ALL GAMMAs using the New Recons

First runs of ALL GAMMA – from glast-ts and SLAC Unix farm

glast-ts sample: no cuts – cal. only events, "NoCal" events, + *regular*
200K

SLAC Unix Farm: cuts - TkrNumTracks > 0
940K (Sat.) + **510K** (Sun.)

Available....
ftp://ftp-gla st.slac.stanford.edu/glast.u06/richard/allGamma-20050618/merit-200506-pruned-2.root

There are new nTuple Variables for both **Tracker** & **Cal**

Exercise Goals

1) Begin re-building
    1) "GoodEnergy" Analysis
    2) PSF Analysis
    3) Back Ground Rejection Analysis

2) Exercise the MC Pipeline
    (For DC2 estimate 5×10^8 background events)

3) Provide data for DC2 workshop
    (Background events coming this week)

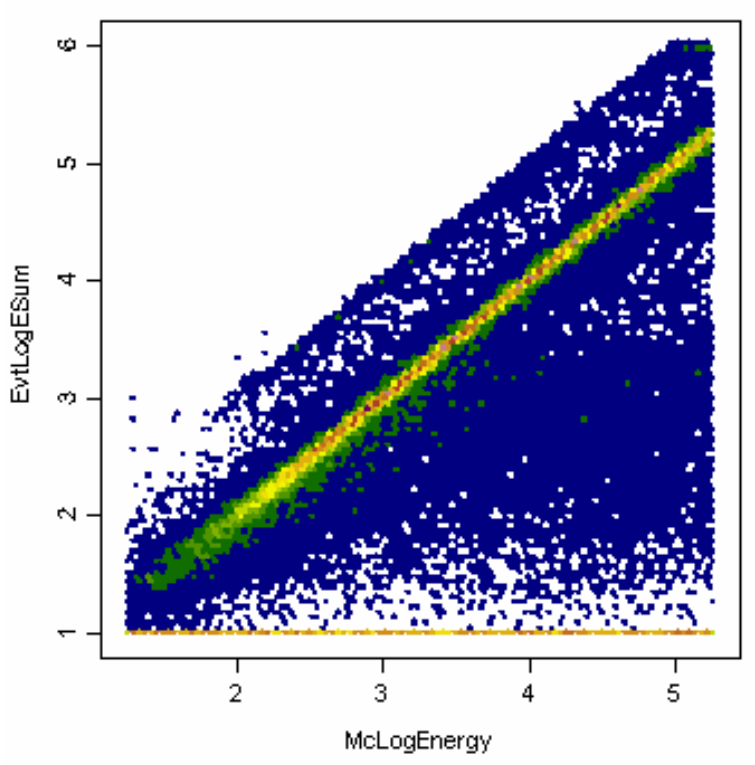
ALL GAMMA Definition:
Disk generation area = $6 m^2$; Soild angle: 2π str.

$A_{eff} \times \Delta\Omega = 37.7\ m^2\text{-str.}$ (SR: 2.0 m^2-str)

