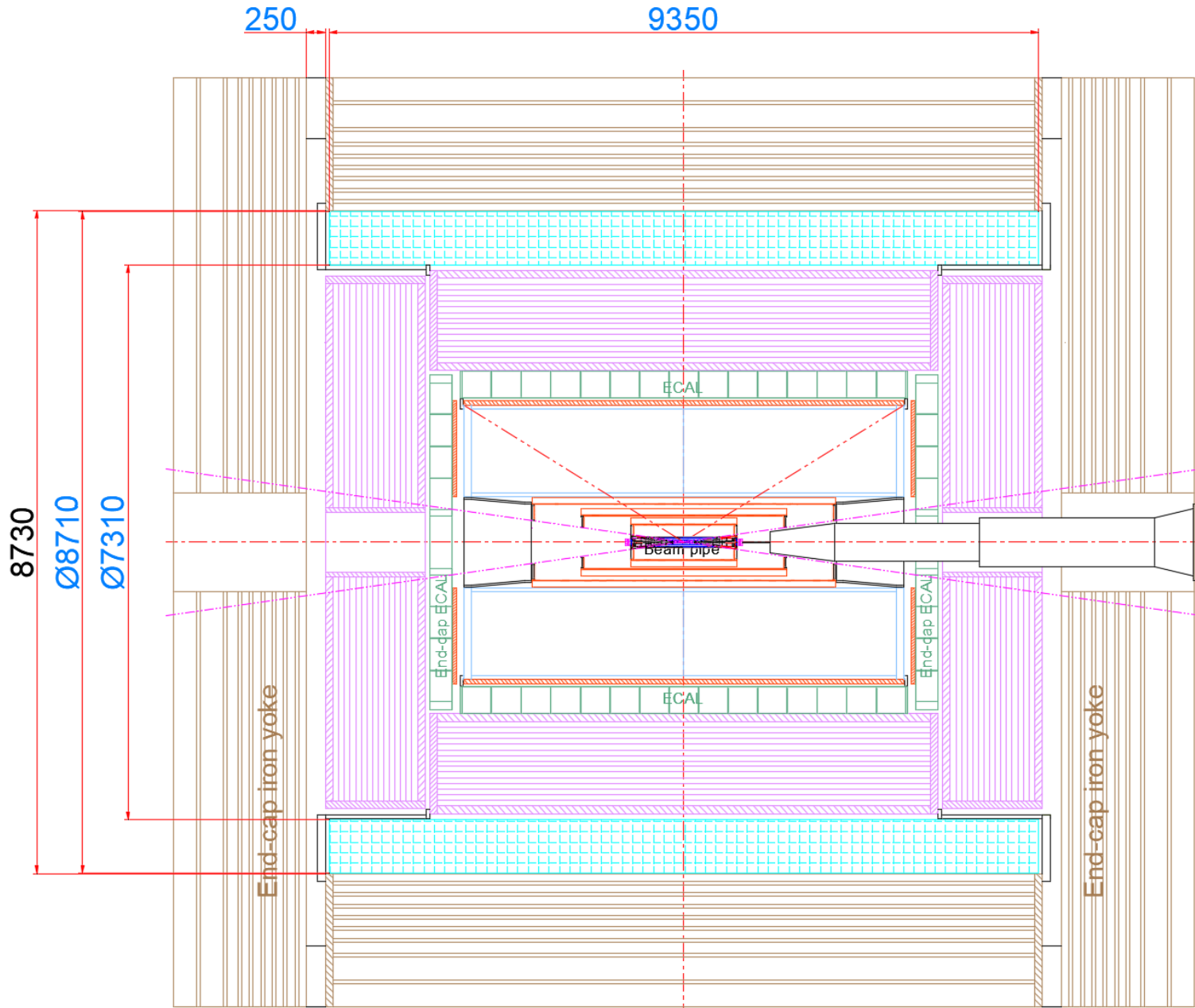
Installation sequence:

Yoke
Magnet
HCAL
ECAL
TPC
ST
Beampipe

Discuss:

1. Boundary
2. Installation and Connection

2. Detailed discuss --- Magnet



Dimension:

- Ø8710 mm
- Ø7310 mm
- 9350 mm
- Yoke: 8730 (Ref: 10 gap)

