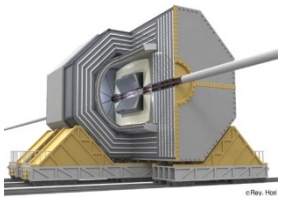
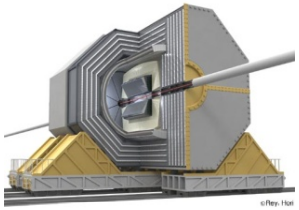


Simulation plan
-- GLDPrime --

Akiya Miyamoto

7 March 2008

ILD Meeting

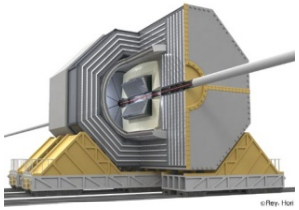


Plan to Warsaw

- Goal:
  - Check consistency between LDCPrime and GLDPrime
  - Obtain physics performances vs detector parameters relation.

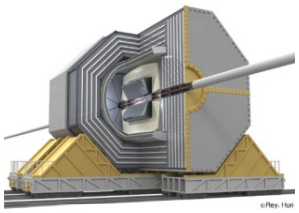
- Geometries
  - GLD, GLDPrime, (J4LDC, if possible)
  - Other variants:
    - VTX radius, IT configuration, … ➔ future subjects

- Processes
  - resources in Japan is not sufficient to do all SM processes.
    → Priority: Critical background processes
    Results of LDC/LDCPrime studies will be very useful
  - MC Production is mainly on signal processes



Practical issues

- Jupiter:
  - Geometry: GLDPrime_v03. (VTX layer radius has to be finalized)
  - PhysicsList: LCPhysicsList (?)
- CPU resources:
  - GRID CPU in KEK is very small. We will use CPU on KEKCC and group's local CPU, until GRID CPU is enlarged.
- Data storage:
  - Job flow: Jupiter ➔ root file → conversion ➔LCIO file → analysis
  - Need to keep root files and LCIO files.
  - Data (LCIO files ?) will be copied to GRID SE
  - Capacity: Local Disk ~12TB, KEK GRID SE disk ~1TB, tape ~12TB which samples should be kept on GRID ?
  - Data information will be put on web.

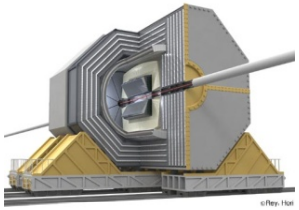


Production processes

- Calibration samples:
  - Single particle: γ, k^0_L, μ
  - uds quark events (no ISR): $\sqrt{s}$ = 91.18, 200, 300, 500 GeV; 40k(?) events
  - c, b quark events (no ISR): $\sqrt{s}$ = 91.18, 200, 300, 500 GeV; 40k(?) events
- Signal samples ($\sqrt{s}$=250GeV, 250fb^{-1})
  - $e^+e^- \rightarrow ZH \rightarrow eeH, \mu\mu H$: Mh=120GeV
  - $e^+e^- \rightarrow ZZ \rightarrow eeZ, \mu\mu Z$:
  - $e^+e^- \rightarrow ZH \rightarrow \nu\nu H, qqH$
  - ($e^+e^- \rightarrow 4f$?)

Standard StdHep files ?

- Signal samples ($\sqrt{s}$=500GeV, 500fb^{-1})
  - Chargino, Neutralino, Smuon pair production
  - $e^+e^- \rightarrow \tau$ pair
- ….

