

Update on Analysis of  
CTBBestEnergy Selection in  
Pass 6 AllGamma data and  
BTElectron data

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04/09/08

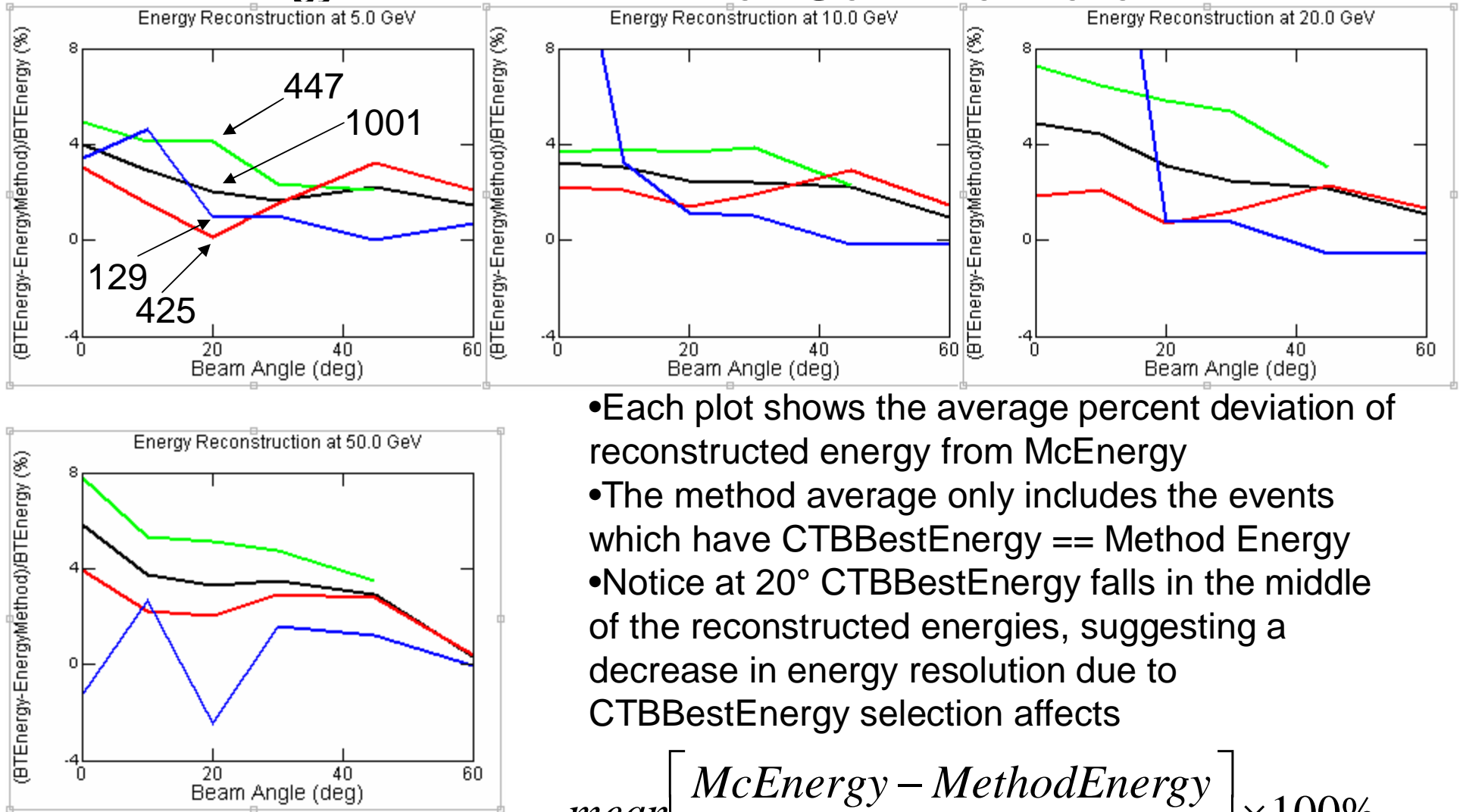
# Questions From Last Week

- How does the selected energy reconstruction method depend on angle?
  - In pass6 all gamma data
    - allGamma-GR-v13r9p12
  - In bt electrons
- What variables are most important in deciding between reconstruction methods?

Pass6 AllGamma Data

CalLkHdEnergy  
 EvtEnergyCorr  
 CalCfpEnergy  
 CTBBestEnergy

# Deviation from McEnergy for reconstructed energies in Pass6 allGamma Data

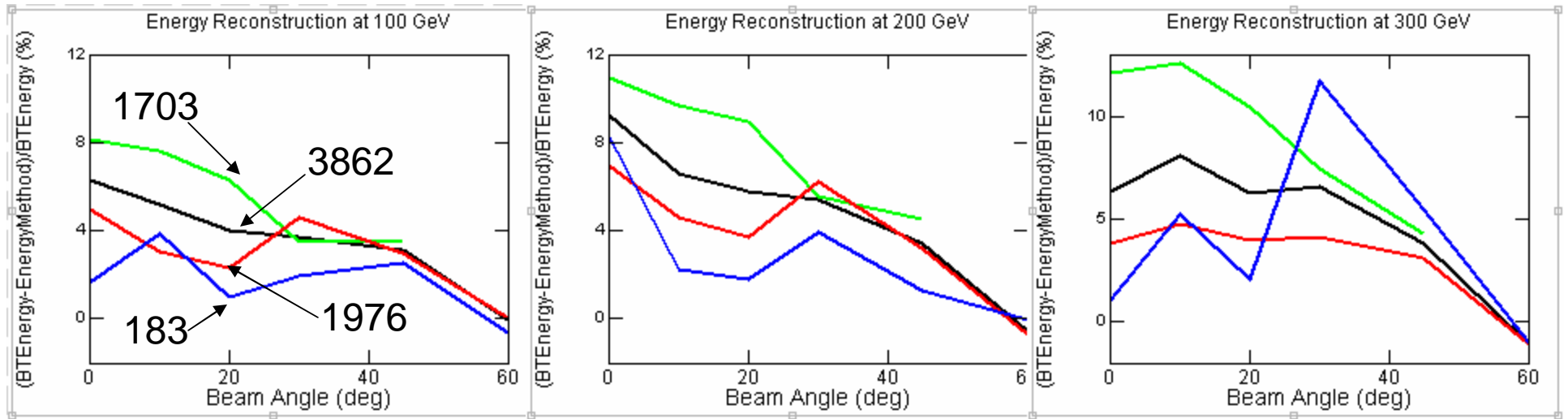


- Each plot shows the average percent deviation of reconstructed energy from McEnergy
- The method average only includes the events which have  $CTBBestEnergy == Method\ Energy$
- Notice at 20° CTBBestEnergy falls in the middle of the reconstructed energies, suggesting a decrease in energy resolution due to CTBBestEnergy selection affects

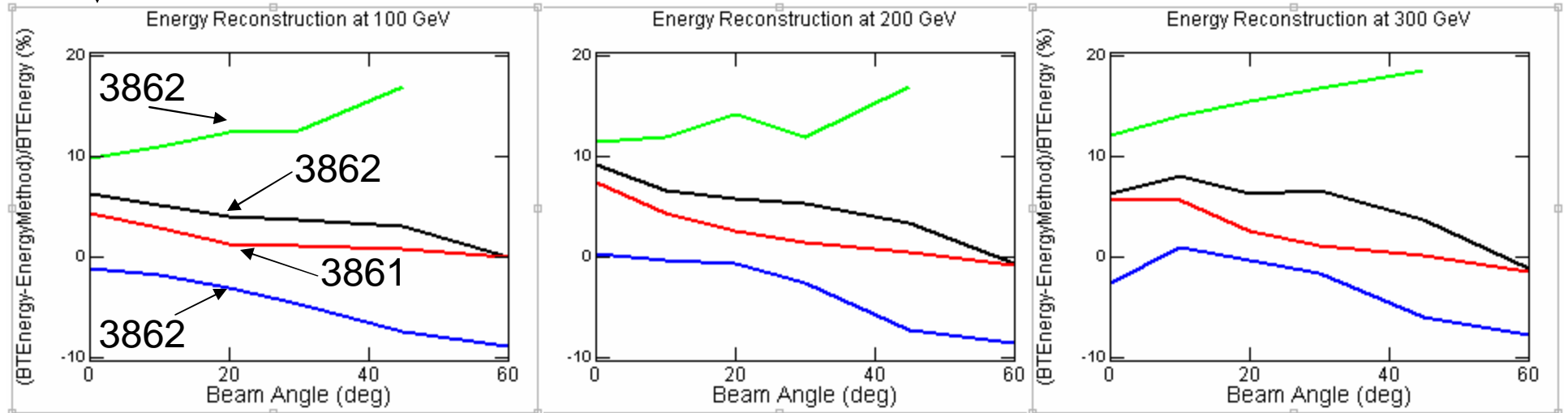
$$mean \left[ \frac{McEnergy - MethodEnergy}{McEnergy} \right] \times 100\%$$

