



Si-W ECAL Pedestal Check 2007

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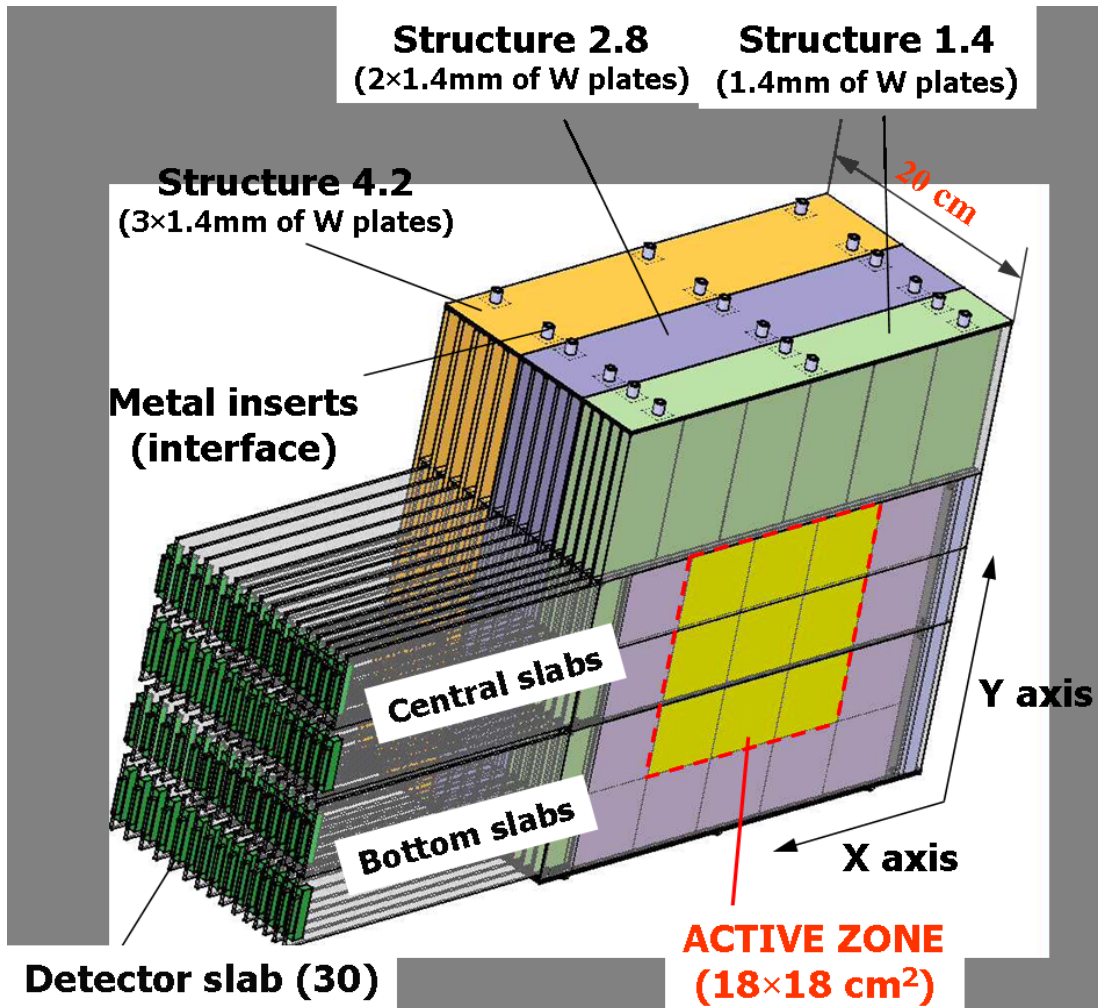
Si-W ECAL, electronics, DAQ, analysis meeting
LLR, January 2010

Setup

Full depth model:

→ 24 radiation lengths in total

3 stacks x 10 layers with fixed W thickness



30 layers

3 x 3 modules

a module = 6 x 6 pads

a pad = 1 cm²

~ 10000 channels !

