ICR Corrections Update – Post Shutdown Data

- Data Sample & Cuts
- Results From Data
- Monte Carlo Results

Data Sample & Cuts

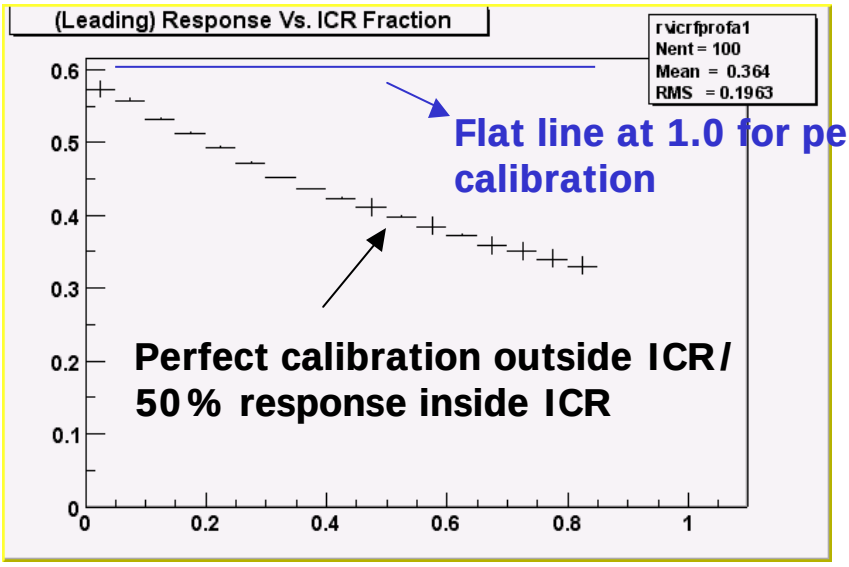
- Data Sample
  - Postshutdown runs
    - **runs 139500-145043 p10.14**
  - Bad runs discarded
    - v 1.2 from jet/met group
    - Hot trigger towers from Bob Kehoe (runs 143772-143889)
    - No NADA corrections...
- Monte Carlo Sample
  - Gamma/jet MC from Steve
    - P10.11

Data Quality Cuts

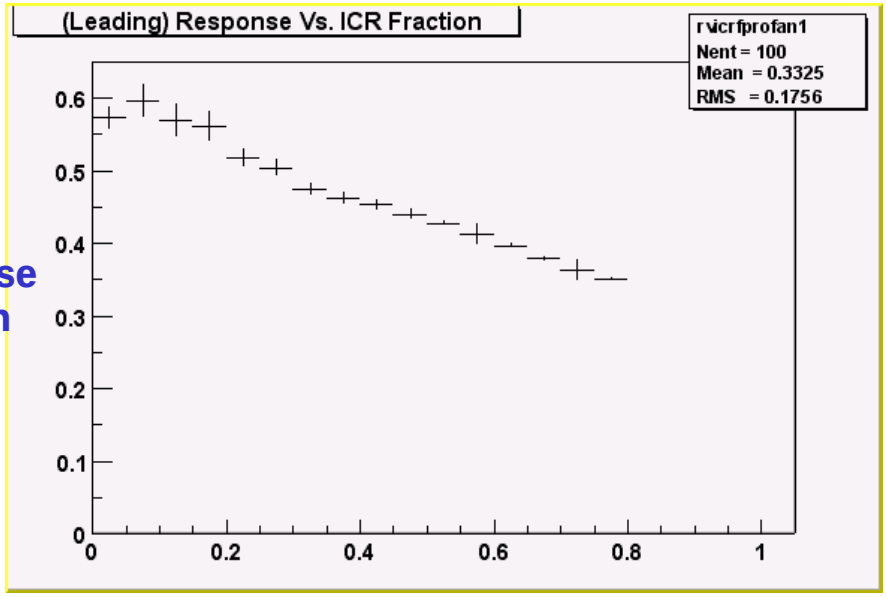
- Cuts on Photon (Simple Cone)
  - **EM Fraction > 0.95**
  - **Isolation < 0.2**
  - **EM object > 0.01 radians from azimuthal cracks**
  - **Only 1 EM object surviving the above cuts**
- Jet Cuts (Run II R=0.7)
  - **0.05 < EM Fraction < 0.95**
  - **Coarse Hadronic Fraction < 0.5**
  - **HotFraction < 10**
  - **N90 > 1**
- Vertex Cut
  - **|Pvsel_psz| < 70cm**
- If any object in the event fails these cuts, the event is discarded

