LCD basic detector description

Vertex Detector (VTX)

Radius[1] [mm]	16		26		37		48		60	
z_{min} / z_{max} [1] [mm]	±50		±120		±120		±120		±120	
Efficiency $R\Phi$ / z	0.95		0.95		0.95		0.95		0.95	
Stereo angle[1] [°]	90		90		90		90		90	
Pixels, Strips[1]	Pixels		Pixels		Pixels		Pixels		Pixels	
Xlen[2] [%X_0]	0.14		0.14		0.14		0.14		0.14	
d($R\Phi$) / d(z) [2] [µm]	24 / 24		24 / 24		24 / 24		24 / 24		24 / 24	
function $\sigma(\theta,\beta)$										
Remarks										

Silicon Inner Tracker (SIT)

Radius[3] [mm]	160		270	
z_{min}/z_{max} [3] [mm]	±380		±660	
Efficiency $R\Phi$/z	0.95		0.95	
Stereo angle[3] [°]	90		90	
Pixels, Strips[3]	Strips		Strips	
Xlen[4] [%X_0]	0.5		0.5	
d($R\Phi$)/d(z)[3] [µm]	50 / 50		50 / 50	
function $\sigma(\theta,\beta)$				
Remarks[3]	Double-sided		Double-sided	

Silicon External Tracker (SET)

Radius[3] [mm]	1600		1610	
z_{min}/z_{max}[3] [mm]	±2500		±2500	
Efficiency $R\Phi$/z	0.95		0.95	
Stereo angle[3] [°]	90		90	
Pixels, Strips[3]	Strips		Strips	
Xlen[3] [%X_0]	0.65		0.65	
d($R\Phi$)/d(z)[3] [µm]	50 / 50		50 / 50	
function $\sigma(\theta,\beta)$				
Remarks				

Time Projection Chamber (TPC)

# Layers	R_{min} [mm]	R_{max} [mm]	z_{min} / z_{max} [mm]	Efficiency $R\Phi$ / z	Xlen [%X_0]	$\sigma_0(R\Phi)$ / $\sigma_0(z)$ [µm]	$\sigma_1(R\Phi)$ / $\sigma_1(z)$ [µm]	$c_{Diff}(R\Phi)$ / $c_{Diff}(z)$ [µm/sqrt(m)]
196[1]	300[4]	1580[4]	±2160[4]	0.99	0.00125	50[5] / 400[6]	900[5] / 0	53[5] / 800[6]
function $\sigma(\vartheta,\beta)$	$\sigma^2 = \sigma_0{}^2 + \sigma_1{}^2\cdot\sin^2\beta + c_{Diff}{}^2\cdot 6mm/h\cdot\sin\vartheta\cdot\Delta z[m]$, h = padrow pitch [5]							

Passive scatterers and support structure

Radius [mm]	14[1]		300[4]		1580[4]	
z_{min}/z_{max} [mm]	±∞		±2160[4]		±2160[4]	
Xlen [%X_0]	0.25 (0.5[7]?)		3[4] (1.16[7]?)		3[4] (1.51[7]?)	
Remarks	Beamtube		TPC inner wall		TPC outer wall	

Passive scatterers (e.g. support structure of VTX, SIT, SET)

Radius [mm]						
z_{min}/z_{max} [mm]						
Xlen [%X_0]						
Remarks						

Definition of forward coordinates:
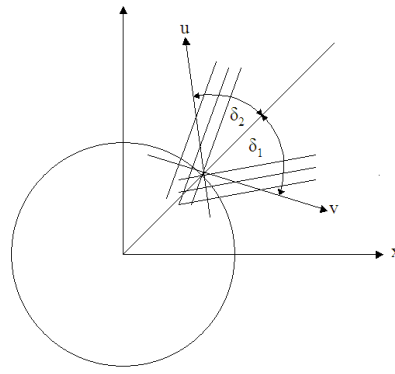
Forward Pixel Discs

z position[3] [mm]	±220		±350		±500	
R_{min} - $R_{max[3]}$ [mm]	29-140		32-140		35-210	
Efficiency u / v	0.95		0.95		0.95	
Coord. angle $\delta_1/\delta_{2\,[3]}$ [°]	0/90		0/90		0/90	
Xlen [%X_0]	0.35 (0.3[7]?)		0.35 (0.3[7]?)		0.35 (0.3[7]?)	
Pixels, Strips	Pixels		Pixels		Pixels	
d(u) / d(v)[3] [μm]	35 / 35		35 / 35		35 / 35	
function $\sigma(\theta,\beta)$						
Remarks						

Forward Strip Discs

z position[3] [mm]	±850		±1200		±1550		±1900	
R_{min} - $R_{max[3]}$ [mm]	51-270		72-290		93-290		113-290	
Efficiency u / v	0.95		0.95		0.95		0.95	
Coord. angle $\delta_1/\delta_{2\,[3]}$ [°]	0/90		0/90		0/90		0/90	
Xlen [%X_0]	0.35 (0.3[7]?)		0.35 (0.3[7]?)		0.35 (0.3[7]?)		0.35 (0.3[7]?)	
Pixels, Strips	Strips		Strips		Strips		Strips	
d(u) / d(v)[3] [μm]	35 / 35		35 / 35		35 / 35		35 / 35	
function $\sigma(\theta,\beta)$								
Remarks								

Passive scatterers (e.g. support structure of forward discs)