2006

equipped w/15 central slabs

2007

bottom slabs added
9 most of the time

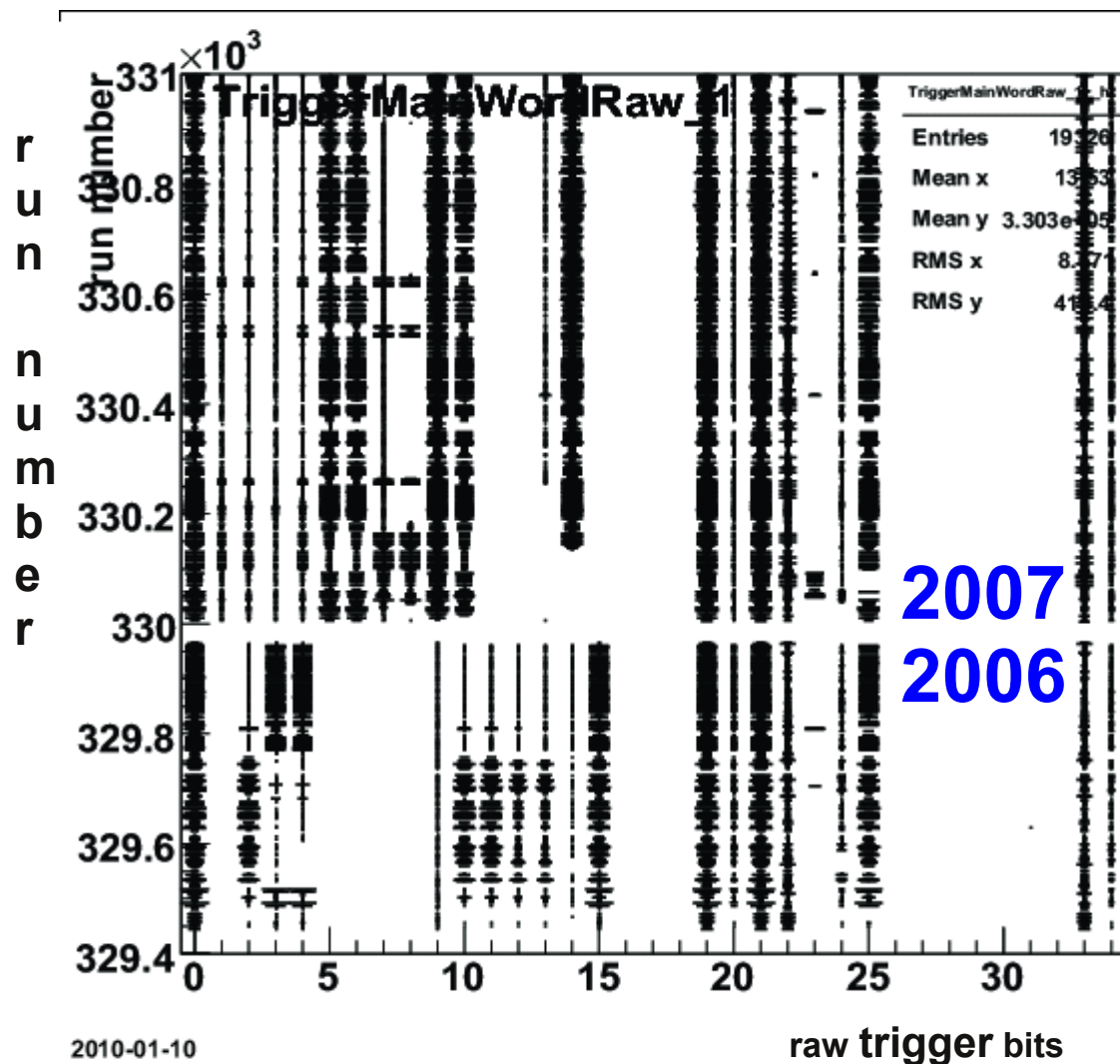
Data

SiW ECAL @ CERN
Combined calorimetric
system test

- Analog HCAL
- Tail Catcher and Muon
Tagger

2006 ~ 600 runs

