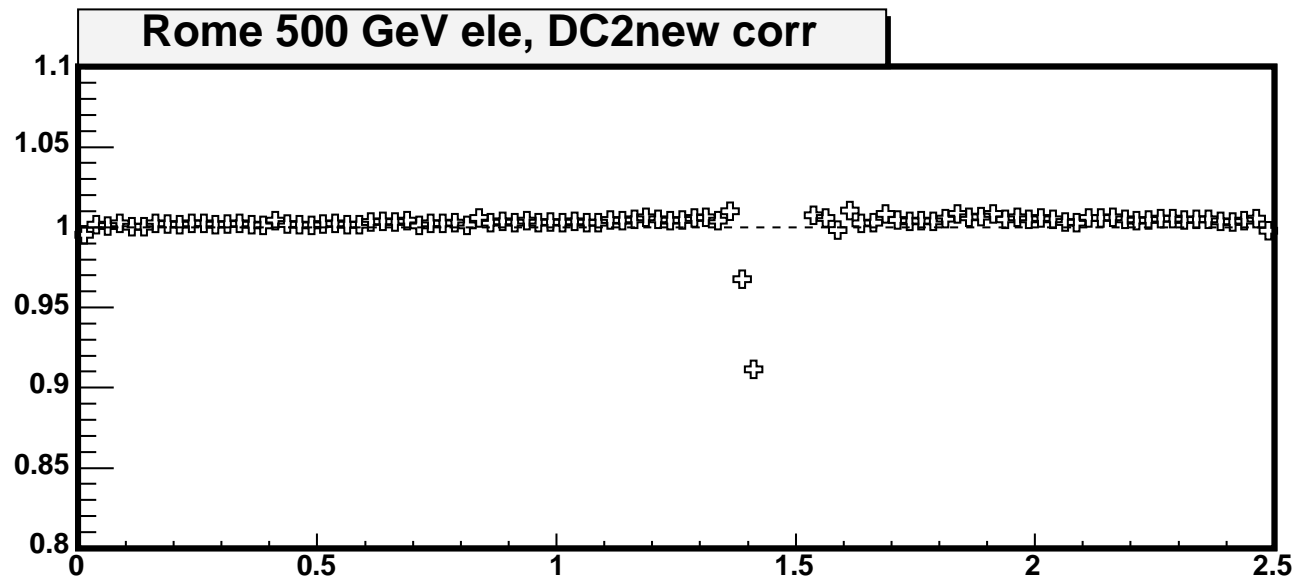
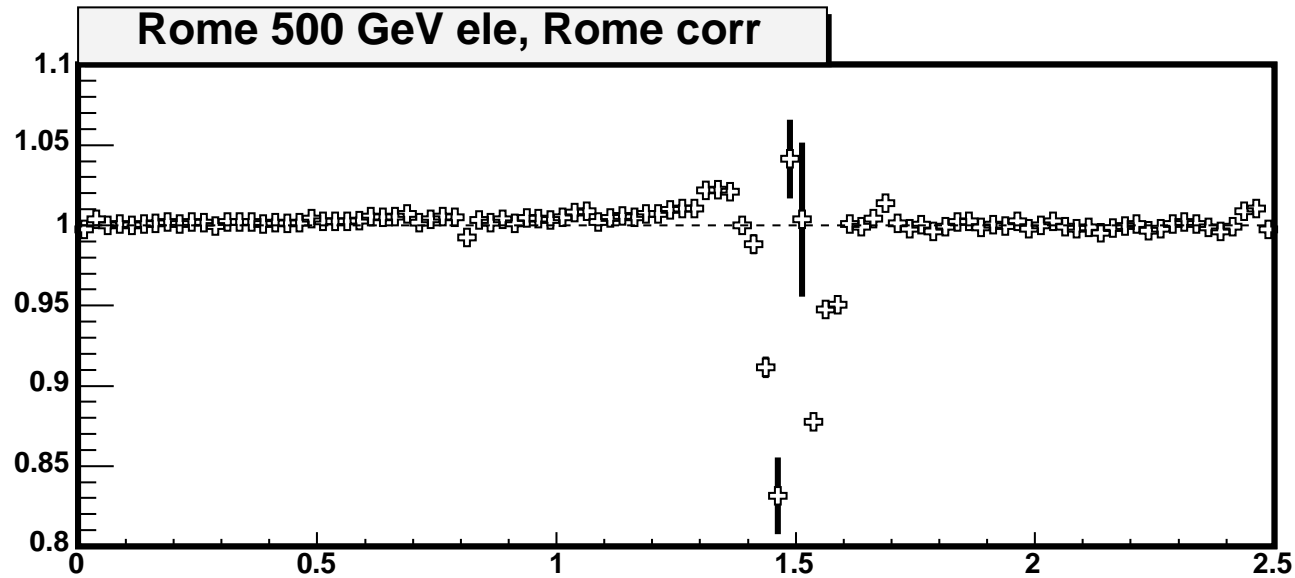


