

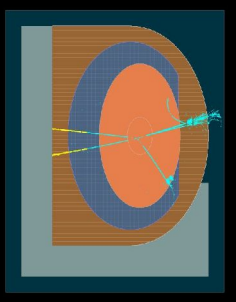
# Toward an LDC engineering model

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## Why an engineering model?

### Integration

- To be able to define our interface with the accelerator

Can we play push-pull? how?

How do we mount the detector?

How do we install it (à la CMS)?

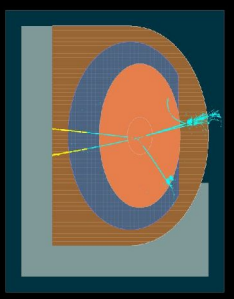
How do we partition the detector?

How do we service it? opening

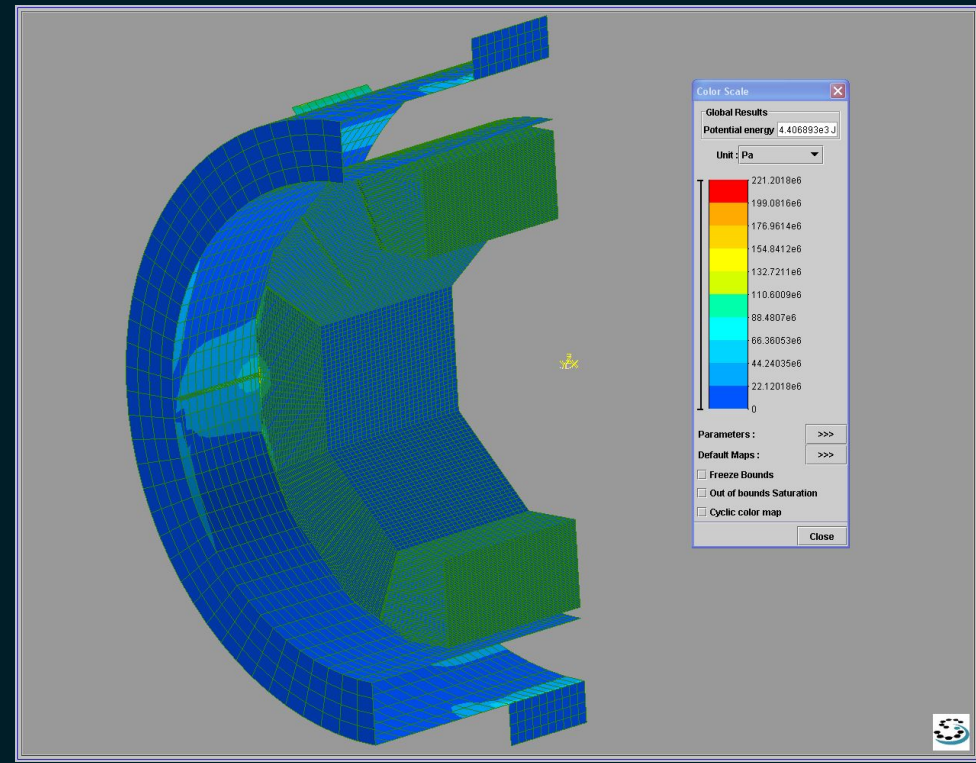
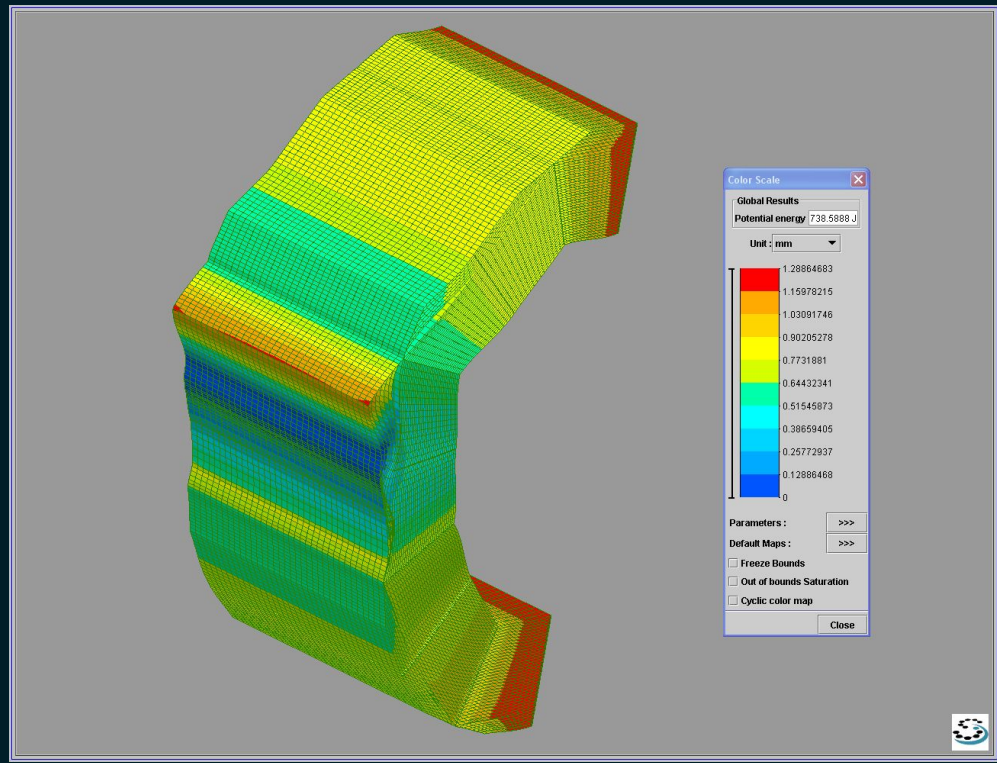
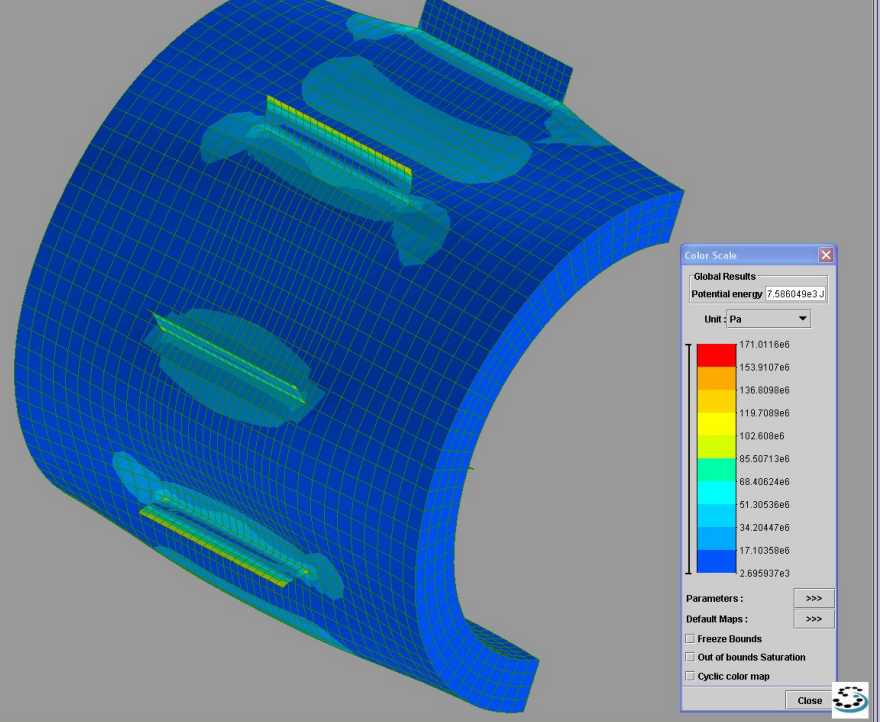
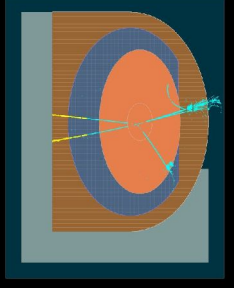
What has to be the size of the hall?

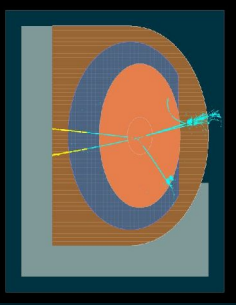
specifically where do we cut the pipe?

how do we extract the TPC?



- To define proper interfaces between sub-detectors geometry, power, cooling, cables in such a way that different alternatives can know what constraints they have to fulfil.
- To be able to perform global structural studies
- To identify and solve specific problems like return yoke for a mounting à la CMS beam tube structure , holding it inner detectors mounting and holding W tube and forward calorimetry holding Square Lumical to fit better Ecal?





This is also needed if we want to provide an Engineering Design Report in 2010.

Such a work had been done for Tesla and for the DOD essentially in DESY (N. Meyners).