2007 ~ 1000 runs



Measurement

SimpleHitSearch processor
part of CALICE reconstruction
> 90% of consumed time

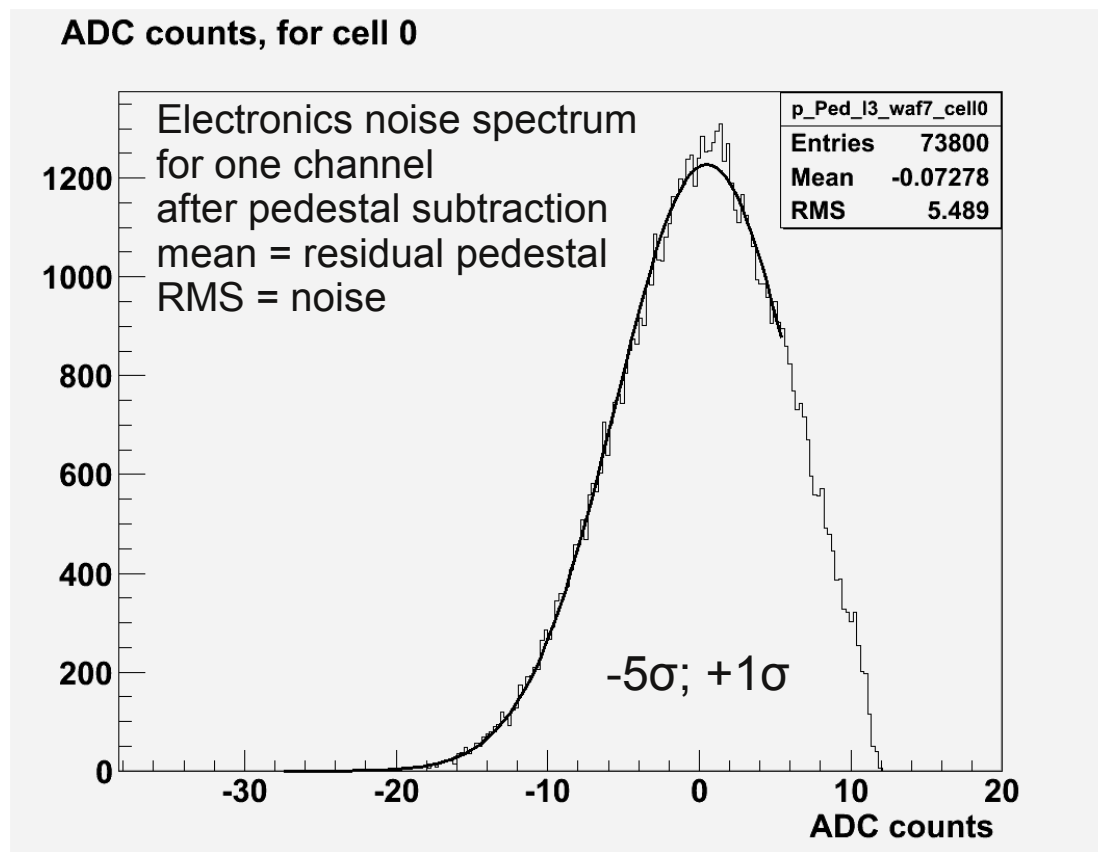
pedestals measured in pedestal
events (500 random trigger events)

also in beam events
(every 25 events)

