Muons from Flight SoftWare (= "FSW")

- See my WorkShopSix presentation to understand the plots here.
- The point of these slides: FSW does indeed give the same TKR-to-CAL muon results as we had before with LATTE.
- Which means that both FSW ("online") and the pipeline are picking up the right settings, calibration constants, et cetera.
- However, a small issue on two channels persists (but that's not FSW's fault). It is that the *online hardware LAC settings* got corrected but not the *offline* value used in $LATCalibRoot/CAL/LAT/tholdci_16twr_01_25_2006.xml

The data sample

For the “muon PSF” page:

9 runs,

six LAT 711 runs (077002497 to 2502)

three LAT 701 runs (077002503 to 2505)

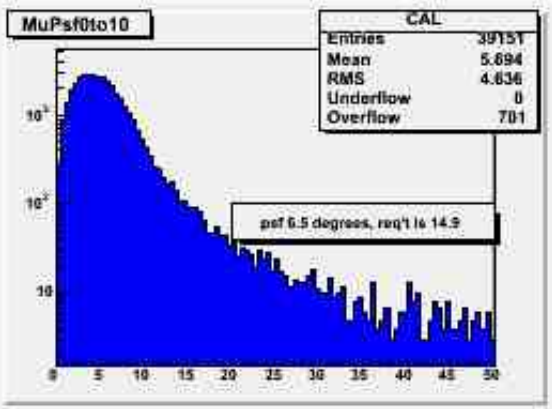
(I realized that I mixed 711 and 701 when I was writing this up. Shouldn’t change anything.)

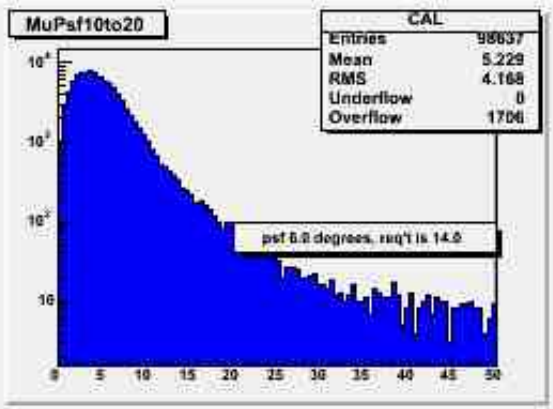
For the “energy per crystal” pages:

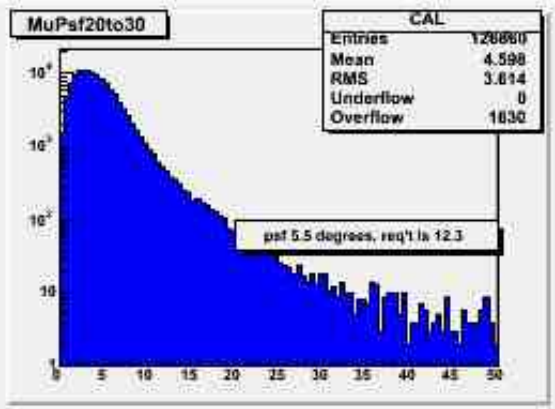
seven LAT 701 runs (077002485 to 2491)

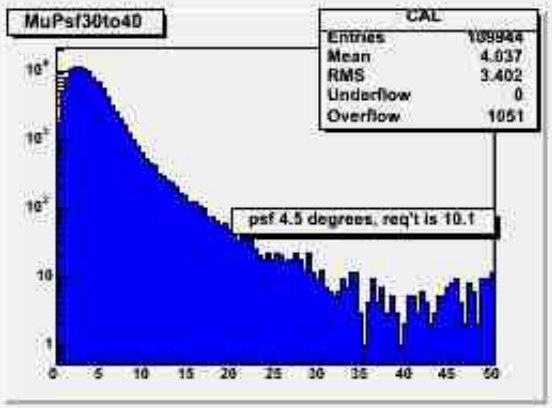
(the idea was just to try some different files for the two jobs)