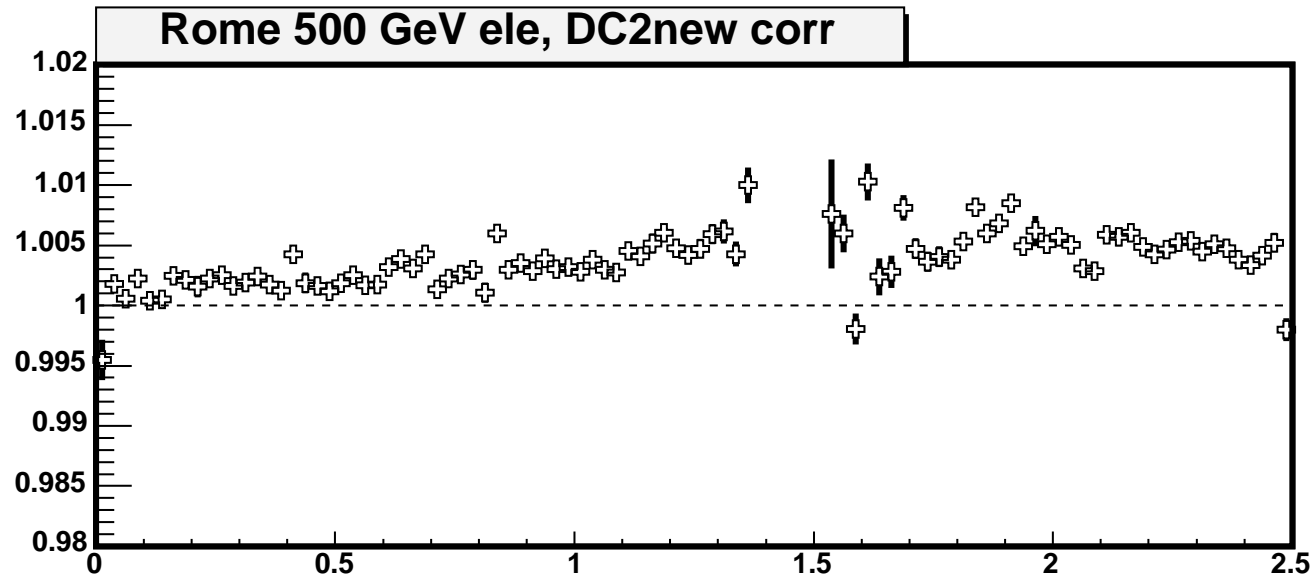
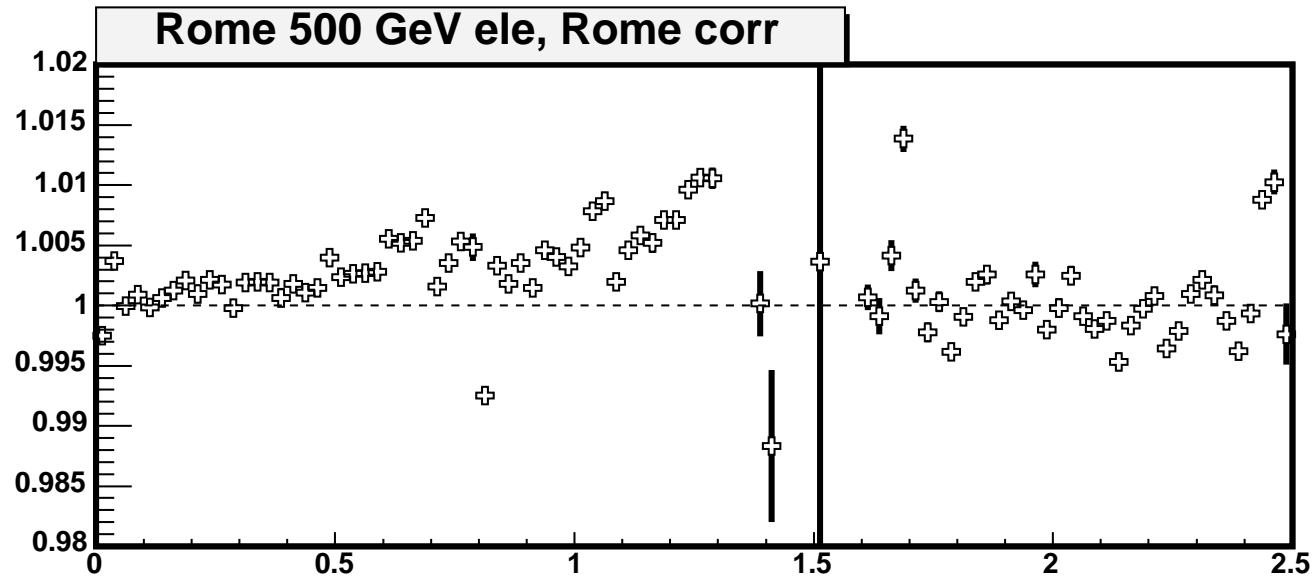
10.0.1 corrections review

- There appeared to be small systematic differences between DC2 (8.0) and Rome (9.0) MC in the endcaps.
- Stathes derived new longitudinal weight corrections for Rome MC (at nearly the last minute).
- I had only a small-statistics 9.0 sample to test with, and not enough time to rerun the jobs.
- Corrections implemented:
 - “Rome” — Stathes’s new weights with no additional corrections.
 - “DC2new” — Stathes’s new weights plus an additional correction factor tuned on DC2 data.
- Now have some plots from larger statistics Rome samples run with 10.0.2.

