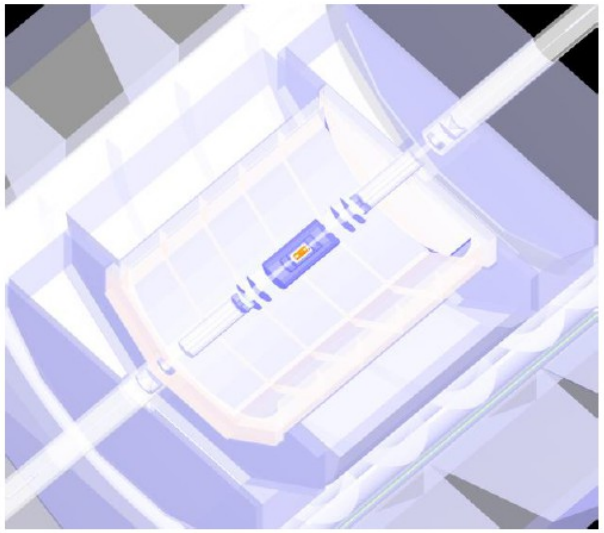
Feasibility & Optimized Parameters

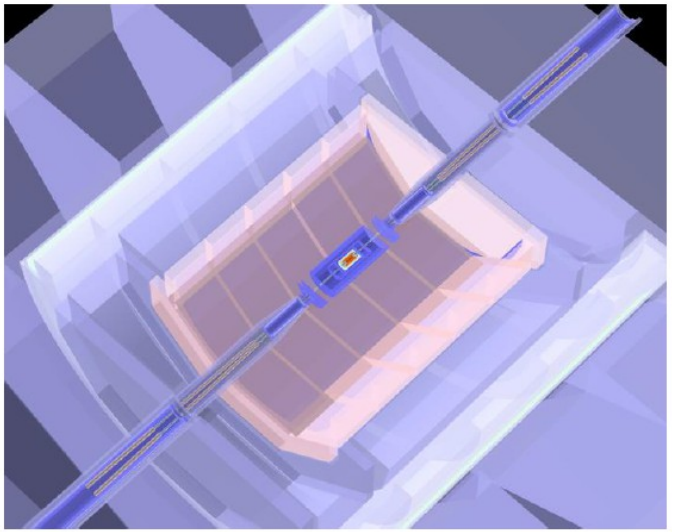
Feasibility analysis: TPC and Passive Cooling Calorimeter is valid for CEPC

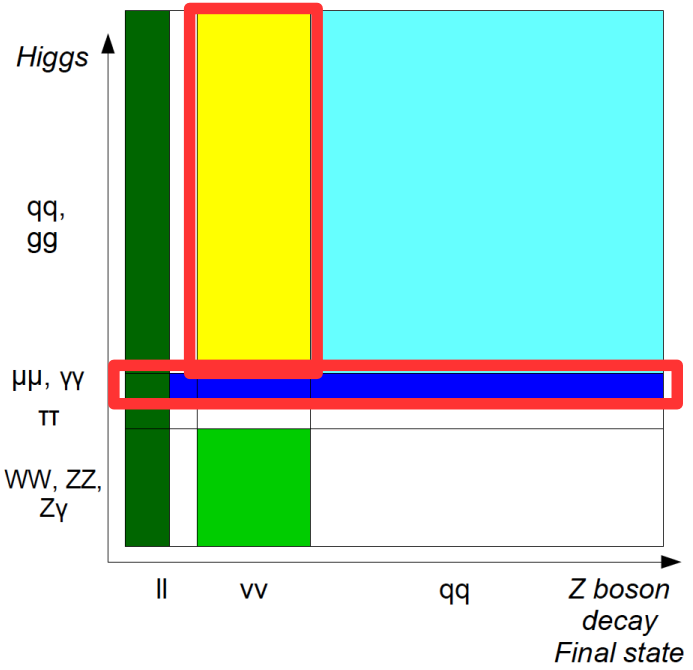
	CEPC_v1 (~ ILD)	Optimized (Preliminary)	Comments
Track Radius	1.8 m	>= 1.8 m	Requested by Br(H->di muon) measurement
B Field	**3.5 T**	**3 T**	**Requested by MDI**
ToF	**-**	**50 ps**	**Requested by pi-Kaon separation at Z pole**
ECAL Thickness	84 mm	84(90) mm	84 mm is optimized on Br(H->di photon) at 250 GeV; 90mm for bhabha event at 350 GeV
ECAL Cell Size	5 mm	10 – 20 mm	Passive cooling request ~ 20 mm. 10 mm should be highly appreciated for EW measurements – need further evaluation
ECAL NLayer	30	20 – 30	Depends on the Silicon Sensor thickness
HCAL Thickness	**1.3 m**	**1 m**	-
HCAL NLayer	**48**	**40**	Optimized on Higgs event at 250 GeV; Margin might be reserved for 350 GeV.

