

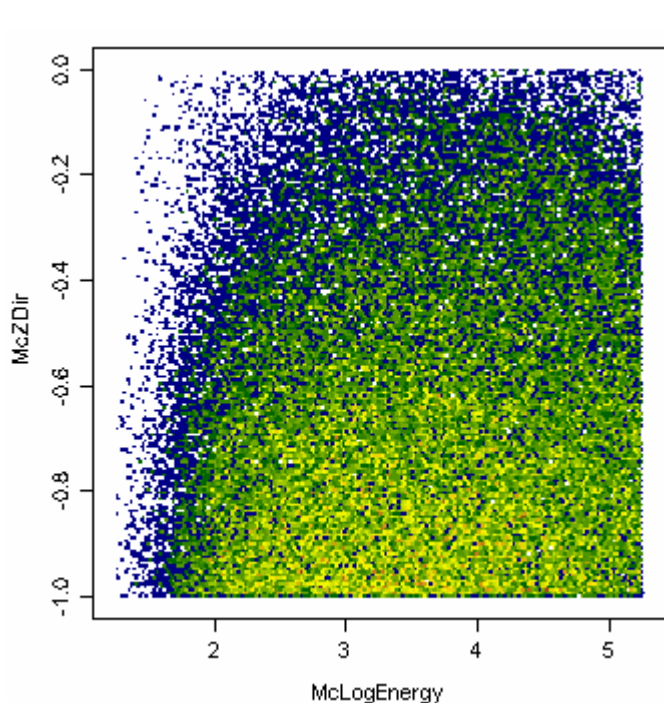


# Energy Correction Alg. Comparison

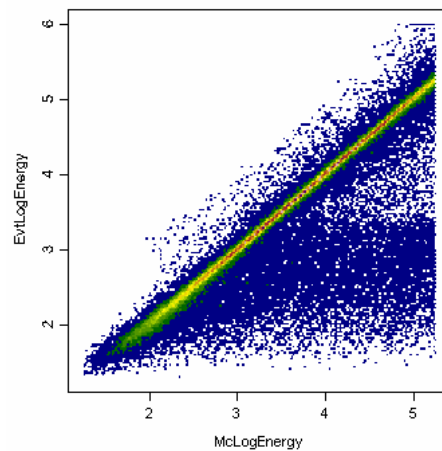
**Data Set: All Gamma (GR-HEAD1.594)**

**No. Events: 142139 x 2 (Test & Training)**

**No. Events after !NoCal : 87123 (CalCsIRLn > 4 && CalEnergyRaw > 5)**

