



Calibration of the CALICE Si/W ECAL prototype

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Outline

- Approach
- First look at an october μ -run
- Intermediate results from december 2006
- Final results



Approach to obtain mip Histograms

- Investigation of pure μ -runs taken during october (CERF-period) at CERN
- 250k events per run, triggered on 1m² counter
- Procedure
 - Starting from native files
 - Applying reconstruction calice-reco v0.3.2 (Götz)
 - Searching MIP tracks with a slightly changed version of MipSelect processor (quite similar to Clusteriser in calice_reco v04-02)
 - Building signal histograms for every cell
 - Fitting function: Landau folded with Gaussian

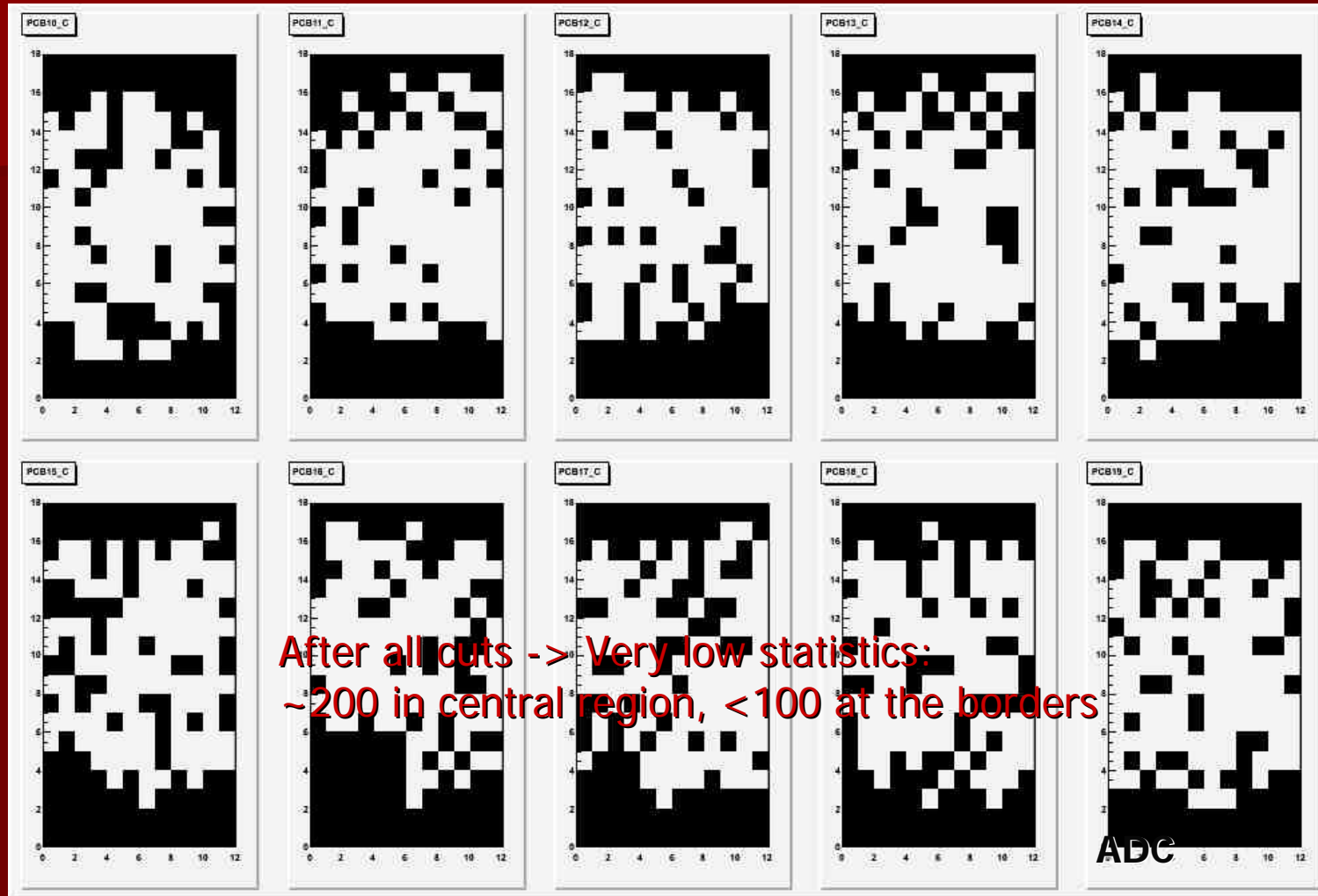


Criteria of MIP selection

- Max distance in x, y, z between two cells grouped to the same cluster: 25mm
- # accepted hits per track: >15 , <40
- Total cluster energy: >15
- Verification via linear fits for x and y



