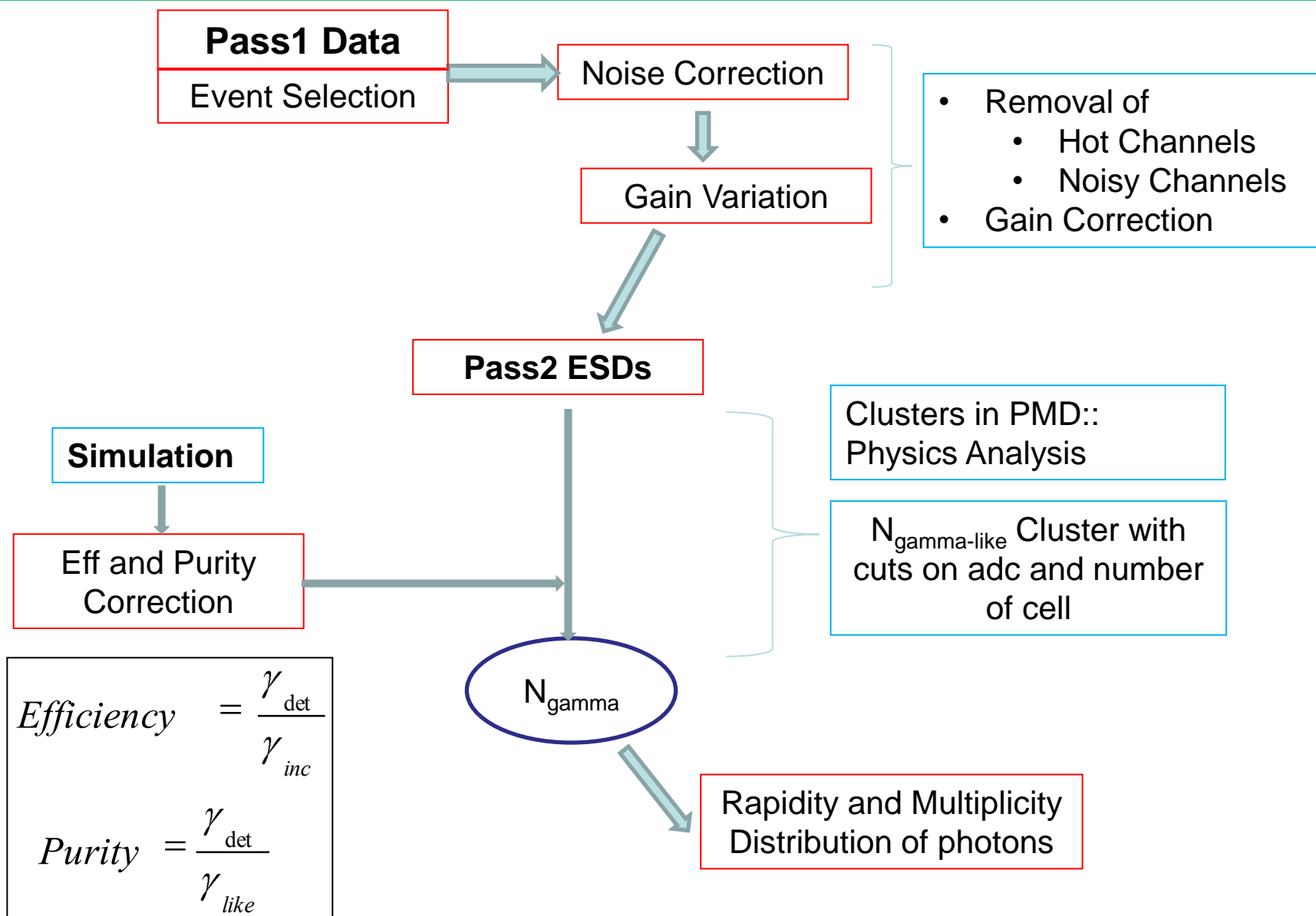


STATUS OF PMD SOFTWARE

ALICE OFFLINE WEEK
July 2010

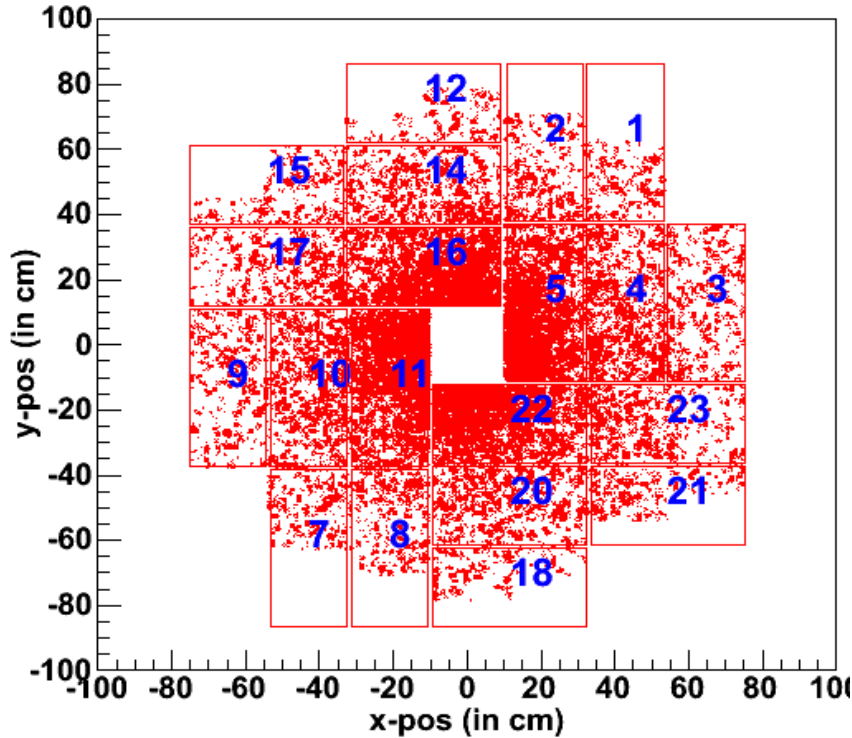
Analysis Flow



$$\text{Efficiency} = \frac{\gamma_{\text{det}}}{\gamma_{\text{inc}}}$$
$$\text{Purity} = \frac{\gamma_{\text{det}}}{\gamma_{\text{like}}}$$