**CalLkHdEnergy**  
**EvtEnergyCorr**  
**CalCfpEnergy**  
**CTBBestEnergy**

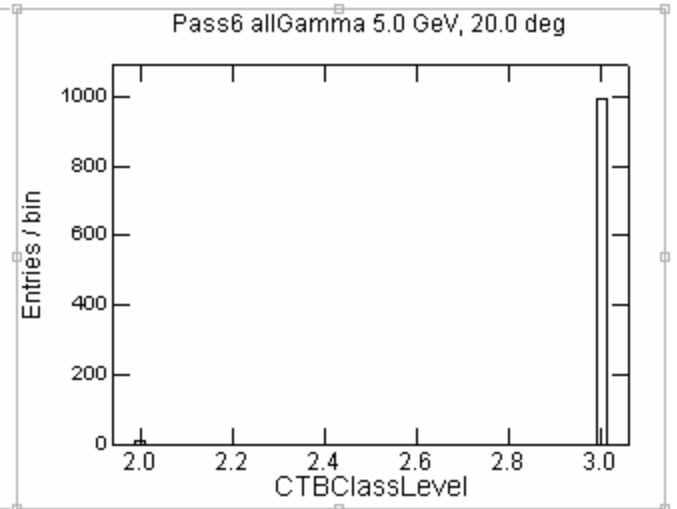
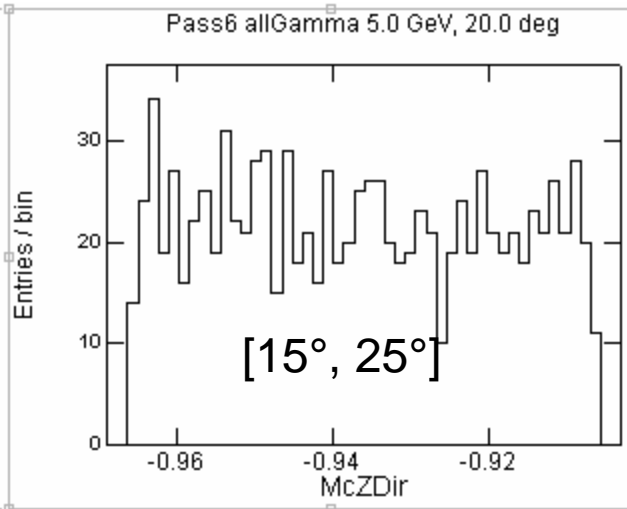
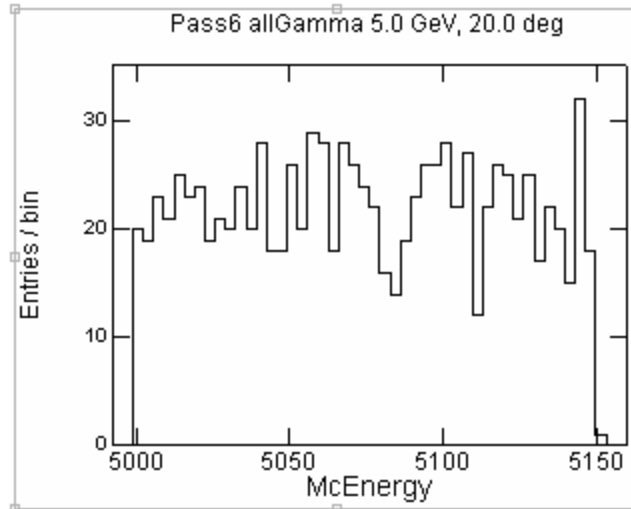
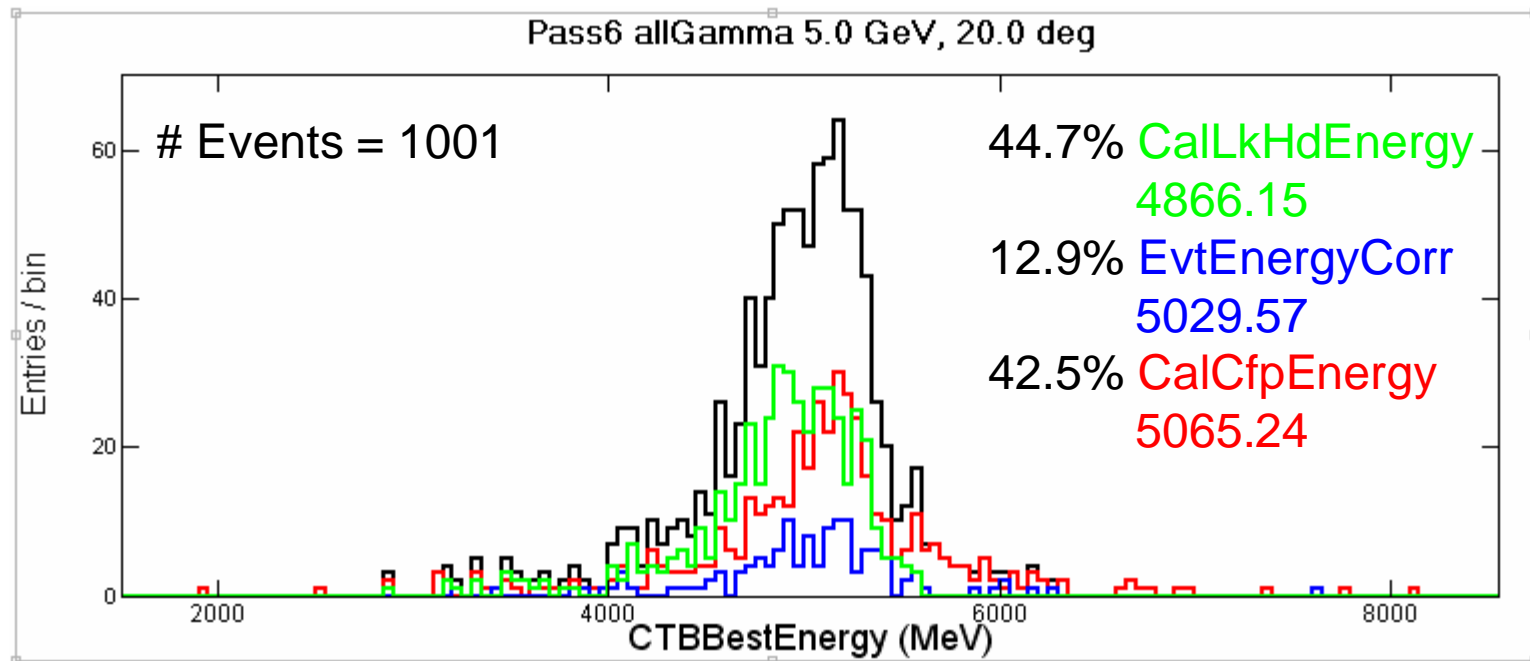
# Deviation from MCEnergy for reconstructed energies in Pass 6 all gamma



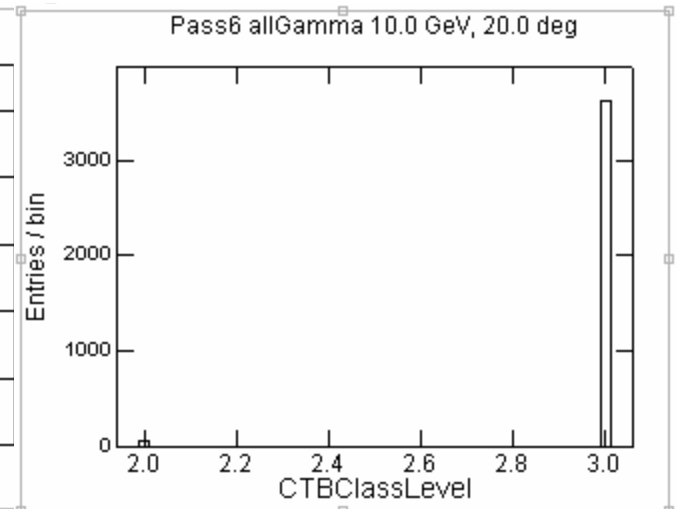
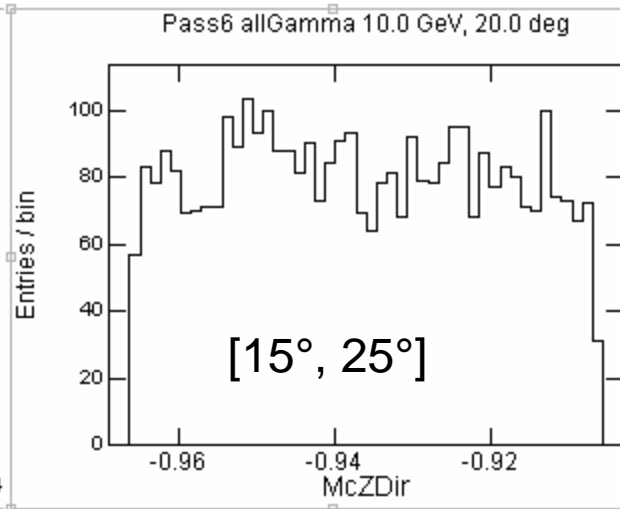
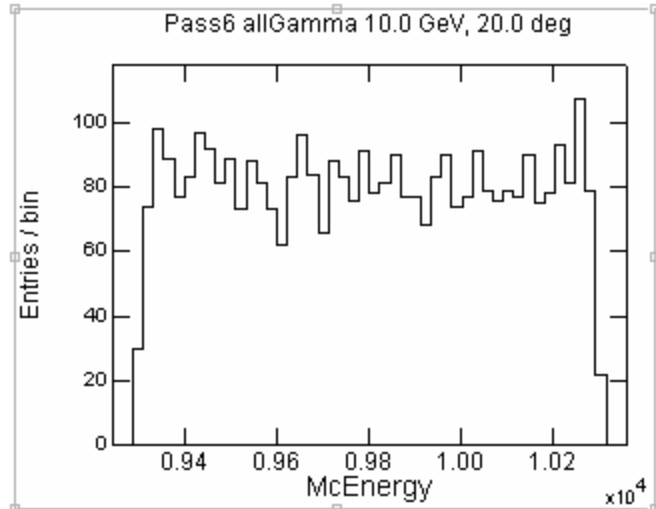
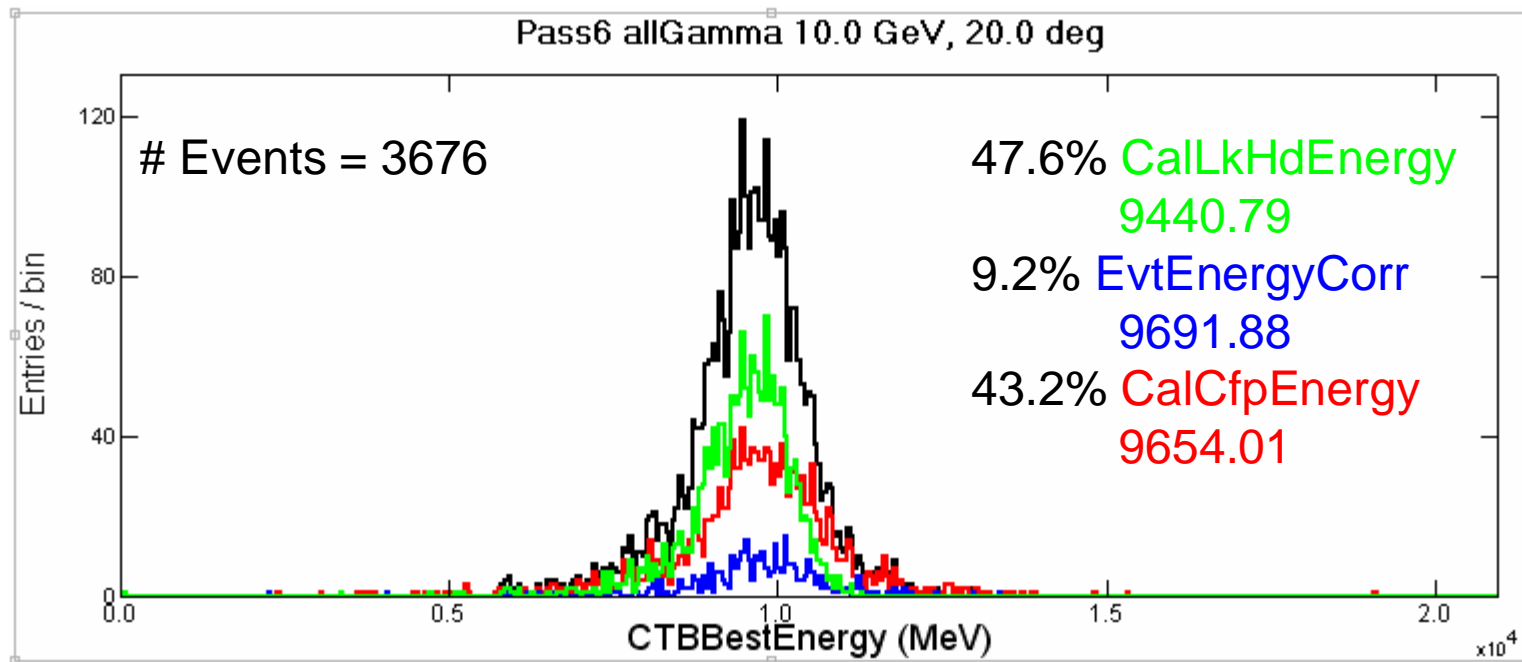
The Bottom Row includes ALL events in the averages.



