



EMCal Status

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EMCAL status @ Point 2

- 4 Super Modules installed
 - 2 SM in C side, installed in March
 - 2 SM in A side, installed in July
- Readout situation not very stable until last week, we went busy often.
- With C side only (2 SM), we can run in the global partition for long time.
- A side has some problems with FEE/RCU cards to be solved in next Cavern access on Wednesday.
- Plans:
 - Try to stabilize 4 SM as soon as possible.
 - Fully commission trigger: STU and TRU. Expect to need to commit decoder updates later this week after firmware development is done.

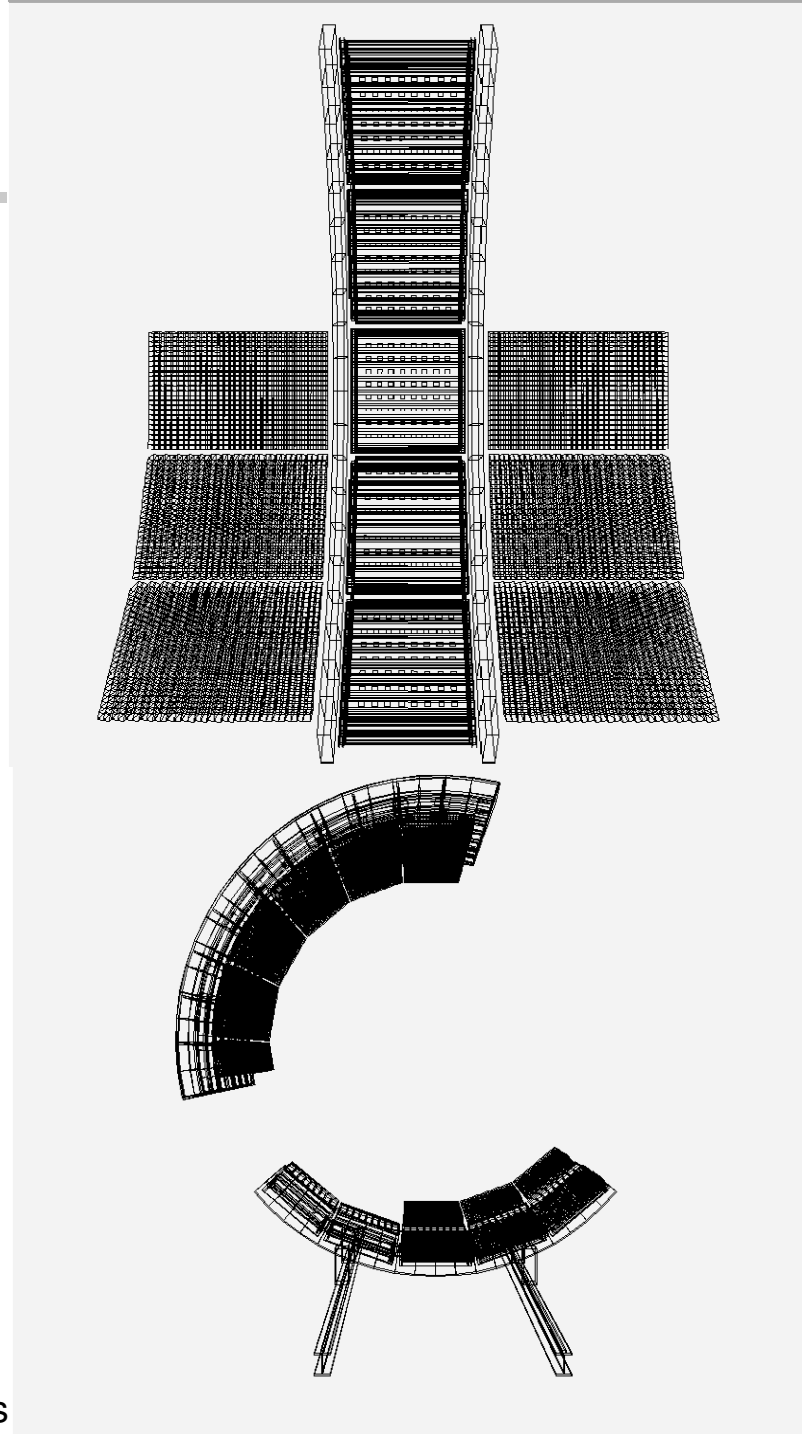
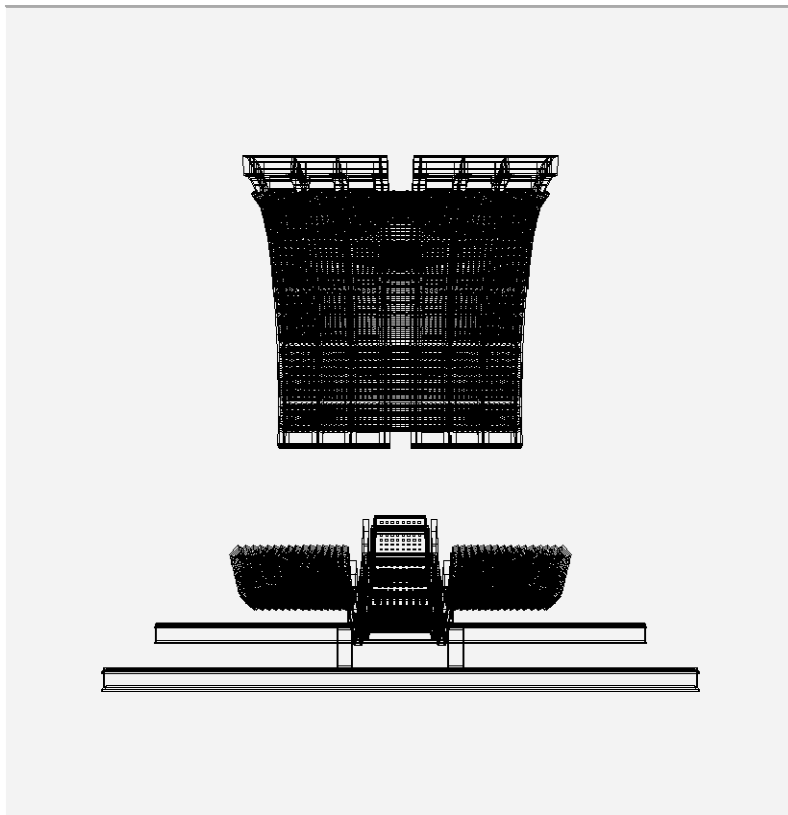
Geometry tasks