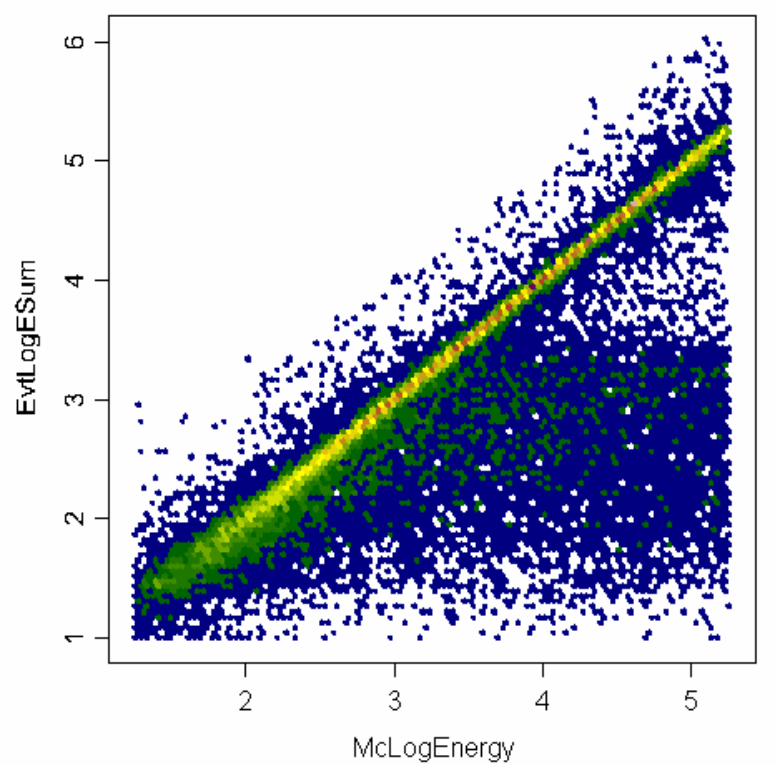
GoodEnergy Analysis

Step 0: Look at the data! Events in nTuple 54878 (10.3 m^2-str)

No Cuts



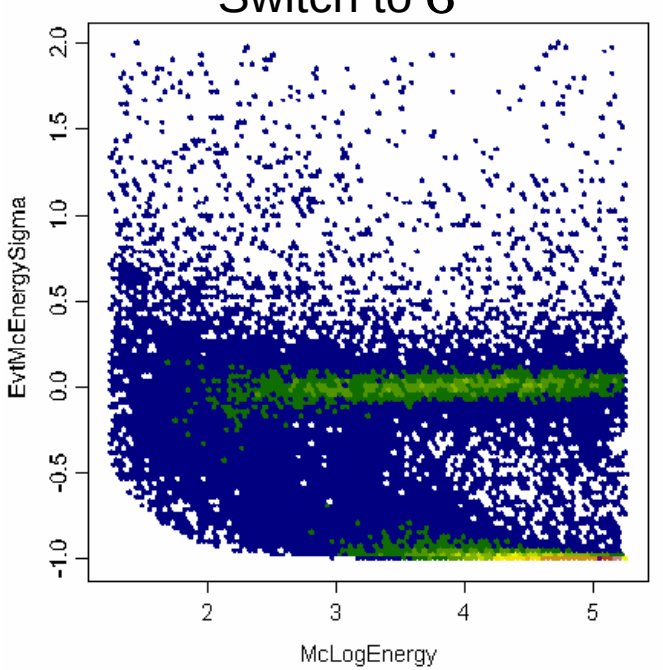
TkrNumTracks > 0



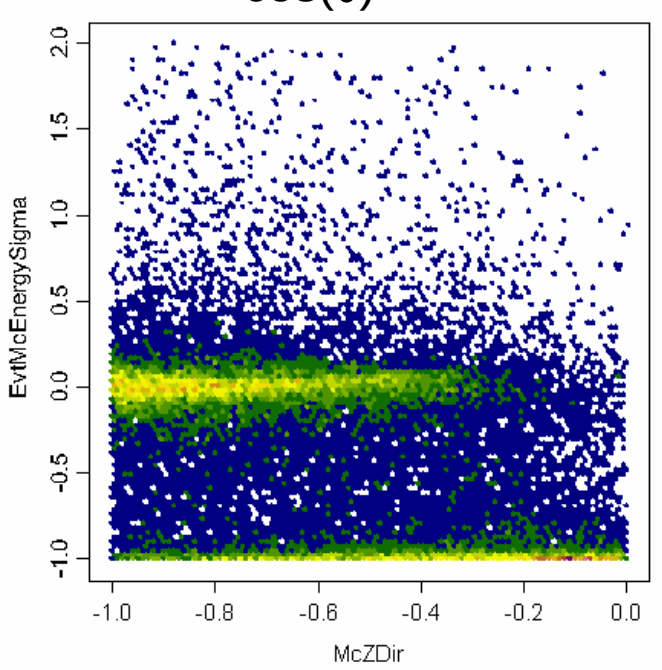
Events: 30117 (5.68 m^2-str)