Response Vs. ICR Fraction

- **What should this look like?**

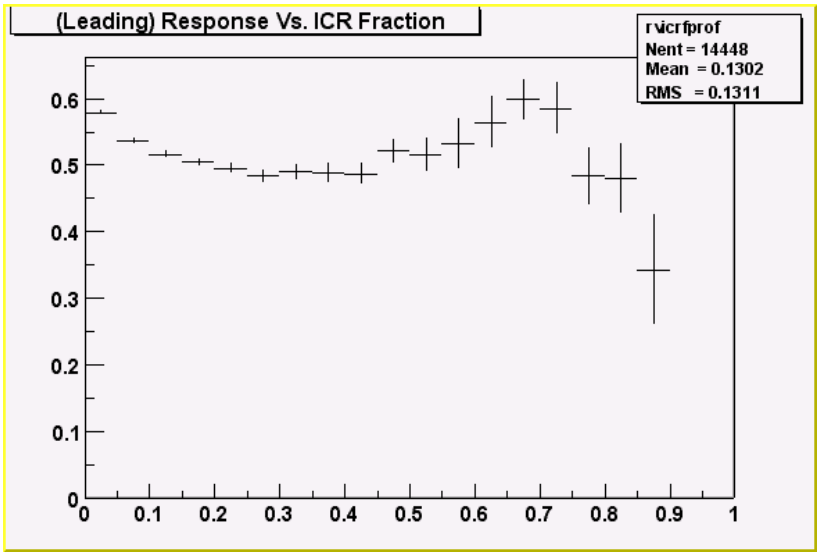


Adding energy dependent response outside ICR region



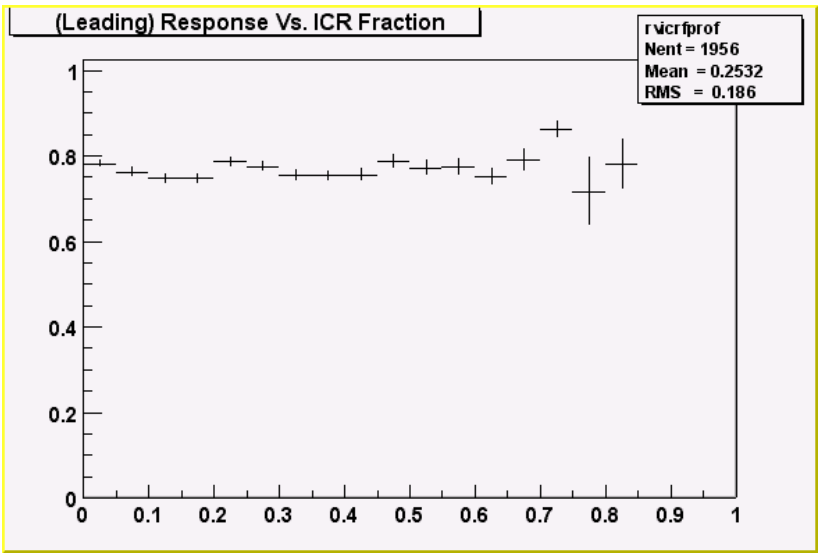
Response Vs. ICR Fraction: Data

- **What does this look like?**

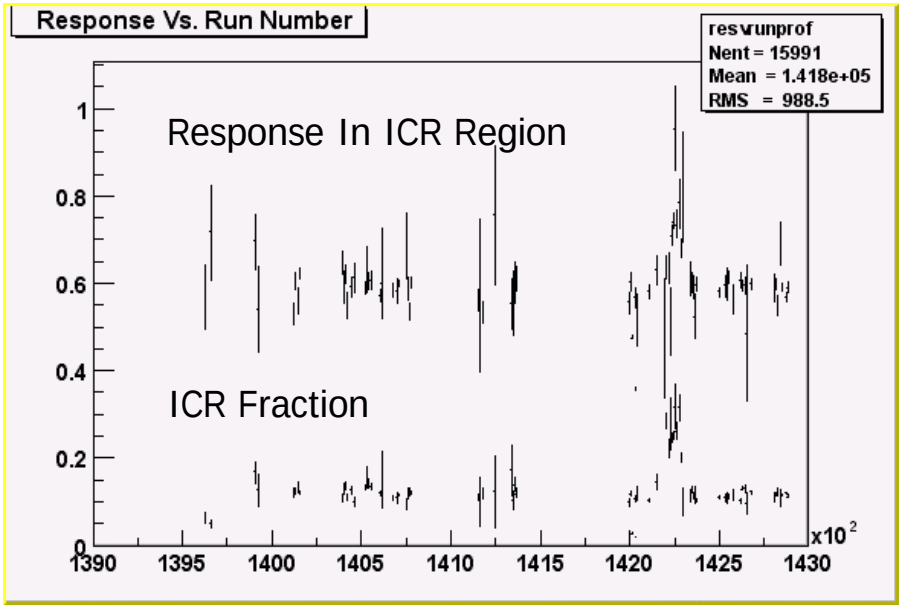


