Status of the ILD event sample production

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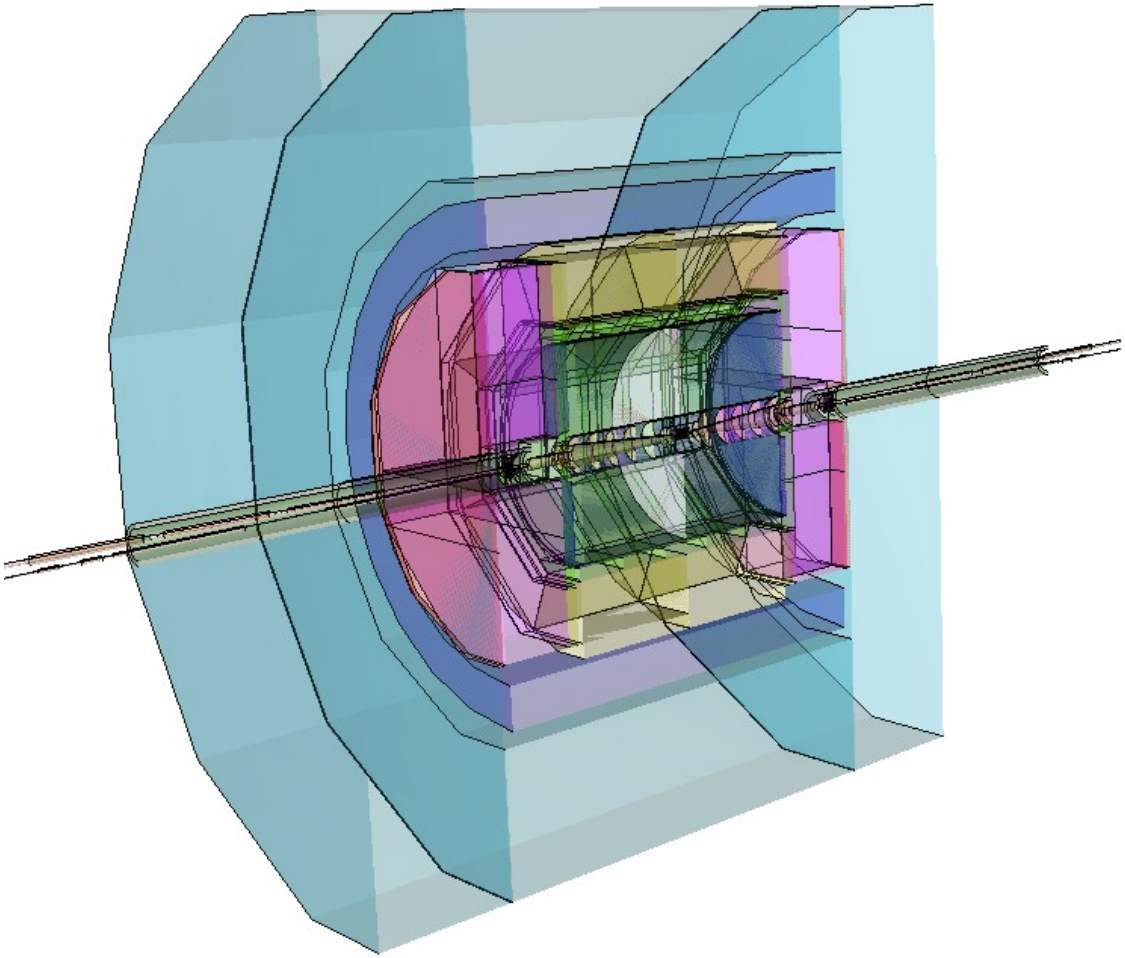
ILD Meeting at LCWS
Chicago, November 15, 2008

Overview

- ILD simulation baseline defined at ILD meeting Cambridge
- Implementation in Mokka
- generator samples
  - physics benchmarks
  - SM background
- Grid production
- Outlook



ILD simulation baseline model

- at the ILD meeting in Cambridge (Sep 13-15) agreed on ILD simulation reference design model:
- roughly following LDC'/GLD' geometry:
  - B=3.5 T (4 possible)
  - VXD: GLD like: 3 double layers (16mm-60mm)
  - SIT 2 layers , FTD 7 disks
  - TPC: r_i=40, r_o=175, l= 230 cm
  - Ecal: Si/W , 0.5x0.5 cells , 22.8 X0 , octagonal
  - Hcal: Sci/Fe, 3x3 cells, 6 lambda , octagonal
  - SET, ETD – yet open
  - forward calorimeters: Lcal, Beamcal, Lhcal
    - (details yet to be defined)

