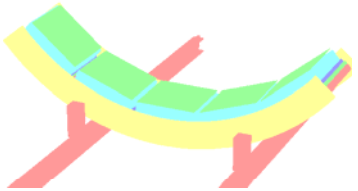
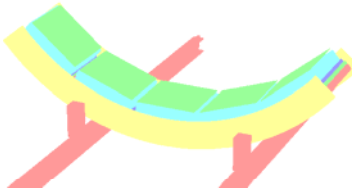


# Experience with ongoing PHOS data taking

Yuri Kharlov

ALICE offline week, FDR session

12 October 2007

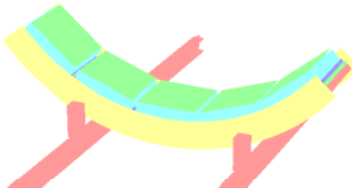


# Current data taking

- PHOS module #2 is installed in the PHOS lab (bldg.167), cooled to –20°C, plugged and takes data almost continuously.
- From the temperature dependence of the light yield, the approximate high gain is 6 MeV/ADC count
- Trigger:
  - Cosmic events with 110x70 scintillator telescope (detects cosmics coming from the top ±25°)
  - LED monitoring system
- Taken data is collected by DAQ to a local disk by 100-Gb chunks, after filling the chunk the data migrates to CASTOR and AliEn.
- So far (12.10.2007) total **5.1 Tbyte** of data is stored in CASTOR
- The path to PHOS data in CASTOR:

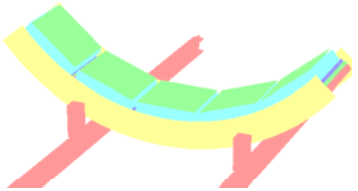
  /castor/cern.ch/alice/phos/2007/
- The path to PHOS data in AliEn:

  /alice/data/2007/LHC07a_PHOS/



# Offline reconstruction

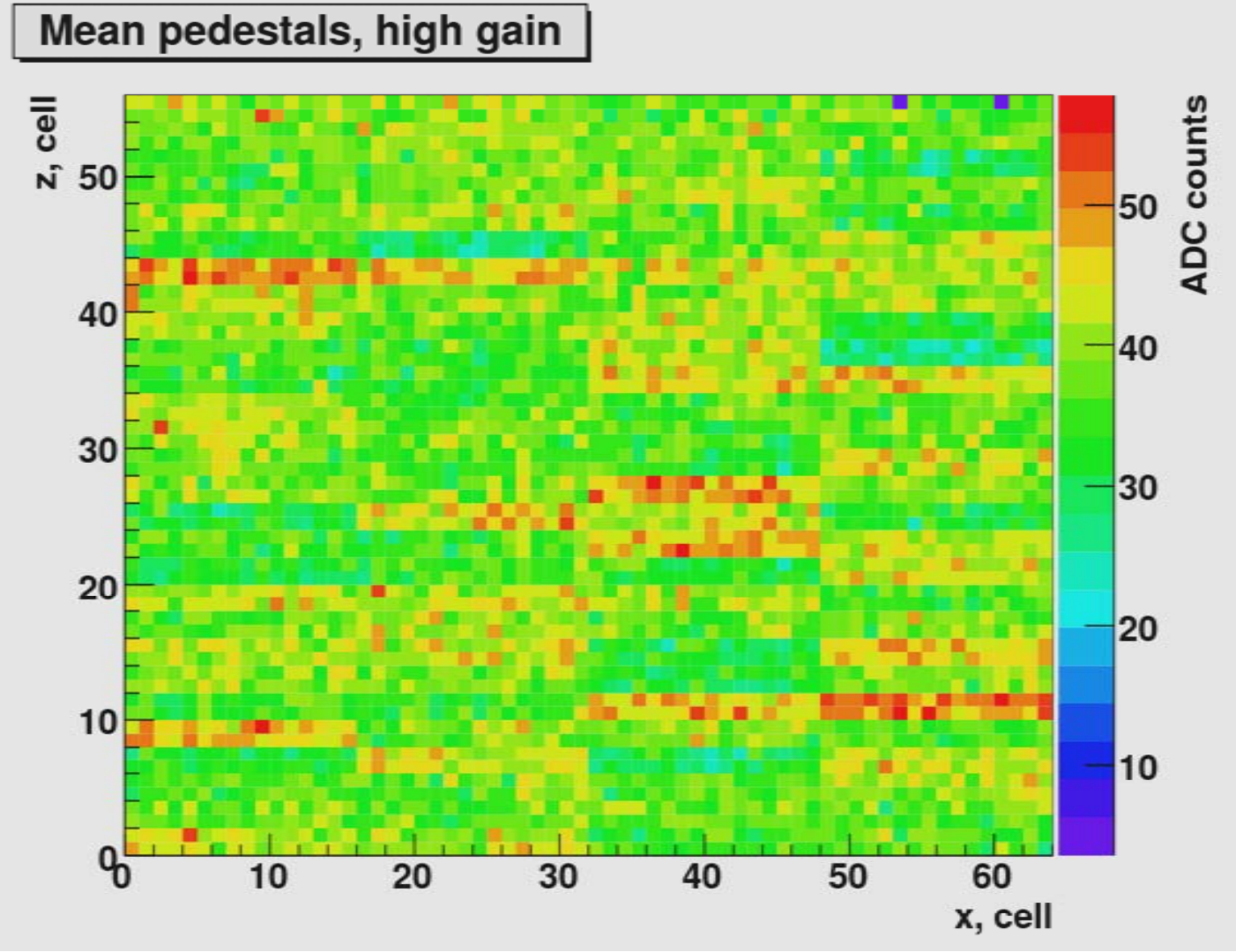
```
AliReconstruction rec ;
rec.SetOption("PHOS","OldRCUFormat");
rec.SetRunTracking("") ;
rec.SetRunVertexFinder(kFALSE) ;
rec.SetRunLocalReconstruction("PHOS") ;
rec.SetFillESD("PHOS") ;

rec.SetInput("rawData.root");

 //  Set non-default rec. parameters
AliPHOSRecoParam* recEmc = new AliPHOSRecoParamEmc();
recEmc->SetSubtractPedestals(kTRUE);
recEmc->SetMinE(0.05);
recEmc->SetClusteringThreshold(0.10);
AliPHOSReconstructor::SetRecoParamEmc(recEmc);

rec.Run();
```