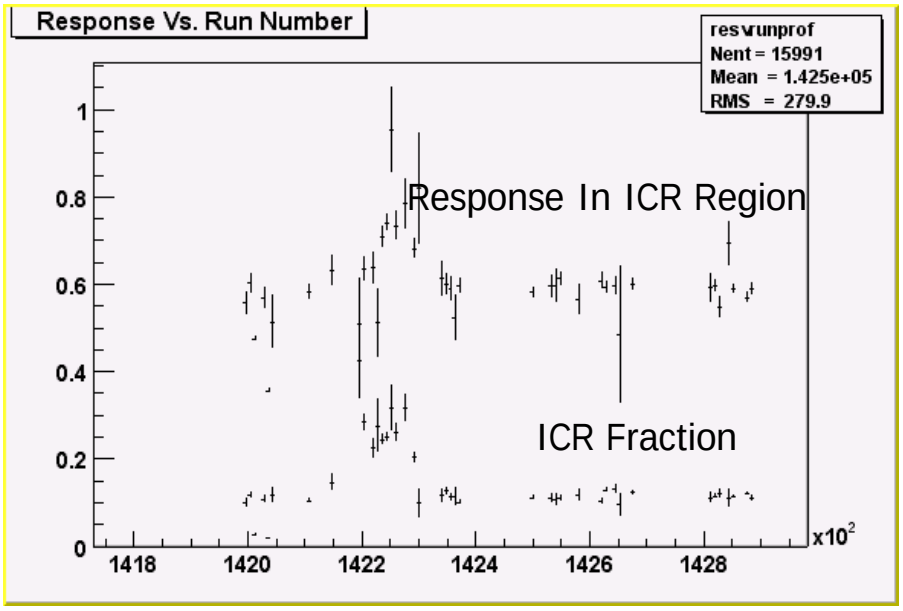
Data

Monte Carlo



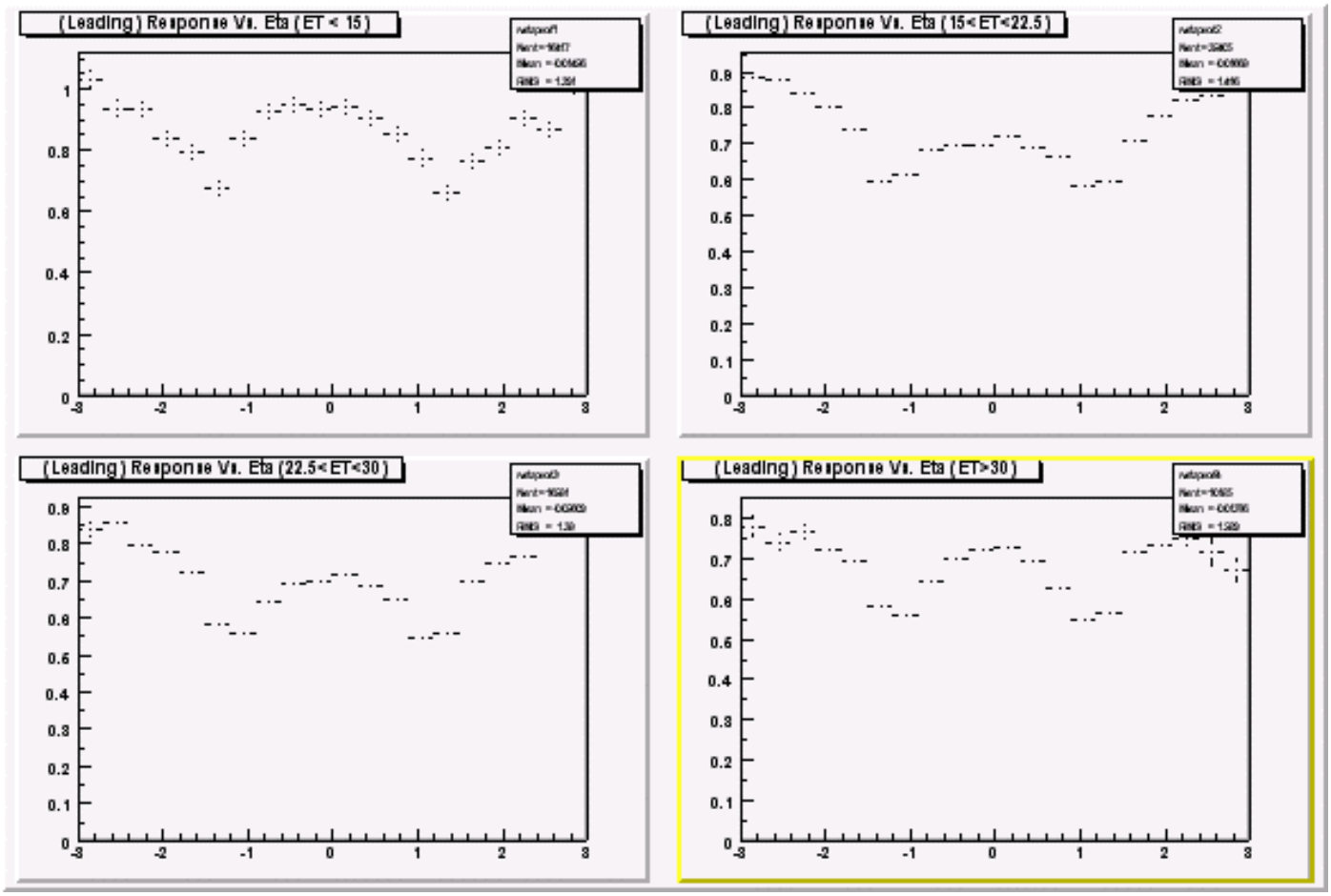
Response in ICR region/ICRF vs. Run





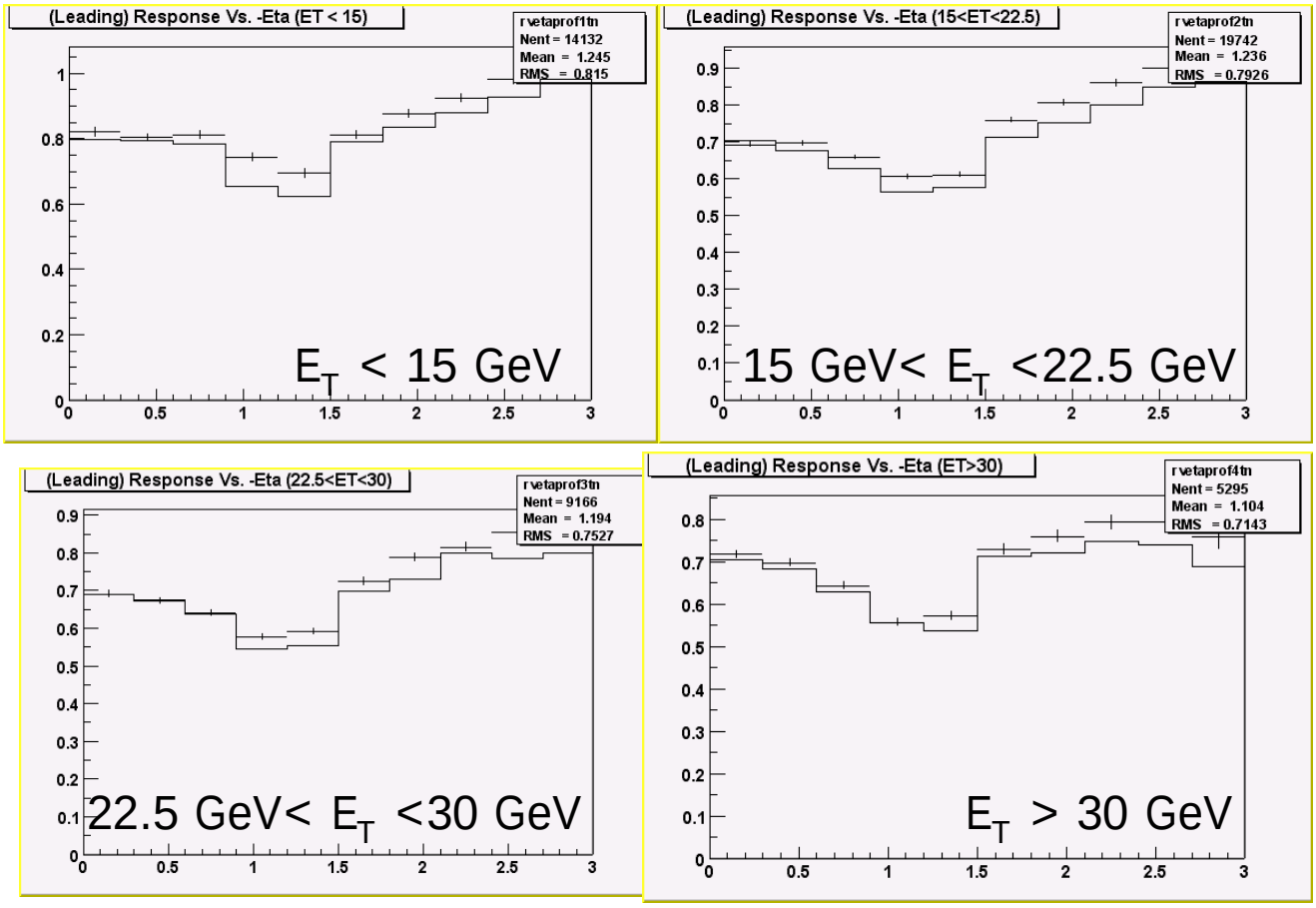
Data Results – Response Vs. Eta

- **4 photon detector ET bins**



Data Results – Response Vs. Eta for +/- Eta

Histogram: + eta, Points: - eta