SR: Convert > 65% of γs

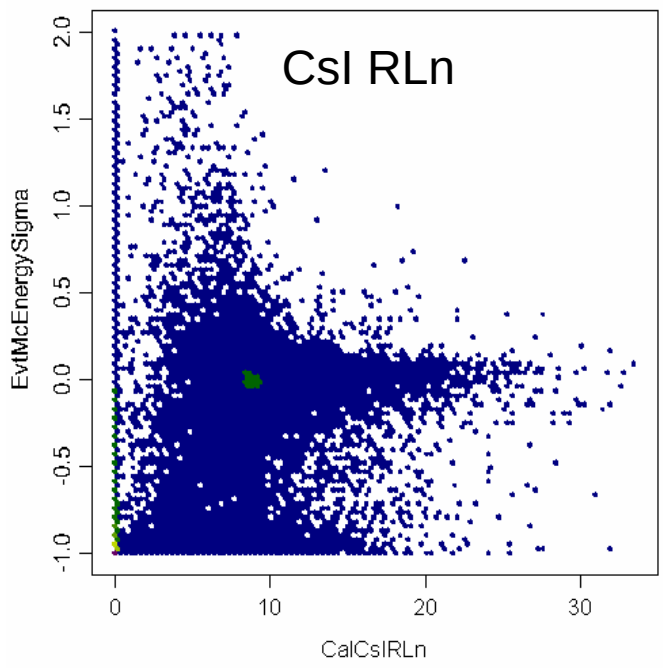
Switch to σ



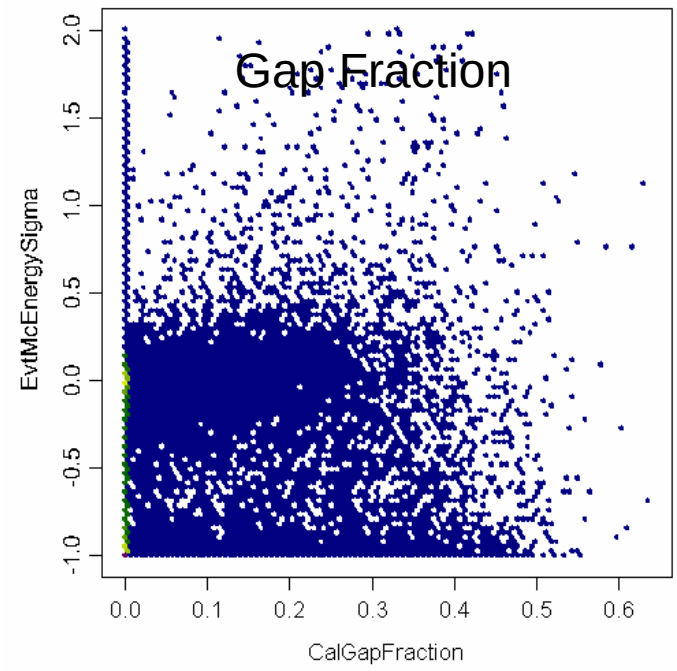
cos(θ)