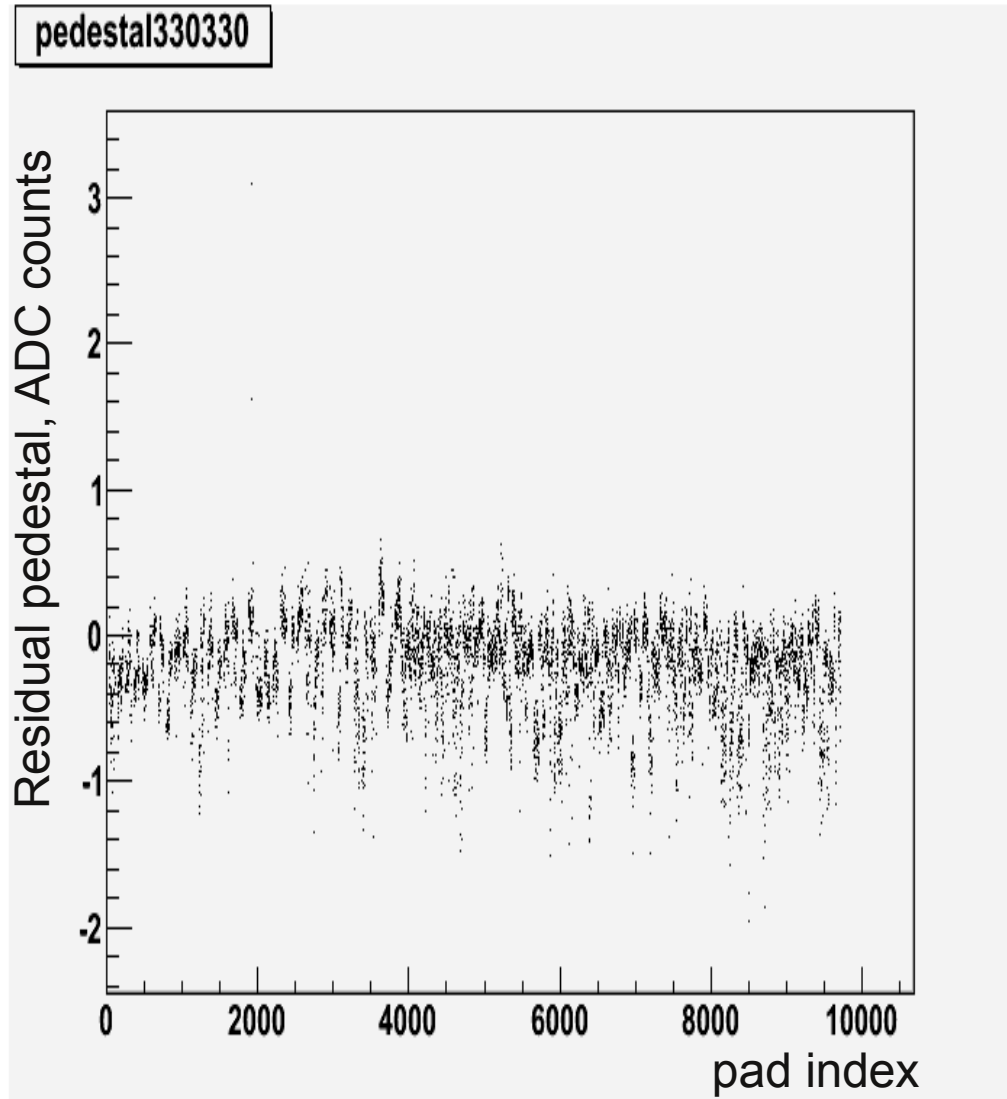
→ sensitive to pedestal shifts

1. ADC values → Hits (value ~ E)
→ Simple pedestal subtraction
→ Common PCB pedestal shifts correction
→ Signal induced pedestal shifts correction

