Software Coordinators Report

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ILD SW&Ana Meeting, Oct 11, 2017

Outline

- Generator
- Simulation
- Reconstruction
- Monte Carlo Production

Generator M.Berggren, J.Tian

- latest HEAD version of Whizard seems to **have fixed the main problems**
  - 4 jet problem has a workable solution
    - still some technical issues to be sorted out w/ authors
    - tails in W-mass distribution
  - ISR should also have been fixed
    - pending verification ...
- MB is working on setting up the production scripts

- plan to use hybrid simulation models for Hcal and Ecal (ILD_l/s5_v02)
- created **reconstruction models** with technology choices

large model	small model	Hcal	Ecal
ILD_l5_o1_v02	ILD_s5_o1_v02	analog	silicon
ILD_l5_o2_v02	ILD_s5_o2_v02	semi-digital	silicon
ILD_l5_o3_v02	ILD_s5_o3_v02	analog	scintilator
ILD_l5_o4_v02	ILD_s5_o4_v02	semi-digital	scintilator

- will use **ILD_l/s5_o1_v02** initially for optimization samples
- produce (sub)-samples with other technologies
  - need full digitization/reconstruction for *semi-digital* and *scintilator*
  - (fall back to **ILD_l/s4_o1_v02** without *scintilator*)

Reconstruction - Marlin

- have introduced two new features in Marlin (R.Ete):
  - **global constants** in xml-file
    - can be overwritten on the command line
  - **include mechanism** for xml-files

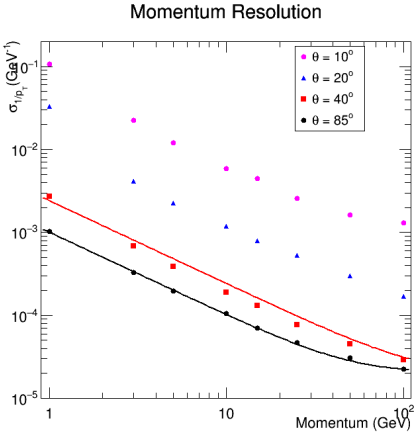
```
<constants>
    <constant name="DetectorModel" value="ILD_l5_v02"/>
    <constant name="FilePath" value="../../test/testmarlin"/>
    <constant name="InputFile" value="${FilePath}/${DetectorModel}_simjob.slcio"/>
    <include ref="./${DetectorModel}_calibration.xml" />
</constants>

Marlin --constant.DetectorModel=ILD_s4_v02  marlin-steer.xml
```

- will allow to more transparently organize the *steering files* for our different detector variants and collision energies
- need to understand if **ILCDirac production system** can be adapted to use this feature

Reconstruction - Tracking S.Lu

- used MV-CA tracking for silicon tracking
- *small issue* at *theta* $= 90^\circ$
  - how to treat *smeared reconstructed* hits close to cathode
  - still under investigation
- started to compare/cross check KalTest with aidaTT-GBL
  - so far everything found to be consistent/identical



DDKalTest

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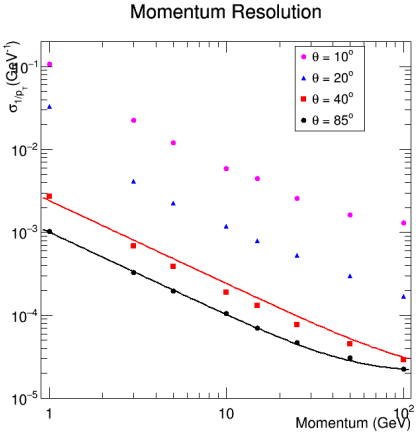

aidaTT

Monte Carlo Production A.Miyamoto, H.Ono

```
#[DBDALL] Assuming All existing samples, except. 6f=2000.0 fb^-1
pr_type        #events sim_cpu_days rec_cpu_days sim_size_GB rec_size_GB
2f              3301700        1912         992        7563       10834
4f             10450449        5234        1770       19834       26309
5f              2017168         817         440        3424        5180
6f              4612286        2872        2896       15442       25481
aa_4f            808889         238         130         997        1623
higgs            953903         507         371        2237        3488
total          22144395       11583        6600       49500       72918
sim+rec cpu   = 18,184 days
sim+rec data  = 122,418 GB
```

- new estimate of resource needs for optimization production
  - assumption produce complete DBD 500 GeV set
- this is for one detector model
  - need to multiply simulation by *factor 2* for large/small
  - need to multiply reconstruction by *number of technology variants*

road map for optimization production

- plan to soon create one more test-release of iLCSoft: **v01-19-05**
  - all known issues fixed
- re-create test samples
  - single particles
  - uds
  - selected physics channels: $H \rightarrow$ *invisible*
- have one final round of testing/validation
- create final *production* release (at least for simulation)

need prioritization of production samples

- order of physics channels, number of events, detector variants
- need input from *physics working groups* (and *R&D groups*)