ILD placeholders : Dimensions review for DBD

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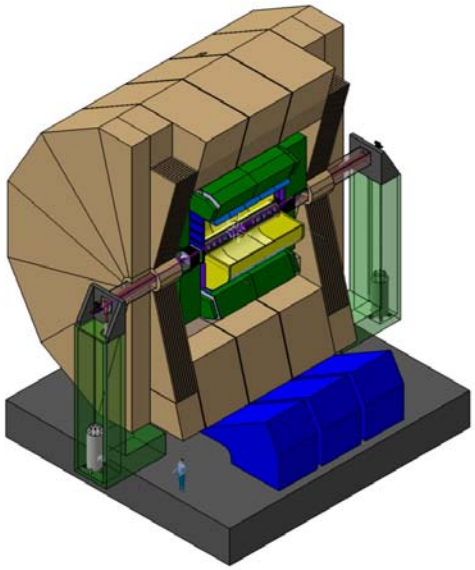
ILD Regional Integration Meeting

LAL, 12-13/04/2012

ILD overall dimensions

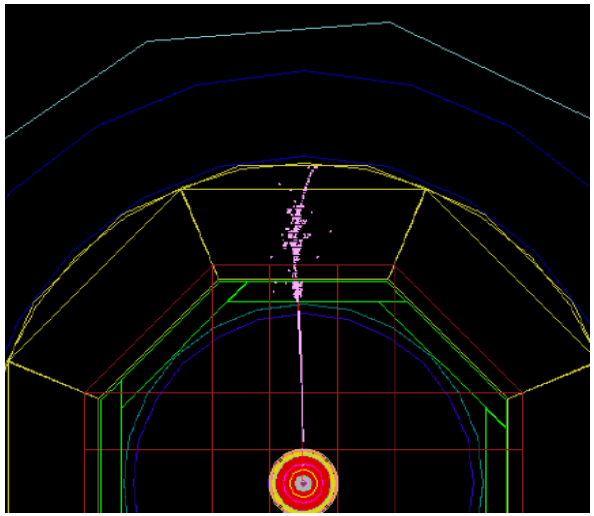
http://www.ilcild.org/groups/mdi/ILD0dimensions-weigth130209.xls

Shown at ILD meeting@CERN october 2010



- Those dimensions were defined as **the overall envelops of the subdetectors**. All the detailed mechanical design studies were supposed to stick to those limits

- These are the dimensions currently used in the simulation and corresponding to the overall detector's envelope



Hcal			**OK for DHCAl ; Numbers for AHCAL**
	Barrel Rin	2058	2058
	Barrel Rout	flat/corner=3345/3410.5	3396/3334
	Barrel 1/2 length	2350 (sensitive =2330)	2340 + 90 electronic boards
	thick.		1293
	EC Rin	square 350	(Checked by A.Gonnin, actual model)
	EC Rout	octogonal 3190(sensitive+elec)	
	EC Zin	2650	
	EC Zout	3937	
	thick.	1287	
Hcal ring	Rin	2190	
Ecal		W/Si, 24 X0, 29 layers, cell 0,25 cm²	No changes
TPC			No changes
Fcal (lumical)		W/Si centered on outgoing beam	New datas from W.Wierba@ILDmeeting, may 2011
	Rin(support/sensitive)	76/80	76/80
	Rout active	196	195
	Rout support	240	280 (the inner part of QD0 support = 287.5)
	Zin	2450	?
	Zout	2635	
Bcal		W/Si or W/diamond centered on outgoing beam 30 layers , 3,5 mm each	from L.Zawiejski@ Paris (janv2010)
	Rin(in/outBeams)	13/20	
	Rout	220(support)	Rout =200(support); 150 (sensors)
	Zin	3595	Zin= 3450 with 10 cm graphite in front
	Zout	3795	Thickness 170 mm ?

ETD		2 layers	From A.S.N@DESY (jul 2010) 3 XUV planes
	Rin	square 400	620 ?
	Rout	octogonal 1843	**circular** = 1890 (sensors)/1930 (support)
	Z 1st disk	2420 (support)	
	Z 2nd disk		
	Z 3d disk	2450(support)	Thickness 15 per plane (i.e = 45 mm total)
SET			From A.S.N@DESy (jul 2010) mechanical support
	Rin	1818	1921
	Rout	1843	1938 Warning : see Ecal Rin
	Zout	2350	2428 Warning : partly in the gap
VTX			Inner meeting@LLR (june 2010) J.Baudot
	R & 1/2 length	16/62.5	case of 5 layers : single and double sided ladders
		17.9/62.5	VTX-SL1= 15/62,5 VTX-DL= 16-18/62,5
		37/125	VTX-SL2= 26/125 VTX-DL= 37-39/125
		38.9/125	VTX-SL3= 37/125 VTX-DL= 58-60/125
		58/125	VTX-SL4=48/125
		60/125	VTX-SL5= 60/125
VTX cryo			
VTX support shell			
SIT		LOI values	From A.S.N@DESy (jul 2010) mechanical support
	R & 1/2 length	165/190	Rmin-Rmax&1/2length :172,3-179,6/ 354,2
		309/330	Rmin-Rmax&1/2length : 319,5-323,5/657,8
Fdisk		LOI values	in CAD

Fdisk		LOI values	in CAD
	Z/Rin/Rout/	220/24,5/160	220/39/169
		380/40/160	371,3/49,6/169
		660/52/304	644,9/70,1/308
		1070,6/84,4/309	1046,1/100,3/309
		1481,2/116,7/309	1473/130/309
		1891,8/149/309	1848,5/160/309
		2302,5/181,4/309	2250/190/309
muons chamber			
	Layer thick=30mm Fe spacer=100 in the nose part and 400 in endcaps		
		1 layer in inner yoke radius	
		1 layer at outer yoke radius	
		9 layers inside	
	endcap	1 layer at outerendcap yoke position	
		10 layers inside st endcap	

Placeholders definition

Overall dimensions

- These are the dimensions currently used in the simulation and corresponding to the overall detector's envelope
- All the detailed mechanical design studies were done to stick to those limits

Placeholder 1 , corresponds to the structural occupancy, including :

- Overall mechanical dimensions
- Front end electronic card going overboard the mechanical structure
- Tolerances :
  - ✓ for alignment,
  - ✓ mechanical deformations
  - ✓ Constructions tolerances
- Fastening system
- Room for integration's tooling

Subdetector dimensions

+

Placeholder2, concerns the services

- Place and way-out for cables,
- Place and way-out for piping,
- Both should include
  - ✓ cables or pipes dimensions,
  - ✓ supports
  - ✓ Screening
  - ✓ Patch panels

in the gaps

Alignment systems ?????

Conclusions :

- Agree on « what is what « & « what belongs to what «
- Review values
- Compare CAD/Simulation models (use of EDMS ???)
- Make decisions on what to be considered as baseline and what to be considered as options

Please , contact A.Gonnin (@LAL) in order to check your subdetectors dimensions and update the overall CAD model