2. Noise measurement
used in Monte Carlo digitization

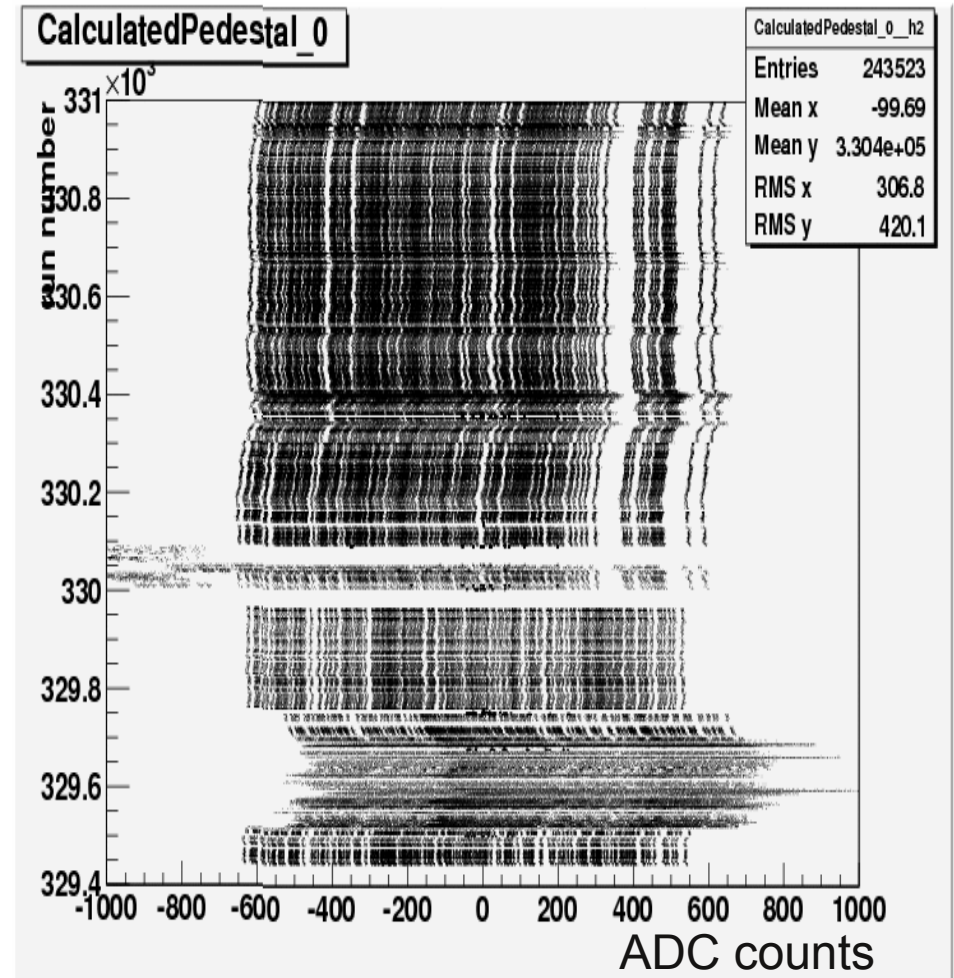


Pedestal Uniformity and Stability



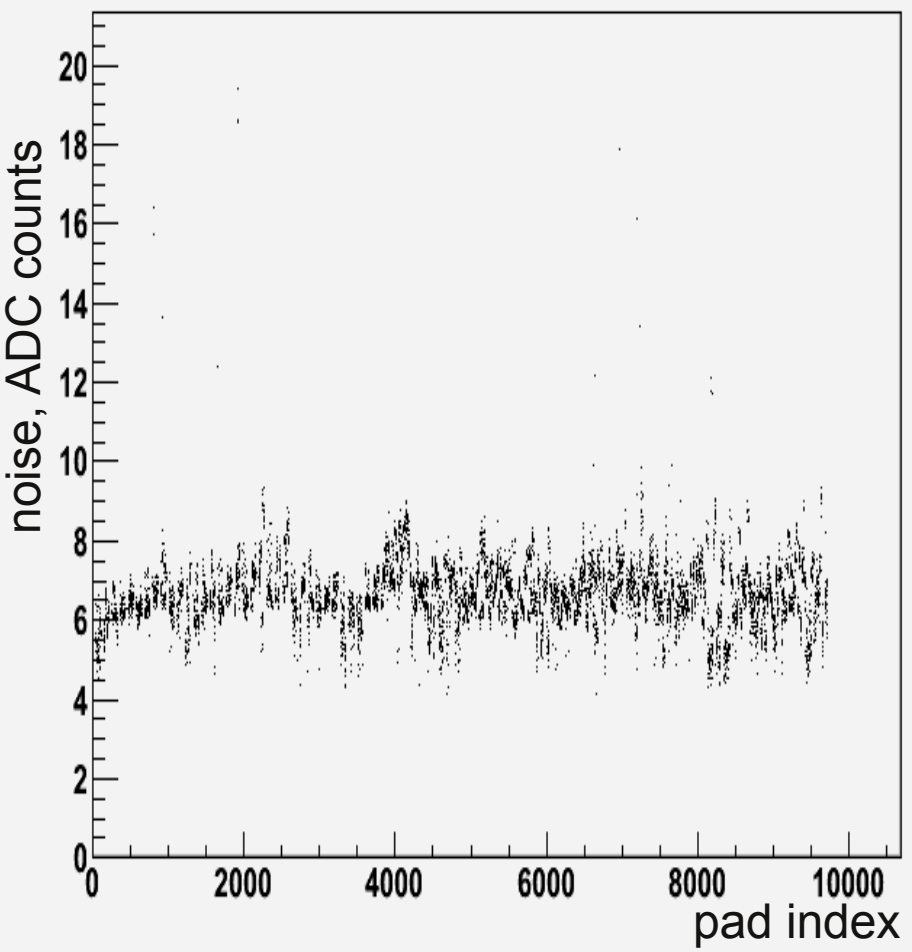
All channels
in run 330330

one PCB (common pedestal shift)