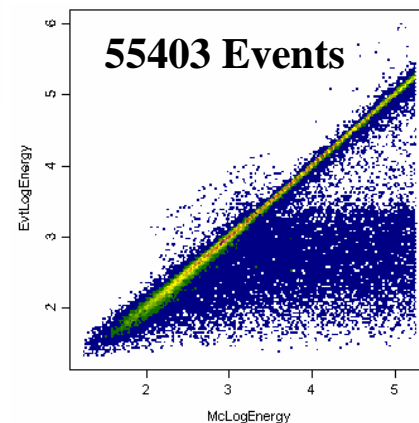


**All Gamma Phase Space**

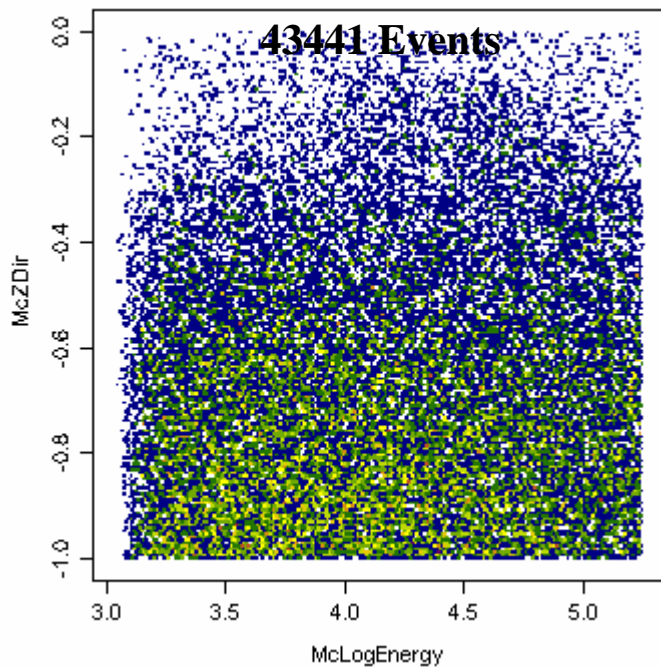


**Best Parametric**

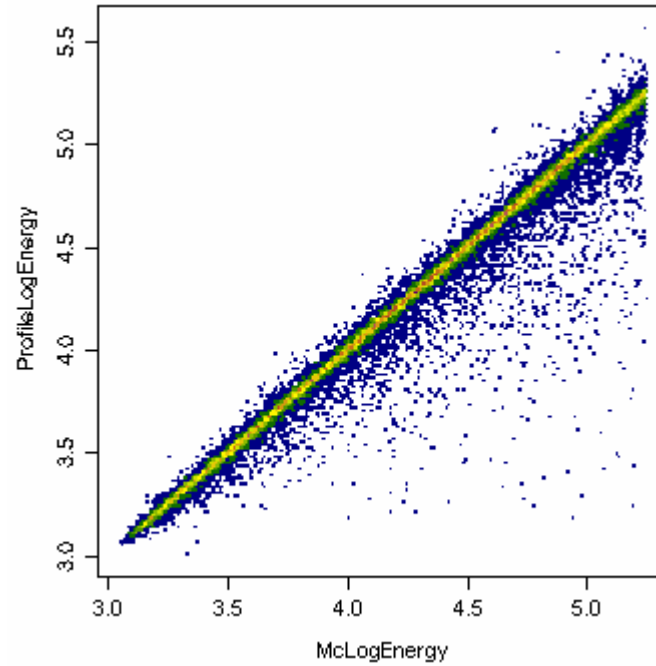
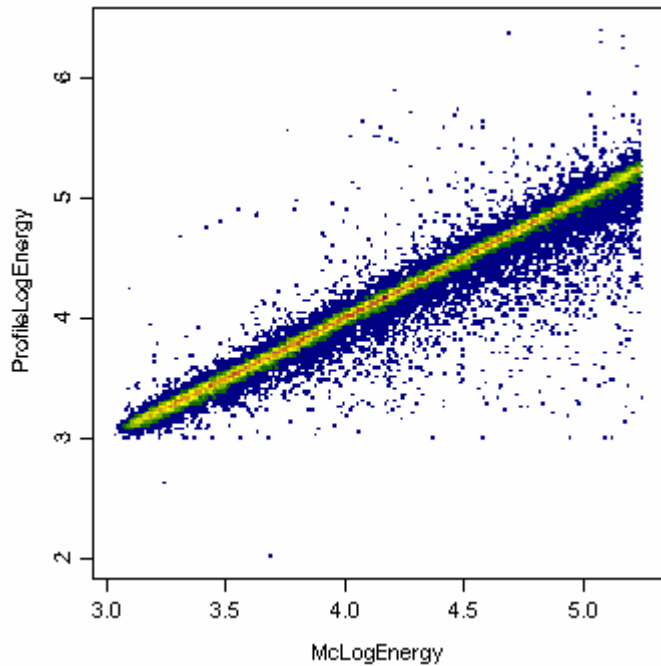
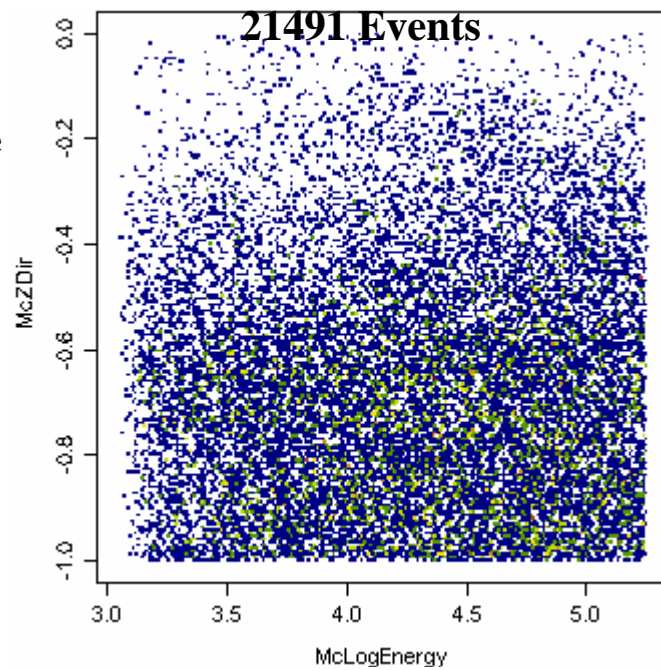
**Parametric Log(E)**



