

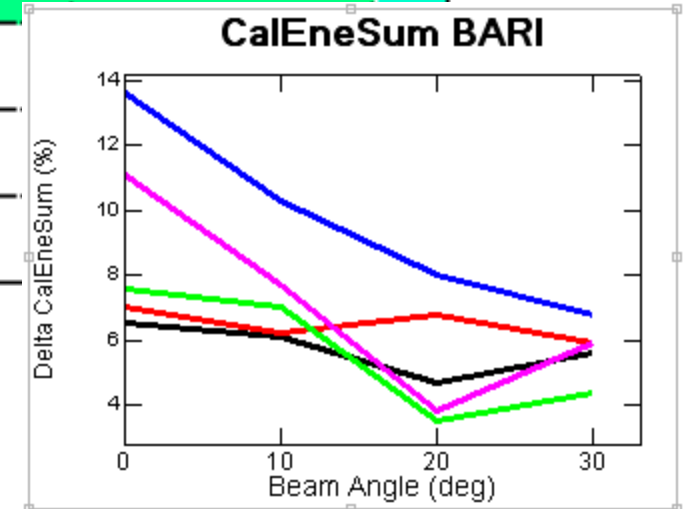
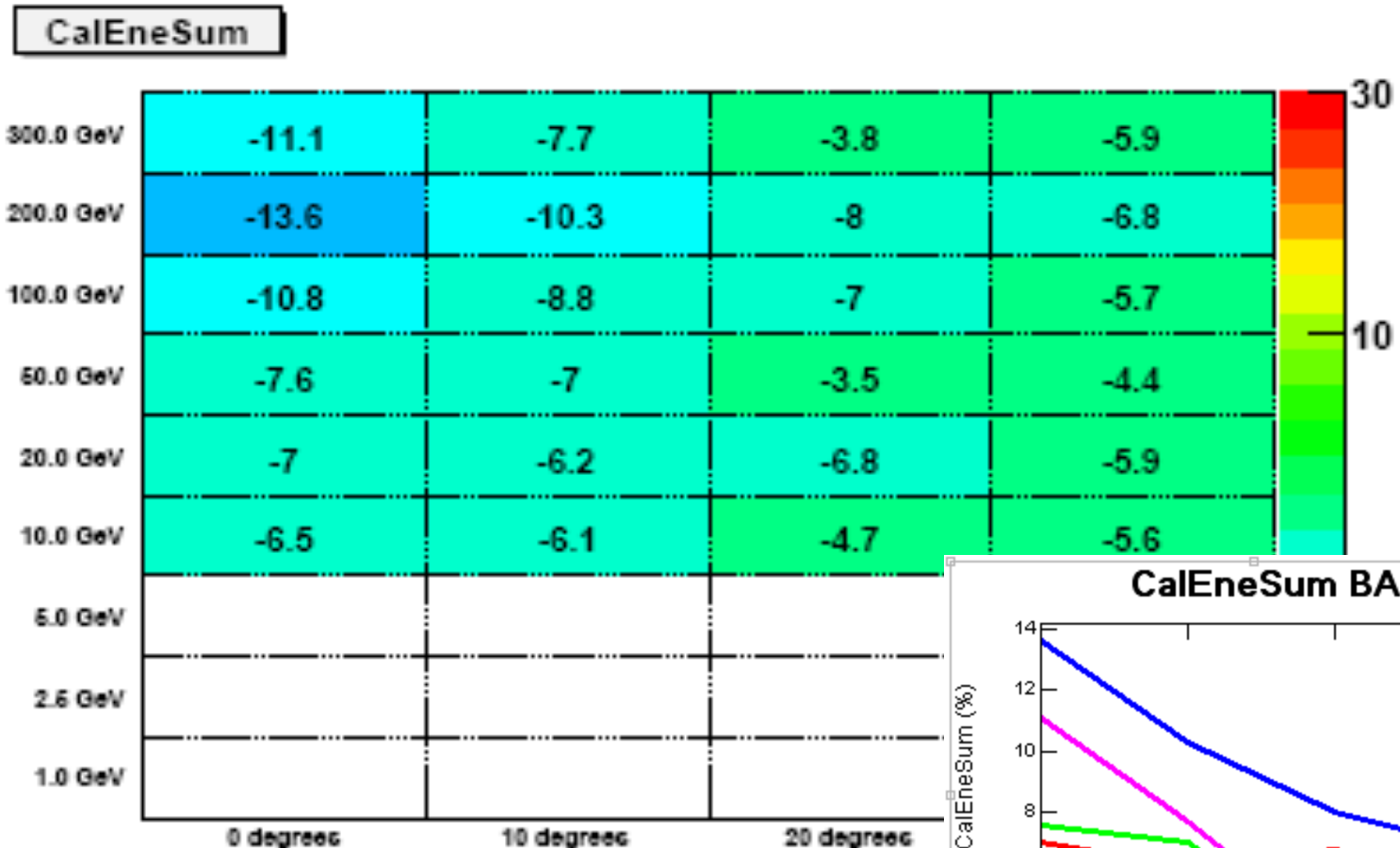
Using BT Electrons to Establish a Systematic Error on The LAT's Energy Scale

Yvonne Edmonds
Calorimeter Working Group
3/25/08

High Energy Electron Cuts as of 3/11/08 – From Alex Moiseev

- ~~CalCfpEnergy > 10 GeV~~ Remove (not relevant)
- CalTrackAngle < 0.08
- ~~CalTransRms < 35~~ Remove (MC vs. BT differences)
- CalTrkXtalRmsE < 30
- CalXtalRatio < 0.25
- CalLRmsAsym < 0.04
- Tkr1ToTTrAve > 1.6
- Tkr1CoreHC > 5
- AcdTotalEnergy: <20 for CalCpfEnergy < 100000, and
AcdTotalEnergy < 20
+(CalCpfEnergy - 100000)*0.0001 for CalCpfEnergy >
100000
- CalTotRLn > 8

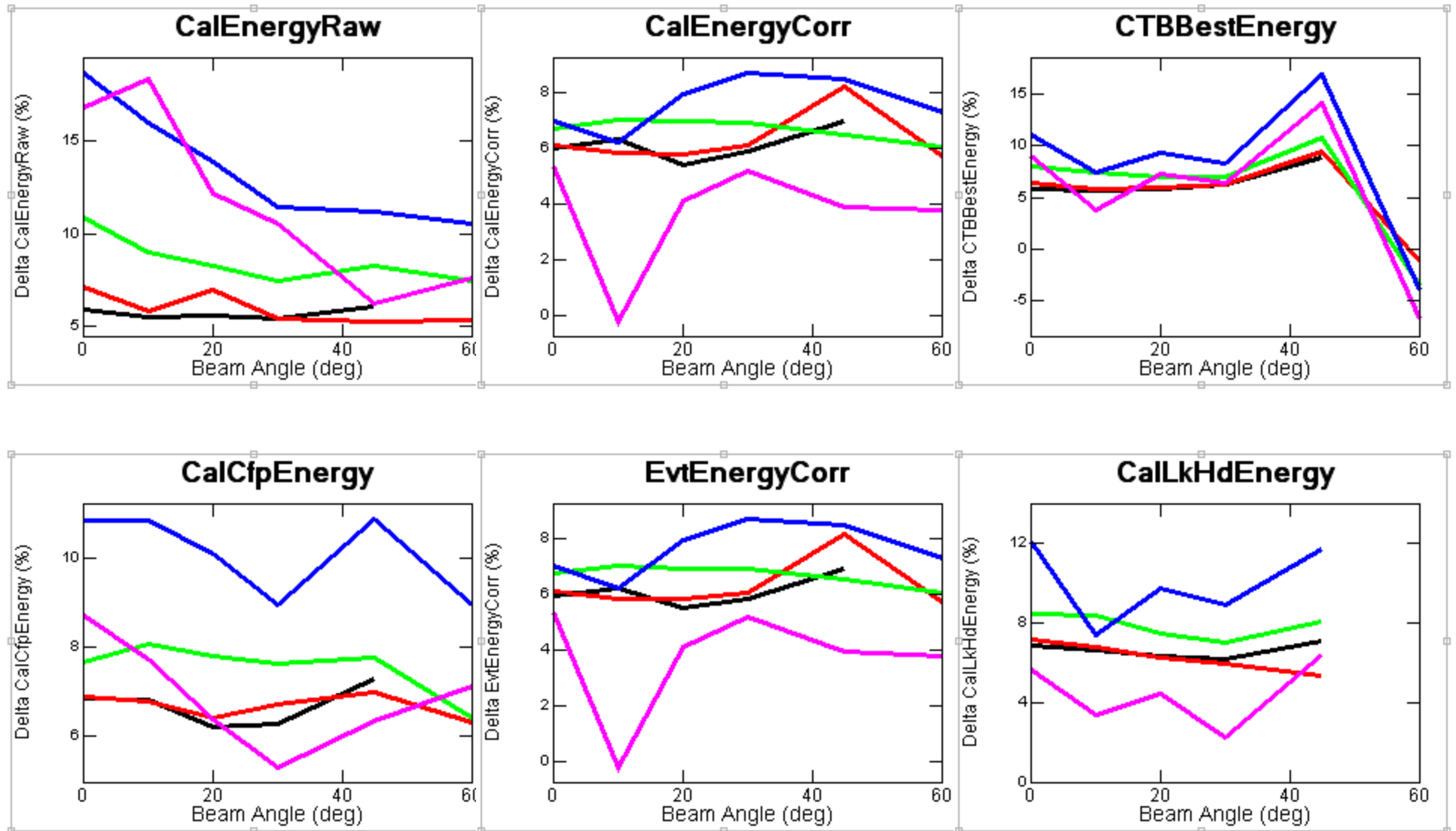
Slide from Bari Meeting



$$-\Delta(\%) = \frac{Data - Mc}{Data} \times 100$$

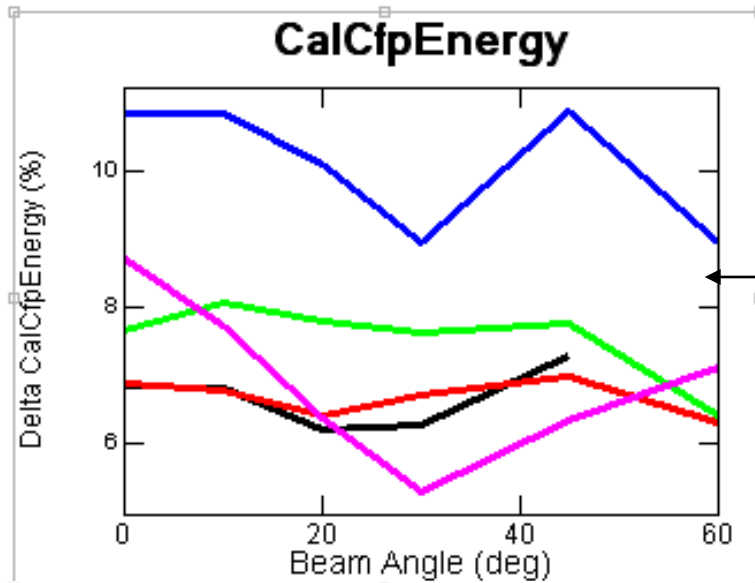
Analysis done for this report on SpS e⁻ Data

