

Simulation Status, Plans and Timeline - Discussion -

ILD Software and Integration Workshop
DESY, July 6-8, 2010

ILD simulation for the DBD

- need to improve realism of simulation for DBD
 - include faults, limitations and imperfections...
- established group of 'simulation contact' persons
 - responsible for corresponding Mokka driver
 - liaison between detector R&D groups and software group
 - crucial step towards more realistic simulation !
- at Paris ILD meeting decided to make attempt to have new drivers this summer
 - need to start working on digitization and reconstruction
- today – status reports
 - significant progress made !

ILD simulation status today I

- beam pipe:
 - no final engineering design -> MDI/Integration group
- B-field
 - realistic field map for bg studies
 - simple field for mass production
- Physics List
 - use QGSP_BERT (re. by geant4)
 - issues in tungsten @CLIC !?
- VXD
 - realistic models for 3 double and five single layers
 - cabling missing
- FTD
 - currently simplified model – realistic design to be implemented
 - just started
- SIT, SET, ETD
 - realistic and detailed sim. exists
 - currently implemented in Mokka
- TPC
 - rather realistic simulation
 - need cabling and support

blue: ongoing work or to be addressed

ILD simulation status today II

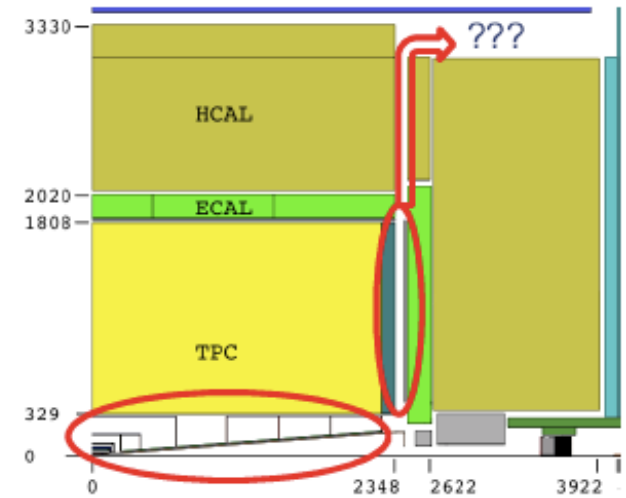
- Sci- and Si/W ECal
 - realistic driver exists
 - can vary mix of Scint./Silicon
 - -> can study options !
- dHcal - Sci Hcal
 - realistic simulation drivers exists
 - two geometries for dHCAL
 - need cabling and services
- Muon
 - new more realistic model exists
 - needs to be verified
 - strips vs. tiles ?
- BeamCal
 - new engineering design exists
 - implemented in Mokka
- LCal
 - new realistic driver exists
 - including support, cooling
- LHCAI
 - no real design exists

Discussion – this morning

- need to create next version of ILD simulation model in Mokka (ILD_01)
 - when can we do this ?
 - which drivers to include ?
- ILD baseline includes options and alternatives
 - we need to have models including these options
 - cannot have all possible combinations (also not sensible)
 - ideally options studied in 'same' geometry – if possible
- some models (e.g. ILD_00_dhcal) options exist
 - which other models to we need ?
 - who can do it ?
 - how to study them ?

Cabling and Services I

- most subdetectors have local dead material built in
- missing are cabling and services that run through ILD
 - -> need to be included in next ILD simulation model
- need to get material budget from integration group
- how much level of detail ?
 - probably best to have averaged distributions !
 - inhomogeneities where physics is affected
 - simplified inhomogeneities as shown by Catherine
- need to get complete list rather soon



Cabling and Services II

- how to included in Mokka ?
 - probably best to have **centralized driver** that is integrated into the model
 - Paulo and Gabriel volunteered to take over the responsibility for this
 - in close collaboration with Integration working group
 - need to make sensible simplifications
 - work already started (Catherine's talk)
 - -> how to make sure this stays in synch w/ developments in the integration/engineering
 - make sure there is no 'double counting' of dead material in detector and 'services' driver !

strawman timeline I

- 1) need to create new ILD_01 simulation model soon
 - including all new subdetector drivers
 - SIT, ETD, SET, FTD, BCal, LCal, Muon
 - including new driver for cabling and services
- testing and debugging of model needed
 - non negligible amount of work !
- models for technology options can easily be created from that, e.g.
 - study mixed Sci/Si Ecal
 - replace SciHcal with dHcal
 - ...

strawman timeline II

- 2) need to update digitization and reconstruction, e.g.
 - hit smearing in SIT with ladders
 - calibration
- 3) need to check that reconstruction still works with new model
 - existing tracking code
 - PFA
- can we aim for having 1)-3) by ECFA workshop in October ?
- -> considerable effort needed
 - need step 1) - simulation model by early September
 - core software group very busy with core and tracking software ...