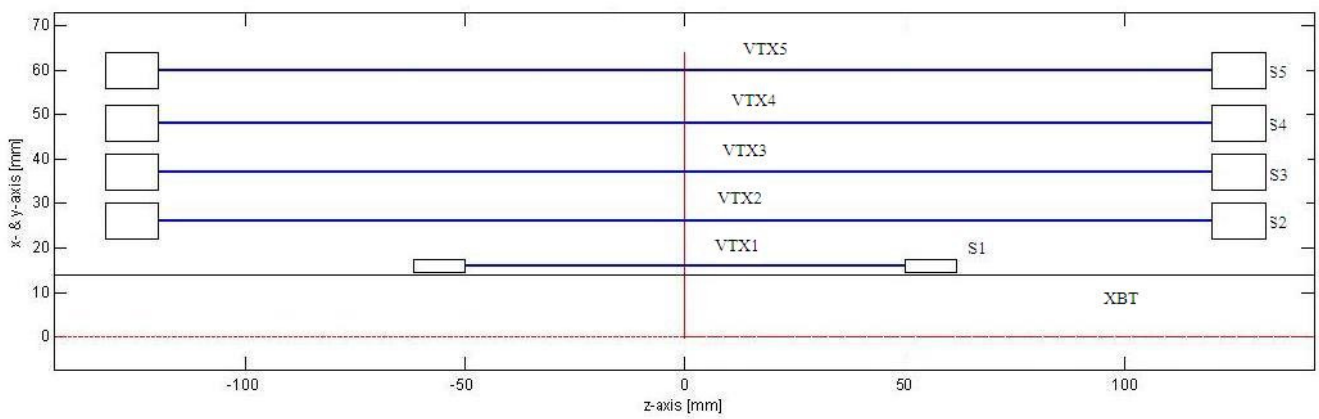| z position [mm]	±2160[4]										
R_{min} - R_{max} [mm]	300-1580[4]										
Xlen [%X_0]	15[5]										
Remarks	TPC endcap										

References

[1]: Detector Outline Document (DOD) for the LDC, Aug. 2006
[2]: M. Vos, Pixel R&D at IFIC Valencia, SiLC meeting, Torino, Dec. 2007
[3]: V. Saleviev, A. Savoy-Navarro, M. Vos, Silicon Tracking, ILD Zeuthen, Jan. 2008
[4]: M. Vos, The silicon tracker elements, Phone meeting, 06.02.2008
[5]: R. Settles, E-mail communication, 25.01.2008
[6]: R. Settles, E-mail communication, 22.02.2008
[7]: MOKKA database, http://www-flc.desy.de/ldcoptimization/tools/mokkamodels.php

LCD basic detector description
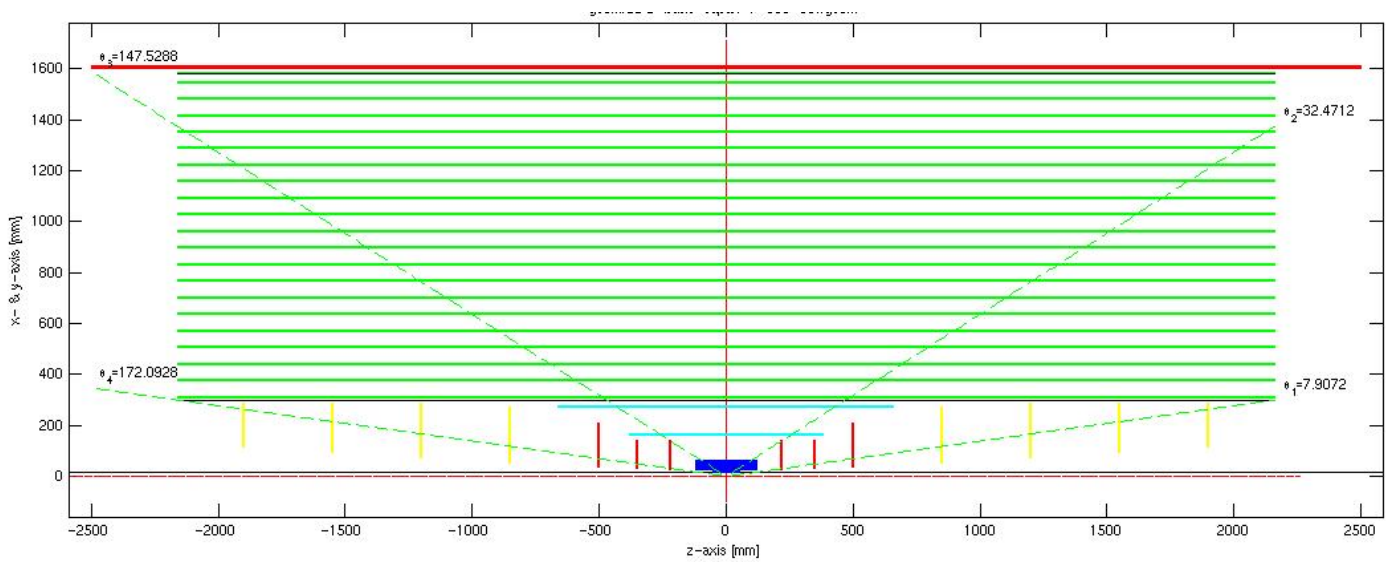
Display of LDC basic detector setup

Zoom of VTX with supports