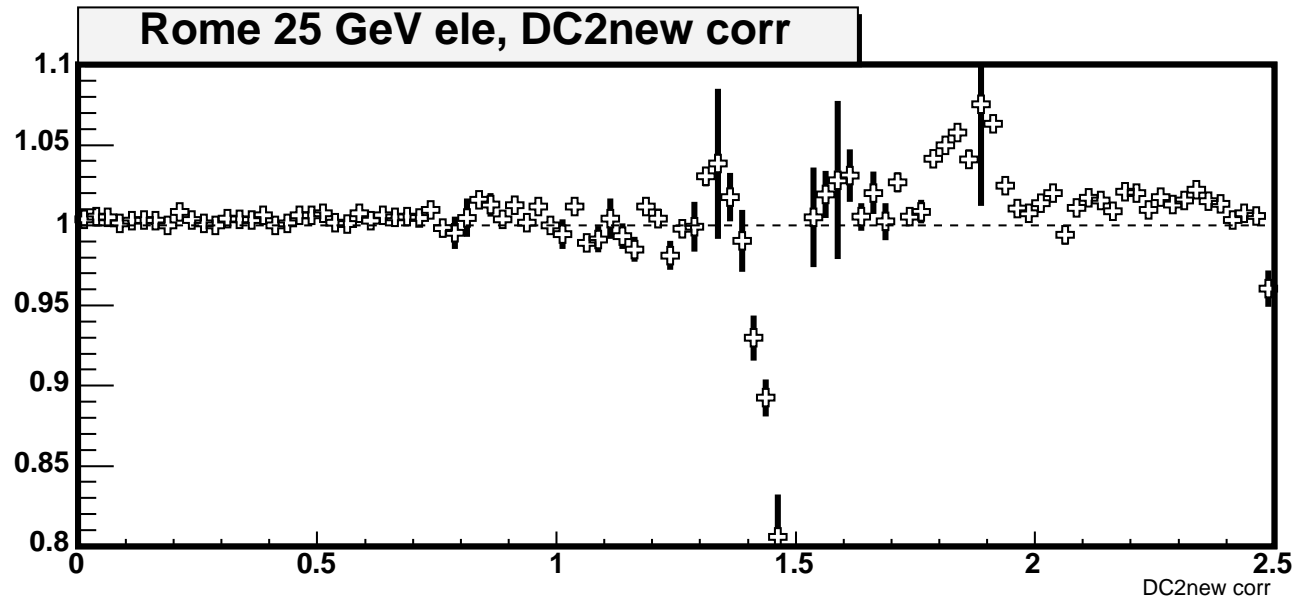
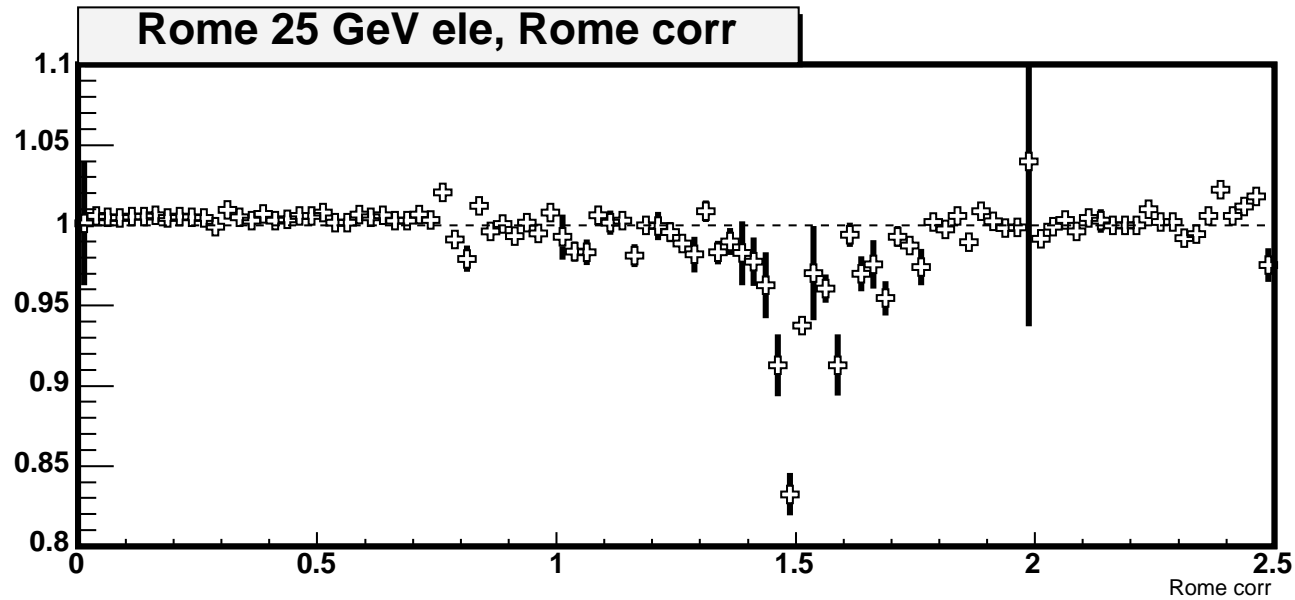
9.0 (Rome) MC; 500 GeV electrons