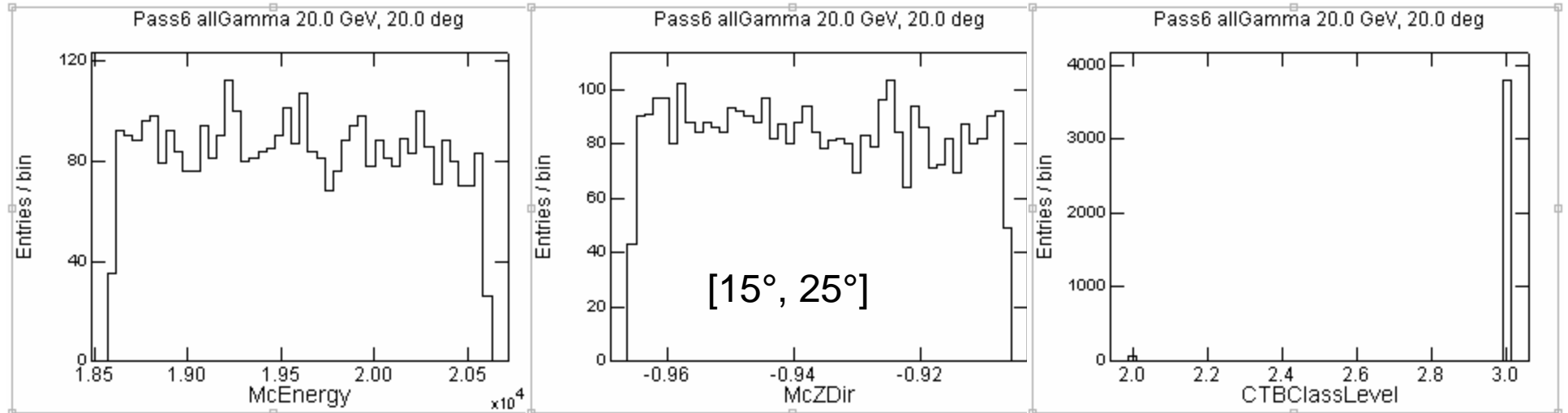
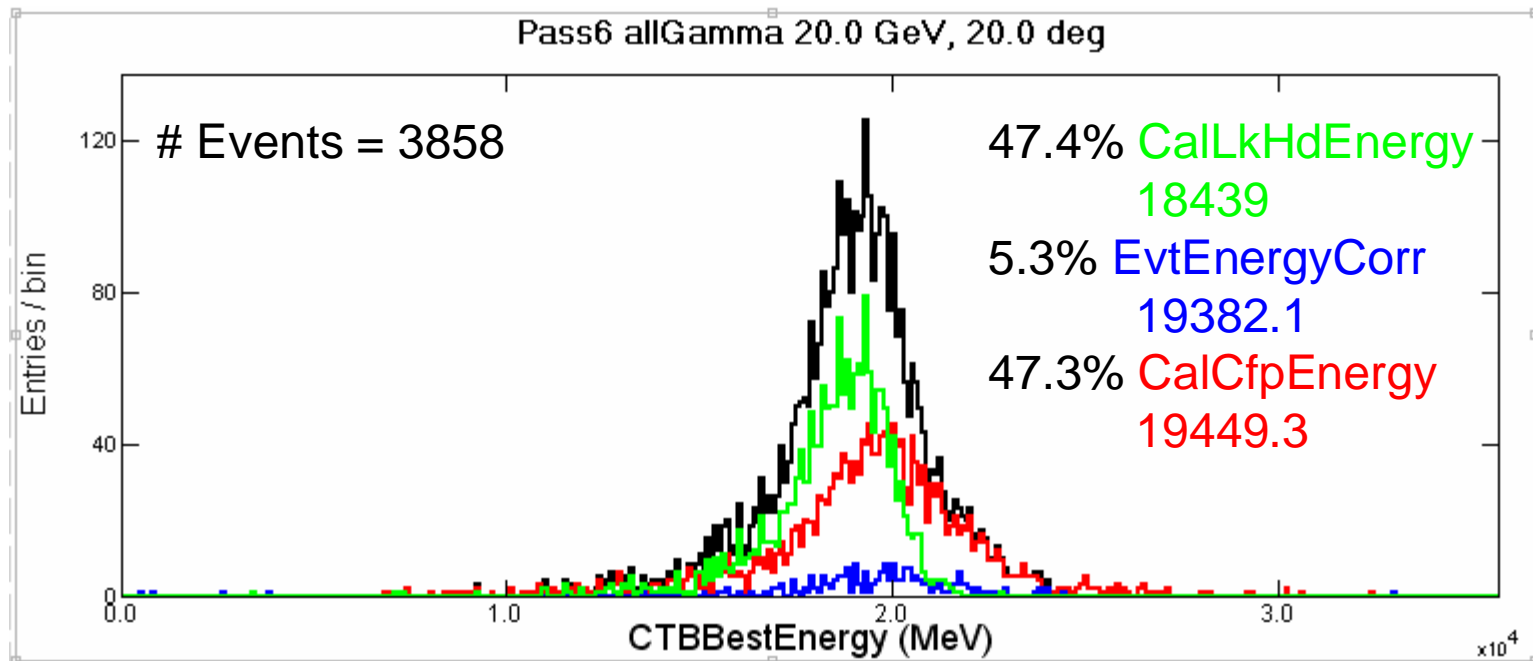
# CTBBestEnergy Selection for Pass6 allGamma 5 GeV, 20°



# CTBBestEnergy Selection for Pass6 allGamma 10 GeV, 20°

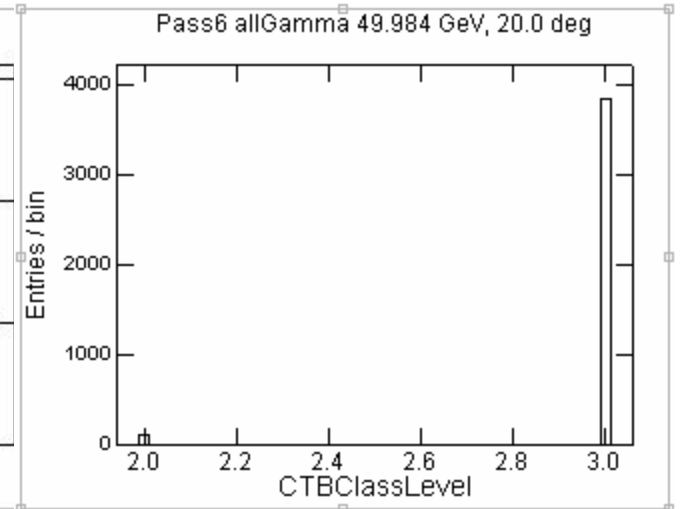
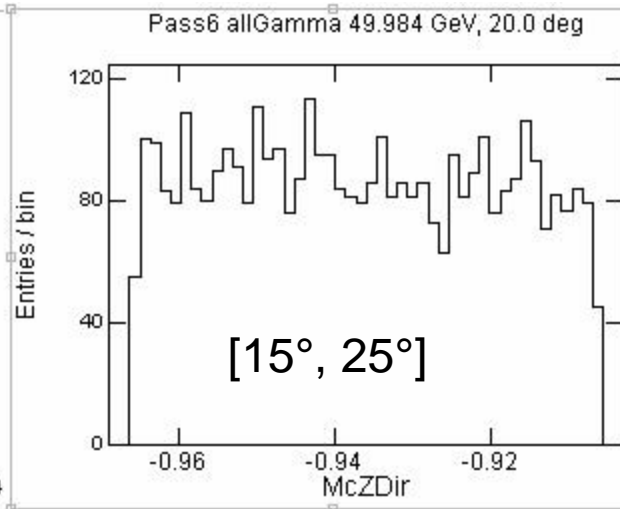
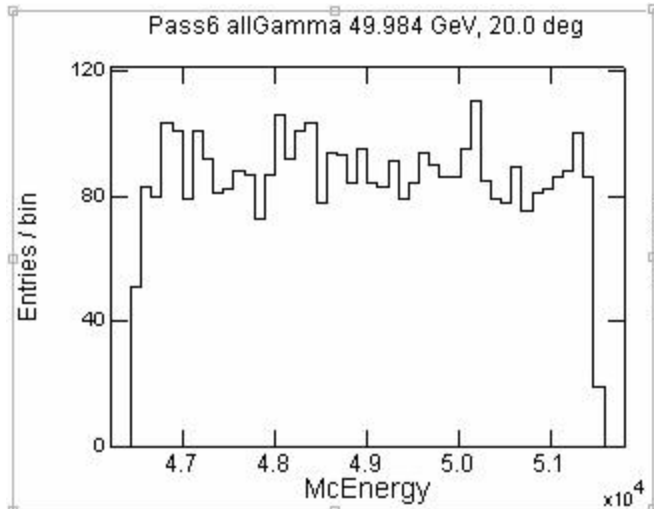
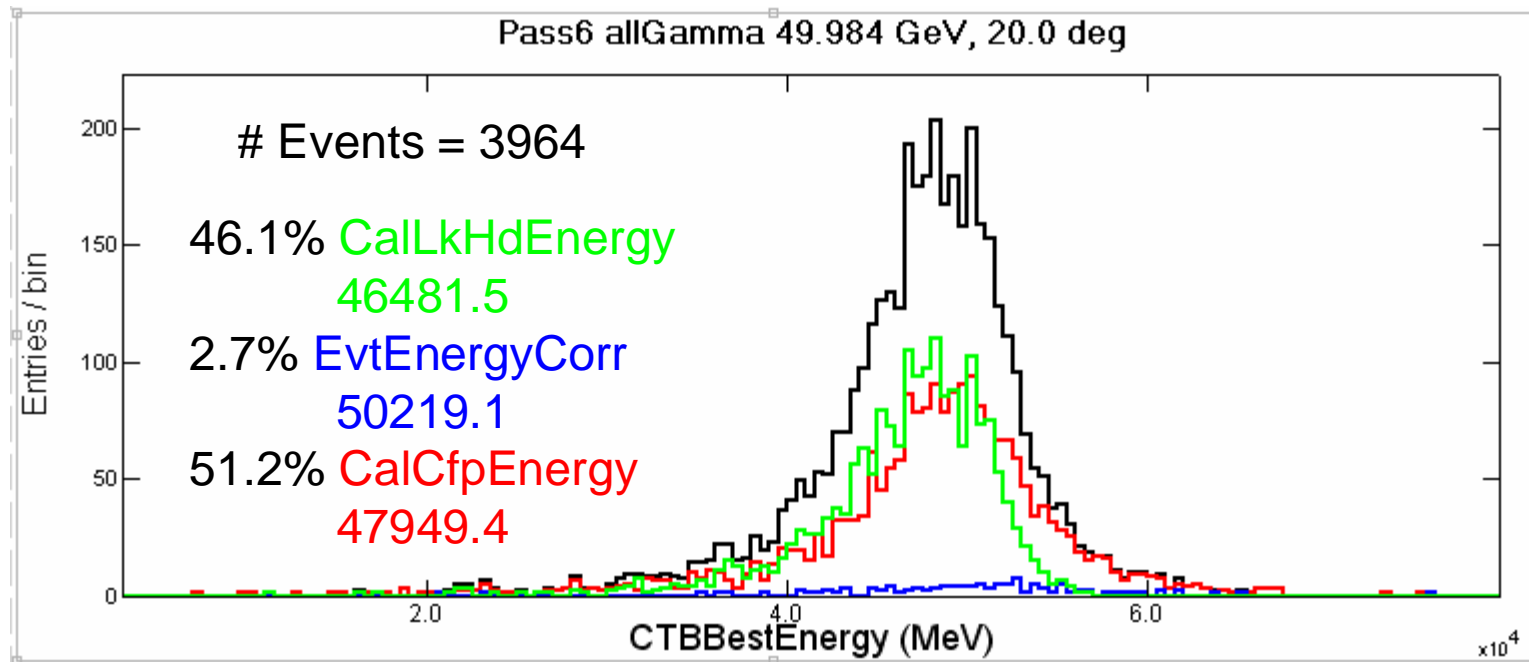