First look at Run 300961

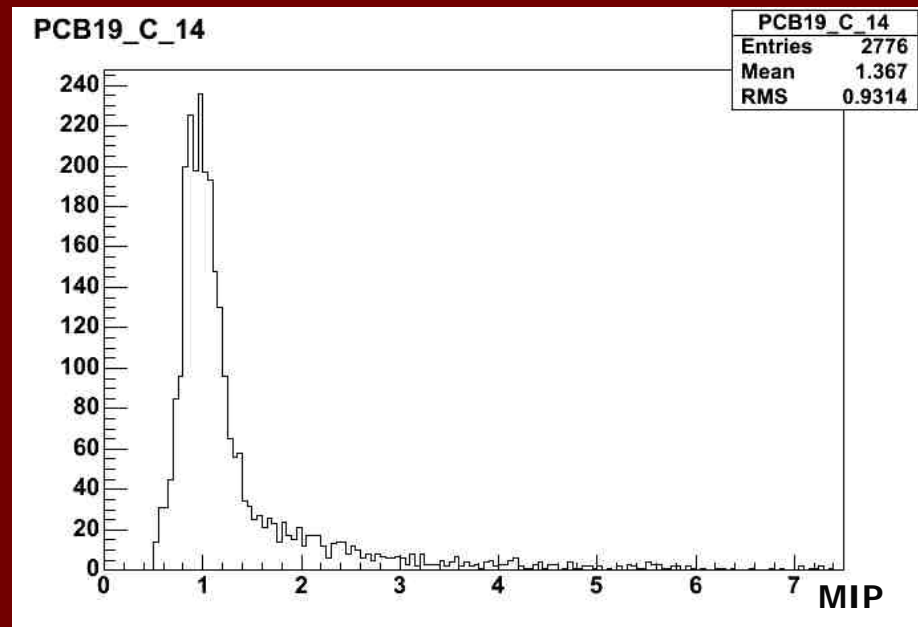


-> 3177 cells declared as non-calibrated !



Results from December 2006

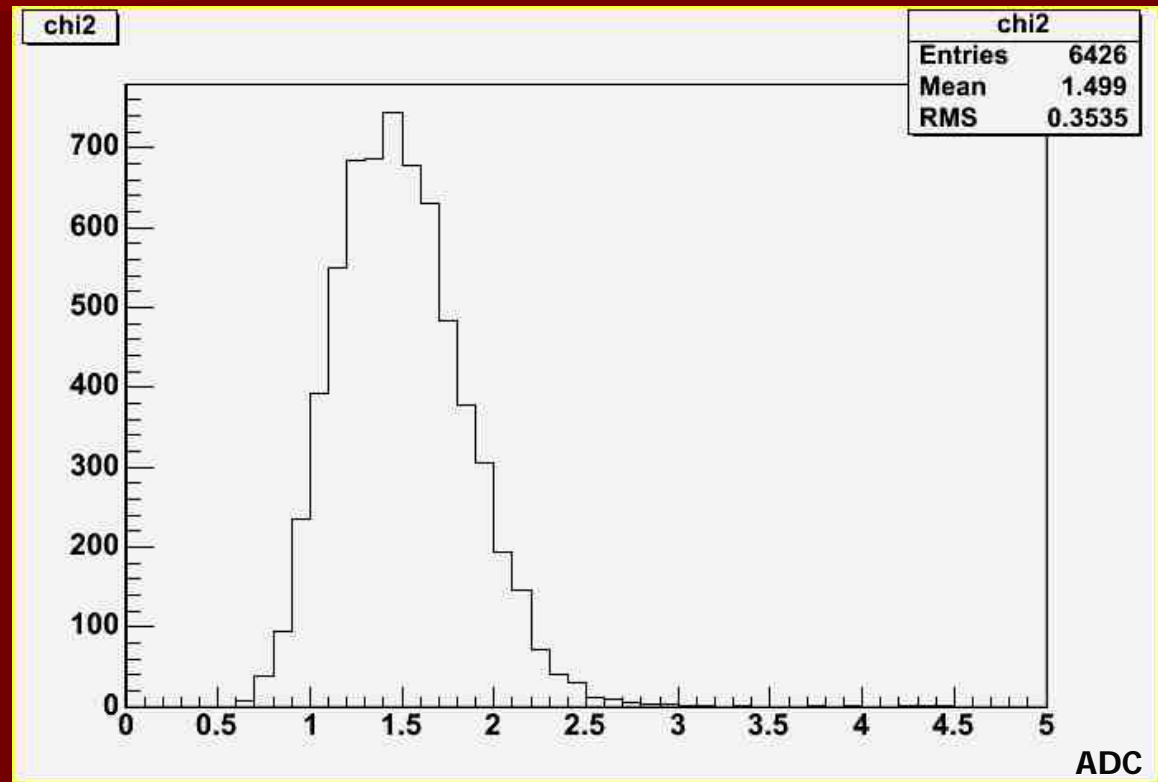
- Raised statistics:
 - Merged histograms of 17 runs
(# 300... 961-956,954,952,951,949-947,941-937)
- Reaching up to 3000 entries which made good fits possible