10, 20, 50, 200, 300 GeV

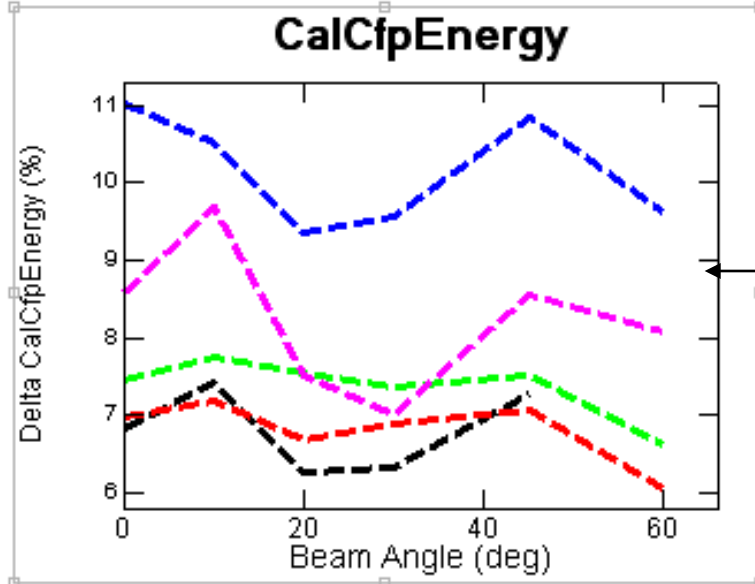
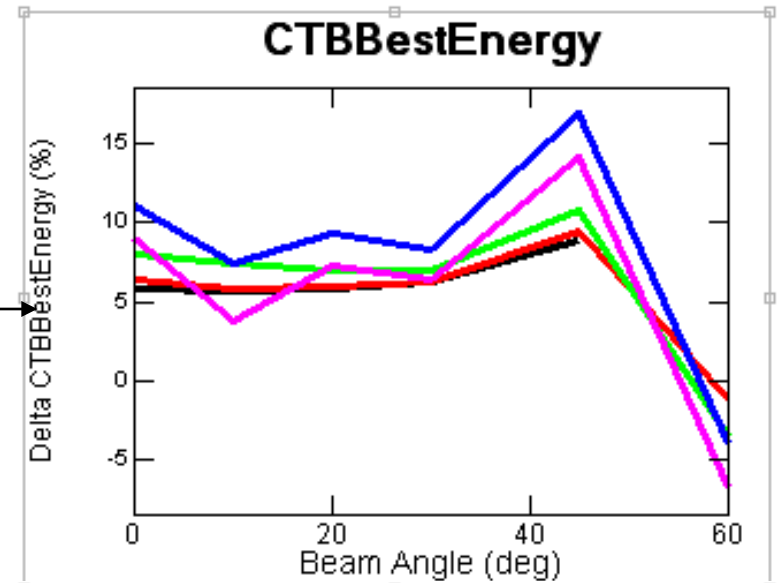


Difference between Mean E_e, (Data – MC)/Data

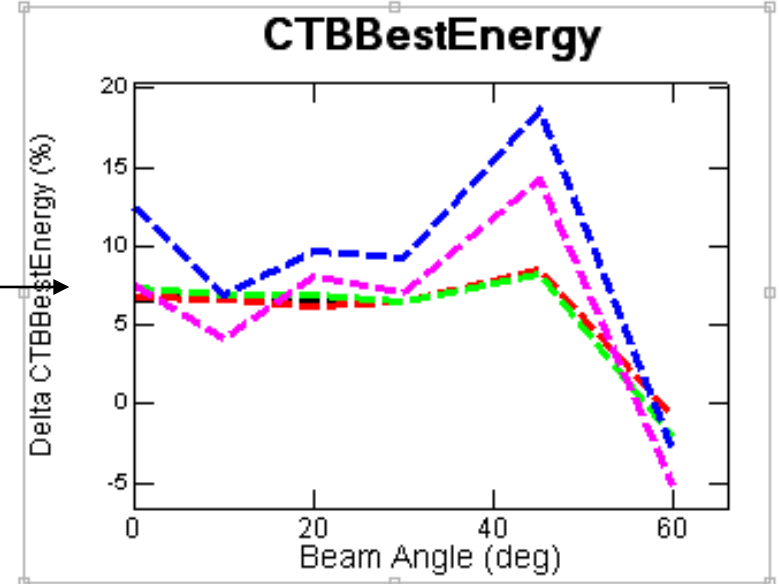
10, 20, 50, 200, 300 GeV



AVERAGE
Value



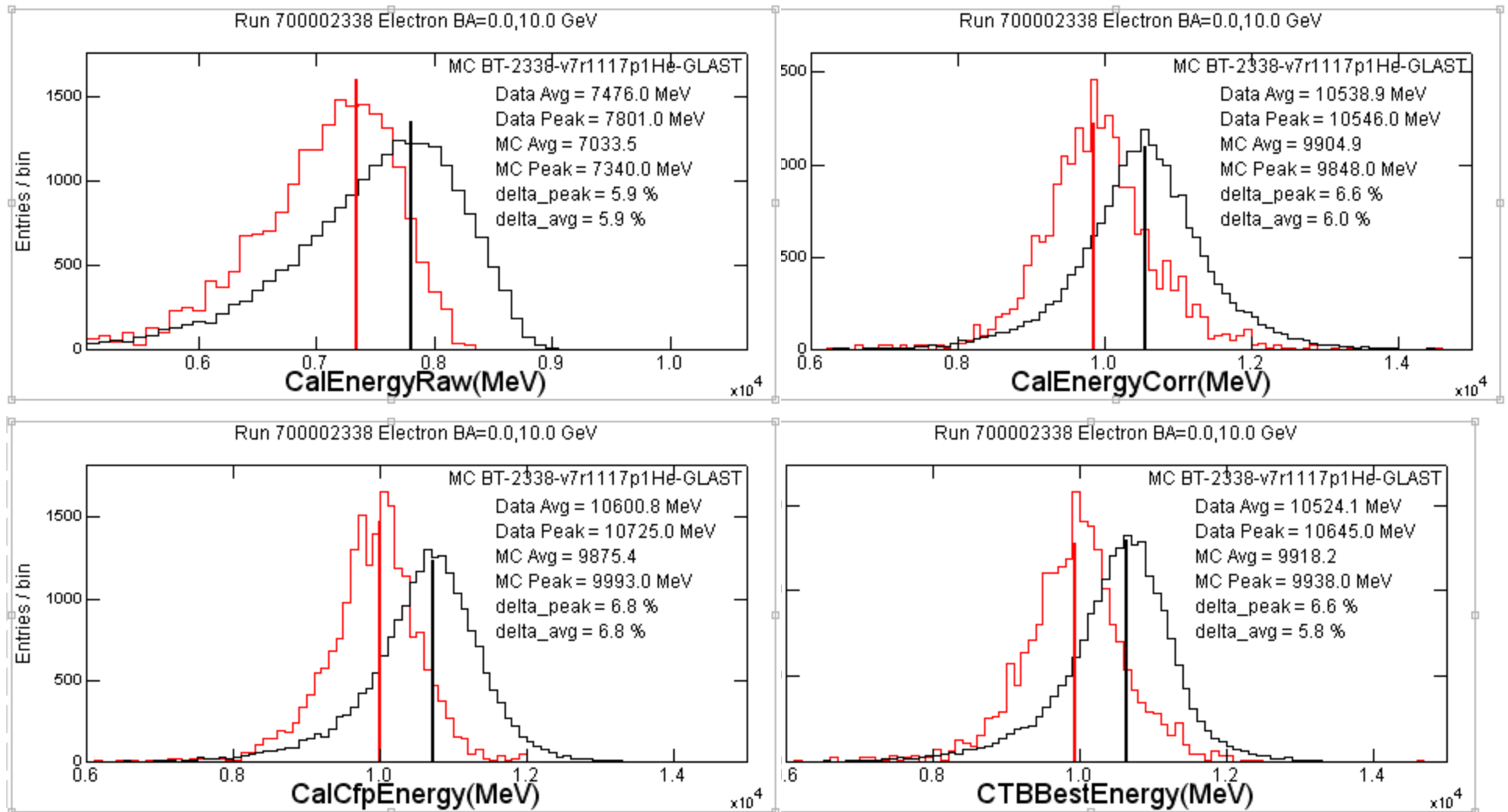
PEAK
Value



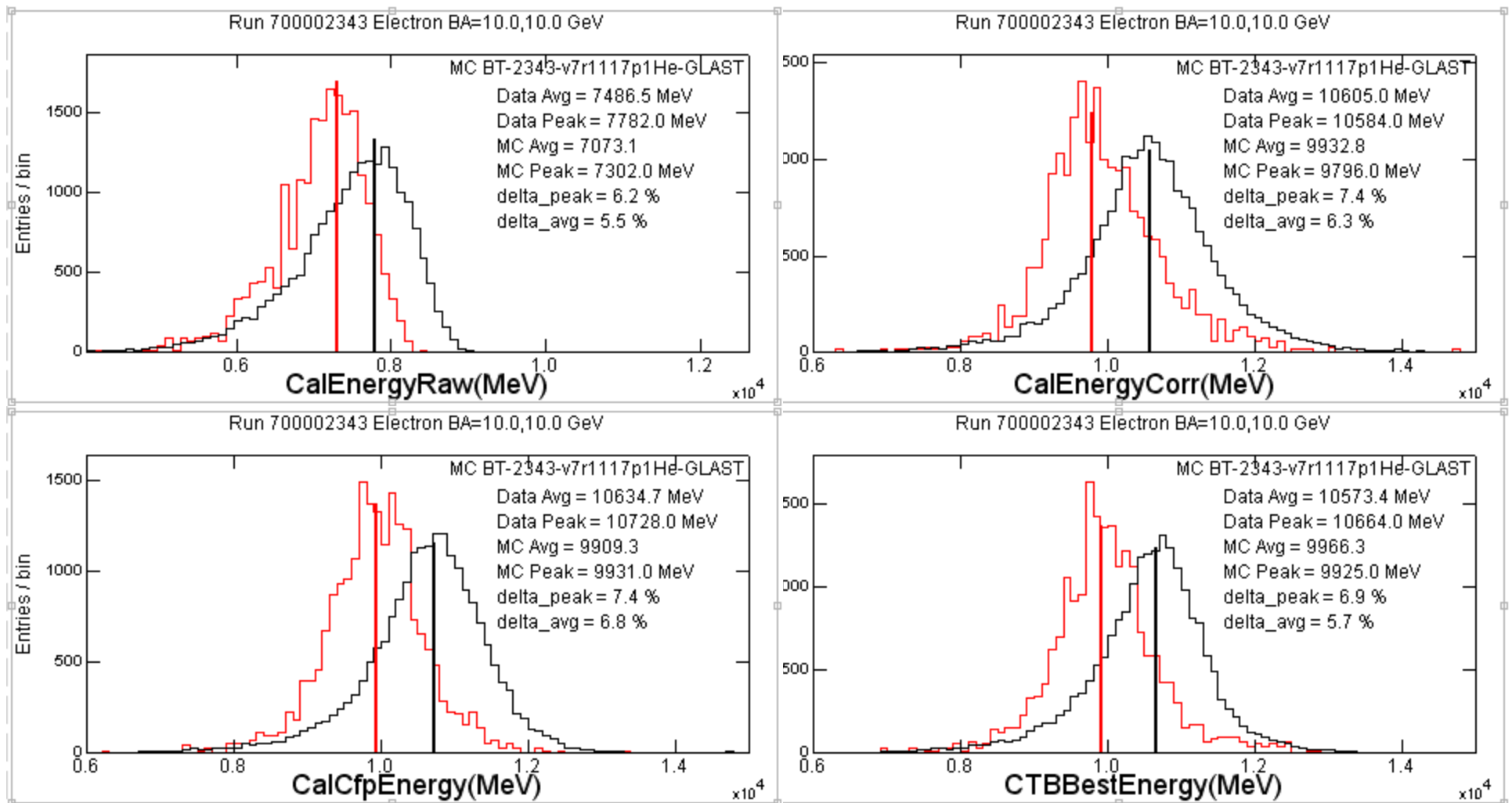
Interesting Distributions

- CTBBestEnergy
 - 20 GeV: Slides 16-17
 - 200 GeV : Slides 28-33
- **DATA IN BLACK**
- **MC IN RED**