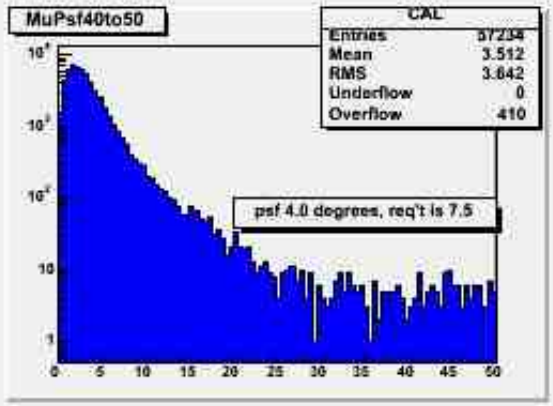
Nine 10° zenith angle intervals

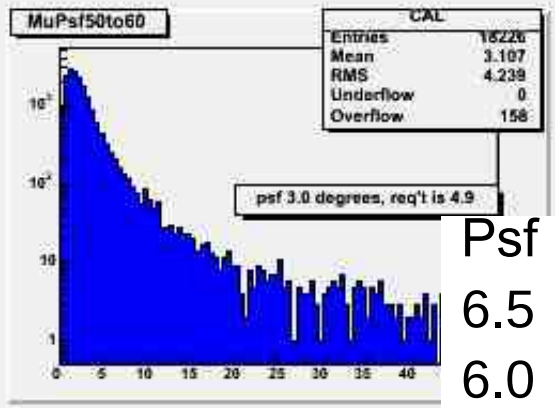


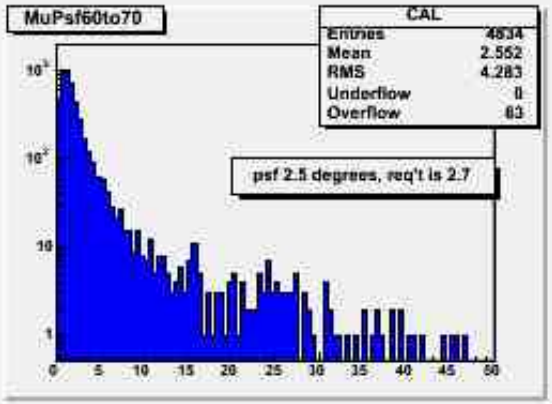


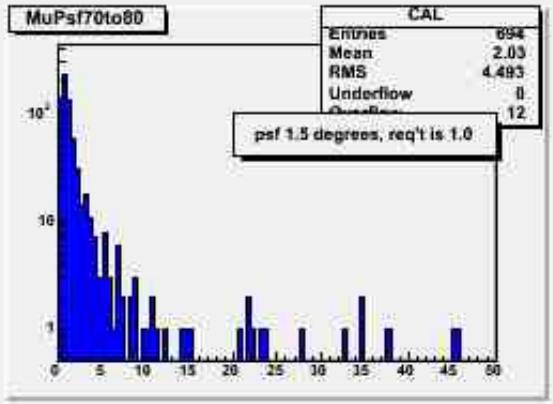










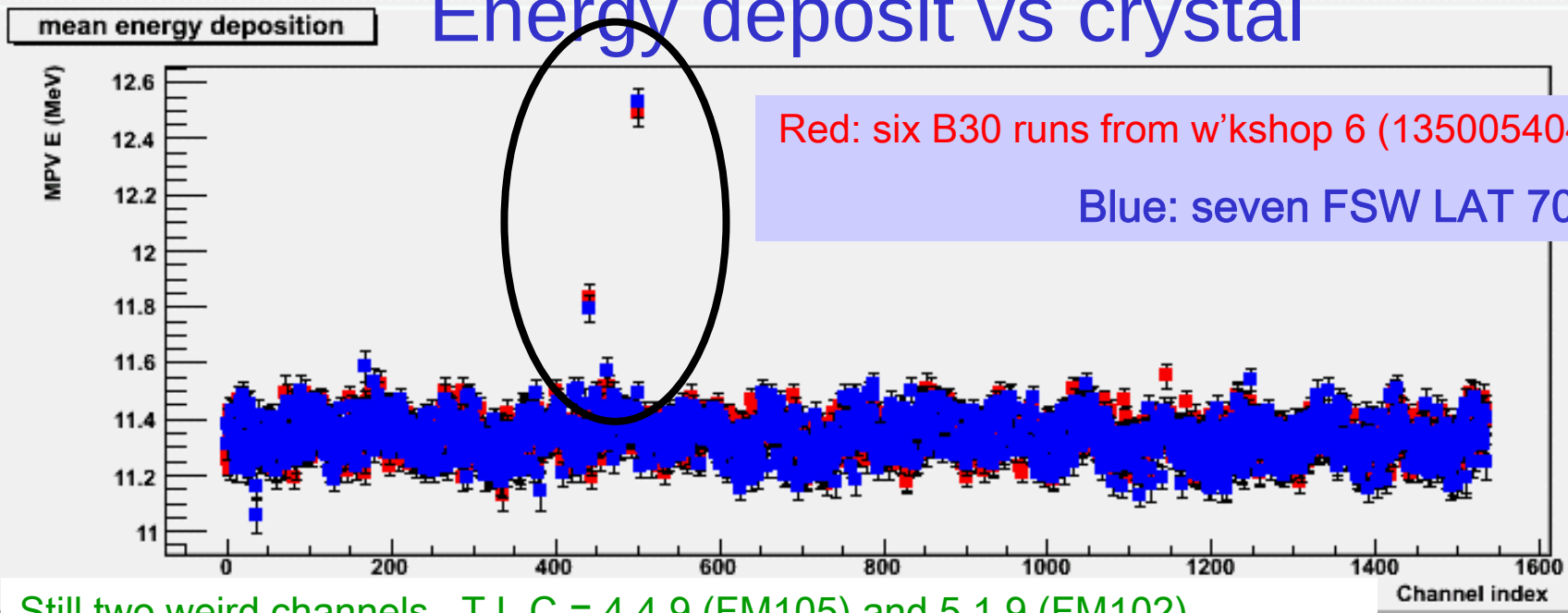


req't met:

Gets marginal beyond 70 degrees off axis.