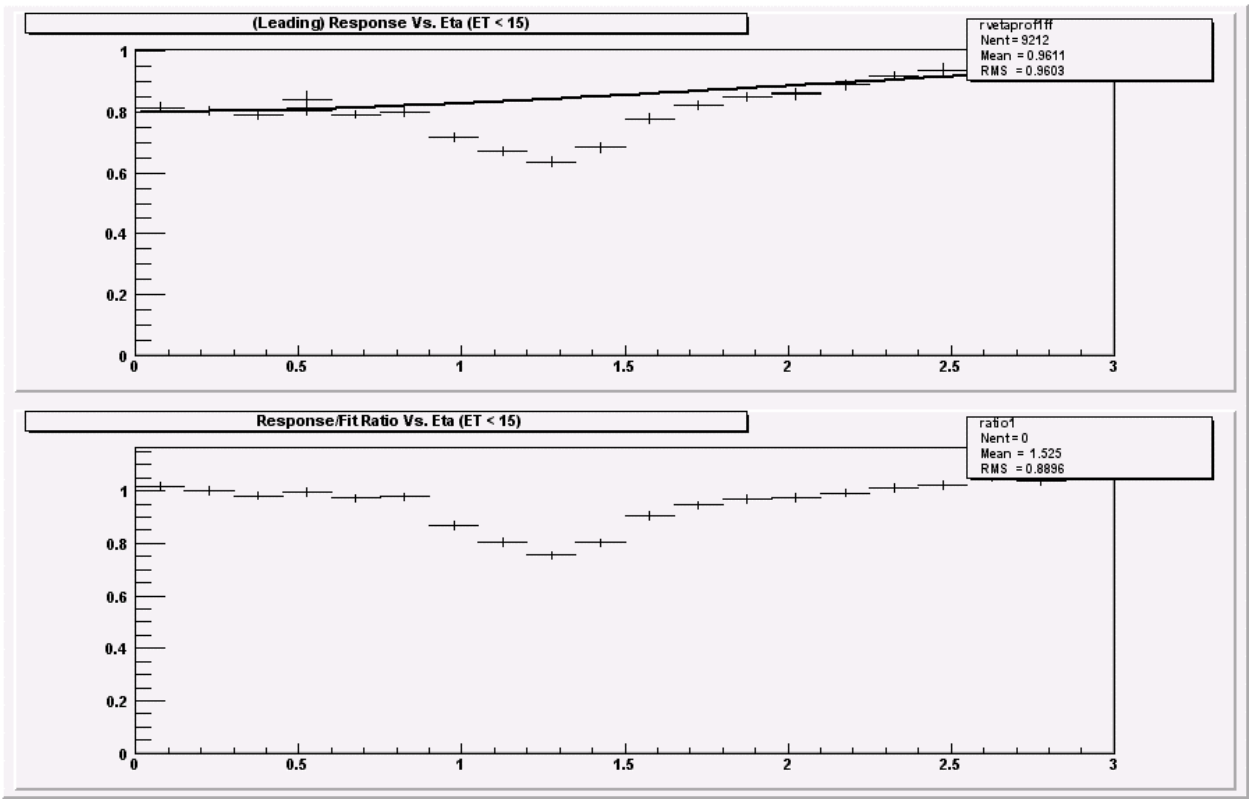
Data Results - Fit

- Fit data to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  E_T < 15 GeV



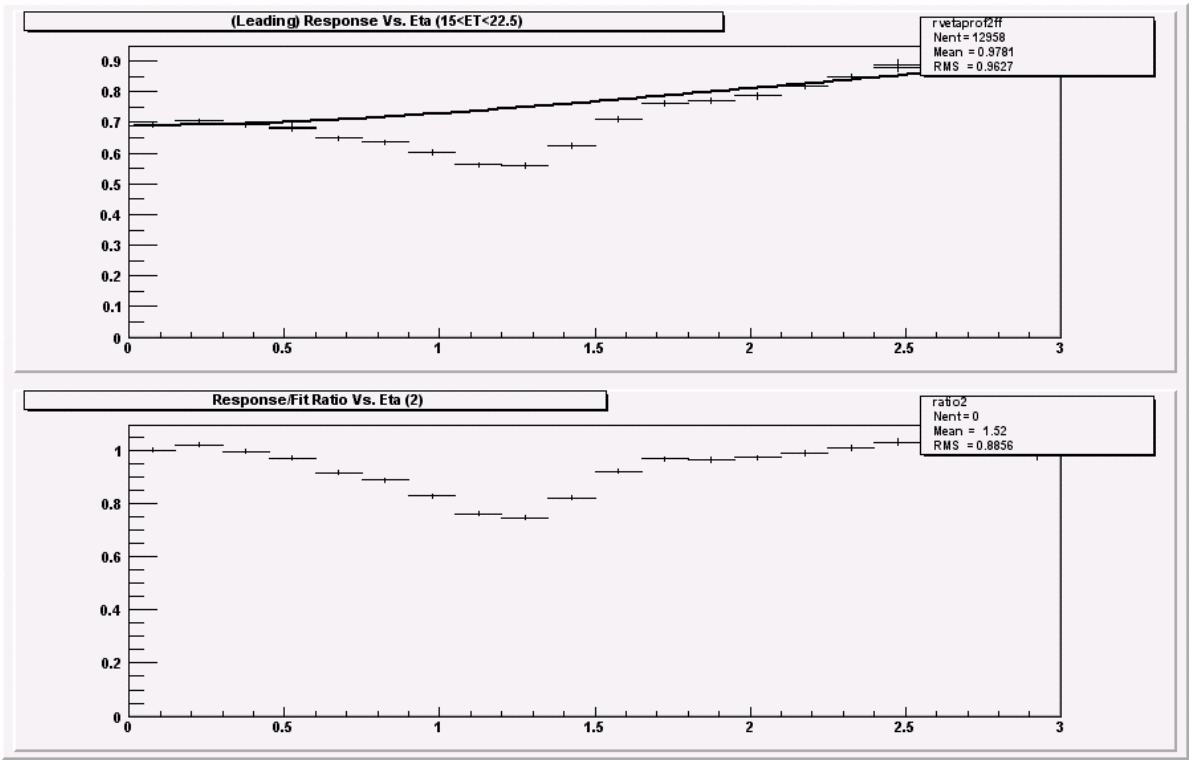
Data Results - Fit

- Fit data to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  15 GeV < E_T < 22.5 GeV



