ECAL Energy Calibration Updates

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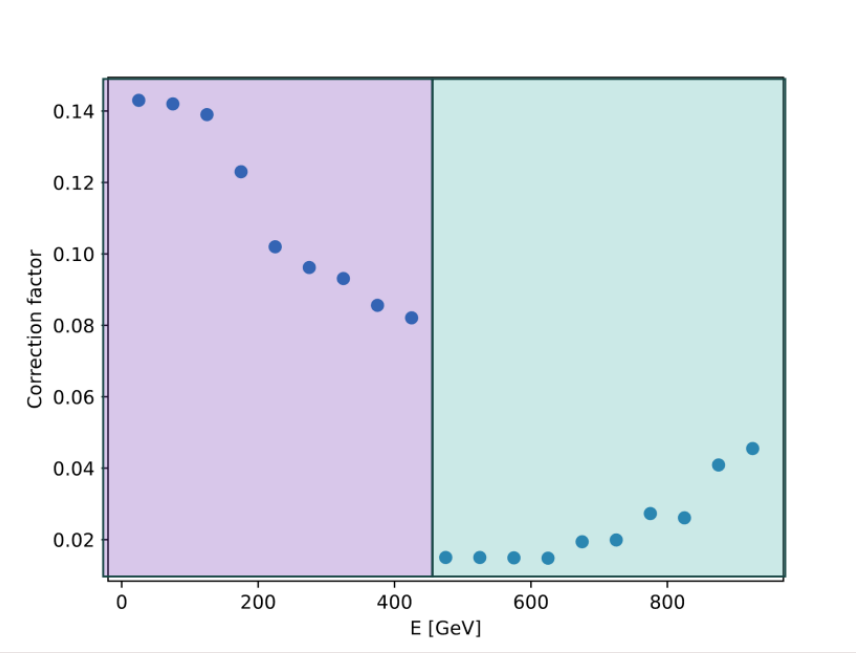
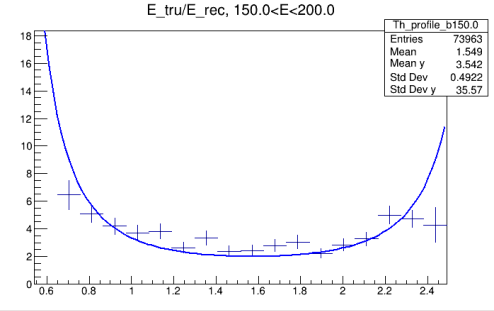
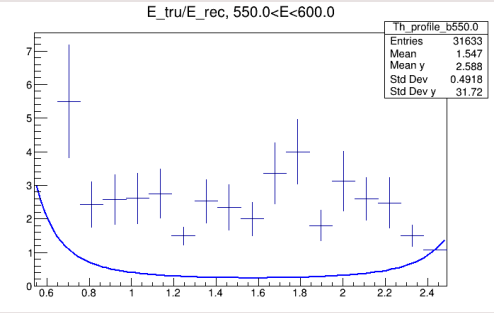
Last Time

- Saw good fit to the analytical energy loss function for energies below ~500 GeV
- Higher energy slices better fit by a constant correction factor in the barrel region
  - + Higher energy photons don’t start showering right away, so we can’t use our simple radiation length function
- Decided to pursue an analytical fit at low energies and use constant correction factor for higher energy slices