Psf req	
6.5	14.9
6.0	14.0
5.5	12.3
4.5	10.1
4.0	7.5
3.0	4.9
2.5	2.7
1.5	1.0

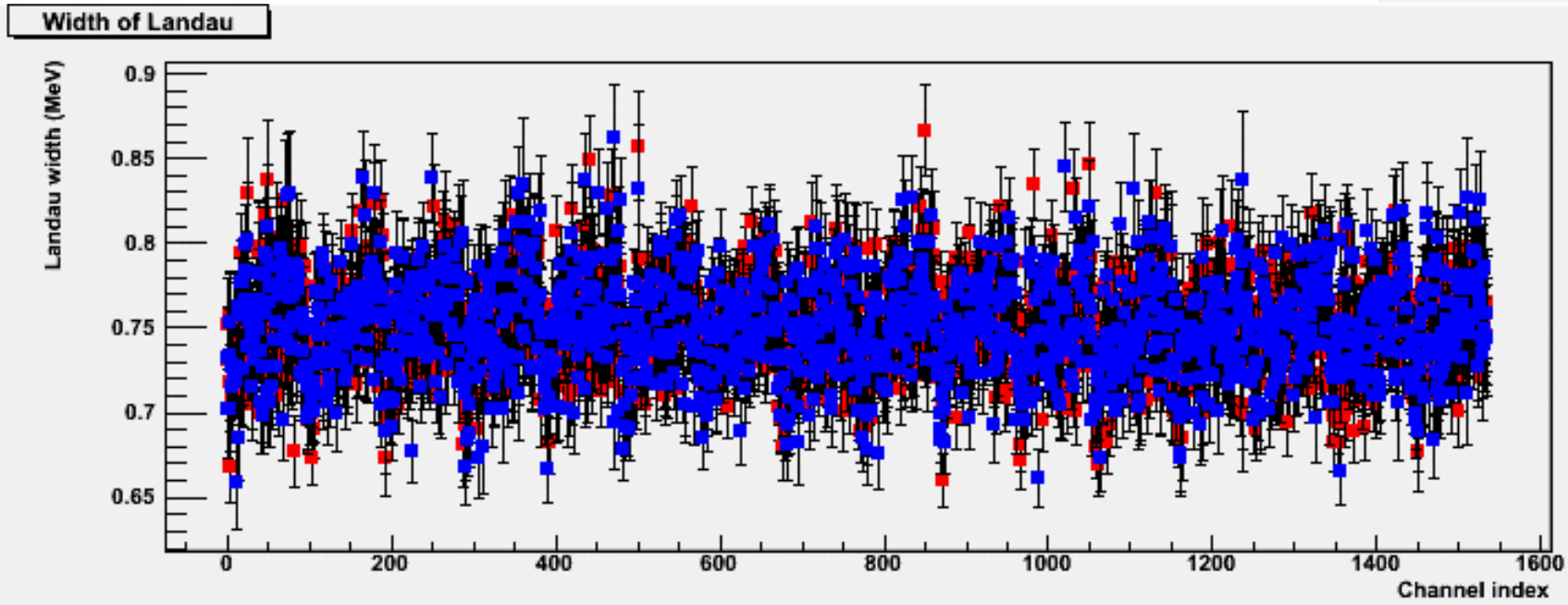
Energy deposit vs crystal



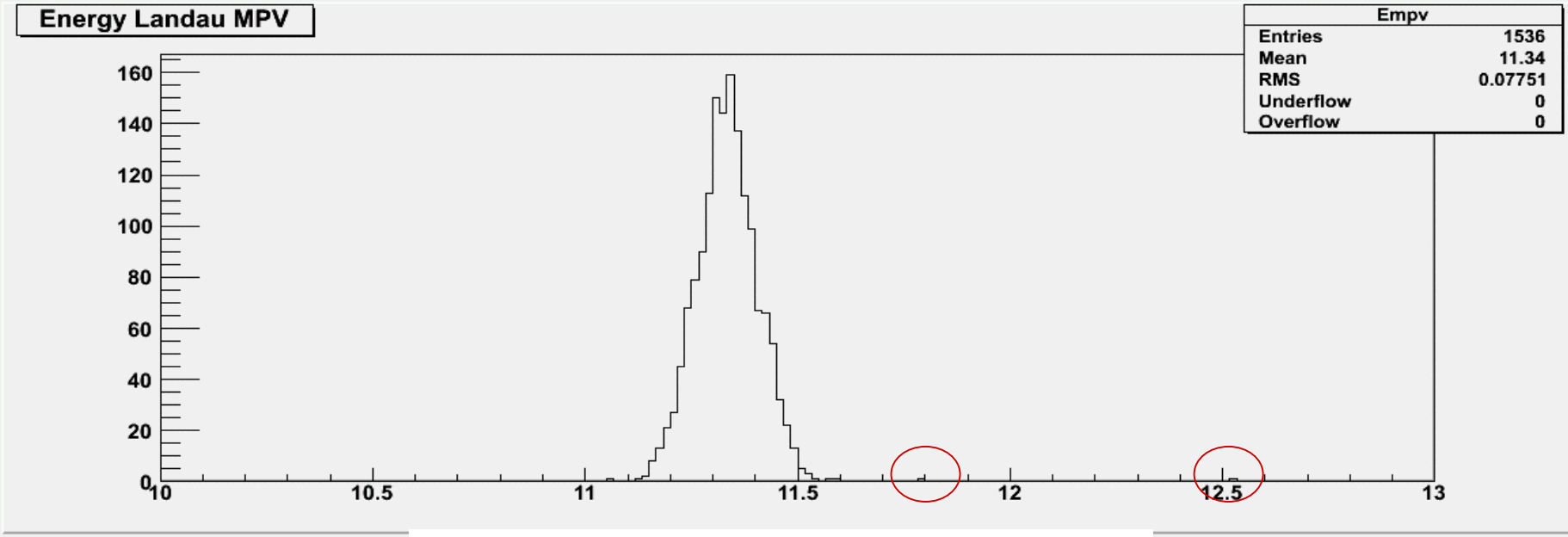
Red: six B30 runs from w'kshop 6 (135005404 to 14)

