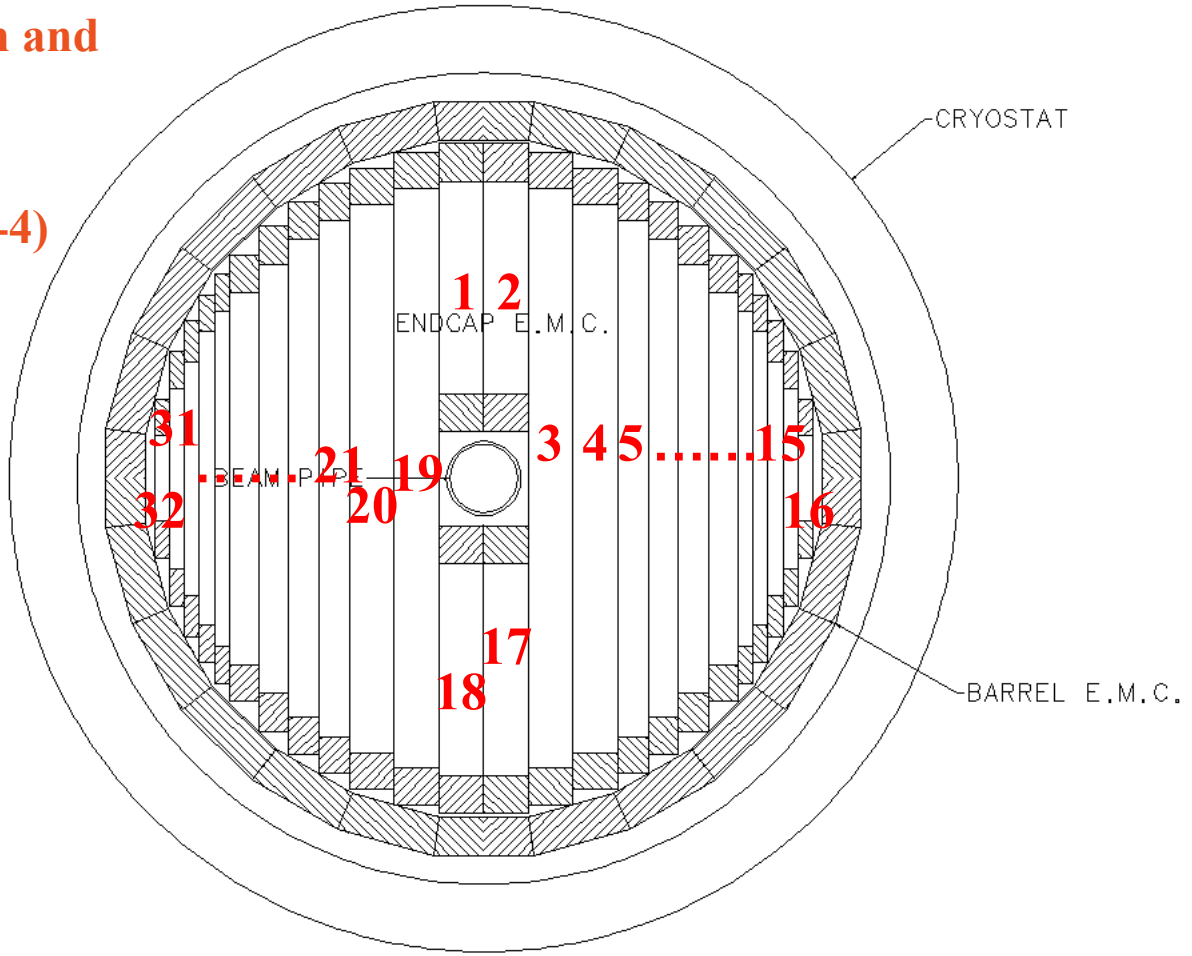
ECAL Endcap geometry

P.Gauzzi – RM 1

EC geometry

- 32 modules of different length and width

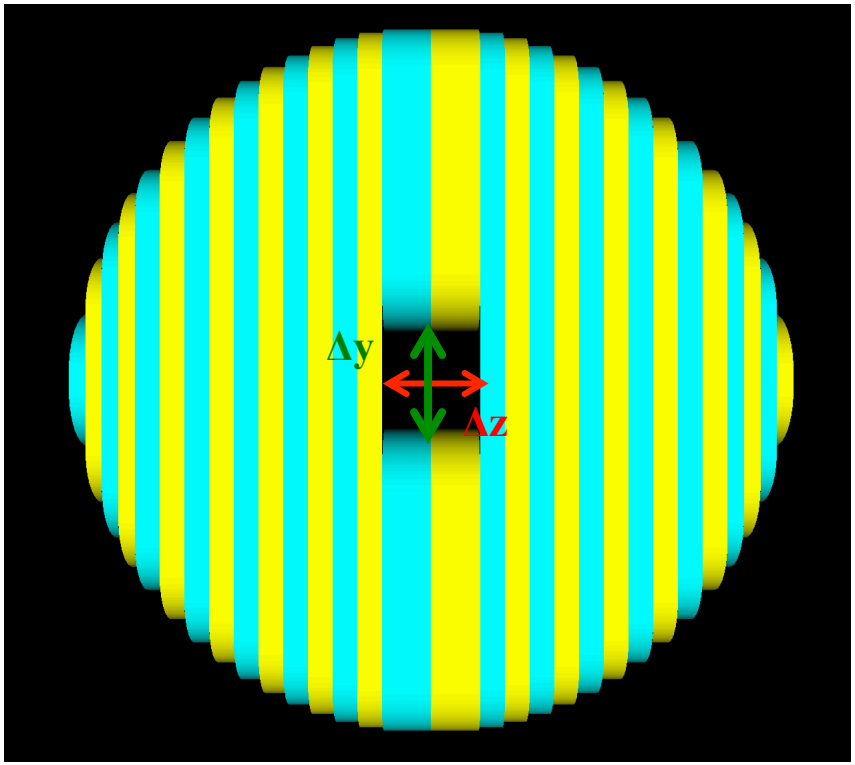