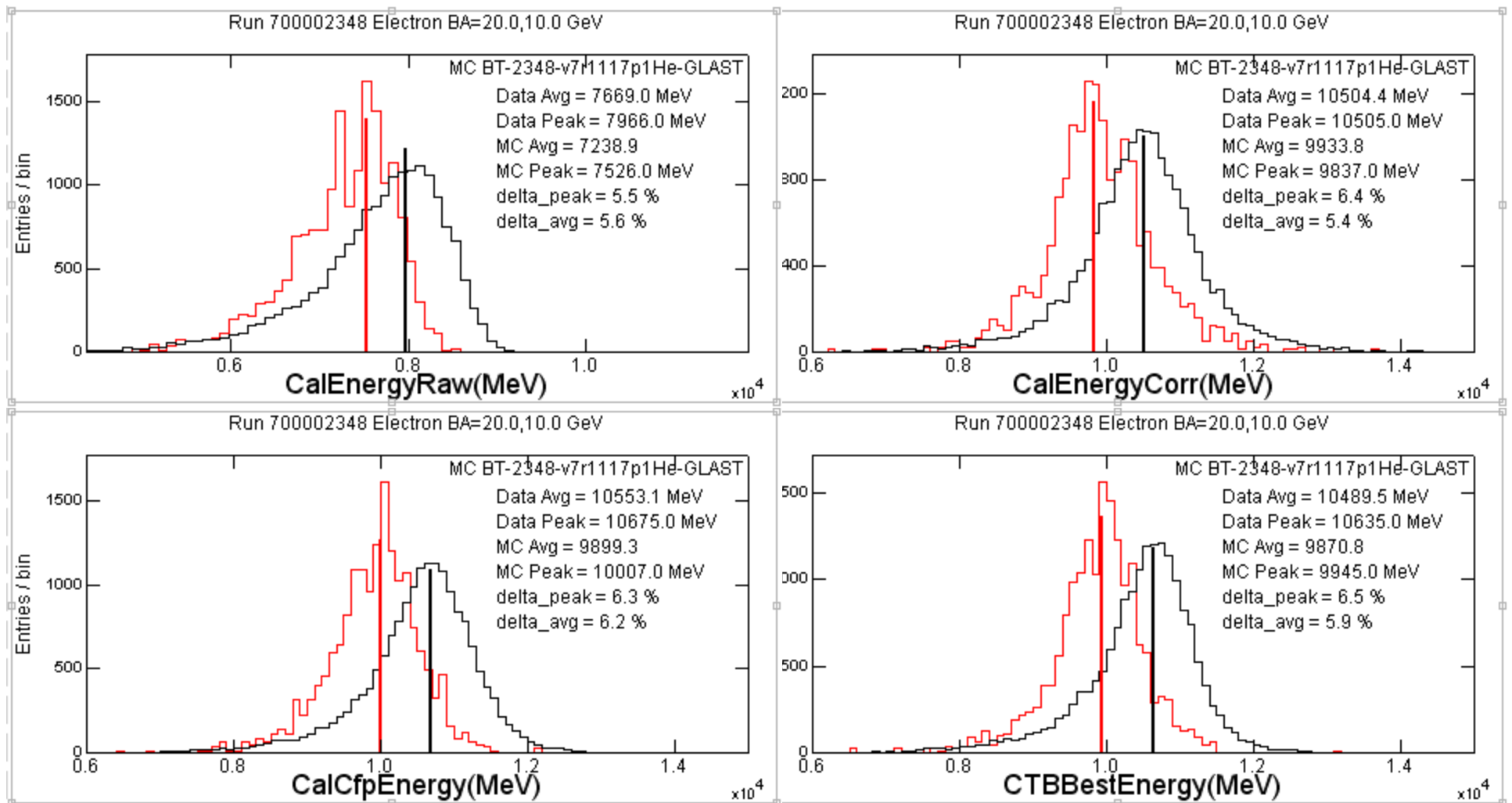
10 GeV, BA = 0, bin = .1 GeV



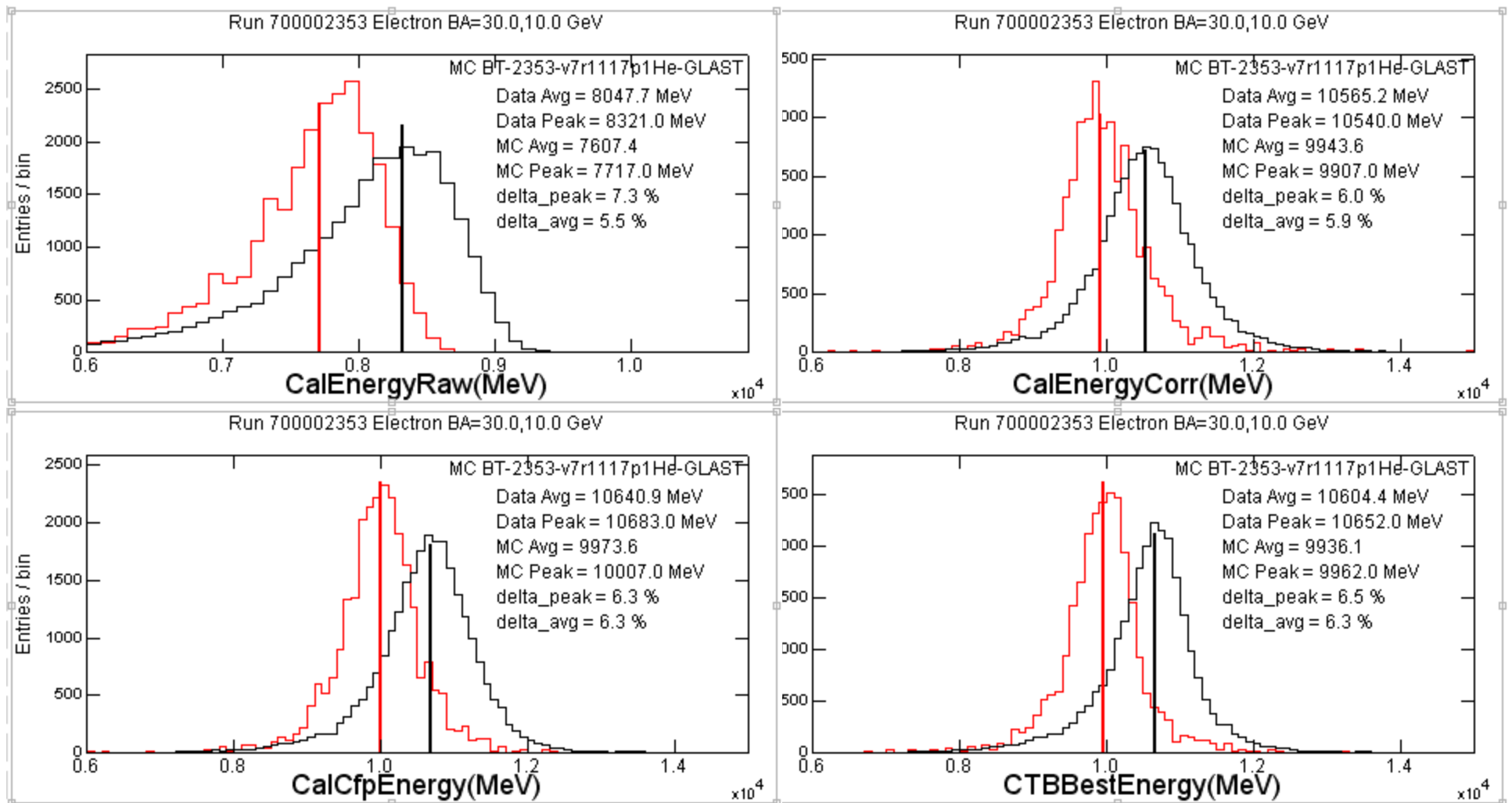
10 GeV, BA = 10°



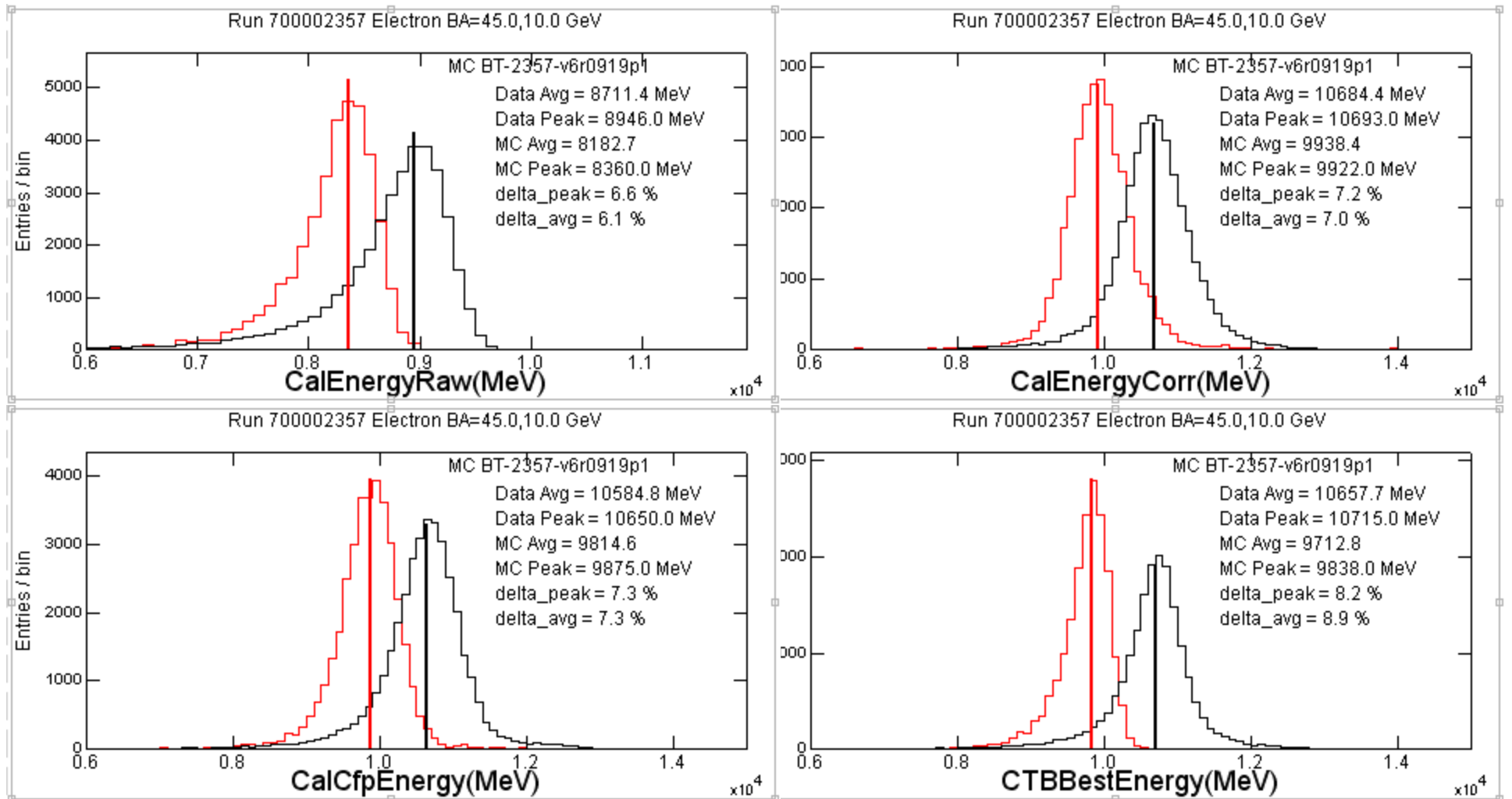
10 GeV, BA = 20°



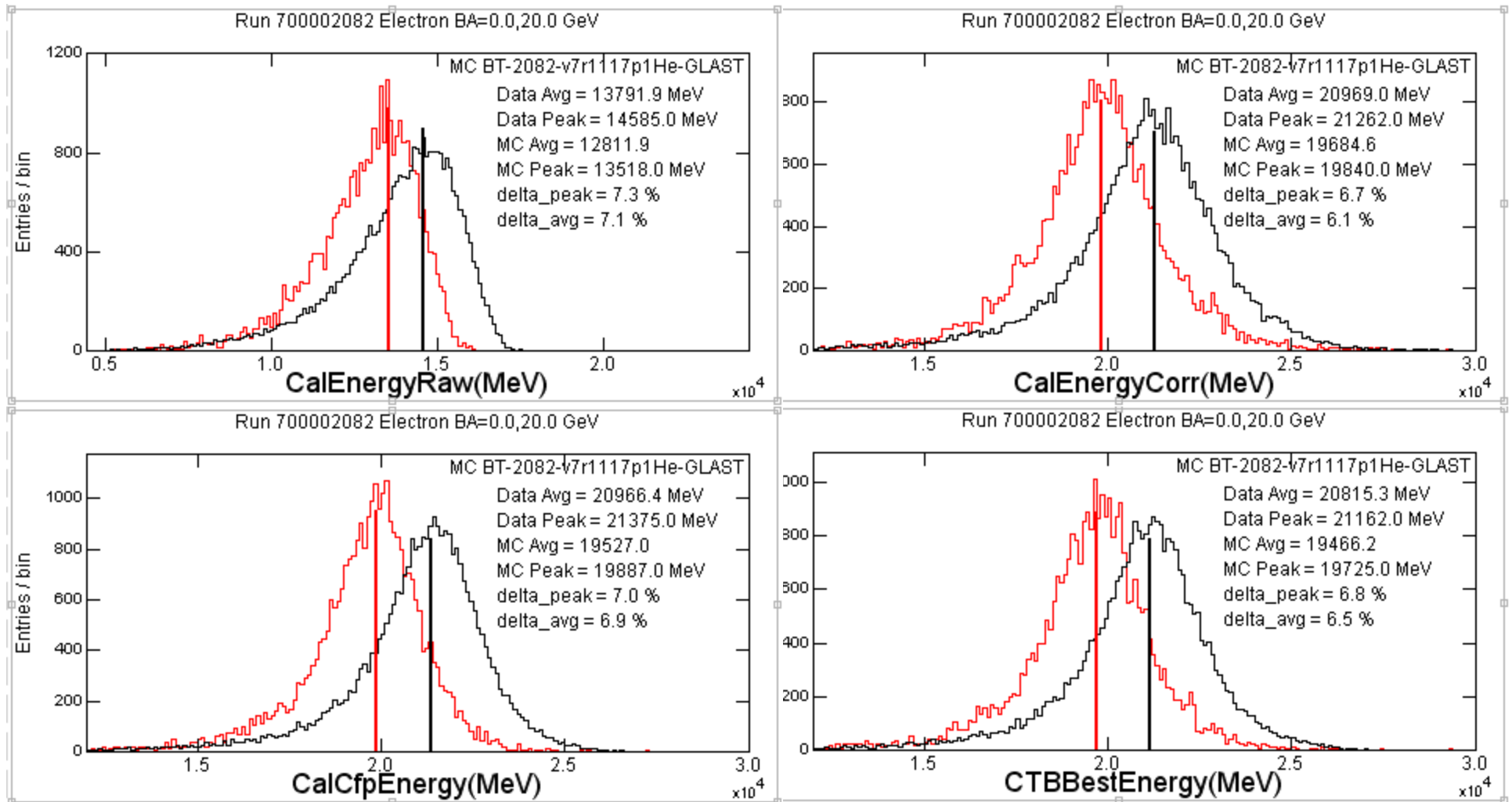