PMD Configuration

PRE Shower Plane

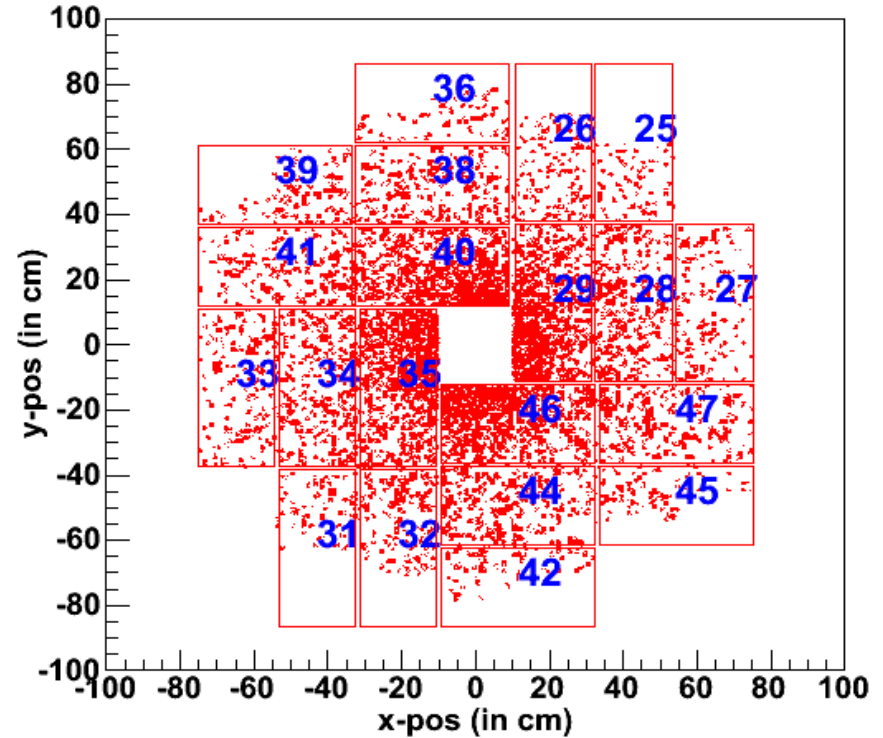


No. of DDLs : 2

DDL # **2304** for module #
1, 2, 3, 4, 5, 18, 20, 21, 22, 23

DDL # **2305** for module #
7, 8, 9, 10, 11, 12, 14, 15, 16, 17

CPV Plane



No. of DDLs : 2

DDL # **2308** for module #
25, 26, 27, 28, 29, 42, 44, 45, 46, 47

DDL # **2309** for module #
31, 32, 33, 34, 35, 36, 38, 39, 40, 41

No. of chains : 100 + 100 = 200

Bug Reports and bug fixes

#69049: Update Hot/Noisy Channel for LHC10c data

#68648: Porting Alignment Codes

#68070: Porting AliPMDHotData, classdef correction

#68067: Update Hot/Noisy Channel for LHC10b data

#66090: Remove gstpar calls

#64534: Modification of PMD-Preprocessor and porting

#64383: Reduce the Number of QA Histogram

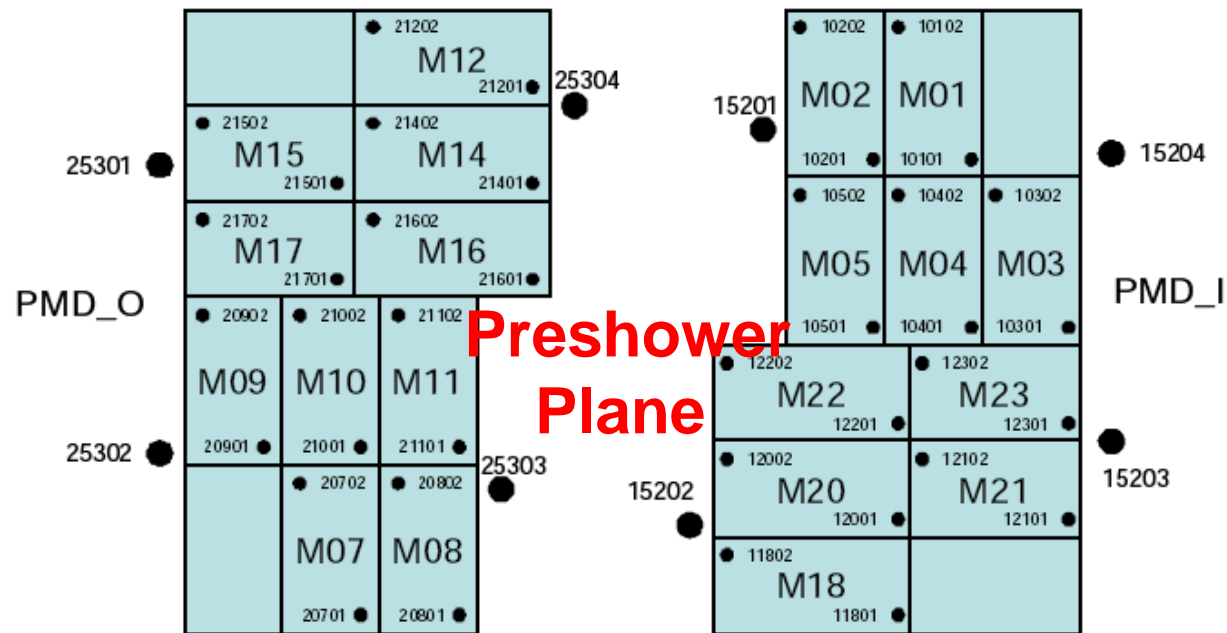
All Bug reports are addressed and closed