Channel(250mm):
Low temperature pipeline channel

- Water
- Electricity
- Gas

Connection:
Fixed on the Yoke

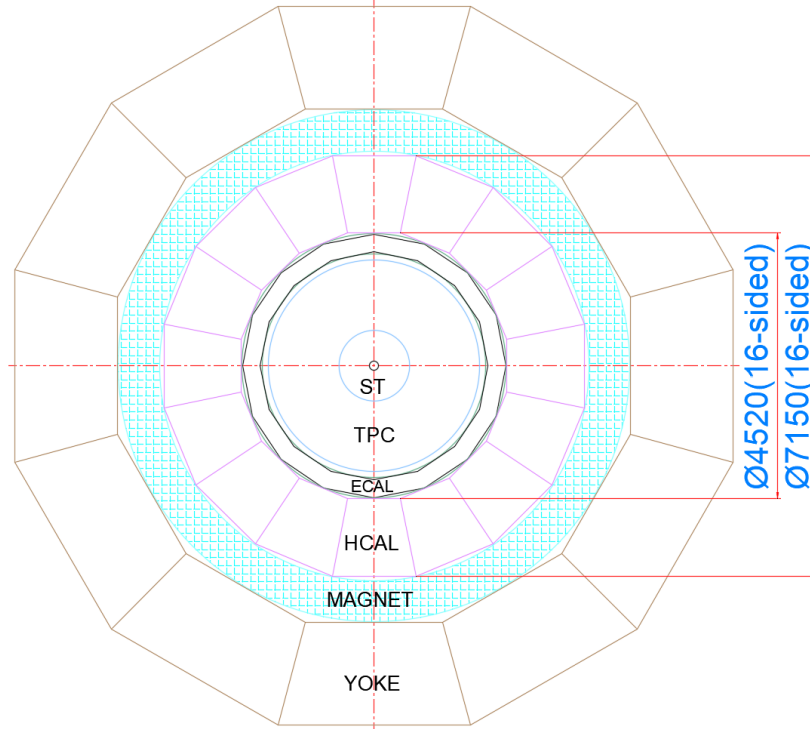
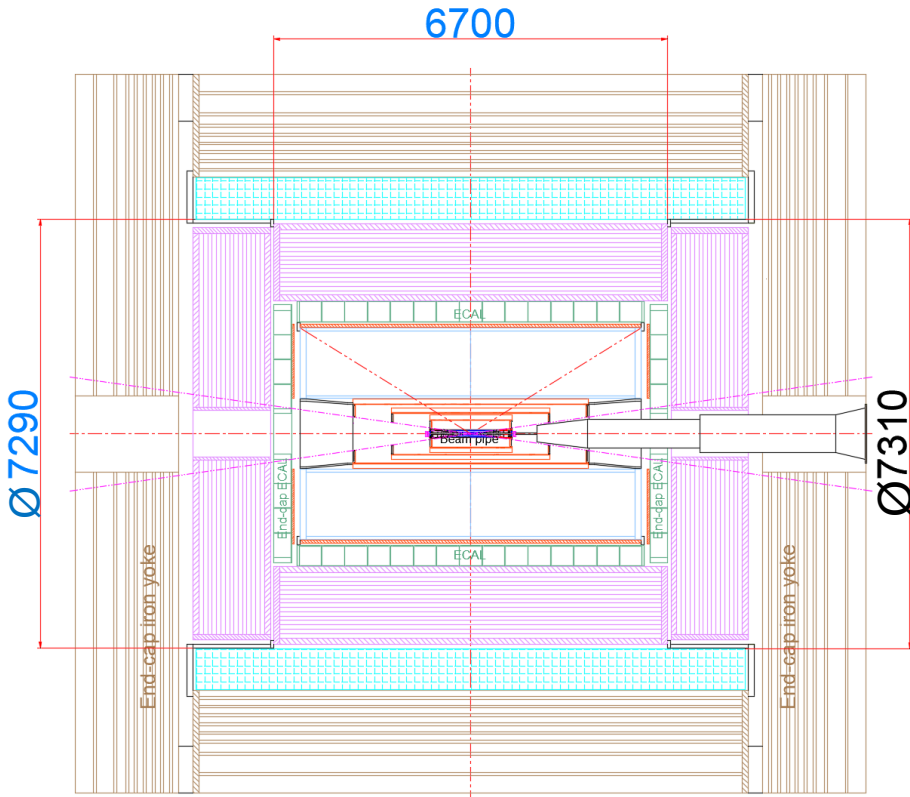
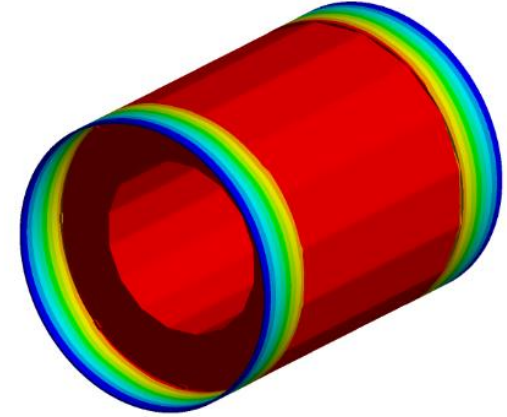
2. Detailed discuss --- HCAL (Barrel)

Thickness of cylinder:
60 mm

Max deformation:
~ 0.25

A: Static Structural
Total Deformation
类型: 总变形
单位: mm
时间: 1
2024/4/29 16:15

0.24495 最大
0.21774
0.19052
0.1633
0.13608
0.10887
0.081651
0.054434
0.027217
0 最小



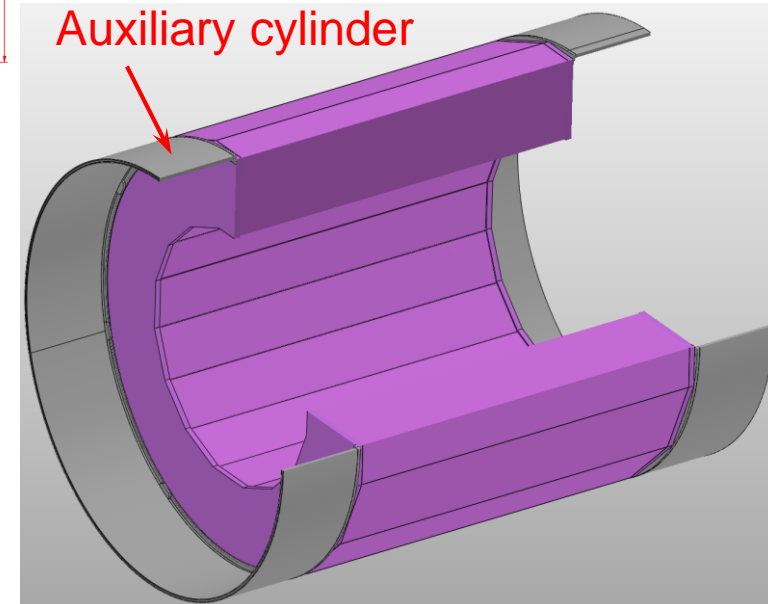
Dimensions:

