ATHENA CALO WG INTEGRATION MEETING

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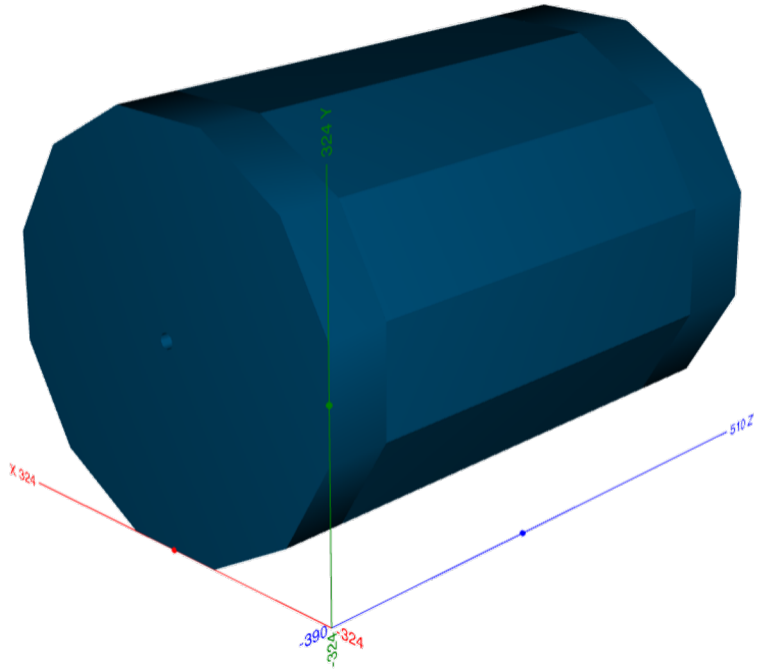

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CALORIMETER V2

- Current implementation of calorimeters in dd4hep represent consensus of all ATHENA calorimetry involved group.
- Incremental changes only from initial discussion.
- All calorimeter requires validation at single particle level
  - most manpower were identified, **except B and N hcals.**
  - Activities are ramping up.

CALORIMETER V2:
ONLY INCREMENTAL OPTIMIZATION CHANGES ON V1

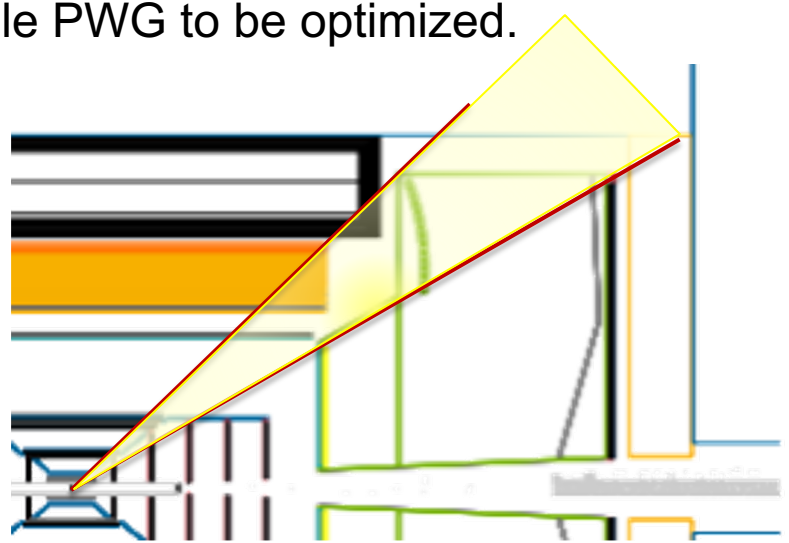
Optimization studies:

- Studies for optimization of b and n Hcal needs additional collaborators

- bCalorimetry system requires inputs from multiple PWG to be optimized.

- beCal:
  - be to peCal gap

  - Number of tracking layers somewhere between 6 and 9 for π identification.