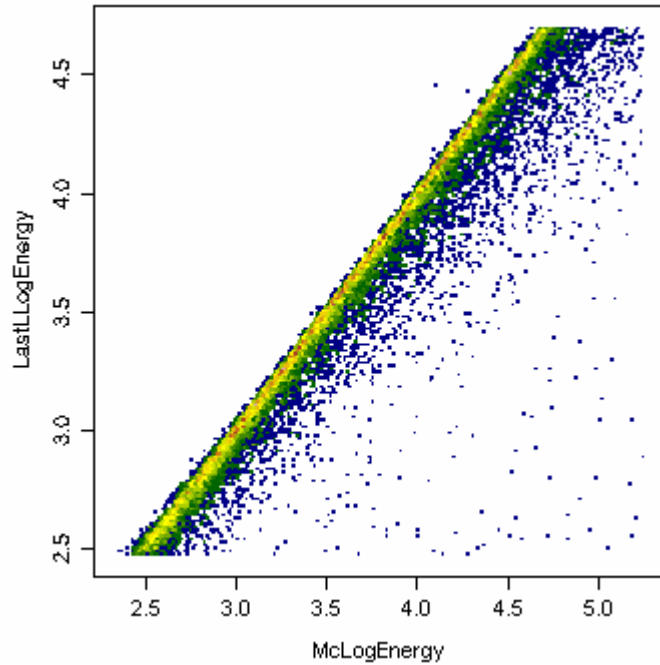
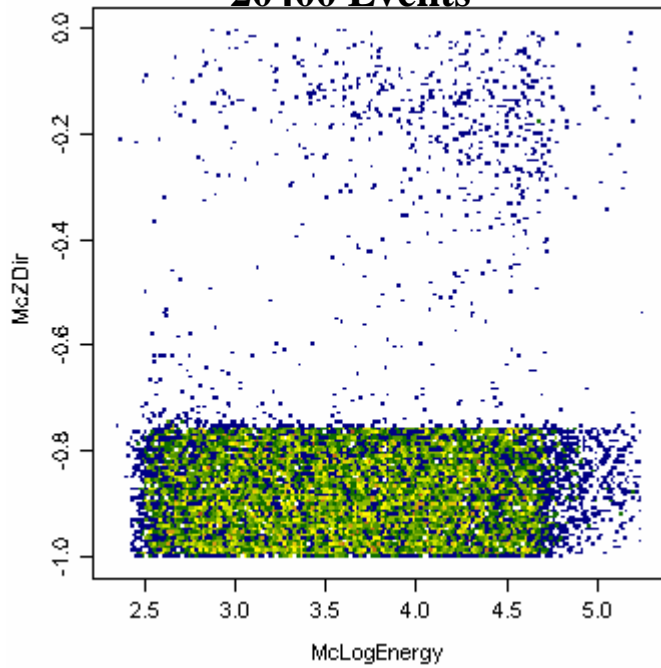
**55403 Events**



Profile  
Fit

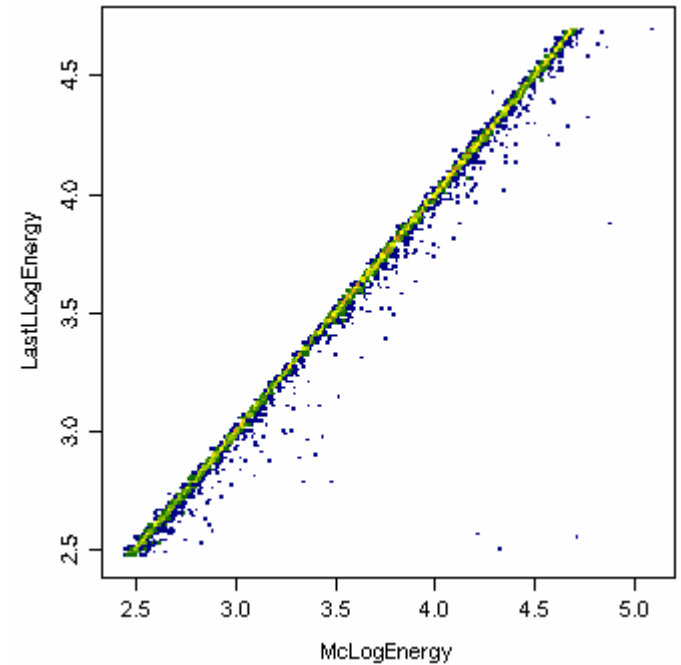
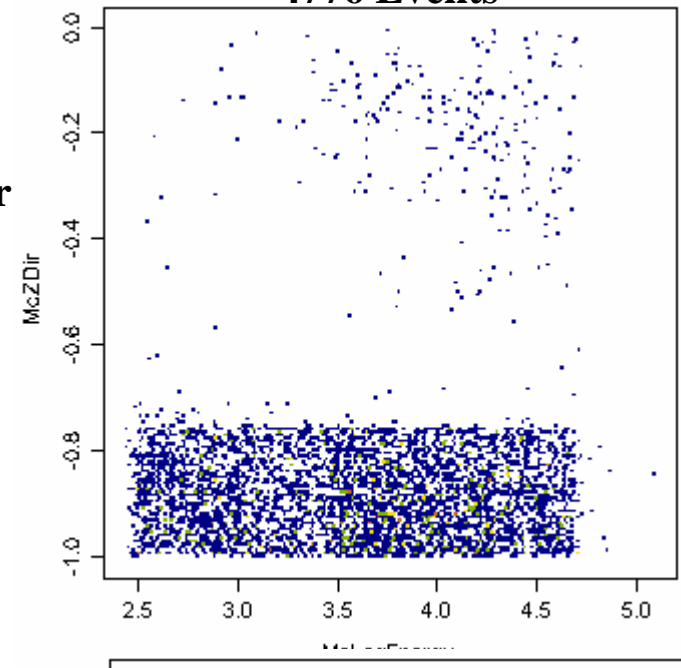


