S. Paganis (Wisconsin)

D. Lelas (LAL Orsay)

Effects of 10.0.2 Parabola Corrections

H8 LARG TB Meeting, CERN, 31-May-2005

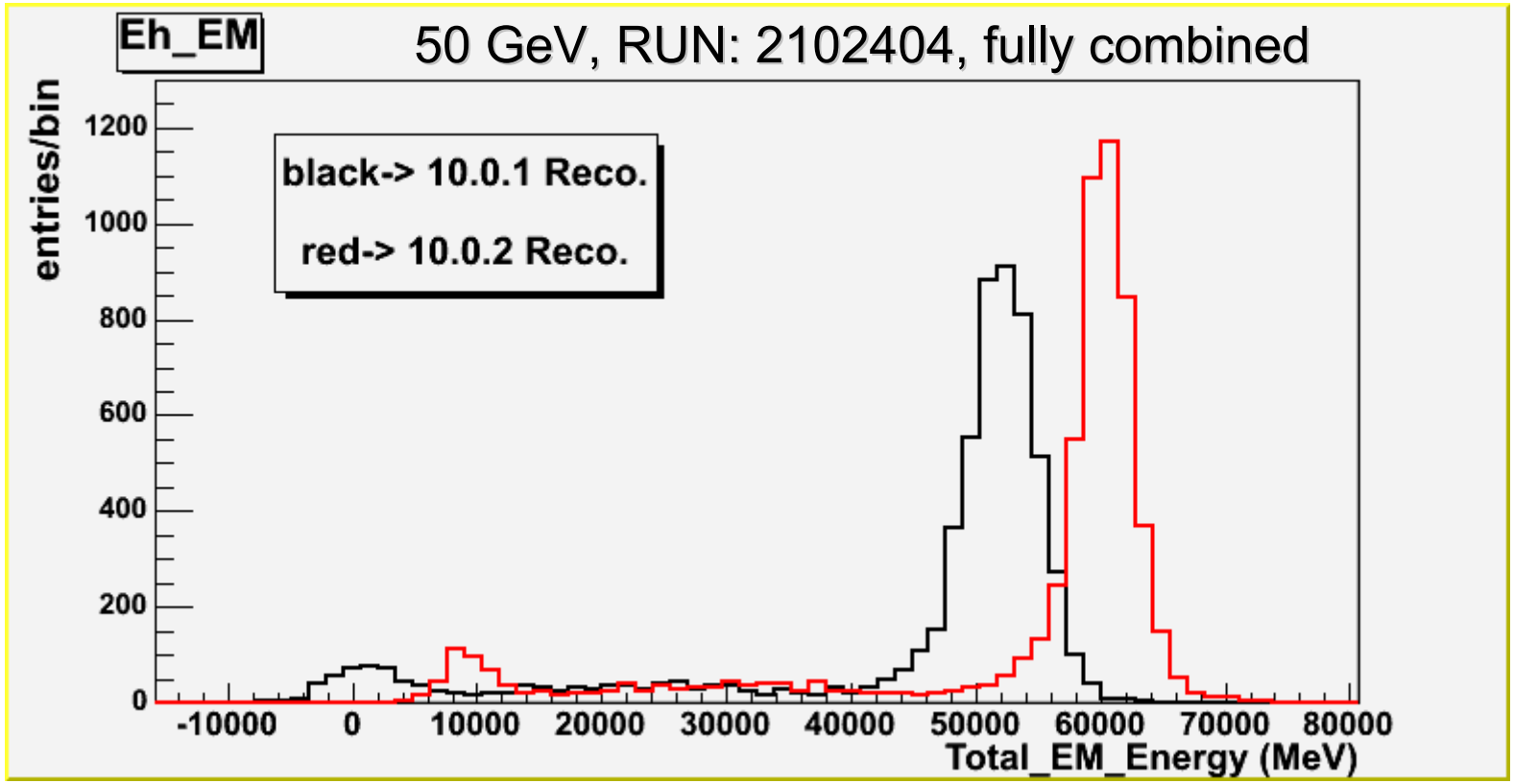
10.0.2 Parabola Corrections (my interpretation)