Inside 4520
Outside 7150
Length 6700

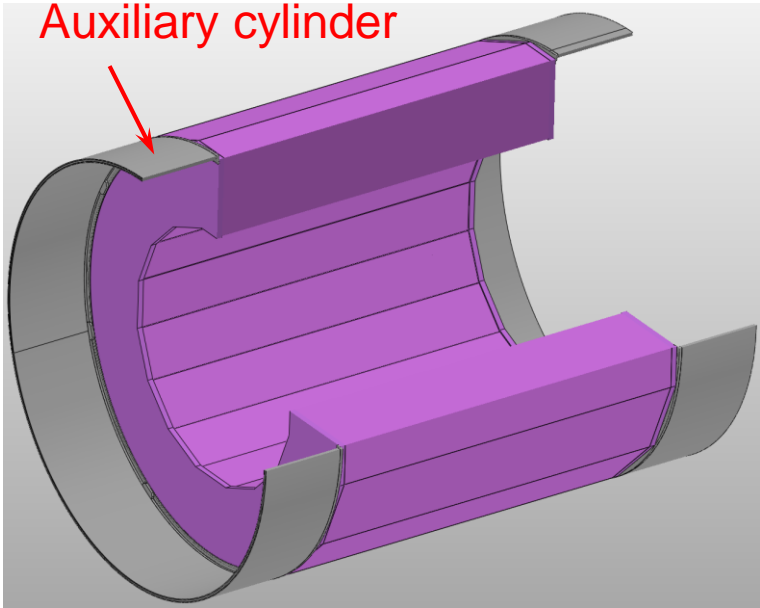
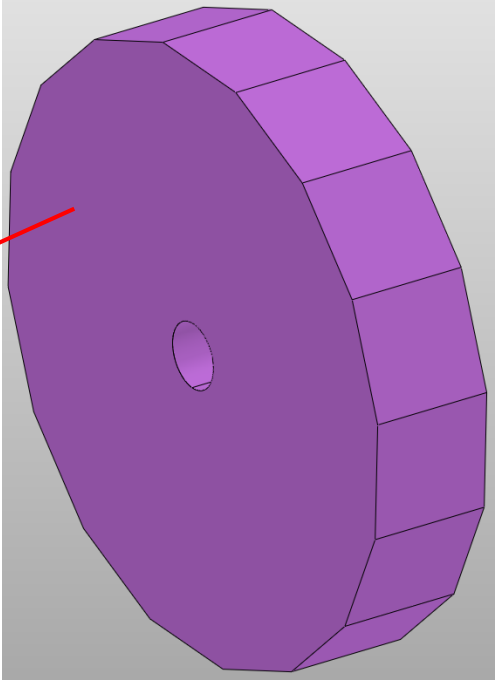
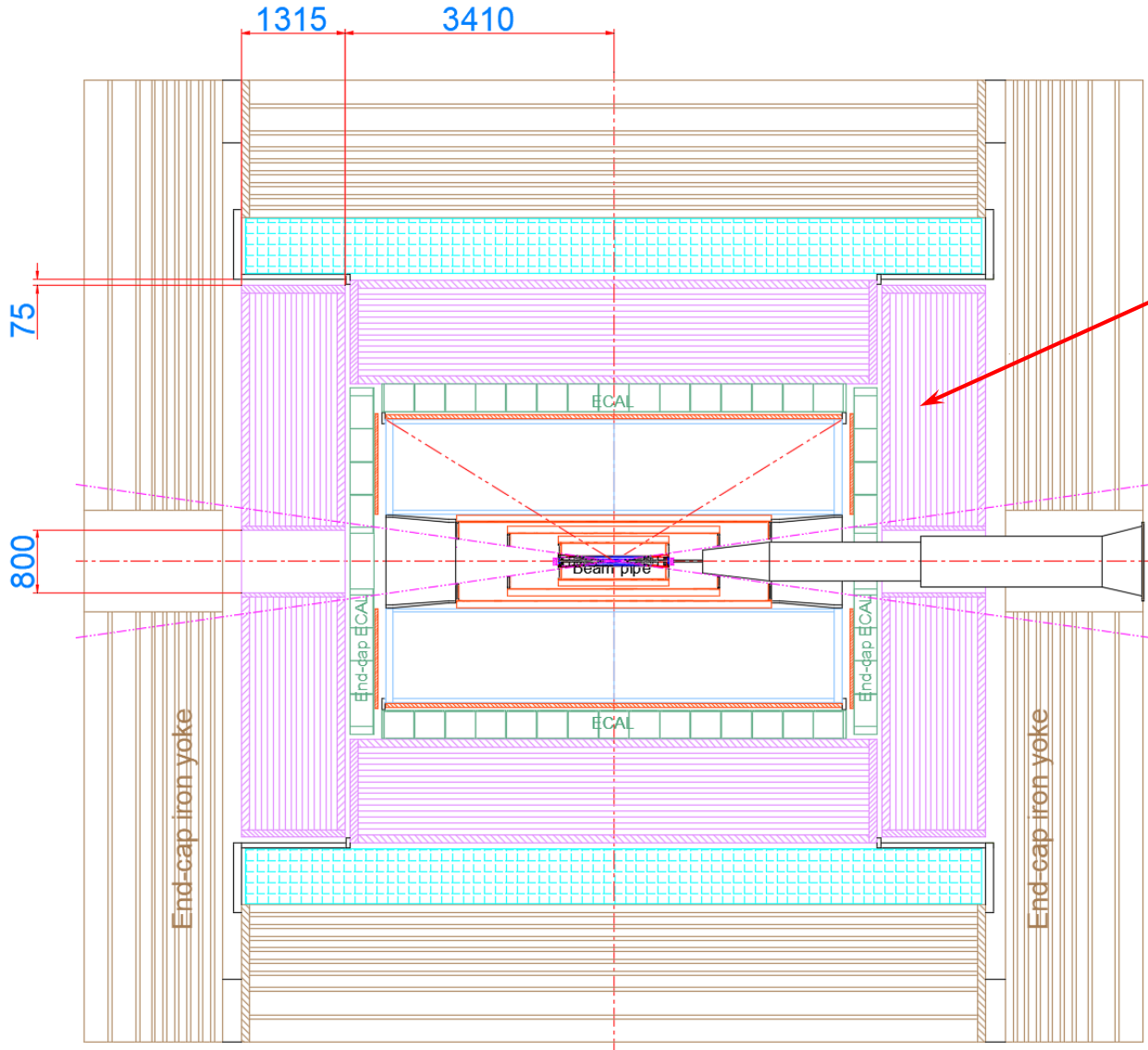
Thickness: $2630/2=1315$