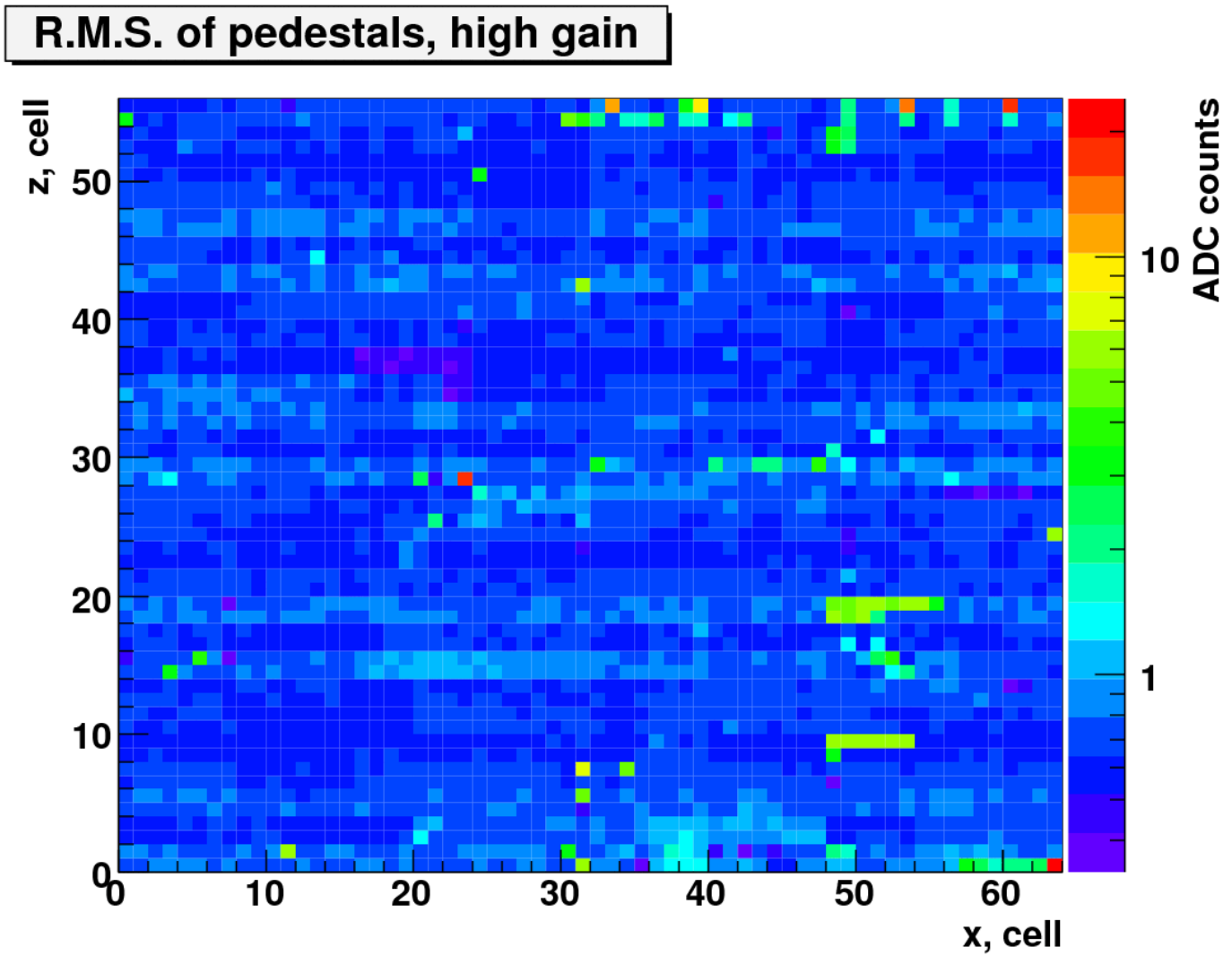
# Offline reconstruction

- Reconstruction procedures are tuned with local data (a disk of 0.5 Tb is available for it).
- Due to wrong RCU firmware zero-suppressed data is corrupted and cannot be decoded. Taken data is non zero-suppressed: 100 times more data than needed.
- We still study the data quality and learn all possible imperfections of FEE. The bad channel map has to be created yet.
- Presence of “noisy” channels, and the noise behavior indicates that all DAs developed so far and tested in simulation have nothing to do with the real life.
- The data decoder and offline reconstruction is being changed too frequently to adapt to the real data. This discards the possibility to use aliroot release for data processing.
- Experience to run bulk jobs is AliEn has been acquired. But reconstruction with aliroot release does not produce any clusters. Aliroot HEAD is not available in AliEn.

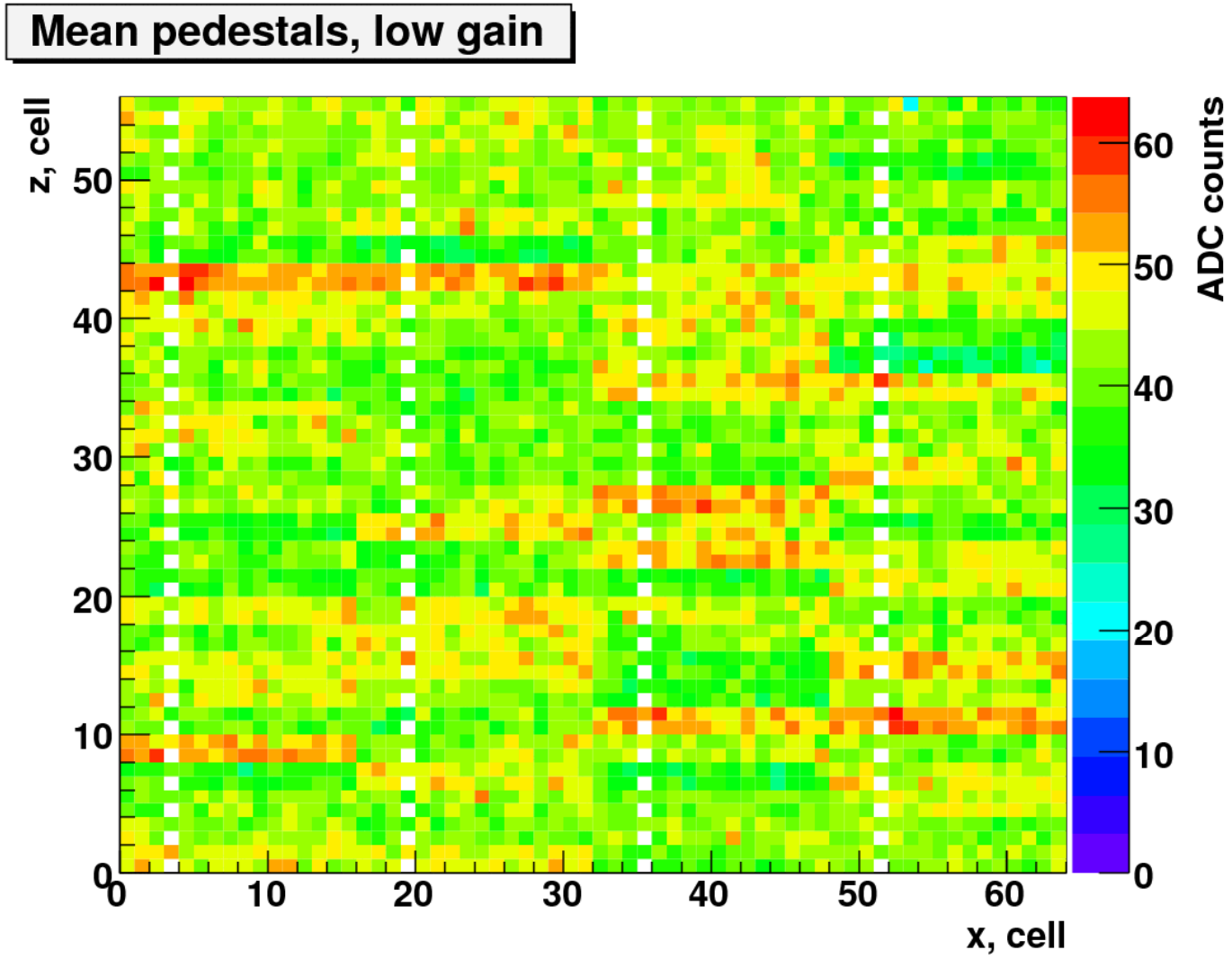
# Results from offline reconstruction: Cosmic RUN 8172 (29.09.2007)