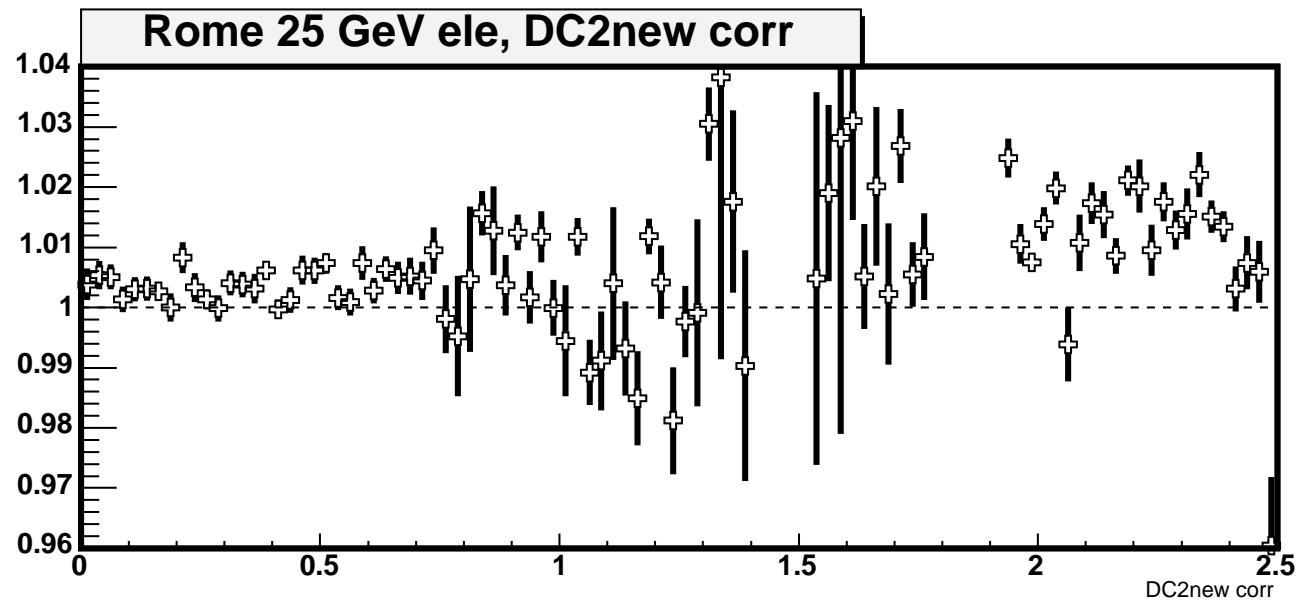
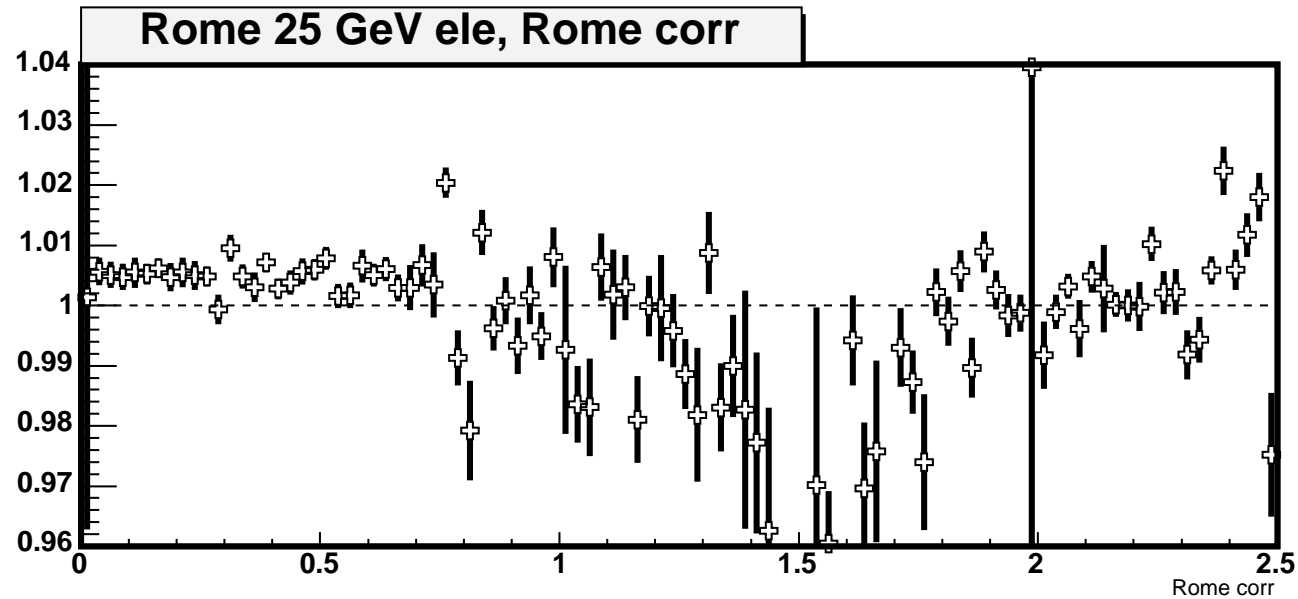
9.0 (Rome) MC; 500 GeV electrons