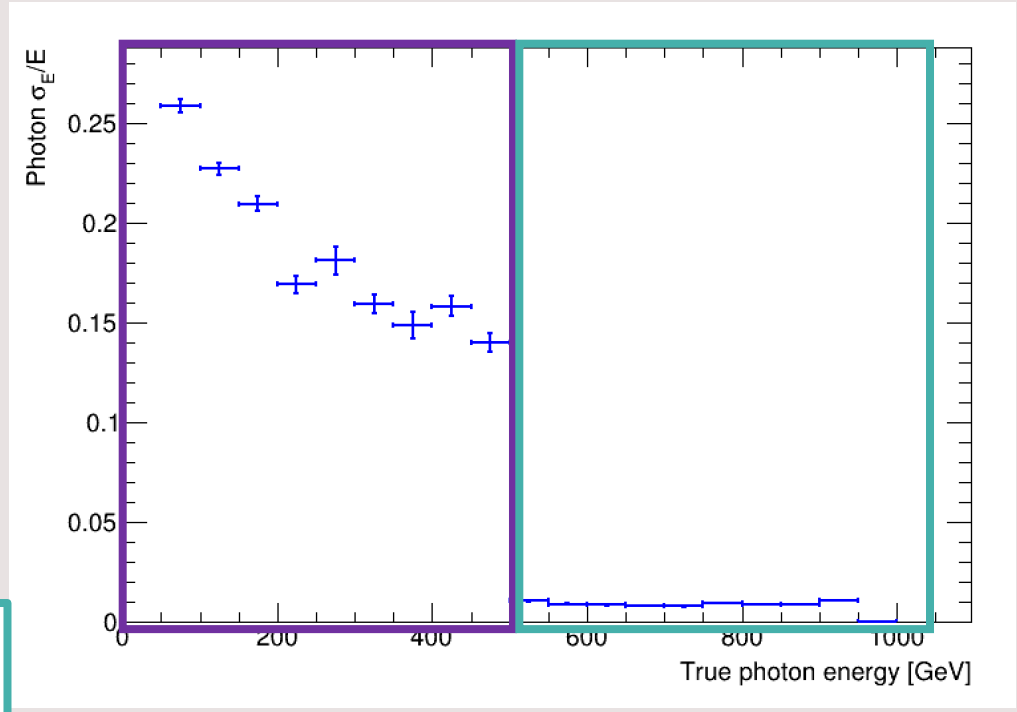


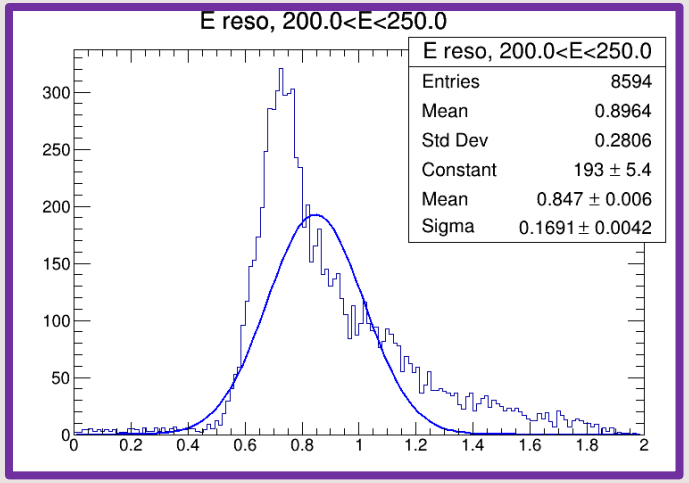


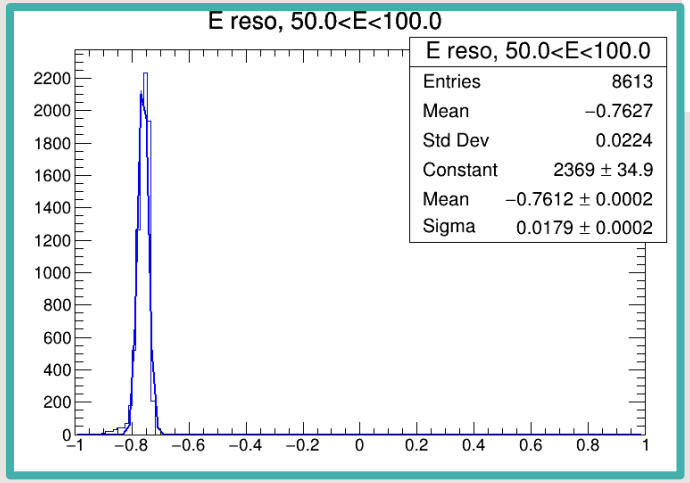


Analytic Fit + Constant Correction Factors

- Took a simple approach for E>450 GeV
- Averaged values of E_true/E_reco in barrel region and used this as constant correction factor
- Retained analytic fits for lower-E slices
- Plotted resolution **after** energy correction







Abandoning Analytic Fit

- For now, it seems it may be wise to pursue a simpler calibration strategy
- Lower-energy slices and endcaps won't be well-described by a constant factor, however
- Next strategy: a 2D binned calibration directly from the 2D response profile
- Code written, not yet implemented bc I am struggling to figure out my workflow on the new host ☺
- Anyway, logic laid out here: