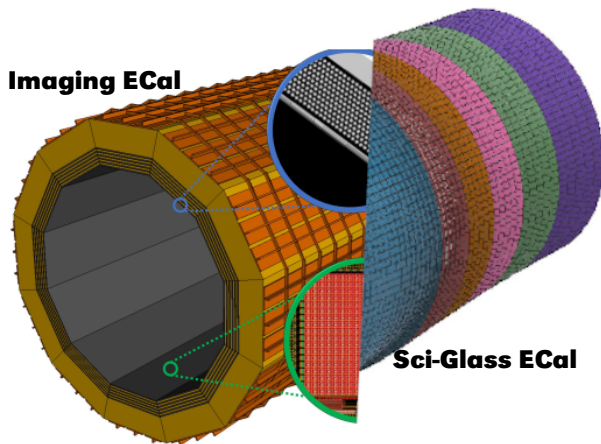


Joint Barrel Optimization

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September 15, 2022

Joint EPIC Tracking & Calo WG meeting

Barrel Calorimetry



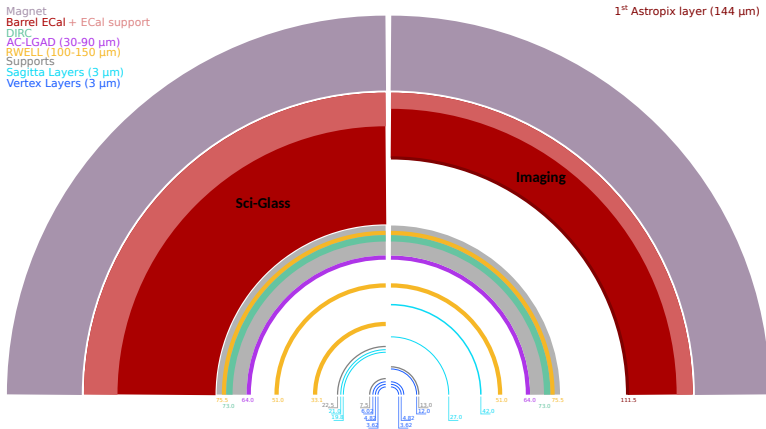
Barrel region - alternatives:

- **Sci-Glass:** homogenous, projective Sci-Glass ECal
- **Imaging:** 5 layers of 0.5x0.5mm Astro-Pix Silicon layers, interleaved with Pb-SciFi calorimeter

General questions:

- Is the radial space for the tracking/PID sufficient right now?
- If we go for the imaging calo, can we use the first pixel layer as part of the tracking?
- How much and where are the largest support structures foreseen (impact on resolution for calo's)?
- Do we need to optimize tracking, PID and calorimetry completely together
 - If yes, which processes do we wanna focus on?
- In case of the imaging calo, would we want an inner HCal?

Magnet
Barrel ECal + ECal support
DIRC
AC-LGAD (30-90 μm)
RWELL (100-150 μm)
Supports
Sagitta Layers (3 μm)
Vertex Layers (3 μm)



Sci-Glass:

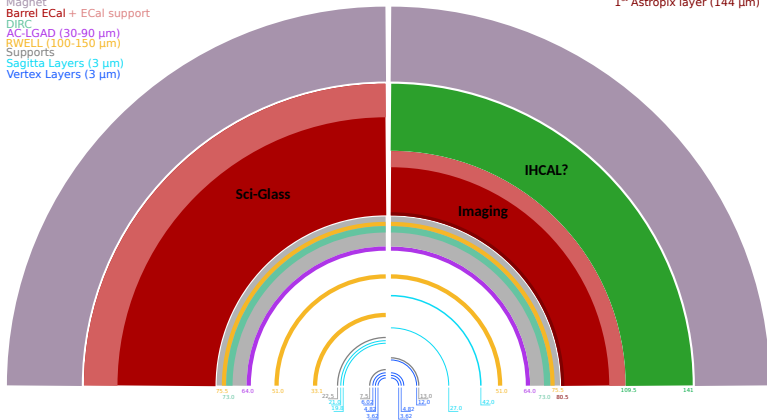
- Spatial arrangement fixed, no IHCAL possible
- Only possible change tracking/PID configuration

Imaging:

- Could fix ECal (total 30 cm $\sim 20X/X_0$) to magnet albeit more cost extensive
- Would leave more room for tracking/PID configuration changes

Magnet
 Barrel ECal + ECal support
 DIRC
 AC-LGAD (30-90 μm)
 RWELL (100-150 μm)
 Supports
 Sagitta Layers (3 μm)
 Vertex Layers (3 μm)

1st Astropix layer (144 μm)



Sci-Glass:

- Spatial arrangement fixed, no IHCAL possible
- Only possible change tracking/PID configuration

Imaging:

- Could fix ECal (total 30 cm $\sim 20X/X_0$) to same inner radius as Sci-Glass
- Option to foresee an IHCAL as default or upgrade in addition ($\sim 30\text{cm}$)