# Software Coordinator's Report

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ILD Meeting, Apr 4, 2017

# Outline

- LC Software Hands-On Meeting
  - GitHub migration
- Generator
- Simulation
- Reconstruction
- ILD Software and Technical Meeting in Lyon

- two weeks ago: LC software experts from all three concepts met at CERN to work on software and discuss common issues and plans:
  - **transition of iLCSoft to to Github**
  - restructuring of iLCSoft packages
  - implementing (some) missing features
  - resource coordination
  - work on iLCDirac

# Transition of iLCSoft to Github

- almost all iLCSoft packages are now on **`https://github.com/iLCSoft`**:
  - LCIO
  - Marlin
  - lcgeo
  - Clupatra
  - MarlinFastJet
  - MarlinTrkProcessors
  - Overlay
  - MarlinDD4hep
  - DDMarlinPandora
  - CED
  - CEDViewer
  - CondDBMySQL
  - ConformalTracking
  - DDKalTest
  - FastJetClustering
  - ForwardTracking
  - GEAR
  - iLCInstall
  - iLCUtil
  - ILDConfig
  - ILDPerformance
  - KalDet
  - KalTest
  - KiTrack
  - KiTrackMarlin
  - LCCD
  - LCFIVertex
  - LCTuple
  - MarlinKinfit
  - MarlinKinfitProcessors
  - MarlinReco
  - MarlinTrk
  - MarlinUtil
  - MemoryMonitor
  - RAIDA
- some packages are on other GitHub repositories:
  - AidaSoft/DD4hep
  - AidaSoft/aidaTT
  - lcfiplus/LCFIPlus
  - FCALSW/FCalClusterer
  - PandoraPFA/PandoraPFA
  - PandoraPFA/PandoraSDK
  - PandoraPFA/LCContent
  - PandoraPFA/PandoraAnalyis
  - danerdaner/LICH
- contact us if you want your package included in the iLCSoft GitHub project

# Some Technicalities of transition to Github

- in transition made sure all packages have a
  - LICENCE file
    - if they use *LCIO* or *Marlin* we have added: **GPLv3**
  - a README.md with
    - basic introduction to package
    - **copyright** statement, e.g.
    - copyright: the *package_name* authors
  - AUTHORS file
    - listing authors that have made *significant* contributions
  - ./doc/ReleaseNotes.md

let us know if any of these files are not correct or incomplete

- in particular the AUTHORS file

# Implications of transition to GitHub

- everyone contributing to iLCSoft needs to get a **GitHub account**
  - at `https://github.com` - using their real name

## basic GitHub workflow

- create a fork of the package repository
- make your changes in a dedicated *feature branch*
- commit (push) to your private fork of the repository
- create a Pull Request (PR) on the GitHub page
- experts will review your changes and eventually merge them

- see `https://github.com/iLCSoft/ilcsoftDoc` for details
- will have a **Git tutorial at the ILD workshop in Lyon** (A.Sailer)

# Why move to Github ?

- using git and GitHub forces a rather steep learning curve on people used to SVN - but

## many advantages of using git and GitHub

- **Review Mechanism**
  - everyone can review and comment on PRs
  - no experimental or sloppy code gets merged into the main repository
  - ( users can push this to their own forks )
- **Continuous Integration**:
  - every PR starts *builds and test* for different compilers
  - only if these are successful the PR will be merged
- **Static Code checking**
  - will set up *Coverity* services for all packages
  - finds *logical flaws* in code
- users and account management done by GitHub

# Generator M.Berggren, J.Tian

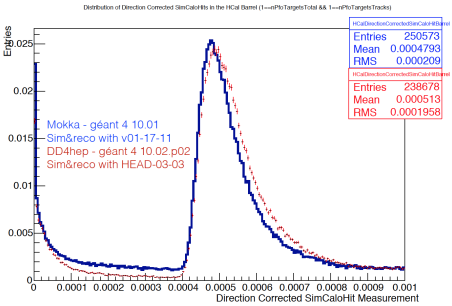
- two weeks ago: LCC generator working group meeting at DESY
  - went through To-Do list created in Tokyo generator meeting
- many points addresses - some points still open:
  - issues with stdhep/lcio generator code:
    - sometimes quarks flagged as stable in 4 jet events
  - tau polarization has warning messages
    - spin information is lost with FSR and Tauola
    - unconditional warning messages in Pythia interface
  - multiplicity in >4 jet events
    - problem in how quarks and color connections are presented to Pythia
  - ISR is different from what was done for the DBD
    - interplay of pt of gamma and correct cross section
    - potentially have a solution -> need to be implemented
  - LCIO output still needs to be checked
    - spin information
    - meta data seems to implemented

# Simulation

- FCAL has nominated B.Pawlik and S.Lukic to work on the implementation of forward calorimeters
- reviewed and updated version of LCal and LHCal
  - fixed some issues (overlaps)
- implemented new L*
  - moved BeamCal closer to IP
- A.Perez implemented the use of a realistic field map for the solenoid and the anti-DID
  - still need test and validation of models and field maps
- S.Lu and FG started to work on *multi-technology* simulation model for the Hcal (generic geometry)
- ongoing work in progress ...

# Reconstruction - PFA L.Tran

- tracking down differences in JER between Mokka and DD4hep based sim/reco
  - looking at single particle's hits and clusters
- observe differences already at single hit level (MIP) and total hit energies
- need to check simulation settings:
  - range cut, physics list, shower mode ( timing )
  - ...
- L.Tran on maternity leave
  - need to find replacment to continue the work ...




also observed with *same* Geant4 version

# ILD Software and Technical Meeting in Lyon

- see preliminary agenda:
  `https://agenda.linearcollider.org/event/7520/timetable/#all.detailed`
- Software Sessions:

| Session | Topics |
|---|---|
| Mon afternoon1 | Core Tools |
| Mon afternoon2 | GitHub and iLCSoft Tutorial |
| Tue morning1 | Tracking and PFA |
| Tue monring2 | HLR and Optimization |
| Wed morining | Status of Simulation Models |
| Thu morning1 | discussion: How to do analysis in ILD |

- there is still room for few software related talks
  - let us know if you want to present something that is not yet covered

# iLCSoft releases

- plan to have a new iLCSoft release with all the latest developments and fixes
  - v01-19-02
- tentative schedule: next week