Blue: seven FSW LAT 701 runs

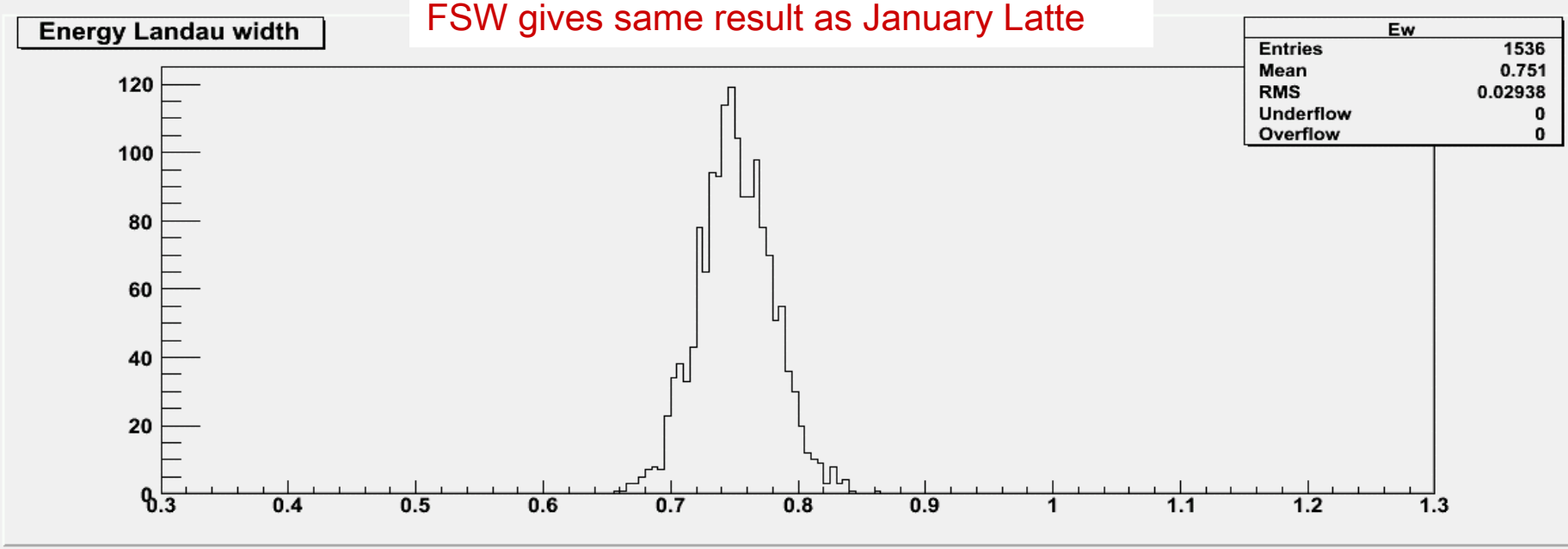
Still two weird channels, T L C = 4 4 9 (FM105) and 5 1 9 (FM102)