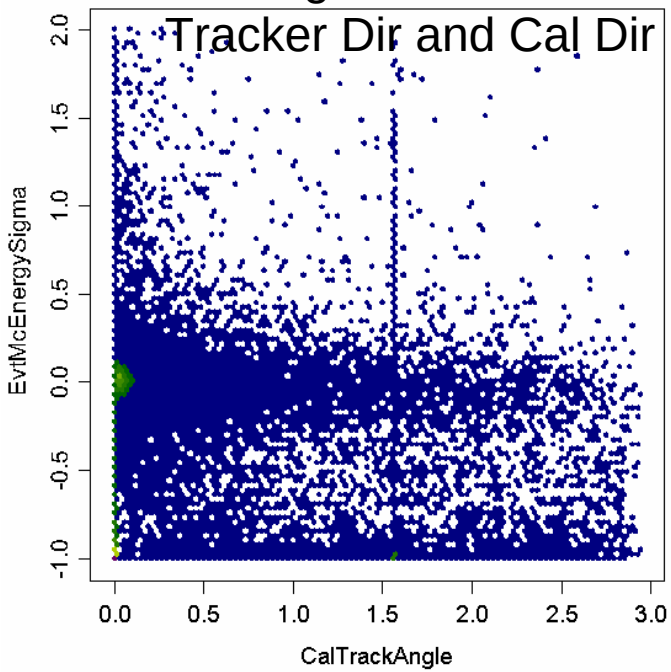
CsI RLn



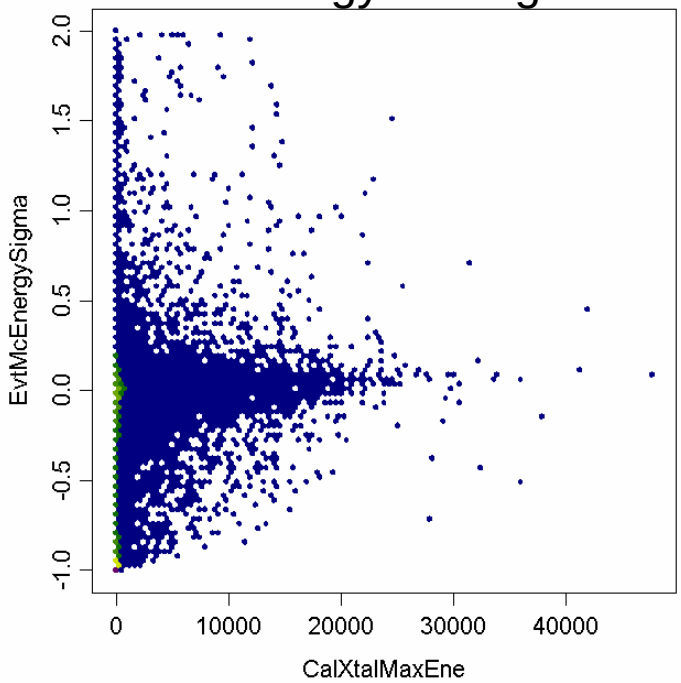
Gap Fraction



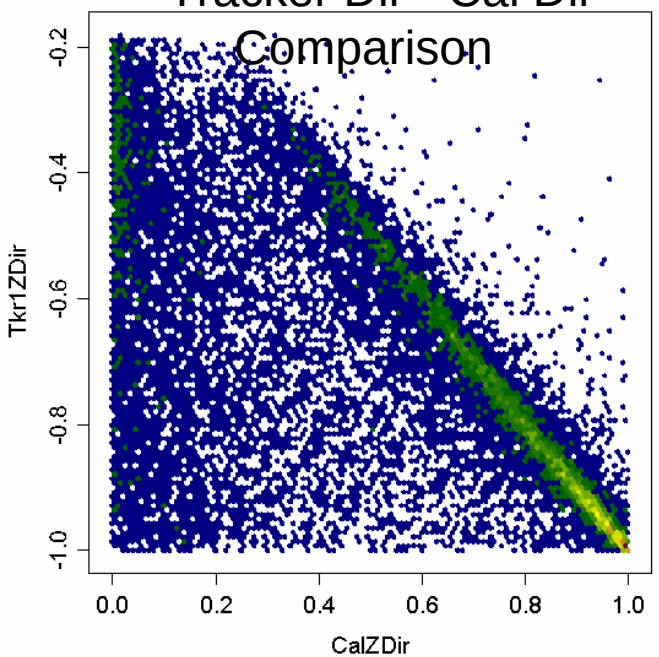
Angle between Tracker Dir and Cal Dir



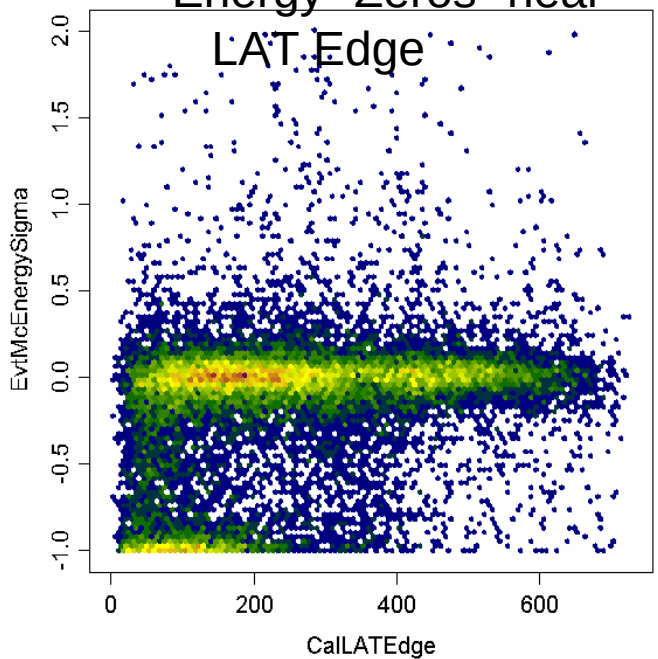
Max. Energy in Single Xtal



Tracker Dir - Cal Dir Comparison



Energy "Zeros" near LAT Edge

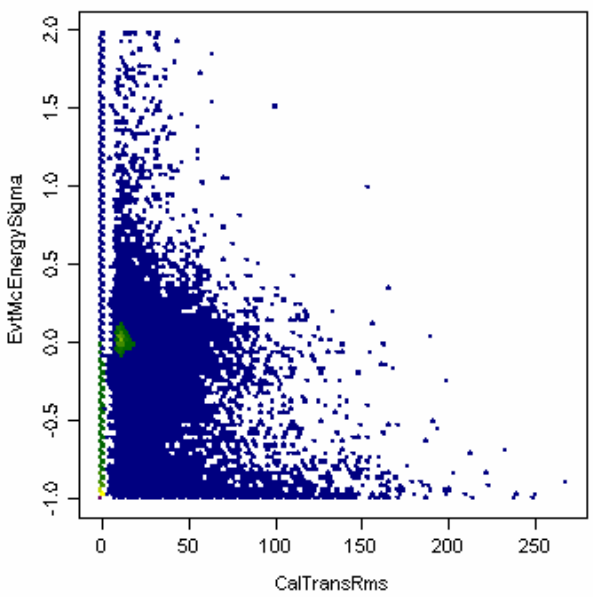


Moments Analysis: Say a Moment of Inertial (see Goldstein).