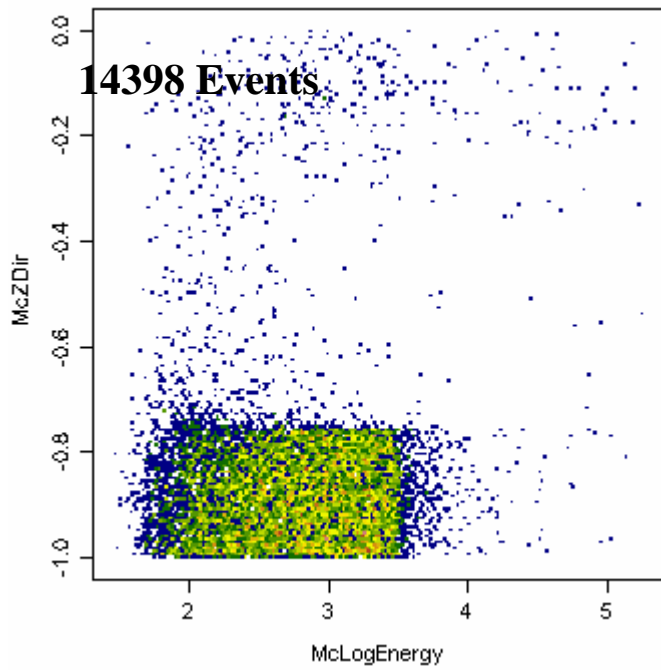
**20400 Events**



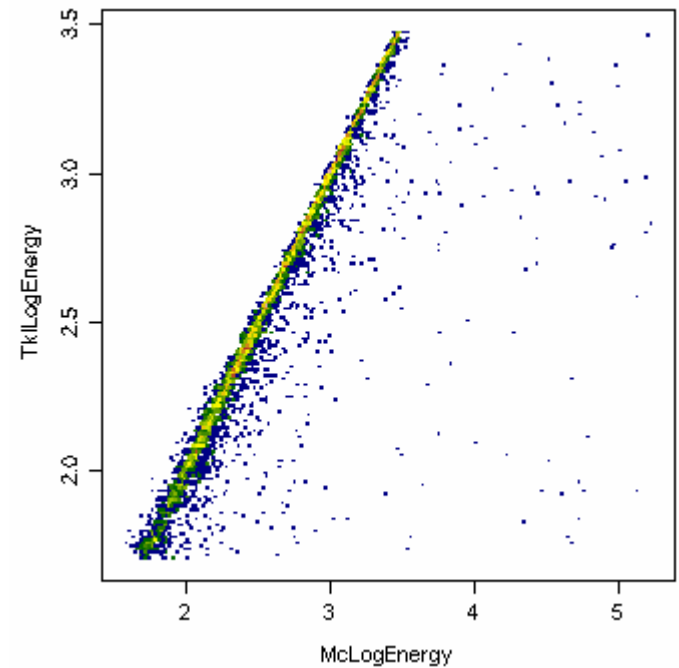
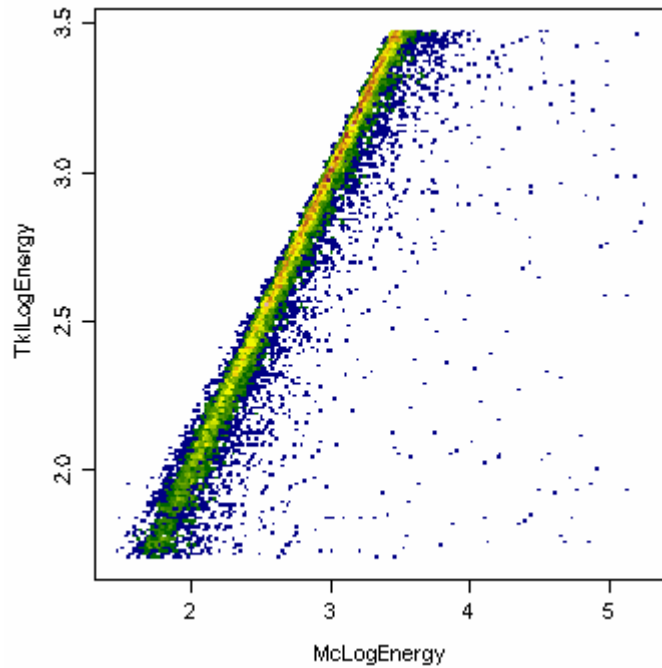
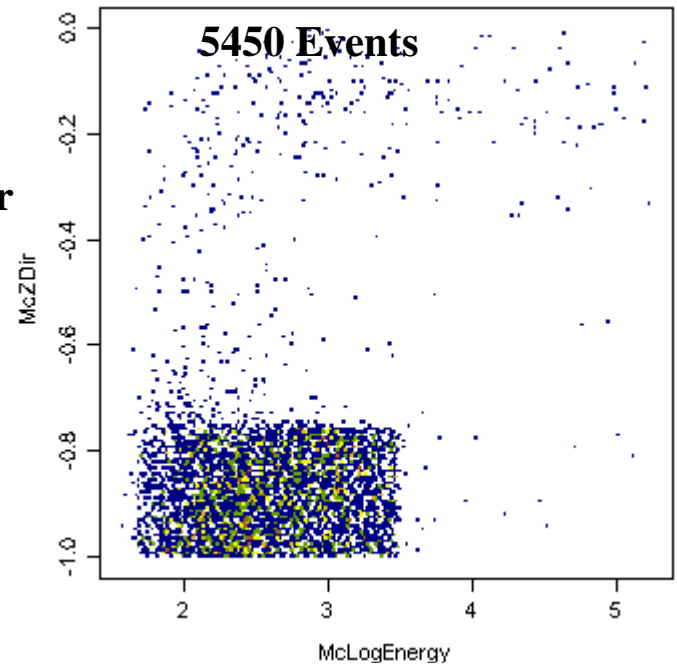
**4776 Events**