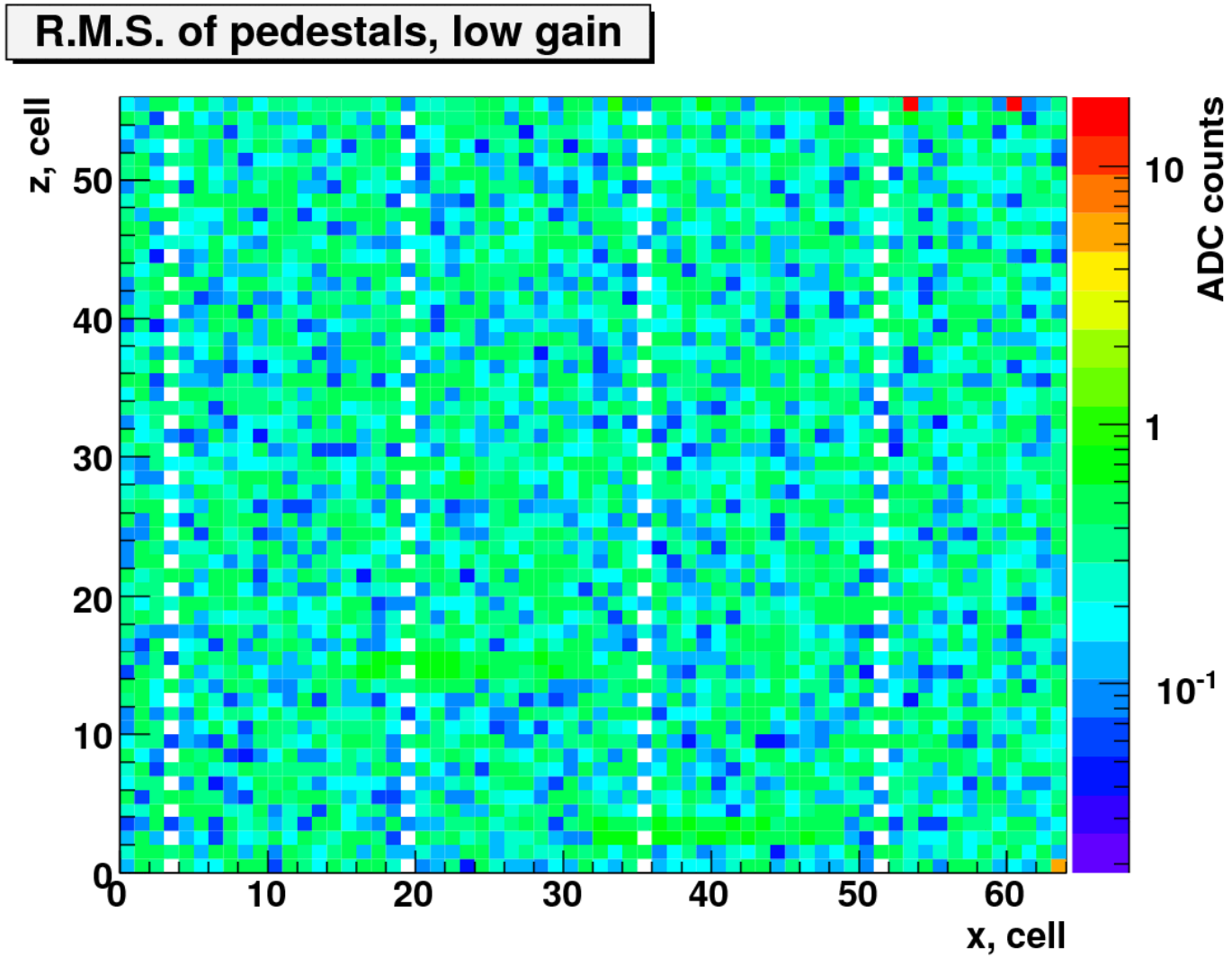
# RUN 8172 (29.09.2007)



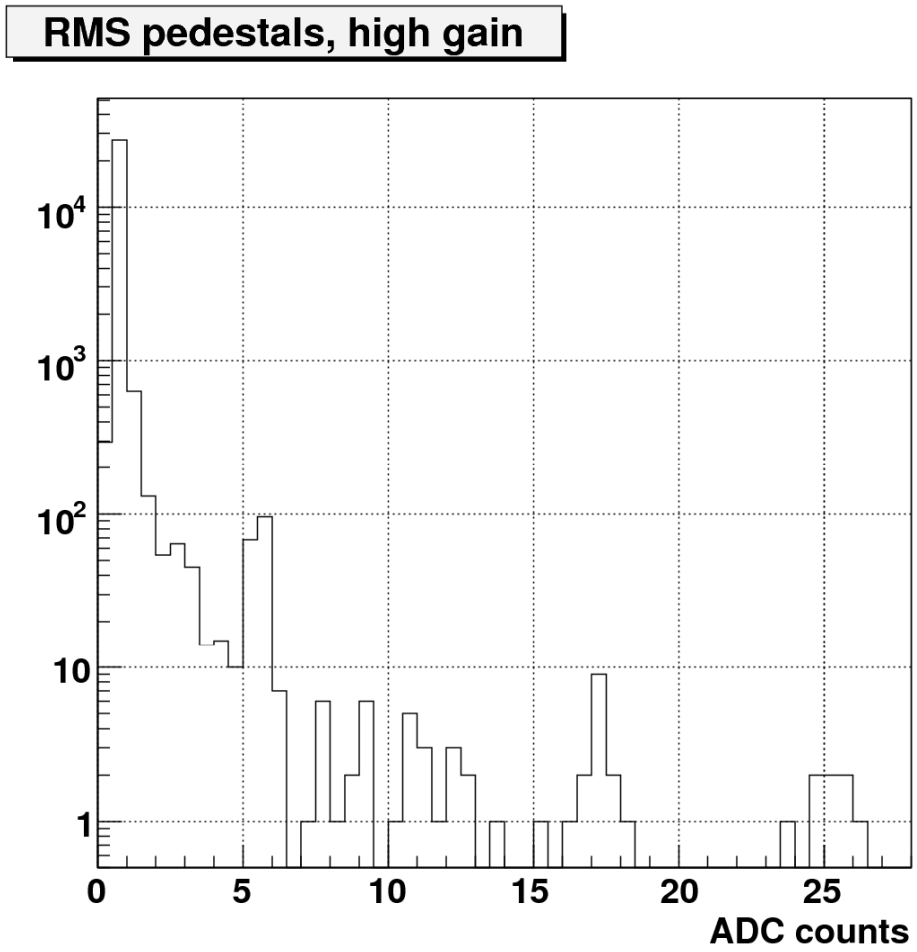
# RUN 8172 (29.09.2007)