Geometry as installed (1319)	jennifer.klay	-	29/01/2007	-	31/03/2009
Finalization of the detector geometry: testing of spaceframe and checking for overlaps (2533)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
Move geometry to new EMCAL library for analysis tasks access. (2626)	gustavo.conesa	Magali.Estienne (100%)	18/06/2009	27/08/2009	31/07/2009

- **Task 1319: Geometry as installed**
 - 4 SM: $80^\circ < \phi < 120^\circ$, $-0.7 < \eta < 0.7$
 - In Charge Jenn, new expected due date 31/10/09
- **Task 2533: Finalization of the detector geometry checking for overlaps.**
 - Detector geometry implemented is ideal.
 - Space frame implementation is OK.
 - Need survey data to test misalignment in software, check overlaps.
 - In charge Jenn, new expected due date 31/11/09
- **Task 2626: Move geometry to independent library for analysis.**
 - Done during summer in trunk and working for analysis.

XCal geometry

- First attempts to create Geometry for the EMCAL extension.
- Meng-liang (Wuhan) in charge.



Simulation tasks

... Handling of the time information from hits during digitization (2534)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Account for detector response in the time information stored in digits (2535)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Implementation of track references (2536)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
... Verification of event merging procedures (2537)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Correct treatment of the detector signal in the sdigits for event merging ... Implementation of the embedding methods (2538)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Correct detector response, GEANT and FLUKA (2627)	gustavo.conesa	-	18/06/2009	-	30/09/2009

- **Task 2538: Correct treatment of detector signal in sdigits correct event merging implementation**
 - Keep as SDigits not the digitized signal (energy+cell+time) but simulated altro sample (sample of ADC counts per time bin).
 - Needed also for correct trigger simulation.
 - In Charge Rachid, expected new due date 30/11/09
- **Task 2537: Verification of event merging procedures**
 - With present definition of sdigits merging is working
 - Need to implement event embedding.
 - Merging method will change when Task 2538 finished.
 - Expected due new date 30/11/09
- **Task 2534: Handling of the time information from hits during digitization**
 - Simple method to associate time to a digit. New method needed.
 - Nobody in charge, to be done after redesign of sdigits in task 2538 is done.

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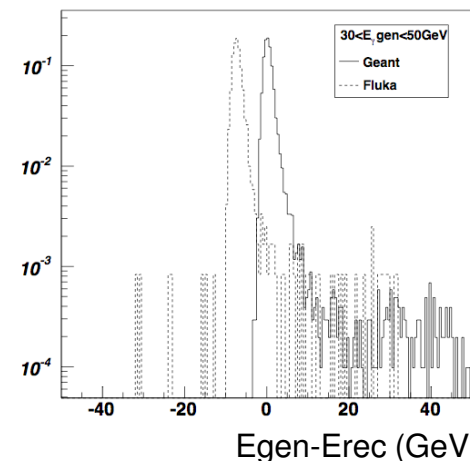
■ Task 2627 : Correct detector response.

- GEANT simulations and beam test show a few % discrepancy.
 - A correction approach defined: Correct at the digit level, knowing the resolution measured in simulation and beam test.
 - Wait for digits modification to implement this.
- FLUKA simulations show unexpected bigger reconstructed energy than generated.
 - Ivana found that cuts for GEANT4 and FLUKA were default, not same cuts as for GEANT3, maybe this cures discrepancy, not checked.

Para ver esta película, debe disponer de QuickTime™ y de un descompresor.

■ Task 2535: Implement realistic time resolution in digits.

- In the code now we have a time resolution of 0.3 ns
- David found a time resolution varying with amplitude, and a value of about 0.6 ns for LED signals in 2007 beam test, comparing adjacent towers.
- Need to check dependency with tower amplitude. We expect amplitude not to be a simple number but a function of the amplitude.
- In charge David, new expected due date 30/11/09



Trigger tasks

... Implementation of the code for trigger parameters for the simulation of the trigger input to the CTP (2548)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Testing of trigger simulation with raw data (2549)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
... Update trigger simulation class with realistic hardware description (2628)	gustavo.conesa	gustavo.conesa (100%)	18/06/2009	-	31/07/2009

- **Task 2628 : Update trigger simulation tasks**
 - AliEMCALTrigger needs to be updated
 - Do not work as designed hardware
 - Trigger definitions not up-to-date
 - Fix trigger thresholds.
 - Suggested new trigger classes:
 - AliEMCALTrigger, manager class
 - AliEMCALTriggerBoard, defines trigger subregions, deriving
 - AliEMCALTriggerTRU and AliEMCALTriggerSTU
 - AliEMCALTriggerPatch (x, y, sum): performs the patch
 - AliEMCALTriggerData: contains triggering data to be stored in the digit tree for post processing.
 - AliEMCALTriggerParam: subregion, patch sizes; FastOR responds, time window width ...
 - Need modification of sdigits and digits simulate to triggers, simulation Task 2538
 - Sdigits should be pulse-shape like
 - New branch at the digits level to consider "trigger digits"
 - Rachid in charge, expected data 30/10/09
- **Task 2548: Implementation of the trigger parameters in OCDB.**
 - Depends on previous task.
 - In charge Rachid, expected new due data 30/10/2009
- **Task 2549: Testing of trigger simulation with raw data**
 - Depends on first task and existence of data.