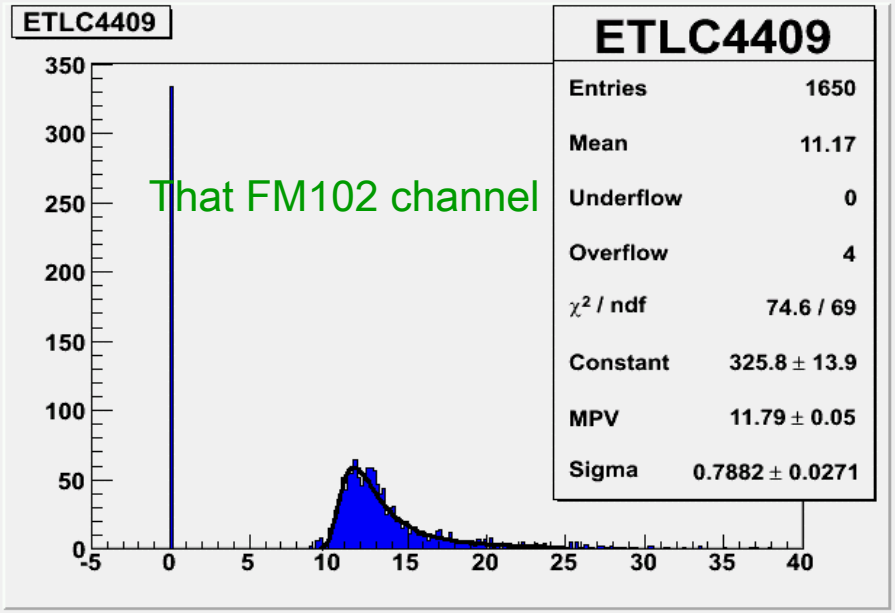
Energy deposit histograms

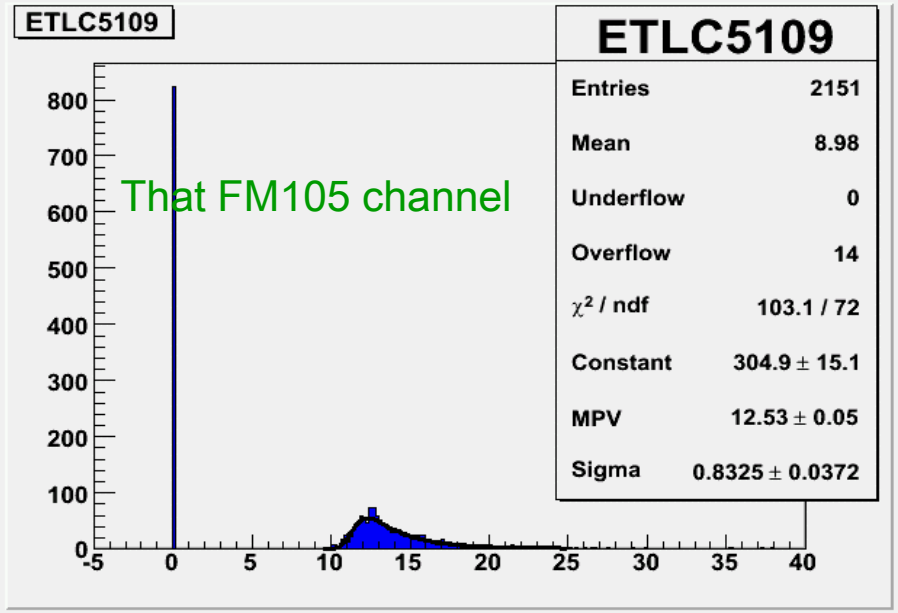


FSW gives same result as January Latte

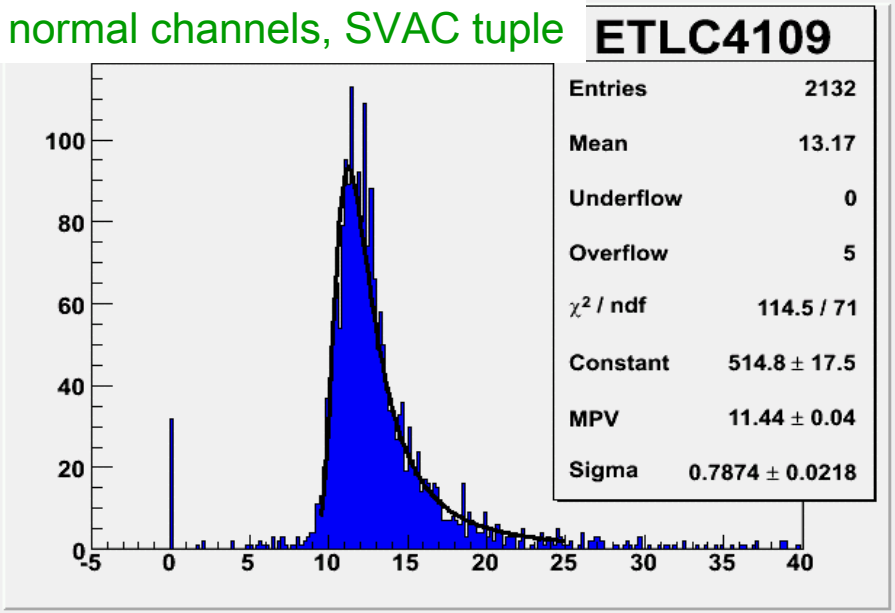


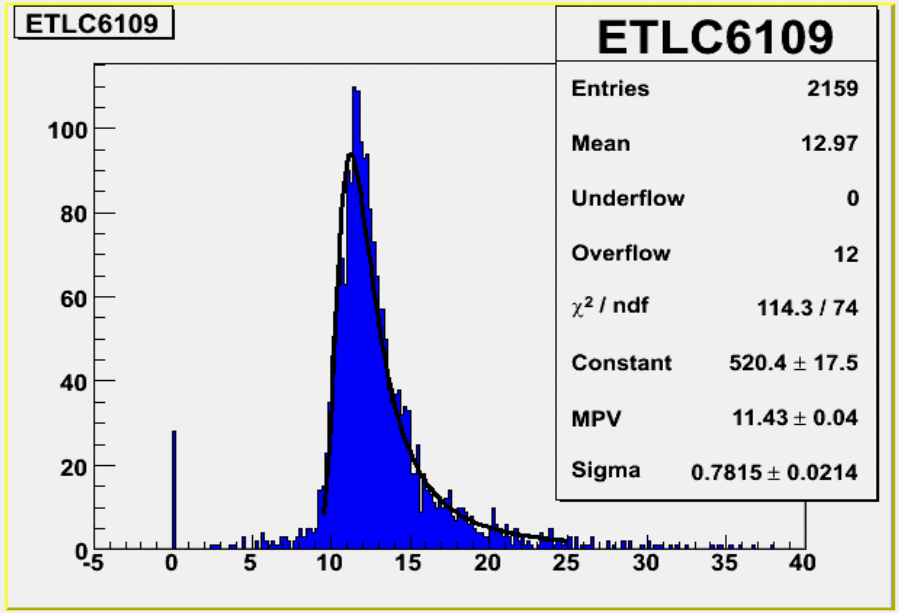
Those 2 renegade channels (here, FSW)