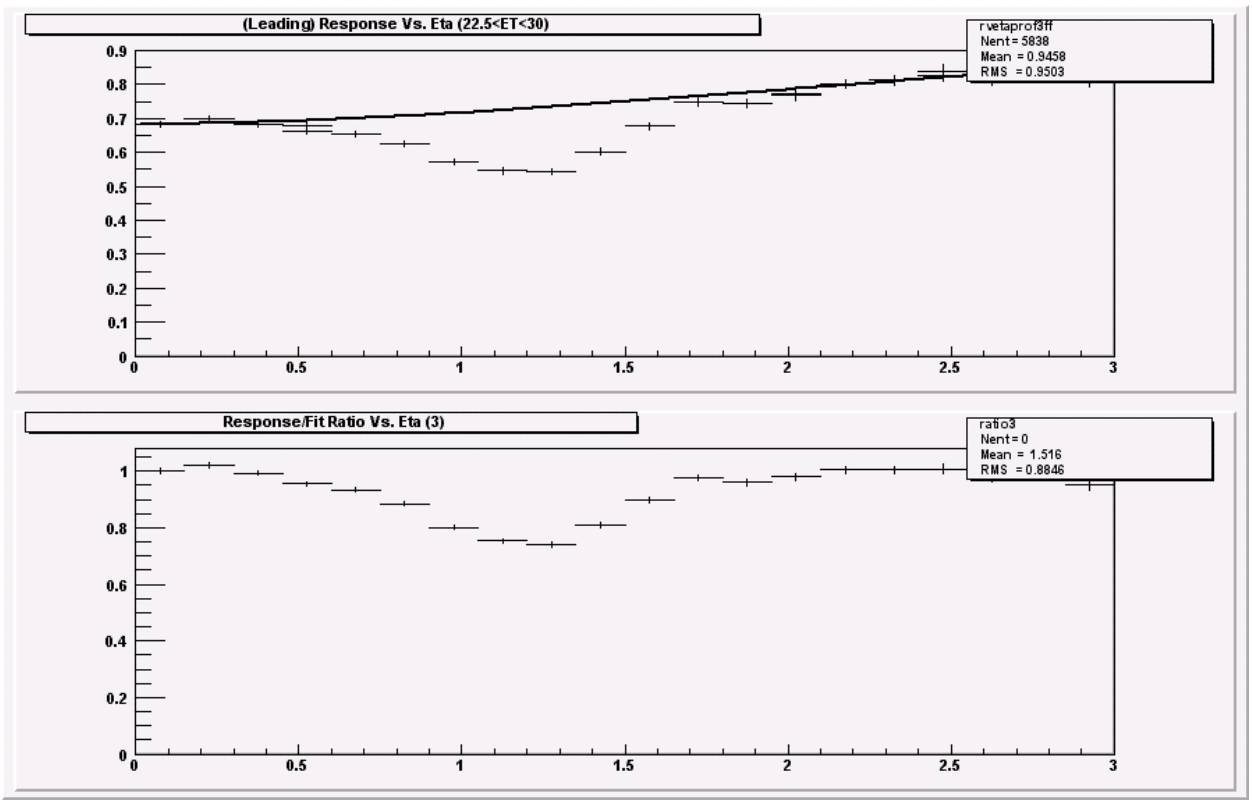
Data Results - Fit

- Fit data to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  22.5 GeV < E_T < 30 GeV



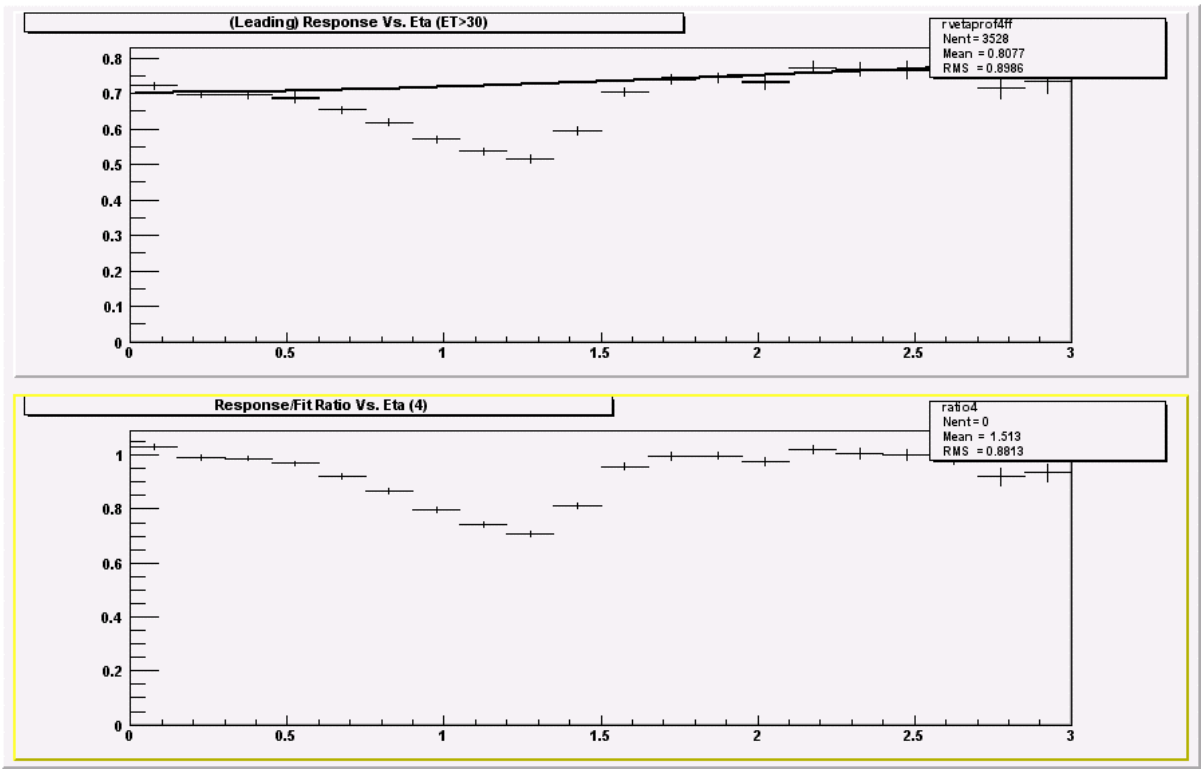
Data Results - Fit

- Fit data to the function:

  a + ln(cosh(detector_eta))