# RUN 8172 (29.09.2007)

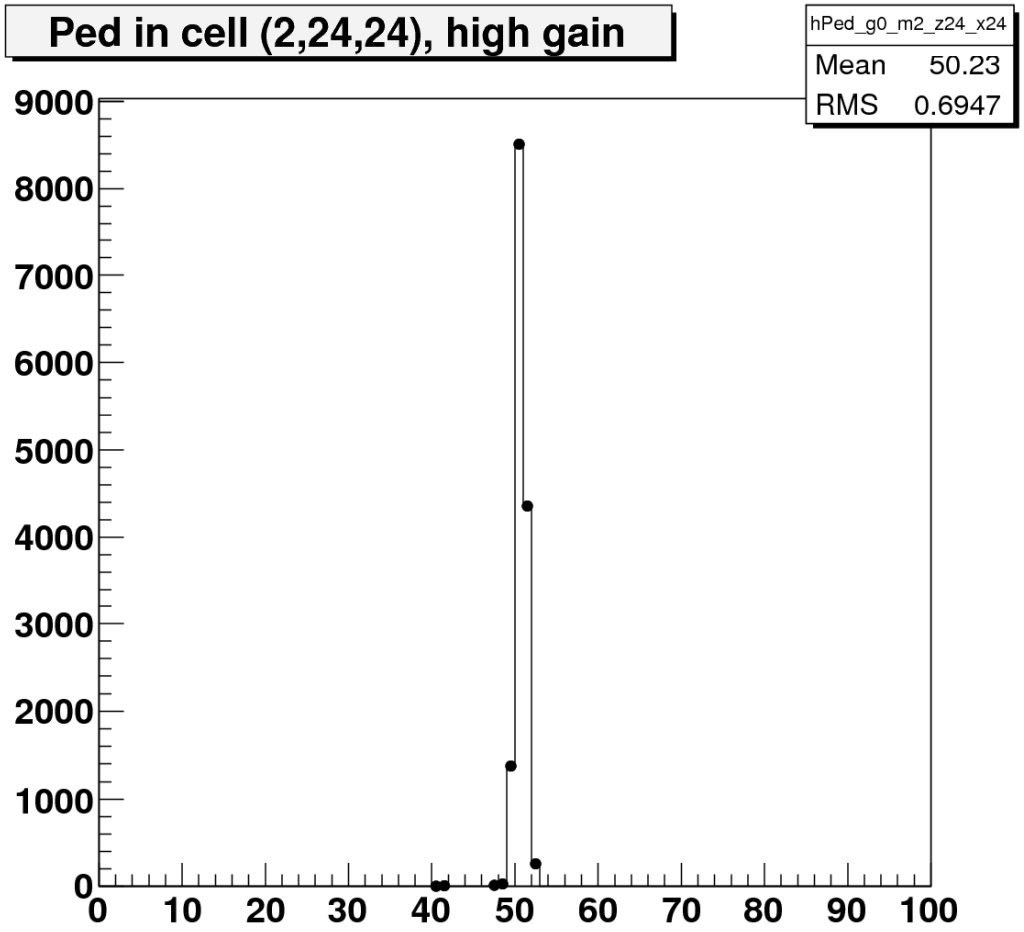


# Pedestal RMS distribution RUN 8172 (29.09.2007)

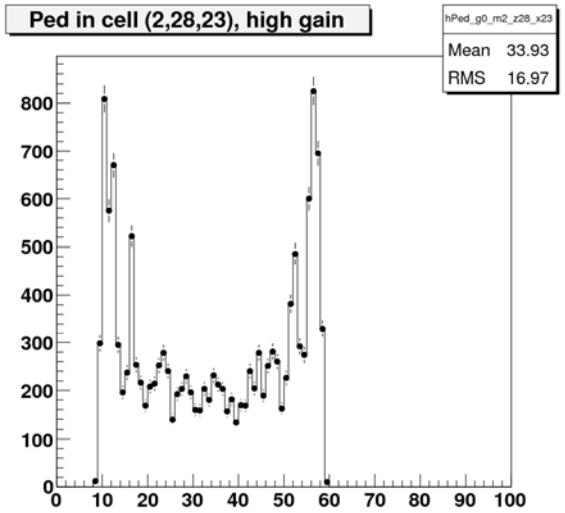


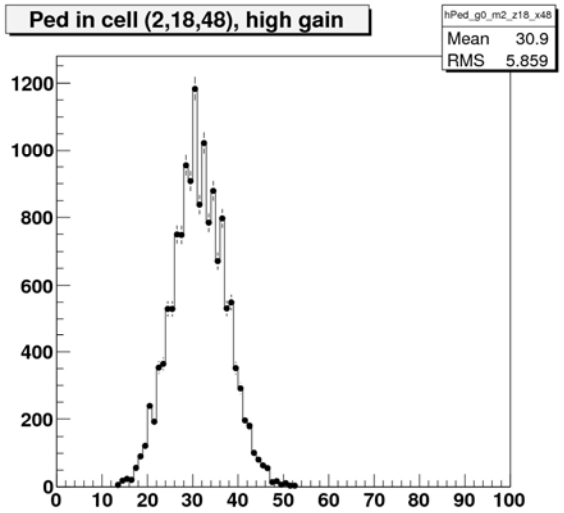

Wide (RMS>1.5) pedestals: 1.9%

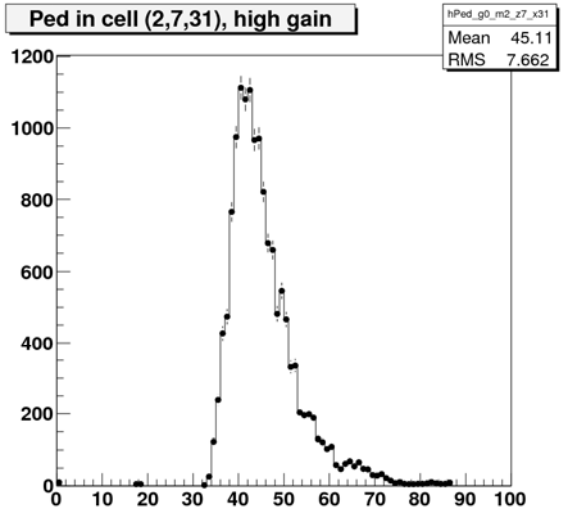
# Good pedestal RUN8172 (29.09.2007)

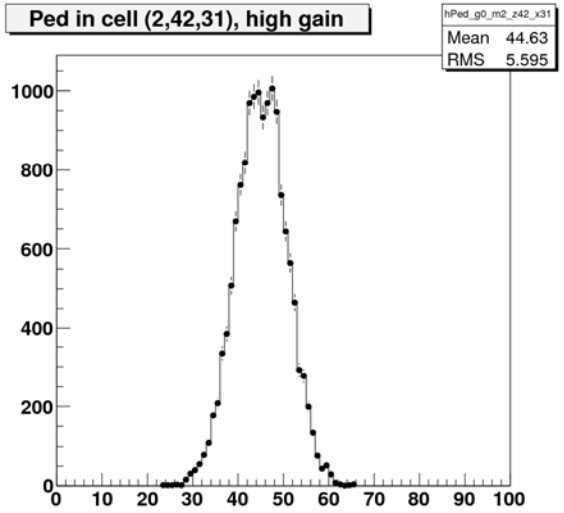


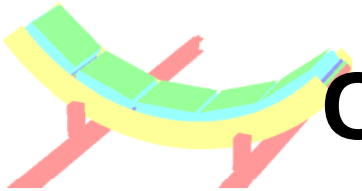
# Bad pedestals: RUN8172 (29.09.2007)



