

EMCAL Offline Status

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Offline Week - 9/October/2007

Review of recent updates

Major categories:

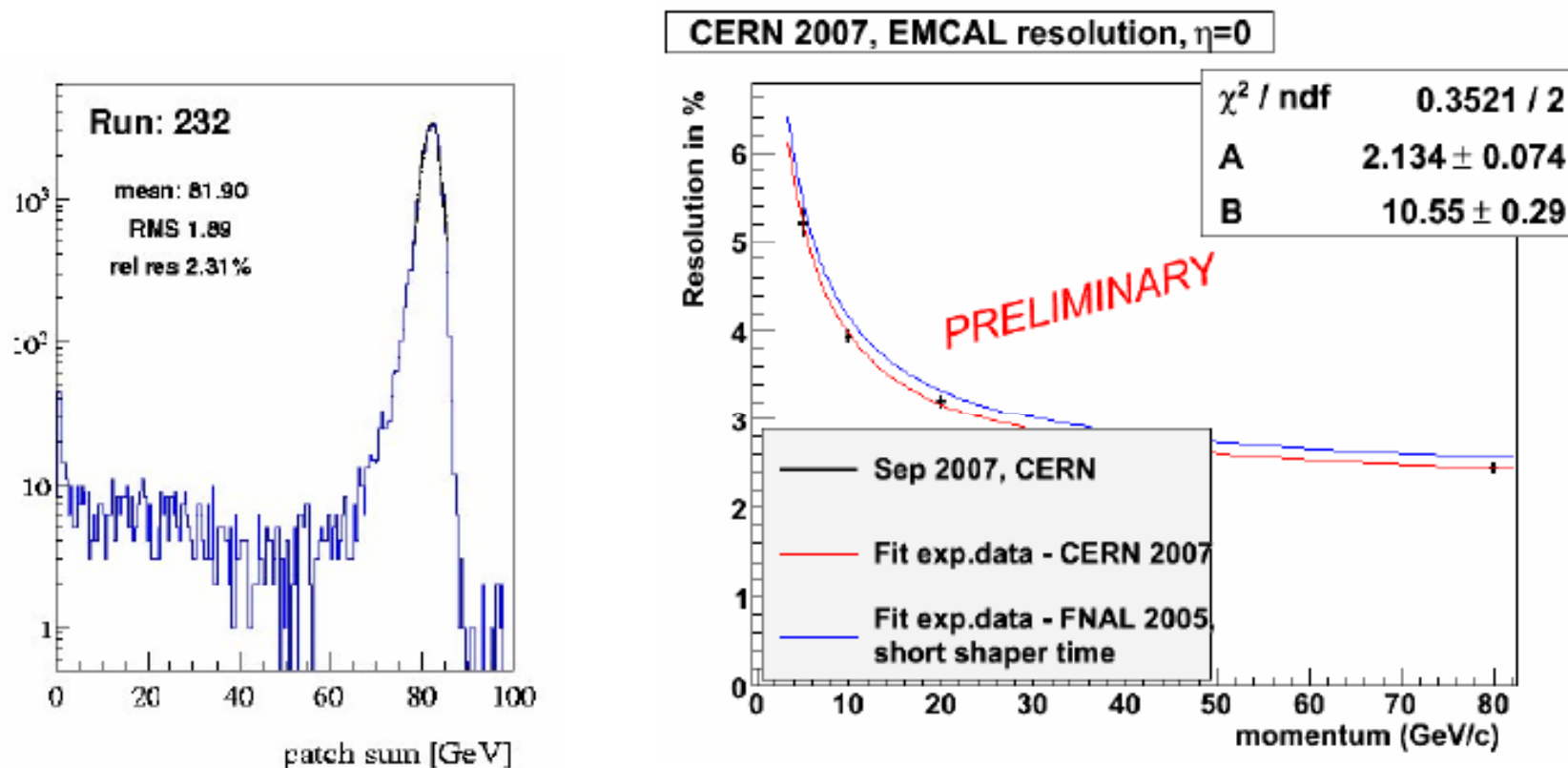
- Test beam
- Offline Task status updates
- Planned Changes to AliAOD/ESDCaloCluster

Test Beam

- Currently running at SPS, 5 to 100 GeV, e^- and hadron beams. Next week in PS, lower energy.
- Prototype with almost final geometry, 16 modules (8 from Wayne State, 8 from Frascati)
- Data taking-analysis chain:
 - Data taken with ALICE DAQ and moved to Castor
 - All data registered in AliEN
 - Data analysis performed in AliEN
 - Raw data decoded with offline code AliCaloRawStreamer
 - We foresee to do the full AliRoot reconstruction chain but found some problems:
 - Mapping was not correct in AliRoot versions in AliEn
 - Full reconstruction standard chain does not break but ESDs are empty, we are going to investigate.