**Last Layer  
Alg.**

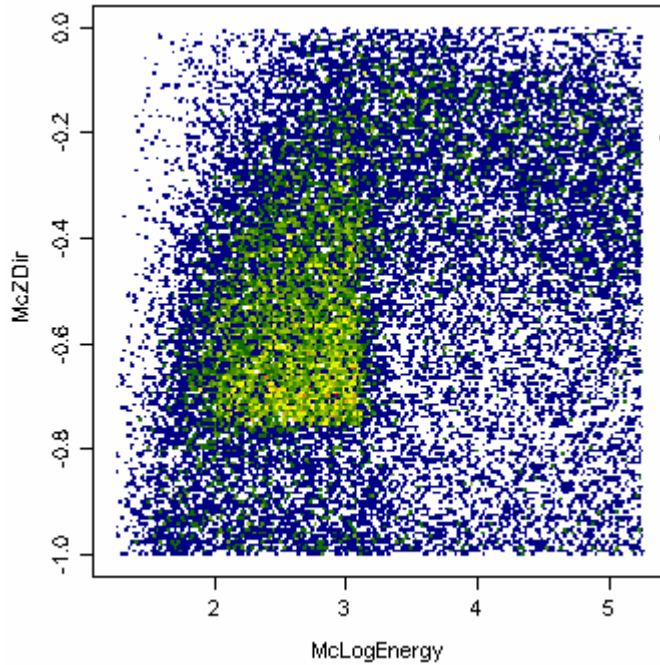




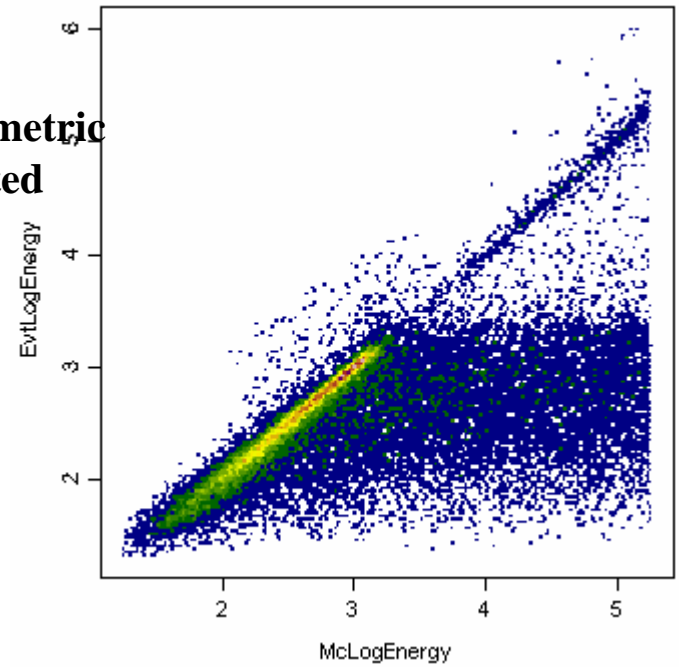
**Last Layer  
Tracker  
Alg.**



# 32835 Events



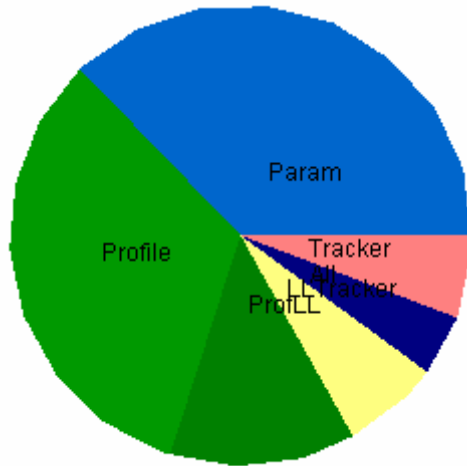
Only Parametric  
Computed



Method	% Computed	% Best Est.
Parametric	100	63.6
Profile	49.9	24.7
Last Layer	23.4	5.5
Tracker	16.5	6.3