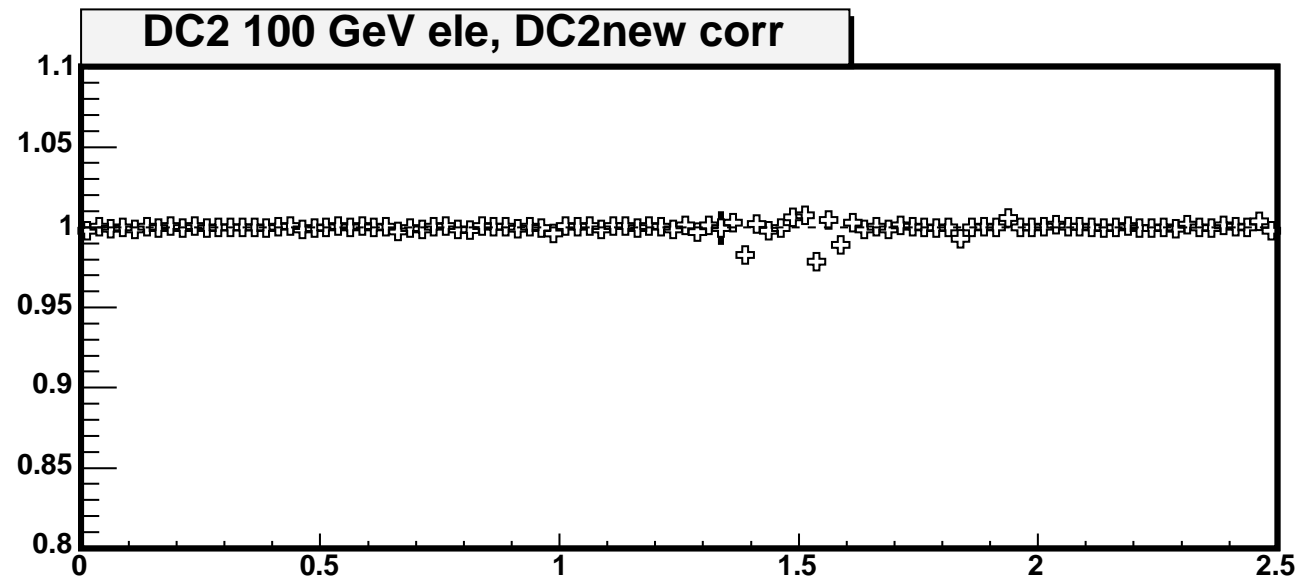
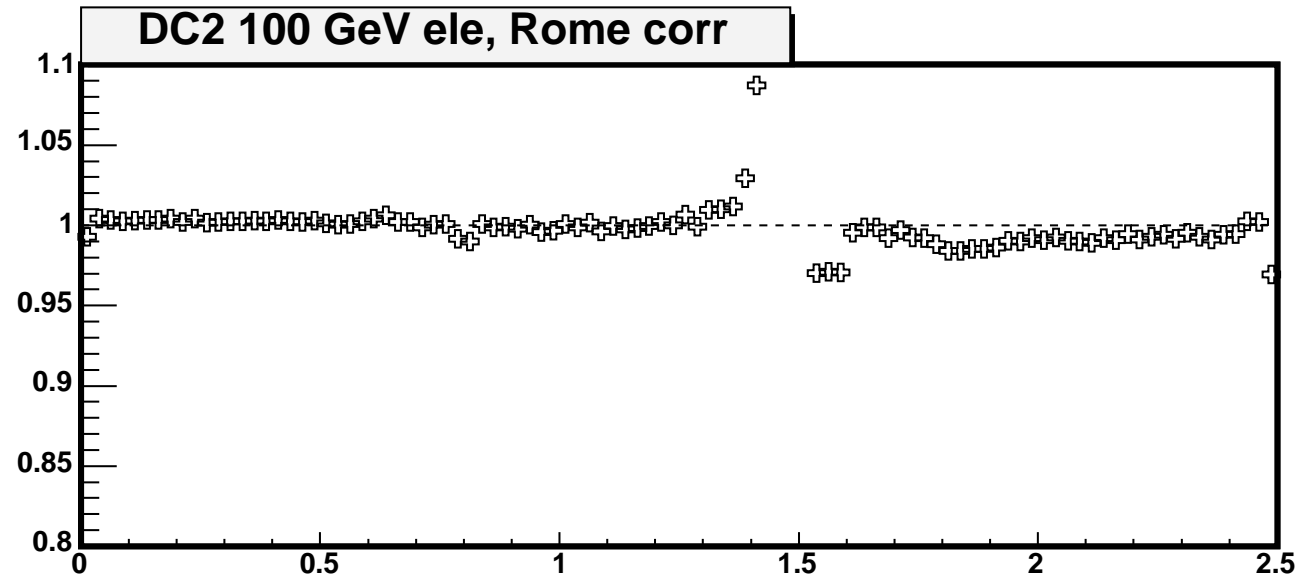
9.0 (Rome) MC; 25 GeV electrons