Test Beam

- Few preliminary plots (don't take them too seriously)
- 80 GeV e^- . Sum of 3x3 patches with preliminary calibrations



For more details, please see FDR slides on Friday afternoon
(David Silvermyr)

Alignment Tasks

		Log		Alignment (181)	jennifer.klay	-	01/01/2006	-	01/01/2008
		Log		└─ General (182)	jennifer.klay	-	01/01/2006	-	01/01/2008
		Log		└─ mis-alignment (183)	jennifer.klay	-	01/01/2006	06/03/2006	06/03/2006
		Log		└─ strategy (184)	jennifer.klay	-	01/01/2006	-	01/09/2007
		Log		└─ Data (185)	jennifer.klay	-	01/01/2006	06/04/2006	06/04/2006
		Log		└─ Provide symbolic volume names AddAlignableVolumes (251)	jennifer.klay	-	01/01/2006	15/11/2006	05/03/2007
		Log		└─ Format of Survey data and conversion into alignment objects (253)	jennifer.klay	jennifer.klay (50%) (+2)	01/01/2006	-	01/01/2008
		Log		└─ alignment aware simulation (255)	jennifer.klay	-	01/01/2006	03/10/2006	03/10/2006
		Log		└─ alignment-aware reconstruction (256)	jennifer.klay	-	01/01/2006	-	01/09/2007
		Log		└─ Transformation local RS to TGeo local RS (1270)	jennifer.klay	-	24/01/2007	-	01/09/2007

Alignment-related tasks (Jenn)

Task 256: Removal of hard-coded calls to ideal geometry

-Reconstruction uses calls to GeoManager for geometry info

-Done as of 03.10.07

Task 1270: Transformation of local RS to TGeo RS

-In progress. Final checks being completed.

-Should be complete by end of offline week (12.10.07)

Task 184: Implement reconstruction from misaligned geometry

-To be completed after Task 1270 is done.

-Hopefully will be complete by end of offline week (12.10.07), if not, should be approximately 1 week later.

Calibration Tasks: SHUTTLE

		Log	!	SHUTTLE (220)	jennifer.klay	gustavo.conesa (100%)	01/01/2006	-	01/12/2007
		Log	!	preprocessor algorithm implemented for use case 1/2 (221)	jennifer.klay	gustavo.conesa (100%)	01/01/2006	-	01/10/2007
		Log	!	preprocessor algorithm implemented for use case 4 (222)	jennifer.klay	gustavo.conesa (100%)	01/01/2006	-	01/10/2007
		Log	▶	Incorporate LED calibration code into AliRoot (1809)	jennifer.klay	gustavo.conesa (100%)	20/08/2007	-	01/12/2007
		Log	▶	Incorporate pi0 Inv Mass code into AliRoot (1810)	jennifer.klay	gustavo.conesa (100%)	20/08/2007	-	01/12/2007

- Implementation of access to DAQ and HLT file exchange servers in the preprocessor: **DAQ implementation is done. Need to investigate what we will get from HLT.**
- Provide list of data points to be retrieved by the Shuttle; analysis and storage of DP arrays in the preprocessor : **After beam test, experts will concentrate on defining this points.**
- Incorporate LED calibration code : **First thoughts**
- Incorporate pi0 Invariant mass code: **Code implemented at ESD level (thanks to Aleksei). Pi0 calibration is not possible with SHUTTLE and preprocessor:**
 - **Need analysis train to use this code**
 - **Code based on TSelectors, will pass to Analysis Frame soon.**

