System Tests

GlastRelease systests run upto v4r3p1.

--TKRTRKENERGY for VerticalGamma1GeV.

-- large increase in memory usage relative to v4r1. By swapping out packages one by one, it seems that either TkrDigi or the Root macros may be the culprits.

Engineering model systests have been run for v3r0402p9, v3r0402p17/18

-- Several differences in CalDigi distributions between v3r0402p9 and later versions

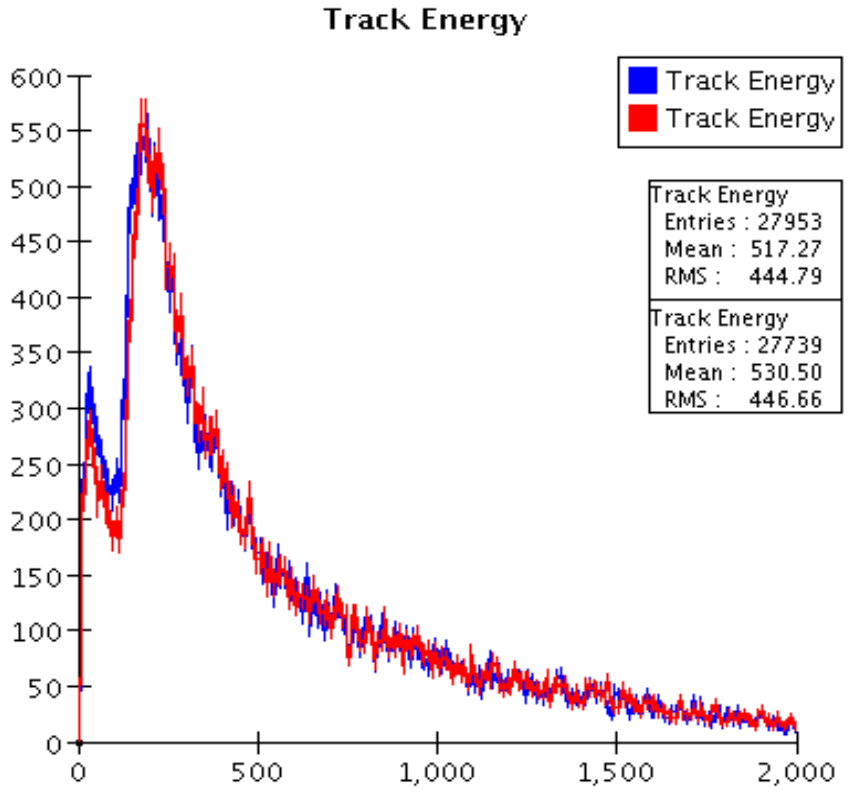
-- These systests have fewer distributions than the GR ones. They were revamped a month or so ago (before the analysis workshop) and sent to I&T for comments.

Richard and Karen have been making the interface better.

TKRTRKENERGY

There seem to be a more events in the low energy peak for v4r3p1 compared to v4r2. Several people have suggested that this is not a significant effect and can safely be ignored.

VerticalGamma 1GeV



Some Tracker Distributions

TKRTRKNHITS – Track: number of hits
TKRTRKQUALITY – Track: quality
TKRTRKSTARTZ – Track: start z
TKRTRKSTARTX – Track: start x
TKRTRKSTARTY – Track: start y
TKRTRKSLOPEX – Track: slope x
TKRTRKSLOPEY – Track: slope y
TKRTRKENERGY – Track: Energy
TKRHITRADLEN – Track RadLen/plane
TKRHITACTDIS – Track: Active Distance
TKRHITPLANEZ – Track: Track Hit Plane Z

I think that some of these cause havoc in the system tests comparisons as the conversion from KS statistic to probability depends on the effective number of events. In this case the entries are strongly correlated with each other, so the effective number of events is not the actual number of events. We don't account for this, so the system often flags statistical fluctuations as significant differences.