Reconstruction:

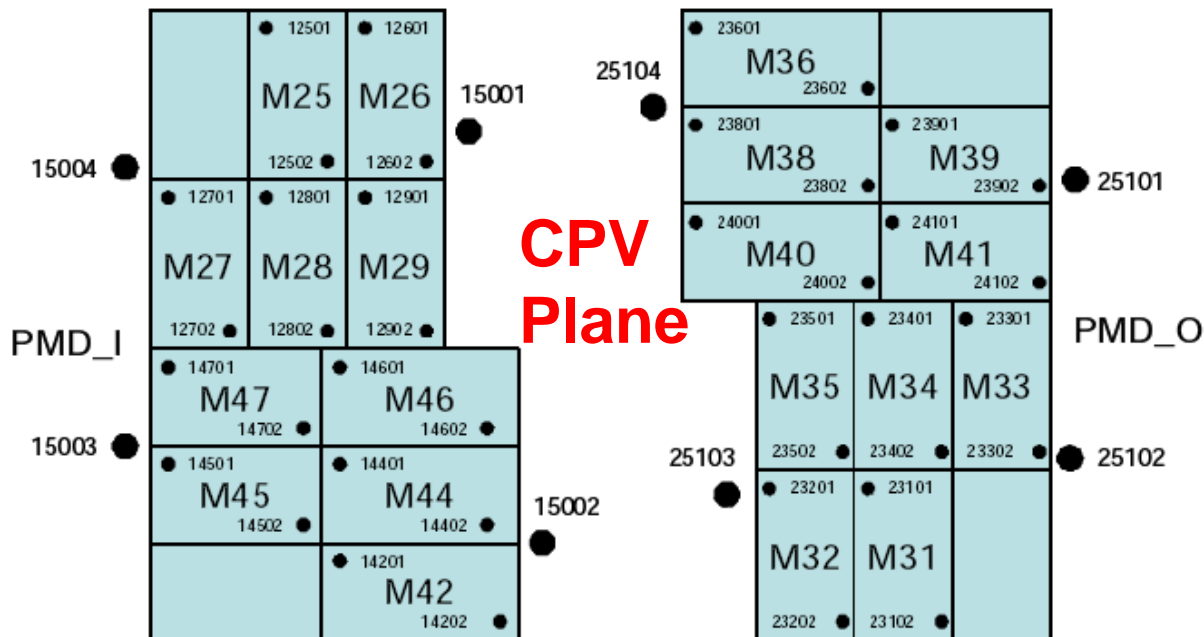
- Modification in the AliPMDClusterFinder Code so that noise cuts can be put in each module individually.
- This is implemented in the data reconstruction by introducing a NoiseCut database file

Code committed and ported to Release

Alignment



- PMD has 4 alignable volumes
- The corresponding matrix elements are stored in the OCDB using TClonesArray
- Two alignment OCDB files are generated from the survey data Corresponding to year 2009 and 2010
- The implementation of the alignment is done in the AliPMDUtility class



Bug#68648, ported and closed

Calibration

Online

There were Bugs in PMD Pre-processor

- DCS Aliases corrected
- Calculation of Gain Problem corrected
- (Bug#64534, code ported to release), Running well at P@2

Offline:

Isolated cells are identified during the reco and stored in ESDs

Isolated Cells are extracted from ESDs and put into 2 Histograms
Per plane (Total 4 histograms)