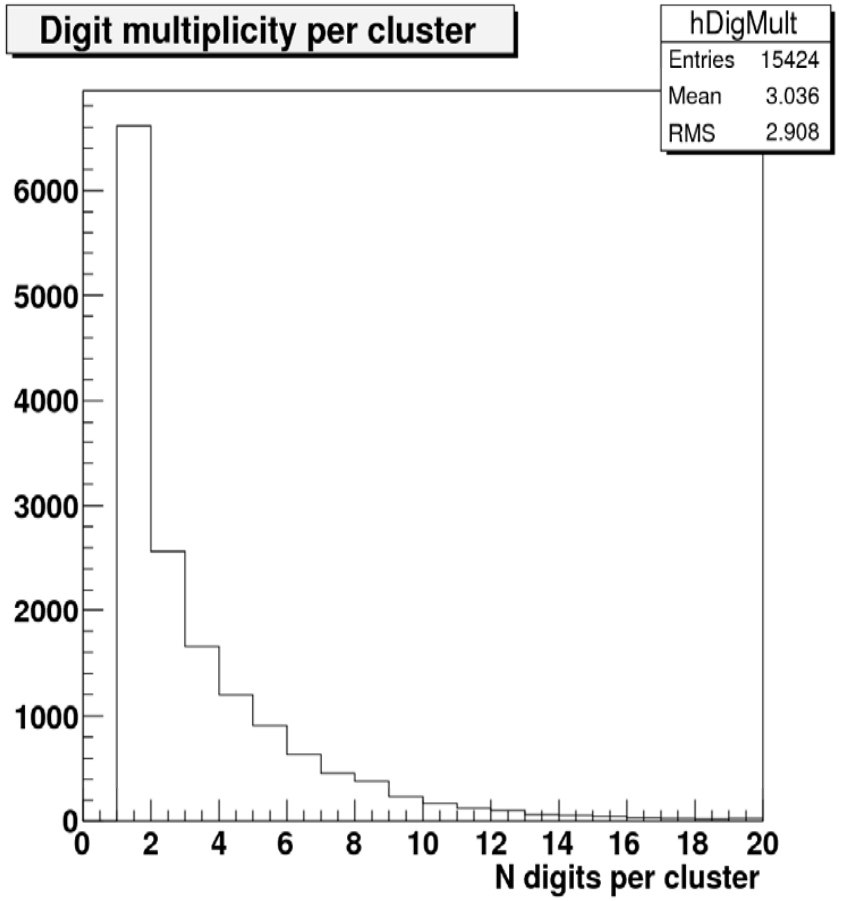


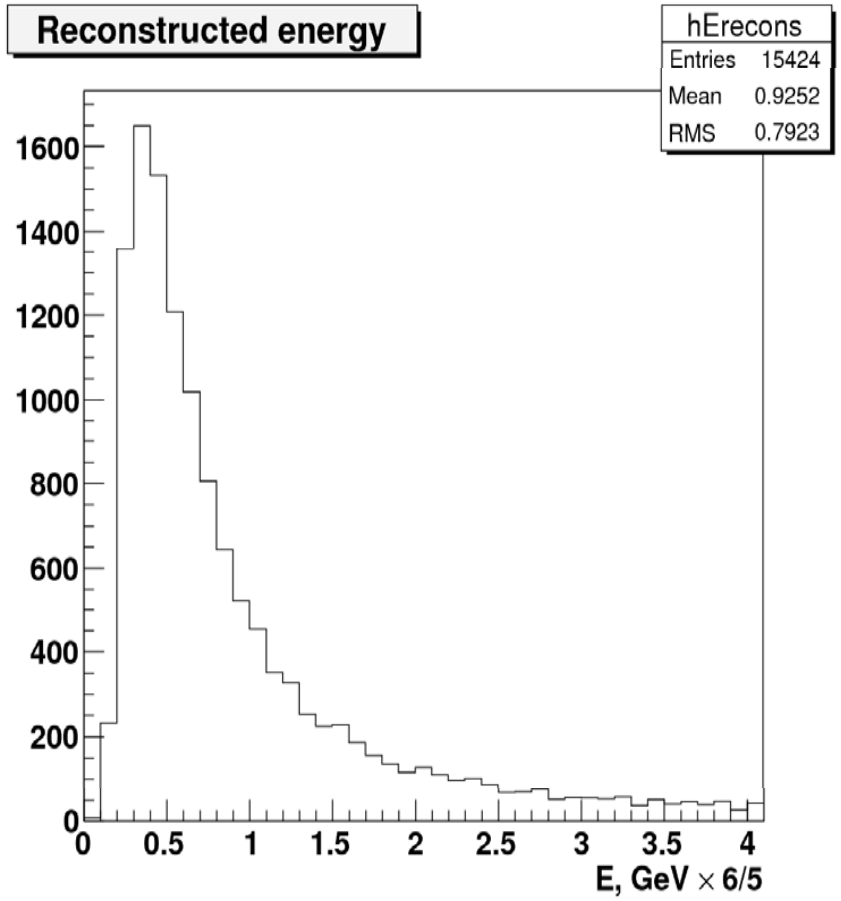
# Cosmic RUN 8172 (29.09.07)

Conditions:

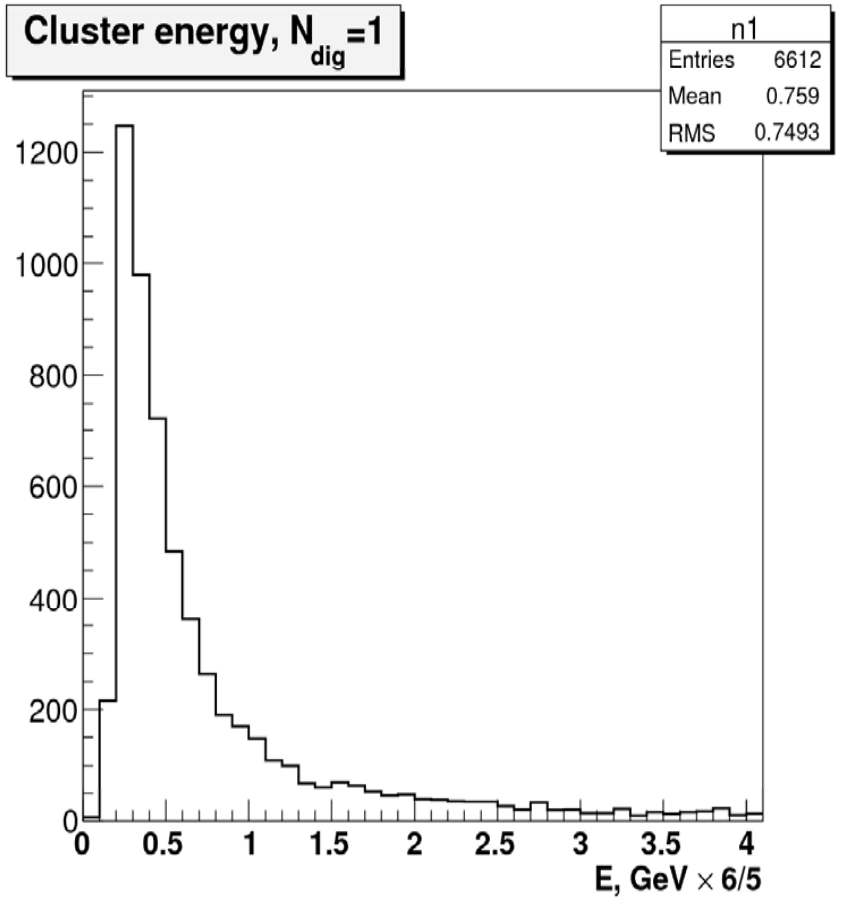
1. Pedestals are calculated on E-by-E basis by averaging 10 pre-samples.
2. Digit energy cut: 60 MeV
3. Cluster energy cut: 240 MeV