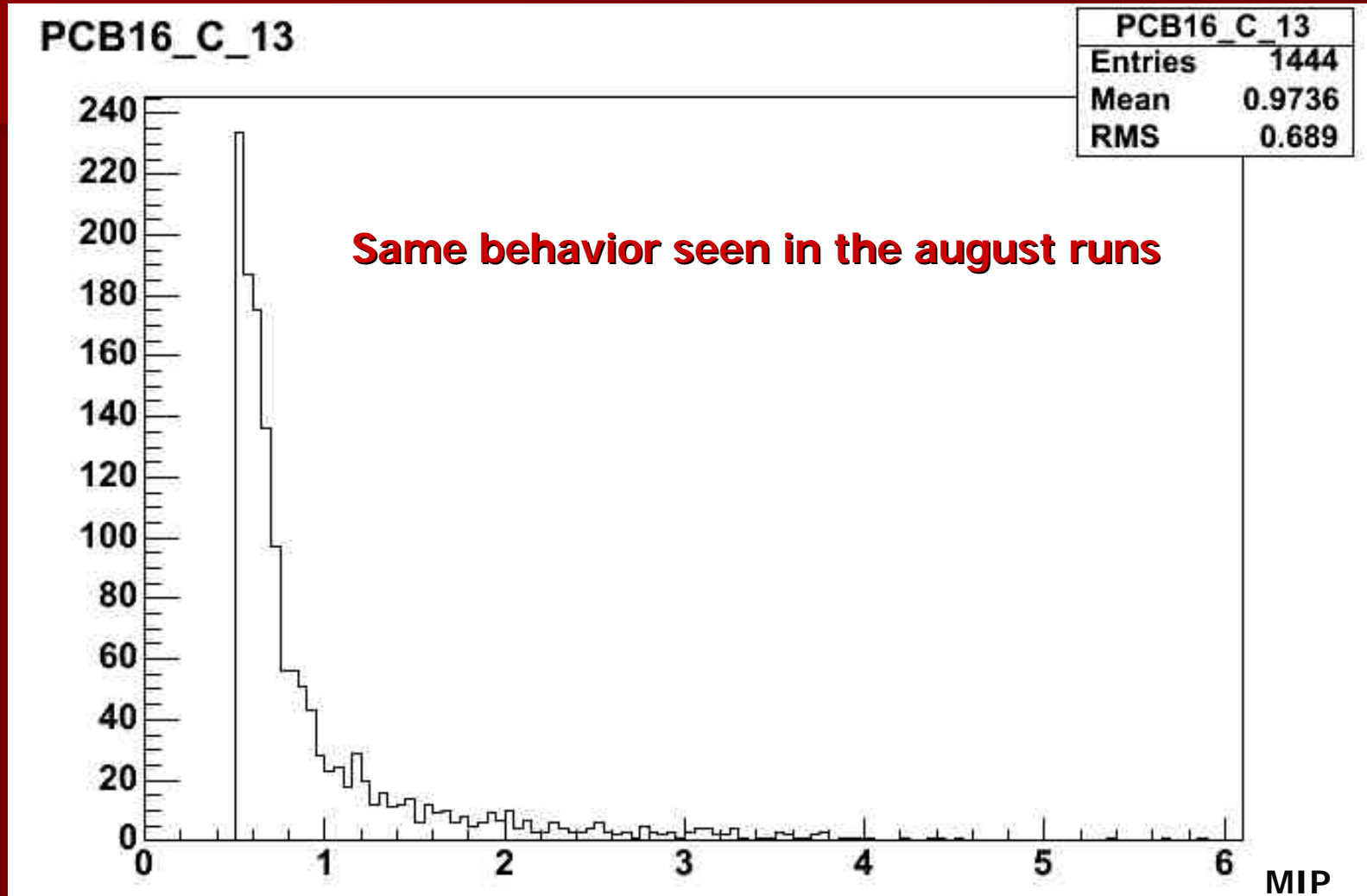
Results from December 2006 II

- MPV (38-51)
- Noise (3.5-7.4)
- MaxChi² (5)