Reconstruction tasks

Global tracking integration (2258)	jennifer.klay	-	01/01/2008	01/01/2009	01/09/2008
PID finalization: recalculations of parameters after digitization (2541)	jennifer.klay	jennifer.klay (100%)	16/03/2009	07/07/2009	30/05/2009
Verification of PID performance for pp (2542)	jennifer.klay	jennifer.klay (100%)	16/03/2009	07/07/2009	30/05/2009
Verification of PID performance for PbPb (2543)	jennifer.klay	jennifer.klay (100%)	16/03/2009	07/07/2009	30/05/2009
Implementation of RecoParams: cosmic, high flux, low flux, calibration (2540)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009

- Task 2540: Implementation of reco params:
 - Different cases implemented, cosmic=calibration=low flux.
- Task 2541(2,3): PID
 - PID Finished during summer. Results shown on PWG4.

Reconstruction tasks

Dead channels in reconstruction (2629)	gustavo.conesa	-	18/06/2009	-	30/06/2009
Study effect of dead channels in reconstruction (2630)	gustavo.conesa	-	18/06/2009	-	30/09/2009
Study effect of real misalignment in reconstruction (2631)	gustavo.conesa	-	18/06/2009	-	31/07/2009
Track matching improvement (2632)	gustavo.conesa jennifer.klay (100%)	-	18/06/2009	-	31/07/2009
Cluster unfolding for $\eta \neq 0$ (2633)	gustavo.conesa	-	18/06/2009	-	31/07/2010

- Task 2632: Track matching improvement
 - Low electron matching efficiency found in grid productions.
 - Improvements developed at the analysis level, to be ported to reco??
- Task 2633: Cluster unfolding implementation for $\eta \neq 0$
 - Implemented the "simple" case $\eta = 0$
 - Nobody in charge right now, not urgent task, expected due date next year.
- Task 2629: Dead channels in reconstruction
 - Dead channels map creation procedure defined, but needs to be validated (David).
 - During this week I will try to implement access to map in reconstruction.
- Tasks 2630 and 2631: Study effect of dead channels and misalignment in reconstruction.
 - Depend on tasks 2629 and 2533
 - Jenn in charge, expected due date 30/11/09

Raw data

Finalization of Raw Data format (2539)	jennifer.klay	jennifer.klay (100%)	16/03/2009	01/08/2009	30/05/2009
Raw data fast fitting (2634)	gustavo.conesa	Aleksei.Pavlinov (100%)	18/06/2009	-	31/07/2009

- **Task 2539: Finalization of Raw Data format:**
 - New RawReader from Cvetan is used in the CaloRawReaders, thanks to Yuri. Data taken in the pit with raw format v3. I set it to done.
- **Raw reconstruction from data taken.**
 - First tests with small samples, it seems to work.
- **Task 2634: Raw data fitting**
 - Now: TMinuit used, too slow, too dependent on initial parameterization.
 - New procedure implemented. Tests show 40 times faster performance of this code and event a bit better accuracy than standard fitting procedure.
 - Need to set the fitting parameters, for that we need to check shape of pulses with data from calorimeters installed.
 - Find for each channel 2 parameters and put them in OCDB.
 - In charge Alexei, expected due date, not clear since it depends on accumulated and trustful data. For the moment 31/11/09.