# CTBBestEnergy Selection for Pass6 allGamma 20 GeV, 20°

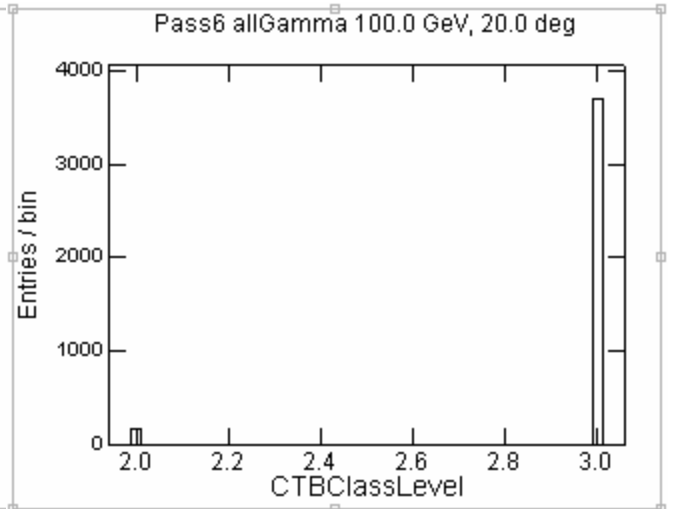
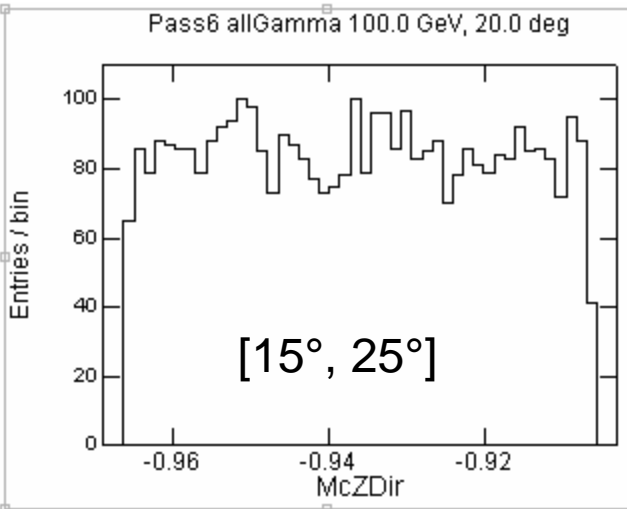
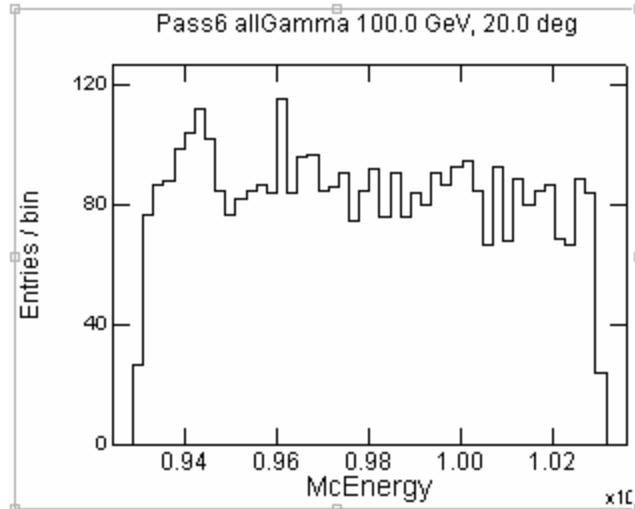
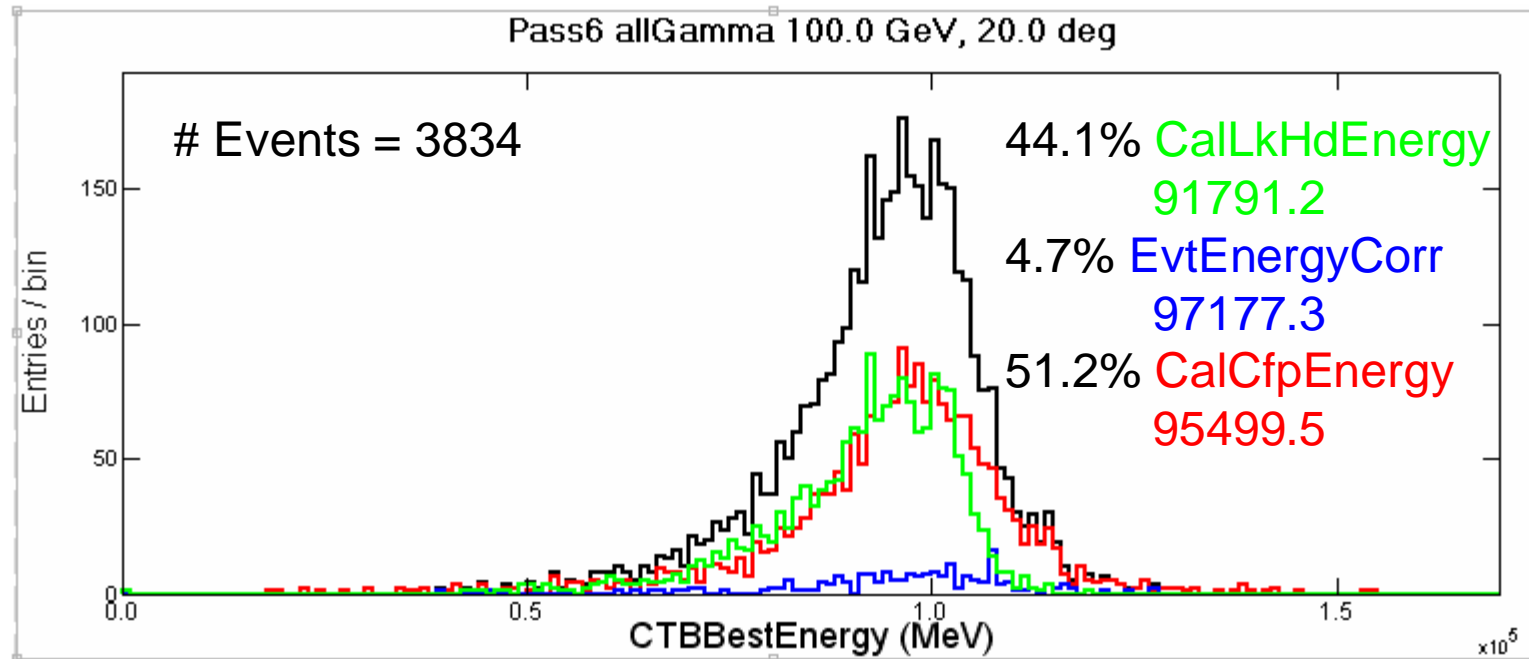