- 10.0.2 Parabola Corrections have been applied to account for “time dependence” found by N. Kerschen, please see: http://agenda.cern.ch/fullAgenda.php?ida=a051328 (05-April-2005)

- The problem seemed to be connected to low energy and noise cells treatment

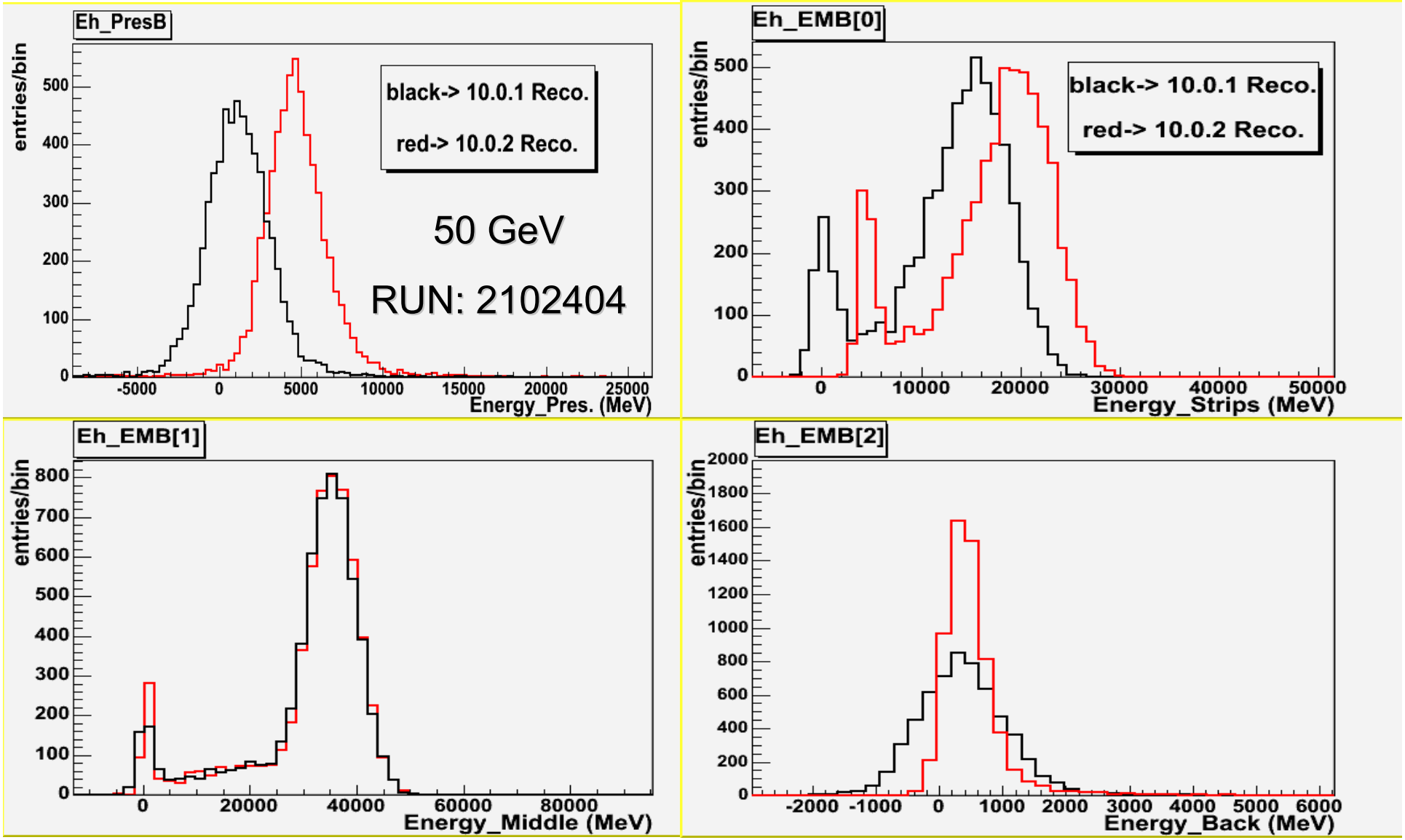
- Maybe, the most important changes implemented in 10.0.2 are:
  - ADC cut was lowered from 50 to 15 ADC counts
  - Search for sample max. is done with abs(signal-pedestal) instead of (signal-pedestal); (I’m not sure what is taken below the cut or when parabola fails. Experts can clarify)