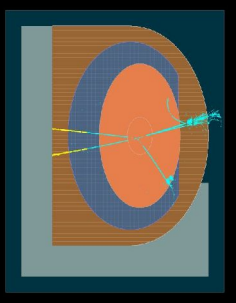
In view of the charge there some help has been found:

- for the overall structure M. Joré from LAL

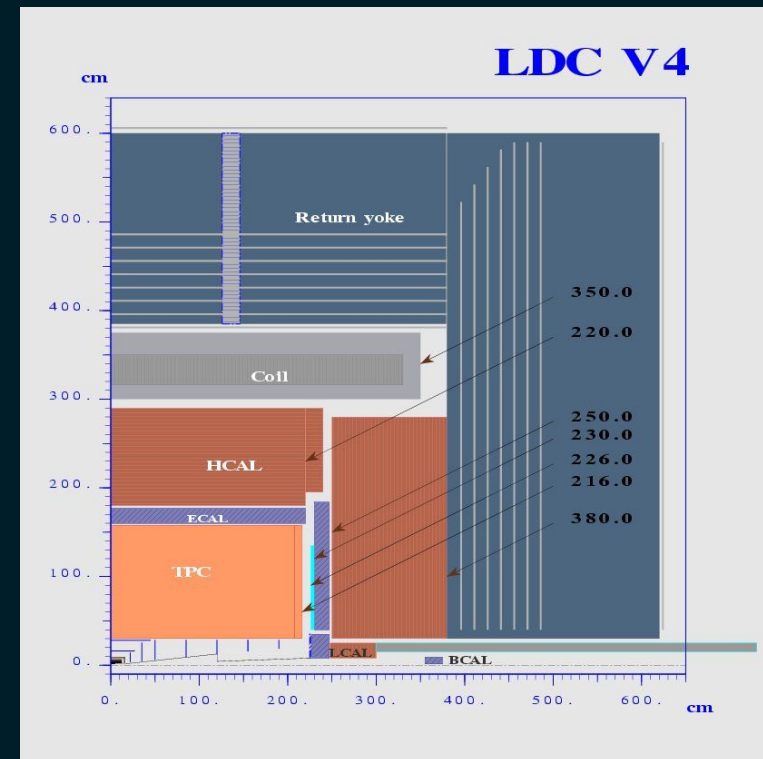
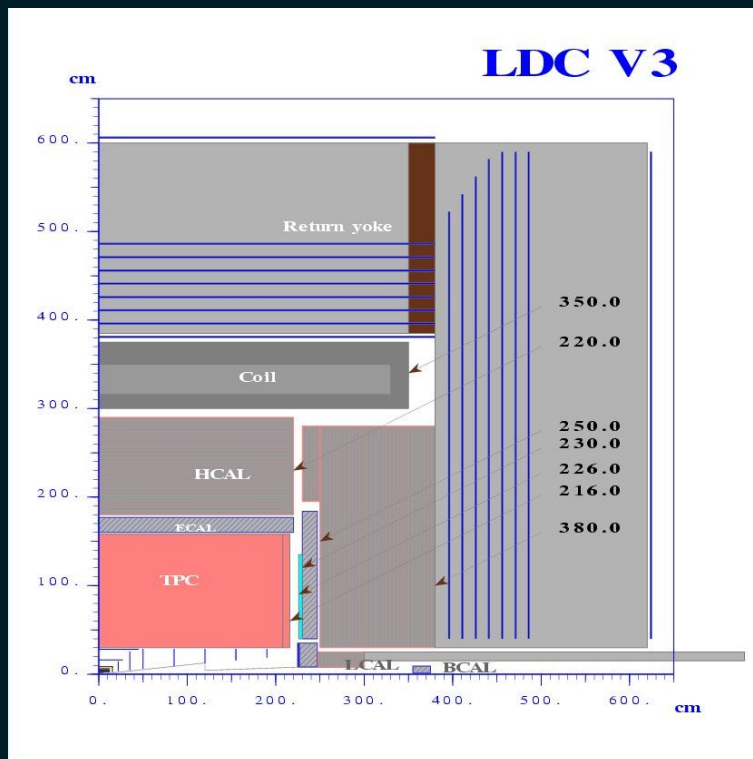
- for the ECAL and some structural computations M. Anduze

- for looking at interfaces C. Clerc

for the other components more people are needed

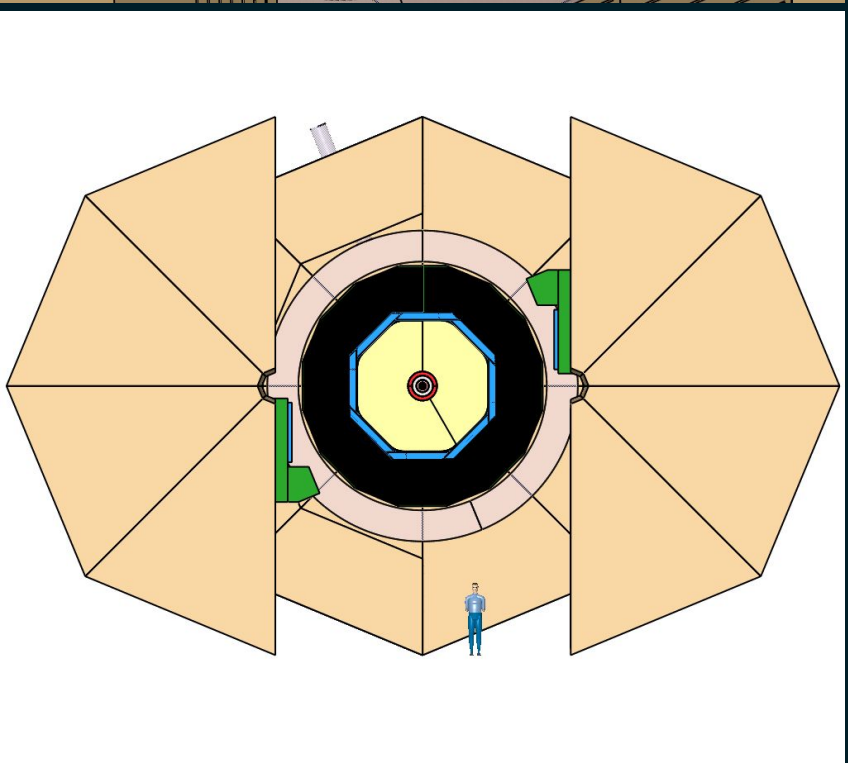
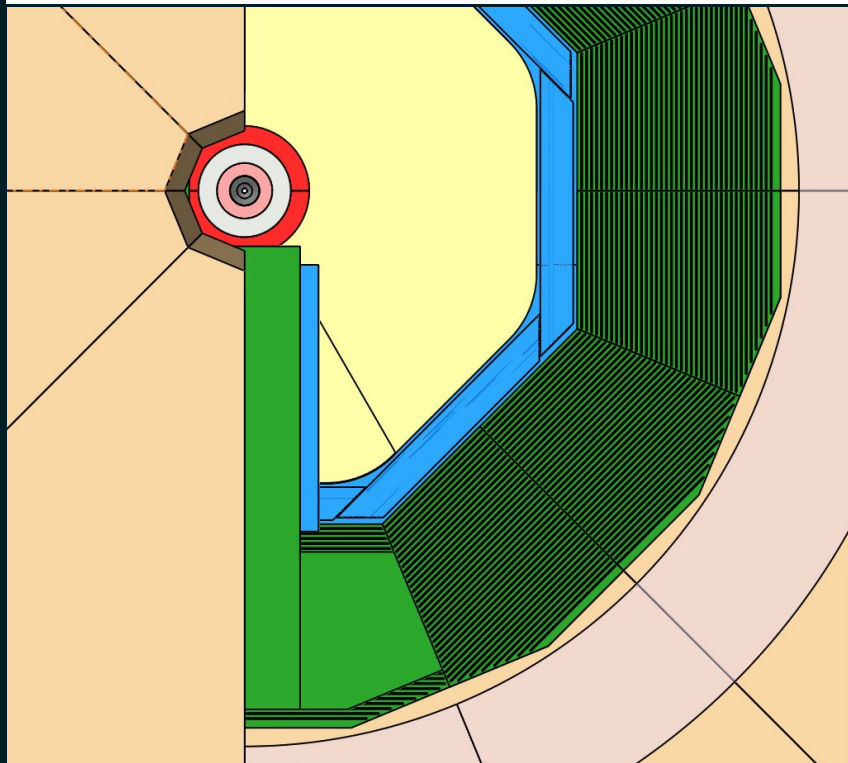
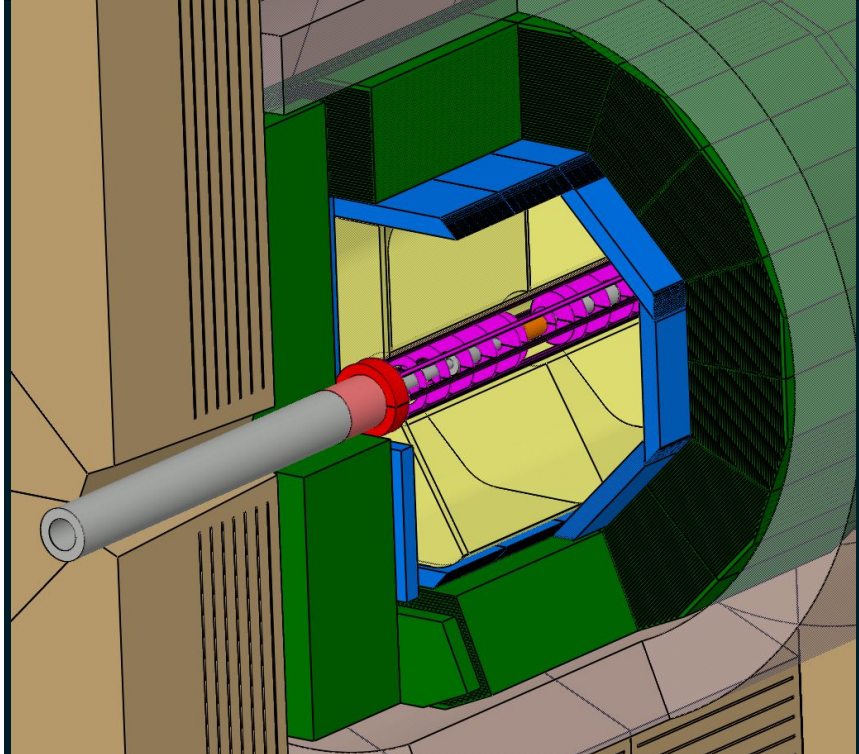
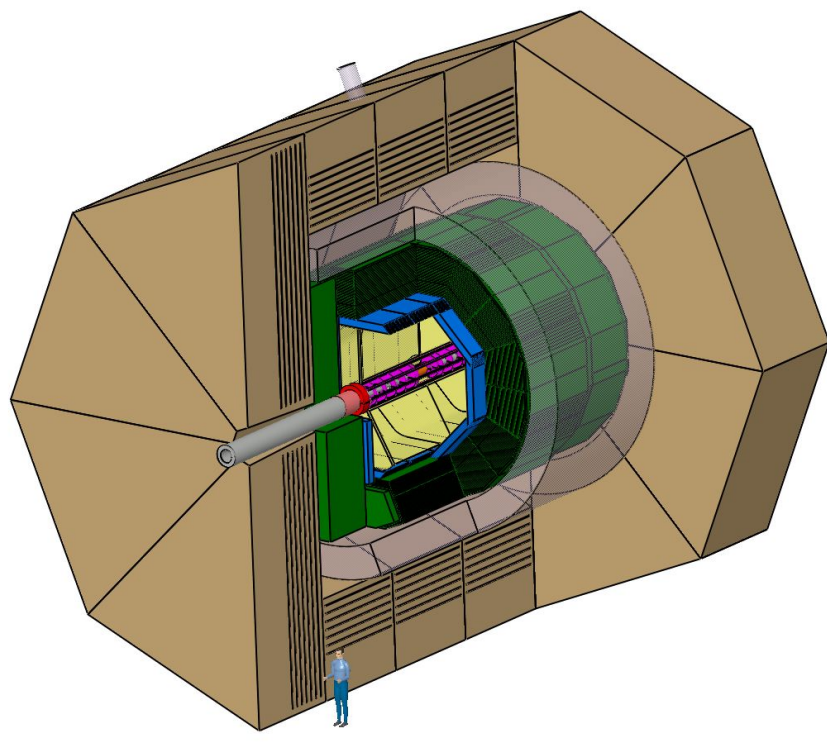
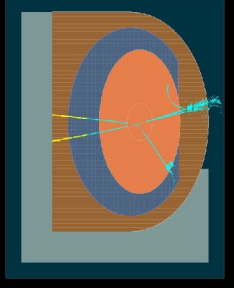