Connection:

Fixed on the Iron Yoke
by auxiliary cylinder

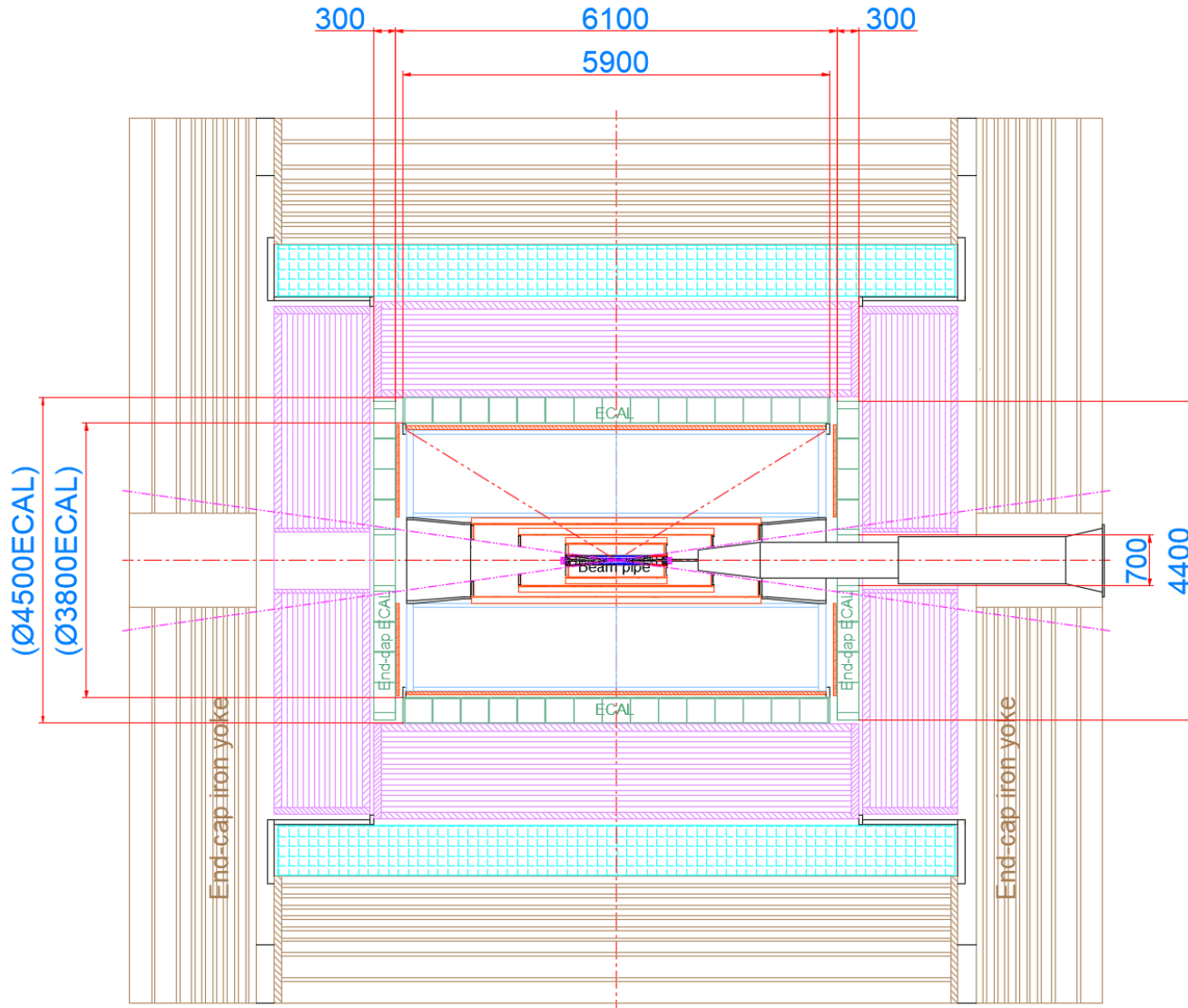


2. Detailed discuss --- HCAL (End)

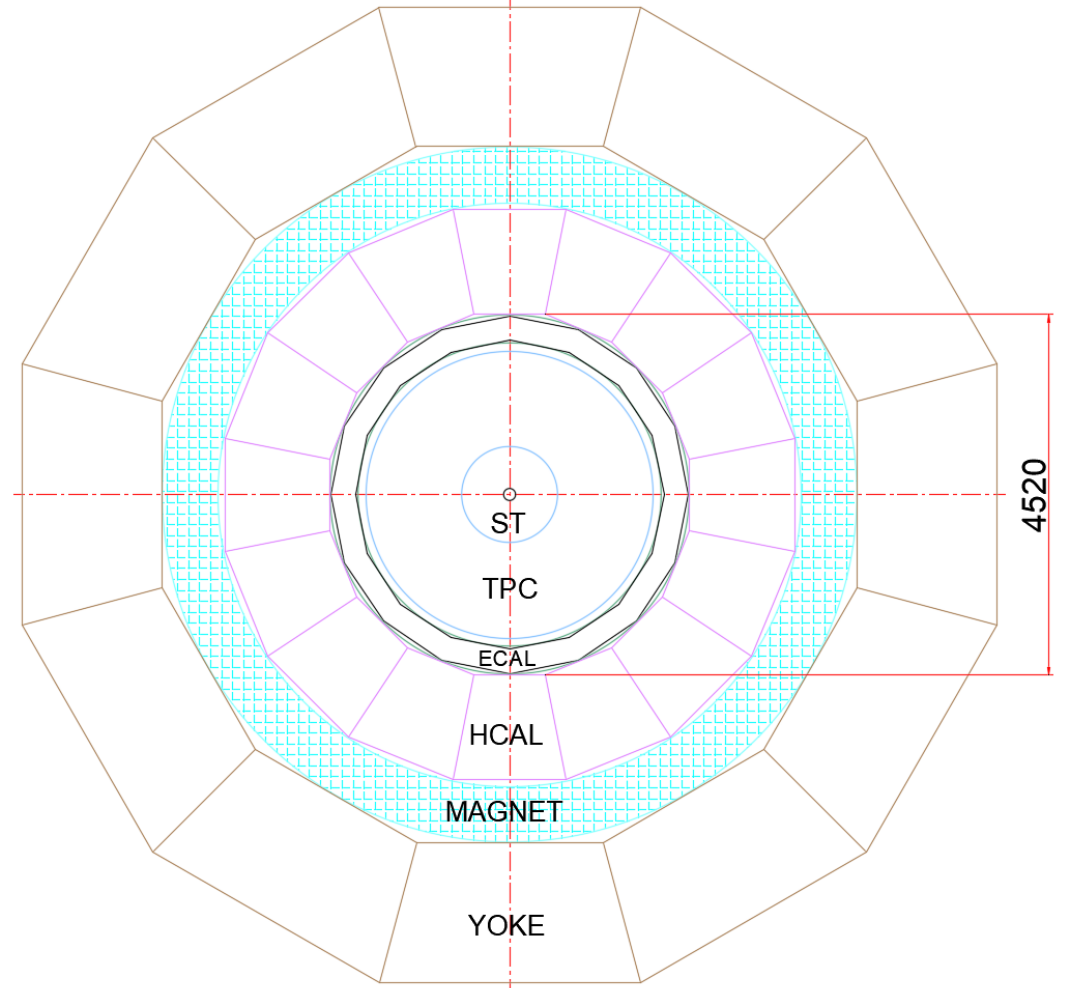


Connection:
