Software Coordinators Report

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Outline

- Generator
- Simulation
- Reconstruction
- Monte Carlo Production
- iLCSoft releases

- report form today's *Software Conveners Meeting*

Generator M. Berggren

- have created Circe files for all initial states for ee, eg, ge, gg
  - provide input beam spectra for Whizard generation
- created a small test production (generation) of 96 2f and 4f samples
  - also included eg->3f
- thereby fixed bug in Whizard (need new release tag !)
  - related to intermediate ASCII files lacking precision
- issue in single W samples fixed by tuning cuts
- **To be done** for 250 GeV production:
  - aa_lowpt samples (T.Barklow)
  - finalize naming scheme for 4f samples
  - need to improve and finalize production scripts
- complete generation could be done within 1-2 weeks
- need to agree on what luminosity to generate ($1 - 2\ ab^{-1}$?)

- e^+e^--pair background files for 250 GeV are simulated for 250 GeV

- plan to use large **ILD_l5_v02** hybrid detector model for main 250 GeV simulation
  - same as used for IDR *benchmarking* production
  - reconstruct initially as *ILD_l5_o1_v02*, i.e. w/ AHcal and SiW-Ecal
  - plan to not further touch the simulation model

Reconstruction - open issues

- prepare *reconstruction steering files* for 250 GeV production:
  - pair background in the BeamCal - *ongoing Moritz H.*
  - seeable pairs files - files exist
  - smearing of vertex z-position - done

- muon reconstruction in-efficiency at $|\cos(\theta)| \sim 0.6$
  - *to be addressed (MH)*
- photon calibration and angle bias in Ecal reconstruction
  - *to be addressed (DJ)*
- plan to have additional track re-fits w/ e, p and K mass hypotheses
  - *currently studied (Yasser R.)*

Monte Carlo Production A.Miyamoto, H.Ono

- have created new production scripts that can optionally write out small set of REC files and mostly store DSTs only

- need to have initial test production for 250 GeV
  - use 500 GeV aa_lowpt overlay for this test
  - use 'mc-opt' (disk only) directory
- need to create production scripts in ILDConfig release tag

- confluence page of 250 GeV To-Do-List:
  - https://confluence.desy.de/display/ILD/Check-list+towards+a+new+250+GeV+ILD+MC+production

Future iLCSoft releases

- need to create a new iLCSoft (patch release) for 150 GeV production:
  - improved pattern recognition (Shaojun L.) efficiency
  - fixed muon and photon reconstruction
  - fix for track refitting

- two options:
- create **v02-00-03** with minimum number of patches
  - same compiler (gcc 4.9), root 6.08, geant4 10.03 et al

- start a new **v02-01-xx** series with more modern external software
  - e.g. gcc 8.2/9.2, root 6.20, Geant 4 10.05, ...
  - allow to use modern (current) *c++17*
  - current standard at LHC experiments

clearly preferable but also would require more extensive **tests and validation**