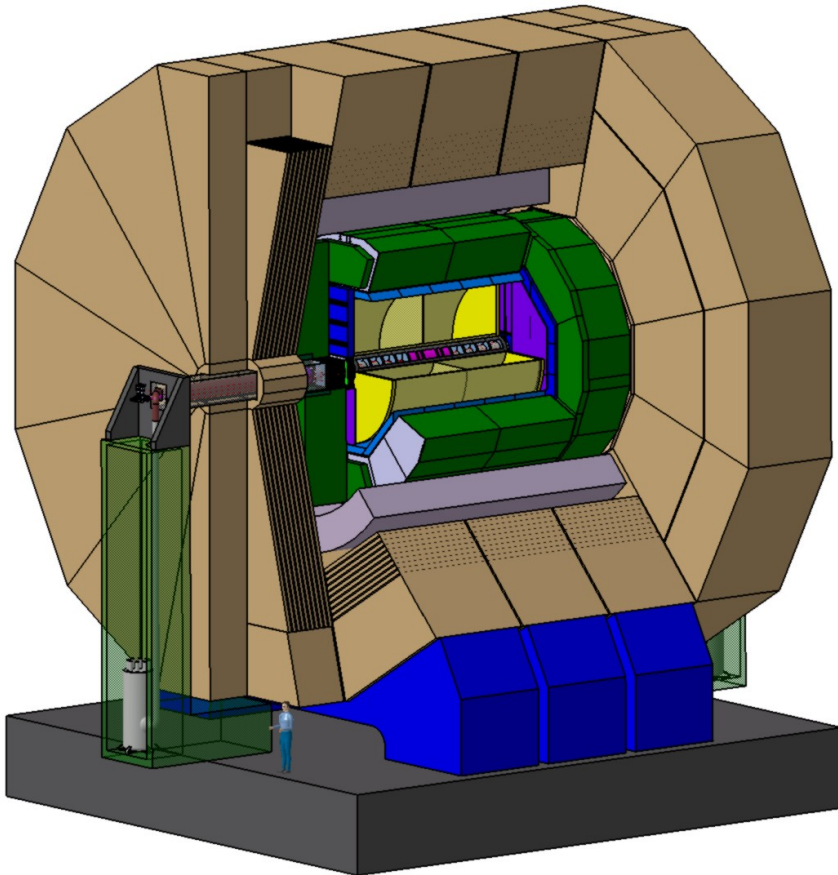


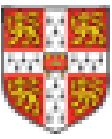
Analysis Strategy for DBD

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This talk:

Plans for DBD Analysis and
Software



★ Paris ILD Meeting

- good discussion of software models for DBD
- agreement on general principles
 - more symmetric treatment of options
- **commitment of ILD to actively support study of options**

★ Immediately after meeting (in café + on RER)

- optimisation/analysis convenors discussed this
- agreed a plan for DBD phase with following goals
 - ensure we have required DBD physics analyses
 - more symmetric treatment of options
- **believe approach will deliver aims with existing resources**

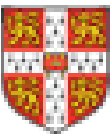


★ Software models/reconstruction

- Push forward with validation of simulation and reconstruction of ILD01 model (SiW + AHCAL)
 - evolution of existing software
 - still, validation is non trivial and may take ~6 months
- Produce MC samples with this model for DBD physics
 - **not** a full O(50 Million event) SM production
- **Guarantees ILD will meet DBD requirements**

★ In parallel

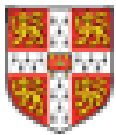
- Support development of PFA for DHCAL and SciW ECAL
 - ~6 month programme of work
- Once “ILD01” production is safely underway
 - commence validation of full detector models with SDHCAL and SciW ECAL
- **Full comparison of PFA perf. on 500 GeV physics**
- **If time allows, in position to redo 1 TeV DBD study**



★ Mokka model (ILD01)

