



CALORIMETER DATA QUALITY STATUS AND PLANS

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CALORIMETER HARDWARE DQ PROBLEMS

- Missing towers, BLS, ADC
 - Usually killed by an expert, because of hardware failure
- Too many “hot” cells, towers, BLS
 - Hardware failure, was not killed by expert in some runs

The runs like these usually declared bad using calorimeter data quality monitoring tool dq_calor:

http://d0-france.in2p3.fr/WORKING_GROUPS/DQ/

BAD RUNS

RUNS	TOTAL	GOOD & REAS.	BAD	UNKN.
160000 – 169999 (August – December 2002)	712	623	23	66
170000 – 180954 (January – September 2003)	936	830	27	79

After removing bad cells and towers
50% of bad runs will have 2 or 3 missing
BLSs. Can we use them in analysis?

“HOT” CELL, TOWERS

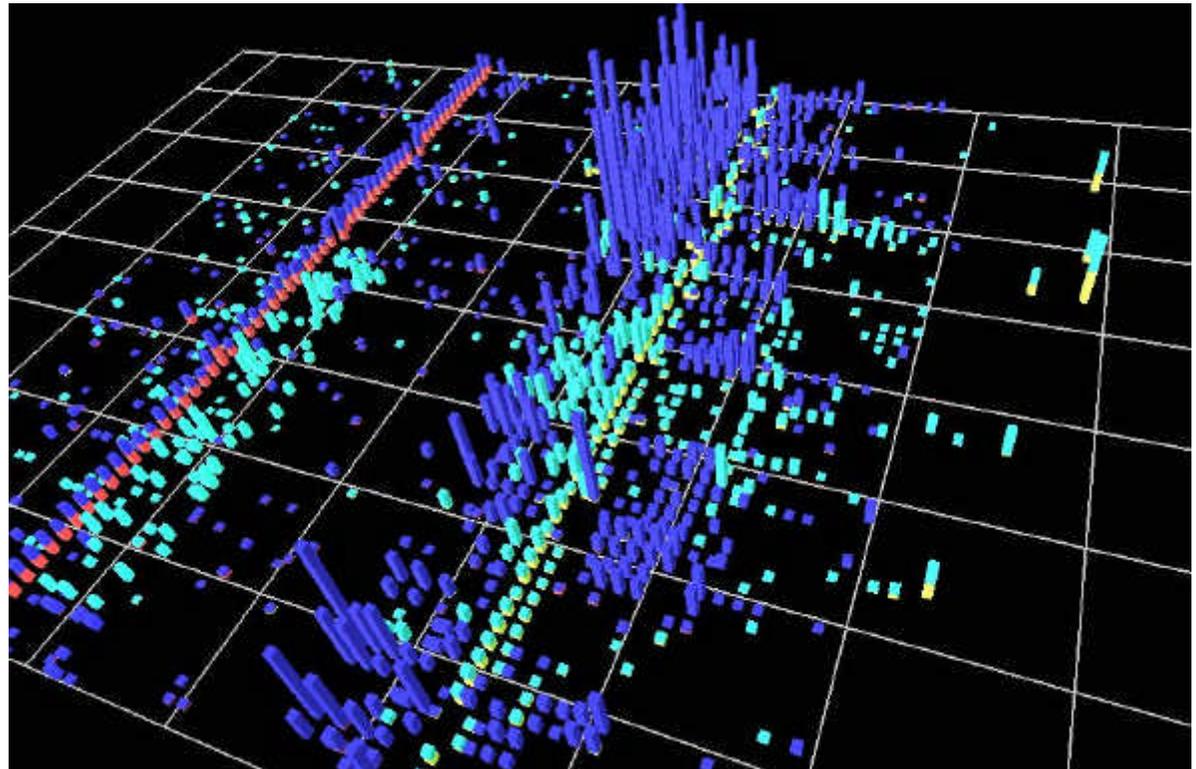
- Usually in the runs calorimeter has 0 – 3 cells which can be called “hot”. Sometimes “hot” tower. They could affect the physical distribution, but not always. The NADA algorithm will remove such cells only if they are isolated.
- The “HOT” regions in calorimeter appears mainly due to pedestal shift in all channels in BLS or ADC. The T42 algorithm could remove cells in these regions.
- If any jet happen to be close to a “hot” cell, tower or BLS, most probably, they will not be removed.
- We plan to have a list of “hot” cells and towers using monitoring tool before pass 2 reprocessing and remove them in reprocessing.