And, may be the most important,  
it defines a model to simulate as fully as possible

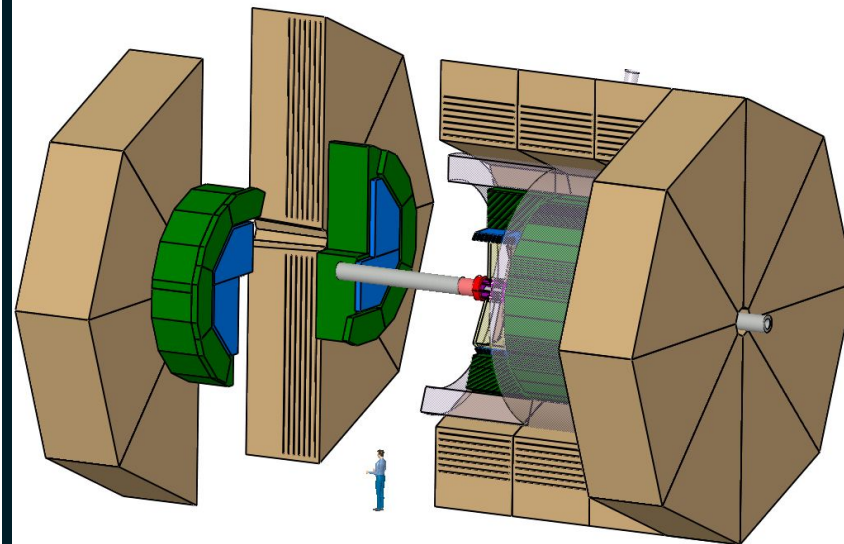
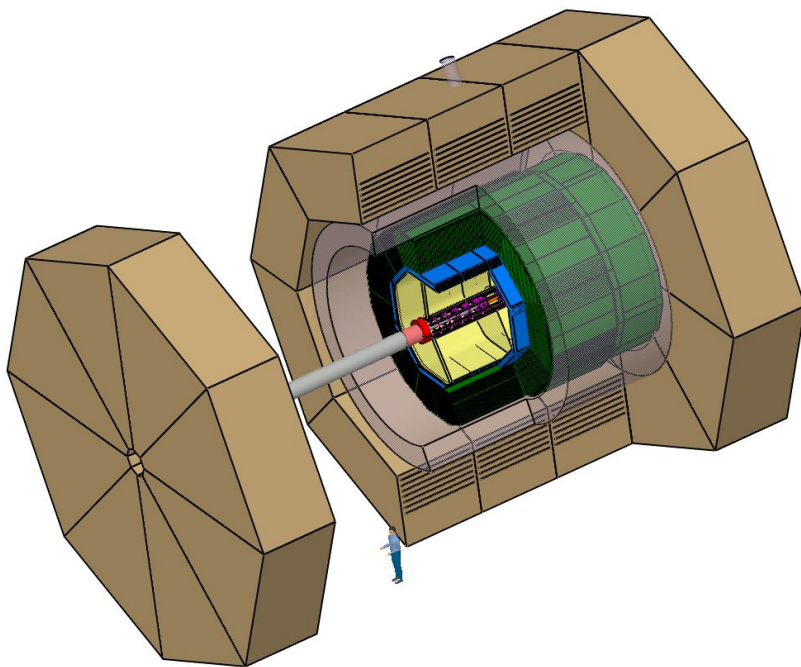