10 GeV, BA = 30°



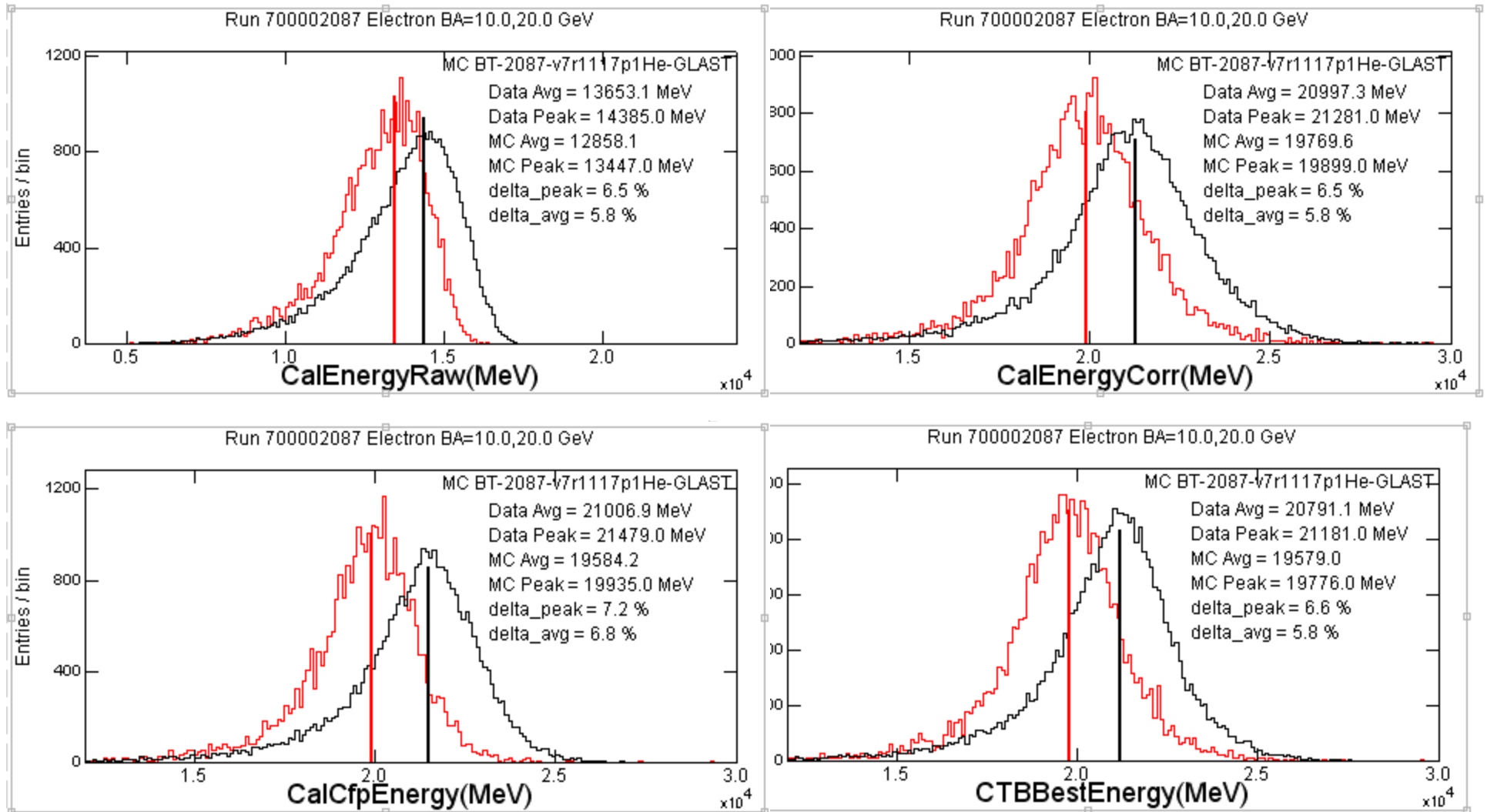
10 GeV, BA = 45°



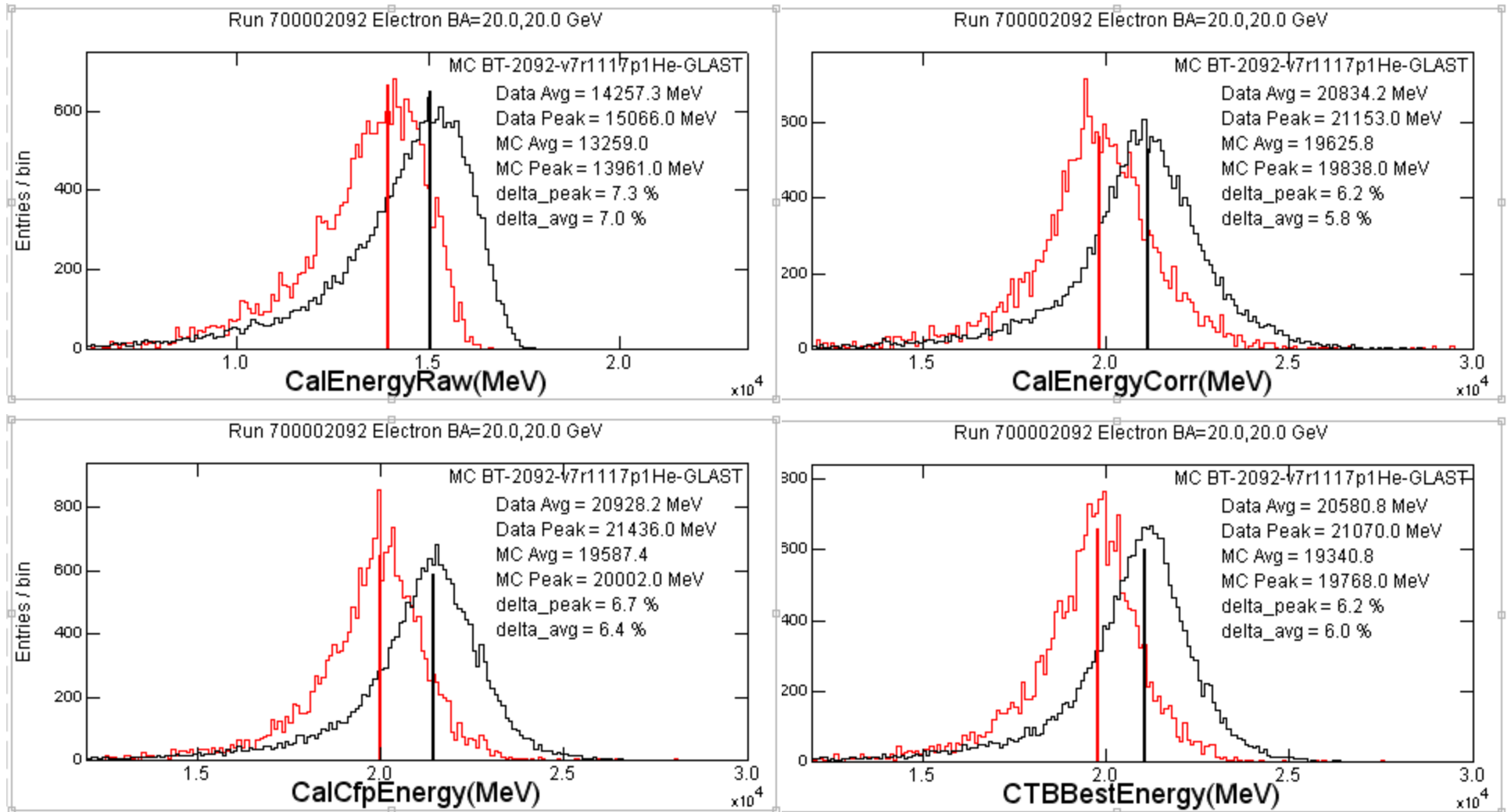
20 GeV, BA = 0, bin = .1 GeV



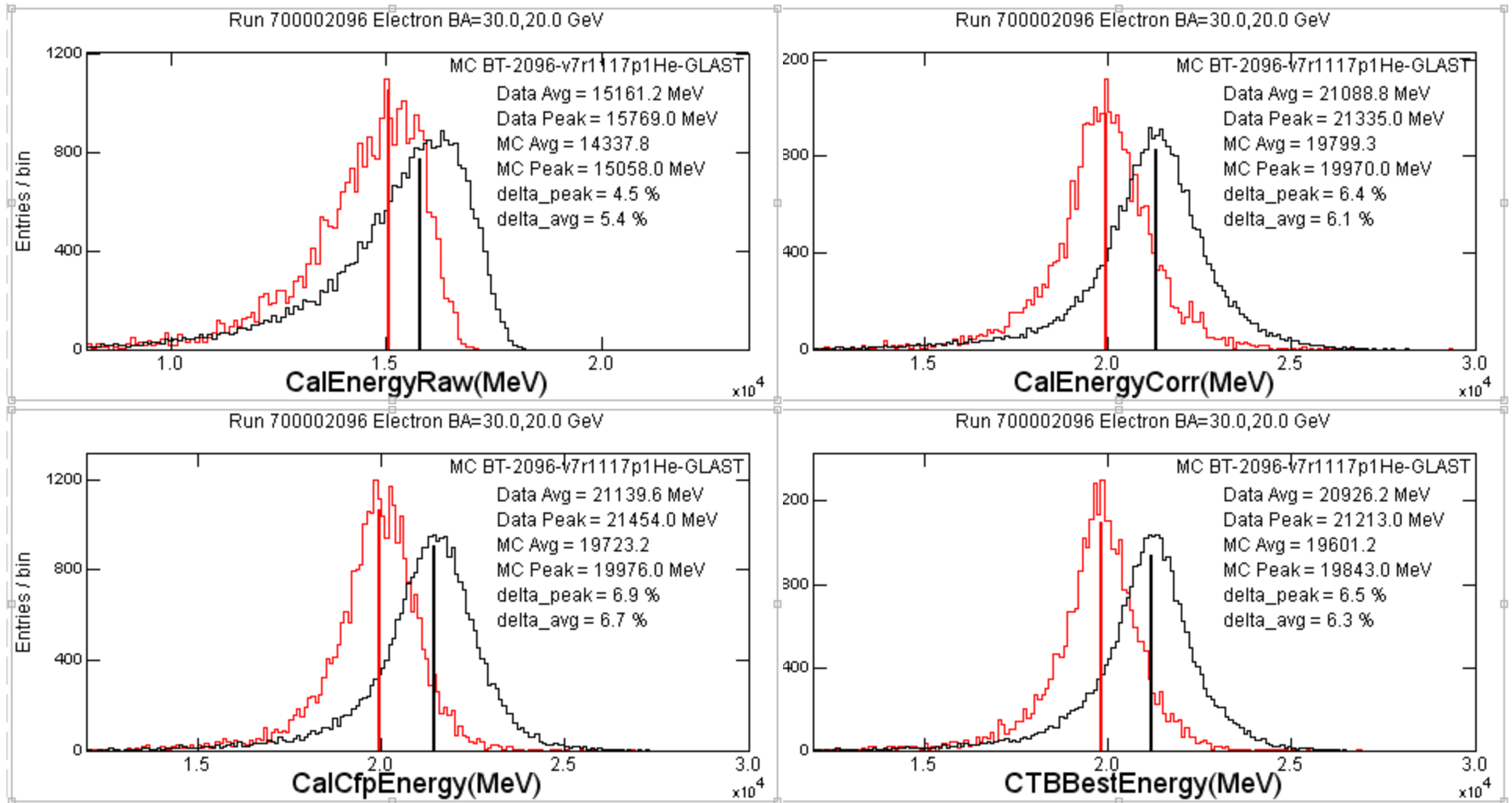
20 GeV, BA = 10°