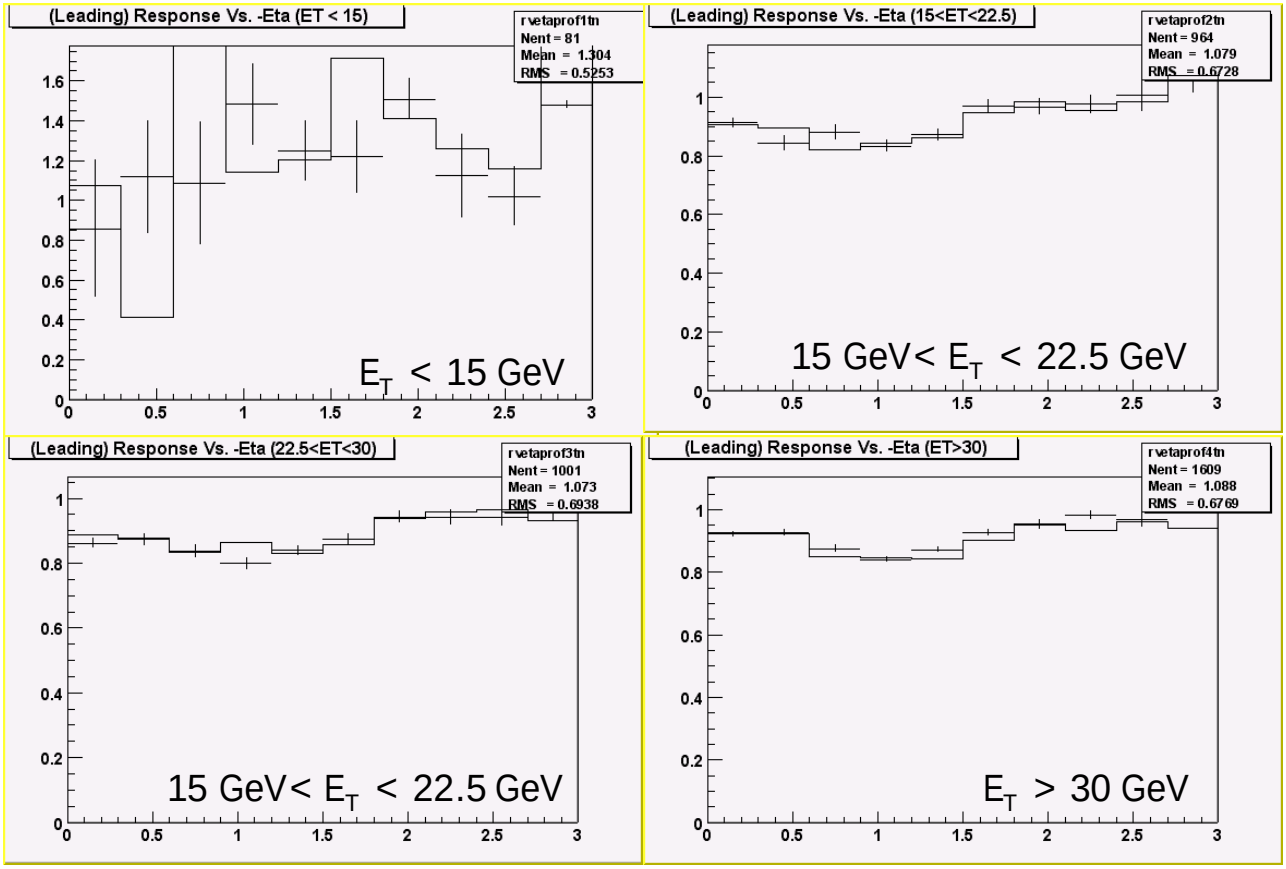
  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  E_T > 30 GeV