Main differences: Yoke structure à la CMS

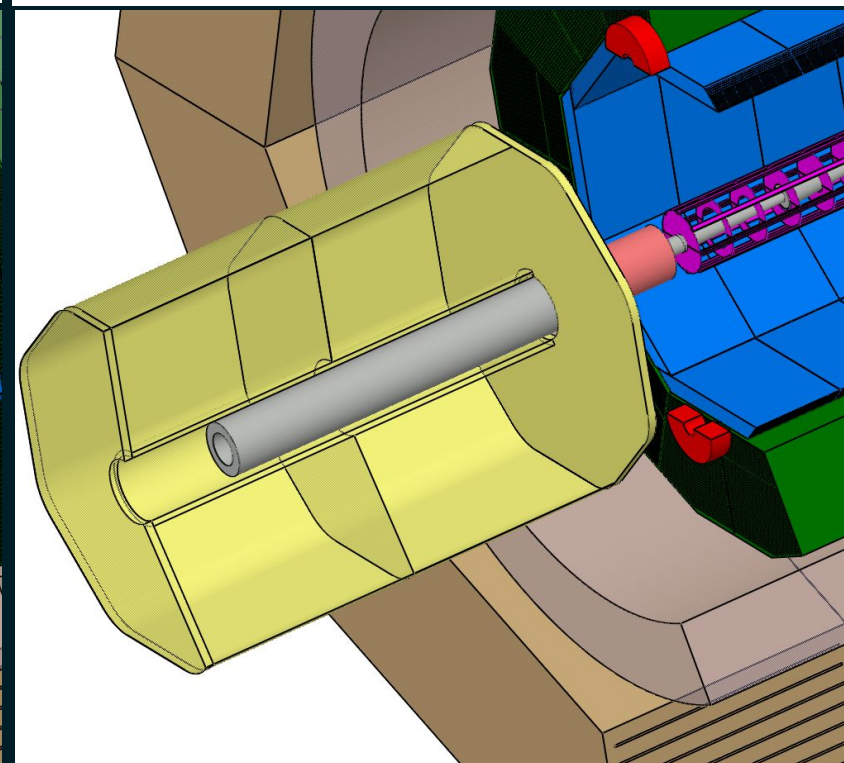
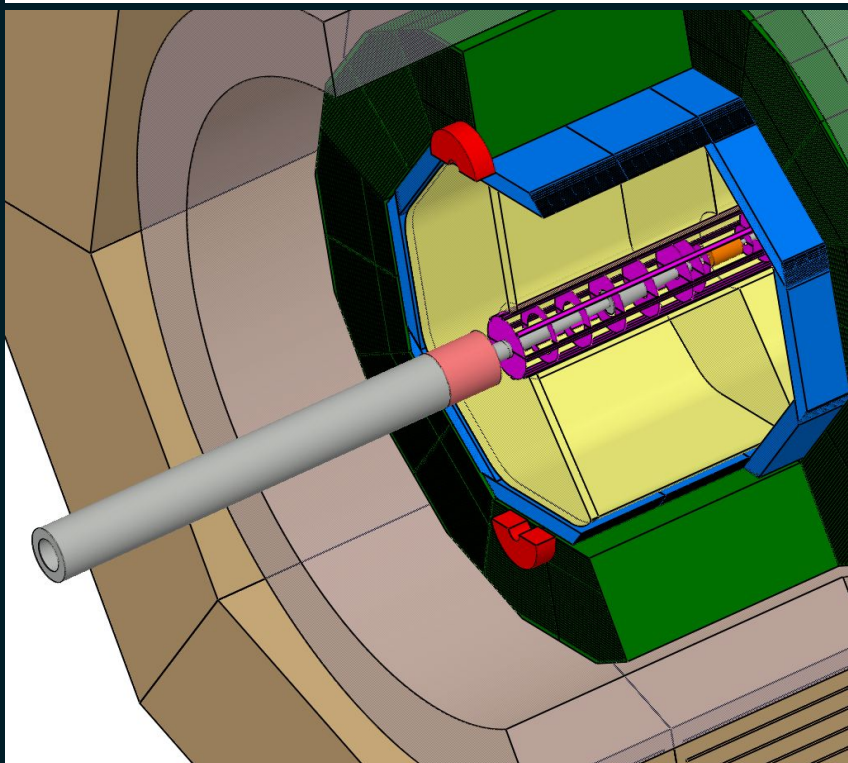
HCAL ring joined to barrel; hanging the TPC from HCAL?

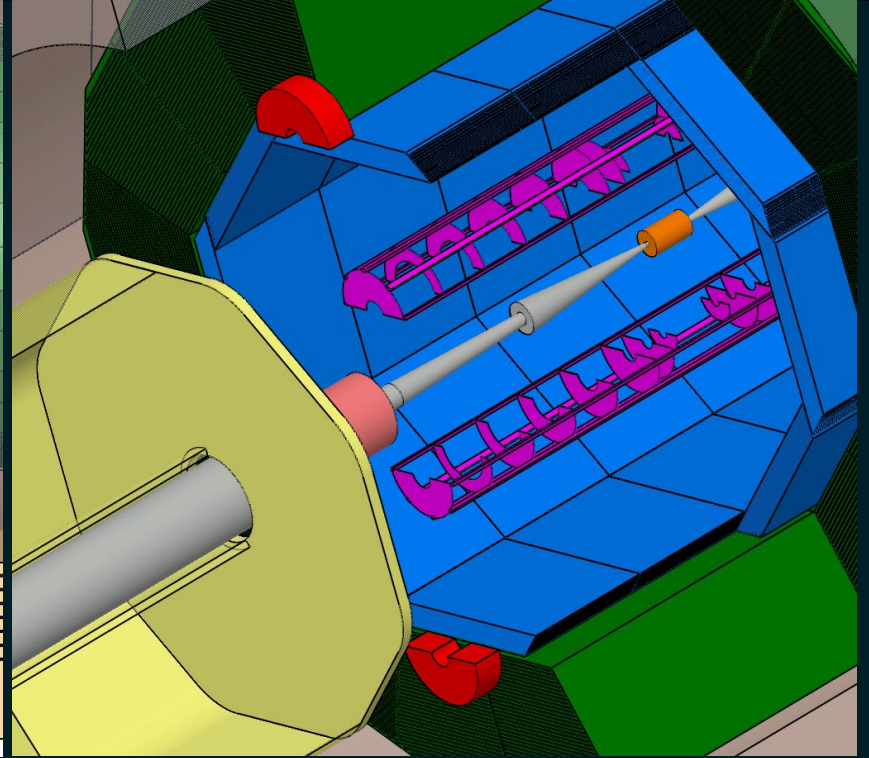
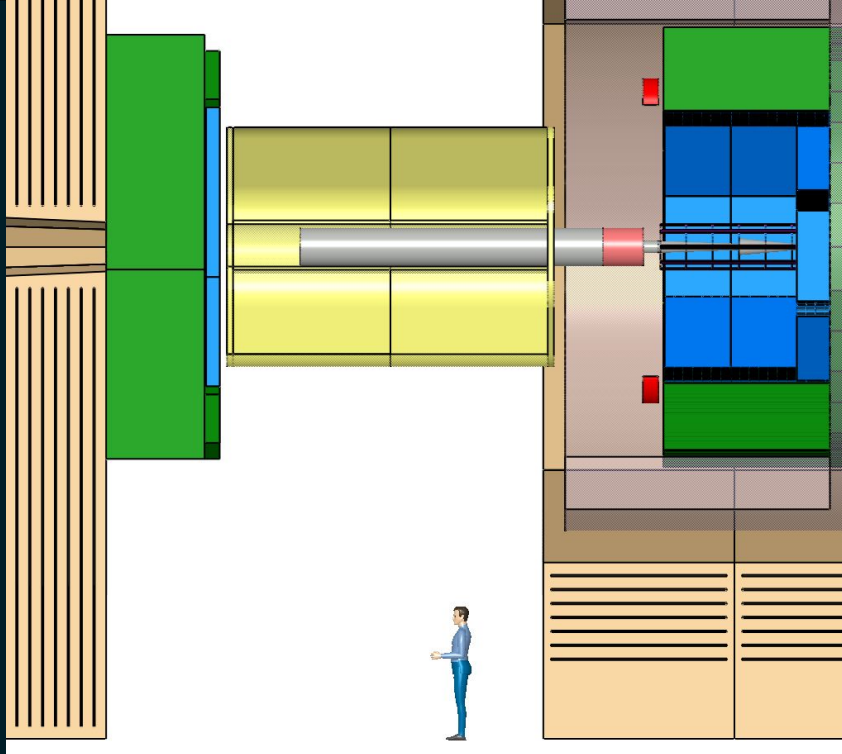
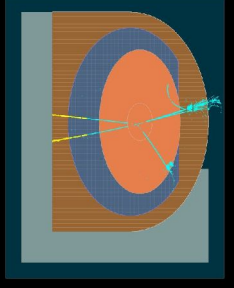




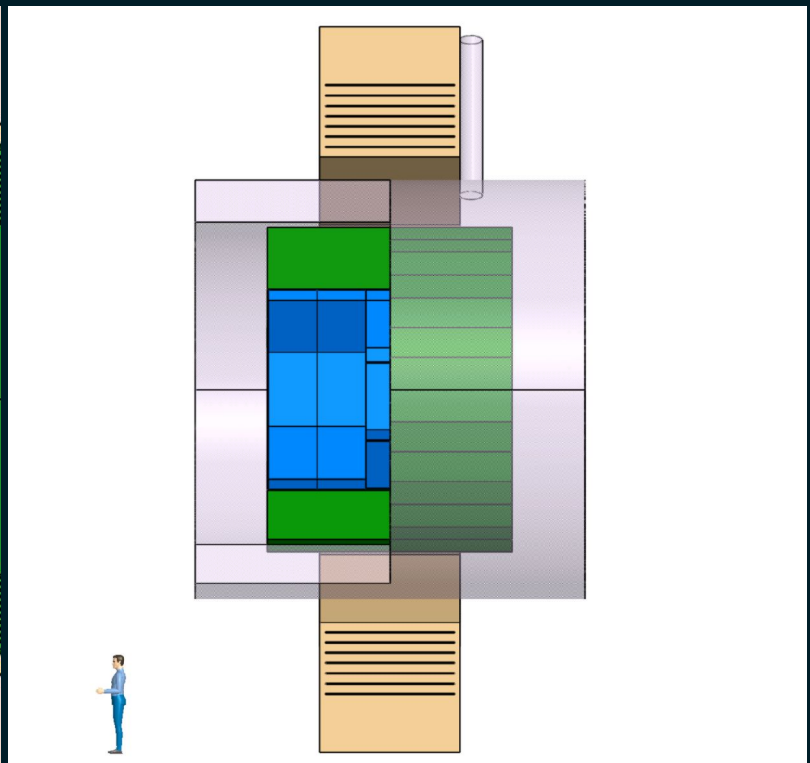
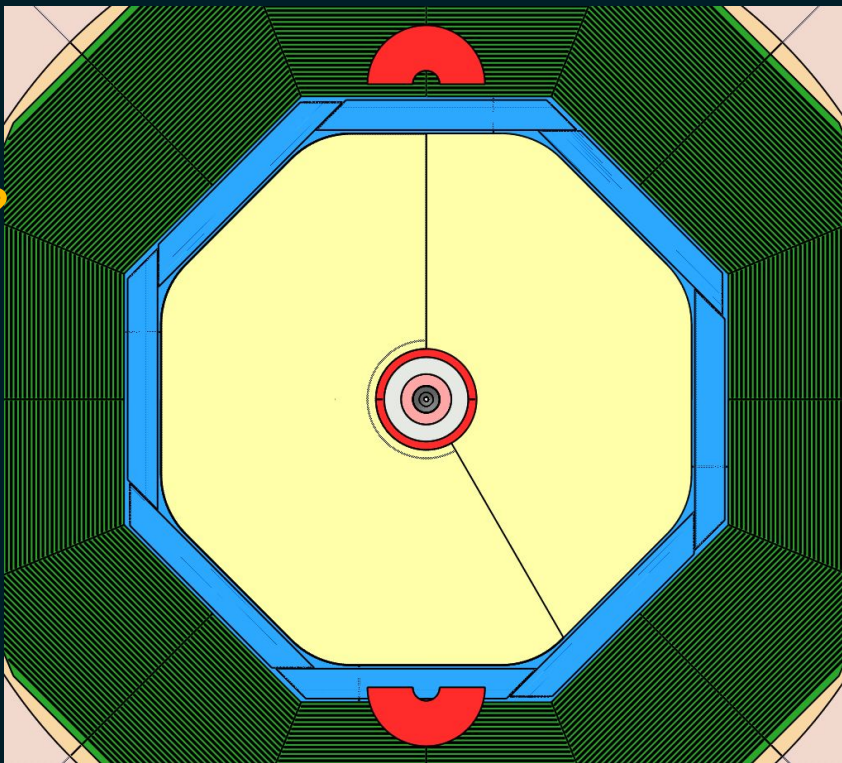