- Tried to refit broken pads with different starting parameters

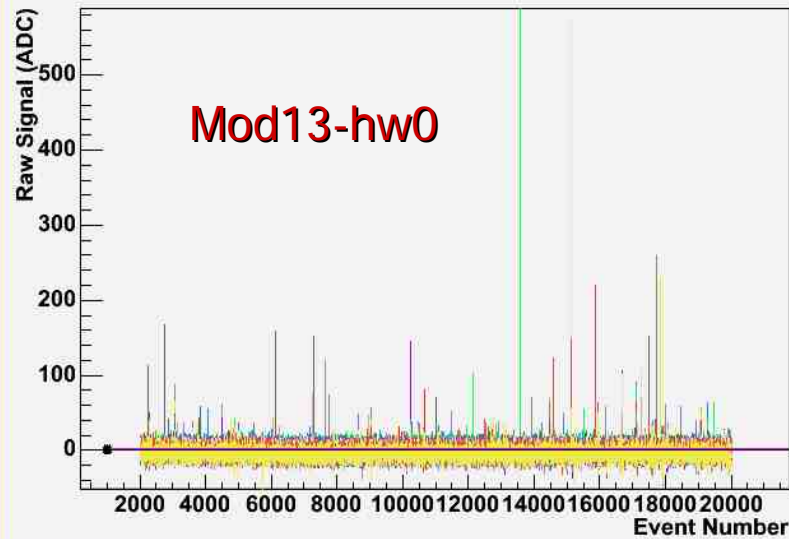


Results from December 2006 III

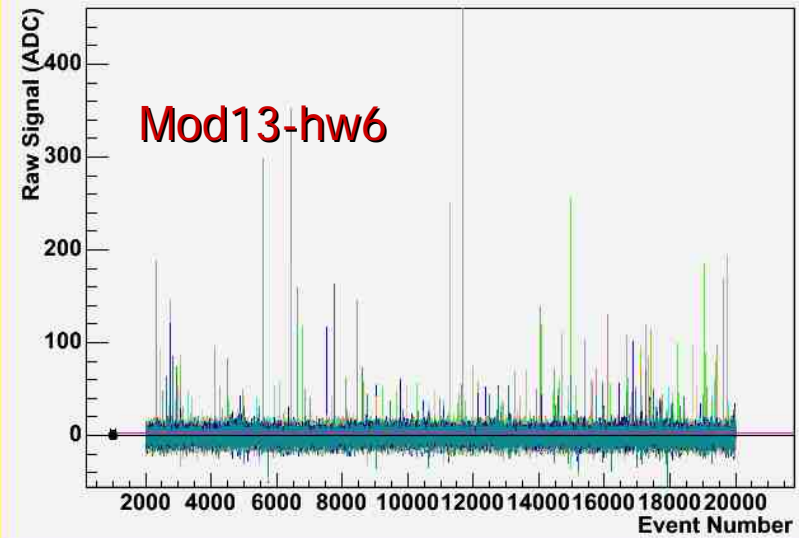


Bad wafer: ADC history