NOISE IN CALORIMETER

- 2 types of noisy events were determine: coherent noise, “ring of fire” noise.
- The package `cal_event_quality` should be used to remove coherent noise and missing crate events from your analysis.

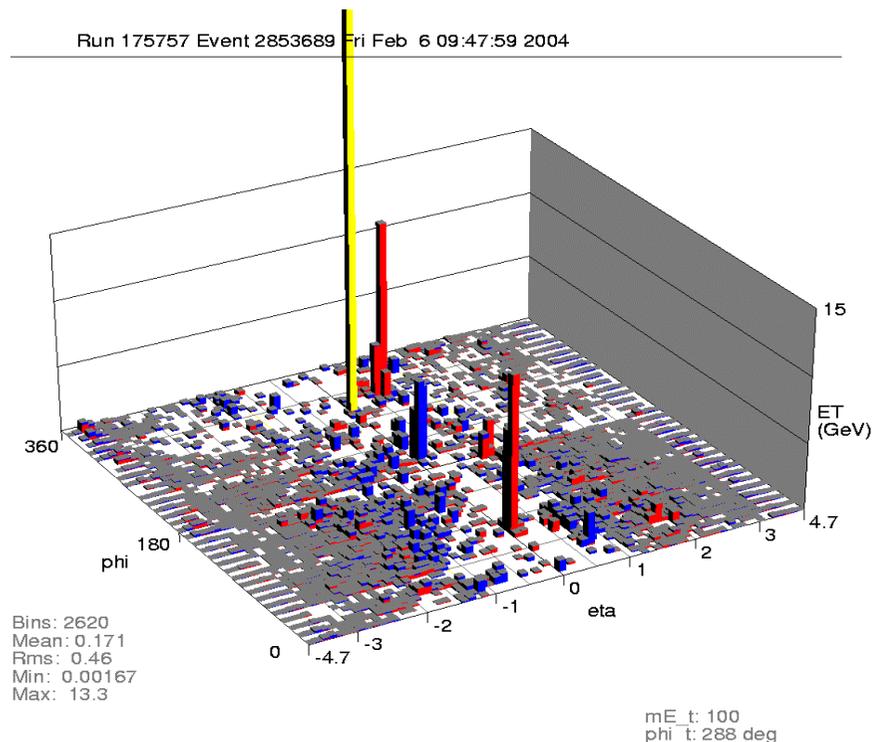
The “ring of fire” noise should be removed on luminosity block basis

(see *Patrice Verdier's* talk about MET today)