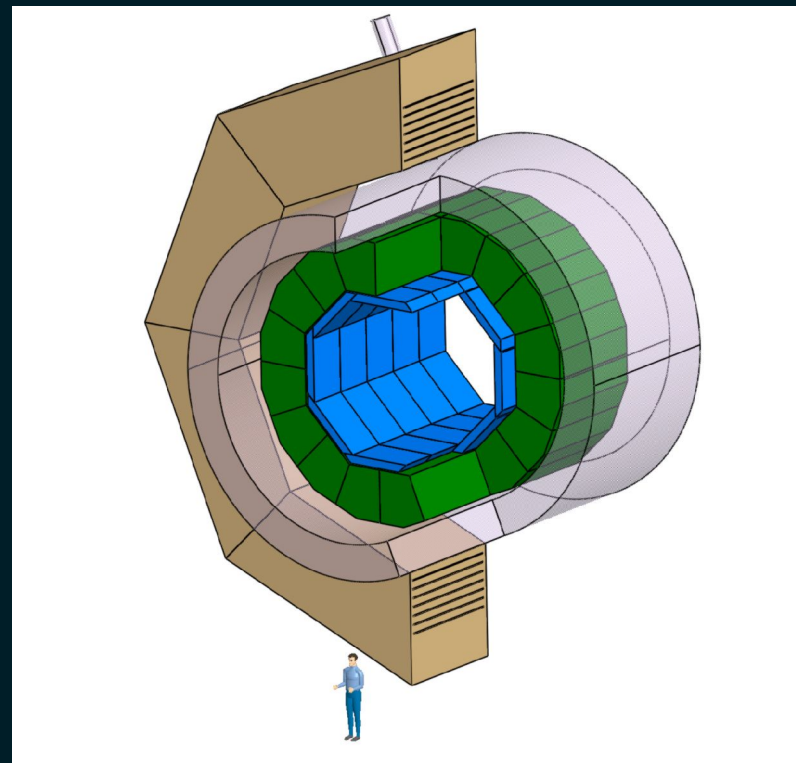
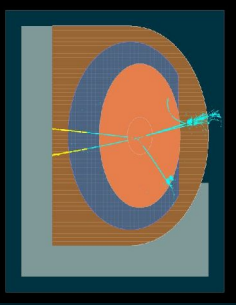
In push-pull  
do we still  
need to  
open the  
end-caps  
by halves?



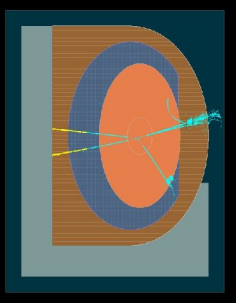


Octagonal?

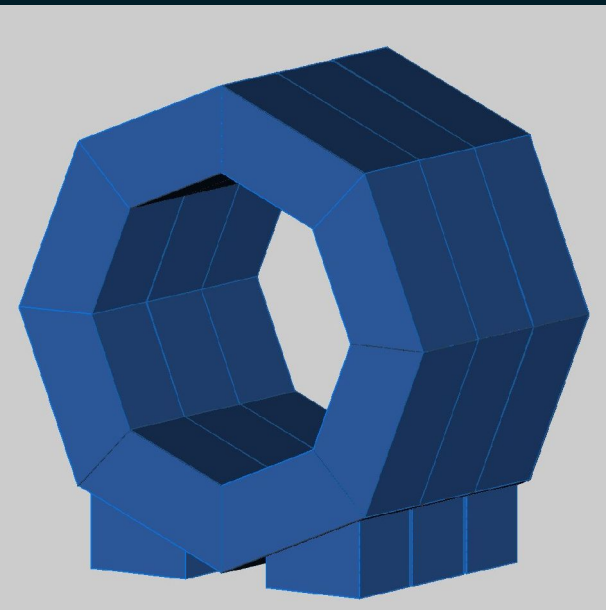
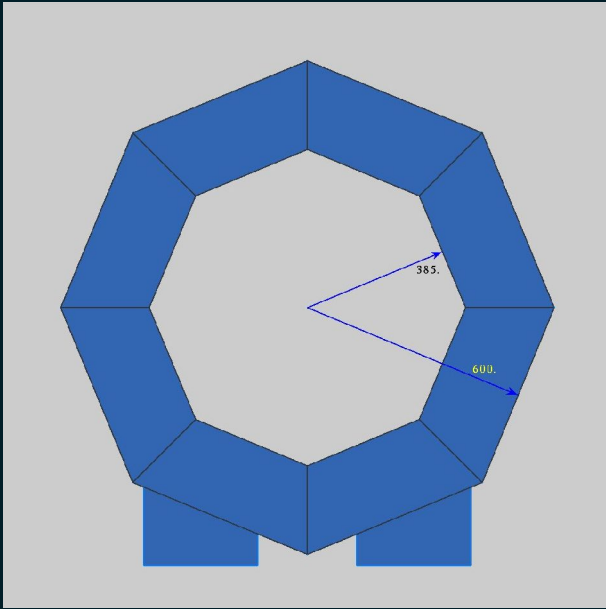




A central yoke bearing coil and calorimetry  
2 yoke barrel rings  
2 end-caps made of two half's ?



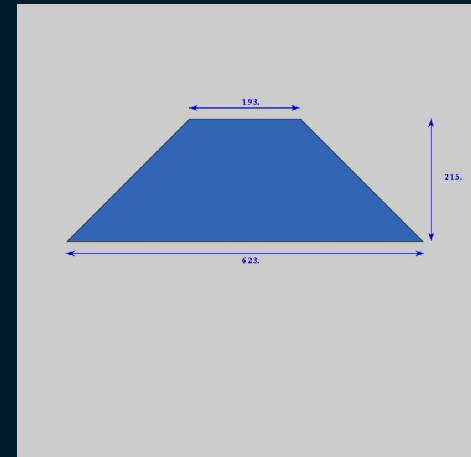
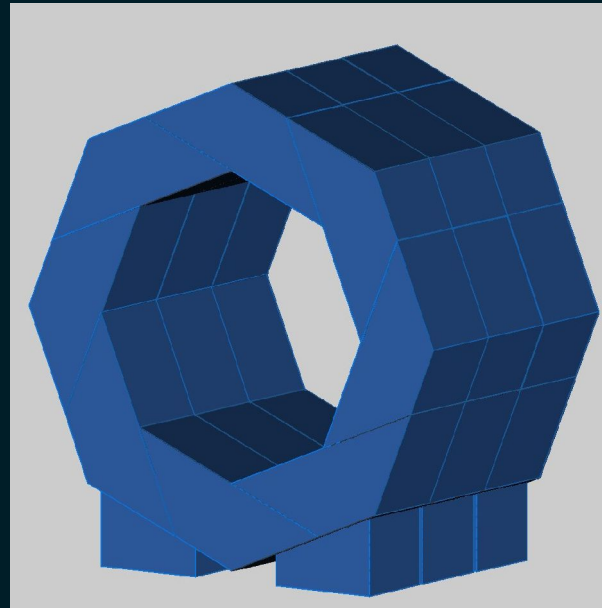
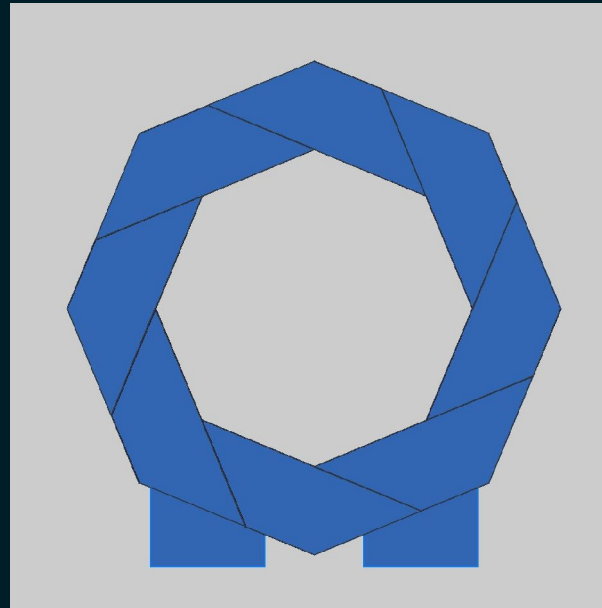
### V3