Cell size: 4.44 × 4.44 cm^2 (layers 1-4)
5.24 × 4.44 cm^2 (layer 5)

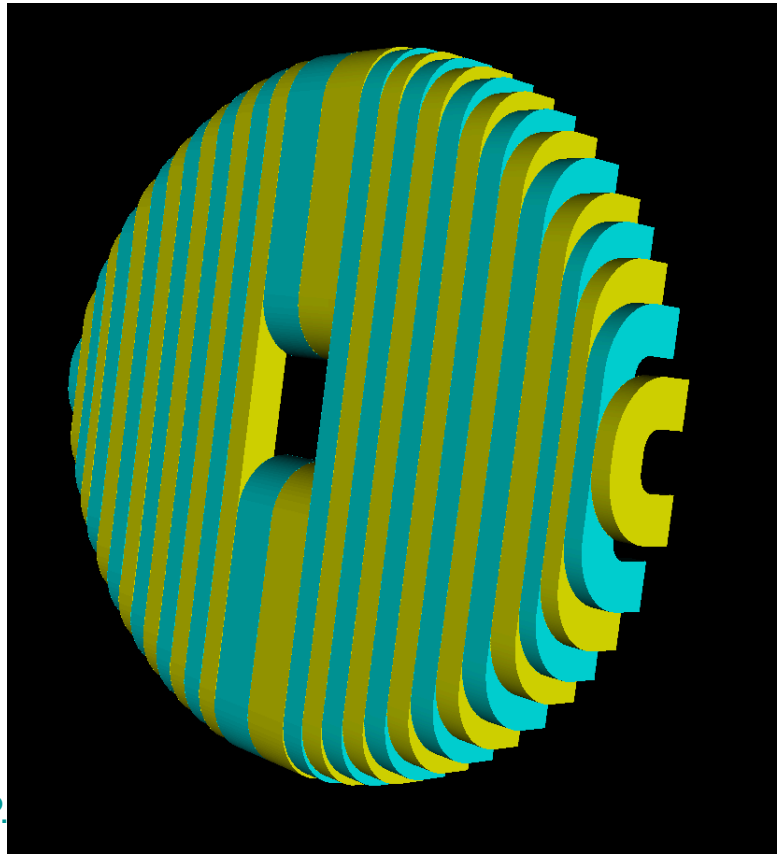


Mod. 1-2 and 17-18: 6 columns
Mod. 3-12 and 19-28: 3 columns
Mod. 13-16 and 29-32: 2 columns