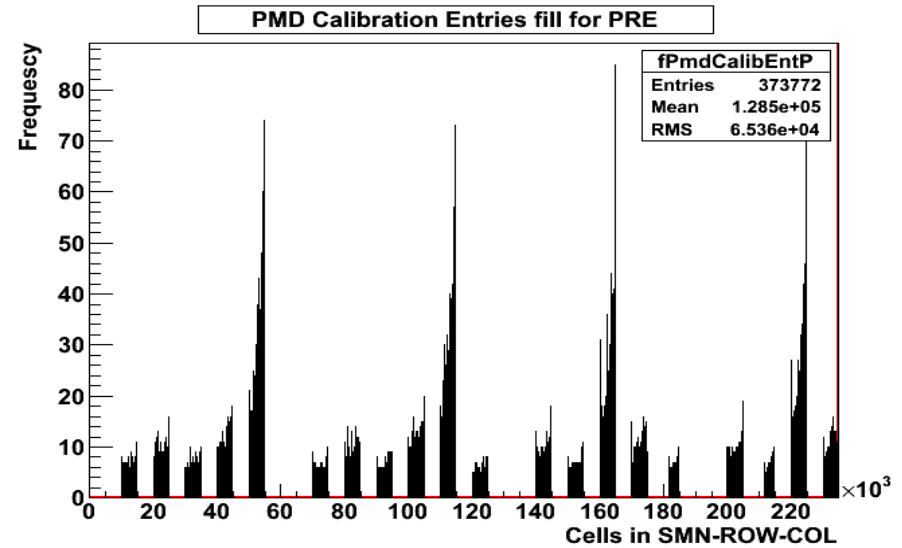
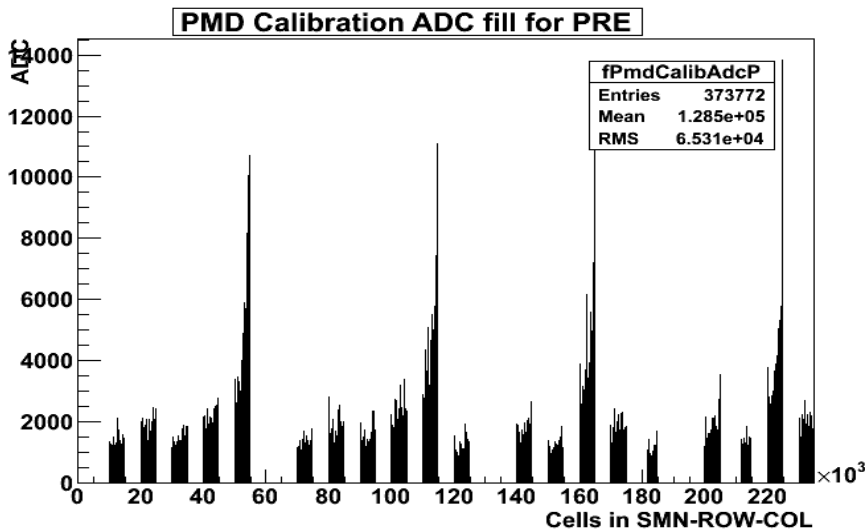
From these two histograms, the relative gain of each cell is calculated
Implemented through AliPMDOfflineCalibration class

AliPMDOfflineCalibration class is inherited from AliAnalysisTaskSE

The code is complete and committed to SVN.

Test is going on. Very soon to put the request in savanah for porting.

Output Histos from the Offline Calibration class:



These histograms are obtained from simulation
First histogram corresponds to the accumulated ADC and
The second one is the number of entries for each cell
From these two histograms the relative gain of each cell
Can be calculated.
Similarly another two histos are for CPV plane

Status of QA

Offline:

New reference histos reduced to 6 from 50

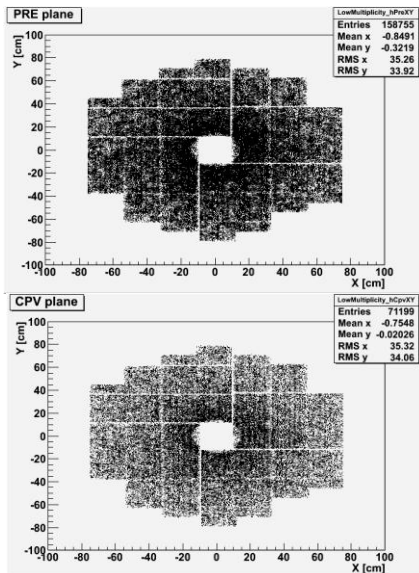
The code is ported to v4-18-Release (Bug#64383)

All the histos are in place except the reference data.

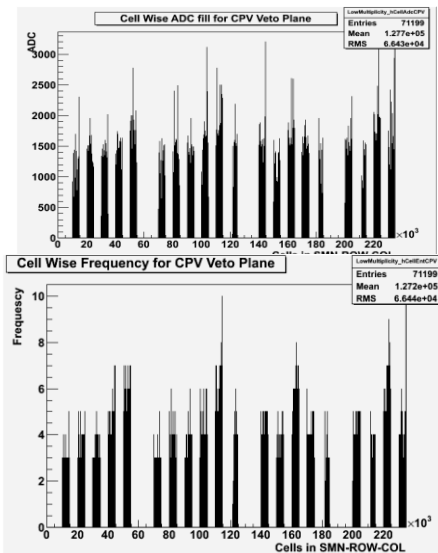
Online:

AMORE is running for PMD.

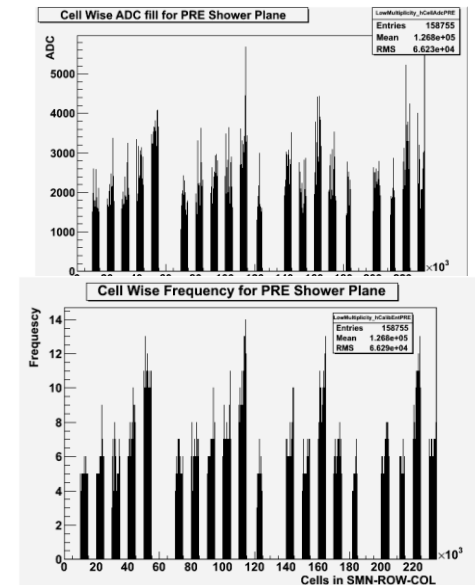
For pmd AMORE uses offline QA class, therefore in online DQM the Number of histograms also reduced to 6 from 50