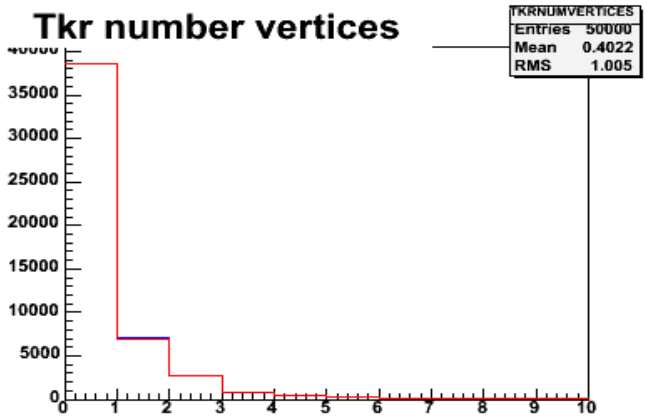
Should we consider changing some of these to be just for the first track?

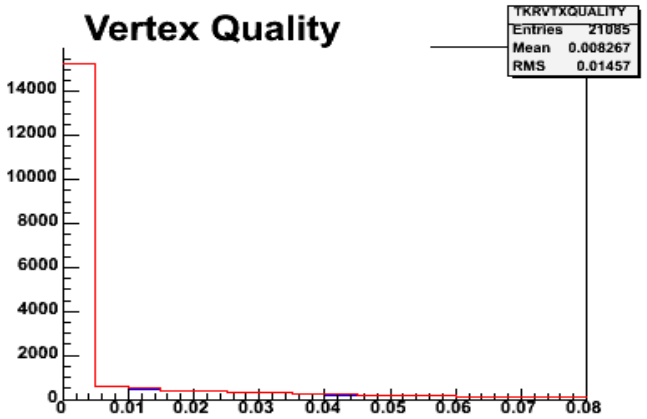
Do we want to change the names to something more standard?

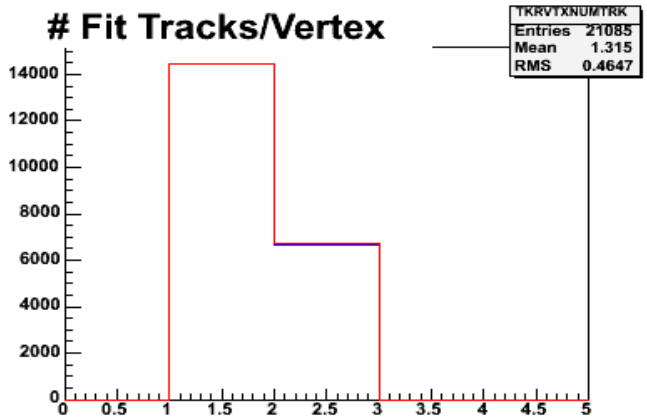
More Tracker Distributions

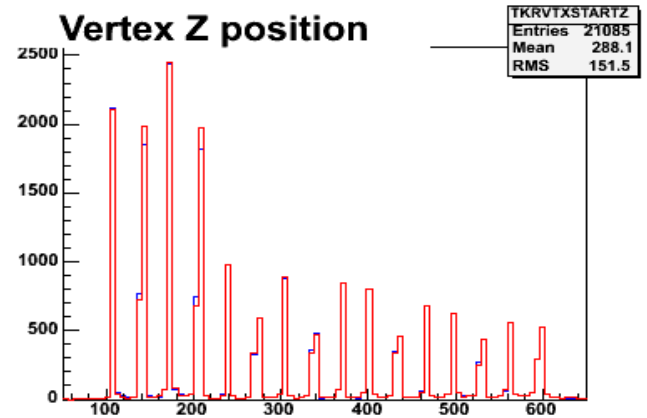
TKRVTXQUALITY - Vertex Quality
TKRVTXSTARTZ - Vertex Z position
TKRVTXNUMTRK - # Fit Tracks/Vertex

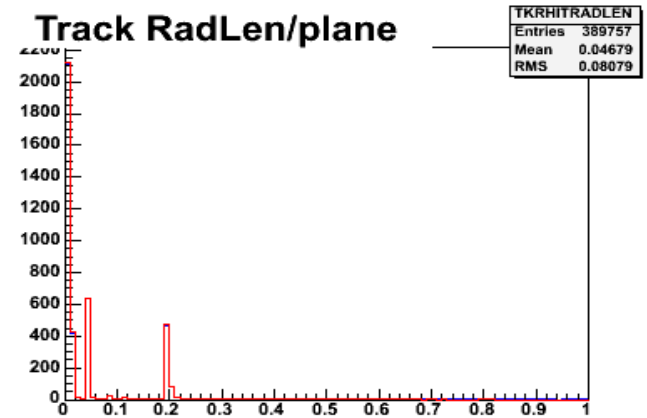
We don't look at any tracker variables from the digi.root file.
Do we want to add something to look at TOT?

