Software Sessions Summary

CALICE Meeting, Manchester
September 10, 2008
Niels Meyer on behalf of

Fabrizio Salvatore	Simulation
Paul Dauncey	Tracking
Roman Pöschl	SiW ECal
N.M.	AHCal
Vishnu Zutshi	TCMT
Shaojun Lu, N.M.	Central Processing

Simulation

Conclusion

- Implementation of the 08 test beam is in progress
- A lot of detectors on the beam line are already simulated in Mokka
  - Need to implement new positions in the db
- Still missing information regarding extra material on the beam line
  - Wire chambers ? Cerenkov ? AOB ?
- No information on alignment
  - In previous TB models we always assumed perfect alignment in the simulation
  - If mis-alignment needs to be included at simulation level, need to know reference points wrt where detectors were aligned
- No driver available for ScECAL
  - If beam line detectors are the same for the ScECAL run, only need SciECAL driver and new detector positions

CALICE meeting, Sept. 9th   Fabrizio Salvatore, RHUL   4

What exists right now for database

- SimConstants
    - Reasonable for DESY06, CERN06 and CERN07
    - Smearing and efficiency need iteration for CERN06 and CERN07
    - Placeholder guesses for FNAL08.
- AlnConstants
    - Reasonable for DESY06, CERN06 and CERN07
    - Drift velocity for CERN06 and CERN07 needs iteration
    - Placeholder guesses for FNAL08
- FitConstants
    - True simulation scattering values for DESY06
    - Theoretical material estimates for CERN06 and CERN07
    - No scattering errors for FNAL08
- To a good approximation, I do all these so a big bottleneck here
    - Help in this area would be very useful and effective

9 Sep 2008   Paul Dauncey   5

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To prompt discussion...

- How accurate does tracking have to be and what are the most important issues?
    - I previously worked on ECAL shower resolution (but no longer)
    - I do not know which analyses will push the tracker data the most
- Track resolution
    - Push for best possible in data? Are scattering errors important? Are different scattering errors for electrons and hadrons important? Should we use the beamspot as a constraint in the fit?
    - How important are systematics (alignment offsets, etc)?
    - Need accurate match to simulation? How critical is material description?
- Track efficiency
    - Are we prepared to work with 3-hit tracks for DESY and FNAL?
    - Need accurate match to simulation? How accurately does efficiency vs position need to be modelled in digitisation?

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SiW ECal

Status and Outlook

Status:

- SiW Ecal Software/Reco works for DESY/CERN/FNAL
  "real" Data and MC out of the box
   (provided the calice db is updated properly)
  -> Has been used for initial offline DQ Checks of FNAL Data
  MC Reco Files with digi steps applied do exist and have
  been looked at

Open Points:

- Extension of Digi Step to Square Events
- Possibility to study Pedestal Shift Correction in MC
- Adaption of SiW Software to software modifs
  motivated by the s/w review

Manpower:

- R.P. For maintenance work
- ? for heavy code development
- Prague group (Michal) volunteered to look at digi step
  No confirmation yet