EC geometry

- **Position: ±169.3 cm from the center of the ECAL**
- **Central hole:**
  Δy = 54.70 cm
  Δz = 53.28 cm

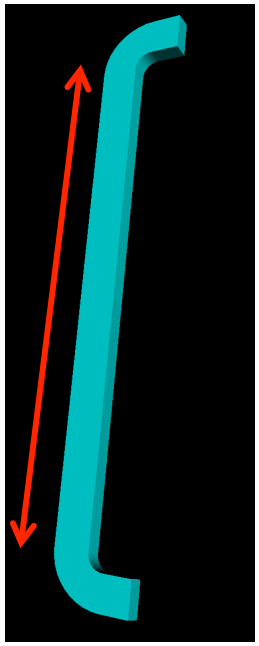




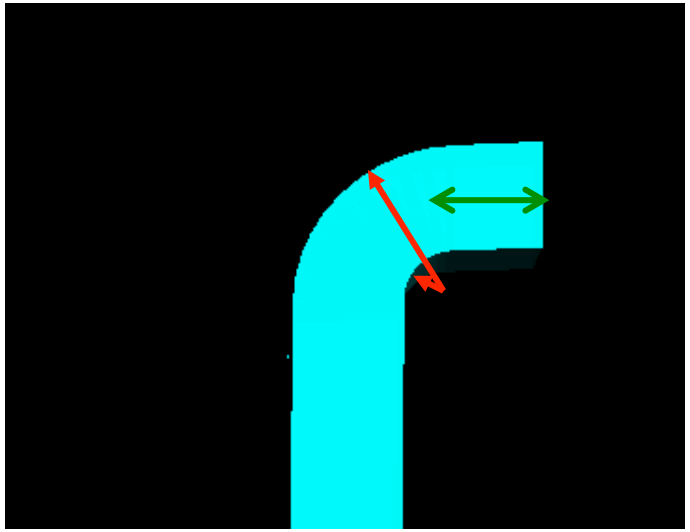
EC geometry

C-shape modules:

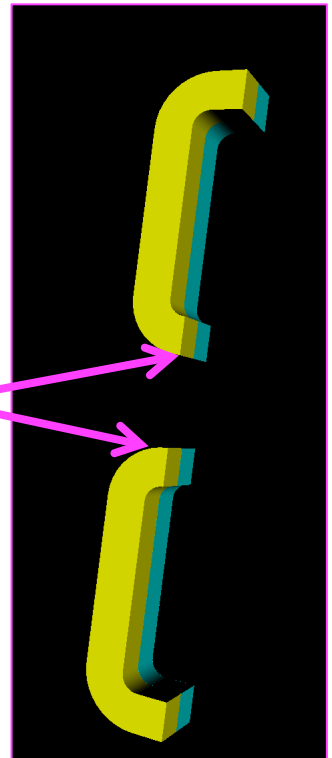
1. **main straight part of different lengths**