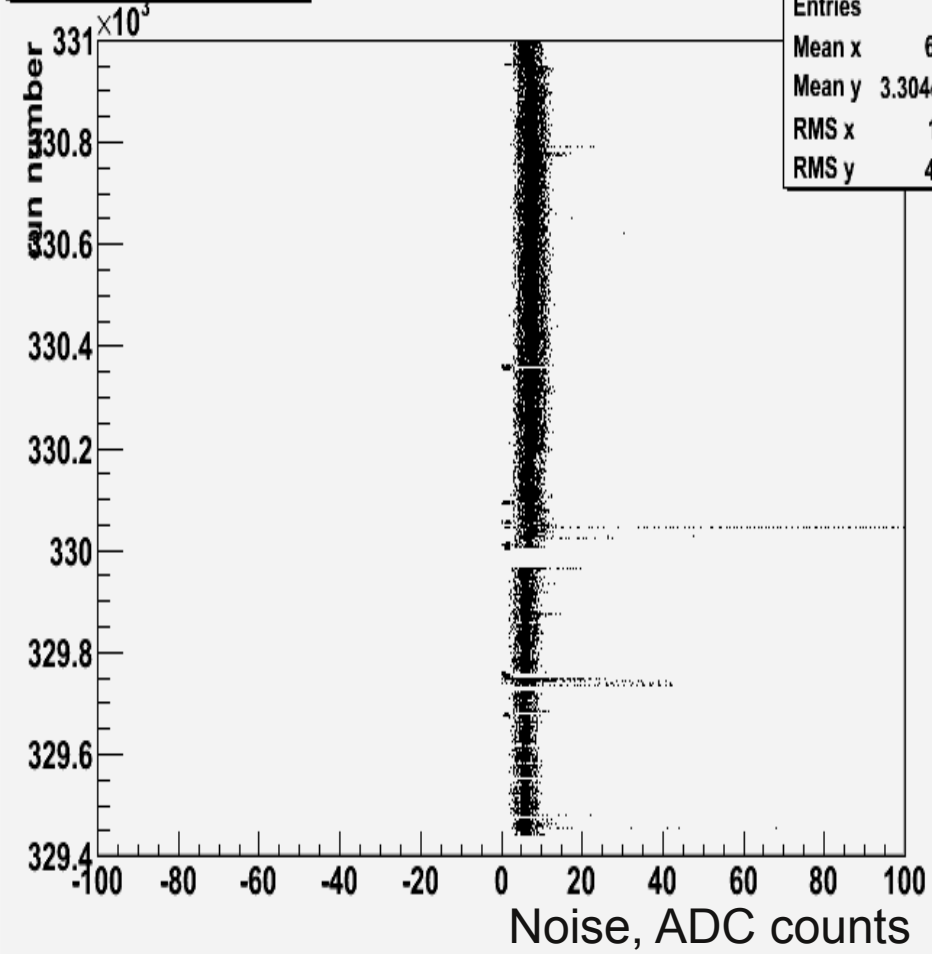
Noise Uniformity and Stability

noise330330