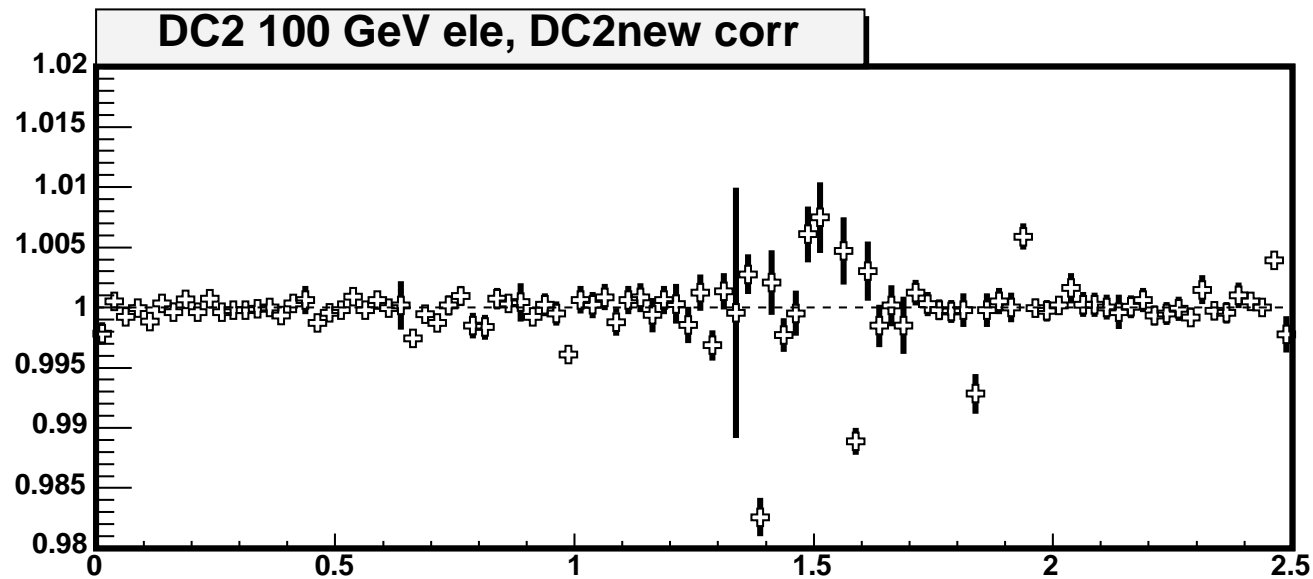
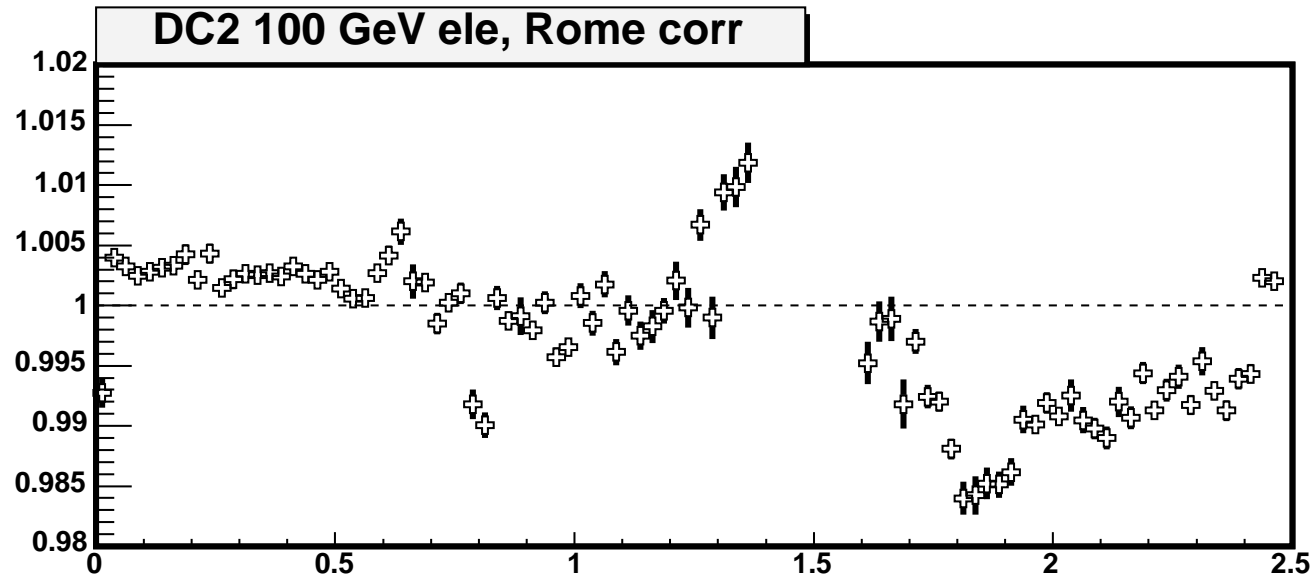
9.0 (Rome) MC; 25 GeV electrons