since Cambridge workshop

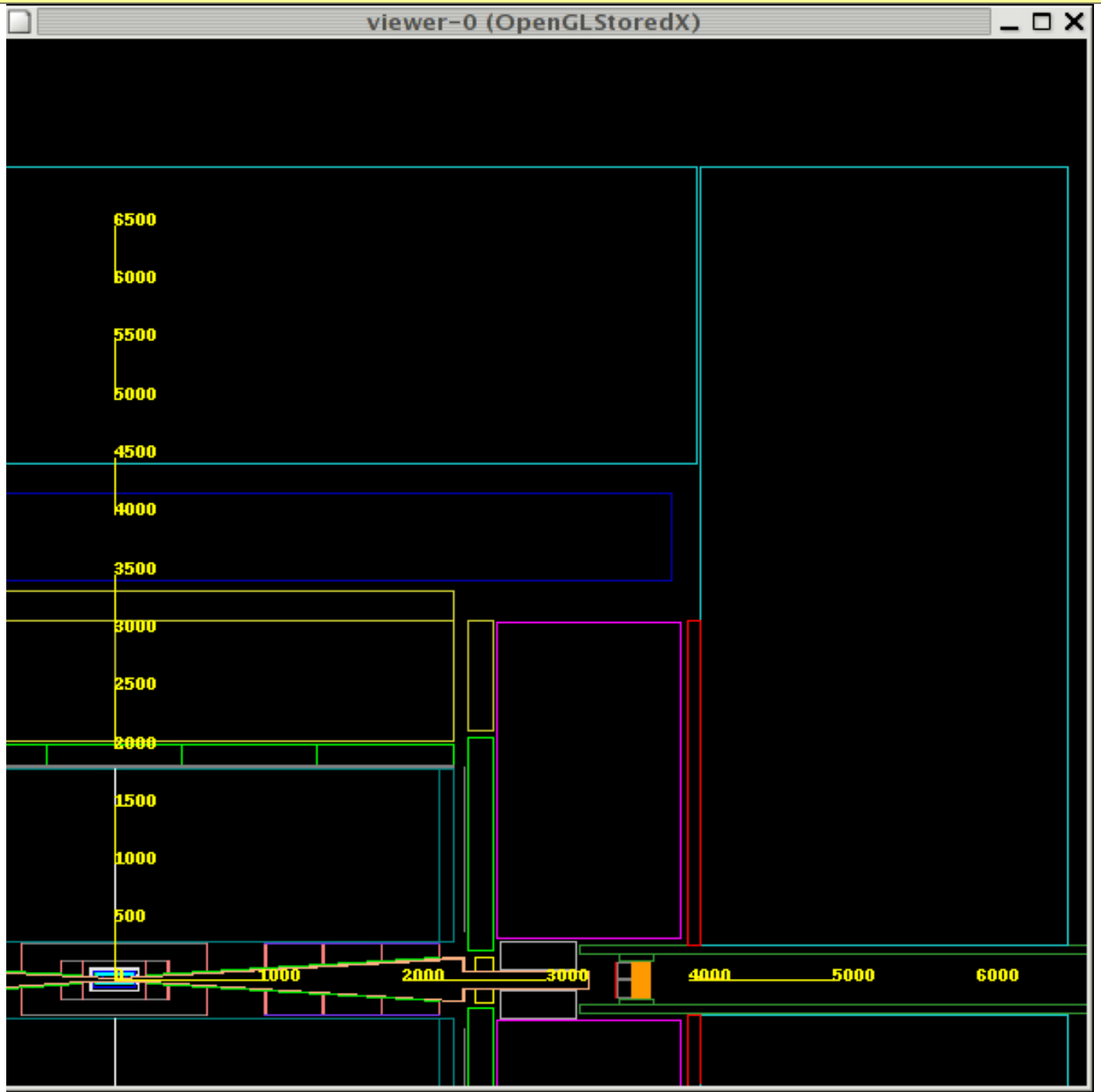
- preliminary detector model document circulated in EB and discussed with subdetector experts
- finalizing of details of subdetector geometries
- dedicated EB-meeting to agree on final numbers
- in parallel implementation of ILD reference design model in Mokka based on LDCPrime
- further iterations on details between experts and software group
  - optimization meetings, mailing lists,....
- testing & debugging Mokka model
- -> final version of Mokka 06-07 with ILD_00 tagged on thursday