Effects on electron runs (1/3)



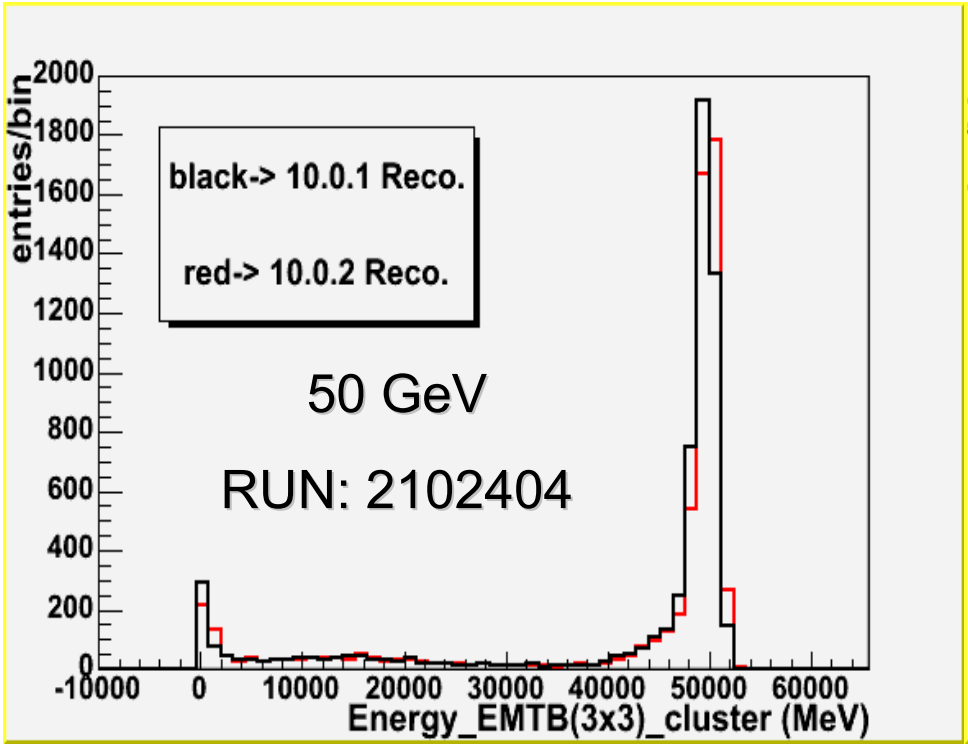
- NO CUTS have been applied for electron runs presented here and in following two slides
- Switching from one reconstruction release to another introduces large shift in the total EM energy as measured by LAr!!! …Very confusing, to say at least…