8.0 (DC2) MC; 100 GeV electrons



8.0 (DC2) MC; 100 GeV electrons



Cluster Corrections — Next Round

- Start looking at position corrections again.
- Instead of making η -position (“S-shape”) corrections, can we change the centroid calculation to use logarithmic instead of linear weighting?
- Described in Awes et al., NIM A311, 130.
- DØ uses this method.
- Remove the need for η position corrections?
- Centroid is calculated as a weighted sum of cells:

$$\eta = \frac{\sum_i w_i \eta_i}{\sum_i w_i}$$

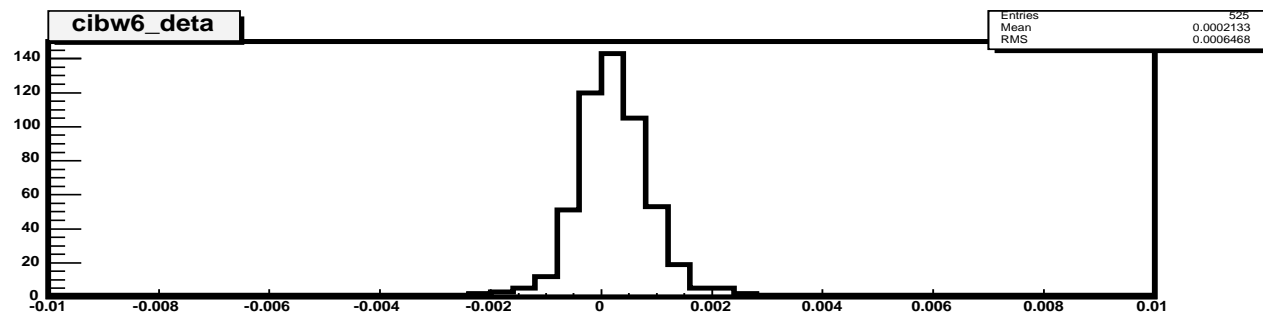
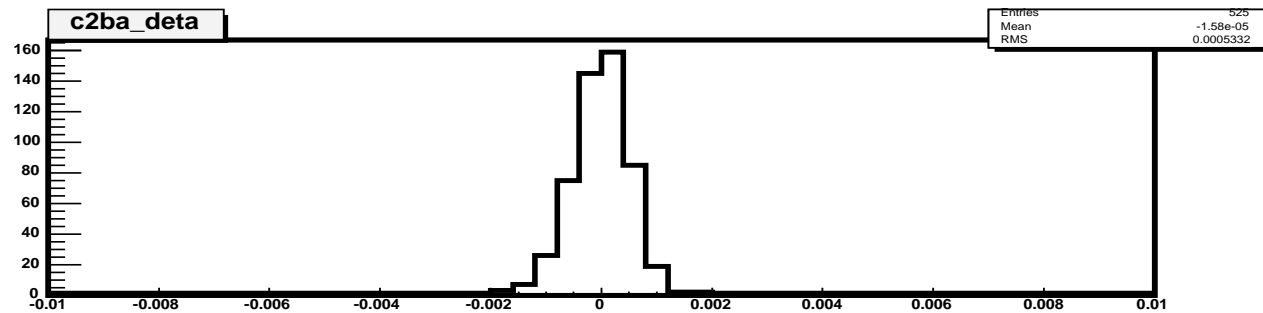
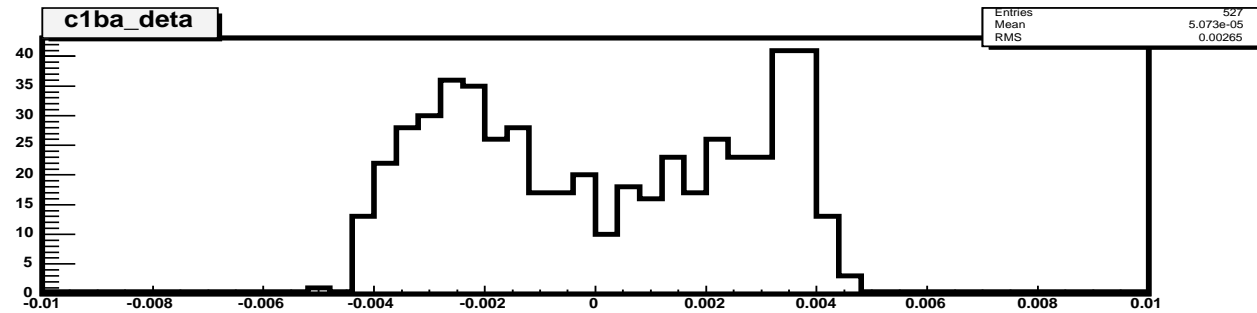
- Now, $w_i = E_i$.
- Propose

$$w_i = \max(0, w_0 + \ln(E_i/E_{\text{tot}}))$$

- Adjustable parameter w_0 needs to be tuned for best resolution. In general, w_0 can depend on energy, position, etc.

