

Software Coordinator's Report

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ILD SW&Ana Meeting, Dec 14, 2016

- Software pre-meeting
- Generator pre-meeting
- LCWS SW sessions and ILD meeting
- iLCSoft releases

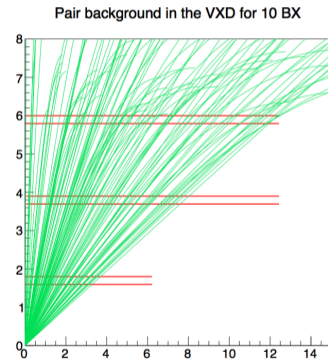
Software conveners meeting before LCWS2016 at KEK:

- identified and discussed open issues for ILD MC production
- Whizard generator issues . . .
- which samples to produce:
 - 250,350,500 GeV - at least according to H20 and up to 10 times as much
 - some 'standard' BSM benchmark samples
 - calibration and validation samples (single particles, uds, . . .)
 - produce all samples in fully polarized !
- treatment of background in simulation . . .
- ILD simulation models and validation process
- status of (high level) reconstruction tools
- Monte Carlo production w/ ILCDirac

plan to overlay two types of background:

- pair background
 - e^+e^- pairs that actually are reconstructable in VXD and FTD
 - need tool to produce corresponding files (SGV)
- aa_lowpt ($\gamma\gamma \rightarrow$ hadrons)
 - recently fixed generator: Γ_ρ, \dots
 - need to prepare correct mix of bb, bw, wb, ww samples (beam/virtual γ)

need to implement bg-overlay in MC production system



LC Generator Group meeting before LCWS2016 at Tokyo University:

- addressed known Whizard2 issues
- particle multiplicities in 4 jet events changed wrt. Whizard-1.95
 - tracked down to passing color information to Pythia
- ISR energy spectrum in 2 jet events
 - understood and soon to be fixed
- polarization in $H \rightarrow \tau^+ \tau^-$ decays (via Tauola)
 - will be fixed internally in Whizard
- and iterated on LCIO output:
- defined meta data to be stored in file
 - \sqrt{s} , beam spectrum, processID/Name, σ , beam particle type and polarization
- re-(de)efined the generator status word:
 - 1:stable, 2: decayed, 3: documentation, 4: incoming, 5: partons

status

expect Whizard to be well ready for a mass production in early summer 2017

- two sim/rec/perf sessions + one joined w/ calo and tracking:
 - <https://agenda.linearcollider.org/event/7371/sessions/4316/#all>
 - <https://agenda.linearcollider.org/event/7371/sessions/4319/#20161206>
 - <https://agenda.linearcollider.org/event/7371/sessions/4317/#20161206>
- summary talk by A.Robson:
 - https://agenda.linearcollider.org/event/7371/contributions/37662/attachments/31032/46467/simRecoPerf_lcws16_robson_v1.pdf

see: https://agenda.linearcollider.org/event/7371/contributions/38020/attachments/30922/46282/gaede_ild_software_status.pdf

Summary

- have made transition from *old* to *new* iLCSoft with v01-19
- complete simulation and reconstruction chain works in principle
- for tracking reached performance of DBD code
- validation process of ILD simulation models has started

Outlook

- address issues observed in JER (DDMarlinPandora !?)
- continue development on generator and production tools
- have reports on validation process in sw-conveners and SW&Ana meetings

- first of new series of developer releases
- consistently use **-std=c++11** for all iLCSoft packages
- removed phased out packages from release
 - cernlib, (Fortran), Mokka, MarlinPandora
 - others to follow in future releases
- v01-19 requires a modern compiler, e.g. gcc 4.8 (or higher)

release of v01-19 marks major milestone:

- transition from *old* to *new* software chain completed
- will use for ILD simulation model validation
 - plan to have *frequent* developer releases v01-19-xx

- need patch v01-19-01 soon:
 - fixed spurious crash in new ILD simulation models
- **major change request** from CLICdp and SiD to change

```
std::string ILDCellID0::encoder_string =  
    "subdet:5,side:-2,layer:9,module:8,sensor:8" ;
```

 - need to provide singleton class in DD4hep and change many packages:
 - lcio, lcgeo, aidaTT, Clupatra, MarlinTrk, MarlinTrkProcessors, KalDet, ForwardTracking, ConformalTracking,
 - need to make these changes as transparent as possible with as little disruption as possible
- continue the transition of iLCsoft packages to Github:
 - <https://github.com/iLCSoft>