2. **Curved part:**
   inner radius = 10 cm
   outer radius = 33 cm

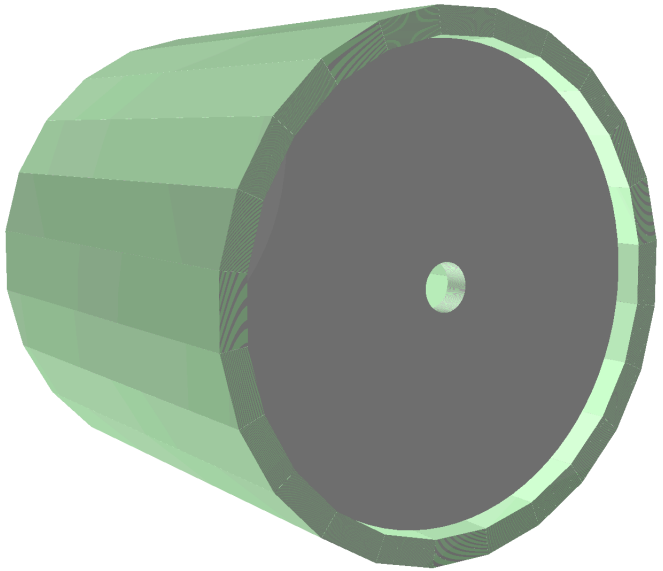


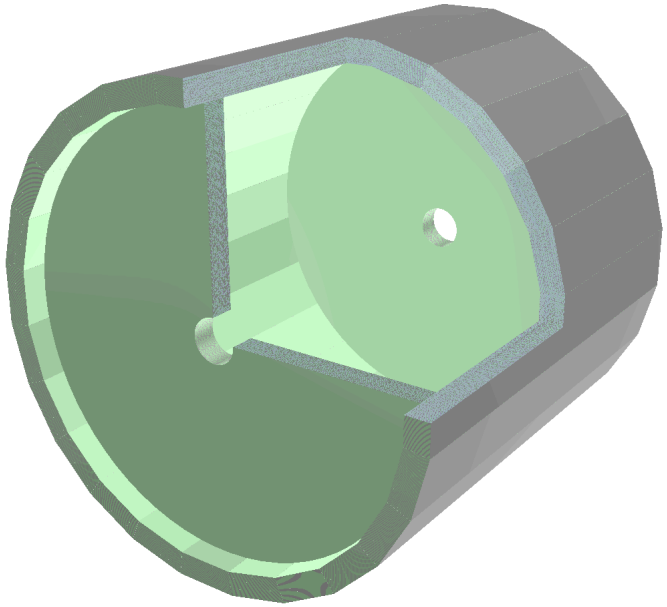
3. **Small straight part after the curve, L = 20 cm**
4. **No straight part for the central modules near the hole**



Present description

- Disc of 2 m radius with a circular hole
- 23 cm thickness

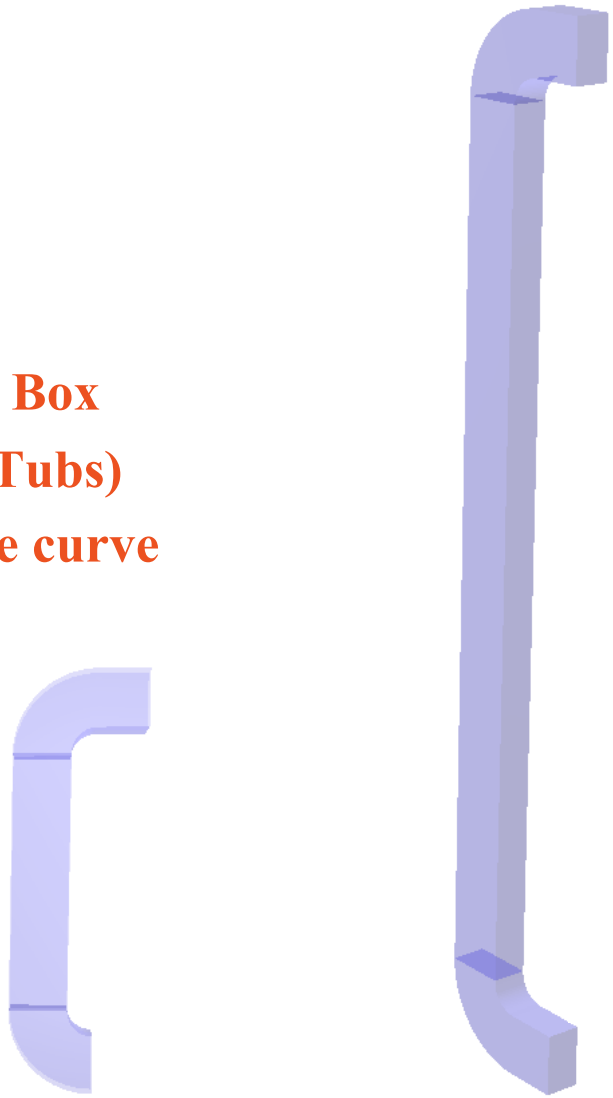




- Internal structure: alternate layers of active (scintillator) and passive (Pb) material