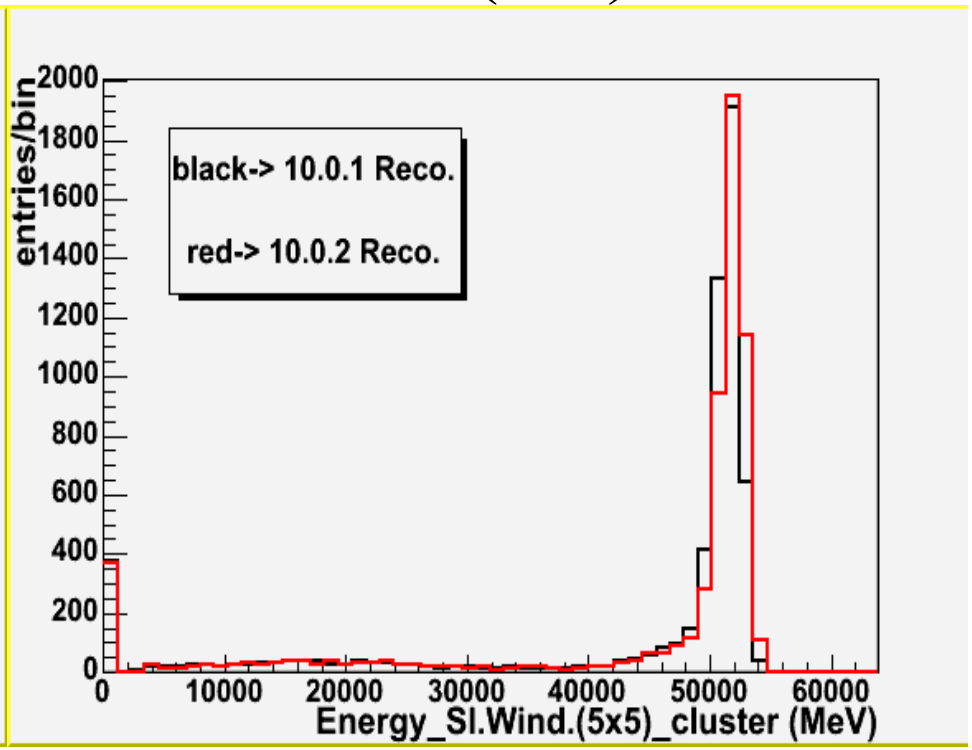
Effects on electron runs (2/3)



- There are substantial POSITIVE shifts in total energies of the LAr Compartments!

Effects on electron runs (3/3)