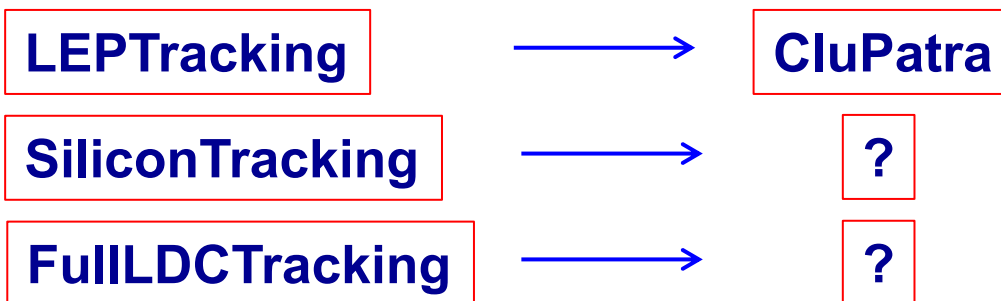
- finalize model by LCWS11
 - need to synchronize with eng. model – **how/who?**
- ETD:
 - remove ETD ? Not used, no software support
- SIT, SET, FTD, ETD **digitisers**:
 - **needed** if we are to use new drivers
 - currently **nobody** assigned to this task
 - if no progress made, fallback is to revert to old “simple” drivers [deadline LCWS11]
- More “minor” issues:
 - support structures for SIT/FTD – **who?**
 - “flatten” FTD geometry

★ Major hole: silicon trackers



★ Tracking

- Ideally we would replace



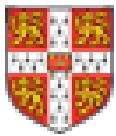
- Need to ensure consistent use of KalTest !

★ Forward Tracking

- Ideally we would like stereo strip reco. for FTD
- Without this **ILD has no background study for FTD**
- **Who?** Vienna expressed interest

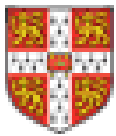
★ Strategy

- Frank/Steve to develop full strategy
- Review progress at time of LCWS11
- Fallback is to use current software



★ LCFIVertex

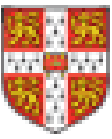
- Interesting ideas from Taikan/Tomohiko et al., e.g.
 - new variables (leptons, ...)
 - vertex based input to jet finding
- Need to be fully incorporated into Marlin
 - not entirely trivial
 - particularly interface with jet finders



Initial MC Production



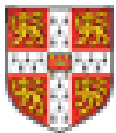
- ★ Aim to start MC production with ILD01 end 2011/start 2012
- ★ Focus on needs of benchmark analysis
 - aim for a few million events per study
 - i.e. not a full SM production
 - MC Samples to be defined by people doing analysis
 - including any preselection cuts
- ★ Need to identify analysis groups asap.
 - ttH - KEK
 - vvH - Ono(?) + ?
 - WW - ?
 - ZHH – “ZHH WG”



- ★ Need to integrate complete Detector drivers into Mokka
- ★ Require fixing loose ends, e.g. SDHCAL
 - endcaps
 - digitisation
 - services (level of detail similar to current models)
- ★ Needs to be done in coordination with core software group
 - very willing to provide support

Timescales

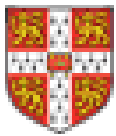
- ★ **Mokka**: similar to **ILD01**, i.e. models fully debugged by **LCWS11**
 - this is essential for development of reconstruction
- ★ **Reco**: first results for **LCWS11**
- ★ **Reco**: complete validated reconstruction by end of year



Physics at 500 GeV



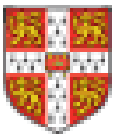
- ★ **DBD benchmarks are not ideal for comparing models**
- ★ **We have been asked to redo Lol analysis with new more realistic detector models**
- ★ **Propose we choice one or two channels which are sensitive to PFA**
 - **ttbar**
 - **SUSY pt5 (or successor)**
- ★ **Perform 500 GeV analyses with three ILD variants**
 - **AHCAL + SiW ECAL**
 - **SDHCAL + SiW ECAL**
 - **AHCAL + SciW ECAL**
- ★ **Again limit production to main backgrounds (WW, ZZ)**



Advantages of Strategy



- ★ Proceed with **1 TeV DBD** analyses based on known detector model/reconstruction **as fast as possible**
 - Get the results **“in the bank”**
 - Do not plan to expend vast resources on mass production
- ★ In parallel develop tools for SDHCAL and SciW
 - mainly different people
 - full support of core software + reco experts
- ★ **Understand impact** of ILD variants using the appropriate 500 GeV analyses
 - i.e. demonstrate performance in full sim.
 - allow comparison in DBD (if wanted)
- ★ If time allows, could replace **1 TeV DBD** analysis with variants
 - once the DSTs exist should be quick...



- ★ **Believe this is an effective way forward**
 - **Delivers DBD**
 - **Delivers full integration of ILD variants into ILD sim/reco/physics framework**
 - **If agreeable to ILD we can flesh out this new plan**

Comments