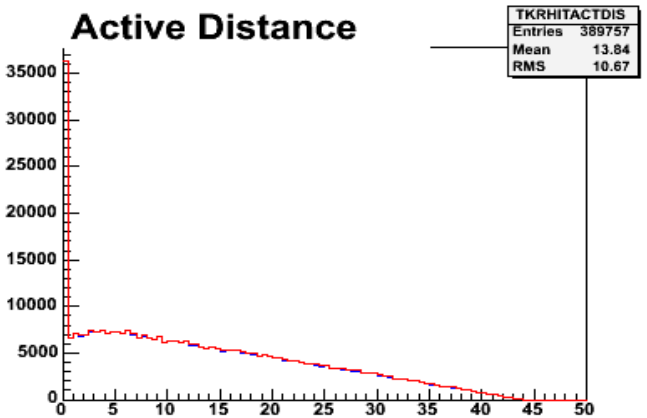

Tkr number vertices
TKRNUMVERTICES
Entries 50000
Mean 0.4022
RMS 1.005

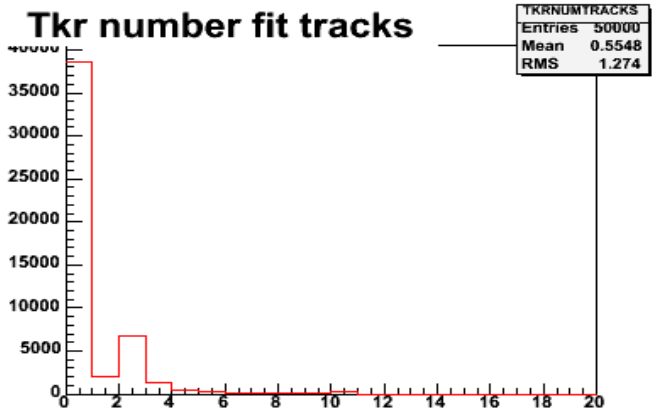

Vertex Quality
TKRVTXQUALITY
Entries 21085
Mean 0.008267
RMS 0.01457

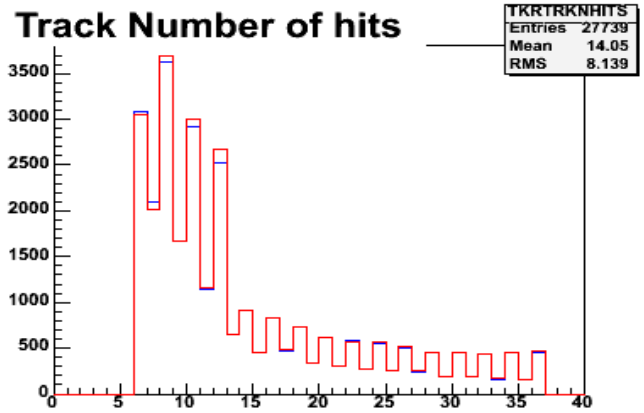

Fit Tracks/Vertex
TKRVTXNUMTRK
Entries 21085
Mean 1.315
RMS 0.4647

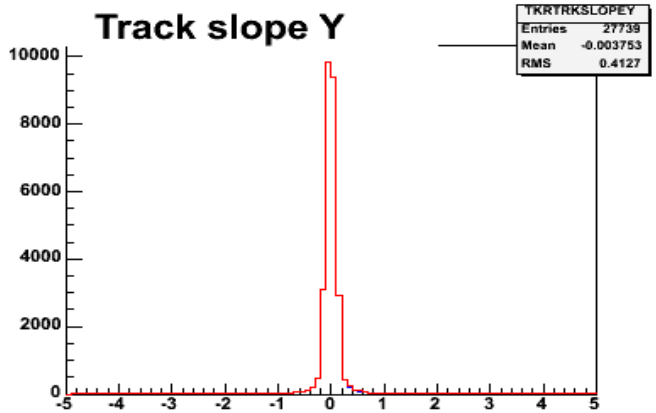

Vertex Z position
TKRVTXSTARTZ
Entries 21085
Mean 288.1
RMS 151.5

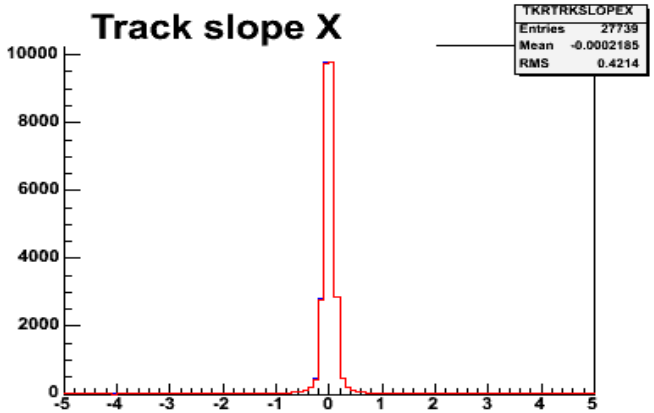