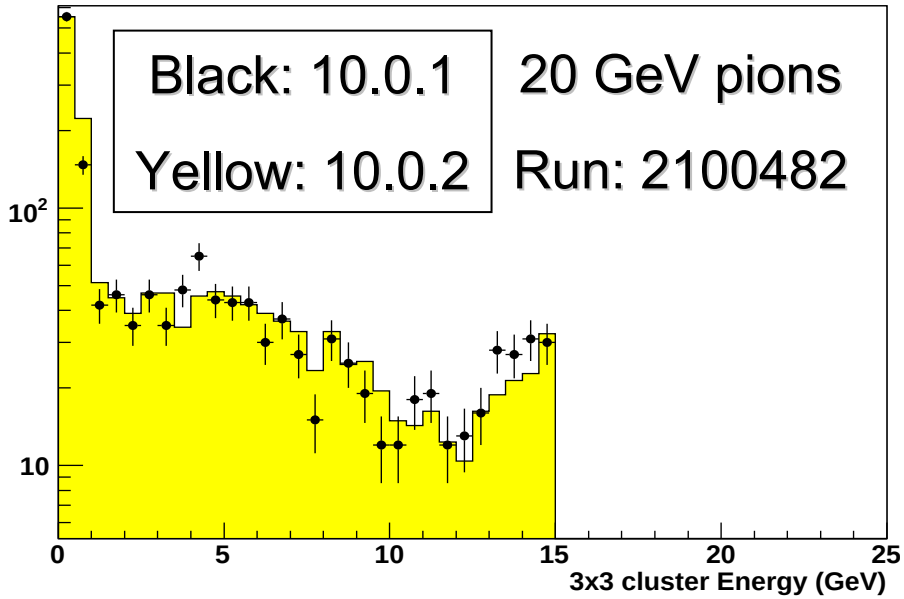


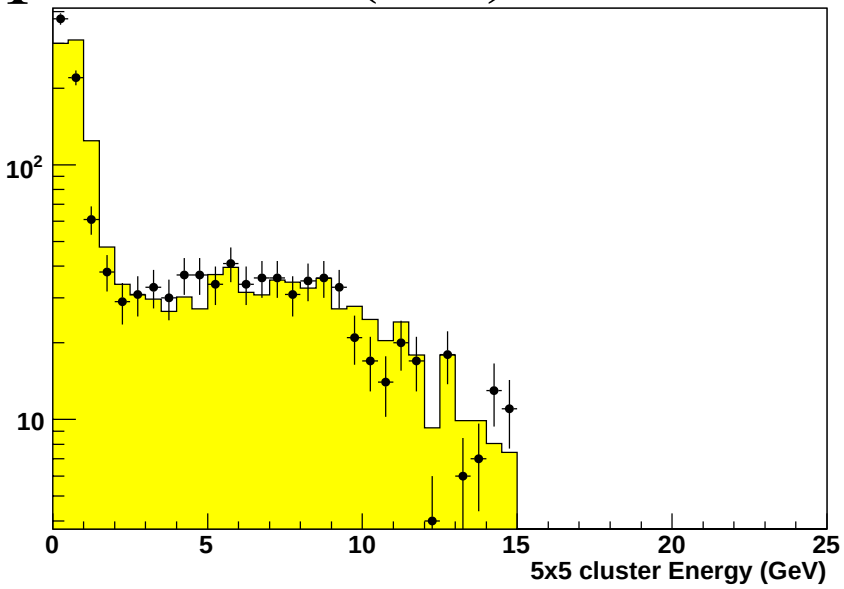


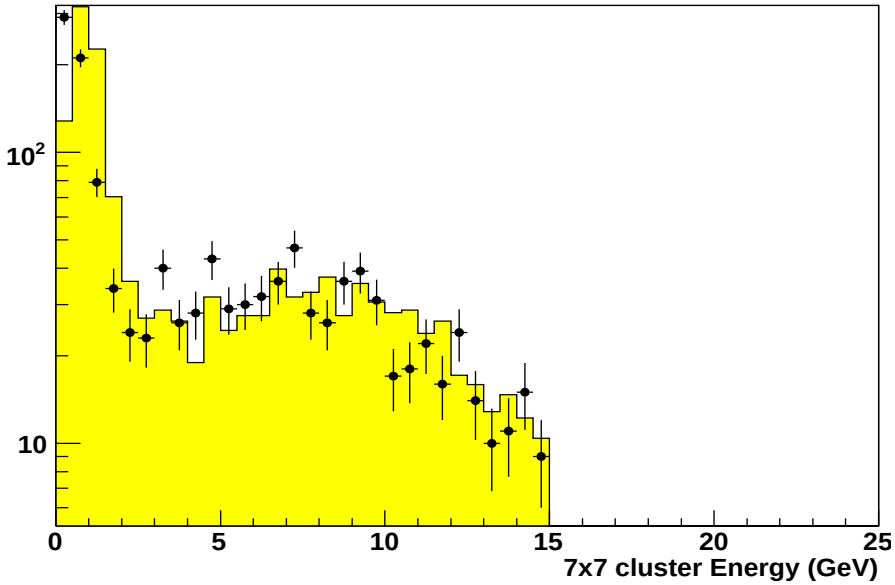
- As expected, small electron clusters (3x3 and 5x5) are not so "affected" by 10.0.2 corrections (was checked before). 50 GeV electron clusters, essentially, do not have low energy cells…
- However, previous plots show that "low energy cells" bias seems to be STILL present in 10.0.2
- This could be specially dangerous for pion studies, i.e. for larger clusters. For magnetic field studies, muons,…, as well.