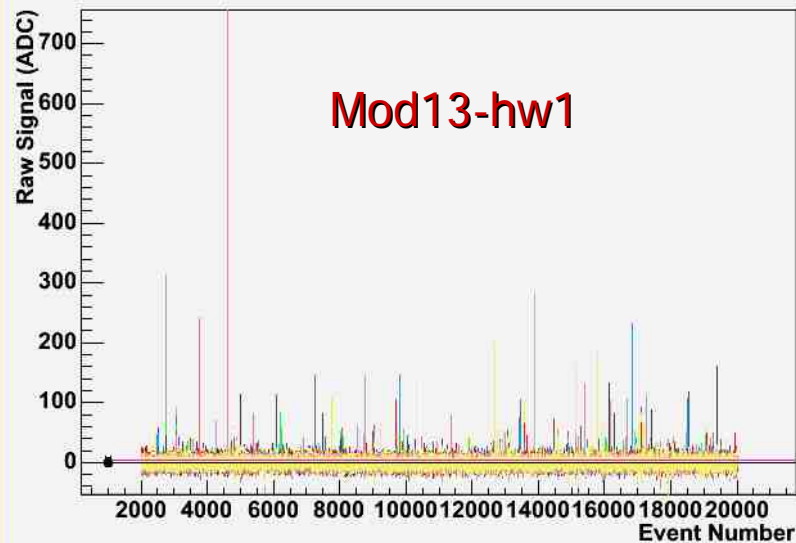
Graph



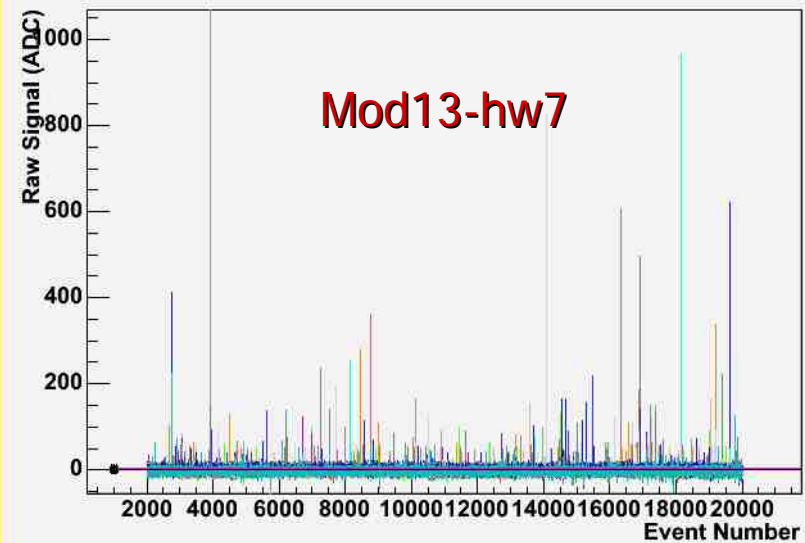
Graph



Graph

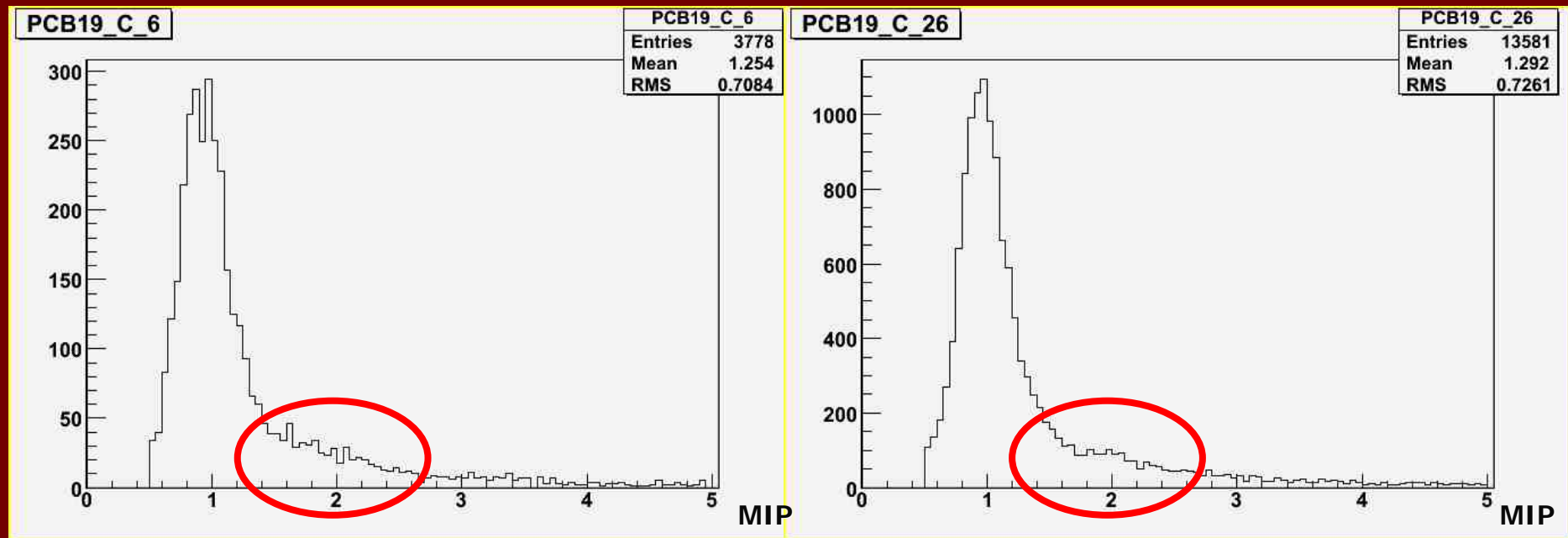


Graph



On the way to the final results