changes/developments in Mokka

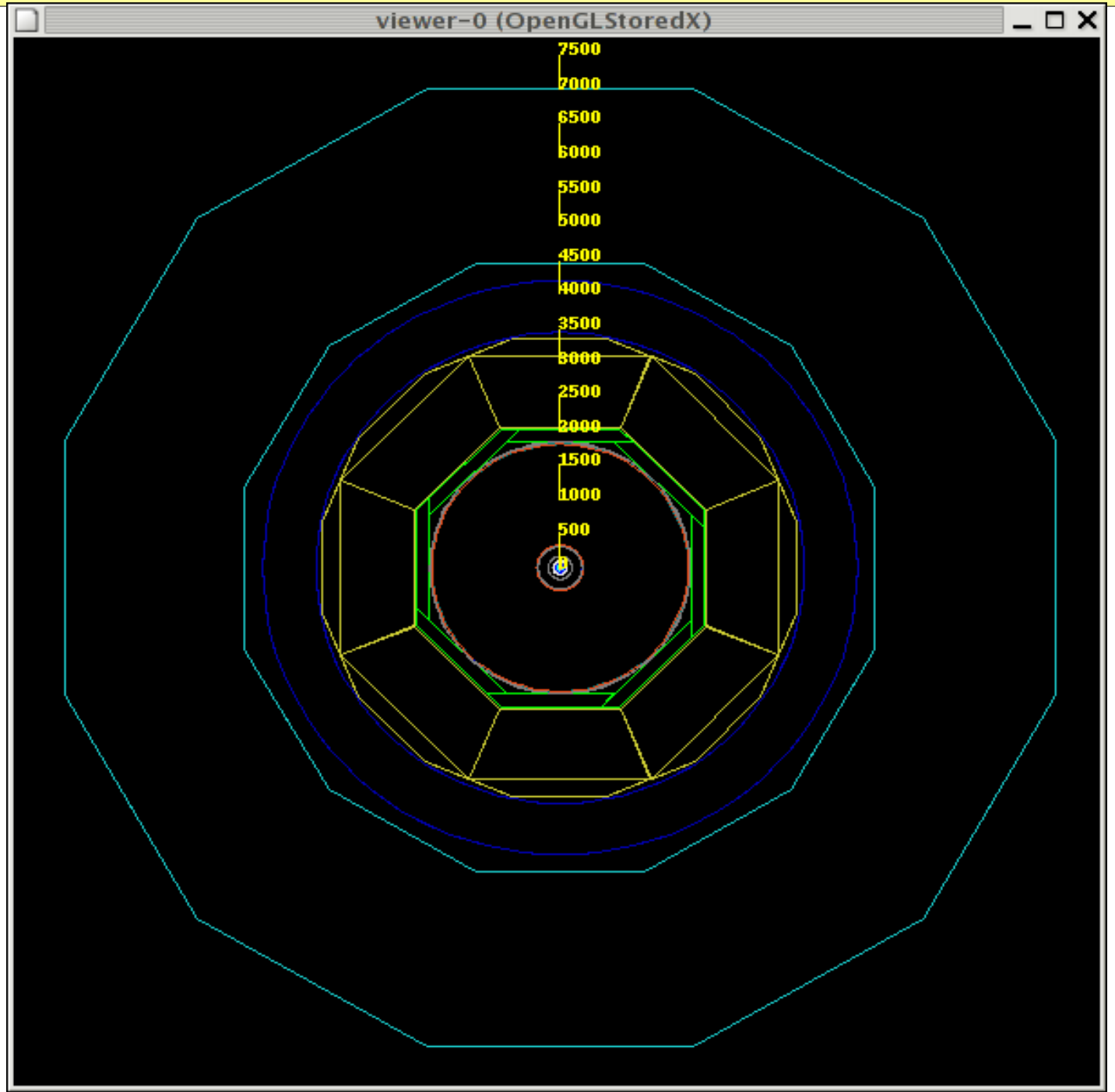
- VXD: GLDlike + fine tuning of geometry
- SIT: fine tuning of geometry
- FTD: positions and radii of discs adapted
- TPC: geometry adapted
- Ecal: geometry adapted
- Hcal: geometry adapted – new version of Hcal endcap(cell layout)
- Lcal new position, segmentation (new driver)
- Beamcal, Lhcal new drivers implemented
  - beampipe, mask,
- Yoke changed symmetry (8-12), plug added
- Coil: clearances adapted
- reading of stdhep generator files improved
- many bug fixes (code, geometry overlaps)....

final geometry – see:
http://www.ilcild.org/documents/ild-discussion-documents/ILDreferencedetector-20081113.pdf/view

ILD_00 model in Mokka I



ILD_00 model in Mokka II



LDCPrime Monte Carlo production

LDCPrime_02Sc			
EventType	NEvent	L[1/fb]	delta_L
2f	1092584	19.89	0.15
4f	2666806	48.88	2.69
6f	446028	471.36	66.21
aa_X	181408	0.28	0.02
ee	6931010	0.1	0
eaea	344270	0.19	0
nnNa	806700	17.45	3.93
aaNa	261954	9.42	0.82
hX	276728	465.86	75.74
other	120000	0	0
Zh_ee_mu	20000	1332.98	0
Zh_qqnn	10000	223.26	0
Zh_qqqq	25000	158.73	0
tautau	100000	22.03	2.8
6f_bbqqqq	450217	486.37	5.42
sp5_ch_ne	82305	464.01	112.54
sp5_x	78570	692	248.26
sps1ap	1617133	891.37	195.94
ZZ	50000	74.59	39.59
total	15560713		