Track RadLen/plane
TKRHITRADLEN
Entries 389757
Mean 0.04679
RMS 0.08079

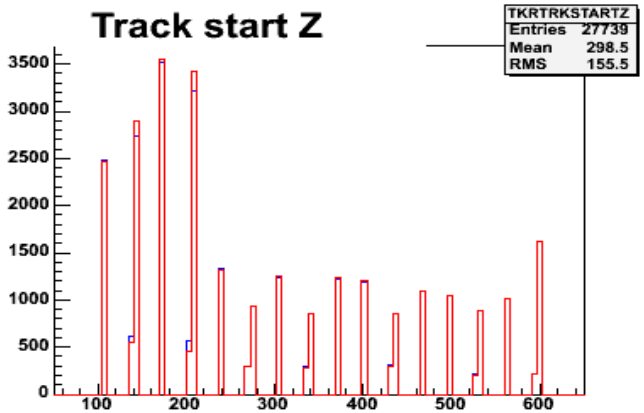

Active Distance
TKRHITACTDIS
Entries 389757
Mean 13.84
RMS 10.67

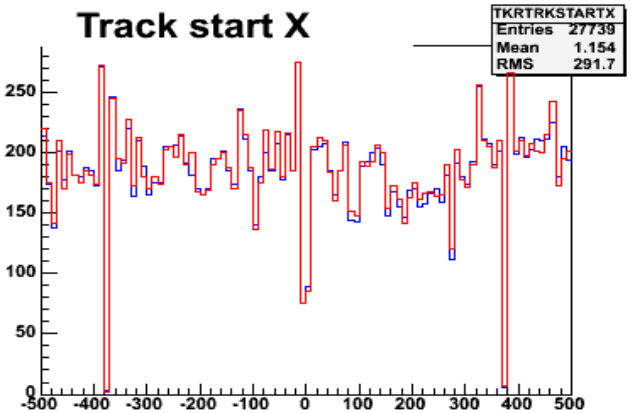

Tkr number fit tracks
TKRNUMTRACKS
Entries 50000
Mean 0.5548
RMS 1.274

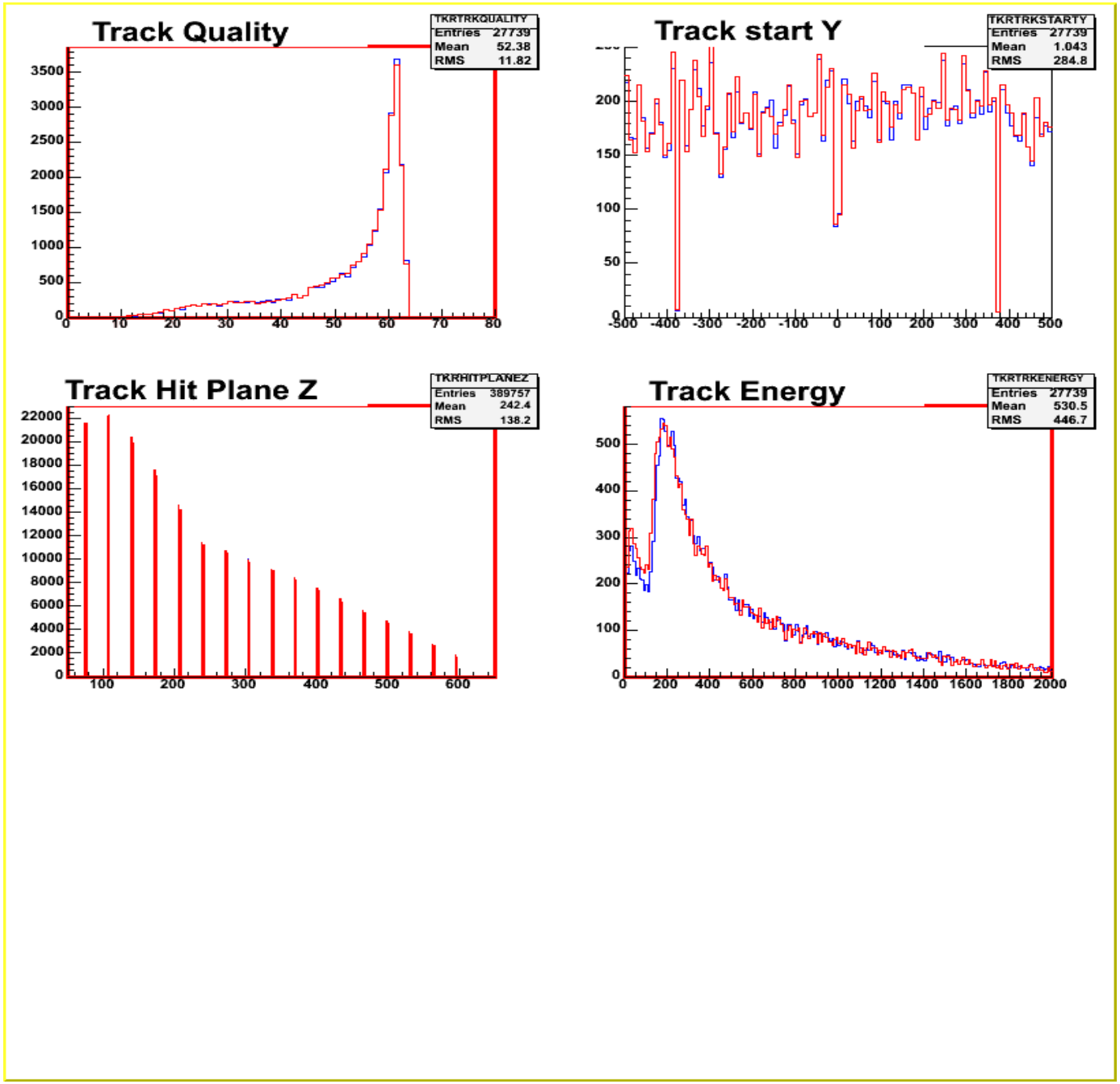

Track Number of hits
TKRTRKNHITS
Entries 27739
Mean 14.05
RMS 8.139


Track slope Y
TKRTRKSLOPEY
Entries 27739
Mean -0.003753
RMS 0.4127


Track slope X
TKRTRKSLOPEX
Entries 27739
Mean -0.0002185
RMS 0.4214


Track start Z
TKRTRKSTARTZ
Entries 27739
Mean 298.5
RMS 155.5


Track start X
TKRTRKSTARTX
Entries 27739
Mean 1.154
RMS 291.7


Track Quality
TKRTRKQUALITY
Entries 27739
Mean 52.38
RMS 11.82
Track start Y
TKRTRKSTARTY
Entries 27739
Mean 1.043
RMS 284.8
Track Hit Plane Z
TKRHITPLANEZ
Entries 389757
Mean 242.4
RMS 138.2
Track Energy
TKRTRKENERGY
Entries 27739
Mean 530.5
RMS 446.7