- Used the grid to process 74 runs, all from the october CERF-period



-> limiting fit range (0, 1.57)

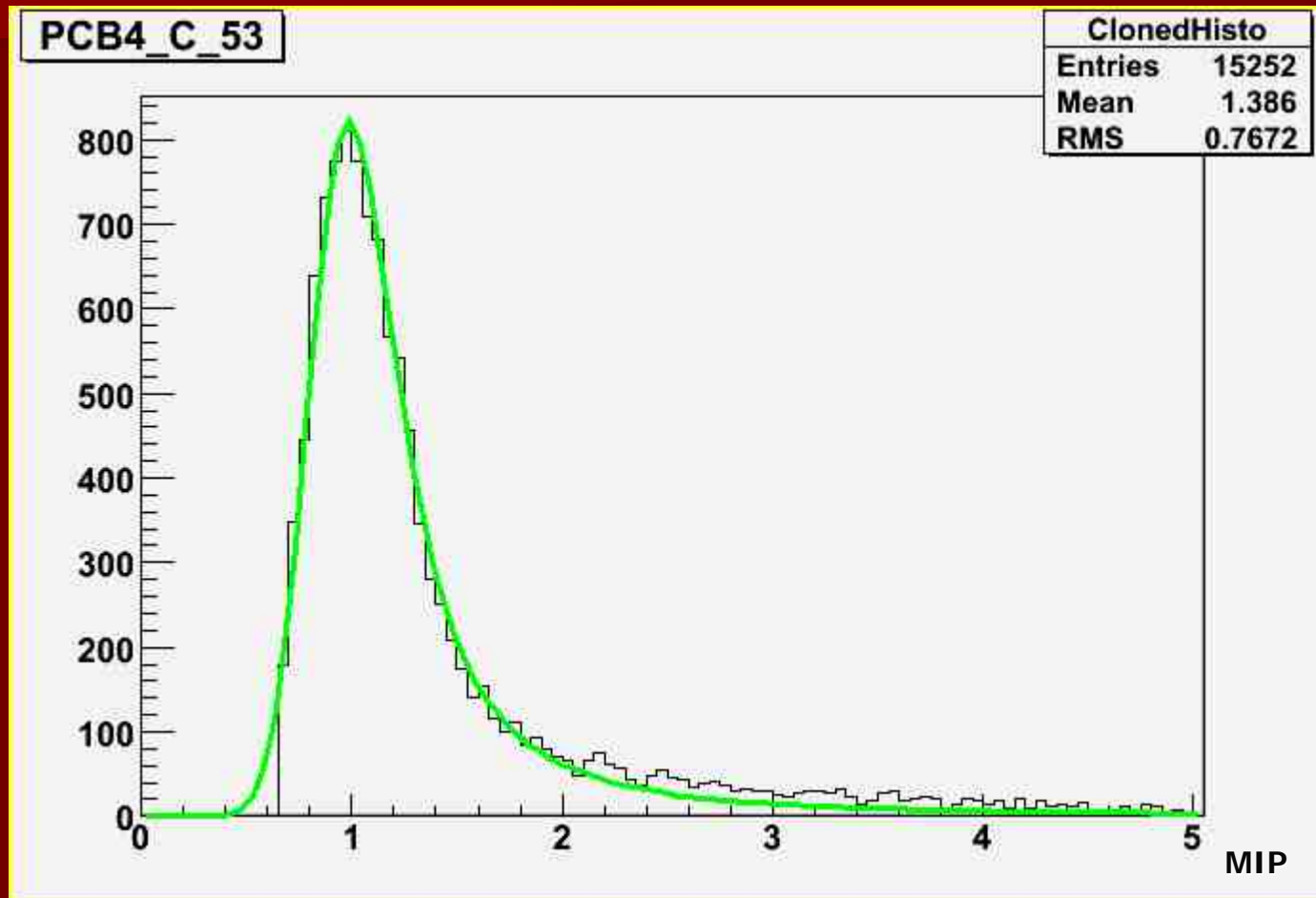


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On the way to the final results II