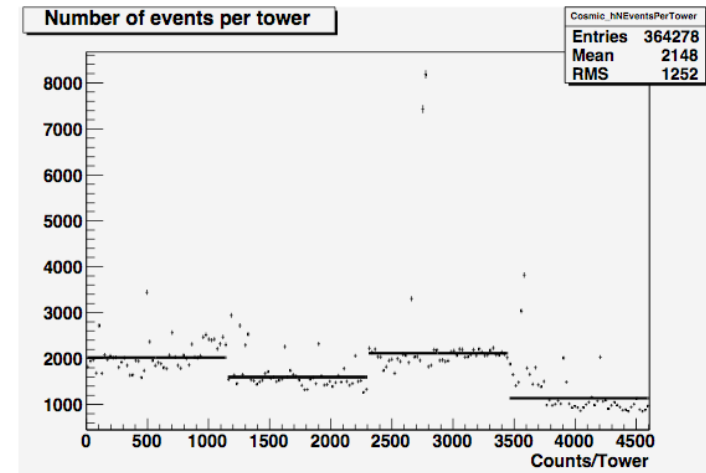
QA

Reference distribution (2314)	jennifer.klay	jennifer.klay (100%)	23/05/2008	-	27/06/2008
Raw data QA (2337)	jennifer.klay	-	07/07/2008	01/05/2009	29/08/2008
Implementation of reconstruction in dataMaker (2550)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
Implementation of run type (2551)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
Implementation of simulation in QA checker (2552)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
Implementation of reconstruction in QA checker (2553)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
Implementation of reference data (2554)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009
Add MC QA ESD histograms, create QA analysis task that calls the QA frame (2635)	gustavo.conesa	-	18/06/2009	-	31/08/2009
Extract QA data from large Monte Carlo production (2642)	jennifer.klay	jennifer.klay (100%)	08/07/2009	-	15/08/2009

- Person in charge of QA left collaboration, need to find other, Raw QA used in AMORE online; work done by David, Francesco and Yaxian with helpful input from Yves
- Task 2551 and 2554: Implementation of run type and reference data
 - Need to produce data to generate reference histograms, p+p and Pb+Pb data available on the grid.
- Task 2642: Extract QA data from MC production:
 - Done in analysis tasks.
- Task 2635 (new): Add MC QA ESD histograms, create QA analysis task that calls QA frame from analysis.
 - Lots of new QA histograms used in EMCAL production validation and implemented in class PWG4/PartCorrDep/AliAnaCalorimeterQA
 - Must be moved the code and histograms to the QA frame when checking the ESDs
 - Also we have to write an analysis task that should execute the QA after the reconstruction.

- Need also to define better what histograms are for shifters and what are for experts. So far for Raw, we have focused on expert plots.
- Available histograms:
 - **Raw:** Now only 1 shifter plot (new from last week, thanks to Yaxian), 30 expert plots (before shifter). To be moved to release.
 - **Hits:** 2 plots, non expert.
 - **(S)Digits:** 2 plots, non expert.
 - **RecPoints:** 3 plots, non expert.
 - **ESD:** 4 plots
 - In class AliAnaCalorimeterQA many more, mainly MC histograms, to be added there.

New raw Data Shifter plot



Calibration: Shuttle

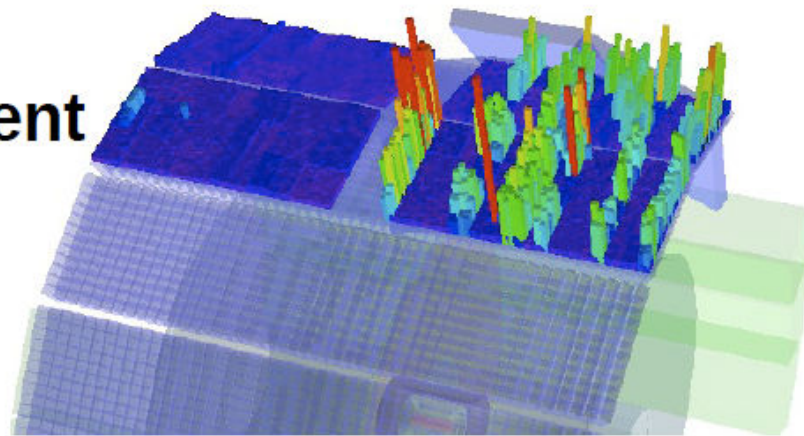
SHUTTLE (220)	gustavo.conesa	gustavo.conesa (100%)	01/01/2006	-	30/11/2009
preprocessor algorithm implemented for use case 1/2 (221)	gustavo.conesa	gustavo.conesa (100%)	01/01/2006	-	30/11/2009

- Shuttle Task (221, 2547): preprocessor implemented for use case 1/2
 - DAs (LED, PEDESTAL, Dead Map) run online at P2 for some time, and output picked up by preprocessor. Whole online calibration chain to be validated over next weeks (see next slide).
 - We want to add a new DA for Pi0 calibration
 - Use DA from Hisa (PHOS, recently committed), to be tested and then used over next months.
 - This DA could be also implemented in the HLT
 - Missing HLT part of this task
 - Port offline calibration code or Hisa's DA to HLT
 - Need to move due date to 31/11/09
- DCS buffer: the points we take (temperature) are stable, buffer size is not so relevant. No changes needed in preprocessor.