Fixed on the Auxiliary cylinder of HCAL

2. Detailed discuss --- ECAL (Barrel and ECAL)



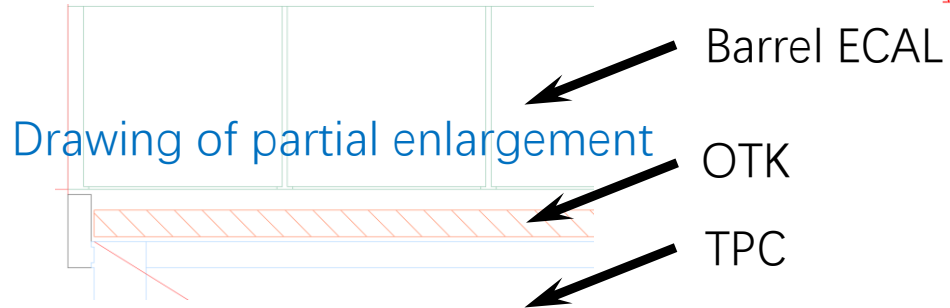
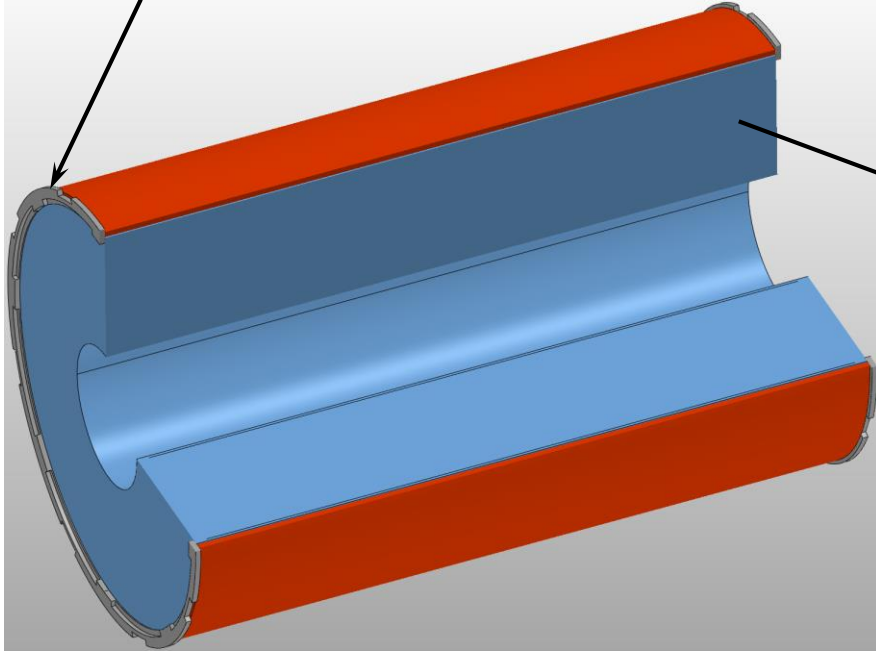
Connection:
Fixed on the barrel HCAL(?)