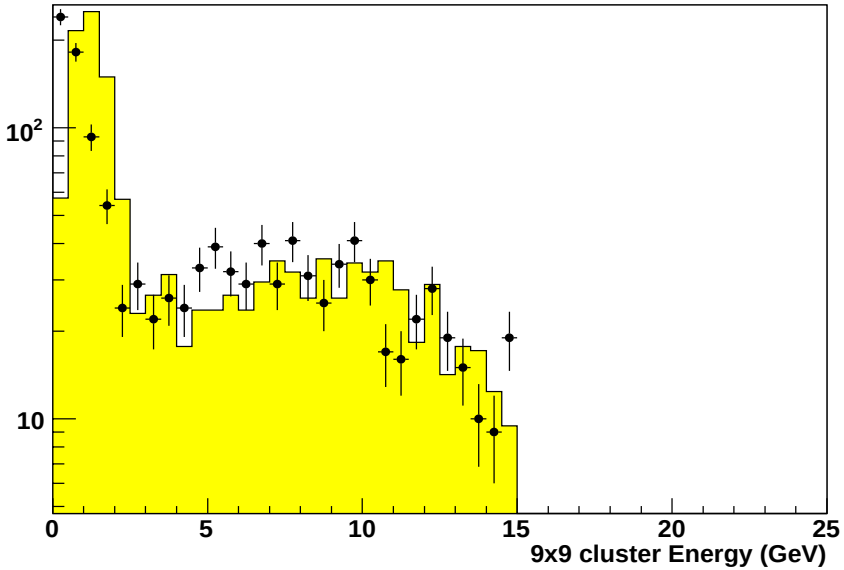
Stathes

Effects on pion runs (1/2)