HLT status

Slide picked up from HLT presentation at technical forum

- **Basic HLT chain with the extraction of tower energies**
 - ready and implemented.
 - Successfully tested in Mode B/Test2.
- **Common PHOS & EMCAL software factored out to a common CALO library.**
- **Work ongoing to implement**
 - fast clusterization
 - Jet triggering



Calibration: Time dependence

Online (1455)	gustavo.conesa	-	25/01/2007	-	15/08/2008
Provide interface to time-dependent calibration corrections (2329)	gustavo.conesa	jennifer.klay (100%) (+2)	04/06/2008	-	15/08/2008
Use of OCDB parameters in simulation (2544)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
Use of OCDB parameters in reconstruction (2545)	jennifer.klay	jennifer.klay (100%)	16/03/2009	30/05/2009	30/05/2009
Implementation of online calibration procedures (2546)	jennifer.klay	jennifer.klay (100%)	16/03/2009	-	30/05/2009

■ Online Task 1455 (2329,2546): Time dependence online calibration interface

- In charge David, Francesco, Sebastien (and Gustavo), expected new due date 30/11/09
- Main Goal
 - Separate out "time-independent" (overall scale or gain normalization for each tower) and "time-dependent" (e.g. temperature changes) calibrations.
 - "Time-dependent" changes are expected to have a time-scale of updates of approx. once every 30 minutes (We keep 15 minute bins in the LED DA by default), while "time-independent" are expected to be updated maybe a few times per year or LHC Run.
 - To be done in preprocessor, store the found parameters in OCDB
- Schema, working in the preprocessor:
 - Need to retrieve the LED (depending on time) and Temperature info
 - Correction is $ADC_LED(t)/ADC_LED(t_0)$ but if problem with LED, $ADC(Temperature)$ is considered
 - Need to store in OCDB the APD Gain Temperature dependence parameters. This is yearly updated.
- To be done
 - Class AliEMCALCalibTimeDep written but not fully tested. Will add this class to what is run in Preprocessor (will access LED and T info, etc. there) Believed to be mostly ready; but not possible to be fully tested until all pieces were in place (to be completed in next weeks; David)
 - Info for APD calibration and map class, and APD bias class, to be put in OCDB. (David, input from Sebastien+Julien)
 - Offline interface update to take into account the time-dependent corrections calculated in Preprocessor (Sebastien, Gustavo, David)"

Task 2546: Offline calibration

Implementation of offline calibration procedures (2547)

jennifer.klay

jennifer.klay (100%)

16/03/2009

29/08/2009

30/05/2009

- Task: Calibration with Pi0, following PHOS steps:
 - Analysis Class
PWG4/CaloCalib/AliAnalysisTasksPi0Selection.
 - Calls classes: EMCAL/AliEMCALAODCluster, does the recalibration of the AODs.
 - Small tests showed it to be working. Need to be tested with MB production.
 - In order to be tested with real data we need to use calibrated cells amplitude (GeV), now ADC counts.
 - Need update in release from trunk. (Savannah report with changes soon)
- Task: other calibrations, need to be explored for the next years if not possible now, need manpower.
 - Electrons
 - MIPs

TClonesArray Issues

- Federico discovered that AliEMCALoader owns several TClonesArrays.
 - a loader is not supposed to own just to load.
 - // All data are stored in TTrees on file.
 - // These TClonesArrays are temporary storage for reading or writing // (connected to TTrees with SetBranchAddress)
 - TClonesArray *fHits; //! TClonesArray of hits (for tree reading)
 - TClonesArray *fDigits; //! TClonesArray of digits (for tree reading)
 - TClonesArray *fSDigits; //! TClonesArray of sdigits (for tree reading)
 - TObjArray *fRecPoints; //! TClonesArray of recpoints (for tree reading)
- Small effect in the memory consumption, but must be avoided.
- Current version developed 4 years ago by Marco, problematic to get it work at this time.
- Need to solve this in the next weeks/months.