XY

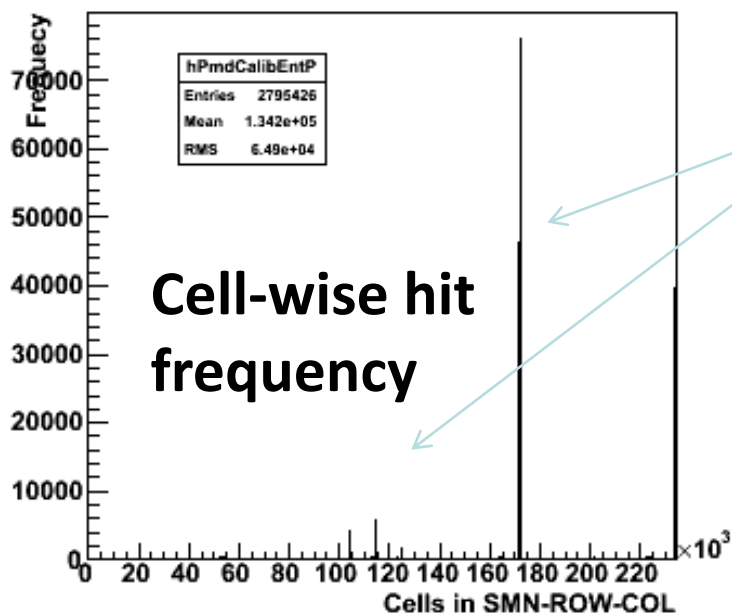


Cell ADC



Hit Frequency

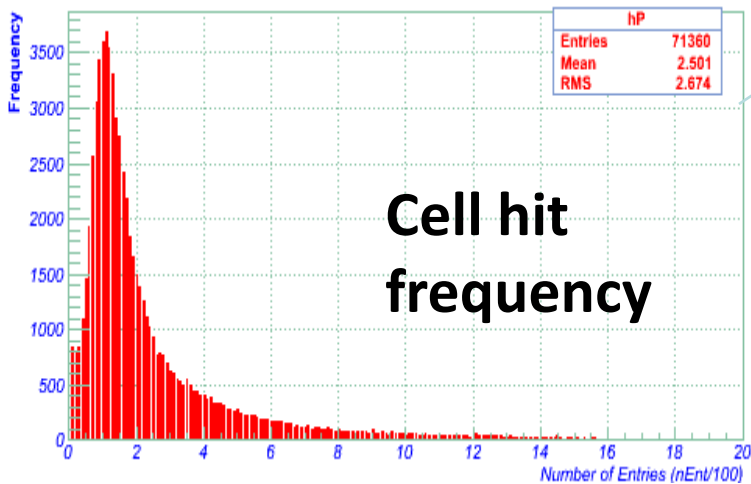
Hot and Noisy Channel Search



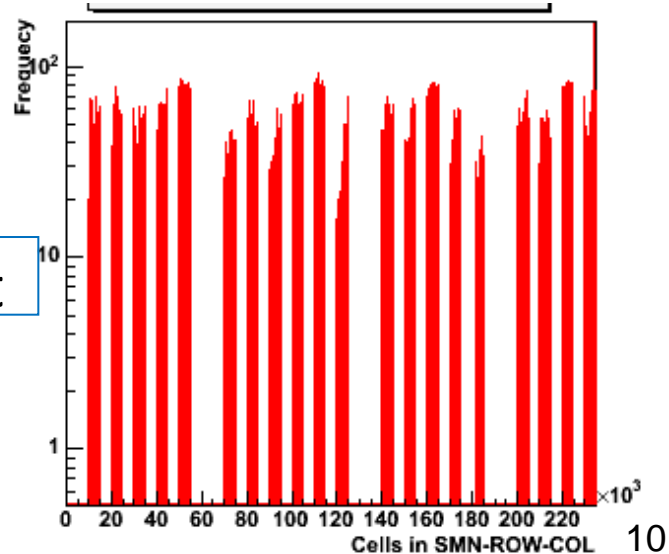
Noisy/hot
Cells

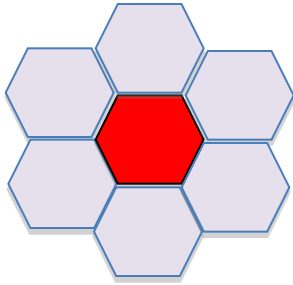
Finished for
(#69049)LHC10b
(#68067)LHC10c