Calibration Tasks: Online

		Log	»	Online (1455)	jennifer.klay	-	25/01/2007	-	15/02/2008
		Log	↑	»	DAQ DA (1271)	David.Silvermyr (100%)	25/01/2007	-	15/10/2007
		Log	↑	»	DCS DP (1272)	David.Silvermyr (100%)	25/01/2007	-	15/10/2007
		Log	↑	»	DCS DA (1273)	David.Silvermyr (100%)	25/01/2007	-	15/10/2007
		Log	↑	»	DCS FXS output files (1274)	David.Silvermyr (100%)	25/01/2007	-	15/10/2007
		Log	↑	»	HLT DA (1275)	David.Silvermyr (100%)	25/01/2007	-	15/02/2008
		Log	↑	»	HLT FXS output files (1276)	David.Silvermyr (100%)	25/01/2007	-	15/02/2008
		Log	»	»	DAQ FXS Output files (1456)	David.Silvermyr (100%)	01/02/2007	-	15/10/2007

- We are still not clear on exact DCS DP and FXS output contents; hardware configuration/needs still under development. Task completed hopefully before next offline week.
- DAQ DA, will be implemented before end of year.

Calibration Status

Mail from Alberto Colla

- **OCDB contains:**
 - [EMCAL/Calib/Data](#): array of pedestals and ADC conversion factors
- **De-calibration tests:** done with success (**ok**)
- **Requirements (besides the parameters already in OCDB):**
 - [pedestal/sigma/ADC-to-Energy](#) arrays for high and low gain: **missing** (see comment)
 - [time walk corrections](#): **missing**
 - [dead/hot channel maps](#): **missing**
 - [DCS-related data](#) (HV's, temperatures): **missing**
- **SHUTTLE Preprocessor:**
 - Under test in the SHUTTLE test setup (**ok**)
 - Performs analysis and storage of relative calibration coefficient
- **Comment on Pedestals:**
 - Pedestal will be removed from calibration requirements if they are subtracted online

Detector experts, Terry Awes, David Silvermyr, will think next months on all these missing points.

Reconstruction tasks

		Log		↳ Reconstruction (194)	jennifer.klay	-	01/01/2006	-	01/01/2008
		Log		↳ General (195)	jennifer.klay	-	01/01/2006	01/09/2006	23/03/2006
		Log		↳ ESD (196)	jennifer.klay	-	01/01/2006	19/12/2006	05/03/2007
		Log		↳ Check memory consumption of reconstruction (219)	jennifer.klay	-	01/01/2006	09/09/2007	01/09/2007
		Log		↳ gALICE (1278)	jennifer.klay	-	25/01/2007	17/03/2007	05/03/2007
		Log		↳ Derivation of the RecPoint/Cluster class from the new AliCluster (1696)	jennifer.klay	jennifer.klay (100%)	26/04/2007	-	01/09/2007
		Log		↳ Implementation of local reconstruction for single event (1705)	jennifer.klay	jennifer.klay (100%)	26/04/2007	03/09/2007	01/09/2007
		Log		↳ Move track-matching parameters to AliEMCALRecParam (1811)	jennifer.klay	-	20/08/2007	-	01/11/2007
		Log		↳ Move PID parameters to AliEMCALRecParam (1812)	jennifer.klay	-	20/08/2007	-	01/11/2007
		Log		↳ Remove TMinuit fitting from AliEMCALRawUtils, implement fast algorithm (1813)	jennifer.klay	-	20/08/2007	-	15/10/2007
		Log		↳ Benchmark reconstruction, task by task (where is time bottleneck?), report findings/solve problem (1814)	jennifer.klay	-	20/08/2007	-	01/10/2007
		Log		↳ Implement cluster unfolding in AliEMCALClusterizerv1 (1815)	jennifer.klay	-	20/08/2007	-	01/01/2008