**Only Parametric Available: 37.7%**

**Break into classes according to which Energy Corr. methods were calculated:**

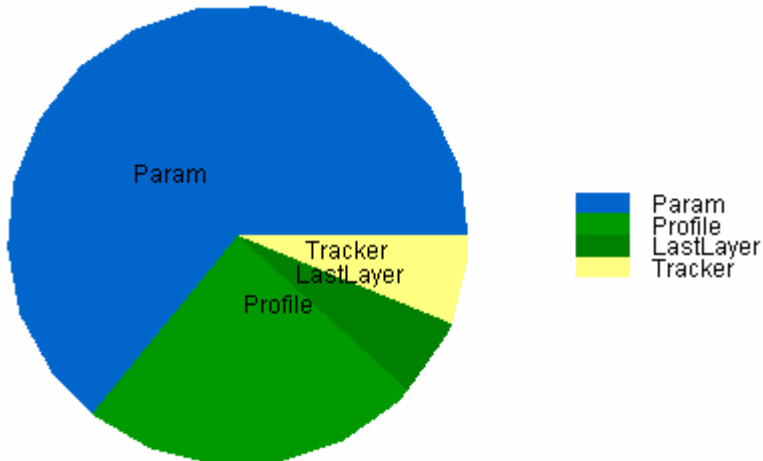


- 1) Param - Parametric only
- 2) Profile - Profile & Parametric
- 3) Tracker – Tracker & Parametric
- 4) Last Layer – Last Layer & Parametric
- 5) ProfLL – Profile, Last Layer & Param.
- 6) LLTracker – Last Layer, Tracker & Param.

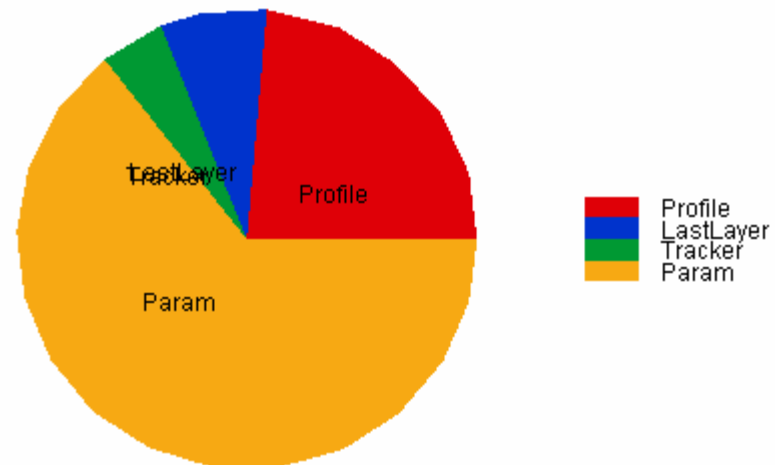
**Perform a CT based selection independently for each category**

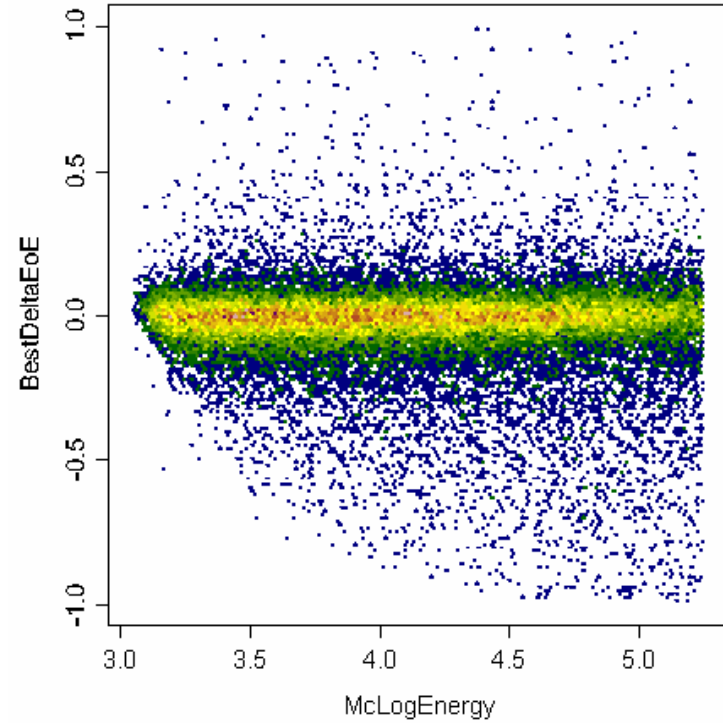
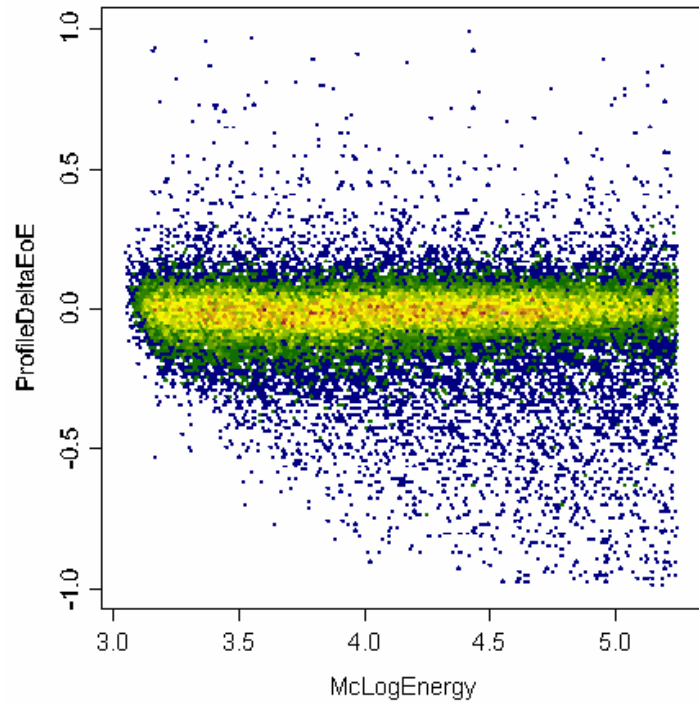
**Combine CTs to compute a BestEnergy for the event.**