Showers form figures of revolutions about the shower axis.

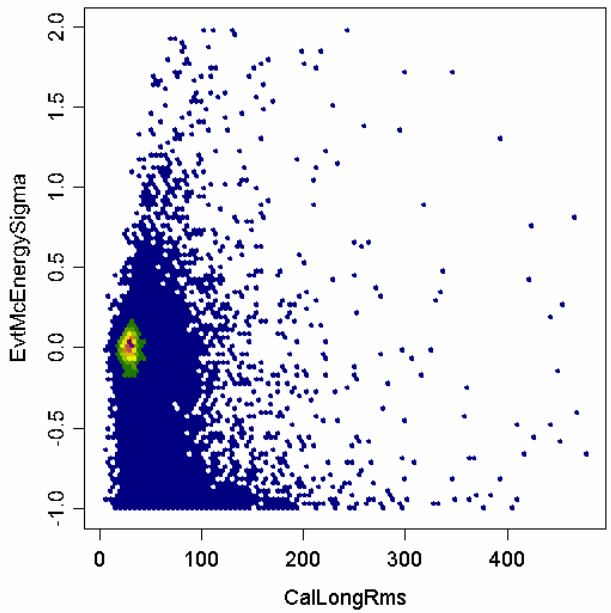
Two larger moments are approx. equal. and a small moment (moment about shower axis). Eigenvector associated with smallest moment is the shower axis.

Capture Moments Information by :

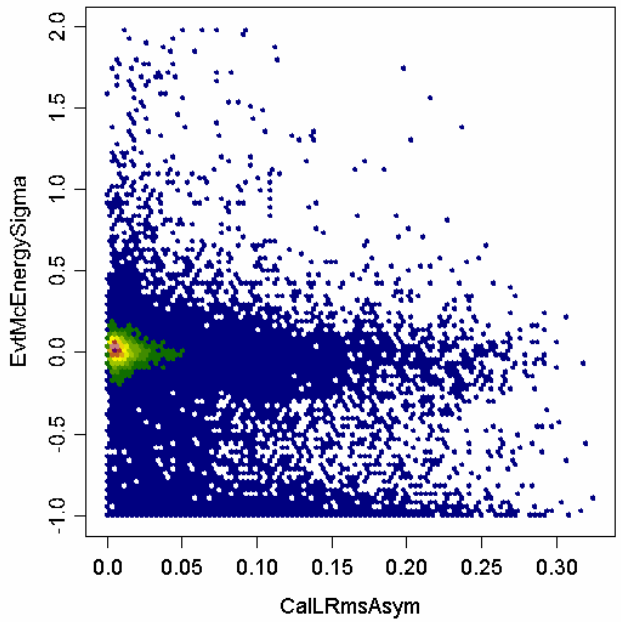
$$CalTransRms = \sqrt{\frac{Smallest\_Moment}{E_{CAL\_Raw}}}$$



$$CalLongRms = \frac{\sqrt{\frac{Smallest\_Moment}{E_{CAL\_Raw}}}}{\ln(CalLATRLn - CalCntRLn)}$$