Monte Carlo results – Response Vs. Eta

- Response Vs. Eta for 4 E_T bins



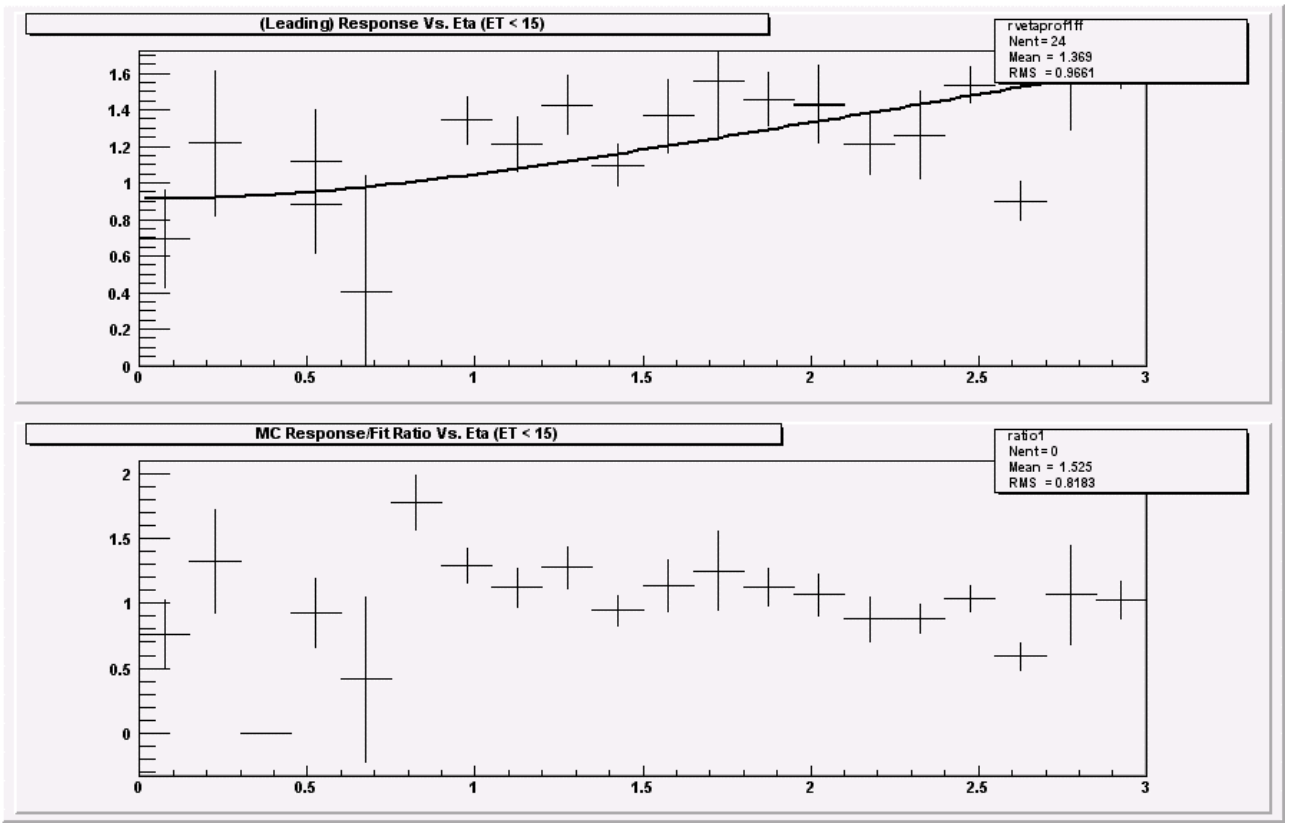
MC Results - Fit

- Fit MC to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  E_T < 15 GeV



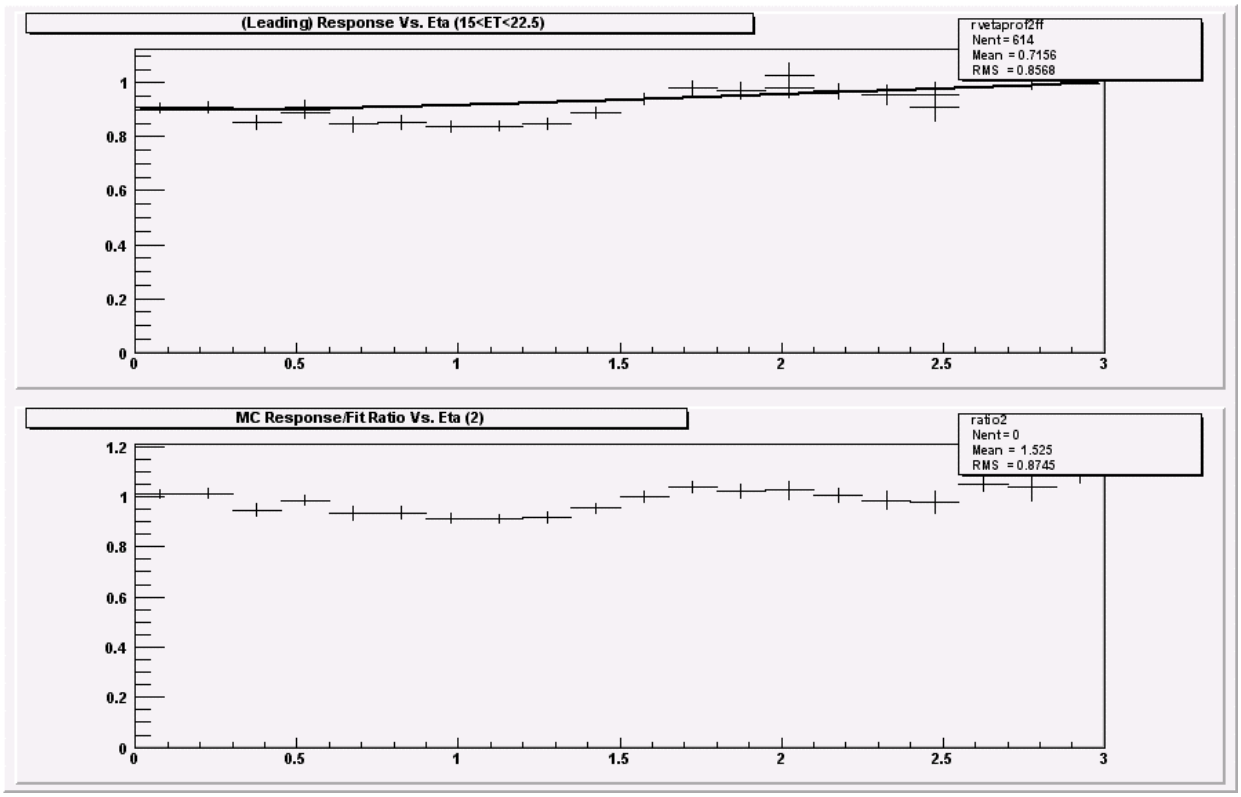
MC Results - Fit

- Fit MC to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  $15 < E_T < 22.5$ GeV