2 normal channels, SVAC tuple

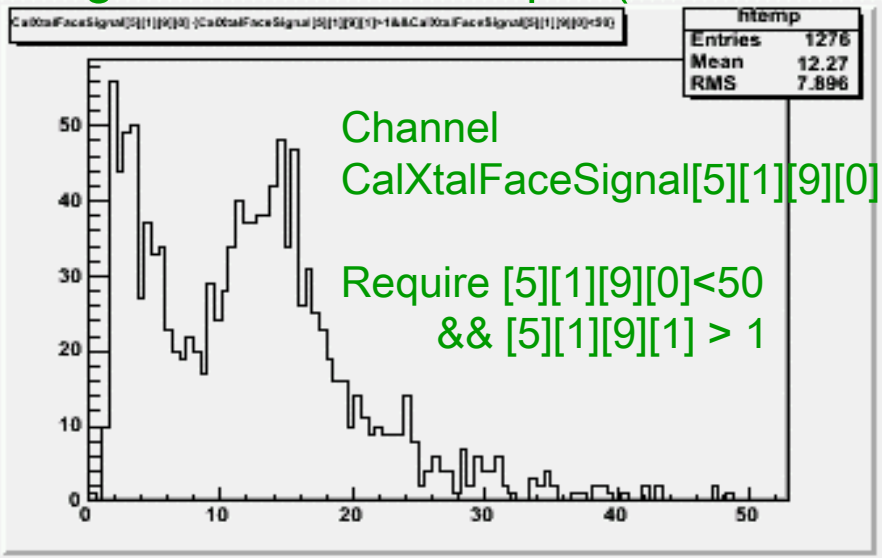


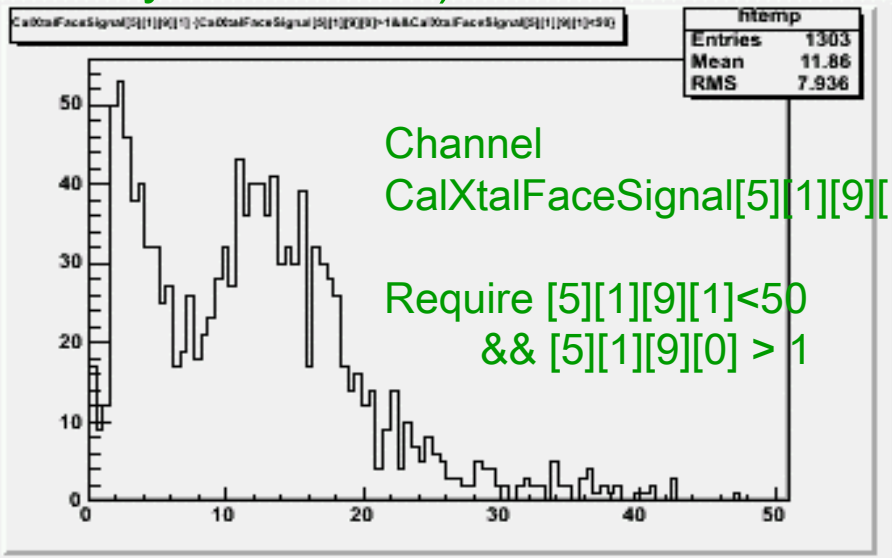


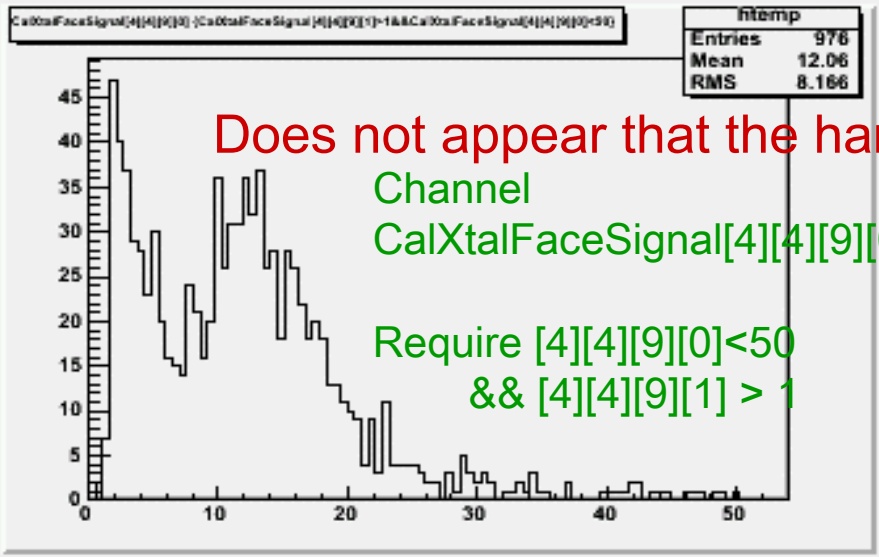
But Anders said LAC's fixed, and Anders is right (as usual)

Run 077002486

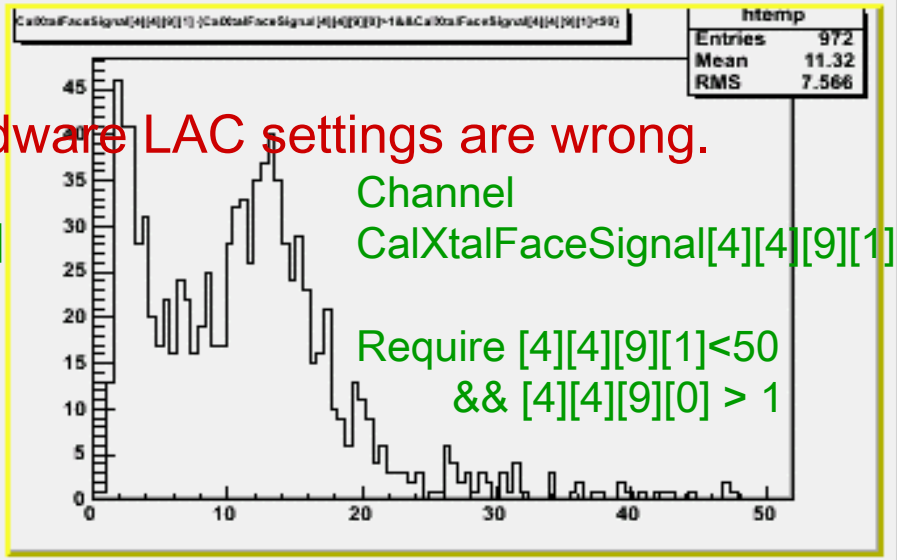
Straight from the CalTuple (uncontaminated by Dave code), for LAT 701 run.