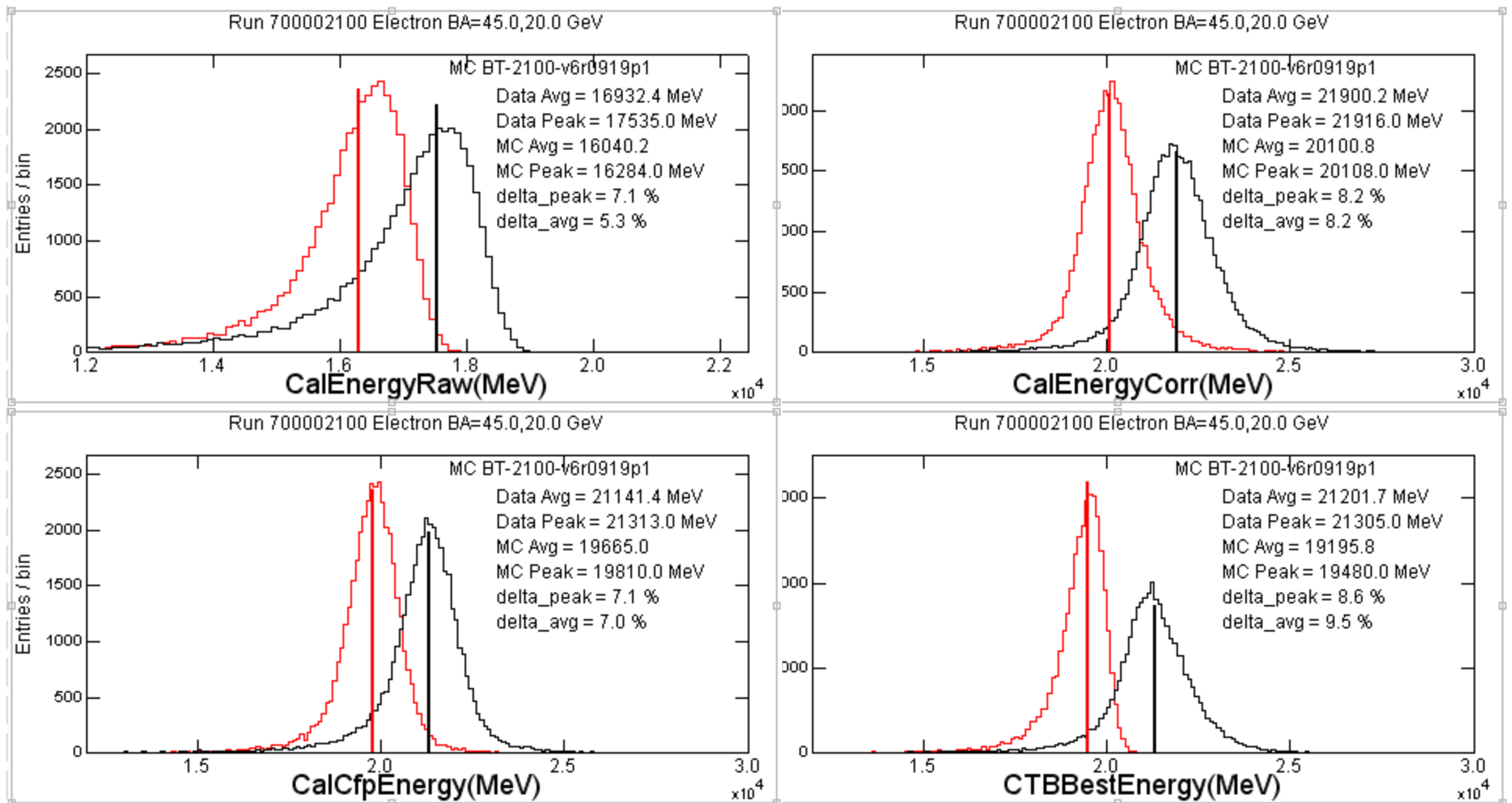
20 GeV, BA = 20°



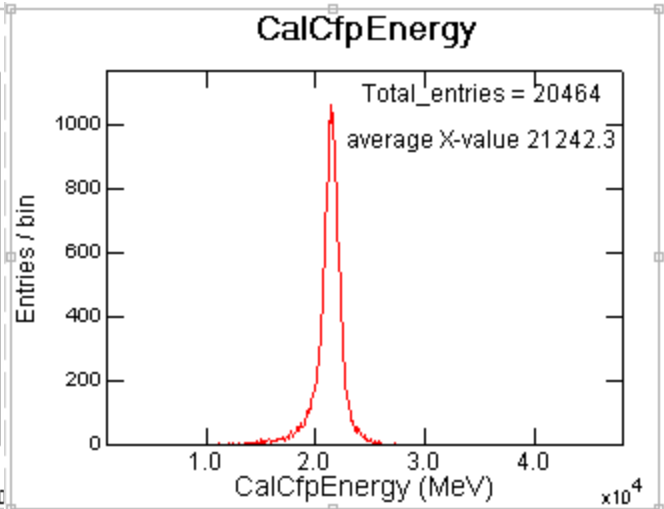
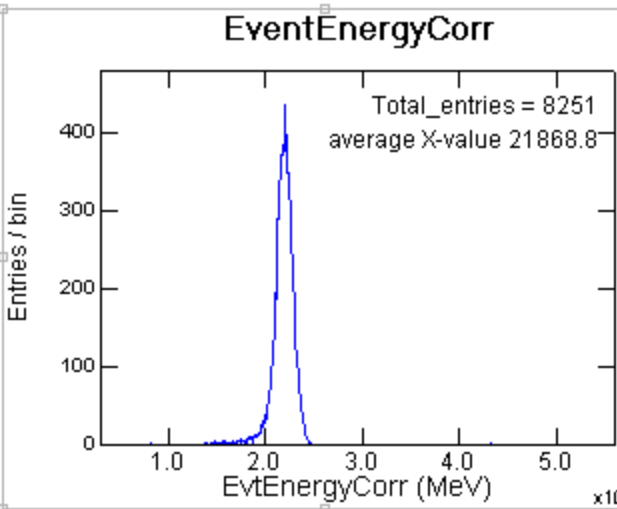
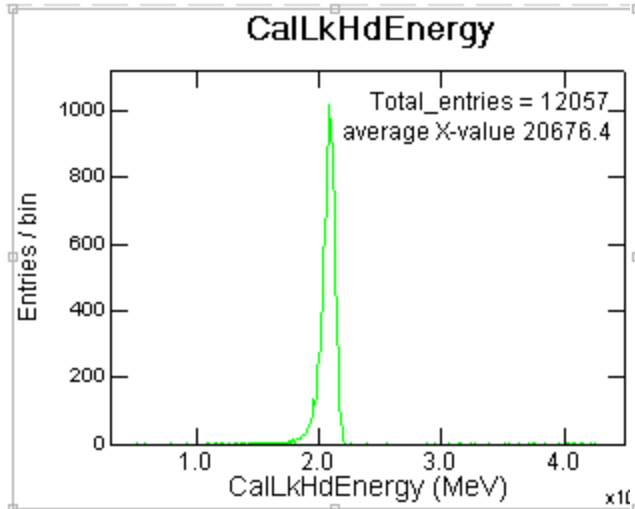
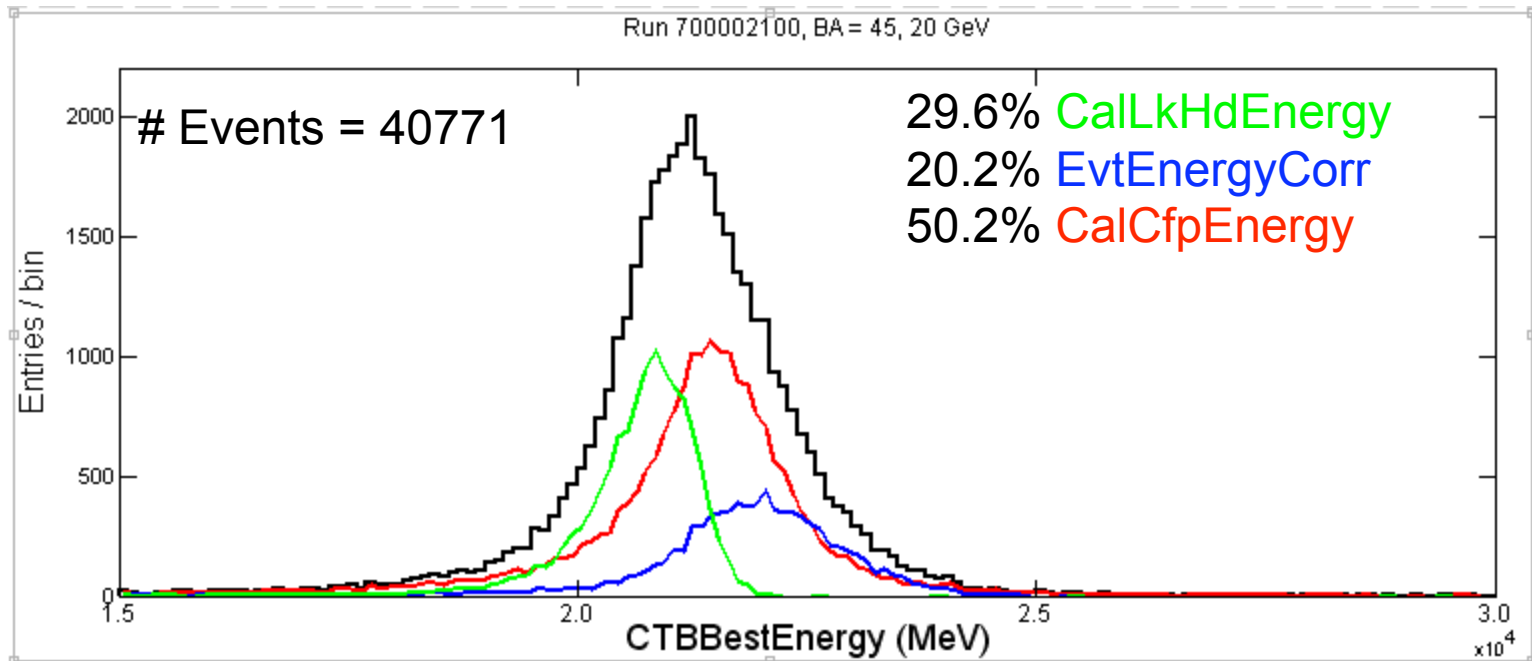
20 GeV, BA = 30°