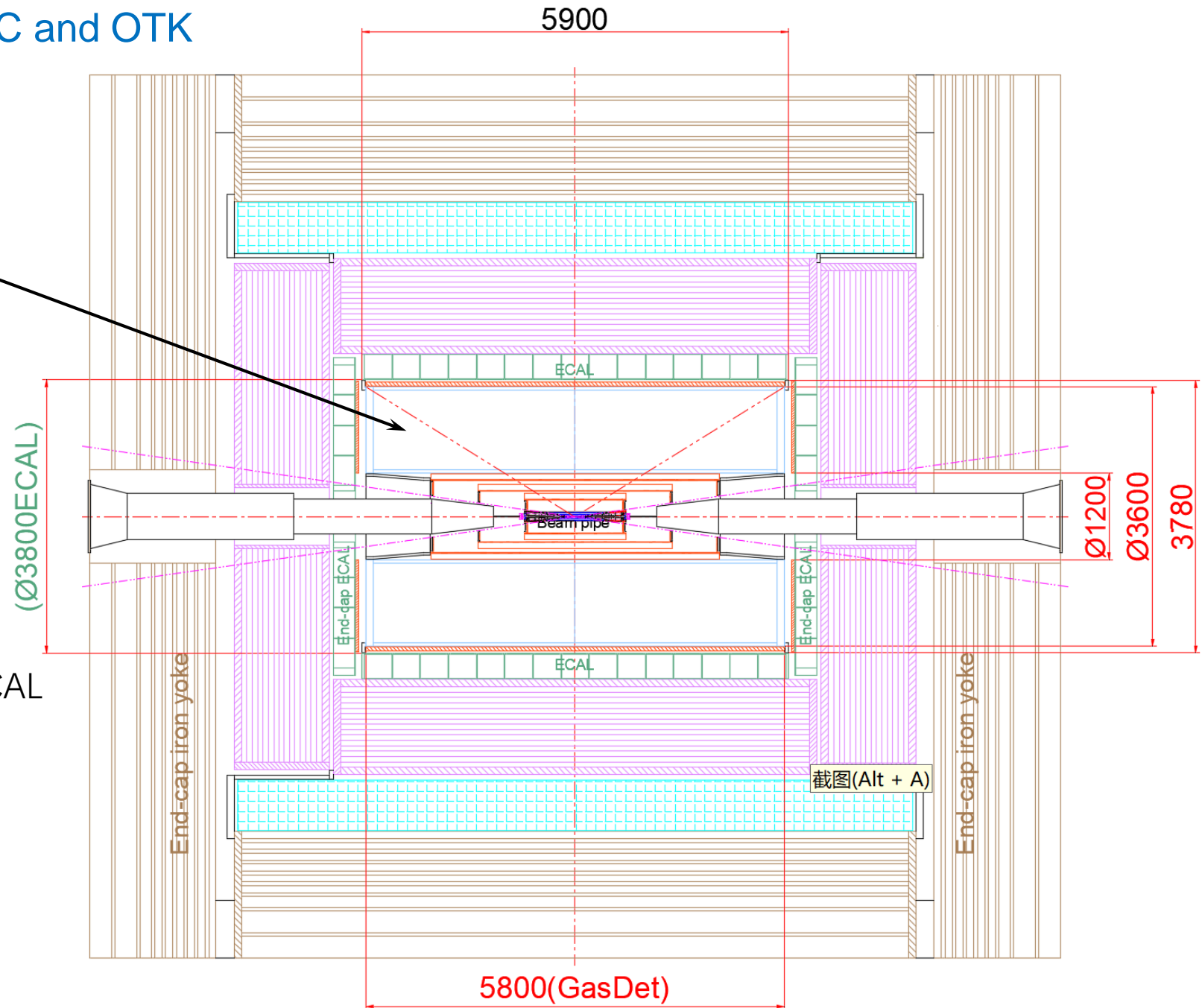
Suggestion: Organize efforts as soon as possible to complete the design of ECAL(barrel) and HACL(barrel)