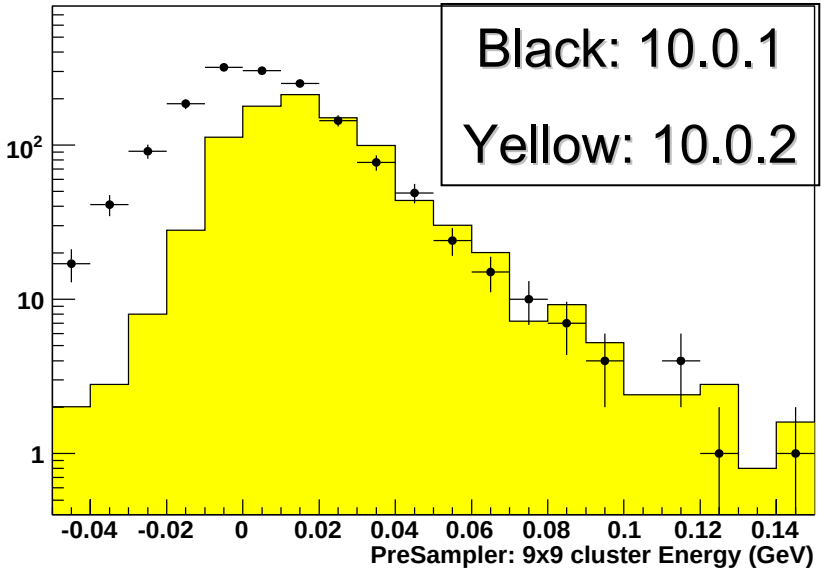


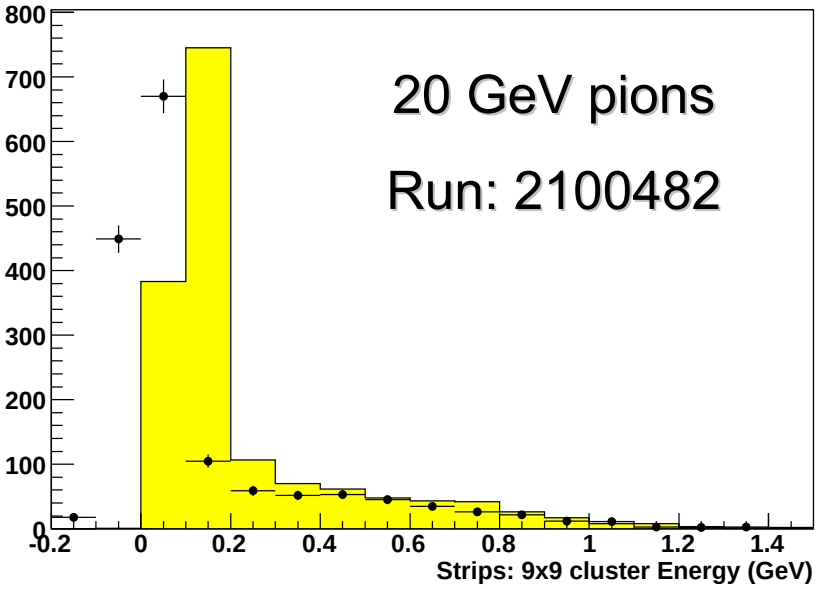


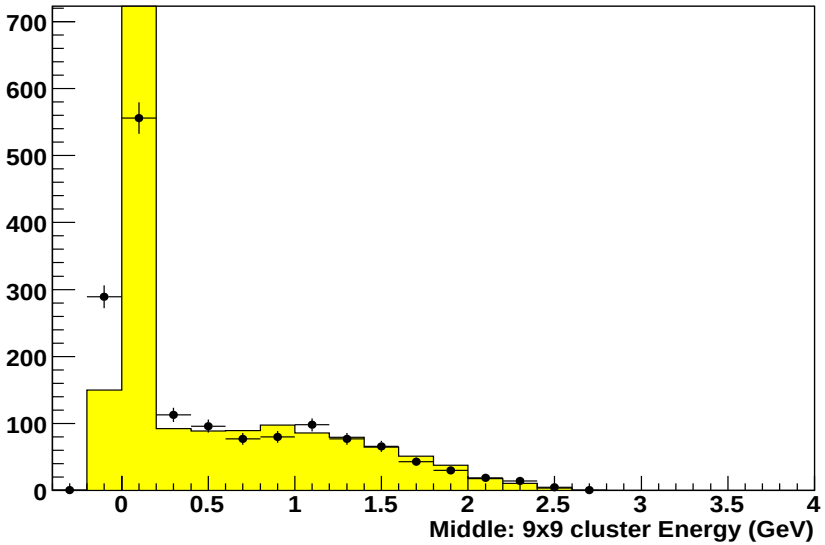
- POSITIVE shifts at lower energies of the cluster rise with cluster size, for 10.0.2 release

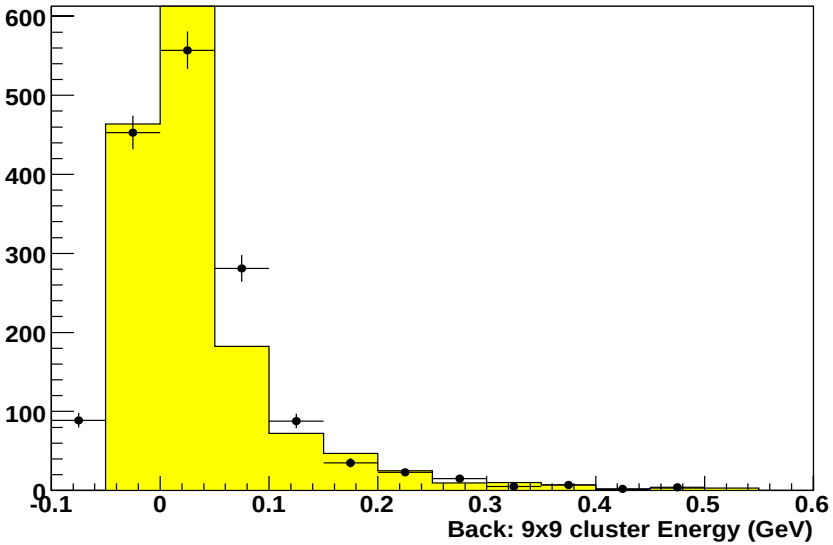
Stathes

Effects on pion runs (2/2)









- 9x9 clusters, the largest shift seems to be in the strips (perhaps due to largest No. of cells)

Conclusions

- 10.0.2 Parabola Corrections were applied to account for “time dependence”, specially for low energy and noise cells.
- These corrections introduce LARGE POSITIVE SHIFTS in the LAr compartment energies (potentially very confusing for new analysers, like for Tile or ID people)
- Smaller electron clustering give comparable results with respect to 10.0.1, at least for 50 GeV electrons, where one doesn’t expect many low energy cells
- However, the “low energy and noise cells” bias is STILL there and it seems to be even worse than in reconstruction releases prior to 10.0.2!! Observed positive bias could be the consequence of “abs(signal-pedestal)” treatment in 10.0.2….
- Pion checks show clear positive shifts, at lower-end of the cluster energies, with increasing of cluster size, for 10.0.2 (not only in comparison with 10.0.1)

- OFCs are needed, of course, but we should REALLY keep in mind these things…