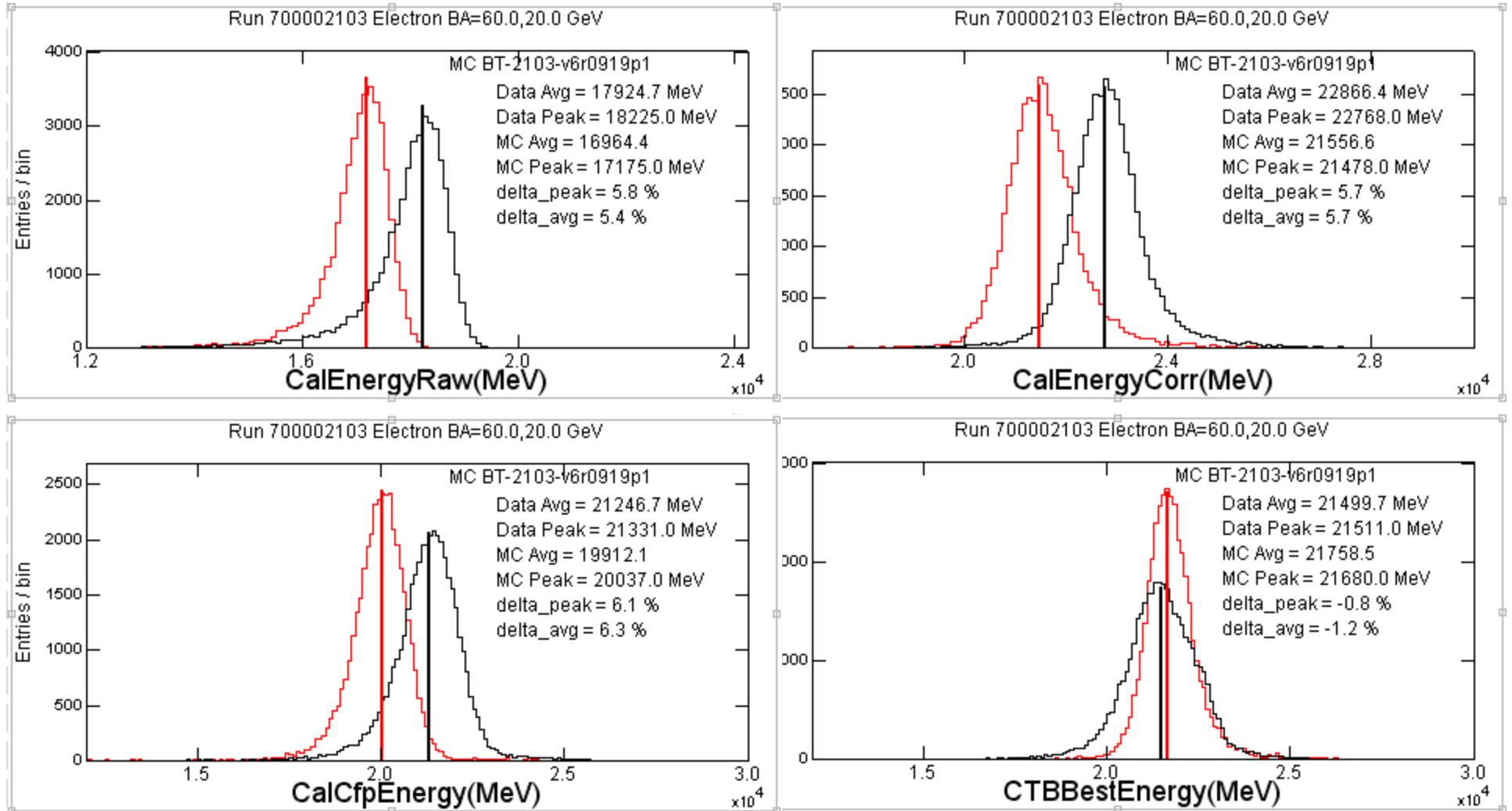
20 GeV, BA = 45°



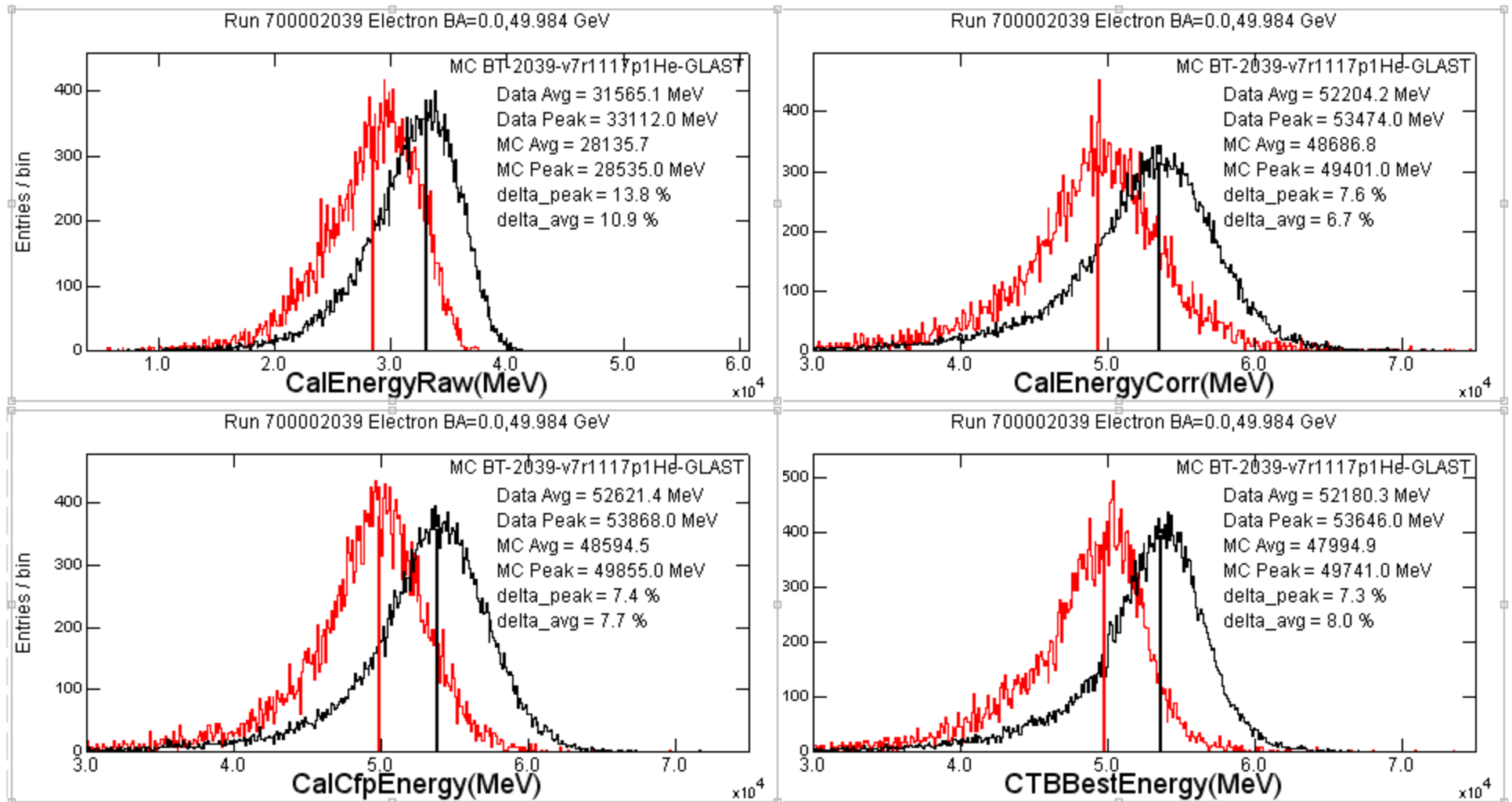
A Closer Look at Energy Reconstruction for Run 700002100: **DATA** 20 GeV, BA = 45°