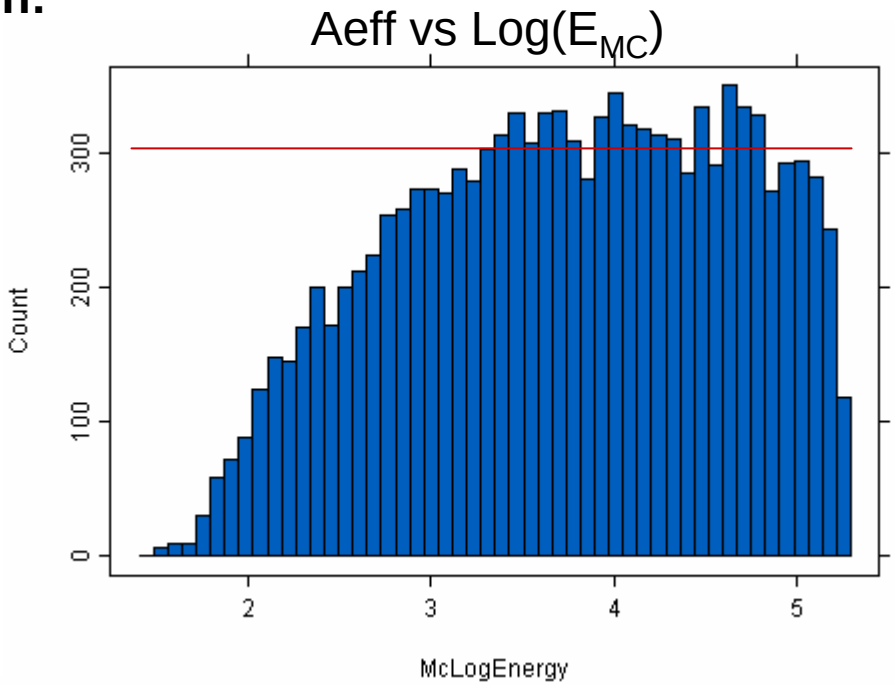


$$CalLRmsAsym = \frac{Big\_Moments1 - Big - Moment2}{Big\_Moments1 + Big - Moment}$$