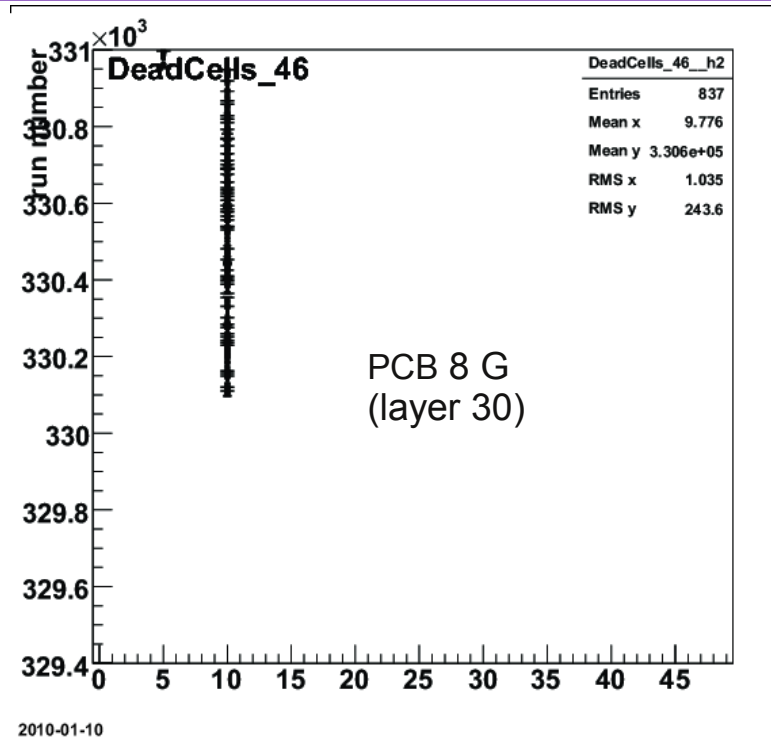
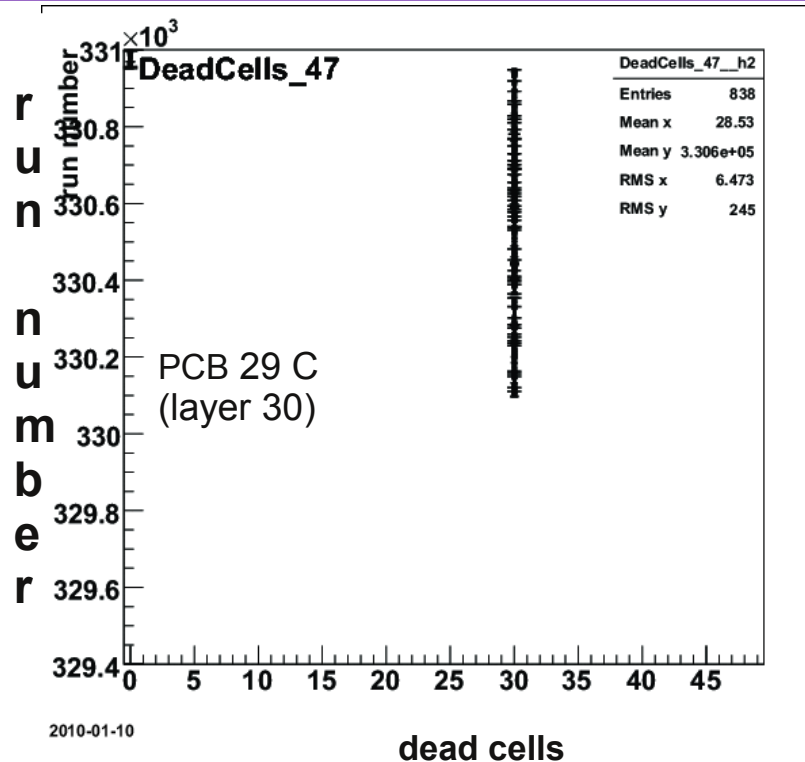