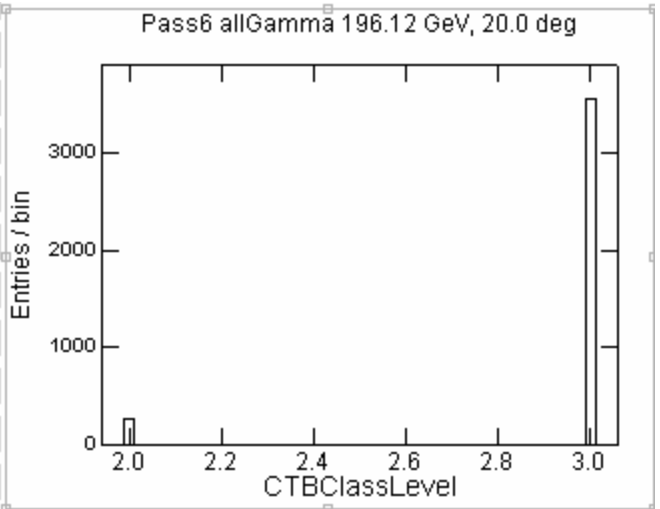
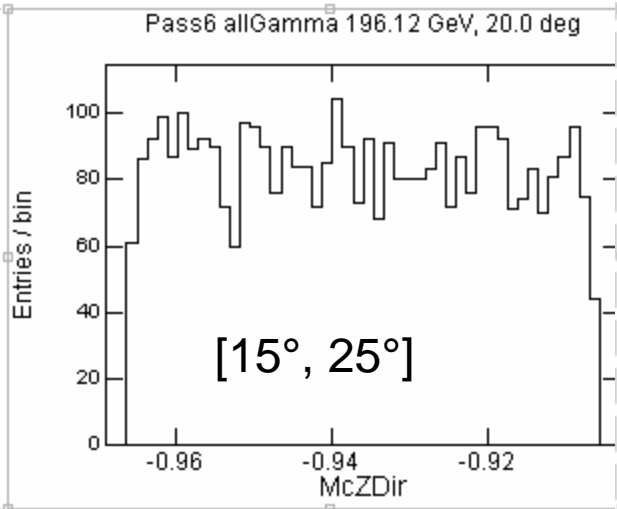
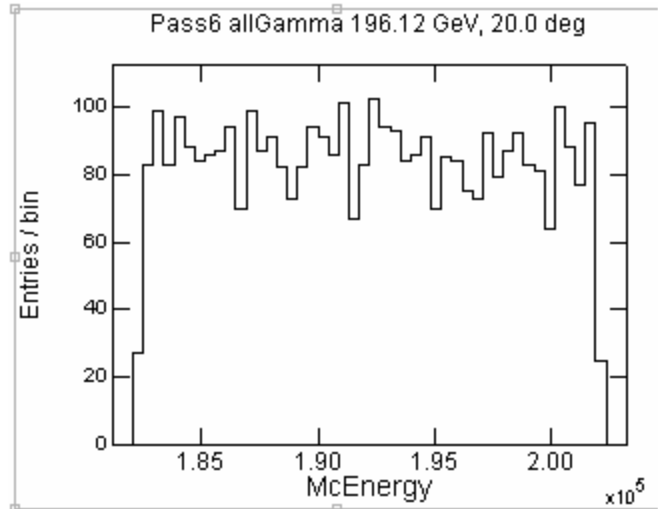
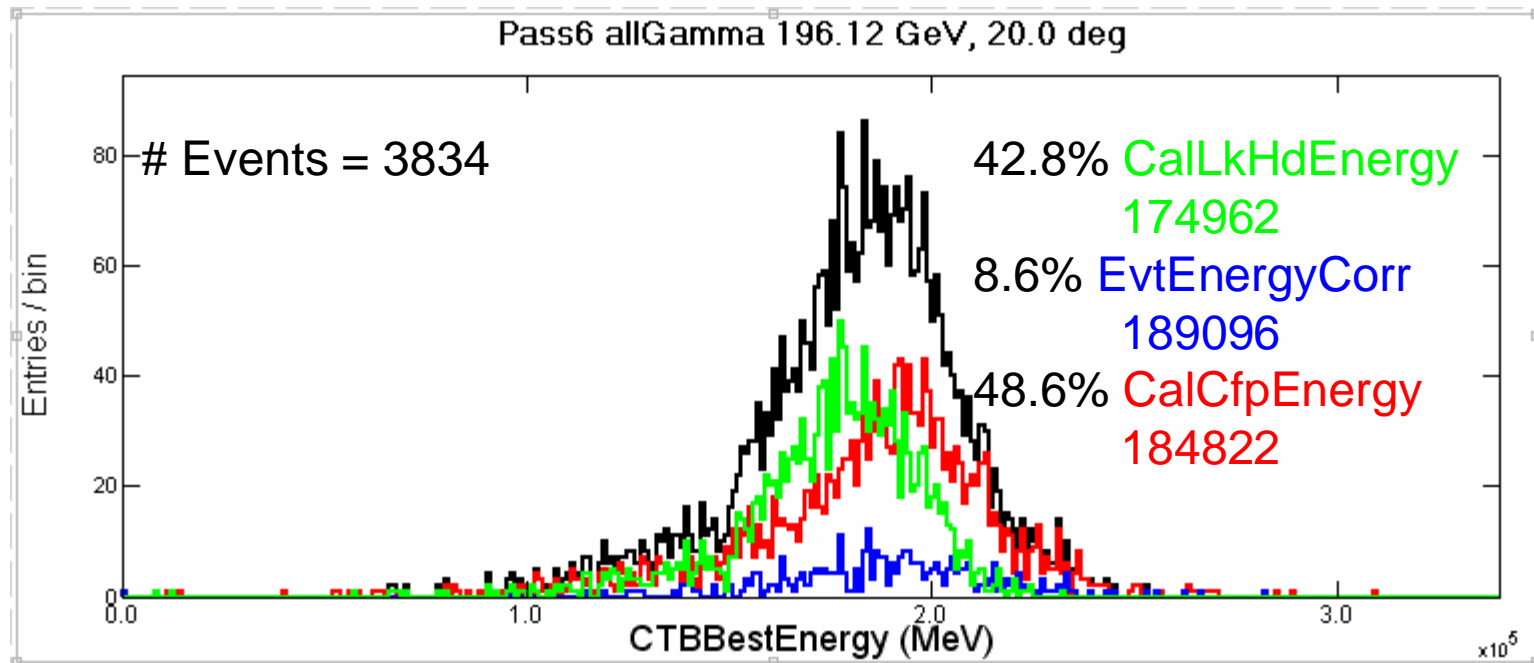
# CTBBestEnergy Selection for Pass6 allGamma 50 GeV, 20°



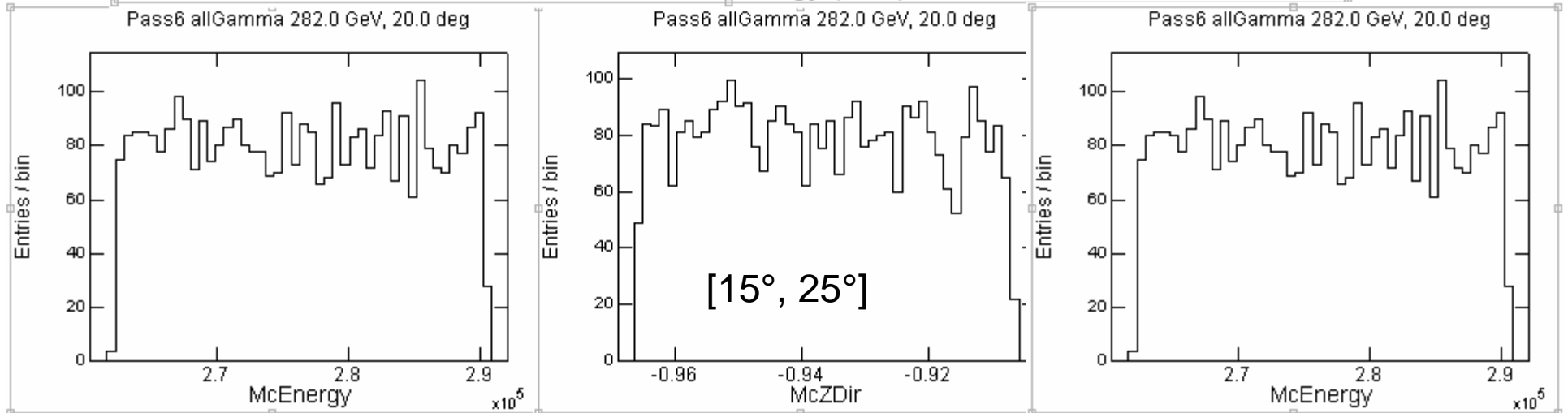
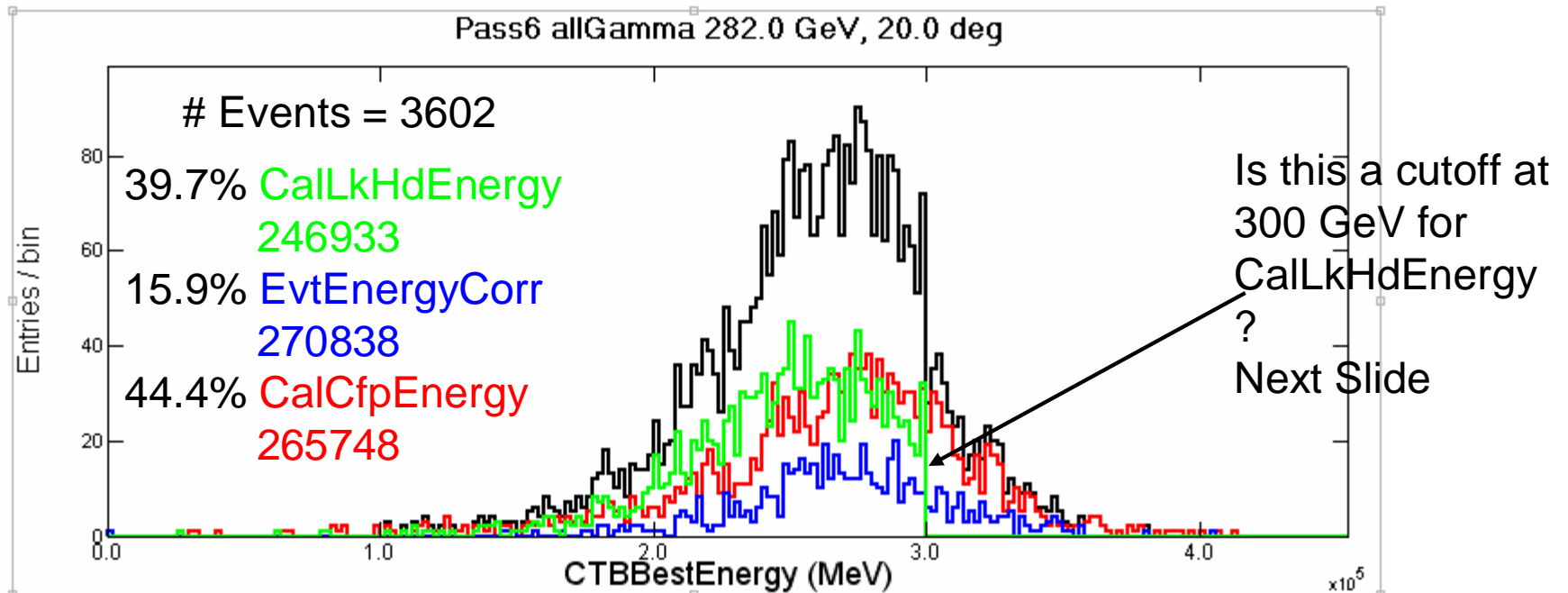
# CTBBestEnergy Selection for Pass6 allGamma 100 GeV, 20°