Roman Pöschl   *CALICE Collaboration Meeting Sept. 2008*   *4*

Digitization / Reconstruction

Digitization output equivalent to (and same format as) raw data

Effects simulated:
- Signal leakage to neighbouring tiles (global factor only)
- Non-linear response (response curves and calib constants)
- Pixel statistics
- Energy scale (calib constants)
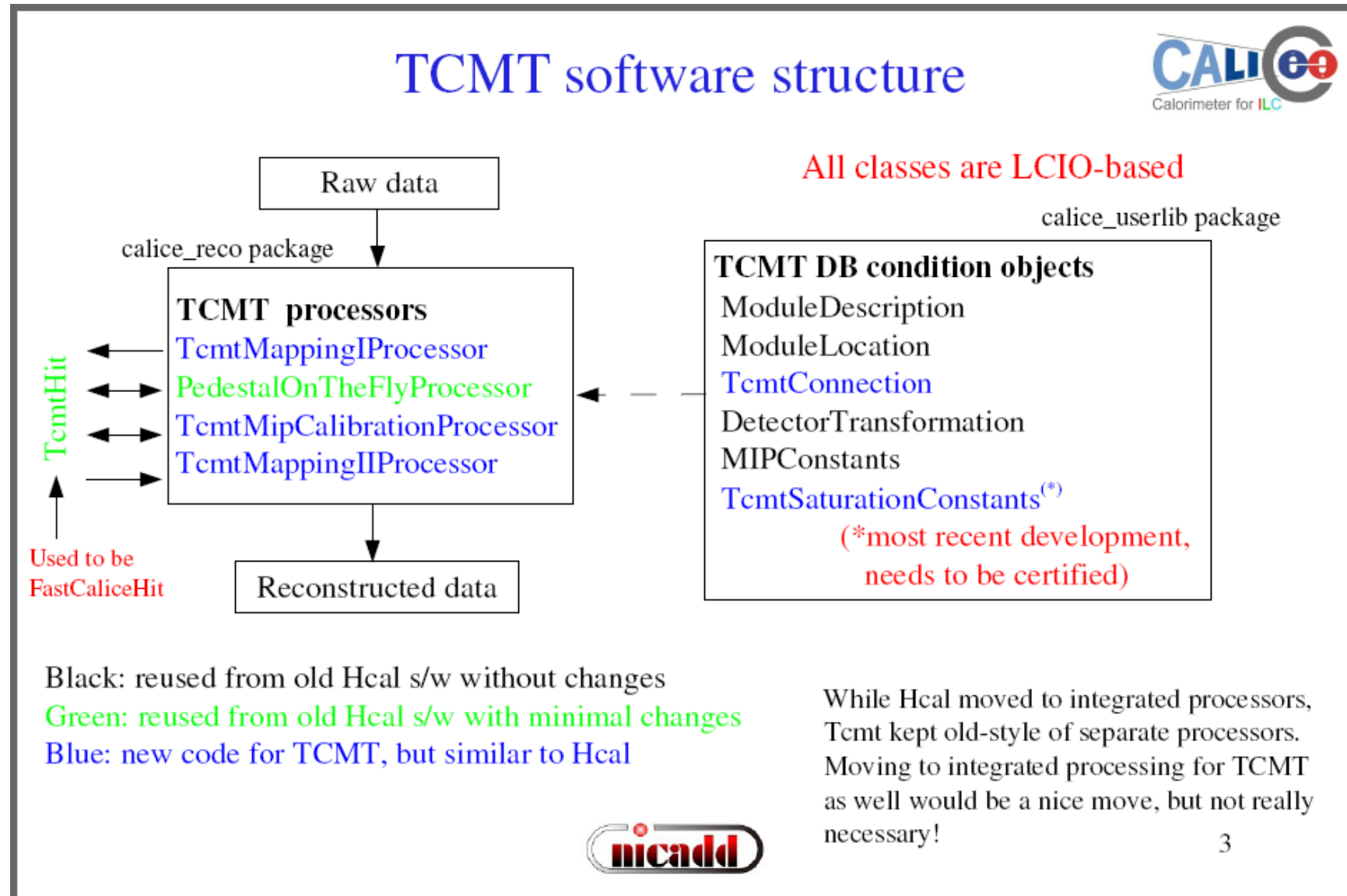- Dead/uncalibrated channels

Effects reconstructed/corrected:
- Non-linearity

Still not possible at the moment:
- Channel-to-channel smearing of calib constants (to get resolution correct in simulation)
- Correction of known and simulated effects (signal cross talk, excluded cells)

Niels Meyer -- HCal Code Status -- CALICE Mtg. Manchester -- Sep. 9, 2008

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TCMT

TCMT software structure

All classes are LCIO-based

Raw data

calice_reco package

calice_userlib package

TCMT processors
- TcmtMappingIProcessor
- PedestalOnTheFlyProcessor
- TcmtMipCalibrationProcessor
- TcmtMappingIIProcessor

TcmtHit

Used to be FastCaliceHit

Reconstructed data

TCMT DB condition objects
- ModuleDescription
- ModuleLocation
- TcmtConnection
- DetectorTransformation
- MIPConstants
- TcmtSaturationConstants[*]

(*most recent development, needs to be certified)

Black: reused from old Hcal s/w without changes
Green: reused from old Hcal s/w with minimal changes
Blue: new code for TCMT, but similar to Hcal

While Hcal moved to integrated processors, Tcmt kept old-style of separate processors. Moving to integrated processing for TCMT as well would be a nice move, but not really necessary!

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Summary the jobs are done

- test beam at cern:
- 10GeV electron testbeam: reference run 3
- 12GeV electron testbeam: reference run 3
- 15GeV electron testbeam: reference run 3
- 20GeV electron testbeam: reference run 3
- 30GeV electron testbeam: reference run 3
- 40GeV electron testbeam: reference run 3
- 45GeV electron testbeam: reference run 3
- test beam for rotation HCAL
- 15GeV Pion test beam, HCAL rotated 30

Summary the jobs are required

- test beam at cern:
- 15GeV Pion test beam, HCAL rotated 30 degree: reference run 350383
- 10GeV Pion test beam, HCAL rotated 30 degree: reference run 350384
- 12GeV Pion test beam, HCAL rotated 30 degree: reference run 350390
- 8GeV Pion test beam, HCAL rotated 30 degree: reference run 350391

If you find any problem in the MC productions, please let me know, I appreciate it very much.

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Central Processing

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- test bean
- 10GeV e
- 12GeV e
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Please contact Shaojun for your LCWS requests!

Next round of reprocessing finally scheduled
- test jobs (presumably 2007) starting next week
PLEASE REPORT YOUR RUNS OF INTEREST FOR LCWS!
- cross checks, software release, freeze of constants
- full processing of 2007, spring 2008

Discussion

One full session with discussions on future organization and developments, guided by recommendations from SW review

Very limited presonell, please help us at least with following the discussions and give feedback - we don't have development capacities to work on tools which never will be used. Consider joining the bi-weekly software meetings, announced over calice-SW list

Take advantage of common tools, their developers will appreciate!

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