**MC Truth**

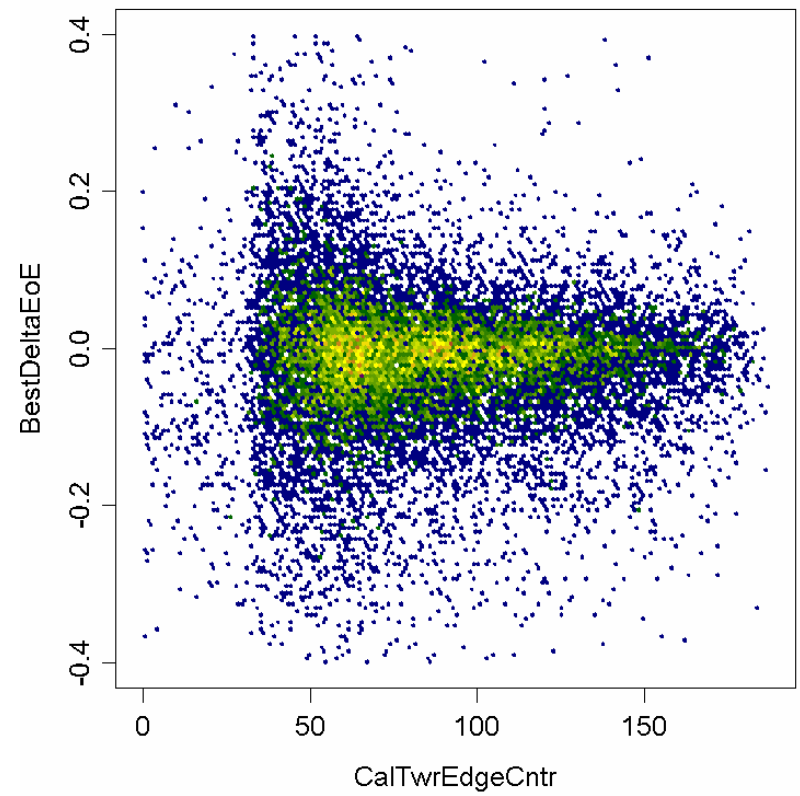
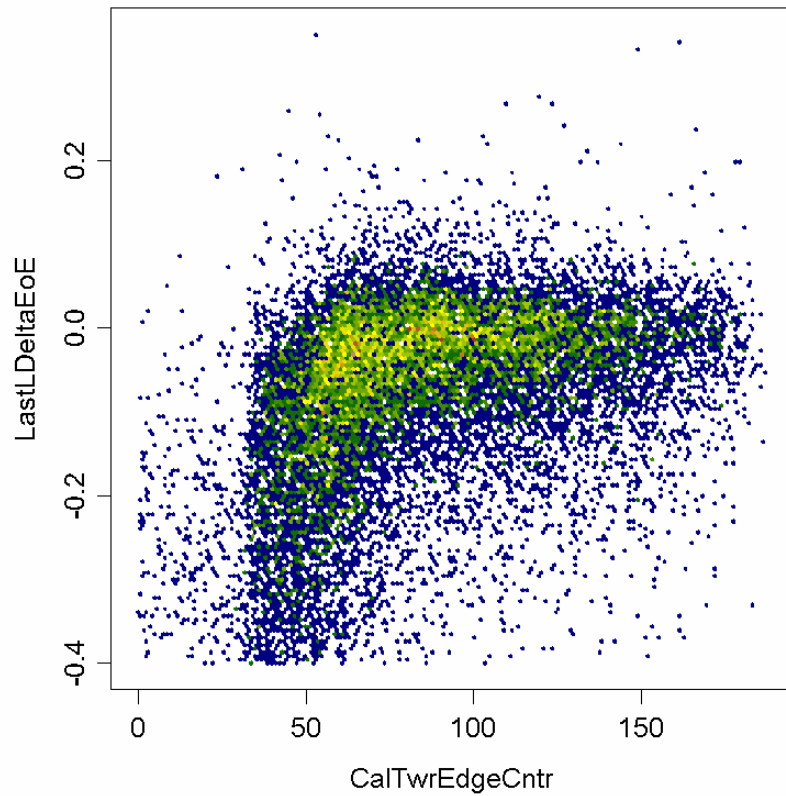