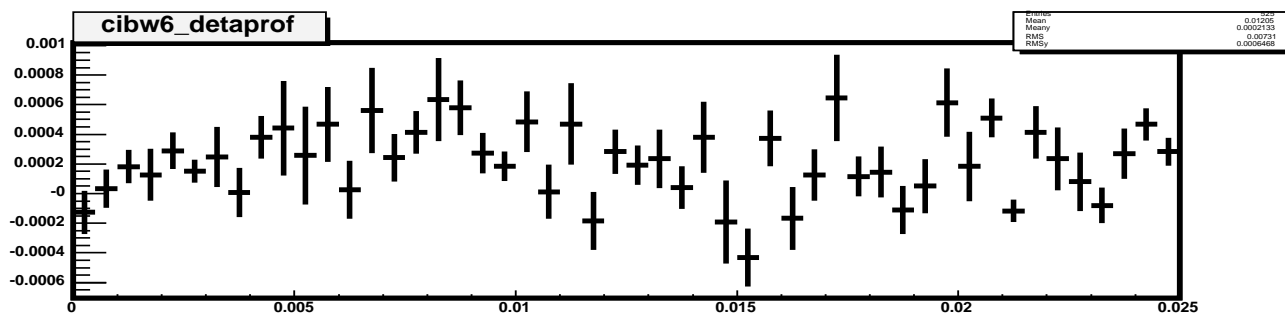
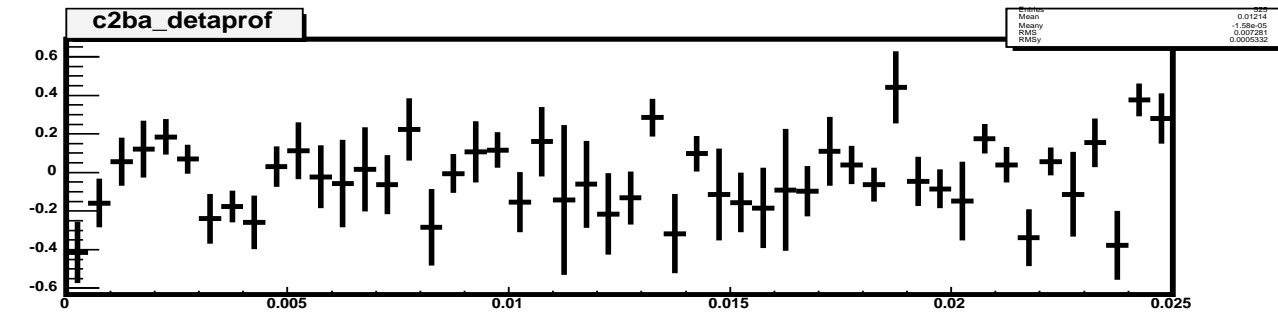
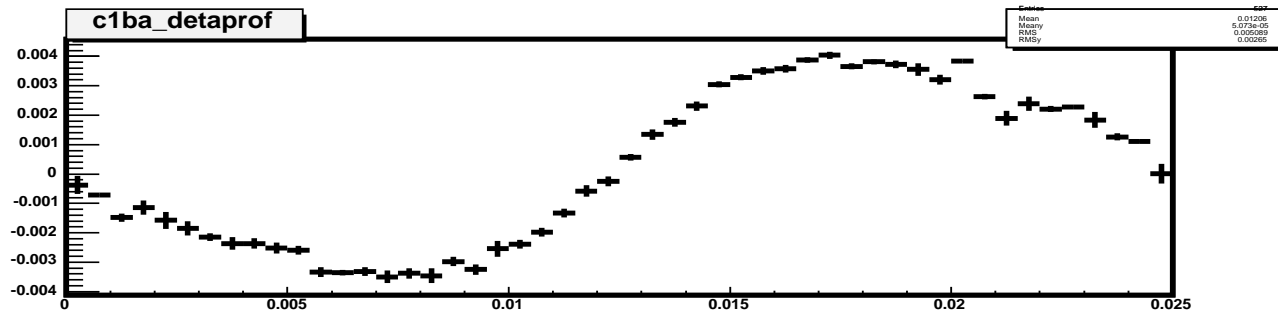
Preliminary Results

- Using 1000 DC2 100 GeV electrons, barrel sampling 2.
- $\eta_{\text{reco}} - \eta_{\text{true}}$ for uncorrected, corrected, and log-weighted ($w_0 = 5$) clusters.



Preliminary Results

- Plot $\eta_{\text{reco}} - \eta_{\text{true}}$ vs. position within cell.



Log Weighting Preliminary Conclusions

- Still small statistics.
- No real tuning done yet.
- However, log-weighted positions are already almost as good as the current corrections.
- More soon.