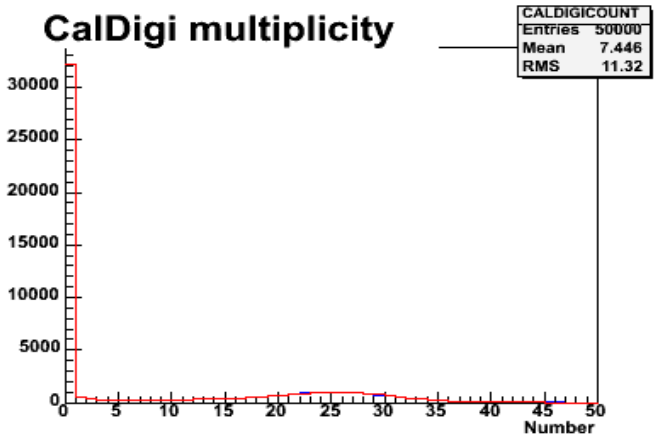
CalDigi Distributions

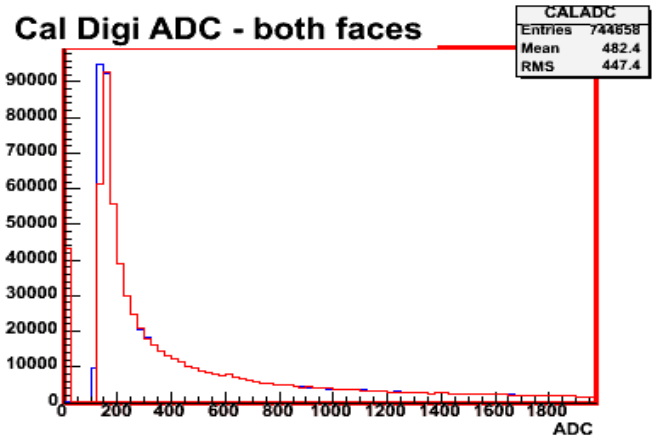
CALDIGICOUNT - CalDigi multiplicity

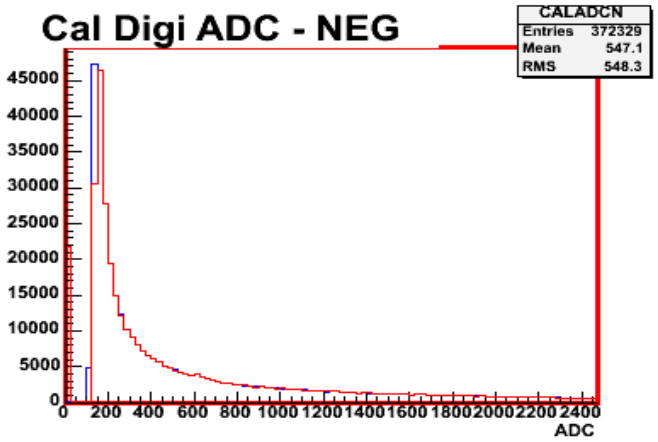
CALADC – Cal ADC both faces.
CALADCN – Cal ADC negative face
CALADCP – Cal ADC positive face
Do we really need all three of these distributions, should we subdivides these by readout range?