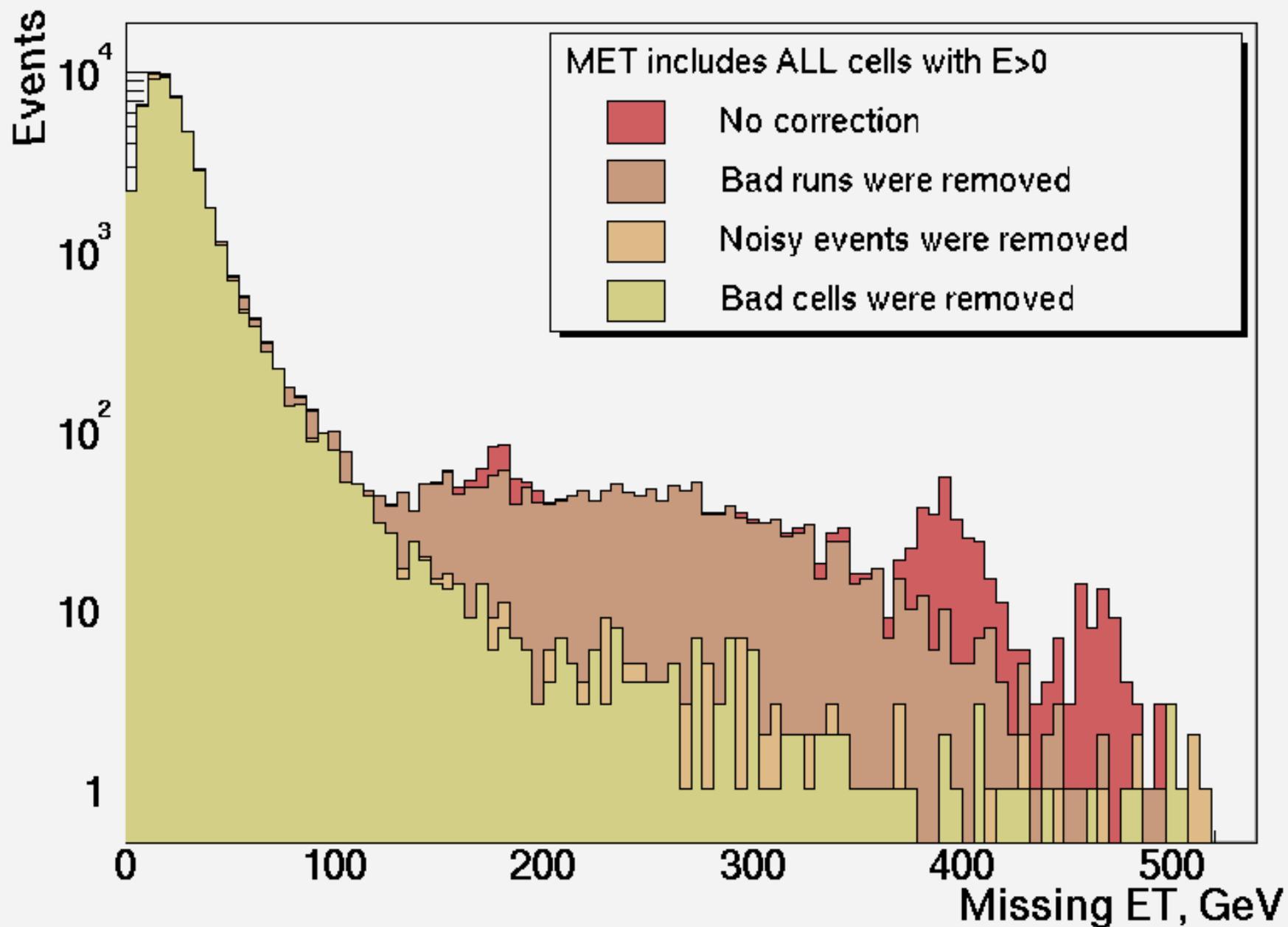
ANALYSIS FEEDBACK

- The DQ progress in the noise is due to the feedback from physics analysis mainly, but you still have the noise in your physics (see *Yuri Gershtein's* talks) . Usually you can see the noise as events in the tails of missing ET or PT distributions.



- Look on these events with the event display, if they are really noisy – skim them in thumbnail format and send them to me!
(shary@lal.in2p3.fr)