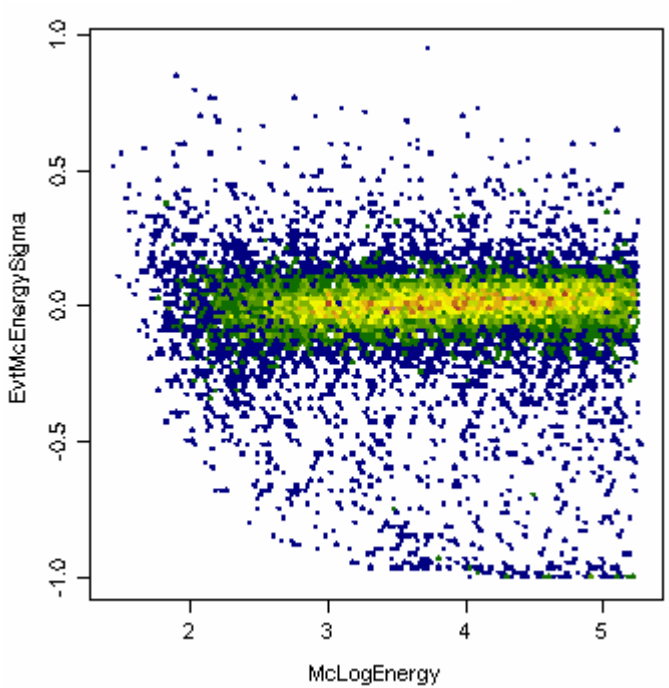


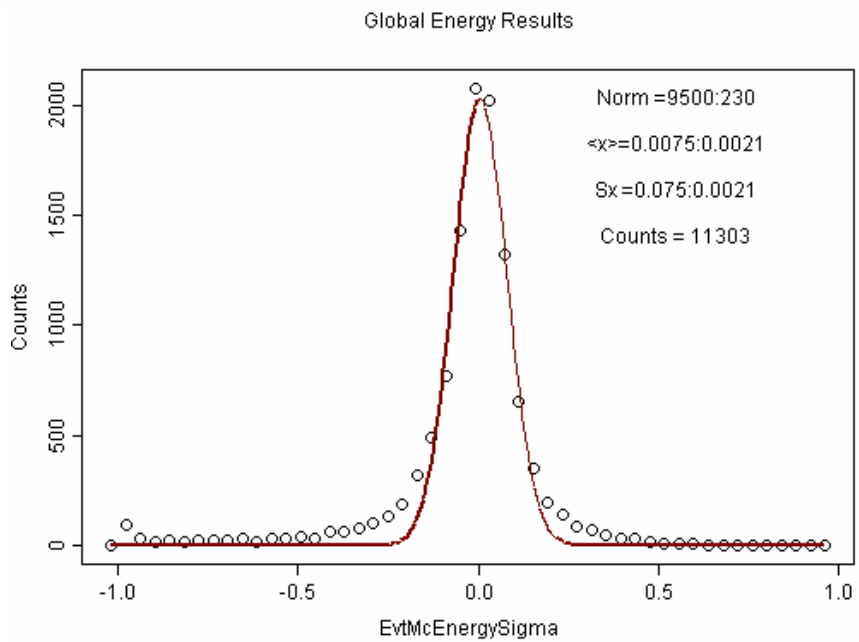
A First Gamma Selection:

CalTotalCorr < 3.5 &
CalDeadTotRat < .15 &
CalGapFraction < .30 &
CalTransRms < 60 &
CalLRmsAsym > 0. &
CalCsIRLn > 4 &
CalEnergyRaw > 5.

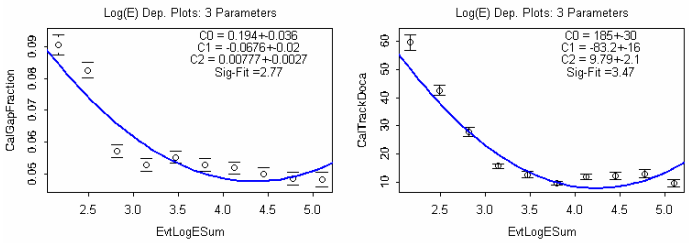


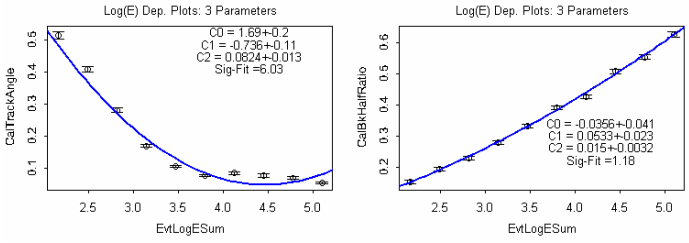
~ 300 Events/Bin
A_{eff} x $\Delta\Omega$ = 2.8 m^2-str