If Hit Frequency $>$ mean
 $+ 5 \times$ RMS



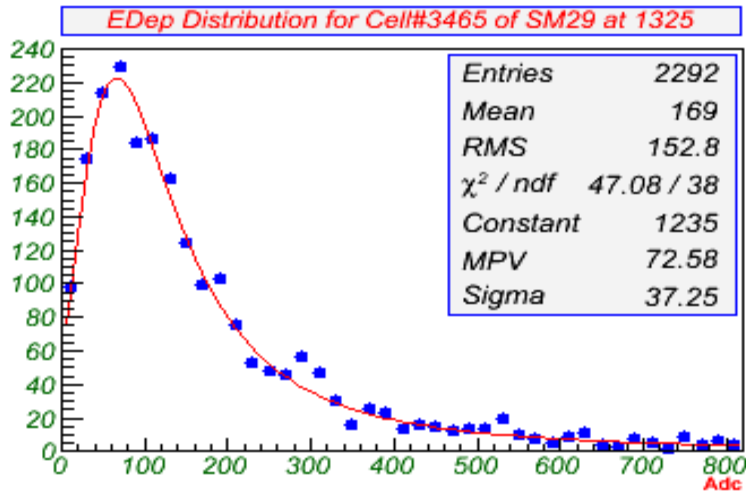
After cut



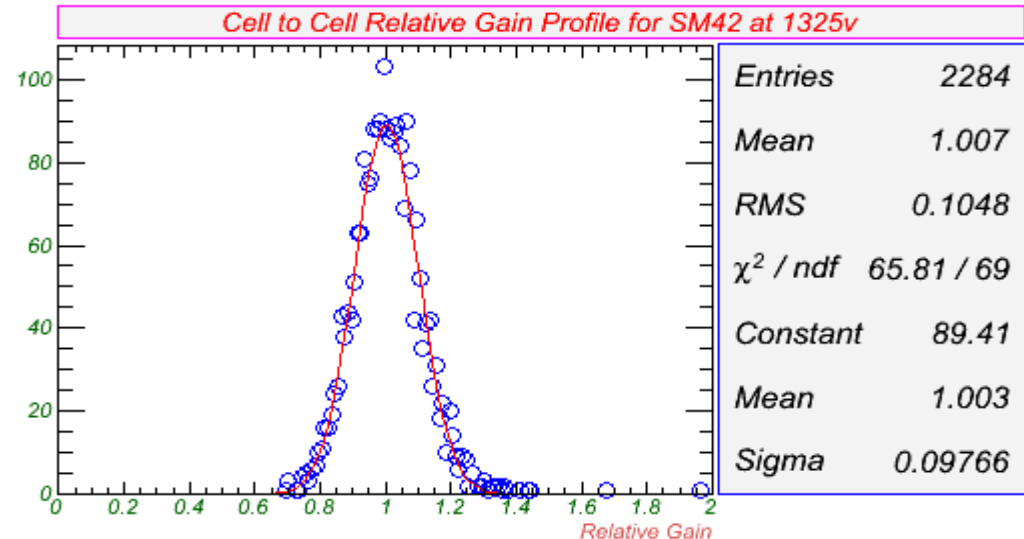
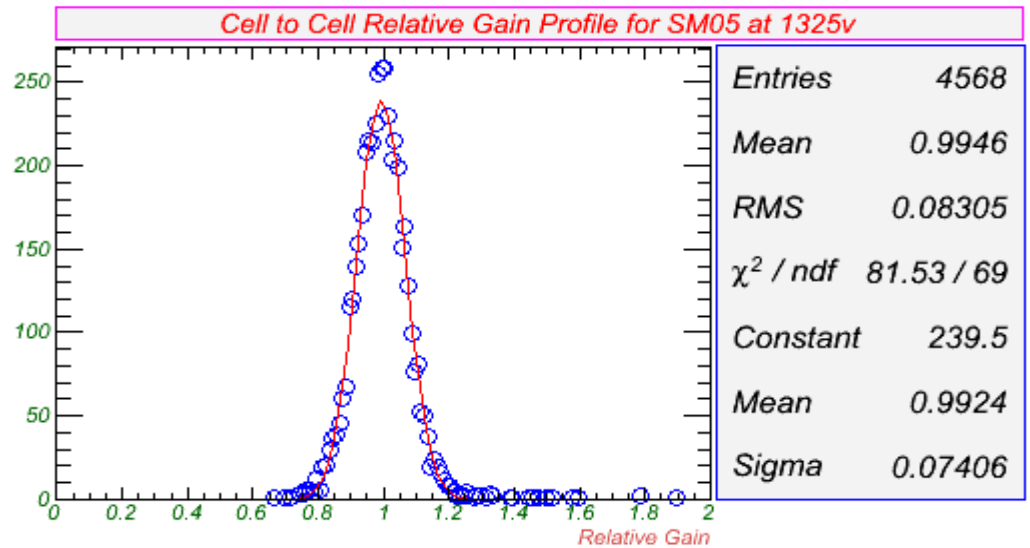