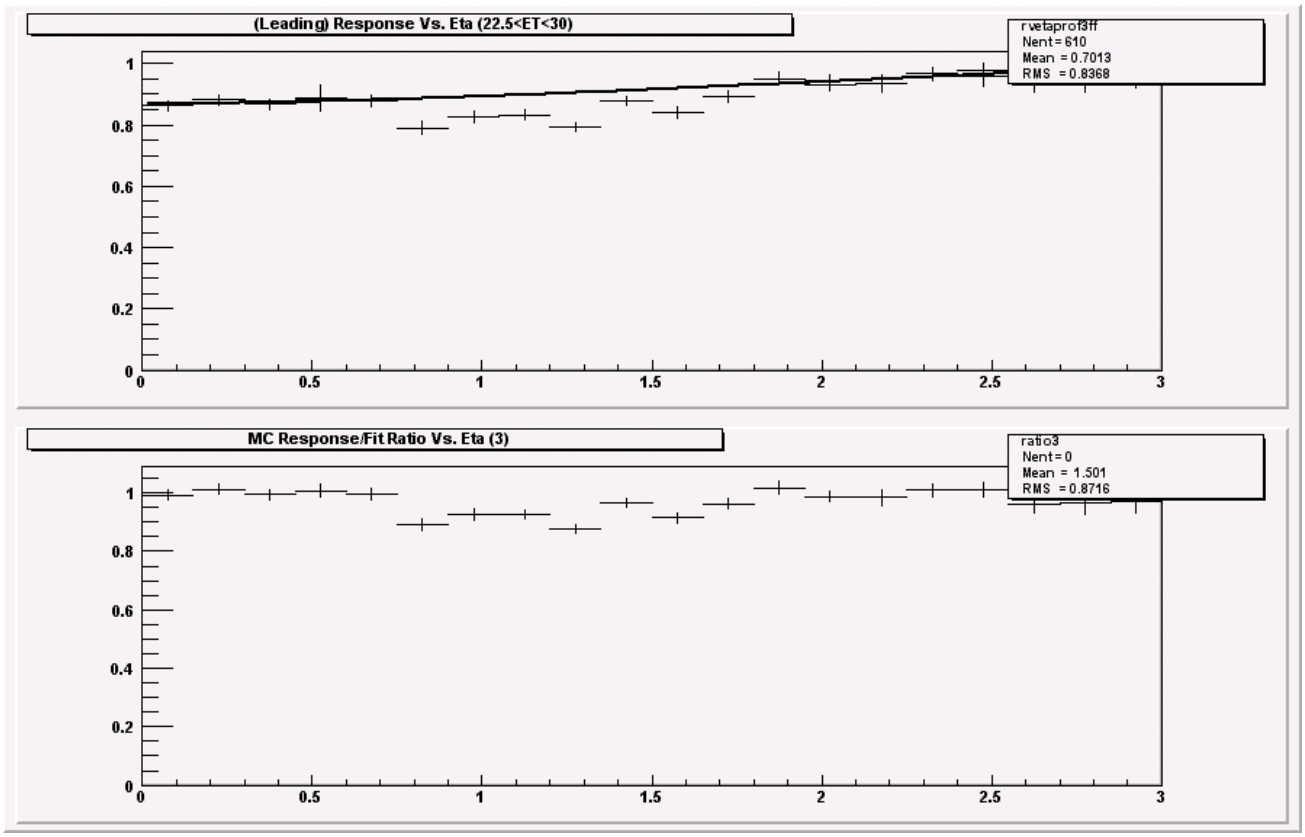
MC Results - Fit

- Fit MC to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  $22.5 < E_T < 30$ GeV



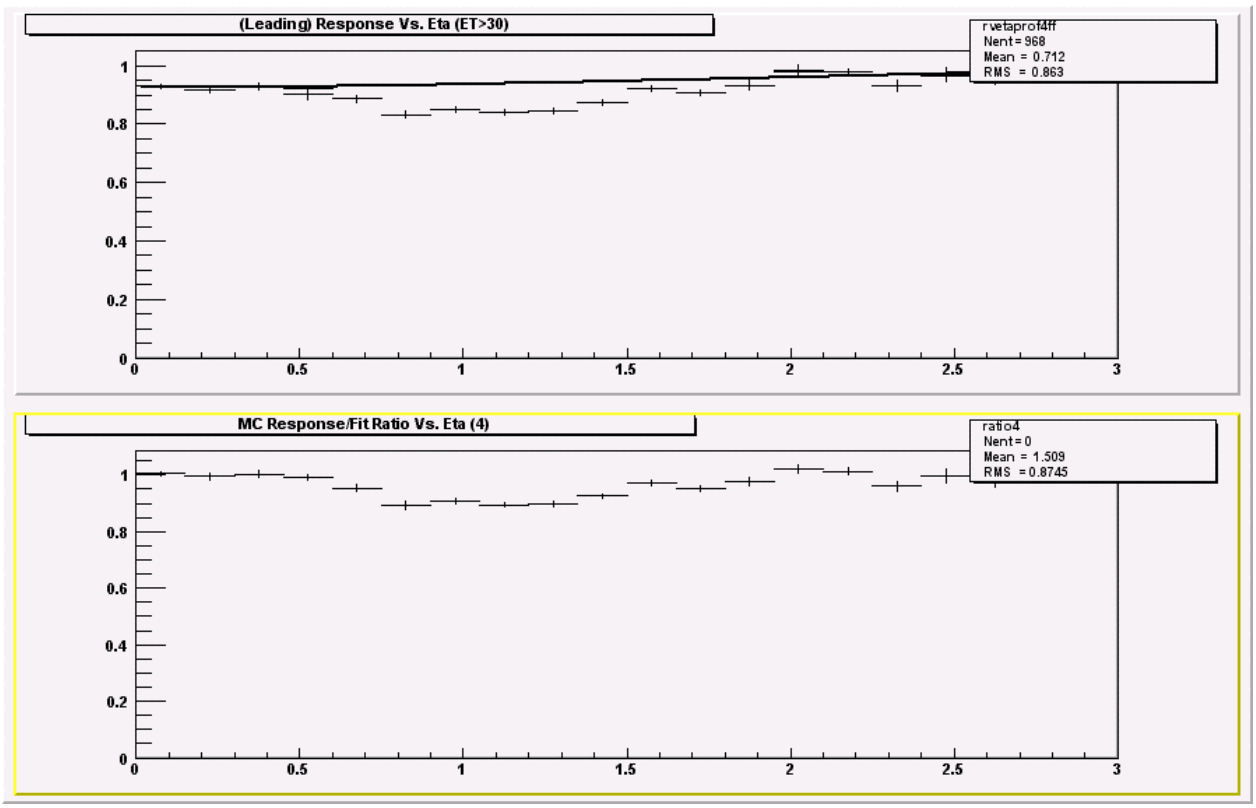
MC Results - Fit

- Fit MC to the function:

  a + ln(cosh(detector_eta))

  For $\eta < |0.5|$ and $|2.0| < \eta < |2.5|$

  E_T > 30 GeV



Summary/Conclusions

- **ToDo**
  - **Still question of ICD "calibration" in reconstructed jets**
    - **Investigate ICD/MG using Lee's roottuple (has ICD/MG fraction separate). Is the problem in non-linearity**
    - **Understand response vs. icrf**
  - **Extract correction as a function of time/run number/icrf/etc.**
  - **Set up automated "smalltuple" to keep up with data taking**