**CT Prediction**



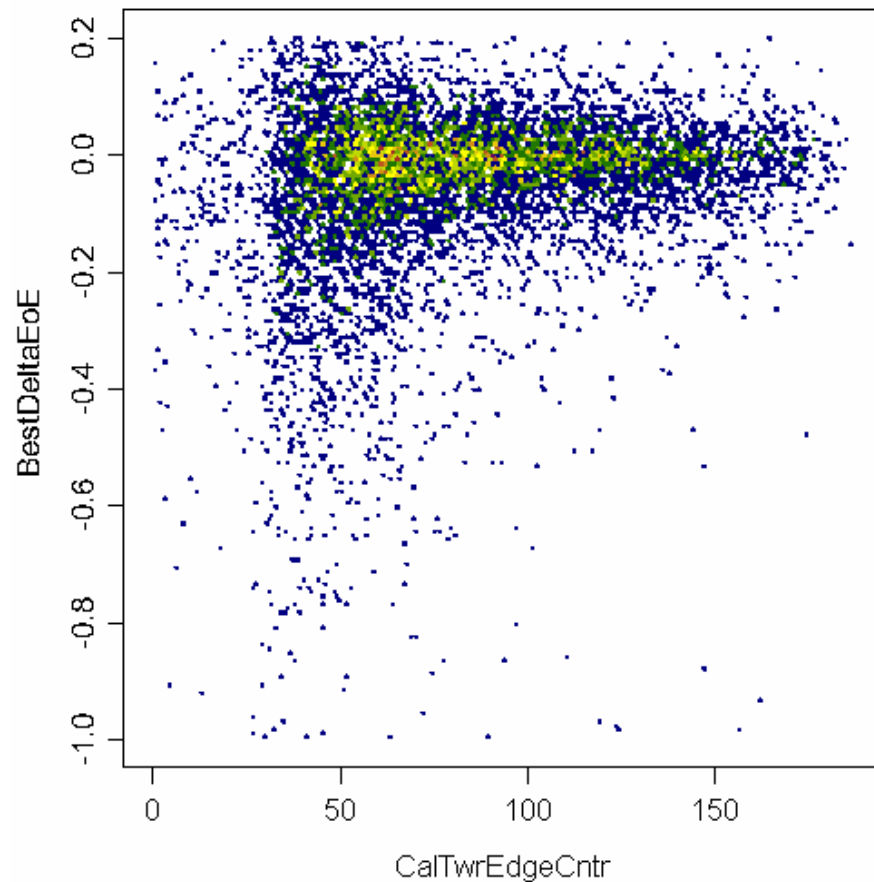
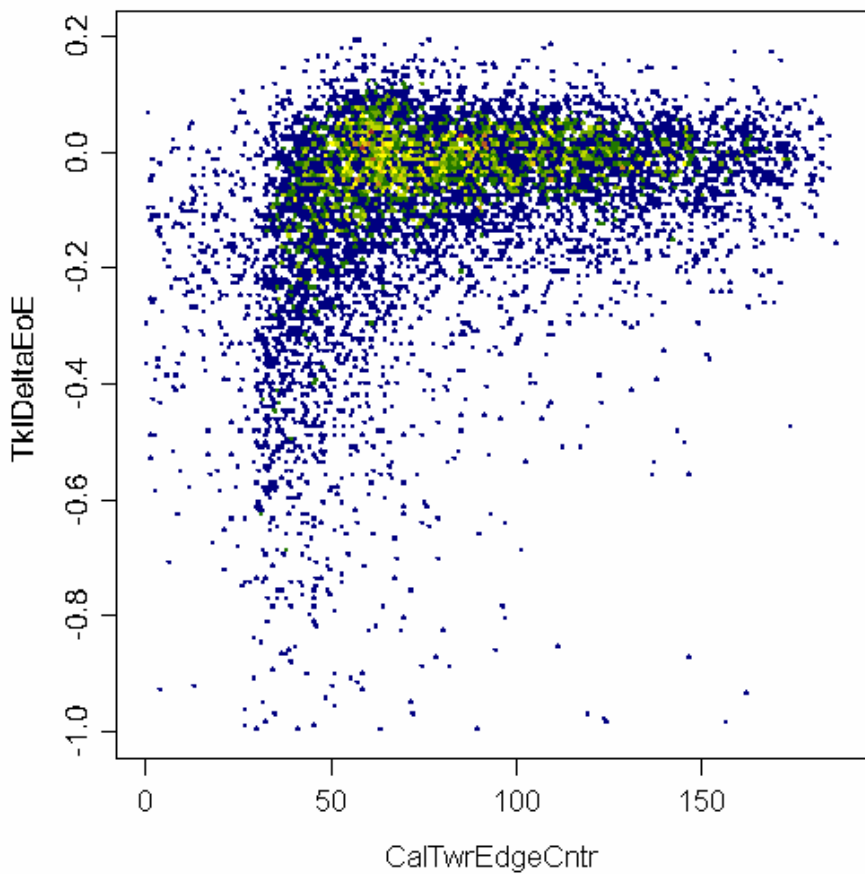


## Profile - Best Comparison



## Last Layer - Best Comparison





### Tracker - Best Comparison

# Conclusions

- 1) **The best energy resolution is achieved by combining all the results**
- 2) **The Last Layer / Tracker methods have the smallest overshoot problems**
  - **Cover the smallest phase-space**
  - **Based on observed correlations**
- 3) **Profile Fit demonstrates that a detailed fit to the 3D energy depositions works and accomplishes in a single approach both inter tower gaps and leakage corrections.**
- 4) **Parametric method provides a floor from which to improve.**
  - **Assumes a factorized model of inter tower gaps and leakage correction.**