cell-to-cell gain variation After 5M events

Isolated Cell ADC

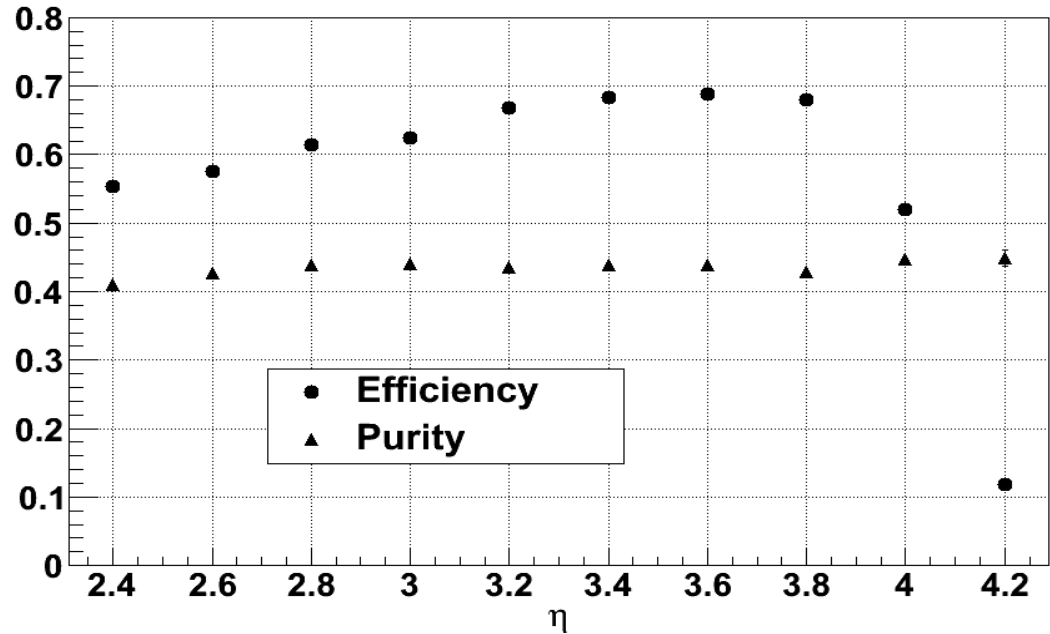


Cell-to-cell gain variation is
< 10% within each module



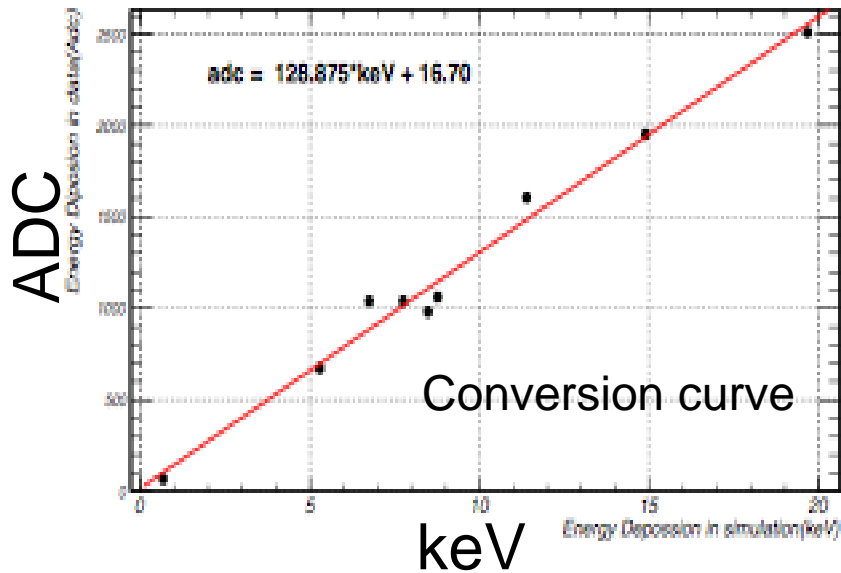
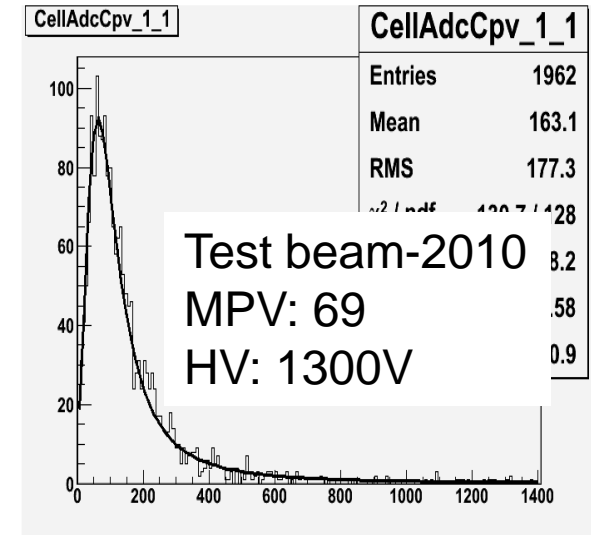
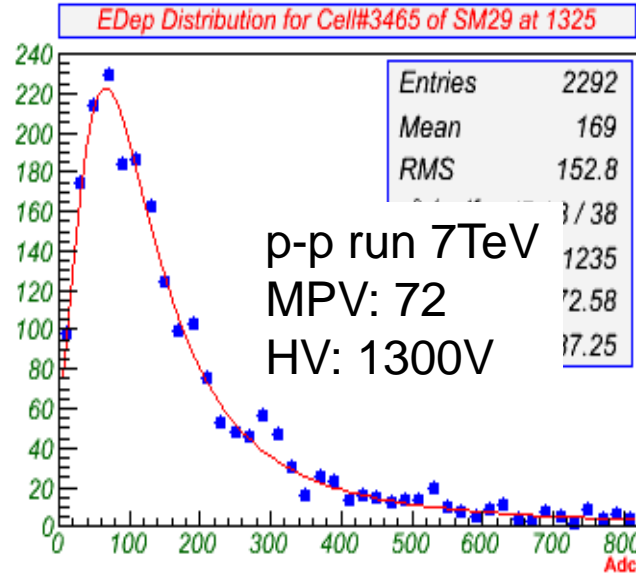
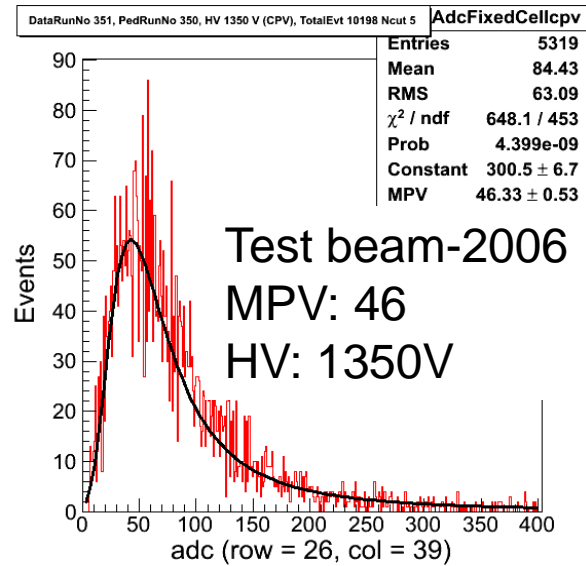
Efficiency and Purity

$$\text{Efficiency} = \frac{\gamma_{\text{det}}}{\gamma_{\text{inc}}}$$
$$\text{Purity} = \frac{\gamma_{\text{det}}}{\gamma_{\text{like}}}$$