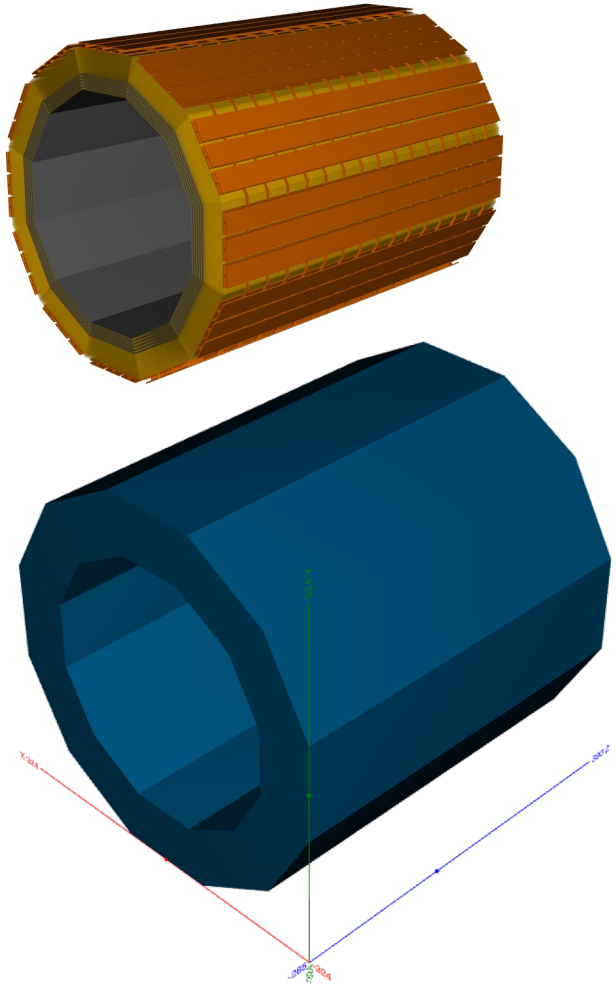


BARREL ECAL

- 12 Staves
- 6-9 imaging layers, 6 implemented in DD4HEP
- Outer radius 75.5 cm, 40 cm thick