### V4

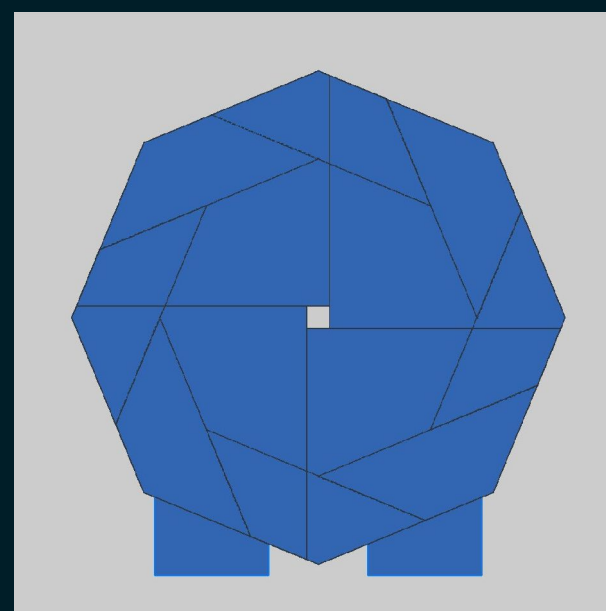
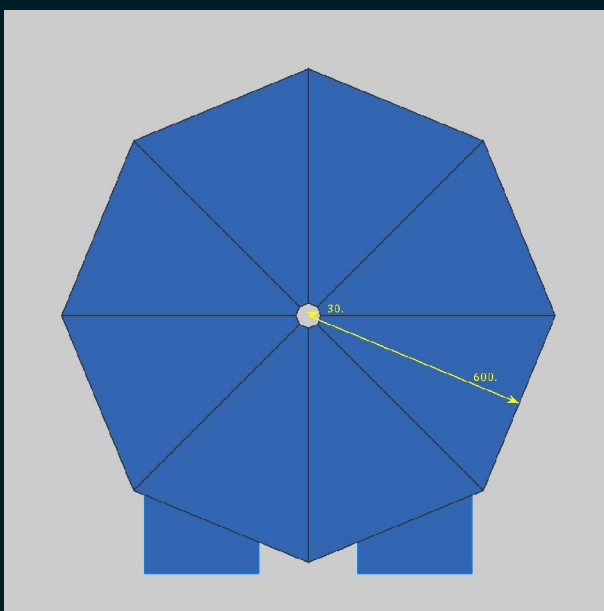
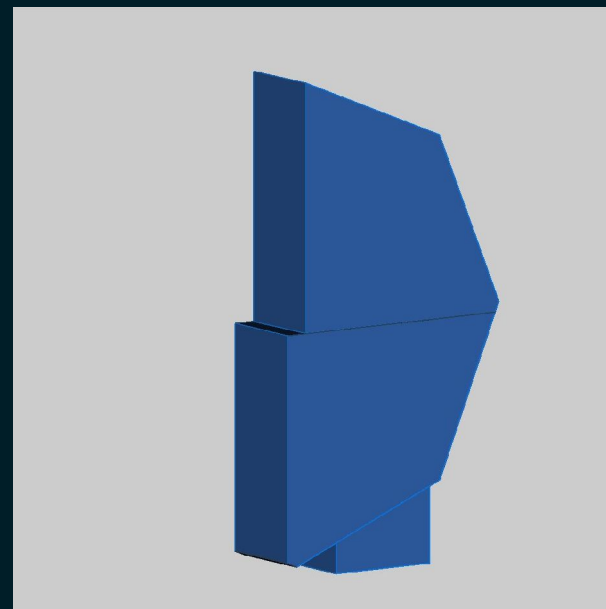
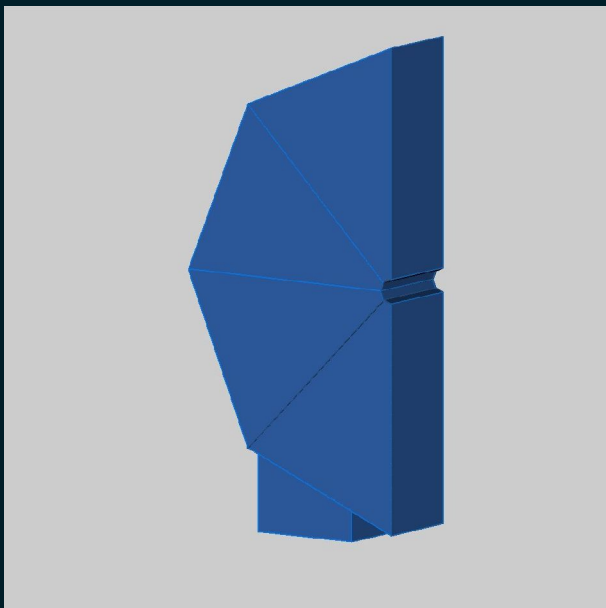
à la ECAL

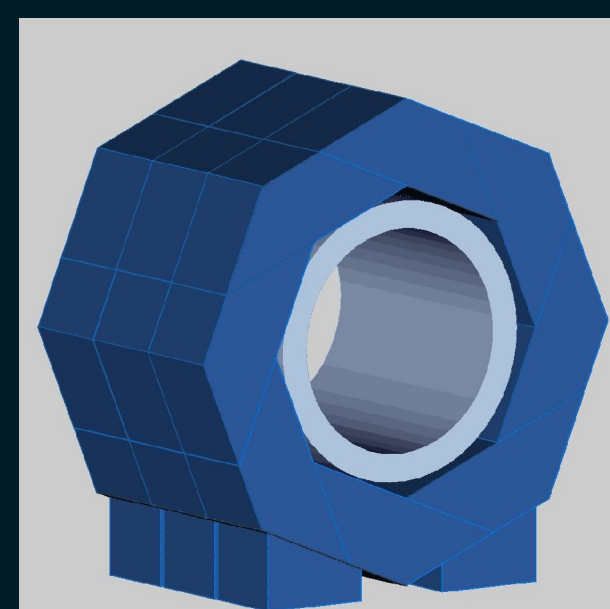
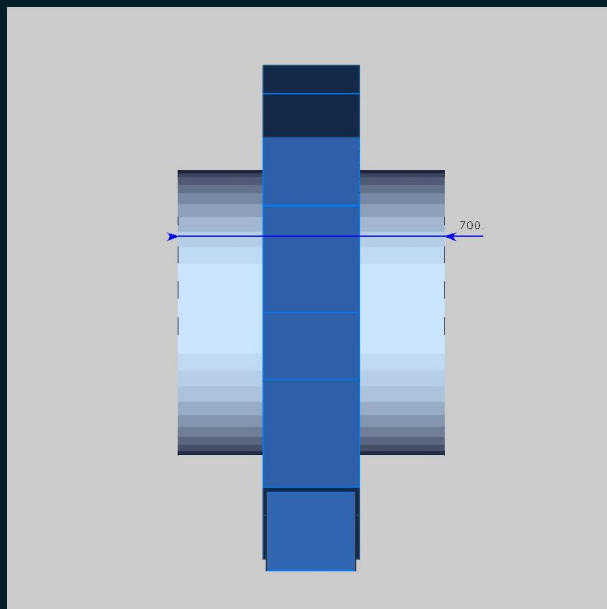
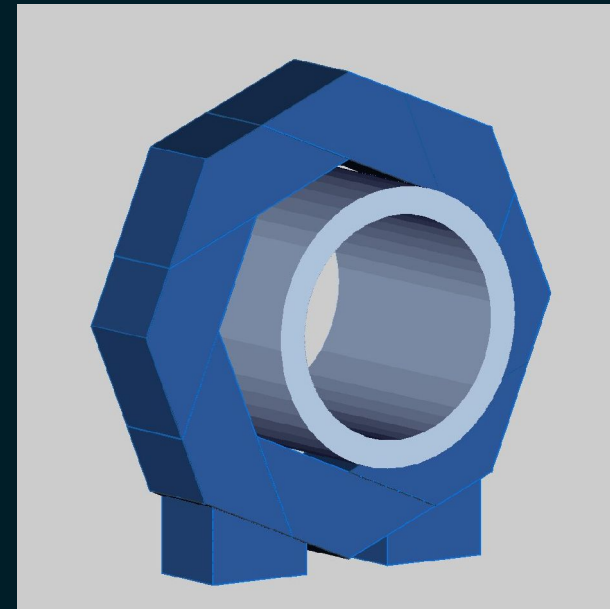
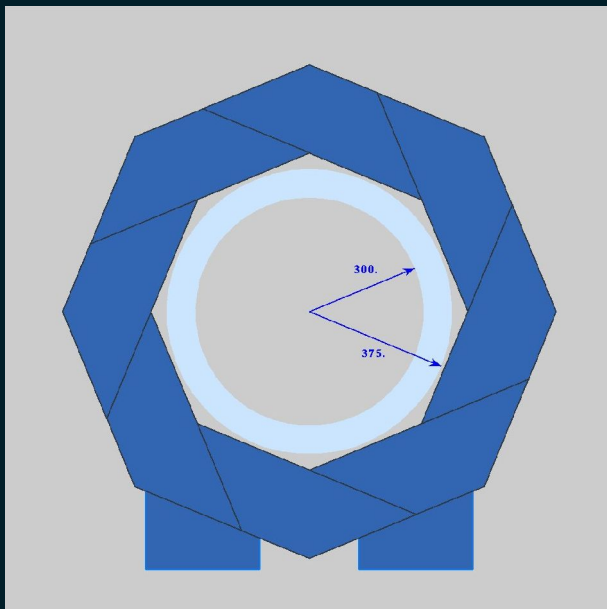
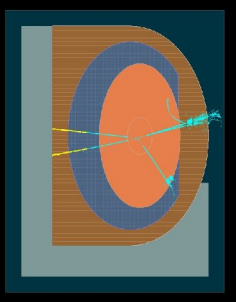
makes it easy to insert muon chambers