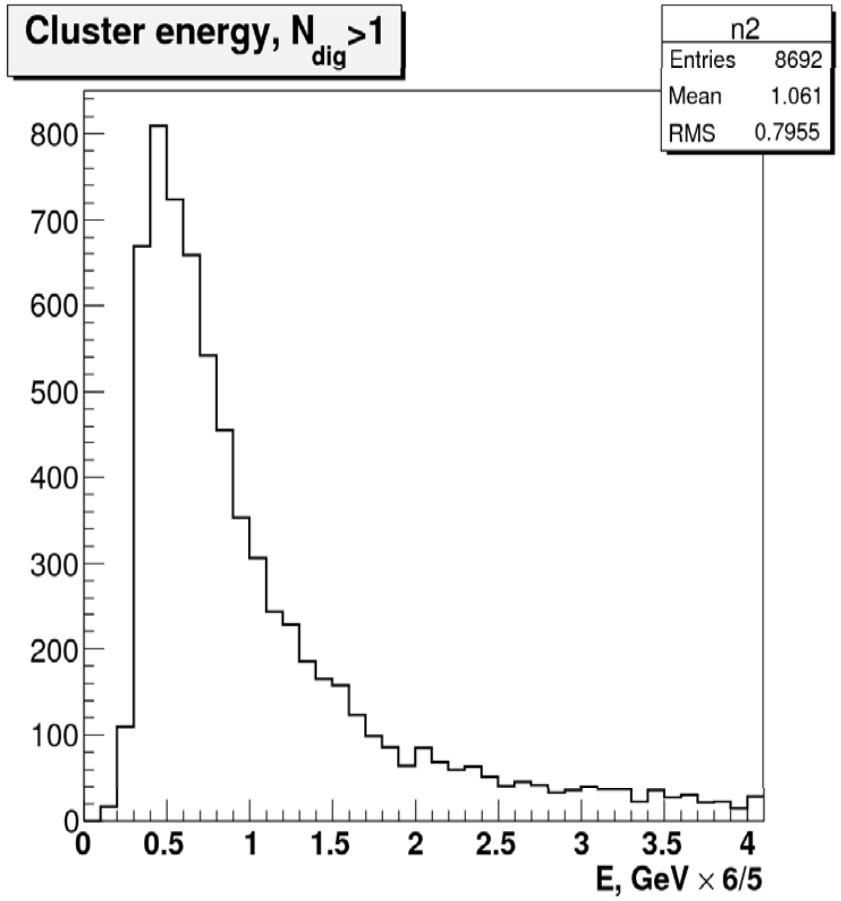
# Cosmic RUN 8172 (29.09.07)