LDC01_06Sc			
EventType	NEvent	L[1/fb]	delta_L
4f	4000	46.02	76.38
Zh_ee_mumu	19000	1266.33	66.65
Zh_qqnn	10000	223.26	0
Zh_qqqq	25000	158.73	0
sps1ap	1621157	879.67	190.59
ZZ	55000	82.21	44.76
total	1734157		

ilcsoft v01-04

LDC_GLD_01Sc			
EventType	NEvent	L[1/fb]	delta_L
Zh_ee_mumu	20000	1332.98	0
Zh_qqnn	9000	200.94	0
Zh_qqqq	23000	146.03	0
sps1ap	1528657	873.32	197.43
ZZ	55000	82.21	44.76
total	1635657		

massive MC production for 3 LDC like detectors – details at:
http://www-flc.desy.de/simulation/database
http://ilcsoft.desy.de/loi/reco (summary)

SM model background sample (SLAC)
canonical signal samples LOI (WWS-SW)
other physics signal samples

total effort: simulation ~2 month
reconstruction ~1 month

ILD_00 Monte Carlo production

- try to re-do what has been done for LDCPrime
- however – time is short wrt to LOI deadline
  - -> possibly have to settle for less
- simulate WWS physics benchmark physics processes
- simulate most important backgrounds
  - will have to apply weights to processed files
  - new files contain cross section & physics process
- agreed in ILD optimization group to start with new 250 GeV sample produced at SLAC and copied to the Grid by Akiya Miyamoto

generator files to be simulated I

- generator files produced with whizzard at SLAC(DESY)
- Standard Model background @ 250 GeV & 500 GeV
- physics benchmark reactions as defined by WWS
- all detector concepts will (essentially) use the same generator files for the LOI

ILC Data Samples

http://ilcsoft.desy.de/portal/data_samples/

Home | General Documentation | Data Samples | Software Packages | Binary releases | News

ILC Soft ▸ Data Samples

Data Samples

ILC Data Samples

Generator files for LOI Benchmark reactions.

Generator files for LOI SM background (500GeV)

Generator files for LOI SM background (250GeV)

ILD Reconstructed MonteCarlo data sets (LDCPrime)

ILD MonteCarlo Database

This database provides you with information about several Monte Carlo samples of various physics processes using different detector models. The logical filenames retrieved from this database can be used to access the LCIO files using lcg grid tools.

example: signal files

Generator files for LOI signal samples

http://ilcsoft.desy.de/loi/loi_signal_gen.html

Combinamos ....com ***** HEPonX ECFA2008 LCIO ilcsoft simulation/geant4 Google DESY IT Group MyHome LEO English/... Dictionary FP7

Generator files for LOI signal samples

The table shows available generator files for the LOI Benchmark Reactions as defined by the WWS software panel. You need a valid grid certificate as a member of the VO ilc and a recent version of the LCG middleware to download the files from the grid via its logical file name.
See http://ilcsoft.desy.de/portal/data_samples for details.
At http://www-flc.desy.de/simulation/database/ you can also find generator files for SM background.

Sig1: ZH,H->ee/mumu (also: H->tautau)							
Process(final state)	Grid filename	E[GeV]	e+ pol.	e- pol.	Sigma[fb]	L[1/fb]	Number of events
e1e1h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20612_01.stdhep	250.0	-1.0	-1.0	0.644995	15503.996155	10000
e1e1h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20613_01.stdhep	250.0	1.0	-1.0	17.8919	1000.00558912	17892
e1e1h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20614_01.stdhep	250.0	-1.0	1.0	11.2894	999.964568533	11289
e1e1h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20615_01.stdhep	250.0	1.0	1.0	0.645477	15492.4187849	10000
e2e2h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20617_01.stdhep	250.0	1.0	-1.0	17.126	1000.0	17126
e2e2h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20618_01.stdhep	250.0	-1.0	1.0	10.9671	999.990881819	10967
e3e3h	lfn:/grid/ilc/mc-2008/generated/CMS_250/w20621_01.stdhep	250.0	1.0	-1.0	17.0988	1000.01169673	17099

ILD_00 production status

- simulation of events with ILD_00 started **yesterday**:
- 250 GeV
- ZH, H->ee,mumu / Z->nn,H->qq / Z->qq,H->qq
- 2f and 4f background sample
- ~11k Z->ee,mumu simulated...
- minor issues with new storage element at DESY
  - -> are going to be sorted out asap
- hopefully report on significant progress in ILD meeting at the end of the workshop ...