2. Detailed discuss --- TPC and OTK

Connection flange

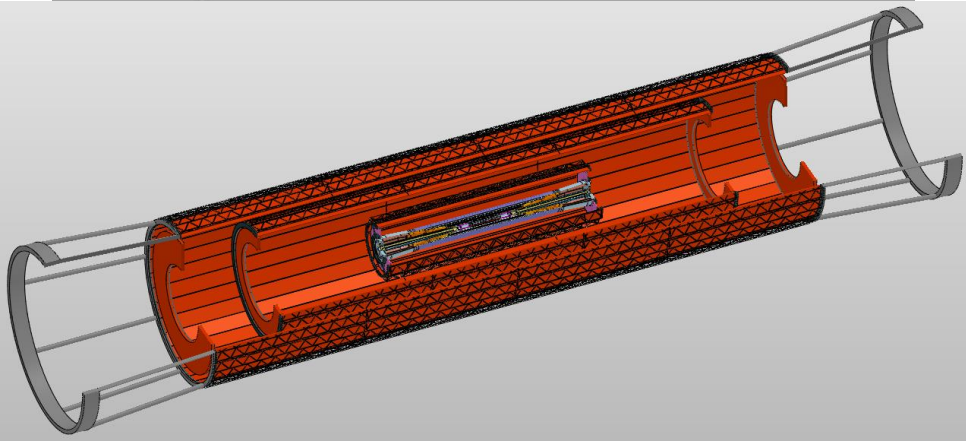
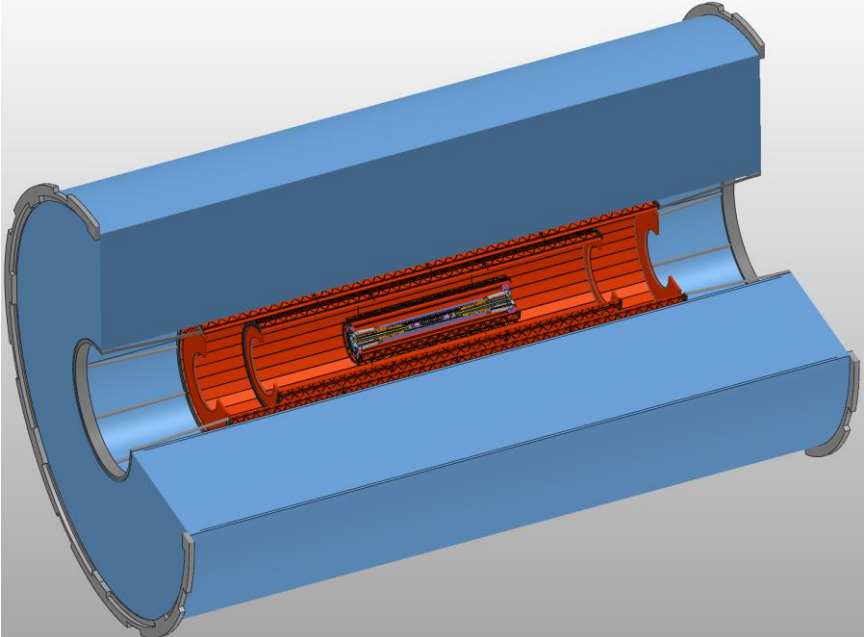