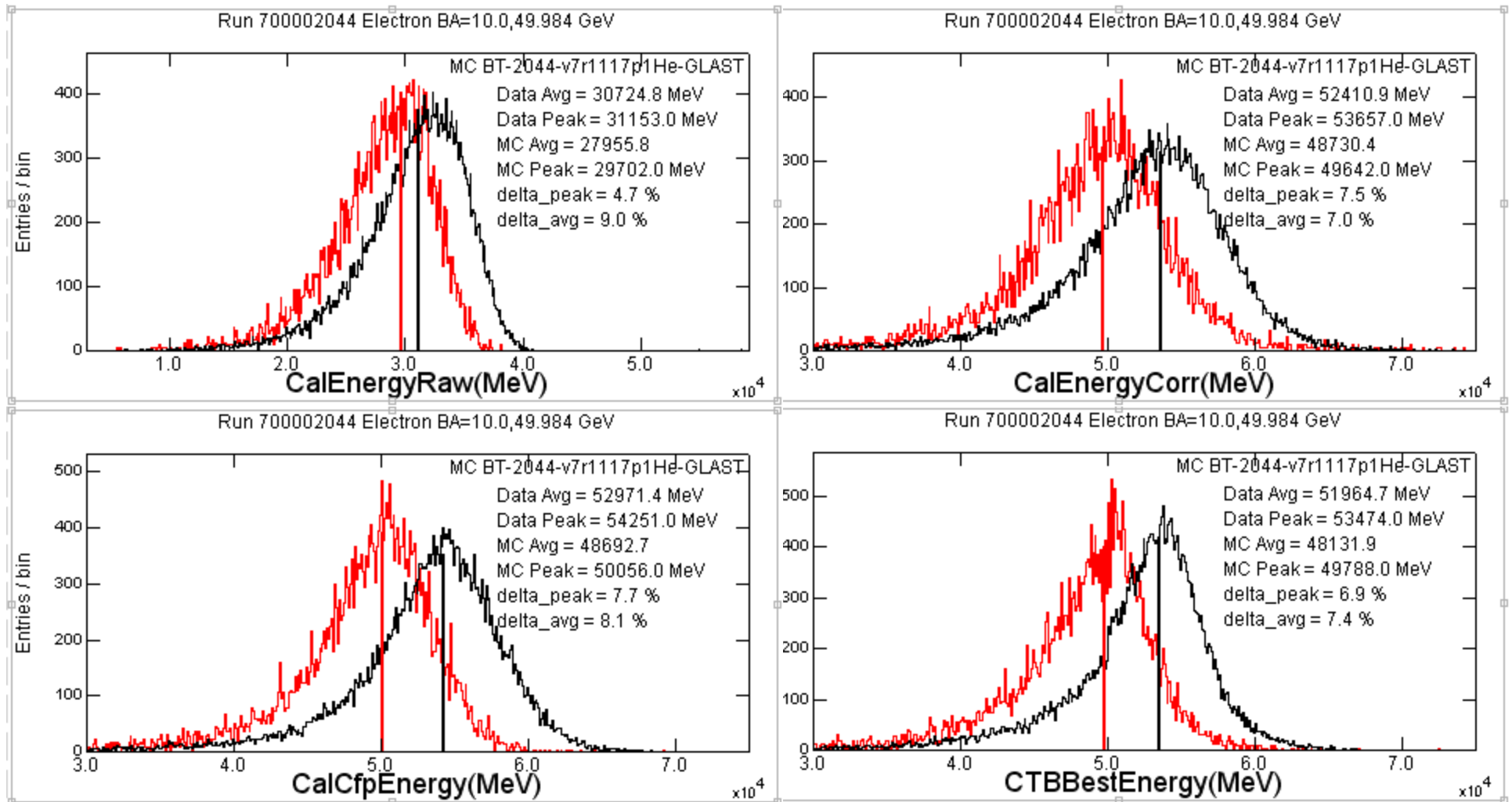
20 GeV, BA = 60°



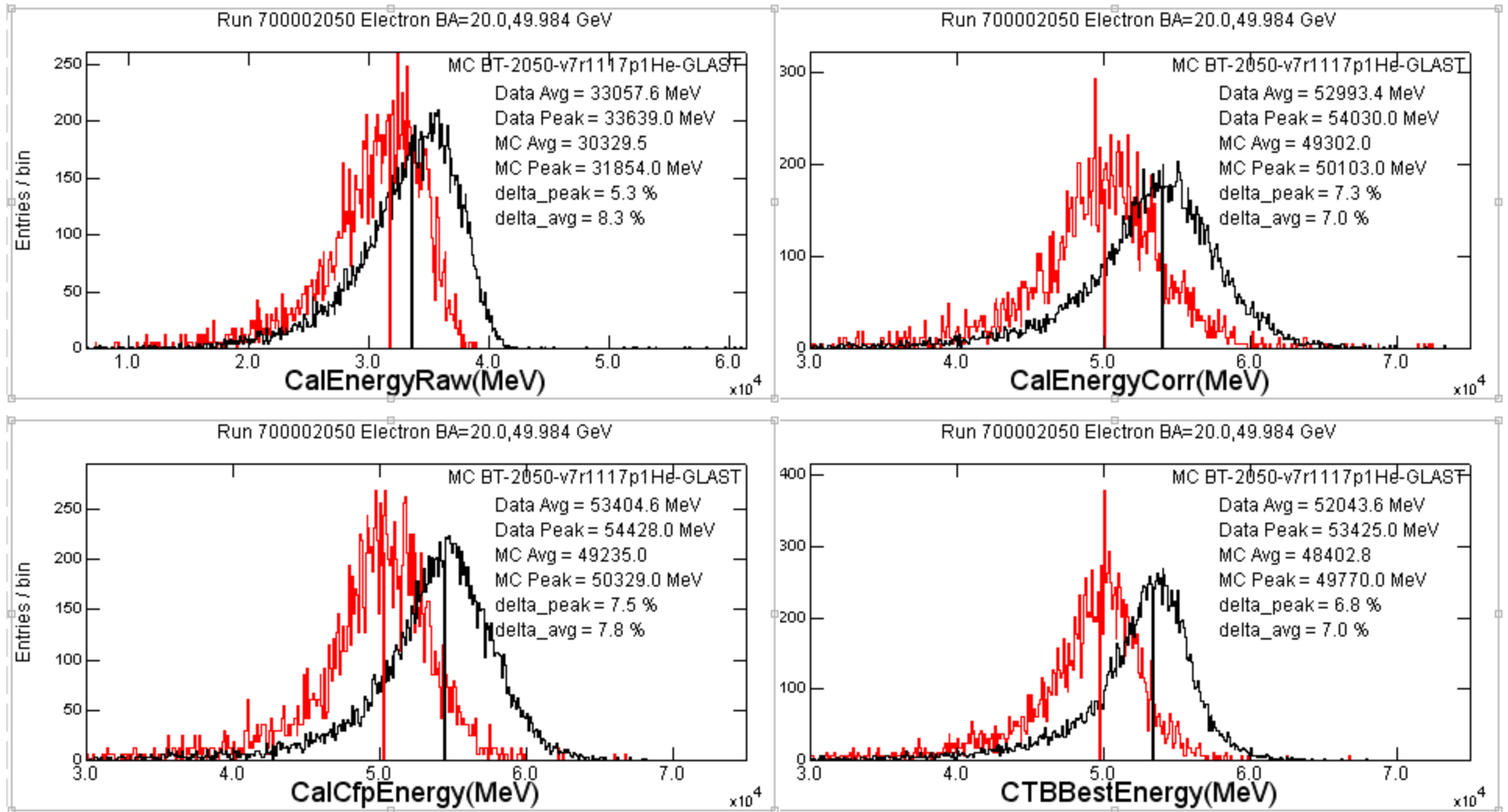
50 GeV, BA = 0, bin = .1 GeV



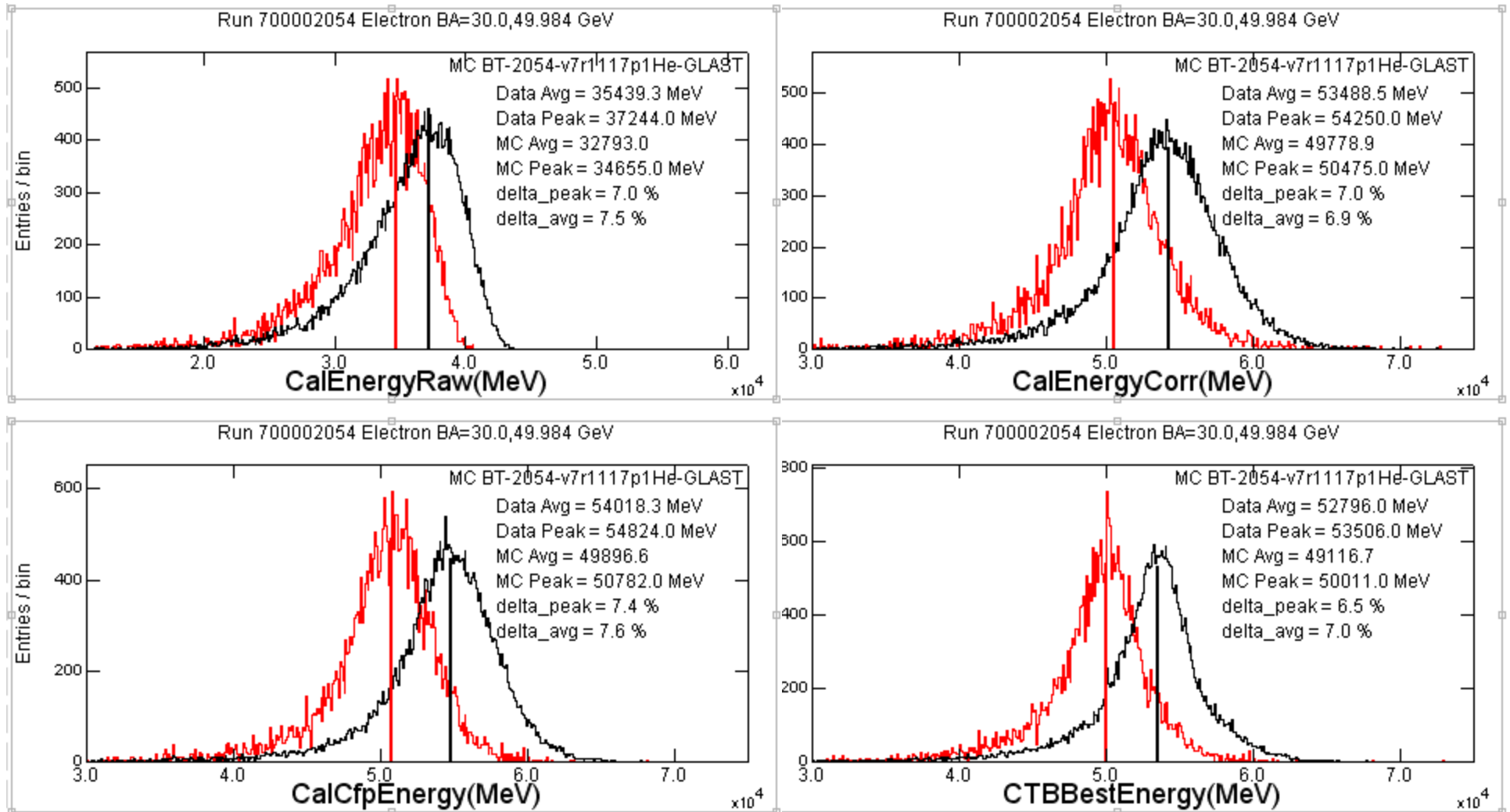
50 GeV, BA = 10°



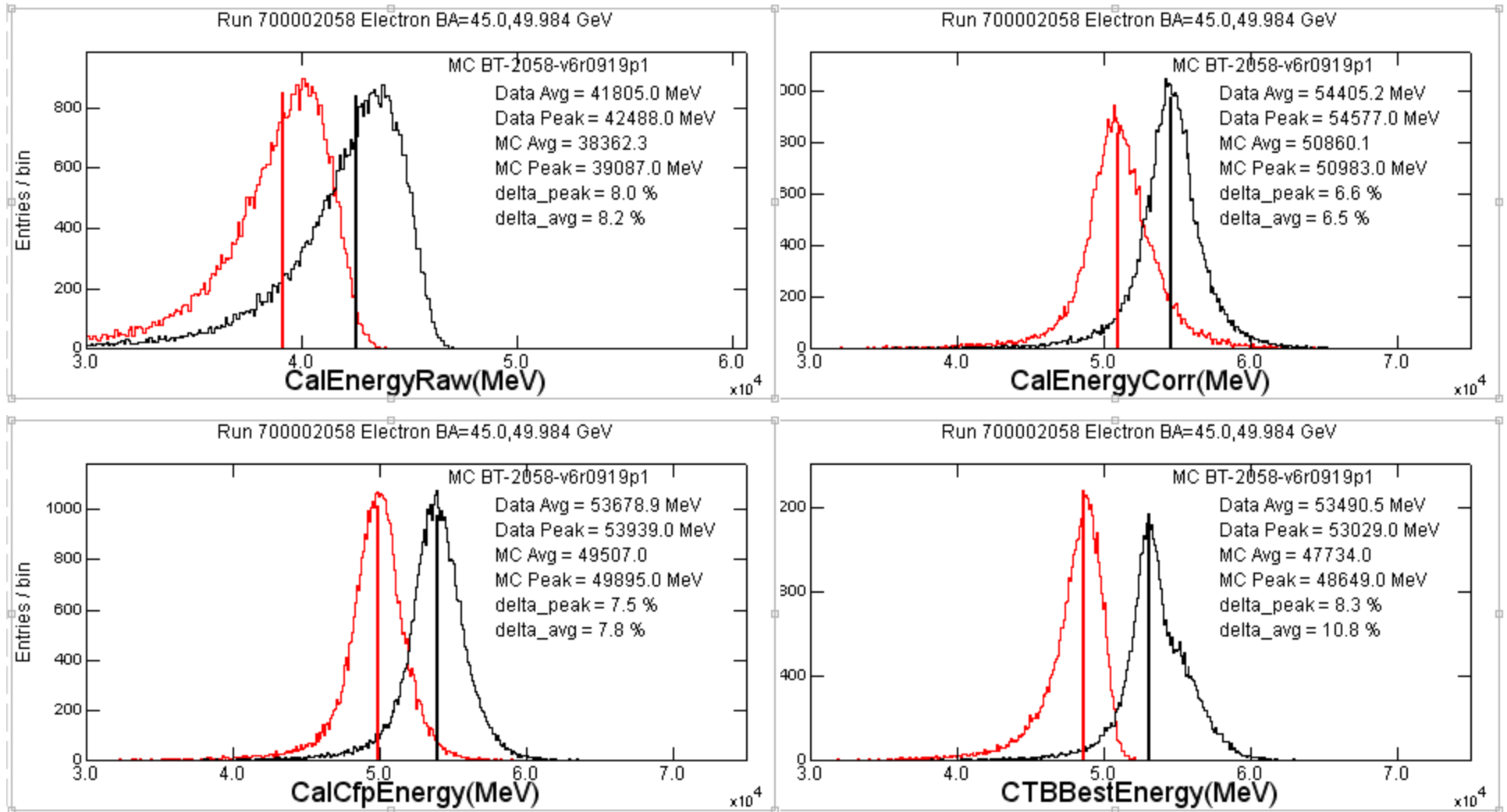
50 GeV, BA = 20°