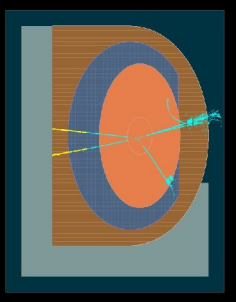


## Variations on the end caps.

rotate  
by half  
a sector?

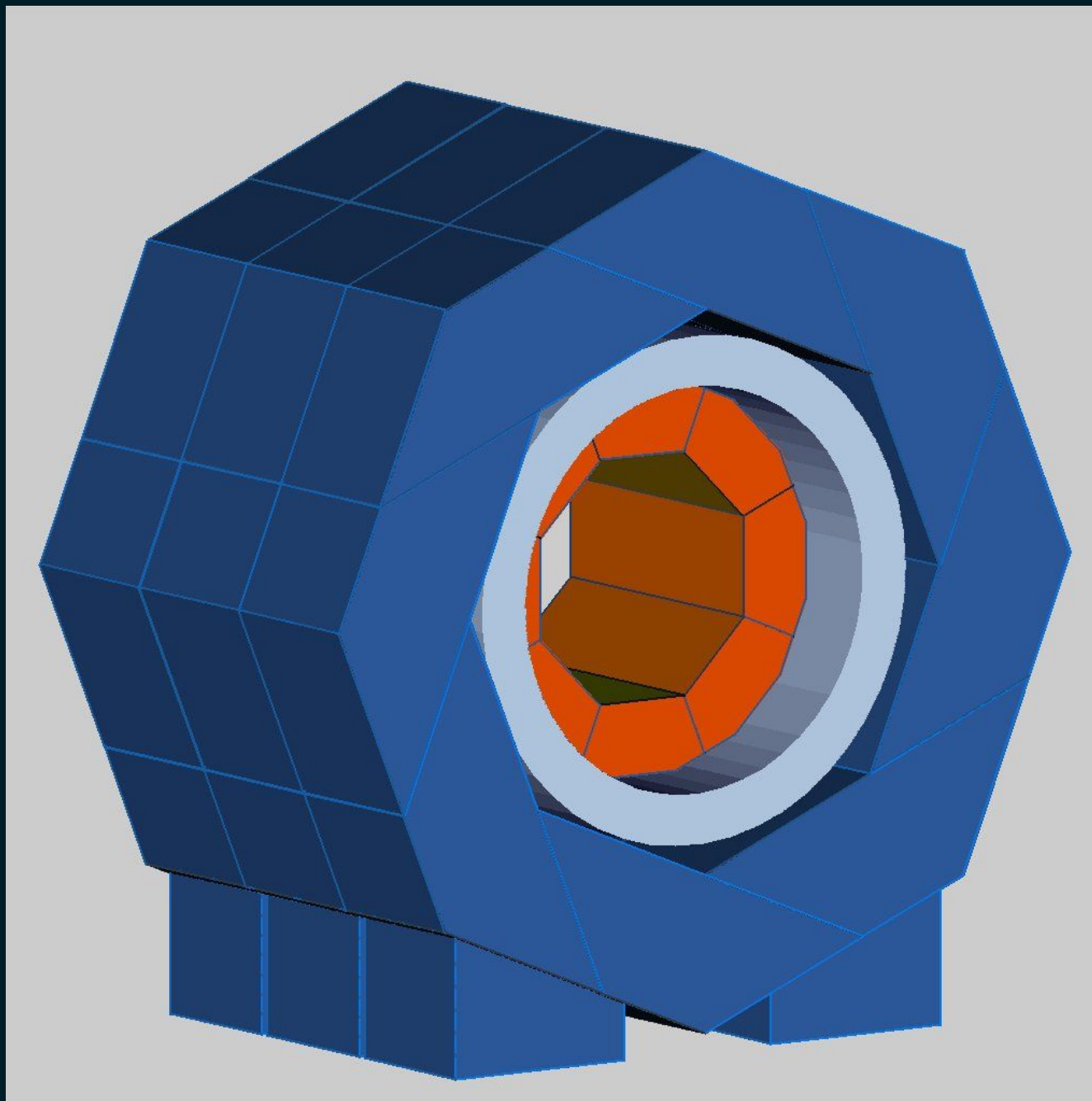


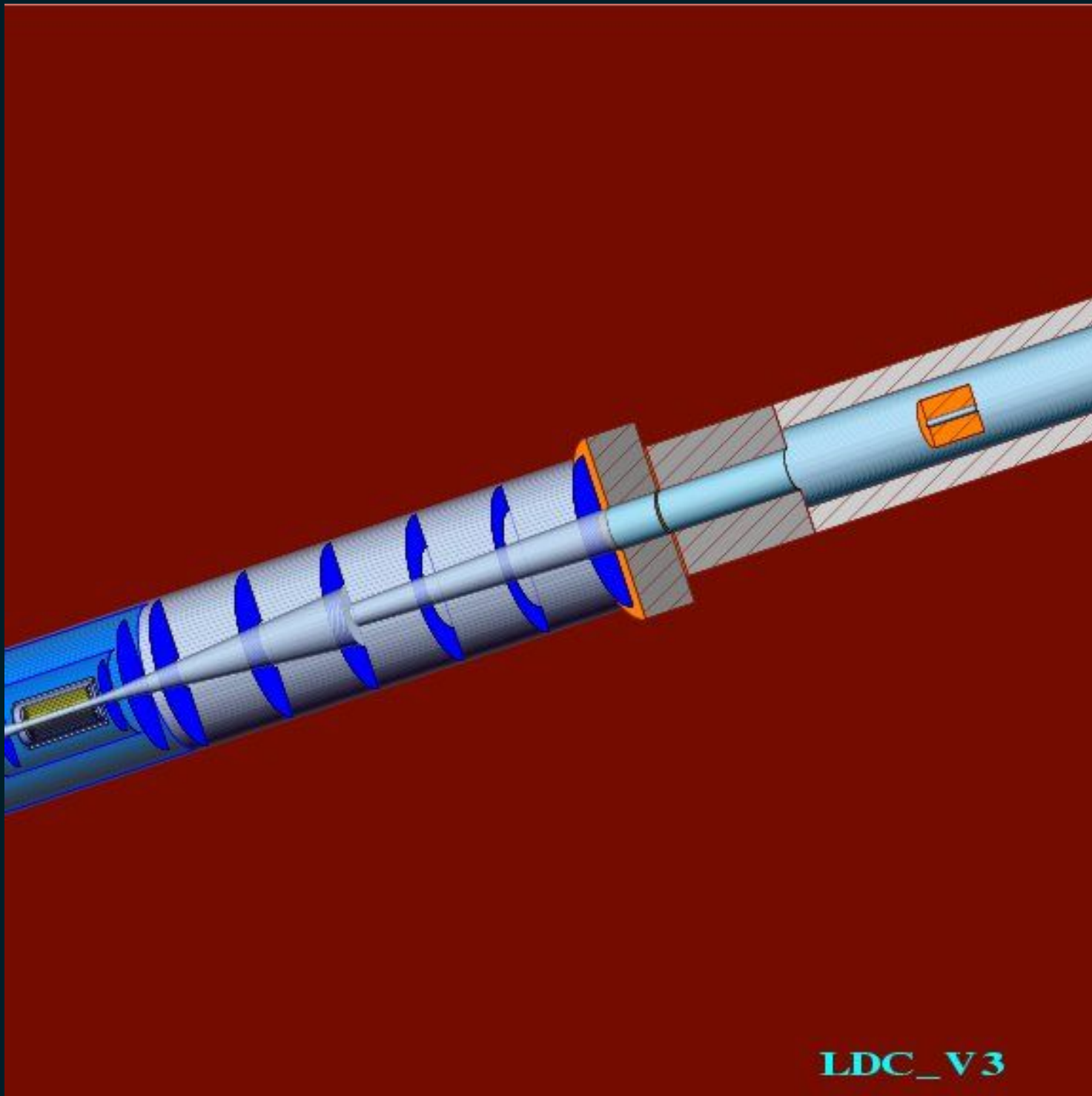
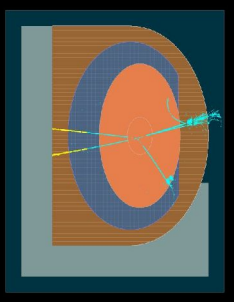