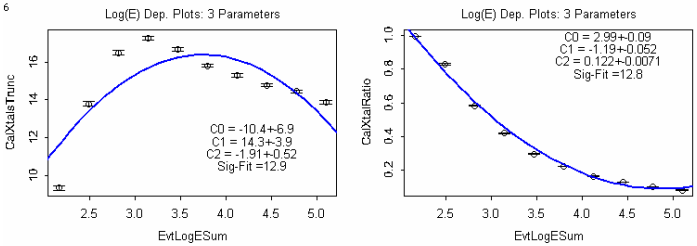


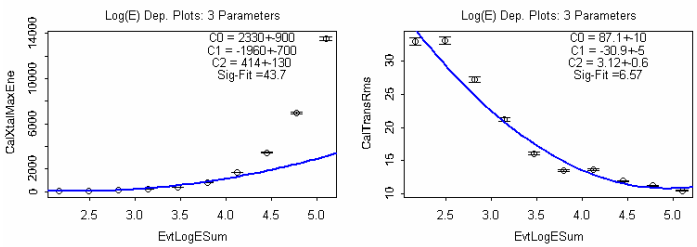


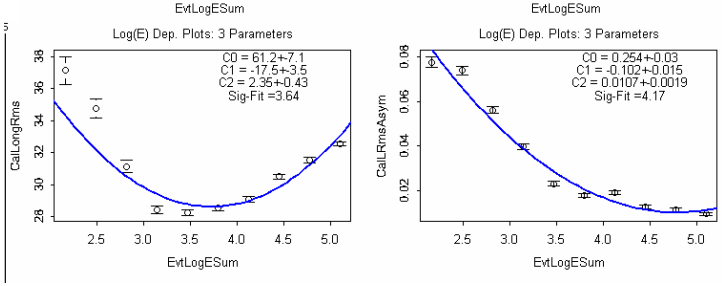
Step 1: Re-do the Energy and cos(θ) dependencies

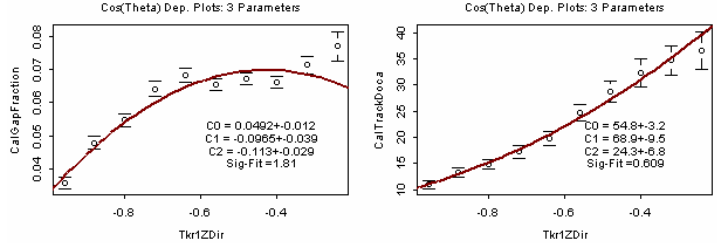


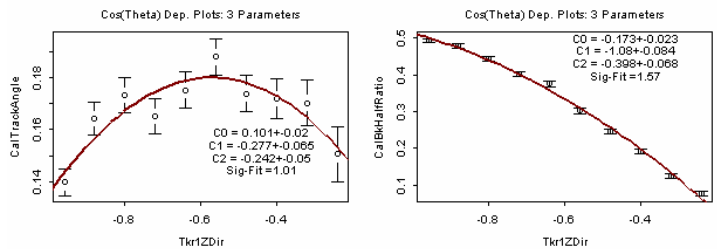


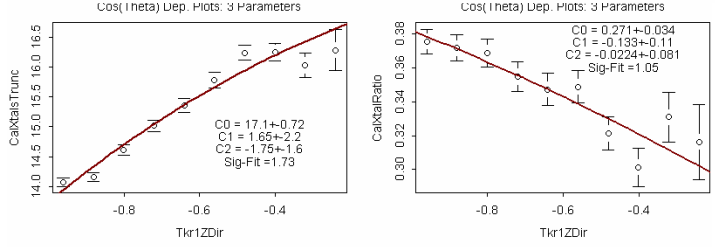


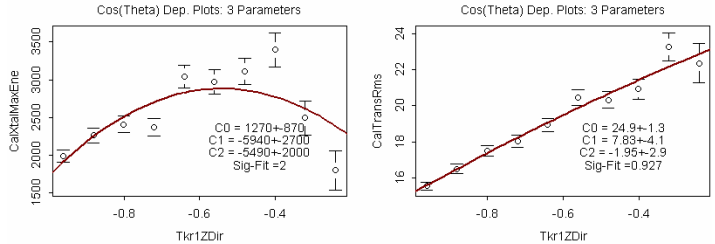


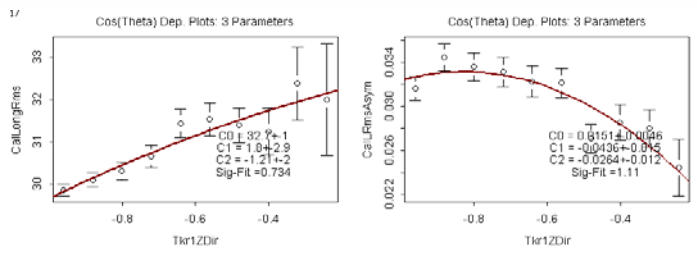












That's as far as its gone so far.

GOOD PROGRESS!

Lot's of puzzles to solved.

No "Show Stoppers" observed

And...

The re-write of the Recons is a Success!

Go see for yourselves!