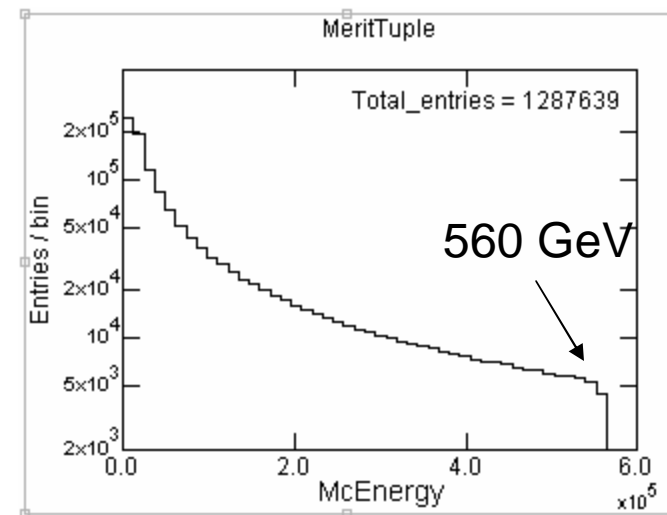
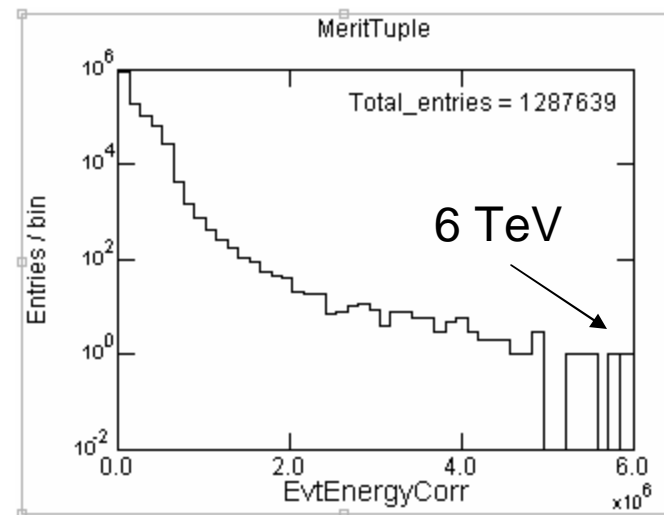
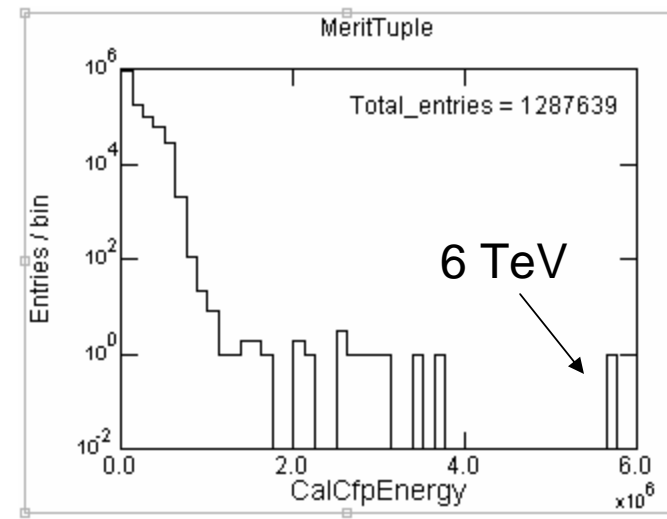
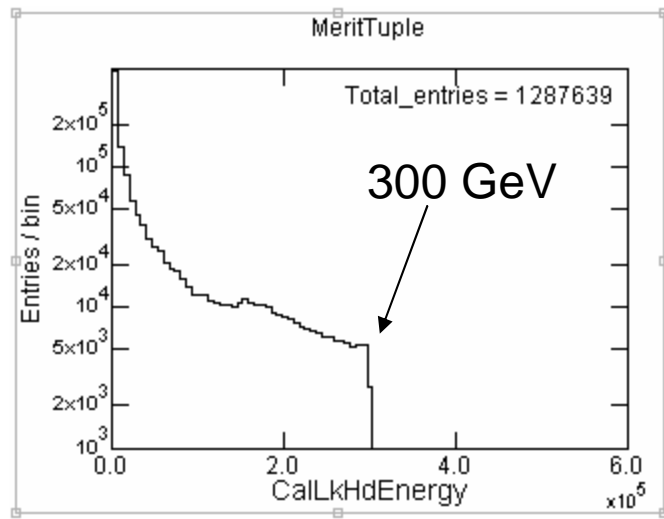
# CTBBestEnergy Selection for Pass6 allGamma 200 GeV, 20°



# CTBBestEnergy Selection for Pass6 allGamma 300 GeV, 20°



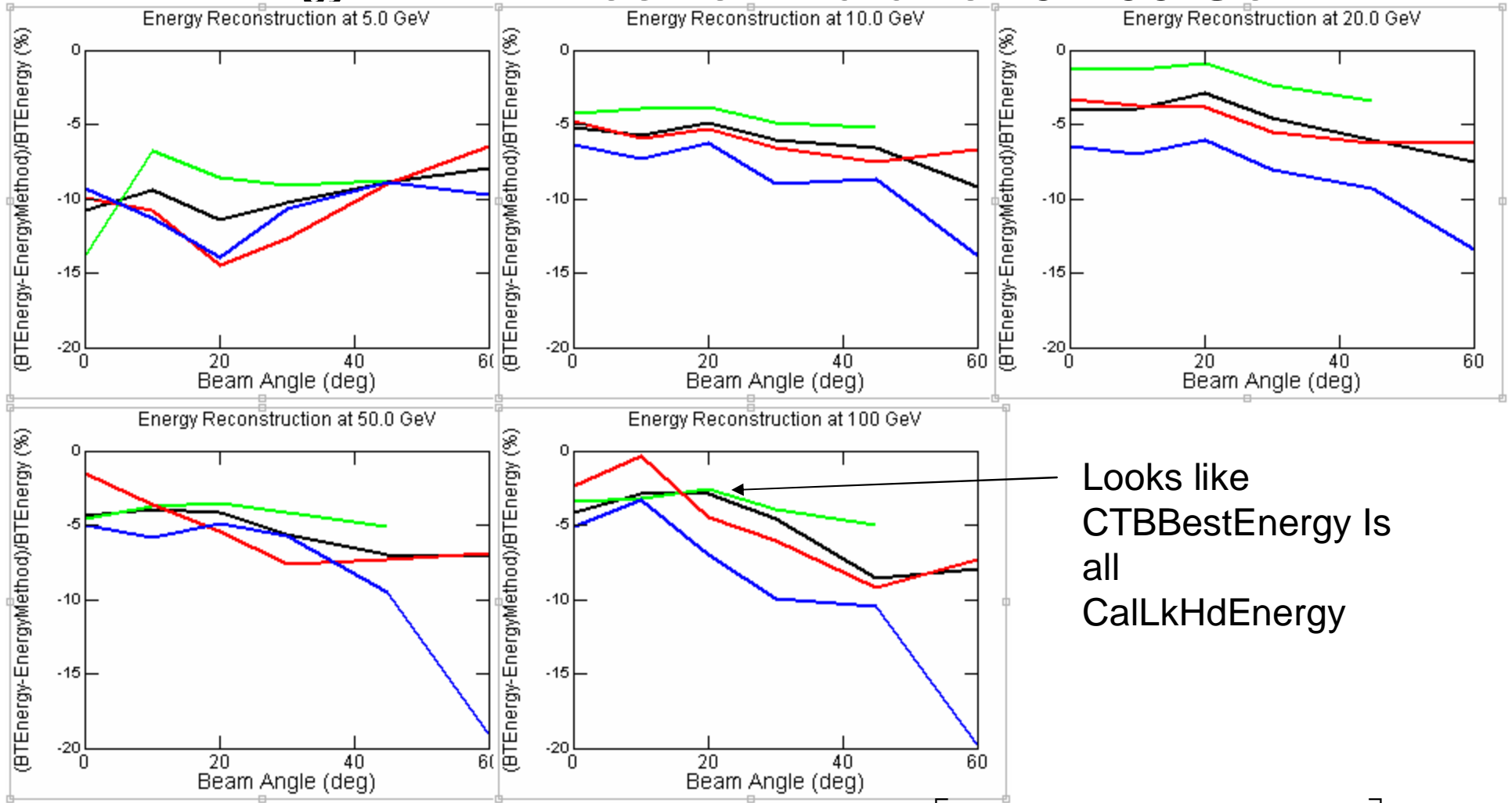
# Pass6 AllGamma skimmed merit file no cuts



**BT Electron DATA**

CalLkHdEnergy  
 EvtEnergyCorr  
 CalCfpEnergy  
 CTBBestEnergy

# Deviation from beam test energy for reconstructed energies in Electron Data for 5-100 GeV



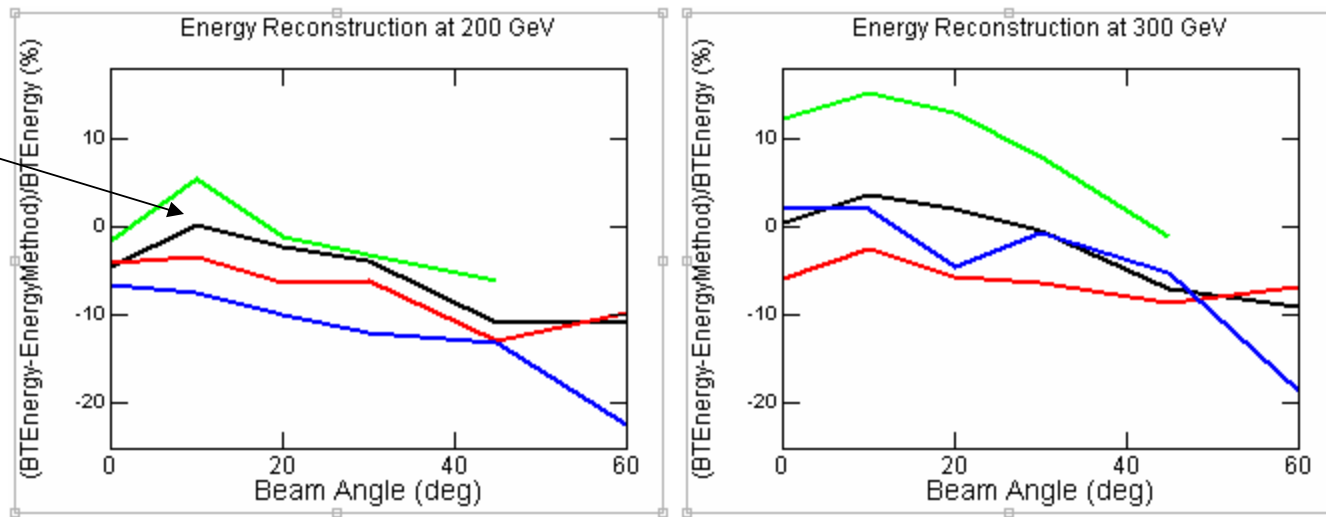
Looks like  
 CTBBestEnergy Is  
 all  
 CalLkHdEnergy

$$\text{mean} \left[ \frac{BTEnergy - MethodEnergy}{BTEnergy} \right] \times 100\%$$