Gaps?  
Chimneys

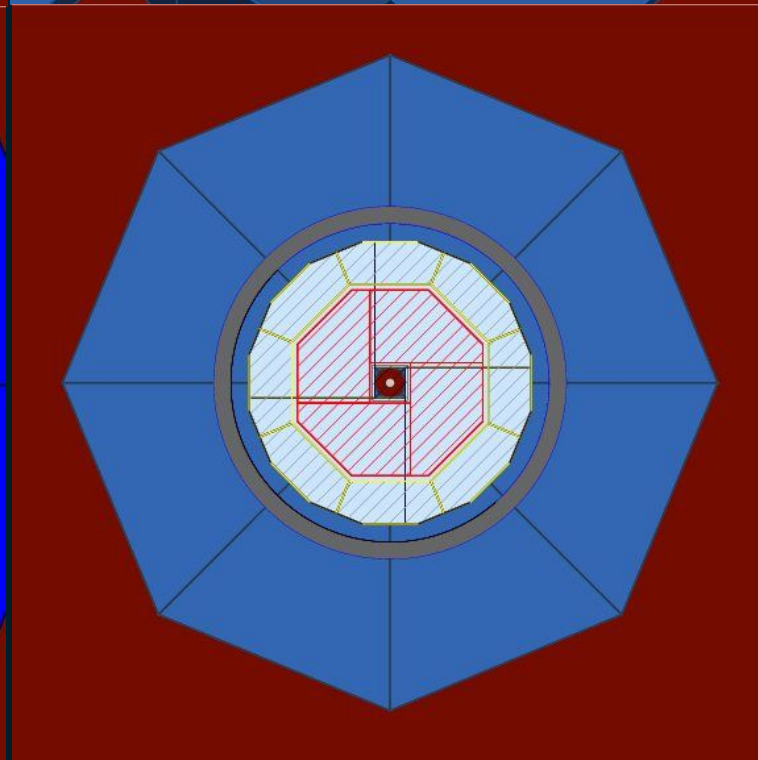
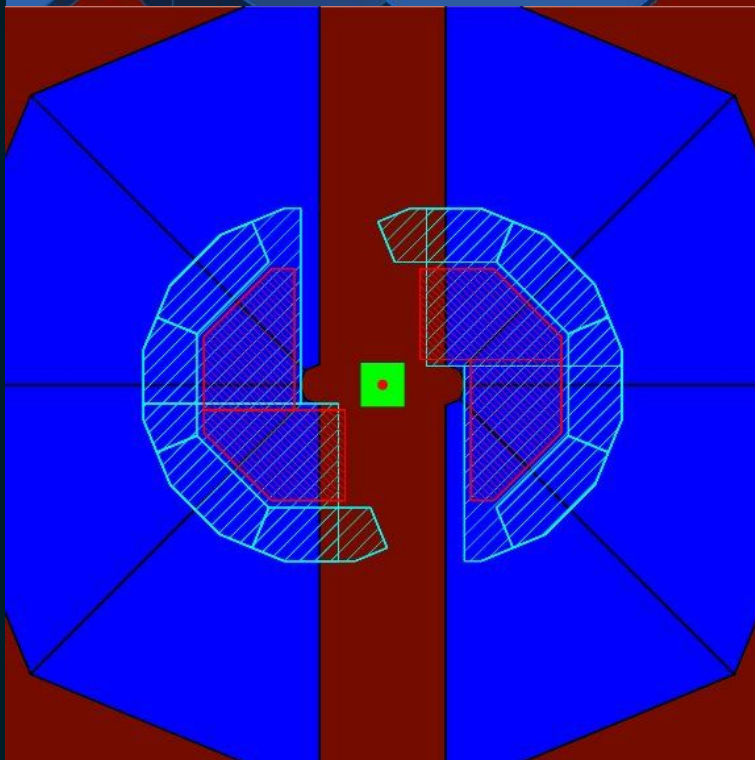
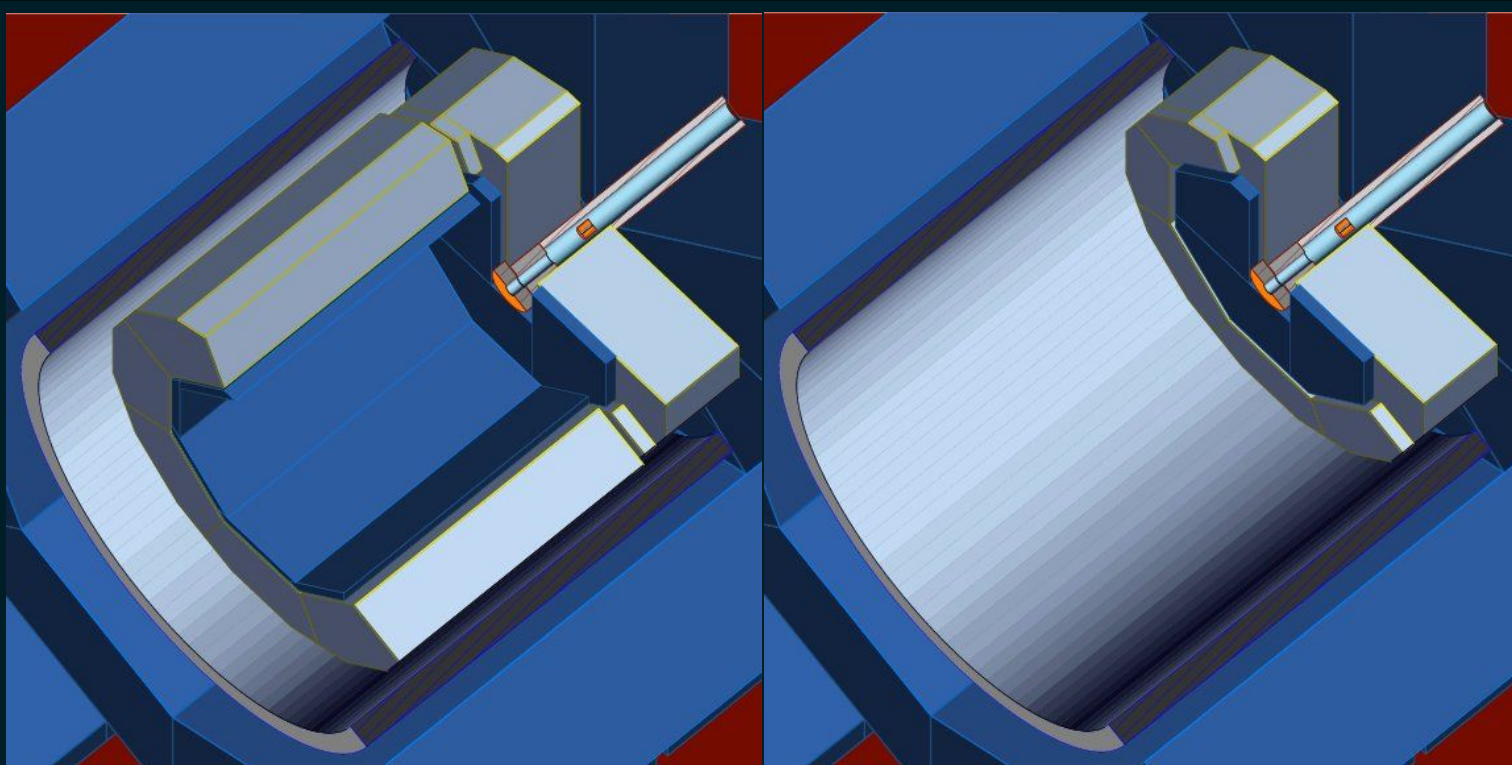
a self-supporting  
Hcal on two rails





LDC\_V3

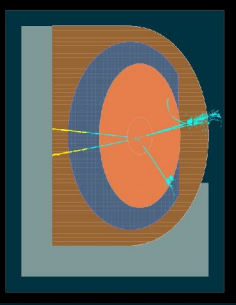




Ring

Square

Lcal



## Conclusion

Some organisation and effort are needed  
to march toward an Engineering Design Report  
or two or three or ...