

DVCS software status

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Outline

- ▶ Online
 - ▶ DAQ software
 - ▶ Online monitoring scripts
 - ▶ Calibration scripts
- ▶ Offline
 - ▶ Simulation
 - ▶ Waveform analysis
 - ▶ Calorimeter clustering, etc

Online software/monitoring

- ▶ Old software will necessarily need to be rewritten
- ▶ Nothing has been done yet
- ▶ Hard to do long in advance
- ▶ DAQ soft will start as soon as new ARS/trigger are available (early 2009)
- ▶ Online monitoring scripts should start at the time of assembly (beginning 2010)



Important tools

- ▶ Calibration scripts
 - ▶ Elastic calibration
 - ▶ LED calibration

GEANT4 simulation of target/calorimeter setup

More details in Florian's talk

- ▶ E00-110/E03-106 analysis based on a GEANT3 simulation
 - ▶ Written in FORTRAN
 - ▶ Little documentation, no longer supported by CERN
- ▶ New GEANT4 written by F. Itard and under evaluation (see details in Florian's talk)
- ▶ HRS: standard resolution and acceptance (R-functions) applied

DVCS analysis framework

- ▶ Based on C++/ROOT libraries interfaced with a MySQL database
- ▶ Analysis algorithms written and tested during E00-110/E03-106
- ▶ Some analysis parameters may need to be adjusted:
 - ▶ Waveform analysis
 - ▶ Clustering
- ▶ Geometrical parameters need to be updated in database
- ▶ NO fundamental improvements foreseen, but possible candidates are:
 - ▶ Waveform analysis
 - ▶ Clustering and photon reconstruction

Software “features” (or (dis)advantages)

- ▶ Event structure is very flexible=complex!
 - ▶ Variable number of blocks per event
 - ▶ Variable number of clusters per event
 - ▶ Variable number of blocks per cluster
 - ▶ Same event structure for every pass of the analysis
 - ▶ Any piece of information can be dropped from one pass to another when written to file without changing event structure
- ▶ Huge number of time-dependent, block-dependent parameters
 - ▶ Waveform analysis
- ▶ Waveform analysis pass need at least $>2\text{Gb}$ RAM memory (not available in all farm nodes running several jobs at a time)
- ▶ Lots of MySQL connections necessary (special server setup)

Computer ressources

- ▶ Old code still compiles (after necessary changes) at JLab, after frequent and painful Computer Center upgrades (OS, ROOT, g++ version...)
- ▶ Production will probably be done in CC-IN2P3 (France) as last time (JLab farm proved to be not performant enough for our needs)
- ▶ JLab farms will be used for online (during the experiment running) and first pass (where CODA libraries are needed)
- ▶ CPU and RAM demanding passes will probably need to be done in CC-IN2P3

Documentation

- ▶ Little documentation written (limited set of sample macros)
- ▶ Non-standard tasks not user-friendly
- ▶ Well supported

TODO list

- ▶ Calibration scripts (most urgent)
- ▶ DAQ software (as soon as new ARS/trigger are ready)
- ▶ Online monitoring scripts (end 2009)