CalLkHdEnergy  
 EvtEnergyCorr  
 CalCfpEnergy  
 CTBBestEnergy

# Deviation from beam test energy for reconstructed energies in Electron Data for 200 and 300 GeV

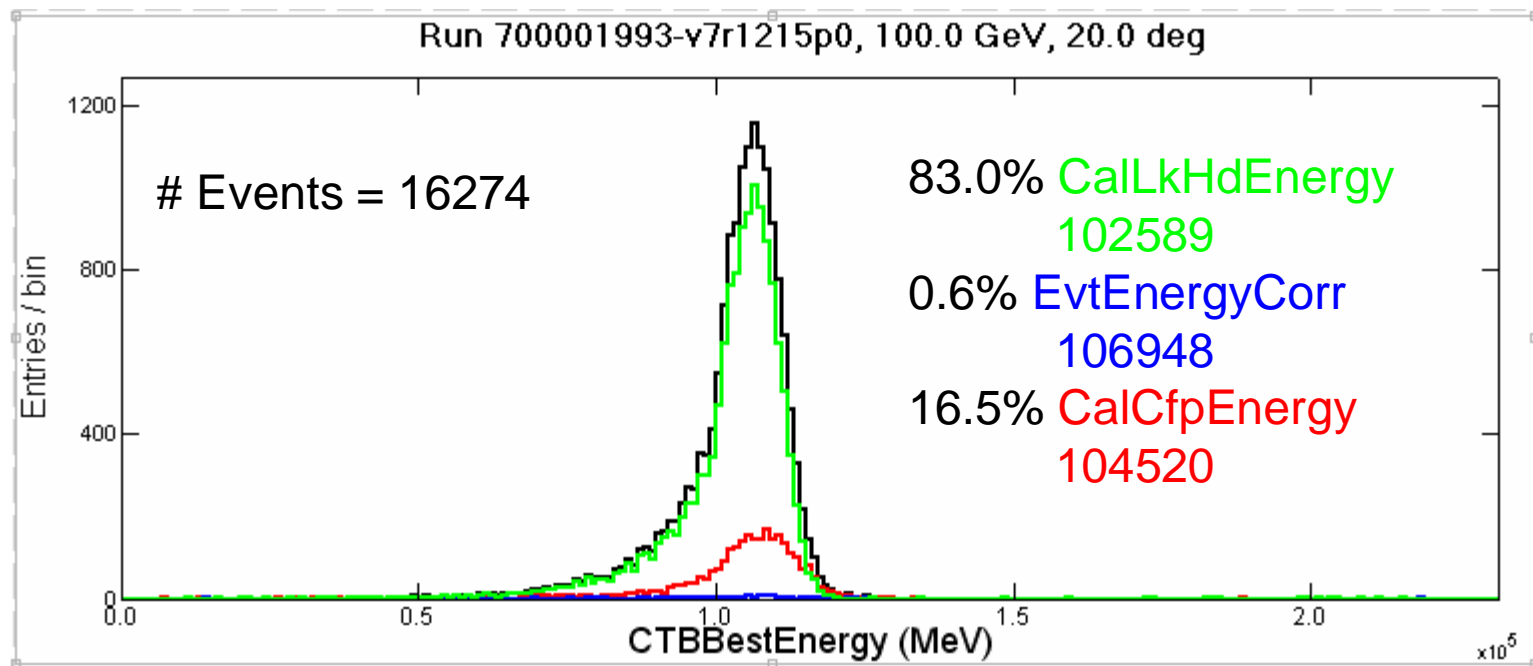
Take  
 Closer  
 Look



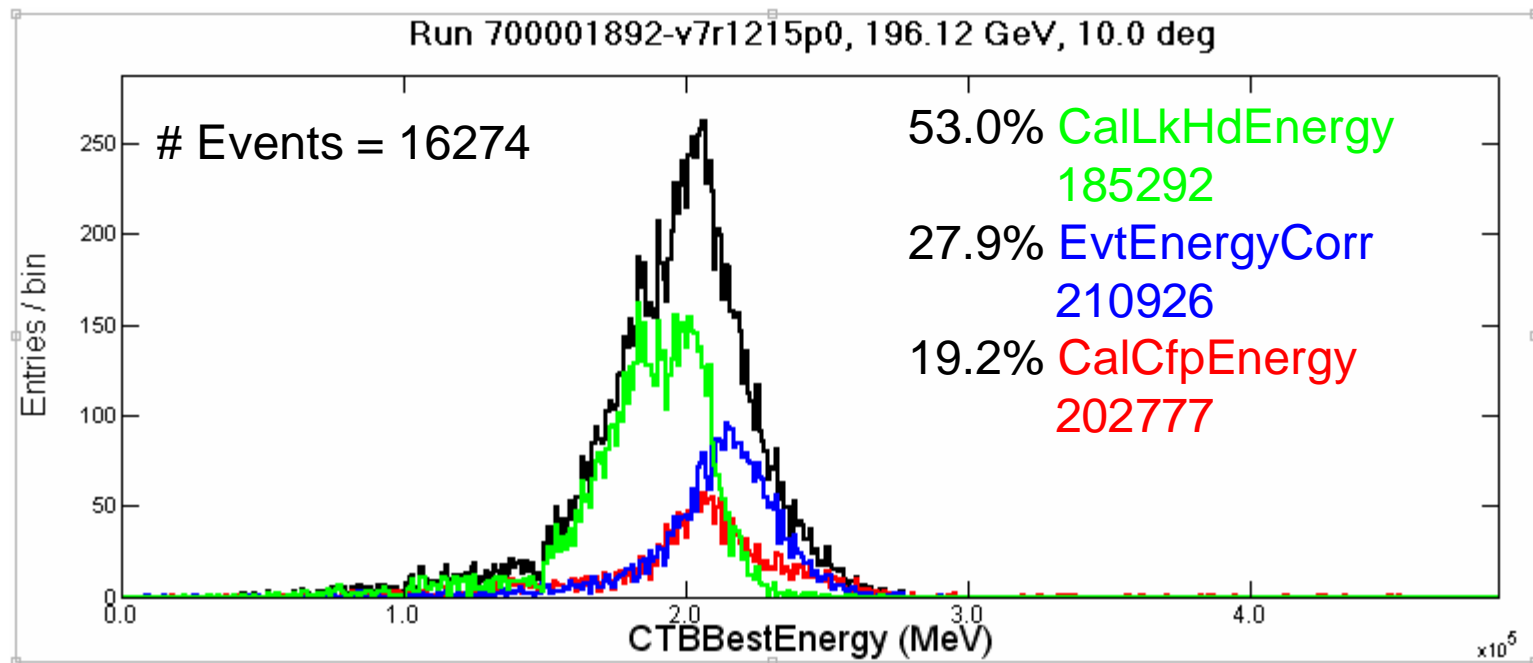
$$mean \left[ \frac{BTEnergy - MethodEnergy}{BTEnergy} \right] \times 100\%$$



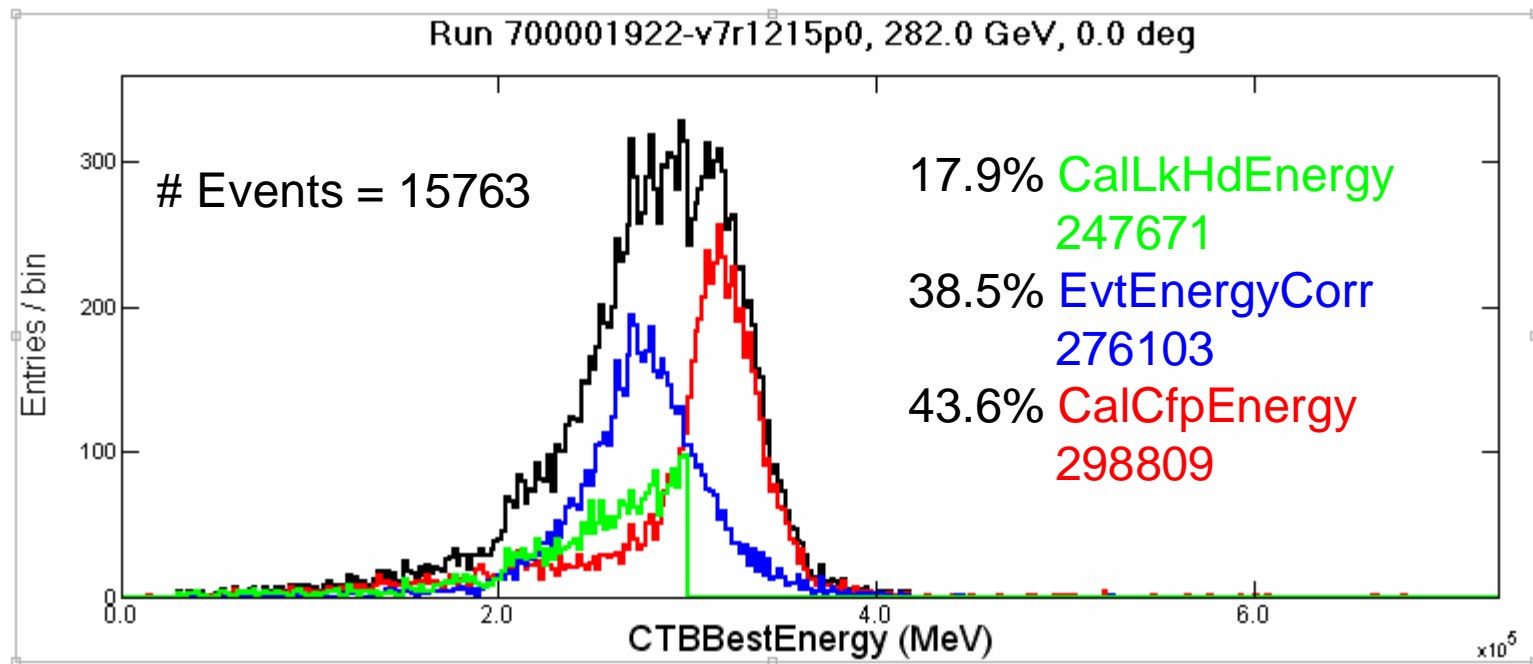
# CTBBestEnergy Selection for BT electrons 100 GeV, 20°