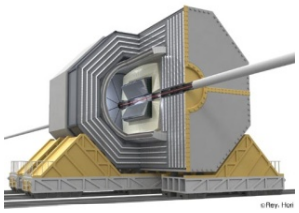


Optimization Matrix: Example

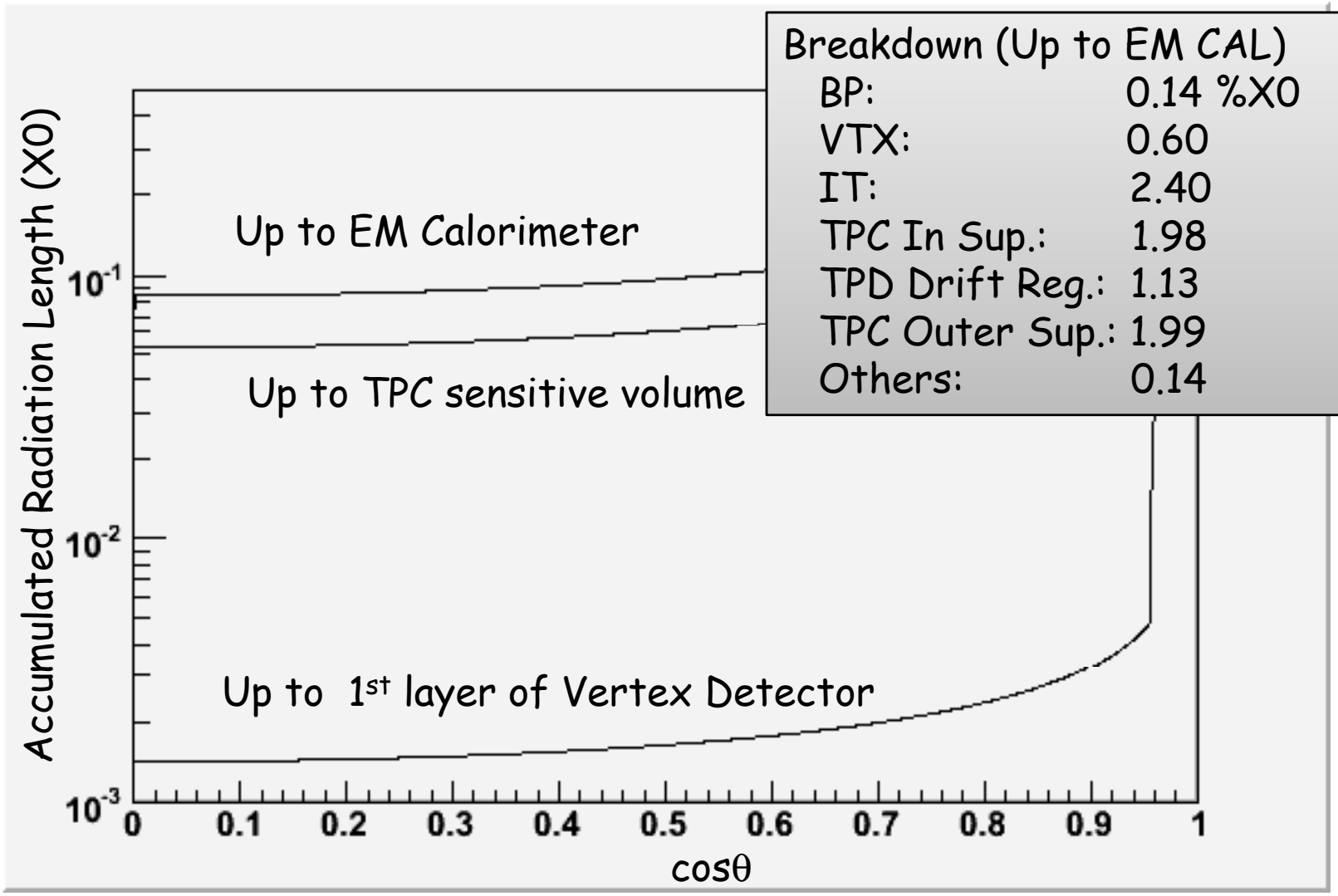
Process	Observable	GLD	GLDPrime	LDCPrime	LDC	ILD-X
$\Delta E/E(\gamma)$, $\Delta E/E(k^0_L)$						
$\Delta Pt/Pt$						
$\sigma(IP)$						
σ(rms90) of Ejet(45,…)						
$ZH\rightarrow\mu\mu H$	$\Delta\sigma$	0.030*	0.031*			
	ΔM_H	37.9*	40.8*			
$ZH\rightarrow eeH$	$\Delta\sigma$					
	ΔM_H					
$ZH\rightarrow nnH$	$\Delta Br(H\rightarrow cc)$					
$ZH\rightarrow qqH$	$\Delta Br(H\rightarrow cc)$					
$\chi_1^+\chi_1^-$	$\Delta M(\chi_1^{\pm})$		1.10*			
	$\Delta M(\chi_1^0)$		1.23*			
.. and more …						