Baseline: TPC + HGC

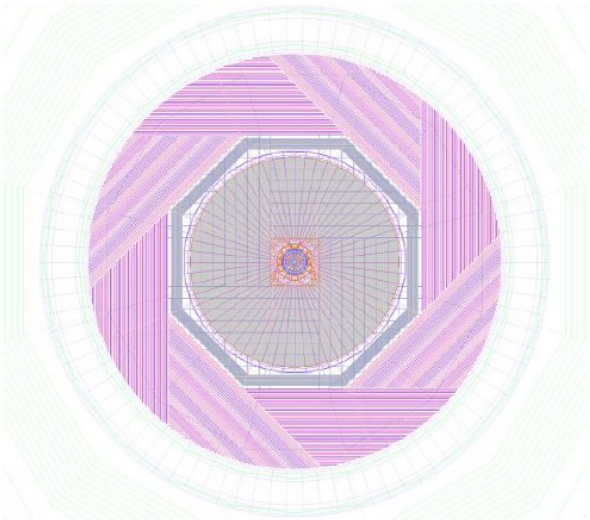
preCDR (2015) → CDR (2017)

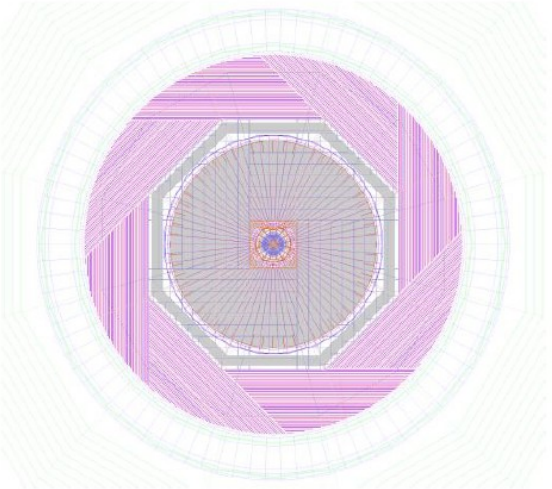






vvH, H->gg
Boson Mass Resolution:
BMR: 3.8%->3.9%





3.5 T + 48 Layers of HCAL

3 T + 40 Layers of HCAL

Questions

- Consistency of the Performance (Simulation) and the hardware design
  - In sub-detectors: I suggest to first describe the technology that has been used in the Baseline design: TPC + Si/W Ecal + GRPC Hcal
  - Provide support for its geometry parameters
    - TPC radius/size -> LCTPC (local geometry) & ALEPH (global geometry)...
    - Material budget & Pixel Sizes for Silicon System
    - Power consumption (mainly for Calo but also for others)
  - Integrability
    - Mechanical, Thermo-simulation

There are still things we don't really understand...

- Scan over different parameters had been done – Shall we present performances at different geometry parameters?
- VTX:
  - different material budget, pixel size & inner radius
- Calorimeter Granularity
  - Lepton-ID
  - Higgs signal
  - Tau signal
- TPC B & Field
  - H->mumu benchmark