Inserting the module geometry

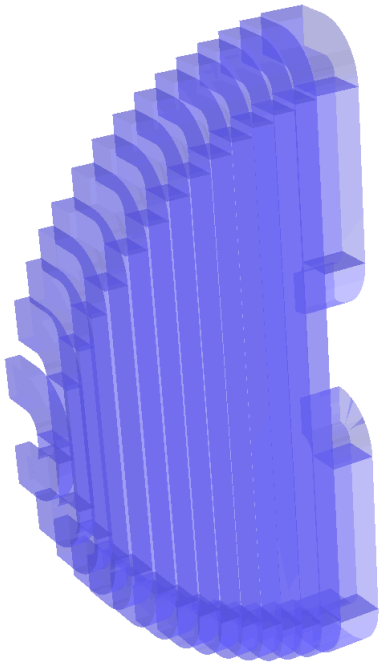
- Using the GEGEDE framework
- First step: insert the module shapes
- For each module:
  - generate the main straight part as a Box
  - add the curved parts (generated as Tubs)
  - add the short straight parts after the curve

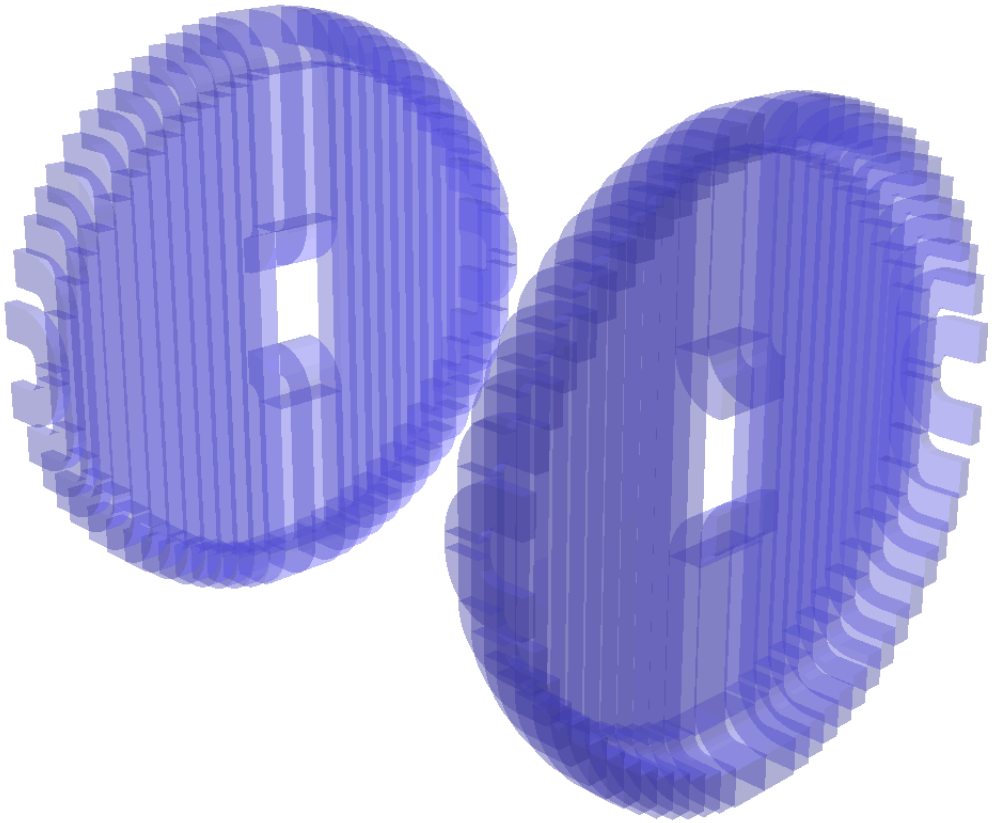


central module
near the hole

Endcap shape

- Generate 16 modules ⇒ half an Endcap
- Replicate the shape three times





Shapes are OK, but
still empty (material =“air”)

Endcap geometry

- Next step is to produce the layer structure for each ot the shapes (main straight part, curved part and short straight part)
- Ok for some modules
- Next: generate all the modules
- Then add to the Barrel
- Final step will be the implementation in the general SAND geometry description