* Preliminary results by T.Itoh and T.Yoshioka. Luminosity is not normalized

Backup Slides

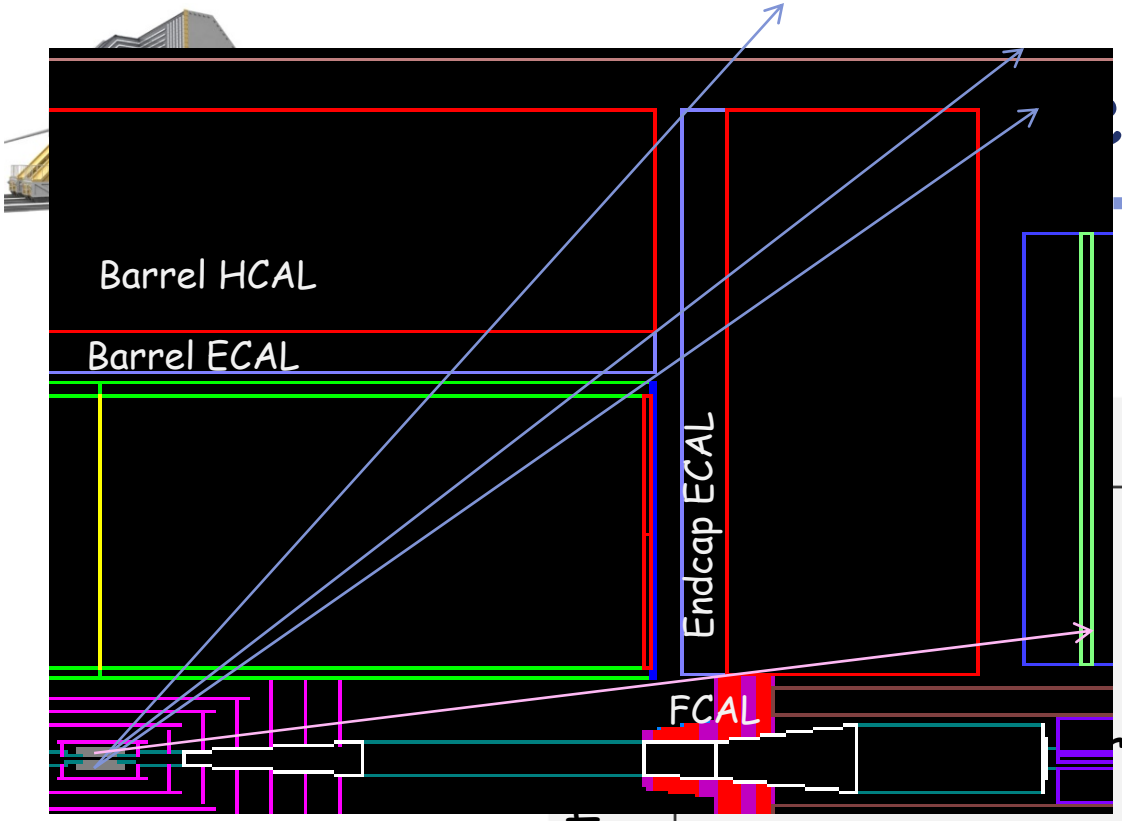


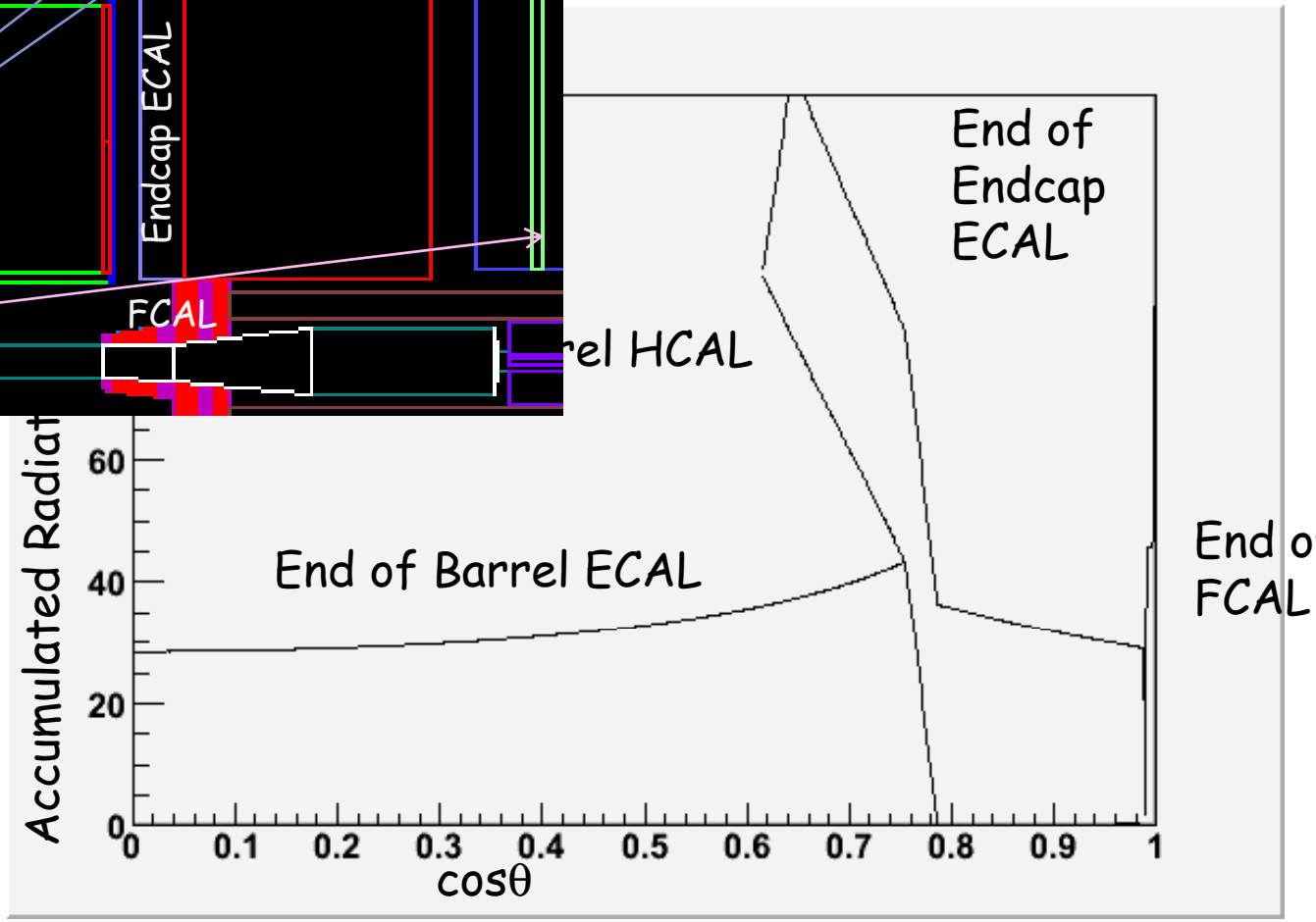
GLDPrim: Materials in X0

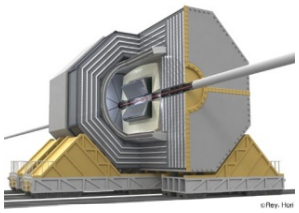


Breakdown (Up to EM CAL)	
BP:	0.14 %X0
VTX:	0.60
IT:	2.40
TPC In Sup.:	1.98
TPD Drift Reg.:	1.13
TPC Outer Sup.:	1.99
Others:	0.14

ss in GLDPrim







Nuclear Interaction Length