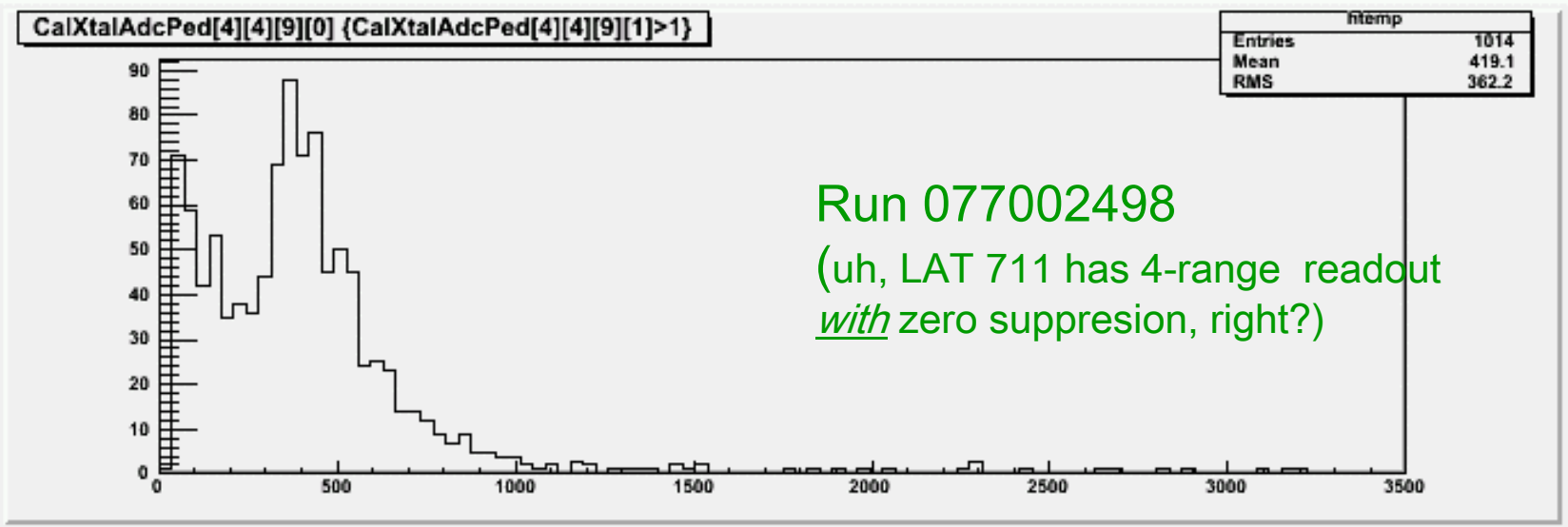


Does not appear that the hardware LAC settings are wrong.



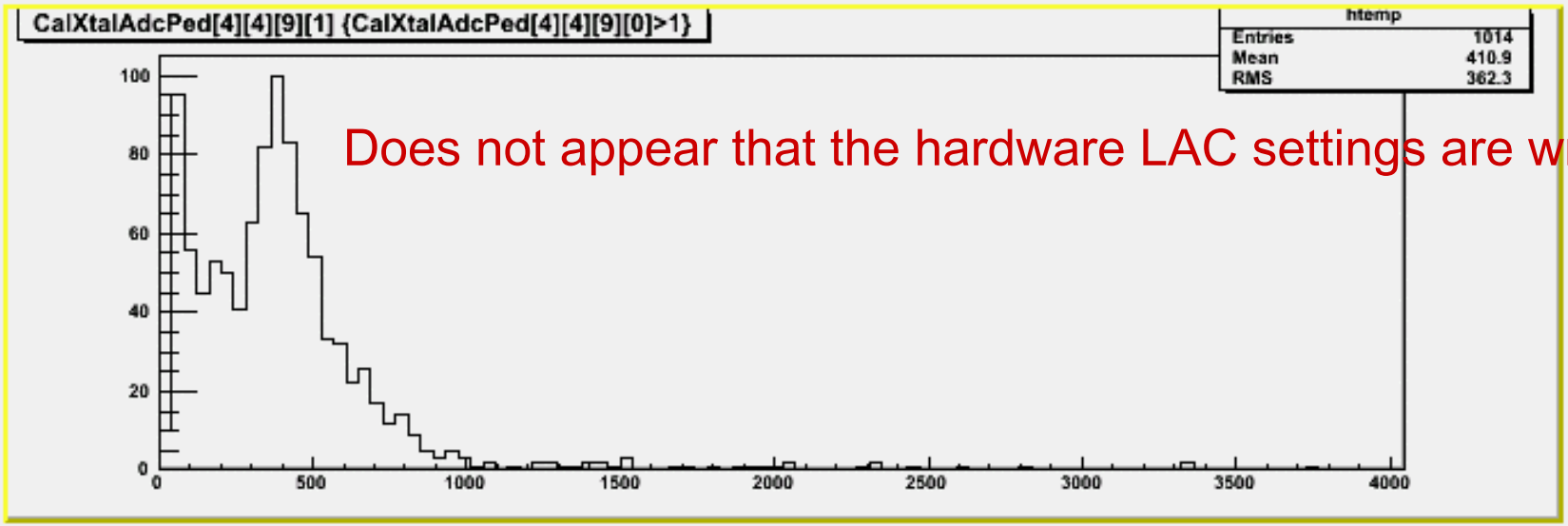
LAT 711 used to be B30

Straight from the CalTuple (uncontaminated by Dave code), for LAT 711 run.



Run 077002498

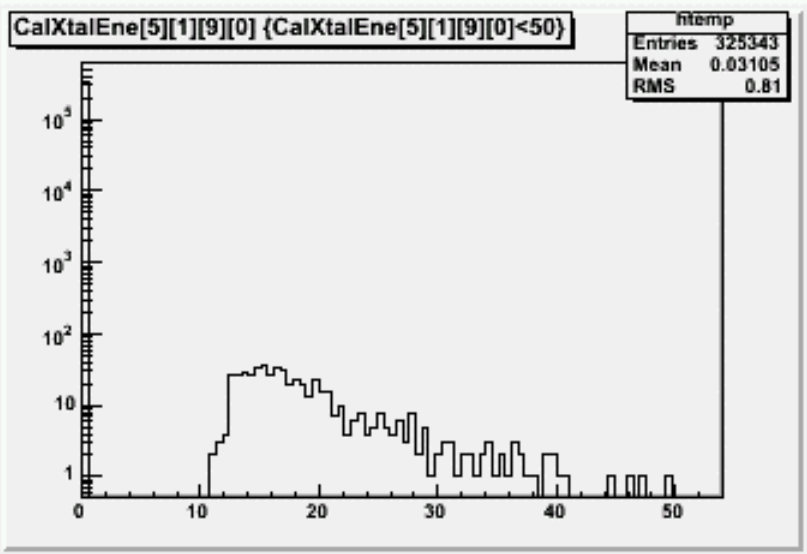
(uh, LAT 711 has 4-range readout *with* zero suppresion, right?)