Sim/RAW/QA/EVE/GEO tasks

		Log		↳ Simulation (198)	jennifer.klay	-	01/01/2006	-	01/01/2008
		Log		↳ Digits (199)	jennifer.klay	-	01/01/2006	-	01/01/2008
		Log		↳ Trigger (192)	jennifer.klay	gustavo.conesa (100%)	06/03/2006	04/03/2007	05/03/2007
		Log		↳ RAW Data Format (1277)	jennifer.klay	-	01/01/2006	25/01/2007	25/01/2007
		Log		↳ Quality Assurance (1347)	jennifer.klay	-	01/01/2006	-	15/07/2009
		Log		↳ Doc (201)	jennifer.klay	-	10/12/2006	12/12/2006	11/12/2006
		Log		↳ Event Display (1289)	jennifer.klay	-	25/01/2007	-	01/03/2008
		Log		↳ Raw data display (1290)	jennifer.klay	David.Silvermyr (100%)	25/01/2007	16/05/2007	01/01/2008
		Log		↳ Incorporate EMCAL to eve in compiled code (currently just done via macros) (1818)	jennifer.klay	-	20/08/2007	-	01/03/2008
		Log		↳ Geometry (1318)	jennifer.klay	-	29/01/2007	-	31/03/2009
		Log		↳ Geometry as installed (1319)	jennifer.klay	-	29/01/2007	-	31/03/2009
		Log		↳ Re-write AliEMCALGeometry for final design (1816)	jennifer.klay	-	20/08/2007	-	01/09/2007
		Log		↳ Include space frame and strongback in geometry definition (1817)	jennifer.klay	-	20/08/2007	-	01/09/2008

Global reconstruction integration (Jenn)

Task 1696: Making AliEMCALRecPoint inherit from AliCluster

-Coding is done but we are completing some tests before it is committed to CVS.

-Will implement EMCAL cluster display in AliEve.

-This should be complete by the end of the week (12.10.07)

Task 1705: Local reconstruction for single events

-Done as of 03.09.2007

Task 219: Check memory consumption of reconstruction

-Holes were plugged during the summer

-Declared done as of 09.09.2007, but we will likely revisit this problem.

Code/Reconstruction improvements (Jenn)

Task 1816: Update AliEMCALGeometry

- Remove all of the "extra" test geometries and implement only the final geometry (done)
- Some final tests before commit to CVS (in progress)
- Should be complete by the end of offline week (12.10.07).

Task 1814: Benchmarking of EMCAL reconstruction

- Sidetracked by the search for memory leaks in other places (that was preventing us running reconstruction of HIJING simulations for CD-2.)
- Currently in the middle of EMCAL beam tests - the data analysis will try new raw data fitting procedures to replace the calls to TMinuit which are likely the culprit for our large share of CPU time.
- Expectation for completion: 01.12.07

RecParam updates

- AliEMCALRecParam defined/introduced by Yuri in summer
 - Originally, parameters stored in \$ALICE_ROOT/EMCAL/RecParam
 - Discussing with Alberto, keep only 3 directories with OCDB data: Align, Calib and Config
 - Moved PHOS and EMCAL RecParams to EMCAL(PHOS)/Config/RecParam
- Need to use GRP to select the appropriate parameters for each run.
- Right now only available by default PbPb parameters
 - Need to commit a file with the pp parameters.

Planned changes in AliESDCaloCluster

Most urgent change

- Looking to HIJING simulations we realized that we were too conservative on the indeces size.
- Need to change `TArrayS fLabels` to `TArrayI fLabels`.
- Not very important backward incompatibility
 - Reading of data generated with previous release does not break.
 - Only problem is in the calorimeters code, not able to read MC labels
 - There are few warnings when reading the data.
- Can we proceed?

Planned changes in AliESDCaloCluster

- Discussing with Markus (discussions still ongoing) we decided for AOD
 - Base class : AliAODCluster: energy and position data members
 - AliAODCaloCluster: Like actual AliESDCaloCluster without digits amplitudes, indeces lists.
 - Need to add reference to digits amplitudes stored in new class.
 - AliAOD(Towers), (need new name): Contains the lists of amplitudes and tower/cell indeces.
 - For calibration and jets we don't need to go to cluster loop, better to have a separate branch.
 - AliAODFMD/PMD ...
- We thought it is better to keep the same structure at the ESD level.
 - Problem: **Backward incompatibility.**
- Can we proceed? When is the right moment?

Summary/Plans

- Most important missing tasks (Geometry, Alignment, Reconstruction) are complete or to be completed soon. Thanks to Jenn.
- Calibration tasks under investigation by experts, Terry et al. Expected improvements in next months.
- Together with beam-test analysis we will proceed to finish other tasks
 - PID and Track-Matching parameters storage in RecParam.
 - Implementation of the cluster unfolding in the clusterizer.
 - Replacement of TMinuit in Raw reconstruction.
- Incorporate EMCAL in the QA frame
- Use GRP to access reconstruction parameters.
- Recheck code speed/memory improvements.
- Update trigger code with new trigger hardware implementation.
- ...