

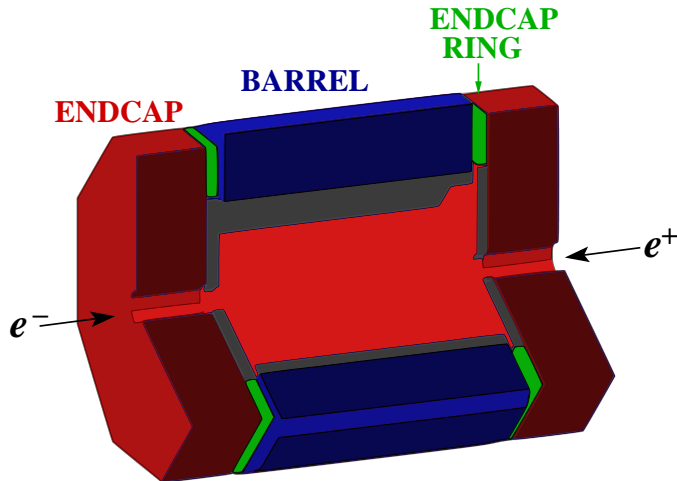
# Status of the Scintillator HCAL Simulation

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# Scintillator HCAL: Basic Structure

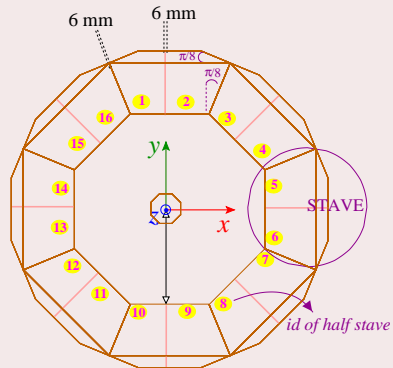
- **Barrel:** detailed design (see next slides)
- **Endcaps:** similar to the barrel, but perpendicular to  $z$
- **Endcap rings:** fill the gap



# Scintillator HCAL: BARREL

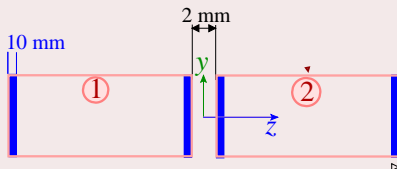
## $x - y$ view

- Circular structure divided into **8 staves**
- For mechanical reasons, each staffe divided into 2

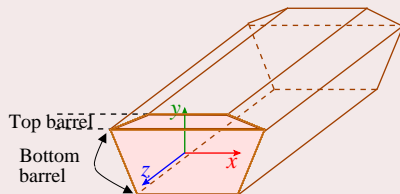


## $y - z$ view

- 2 modules along  $z$

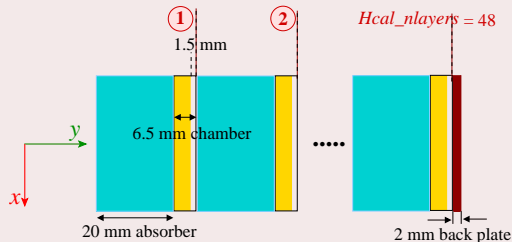


## HCAL module

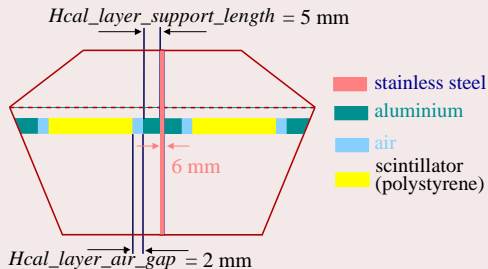


# Scintillator HCAL: BARREL (continued)

## Sampling structure



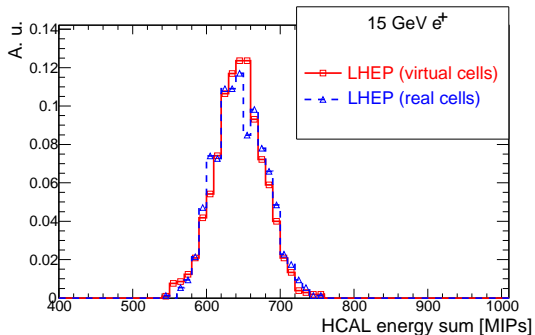
## Layer support



- In each half of a stave, layers have **support elements (Al)** at both ends

# Scintillator HCAL: BARREL (continued)

- **HCAL cells are virtual** (i.e. virtual division of the scintillator volume, not separate volumes for each cell)
- Monte Carlo studies of **test beam HCAL** indicate minor difference between virtual and real cells

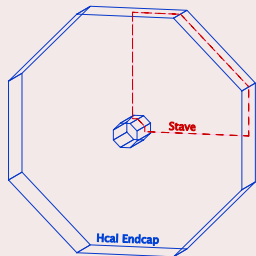


- **Cell size: default 3 cm**
- However, for better use of available space, cells with sizes from 0.5 cm to 3 cm are used (with biggest cell in the centre of the layer)  $\Rightarrow$  cells are staggered (not aligned)

# Scintillator HCAL: ENDCAPS and ENDCAP RINGS

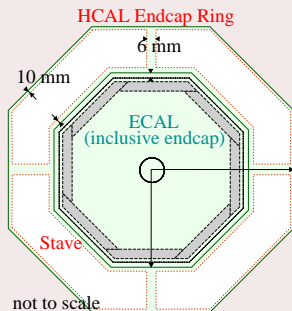
## Endcaps

- No specific engineering design yet
- Simple geometry: octagonal shape, with an octagonal hole for the beam pipe
- Same sampling structure as for the barrel; 3 cm cells;



## Endcap Rings

- No specific engineering design yet
- Use the same simple geometry as for the endcaps
- Number of layers constrained by thickness and outer radius of the ECAL endcaps (ILD\_00: 5 layers)



# Conclusions

- For more detailed information about the scintillator HCAL geometry and parameters, please see:  
[Linear Collider note LC-TOOL-2008-001](#)
- New: small changes to allow proper simulation of CLIC\_ILD detector
  - allow possibility of increased number of HCAL layers
  - Andre Sailer added tungsten (*TungstenDens24* - almost pure tungsten with a bit of Nickel and Iron, as used in the SiD simulation) as absorber material for both barrel and endcaps (to be submitted to svn)