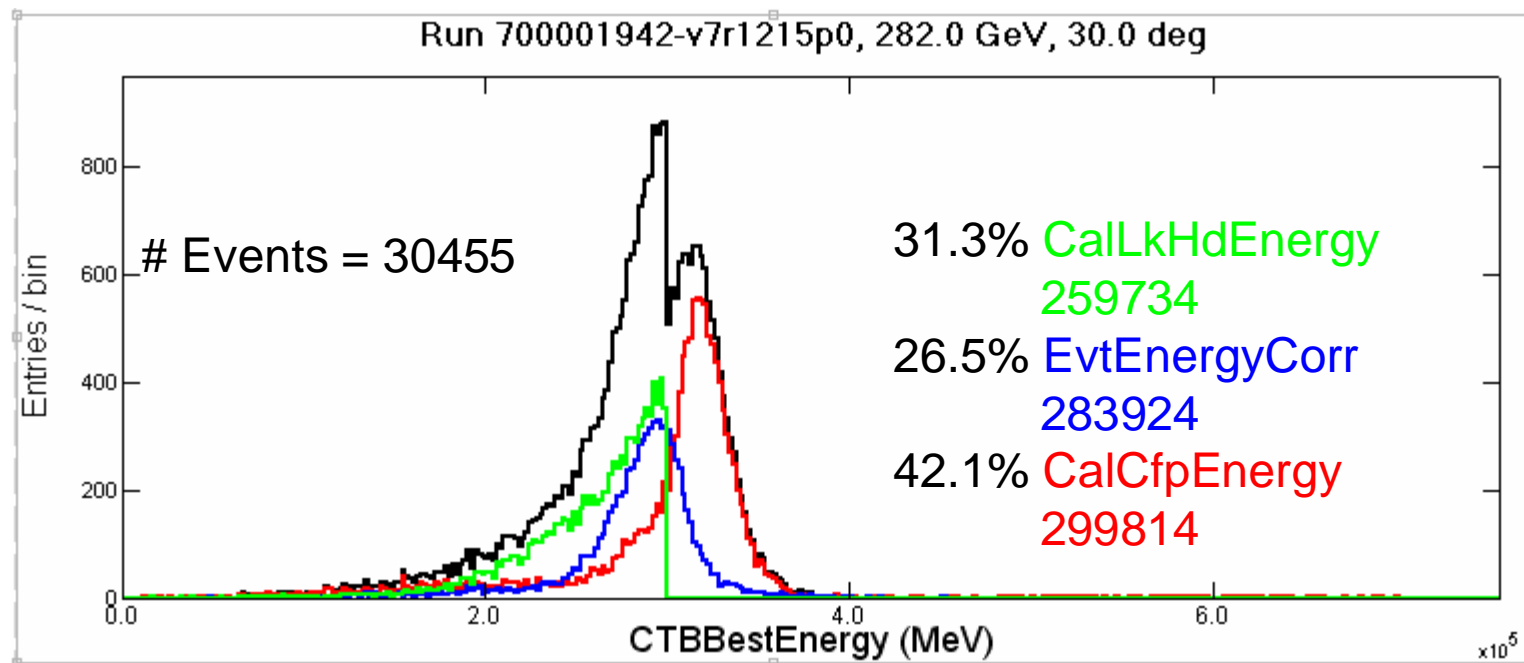
# CTBBestEnergy Selection for BT electrons 200 GeV, 10°



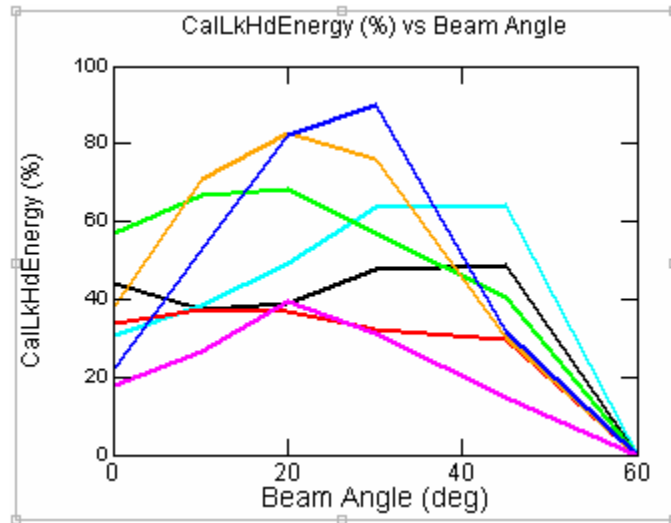
# CTBBestEnergy Selection for BT electrons 300 GeV, 0°



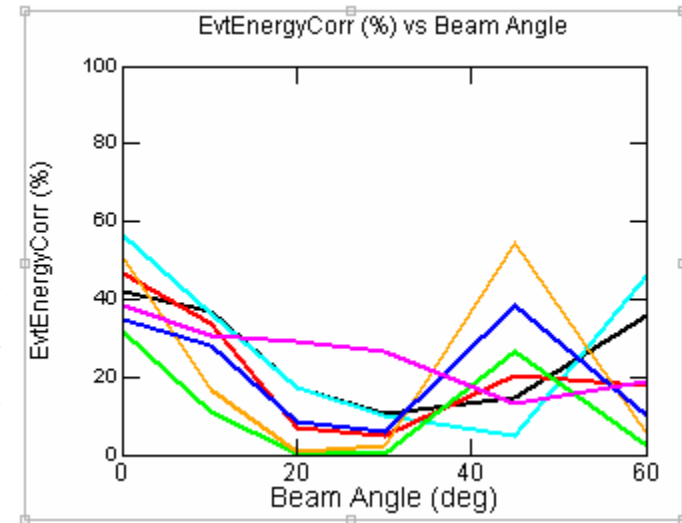
# CTBBestEnergy Selection for BT electrons 300 GeV, 30°



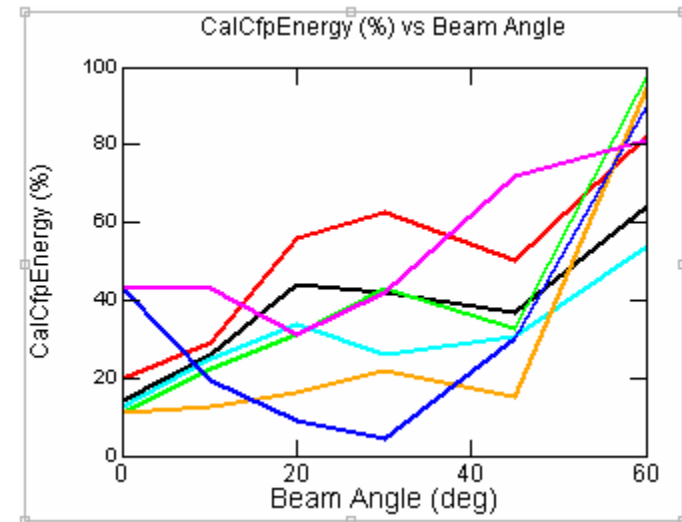
# The % CTBBestEnergy chose each reconstruction method as a function of angle for BT Data



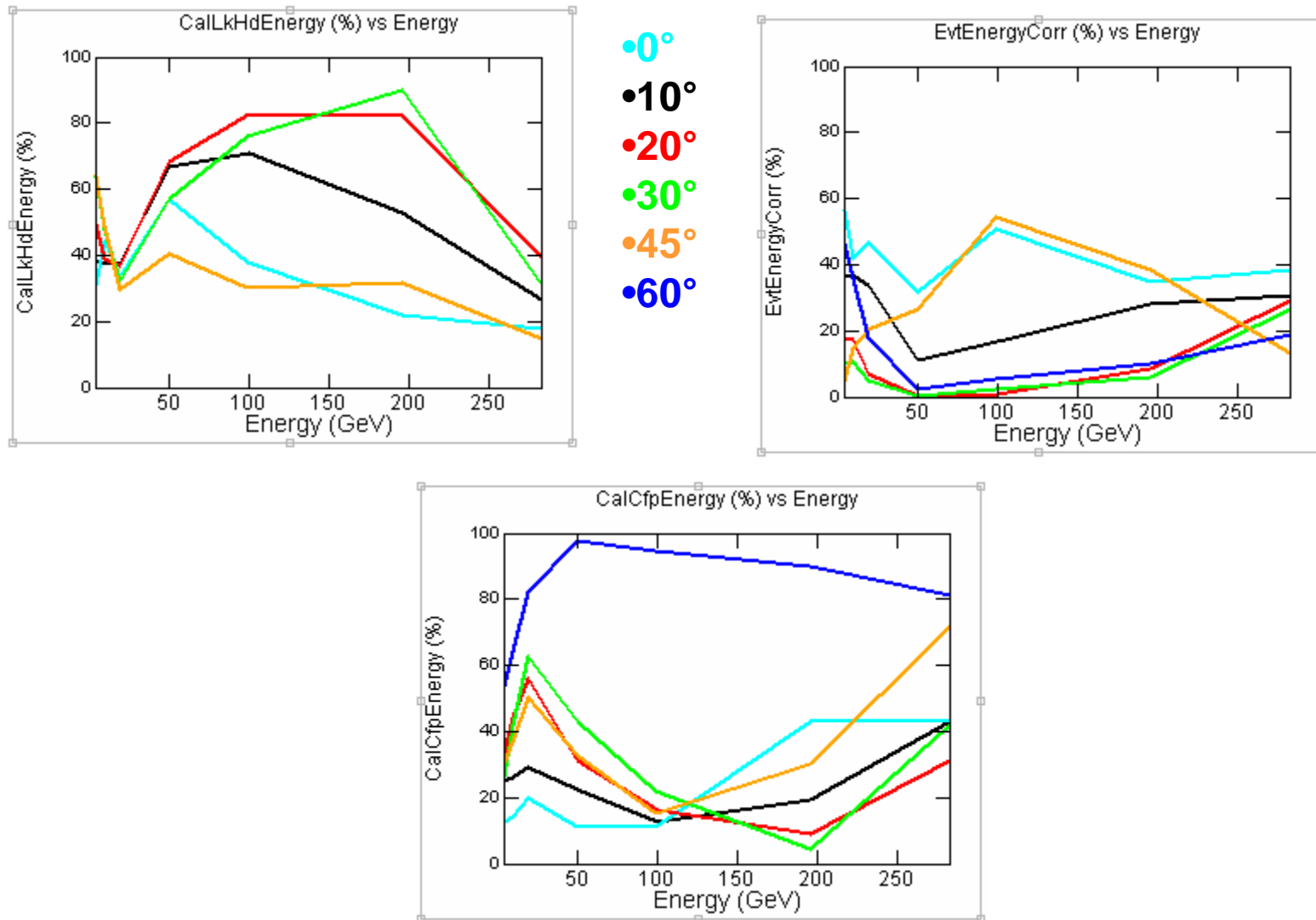
- 5 GeV
- 10 GeV
- 20 GeV
- 50 GeV
- 100 GeV
- 200 GeV
- 300 GeV



- CalLkHdEnergy is chosen from 20°-30° at high energies.
- CalCfpEnergy is chosen at high energy and large angles.



# The % CTBBestEnergy chose each reconstruction method as a function of Energy for BT Data



# Conclusions

- Energy peaks are smeared out during CT selection stage
- CalLkHdEnergy cuts off at 300 GeV and gives CTBBestEnergy a weird shape at high energies.