BARREL HCAL

- 12 Staves
- Fe/Sc (20/5mm) KLM type, 10 x 10 cm transverse granularity

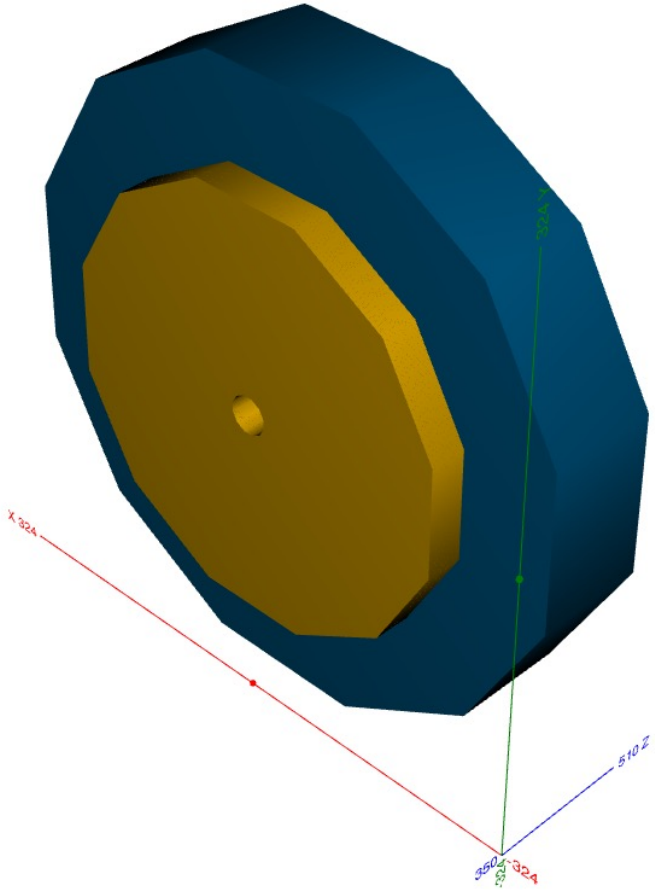


POSITIVE ECAL

- 12 wedges
- WScFi, 23 X0,
- 2.5 cm x 2.5 cm transverse

POSITIVE HCAL

- Fe/Sc (20/5mm) KLM type,
- 10 x 10 cm transverse granularity



Negative ECAL

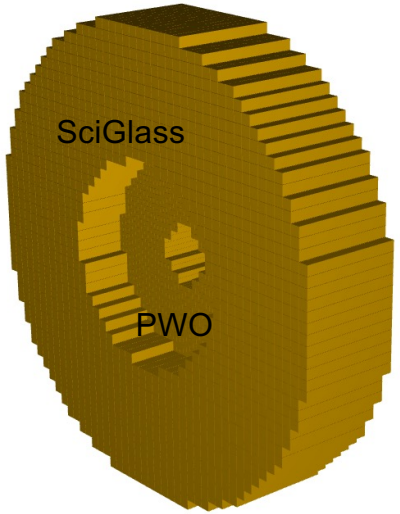
Institutions: EEEMCAL consortia

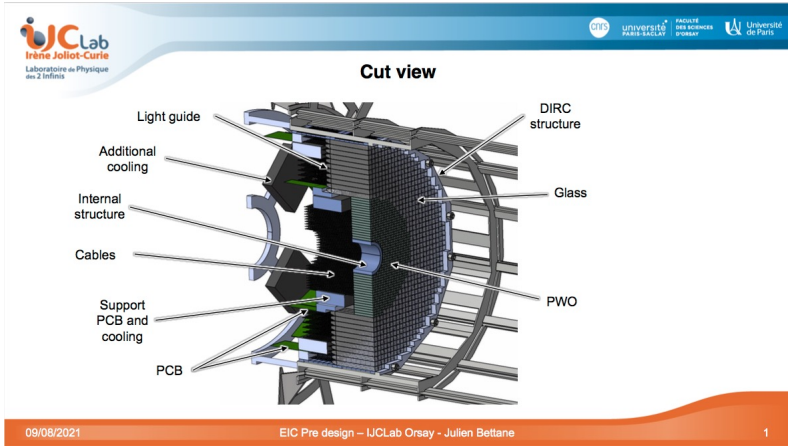
Geometry:

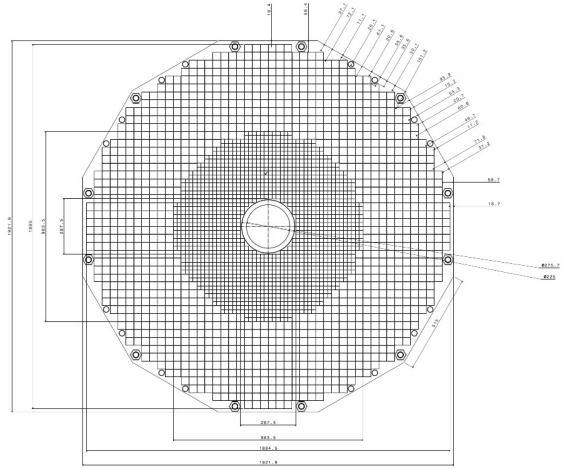
- z=-195cm
- R_in=11 cm (eta ~ -3.5) = R_min_PWO
- R_max_PWO=53 cm (eta ~2)=R_min_Glass
- R_max_total=100cm (eta ~ 1.4)=R_max_Glass

Modules **PWO 1976** (2x2x20 cm^3)
Modules **Glass 1104** (4x4x40 cm^3)

Readout: SiPM matrix 4x4 (S14160 10um 3x3mm^2)







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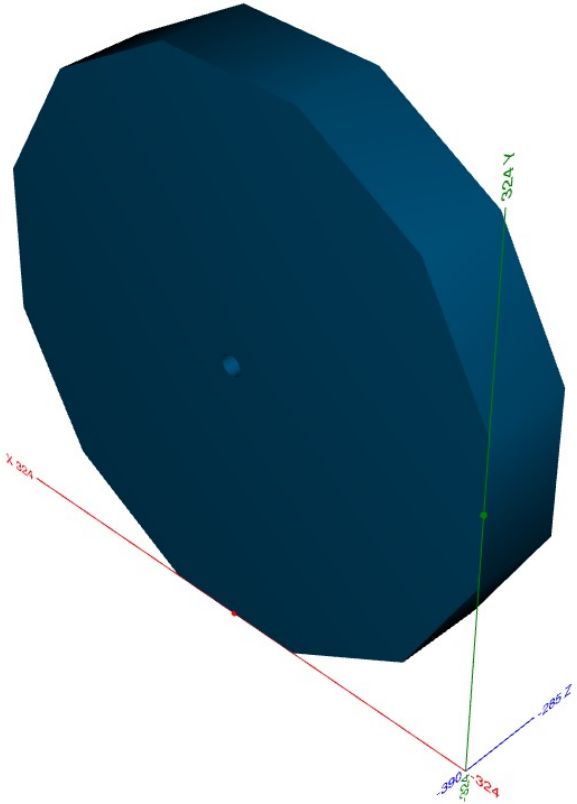
NEGATIVE HCAL

- Fe/Sc (20/5 mm) KLM type,
- 10 x 10 cm transverse granularity



Topics of Discussion

- Different technologies
- Gaps in the detector – this is part of optimization.
- Potentially whole crystal endcap – cost and scheduler risks seemingly high.
- Improved resolution for p(b) Ecals