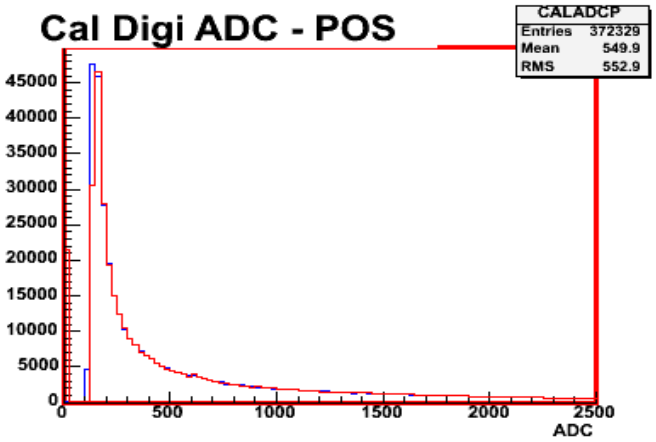
CALRANGE – Cal Hit range both faces

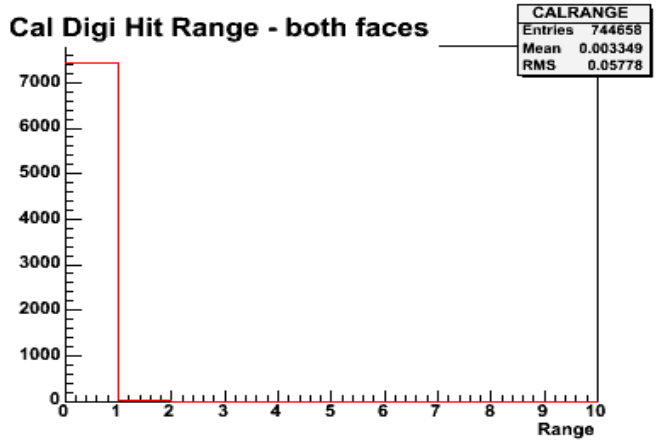
CALEAVE - CalDigi Energy - sum faces/2
CALEAVETOTAL - Cal Digi Total Energy - faces/2 summed
These are labeled energy, but they are not. Eave is (ADCn+ADCp)/2 per crystal, Etotal is the sum of Eave.
I am not entirely sure what we hope to check with these distributions, it may be better to just look at the xtal energy dists from the recon tree.