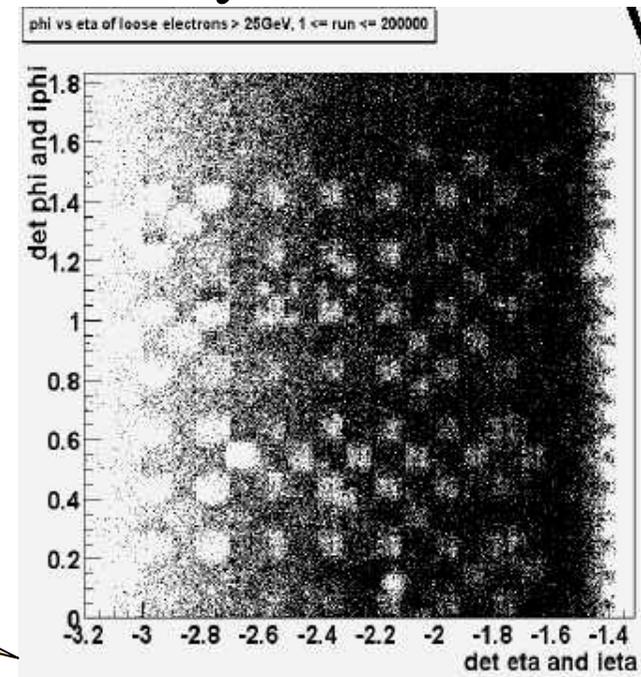
Missing ET in MHT30 skim



“NON TRIVIAL” CALORIMETER PROBLEMS

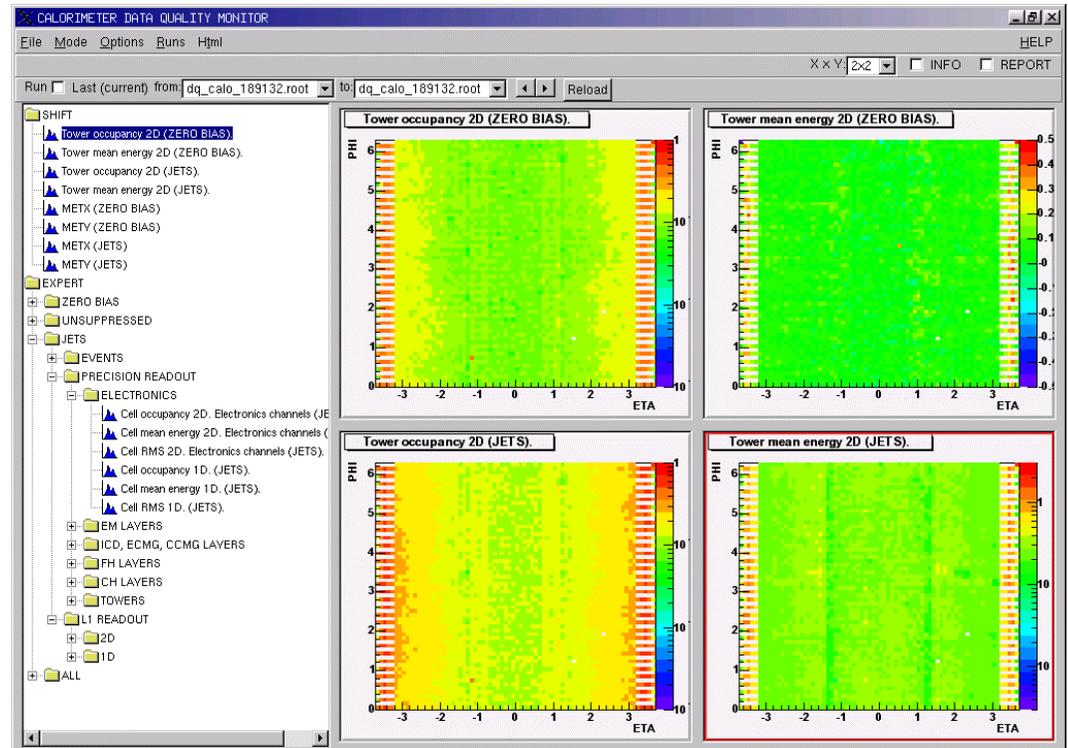
- Problems like tower 2 problem, energy sharing can be found only using analysis for the moment.
- Usually these problem are difficult to monitor online, but we are working on it.
- Monitoring using physics object could be very useful.

The “last novelty” – checker board patterns from *John Gardner* – affect high PT electron distributions.