Develop mechanism to refit noisy cells

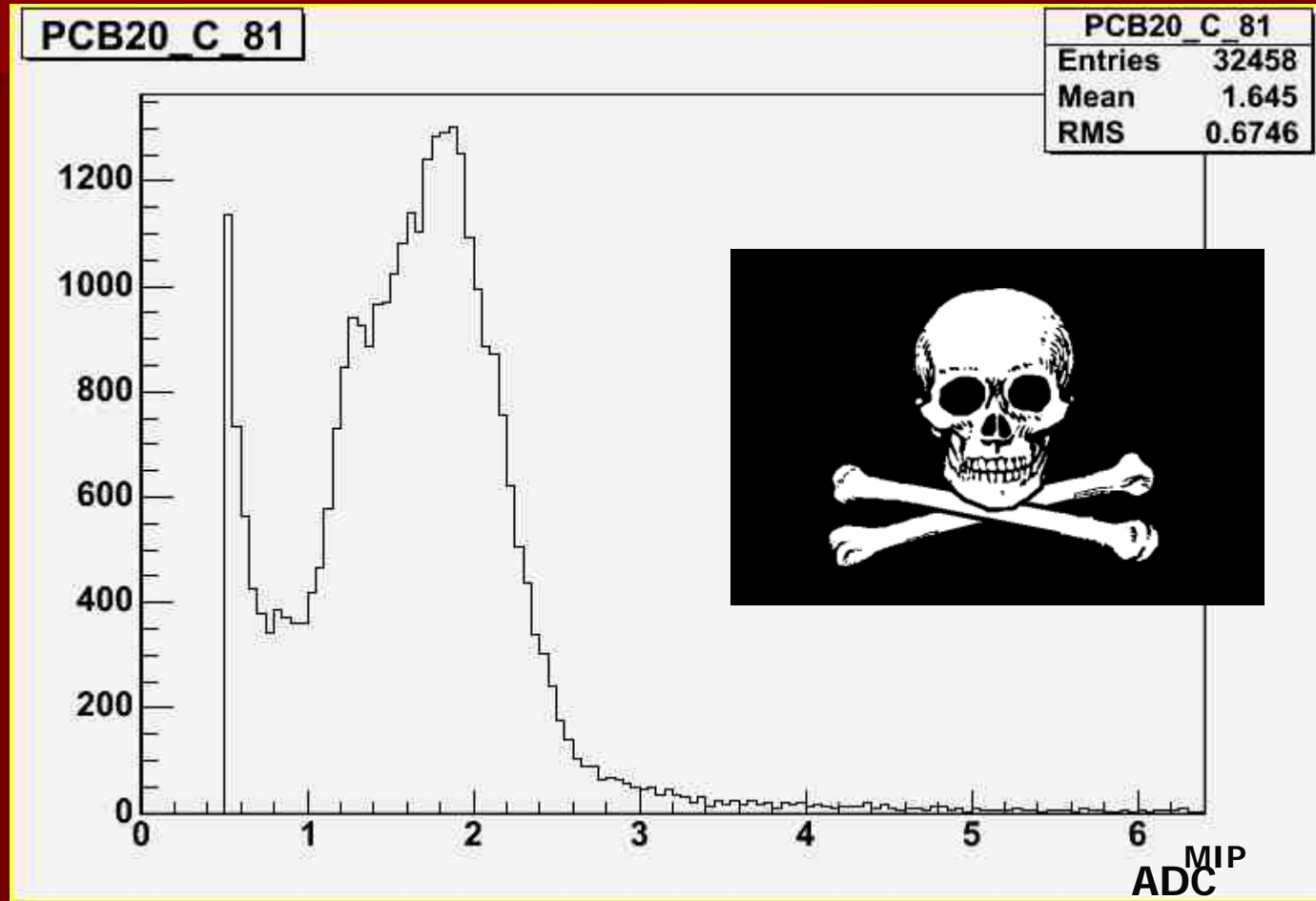


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CALICE
Calorimeter for ILC

Final results



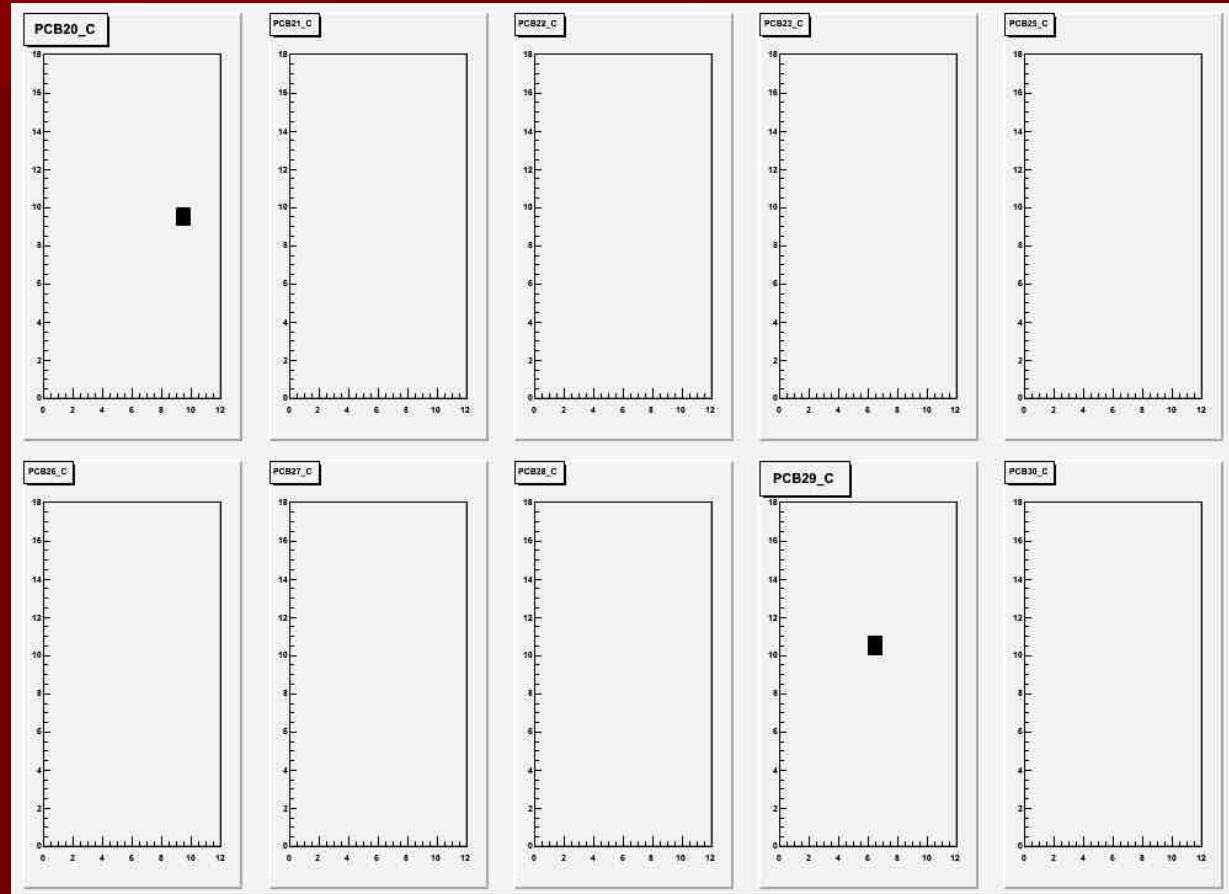
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CALICE
Calorimeter for ILC

Final results III



- PCB3_C : 215
- PCB4_C : 6, 41
- PCB6_C : 6
- PCB11_C : 125, 126
- PCB12_C : 123
- PCB20_C : 81
- PCB29_C : 201



Conclusion

- 14 signal histograms of individual cells had to be replaced + 1 entire wafer
- 18 cells could be calibrated by noise subtraction and refitting
- Only 9 of 6480 cells declared dead!
- Calibration constants will be written into the database soon
- LC note in preparation



Backup



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- Runs used for the final calibration:
 - (# 300... 961-956,954,952,951,949-947,941-937,936-914,910-901,897,895-872)