All channels
in run 330330

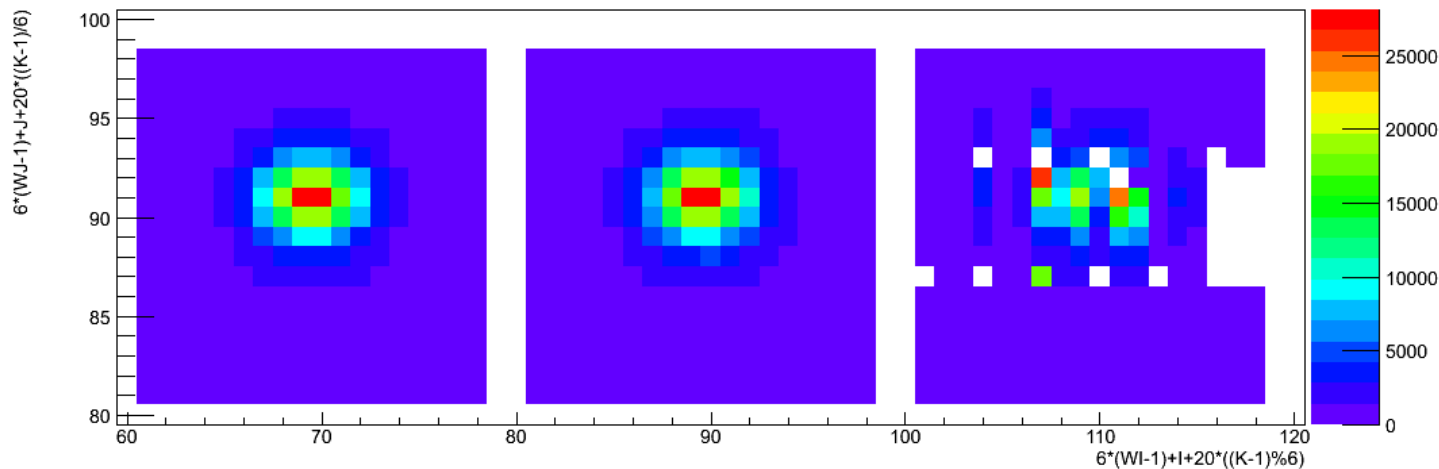
CalculatedNoise_9



Dead Cells



HitMap ECAL Nhits



Hit map by
David Ward

Mapping error

Conclusions

- A reconstruction of ECAL data collected at CERN with monitoring enabled was done
- Uniformity and stability of the pedestal and noise was checked
- The 2007 measurement goes as expected i.e. as in 2006
- 40 dead cells reported in ECAL layer 30 (mapping problem)
- Correlated pedestal shifts has not been studied exclusively for 2007
- Data base storage of the noise is needed for the Monte Carlo digitization
- Comment: CALICE software on GRID
Too big fraction of failed jobs ~ 70 %