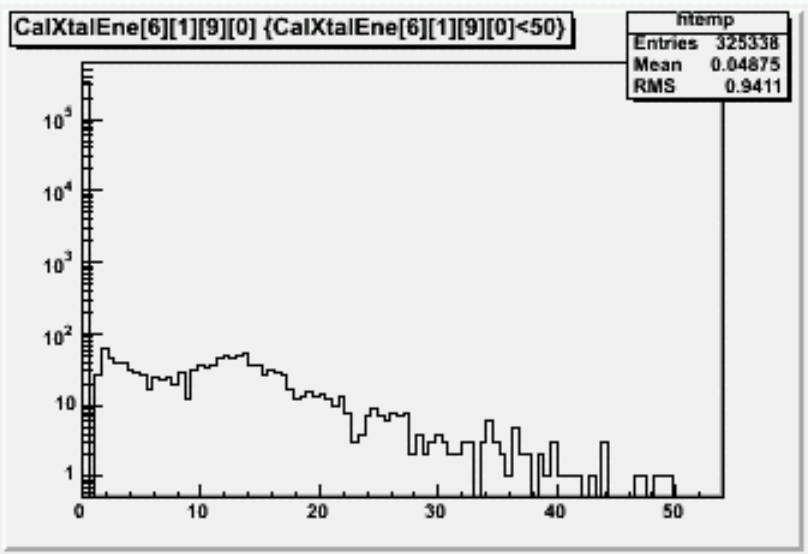


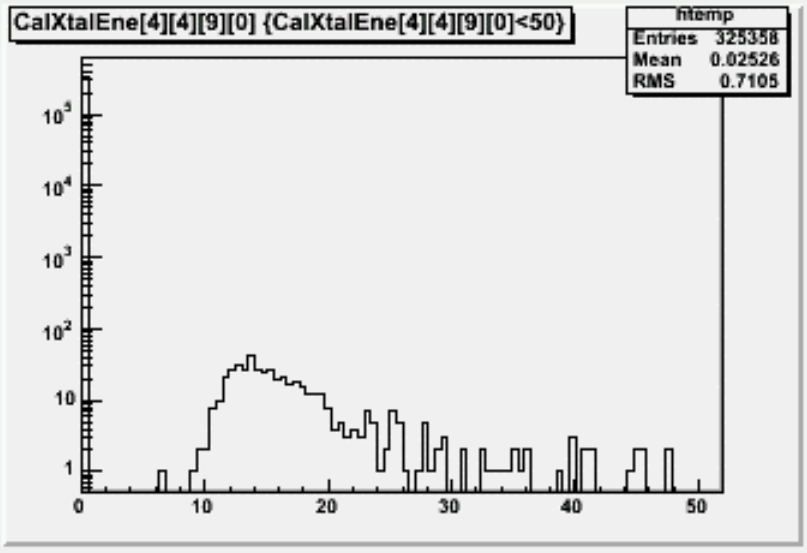
Does not appear that the hardware LAC settings are wrong.

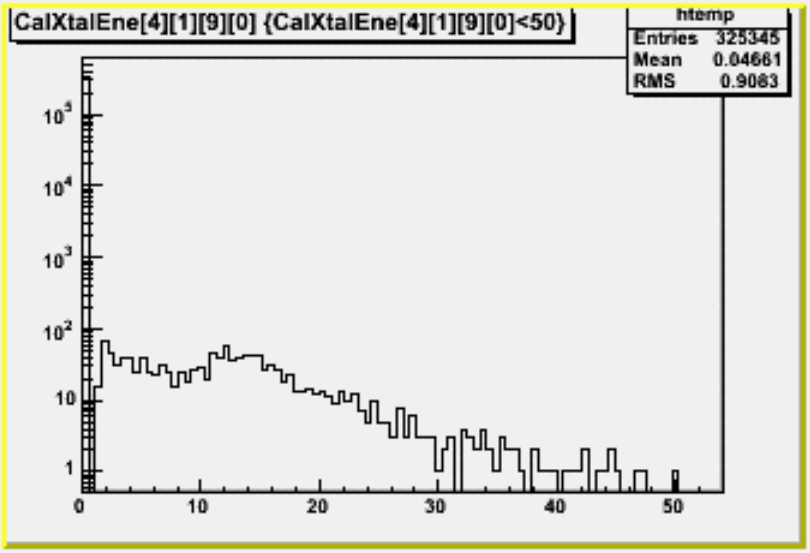
LAC looks okay in CalTuple, so how about in SVAC Tuple?

YIKES! Looks like CalXtalResponse applies a cut to these two channels.









And the answer is…

- The online LAC setting for these two channels did indeed get fixed – XtalRecTool.cxx shows that the single face values stored in the CalTuple get calculated first.
- But to calculate the crystal energy using both faces, a *cut* on the *offline* LAC value is applied a little farther on in the code, and the result is stored in the SVAC tuple.
- You can look at $LATCalibRoot/CAL/LAT/tholdci_16twr_01_25_2006.xml where LACDAC is still 127 for the POS end of crystals 4 4 9 and 5 1 9.
- The solution is to re-generate tholdci_16twr using the current online LAC settings.

Conclusions

- January LATTE muons look the same as April FSW muons.

2 renegade channels (January, looser cuts)