Connection:
Fixed on the barrel ECAL

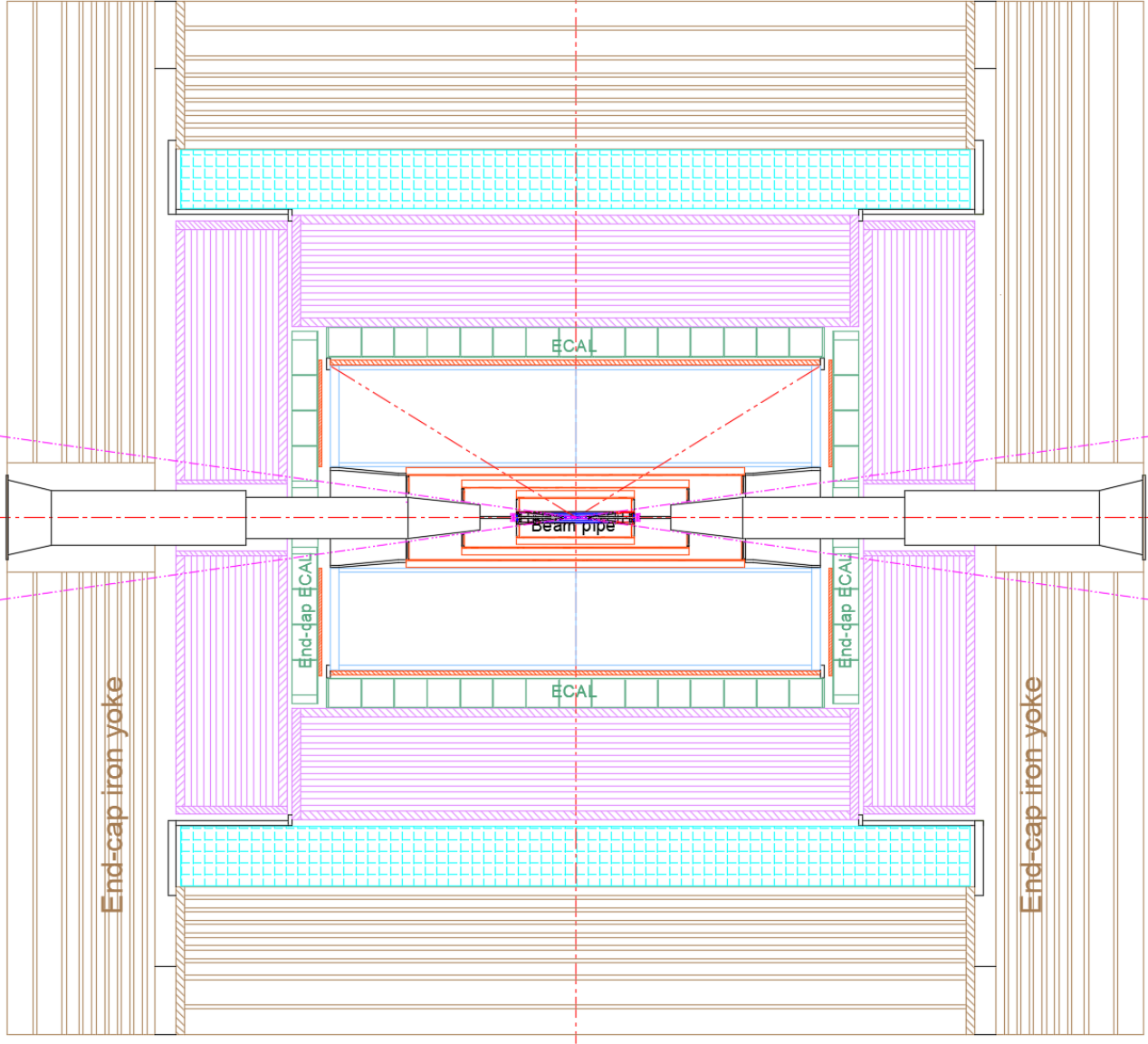


2. Detailed discuss --- Silicon Tracker

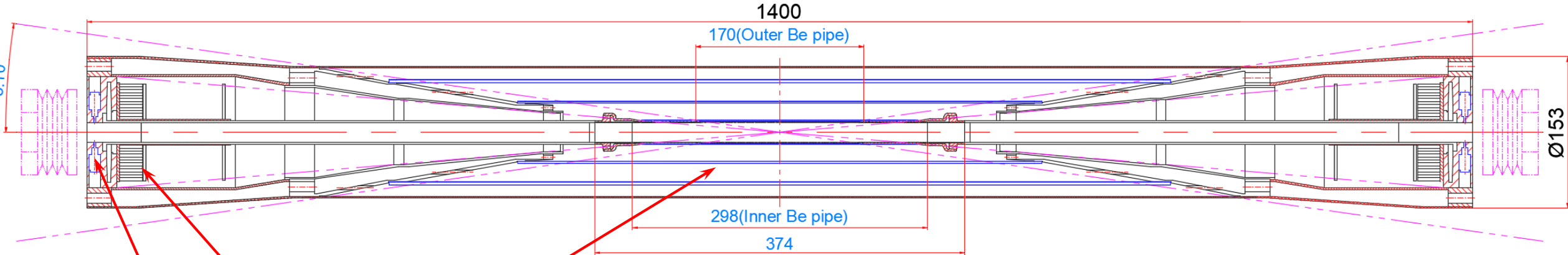
尺寸标注: ???



Connection:
Fixed on the TPC

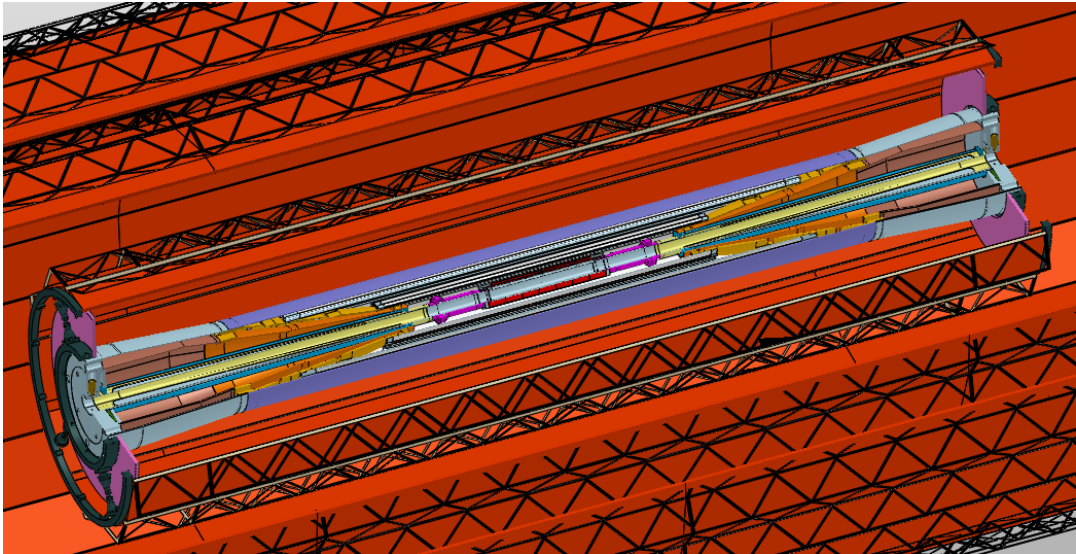


2. Detailed discuss --- Beampipe and Detectors



Detector: BPM, LumiCAL, Vertex

Update:
Length of Be pipe 210 → 298



Connection:
Fixed on the Silicon trackers

Thanks