Eff. and *Pur* are the important quantities to be obtained from simulation

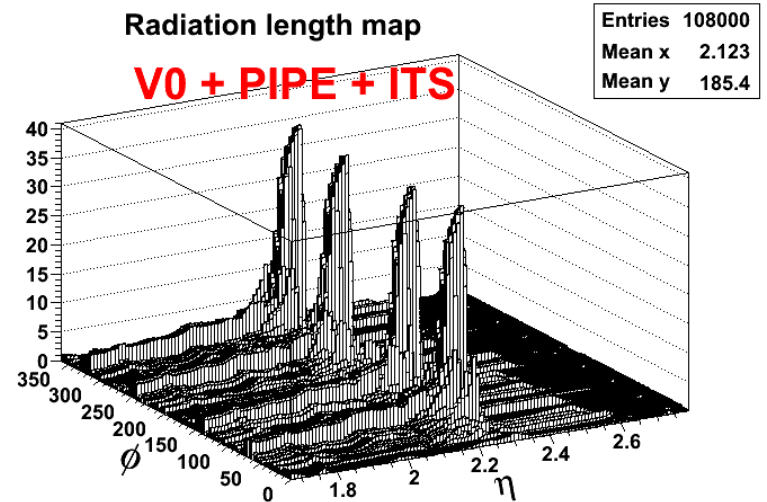
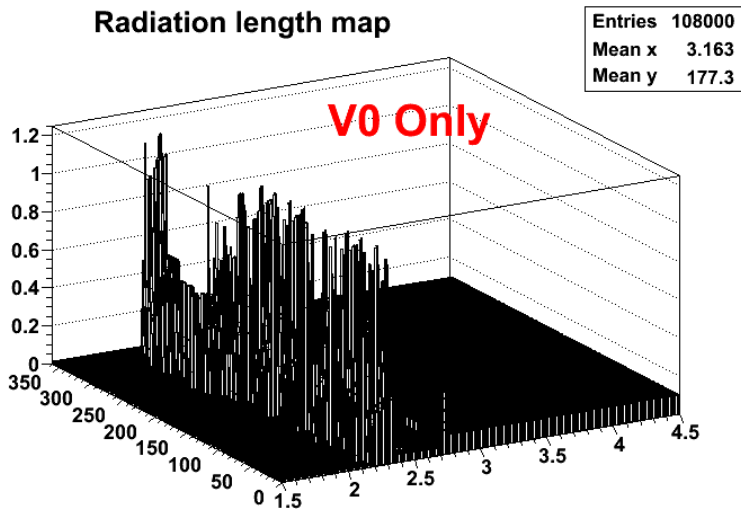
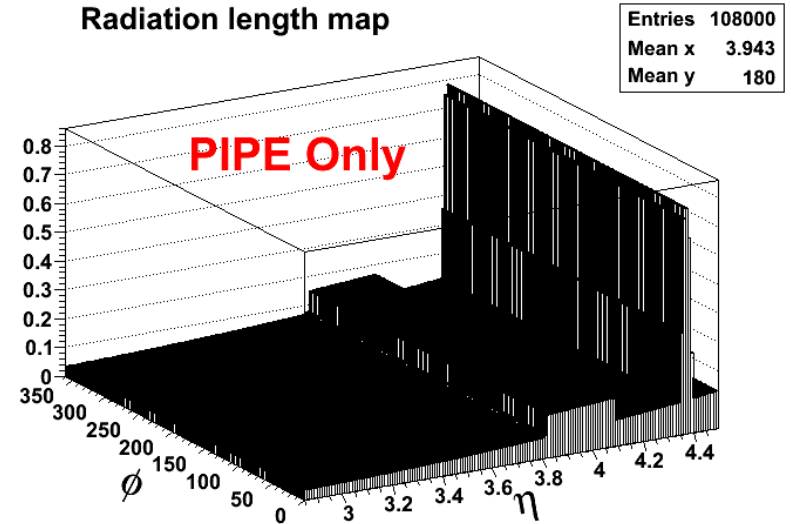
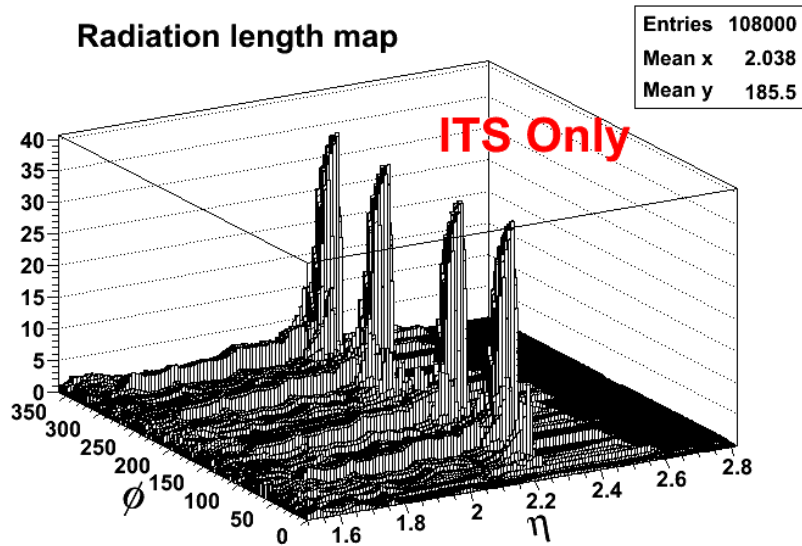
Change in the Conversion factor



New Conversion factors to be submitted to SVN

Eff and Pur: Material Effect

AliRoot from trunk dated: 05-07-2010,



=> REQUEST for new simulation production in order to understand material effect:

- PMD only
- PMD + Beampipe
- PMD + Beampipe + FMD
- PMD + Beampipe + FMD + V0
- PMD + ALL Detectors

- pp at 900GeV (100K each)
- pp at 7TeV (100K each)
- Heavy-ions at 2.75TeV (~50K each)