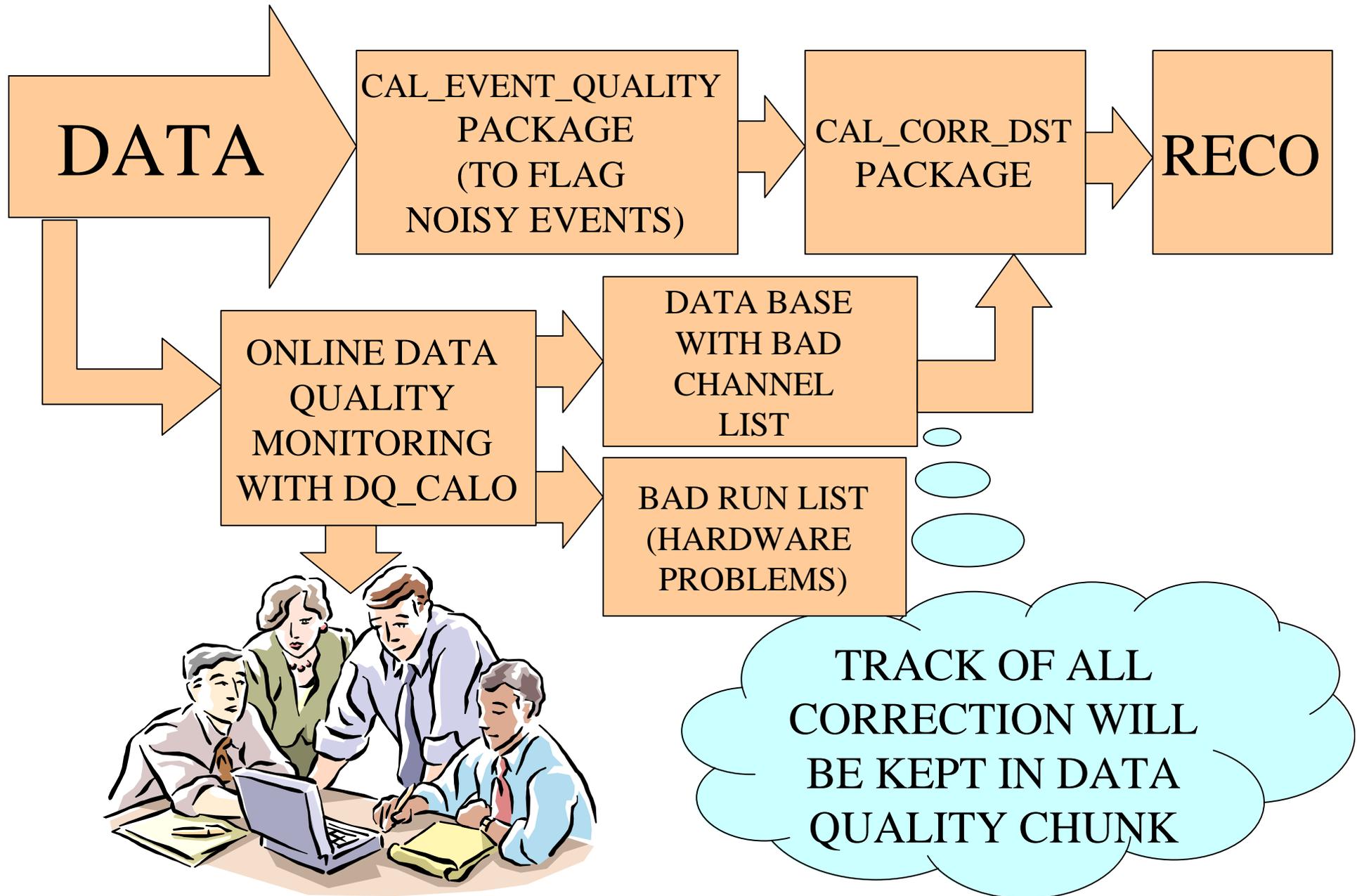


ONLINE MONITORING AND DATA QUALITY CONTROL

- The new data quality calorimeter monitoring program dq_calor is in use. It allows to promptly detect the calorimeter problems.
- Automatic dq controls online
 - ✓ “hot” cell search – in use
 - ✓ “hot” tower search – work in progress
 - ✓ comparison with L1 trigger signals – work in progress
 - ✓ monitoring using the unsuppressed events – work in progress
 - ✓ using cal_event_quality package online – to be done
 - ✓ tower 2 problem monitoring – to be done



THE PLAN



PLANS

- Improve the online tools (dq_cal) to tag problems immediately (cal_event_quality, L1 / precision readout comparison)
- “Hot” cell and “hot” tower correction for the pass 2 in reprocessing
- “Non trivial” problem searching and fixing (e.g. check board patterns)
- Further noise study

LONG TERM PLAN

(under discussion)

- Unsuppressed event monitoring and pedestal correction
- Calorimeter monitoring with physical objects on permanent basis: π^0 , J/ψ , W , Z (CALMO)
- Run quality study: feedback from MET selection to calorimeter quality study. Identify and then correct the identified calorimeter problem. Using MET selection as a quality cross-check.