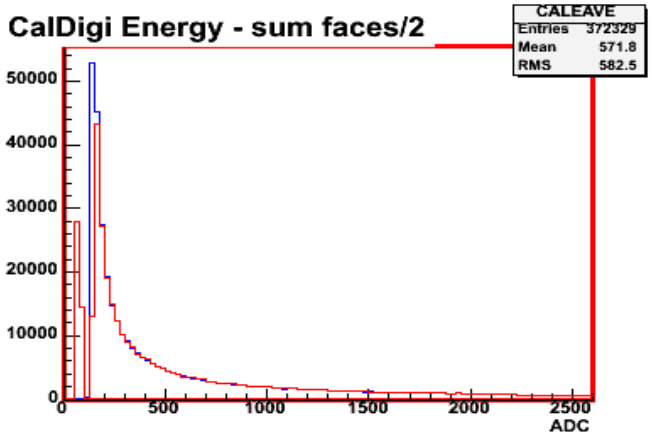

CalDigi multiplicity
CALDIGICOUNT
Entries 50000
Mean 7.446
RMS 11.32
Number

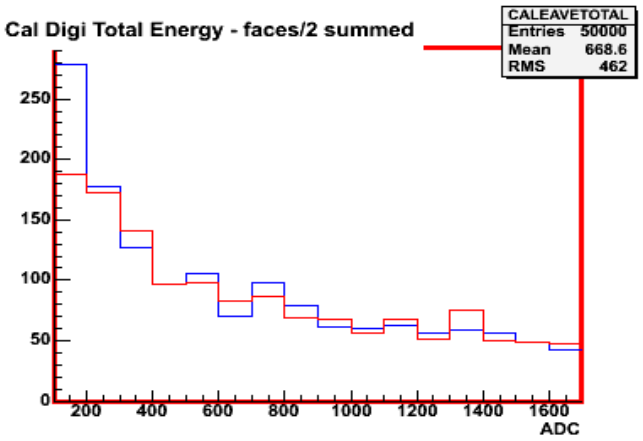

Cal Digi ADC - both faces
CALADC
Entries 744658
Mean 482.4
RMS 447.4
ADC

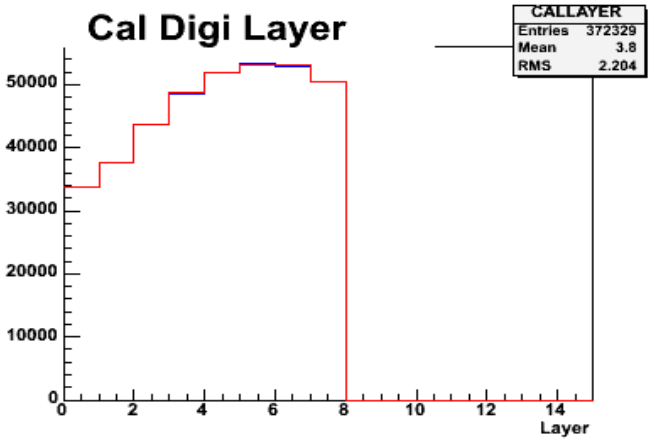

Cal Digi ADC - NEG
CALADCN
Entries 372329
Mean 547.1
RMS 548.3
ADC

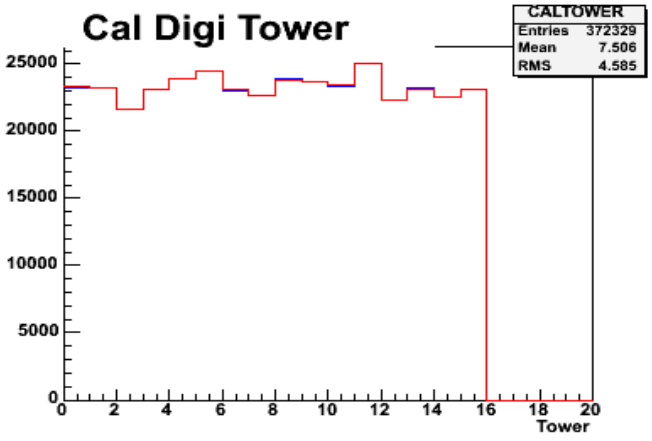

Cal Digi ADC - POS
CALADCP
Entries 372329
Mean 549.9
RMS 552.9
ADC

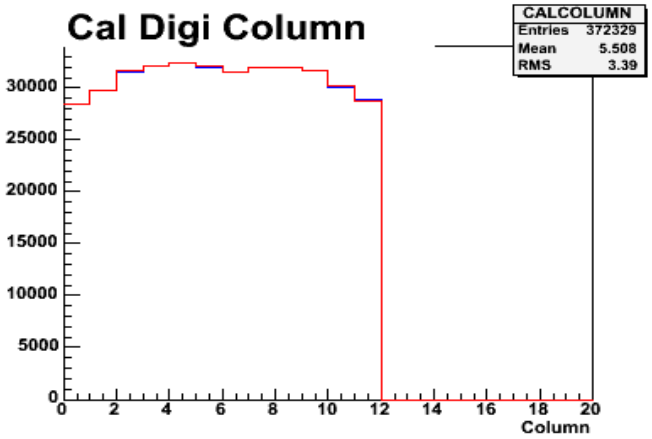

Cal Digi Hit Range - both faces
CALRANGE
Entries 744658
Mean 0.003349
RMS 0.05778
Range


CalDigi Energy - sum faces/2
CALEAVE
Entries 372329
Mean 571.8
RMS 582.5
ADC


Cal Digi Total Energy - faces/2 summed
CALEAVETOTAL
Entries 50000
Mean 668.6
RMS 462
ADC


Cal Digi Layer
CALLAYER
Entries 372329
Mean 3.8
RMS 2.204
Layer


Cal Digi Tower
CALTOWER
Entries 372329
Mean 7.506
RMS 4.585
Tower


Cal Digi Column
CALCOLUMN
Entries 372329
Mean 5.508
RMS 3.39
Column

More Cal Digi Distributions

CALLAYER - Cal Digi Layer
CALTOWER - Cal Digi Tower
CALCOLUMN - Cal Digi Column
CALNLAYERX - Cal Digi hits per layer X
CALELAYERX – Summed ADC counts per layer X

The set of distributions which check calorimeter digis seems fairly complete to me. We could remove CALEAVE, CALEAVETOTAL and CALELAYERX (and replace them with the recon equivalent). Separate out the ADC distributions by range?