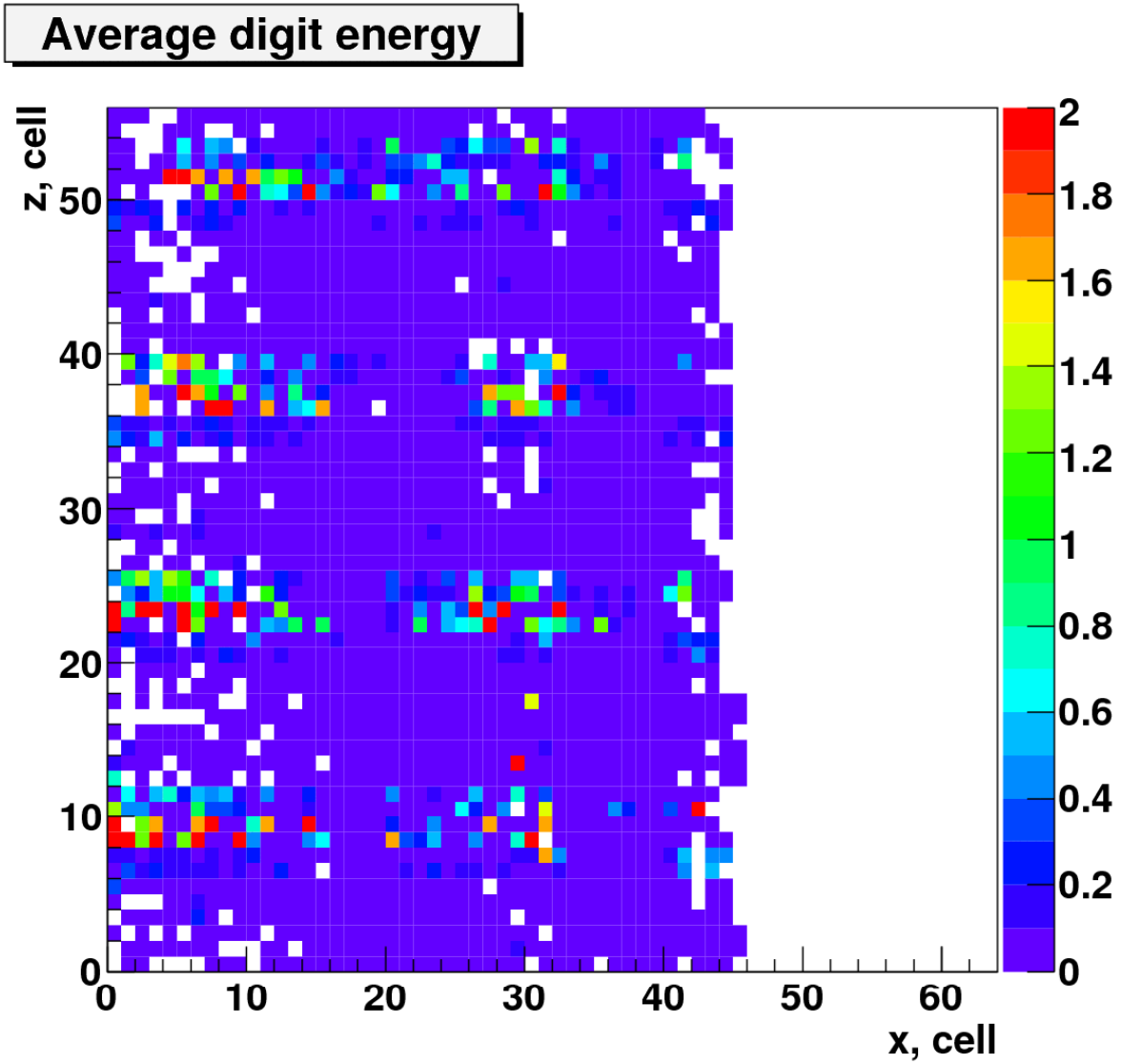



# Cosmic RUN 8172 (29.09.07)

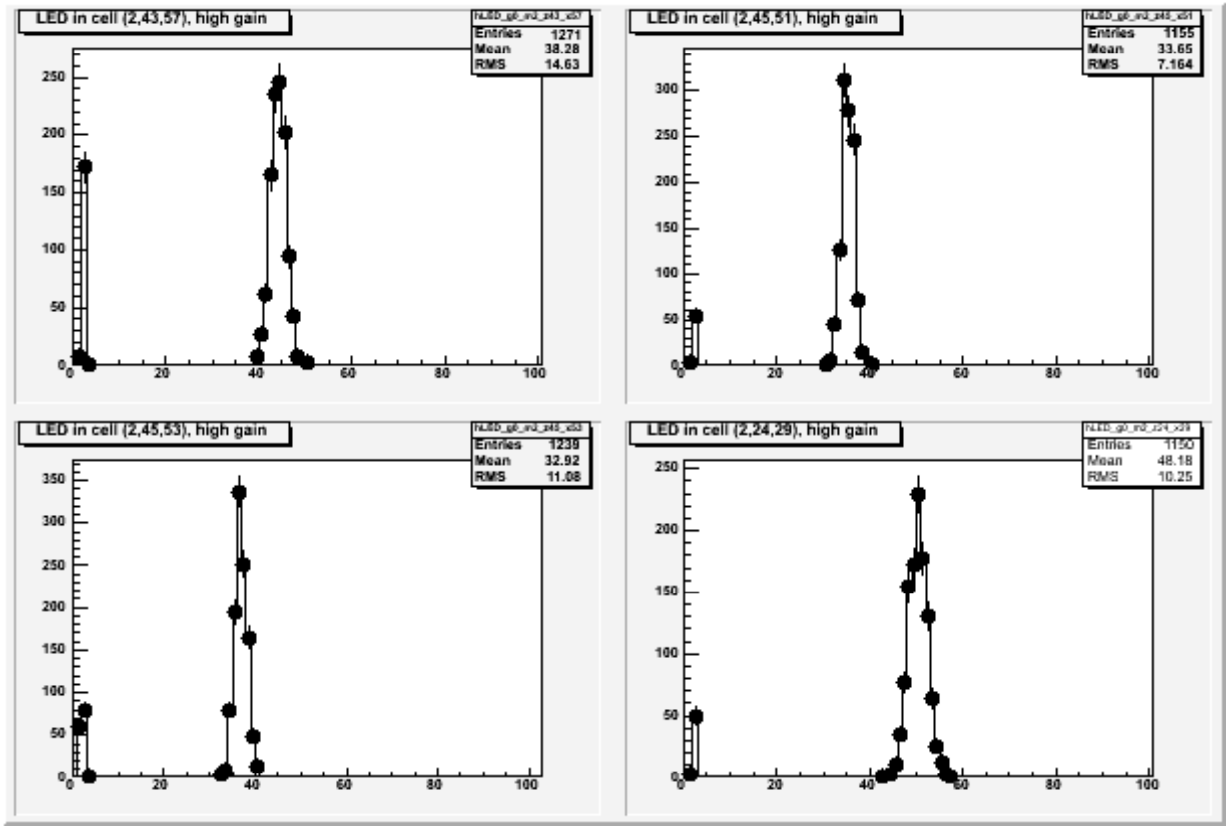


# Cosmic RUN 8172 (29.09.07)

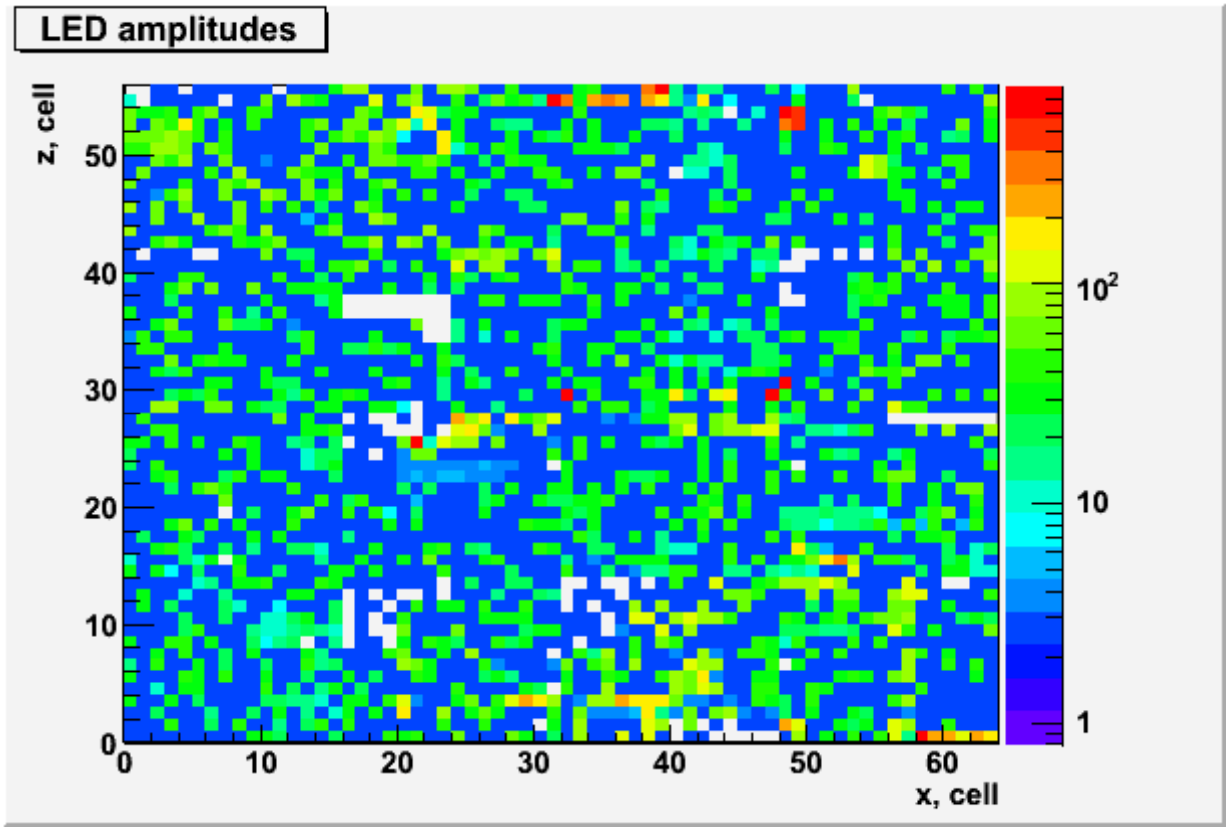


# LED run 8104 (20.09.2007)



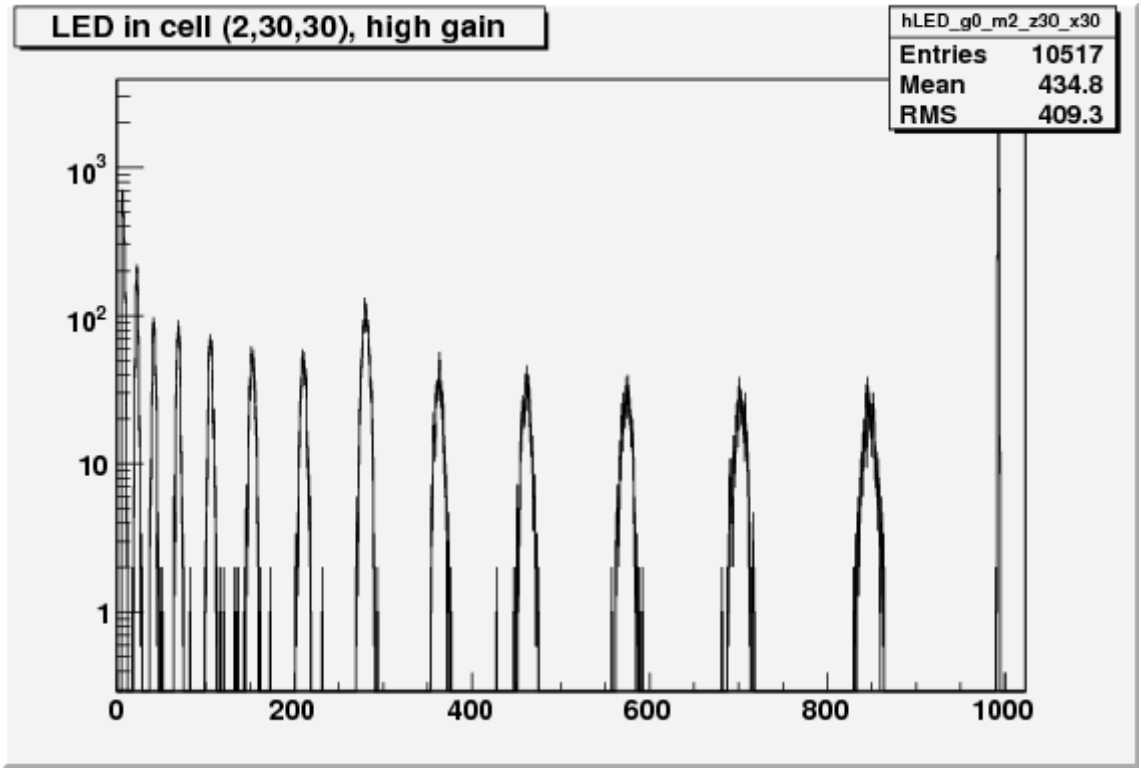

Some LED spectra in high gain channels

# LED run 8104 (20.09.2007)

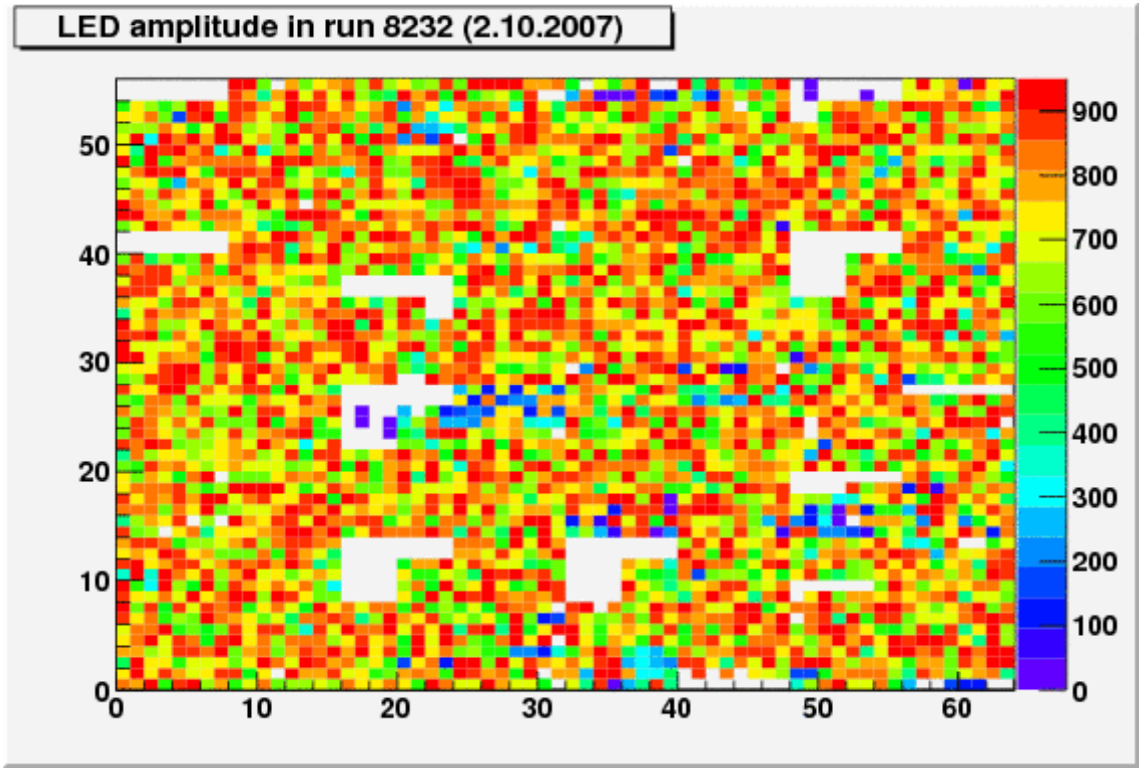


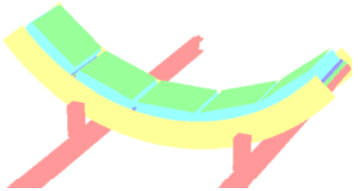

Average LED amplitudes in high gain channels

# LED run 8232 (2.10.2007)



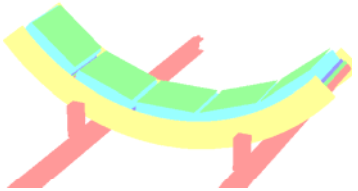
# LED run 8232 (2.10.2007)





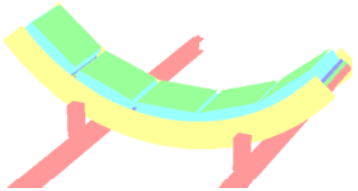
# Online data processing (1)

- DAQ DA:
  - Filling histograms needed for calibration
  - PHOSda is RPM'ed. Tested with real data from a file only. It produces histograms files which can be analyzed by AliPHOSPreprocessor which is supposed to run by Shuttle.
  - We don't have a chance to test it during the data taking, because no dedicated computers are available for such tasks in the PHOS lab.
- HLT DA:
  - Bad channel mapping
  - Filling histograms needed for calibration



# Online data processing (2)

- Online monitoring (DQM) is provided by HLT with the following functionality:
  - Raw data display is now synchronized with event didplay. Raw data can be displayed by double click with mouse.
  - Improved calibration display with one to one correspondence between coordinates from apdgui and HLT



# Summary

- Not only dead, but also bad (noisy, no HV, too high HV) channels should be mapped
- Clusterizer should use bad channels
- Thresholds should be passed to raw data decoding via AliPHOSRecoParam
- Clusterizer thresholds are already passed via AliPHOSRecoParam
- Presence of LED signal indicates that the channel is alive
- Absence of LED signal is not a sole feature of dead channels
- Decoding and reconstruction are permanently modified, the need of HEAD in AliEn is mandatory.
- Online monitoring and DA are provided by HLT. Link from HLT DA to OCDB is to be implemented.