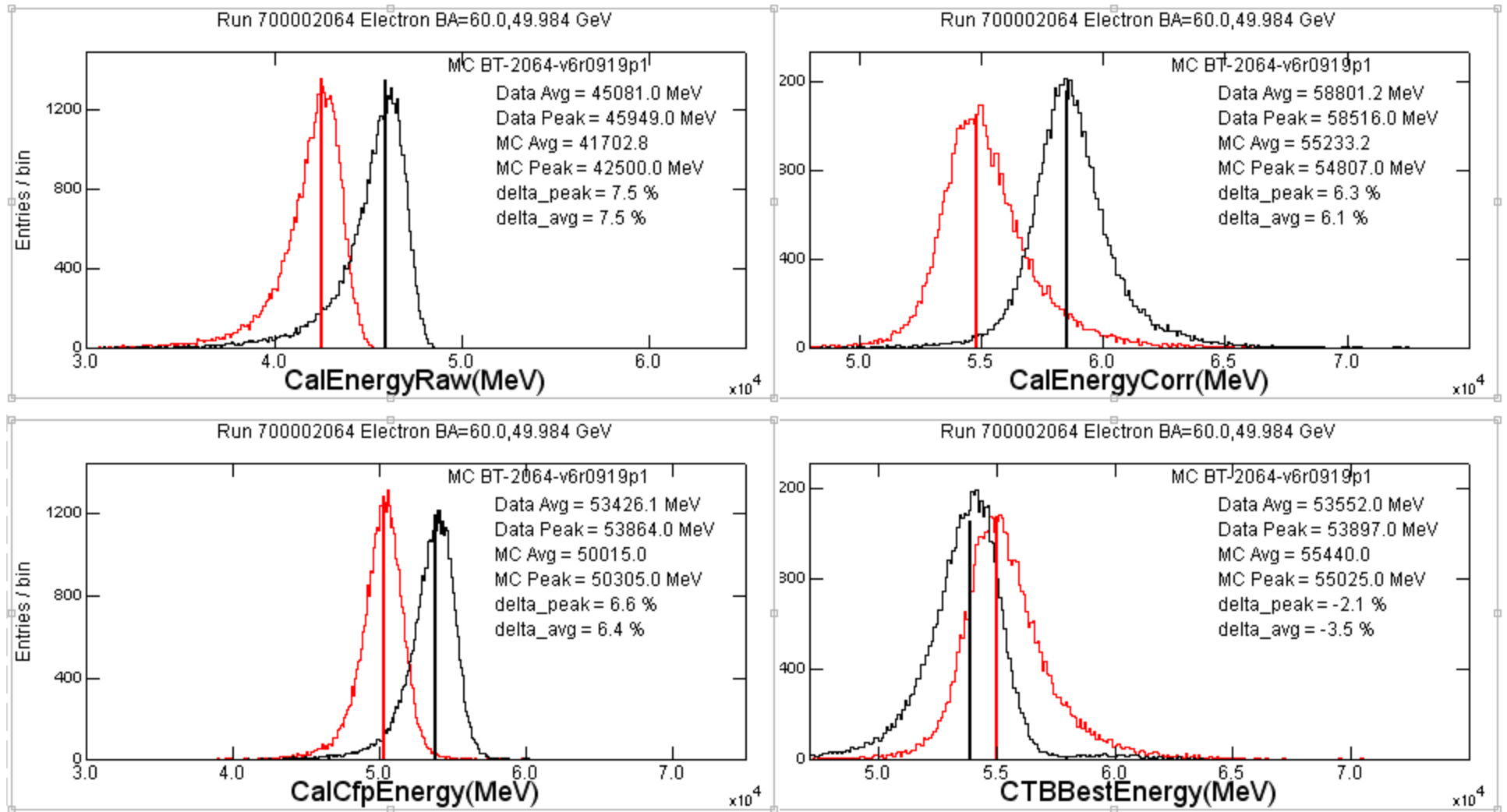
50 GeV, BA = 30°



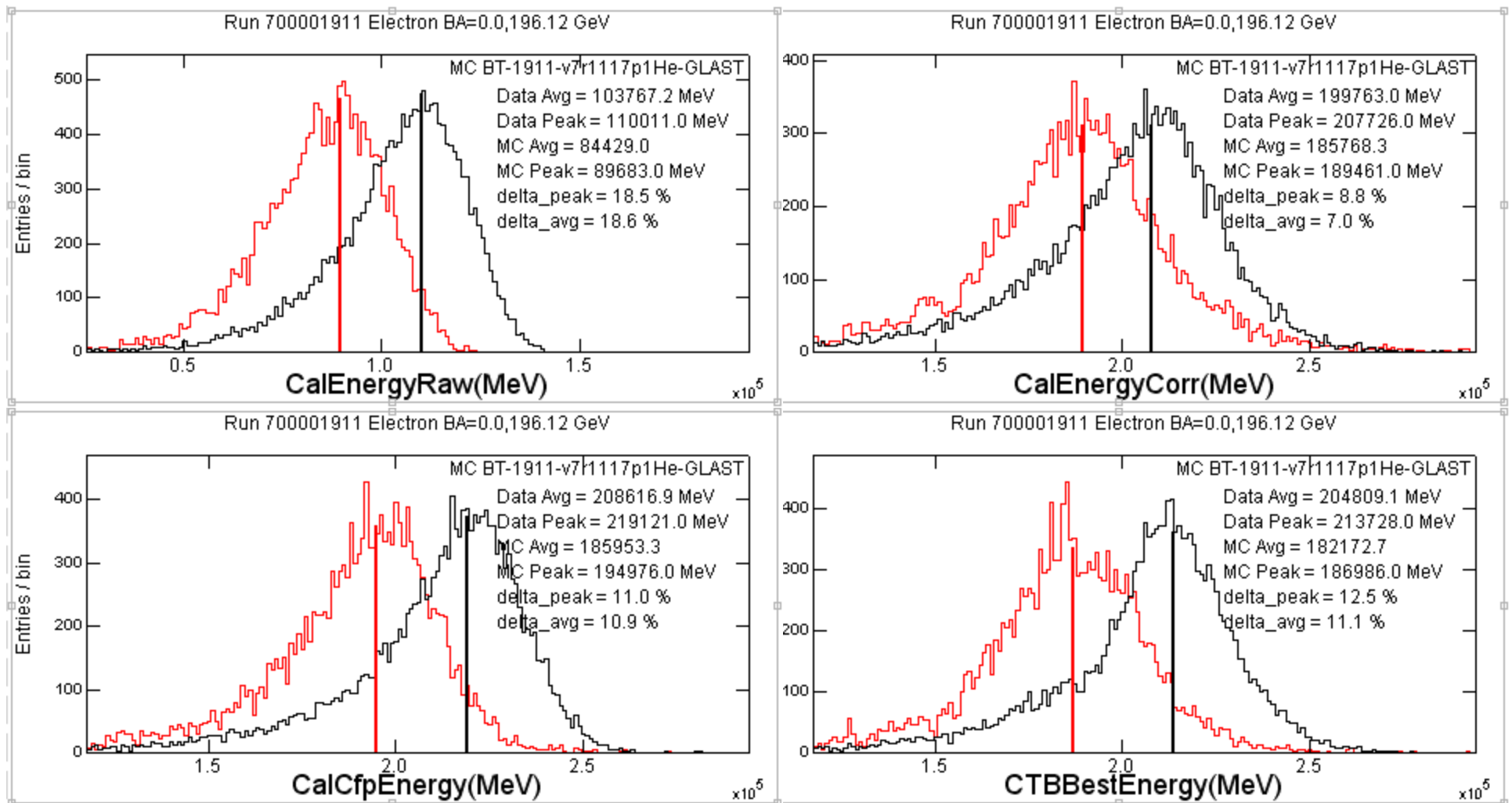
50 GeV, BA = 45°



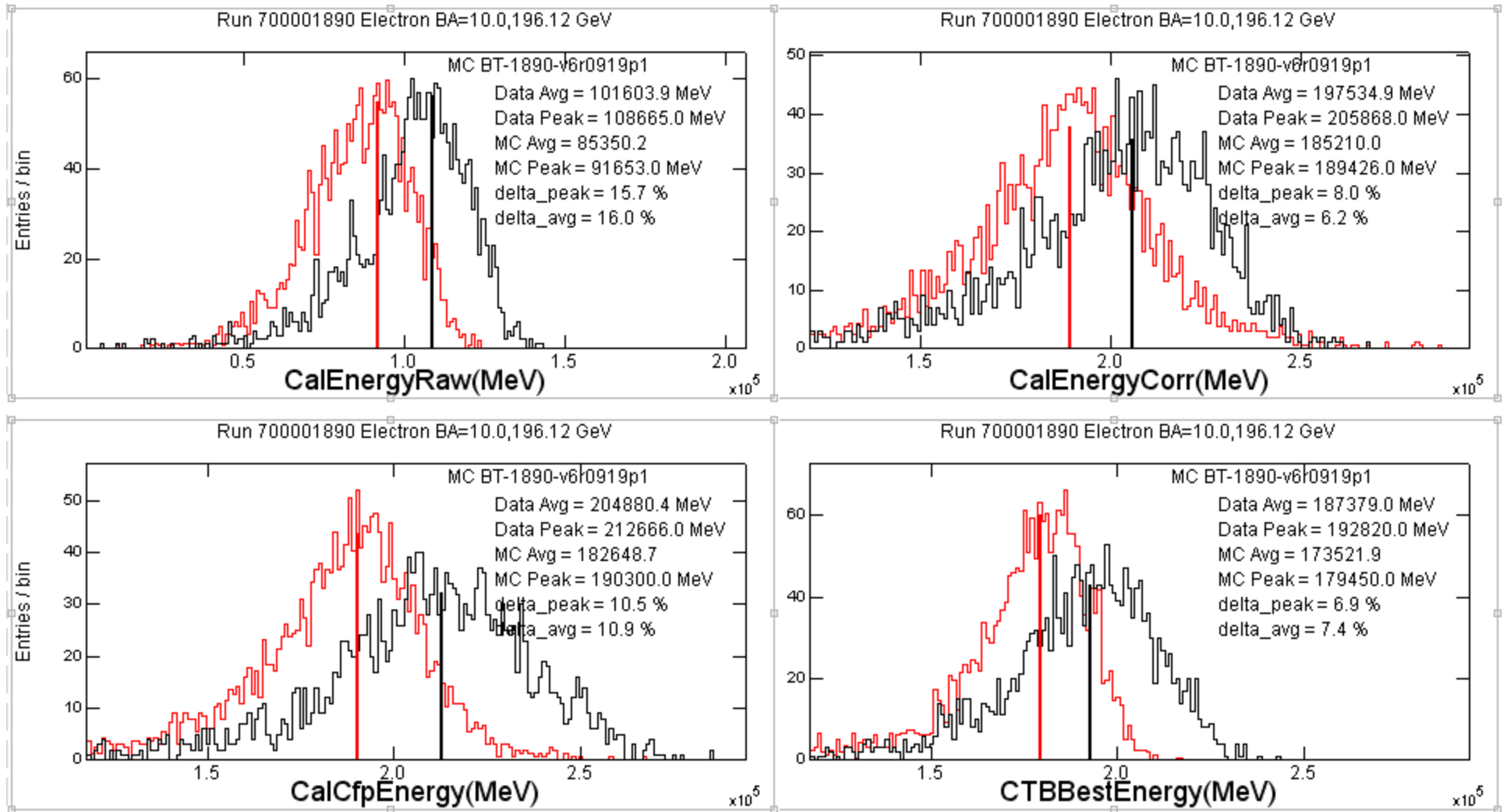
50 GeV, BA = 60°



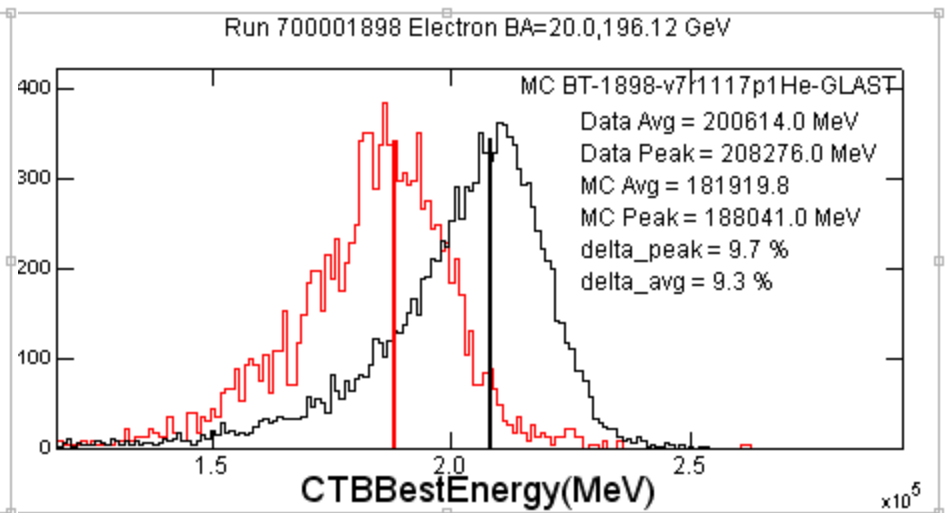
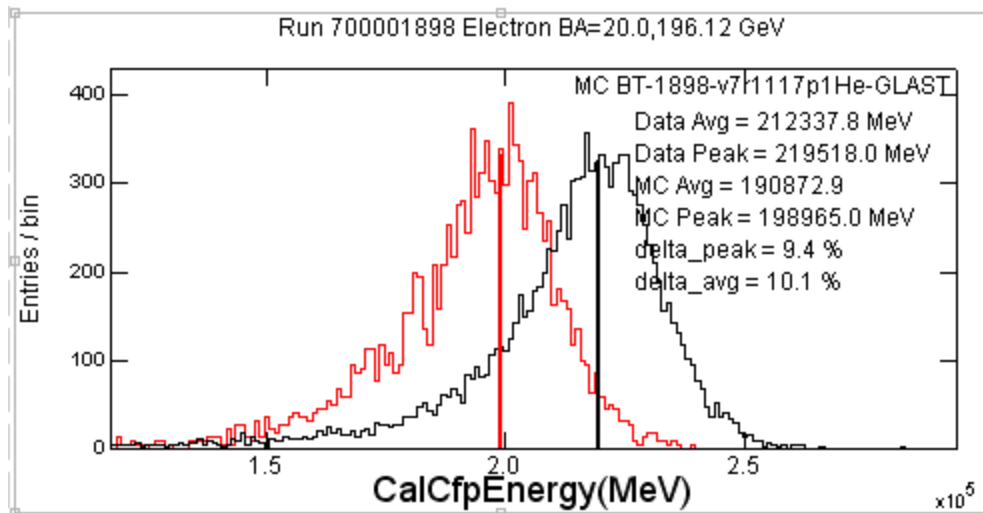
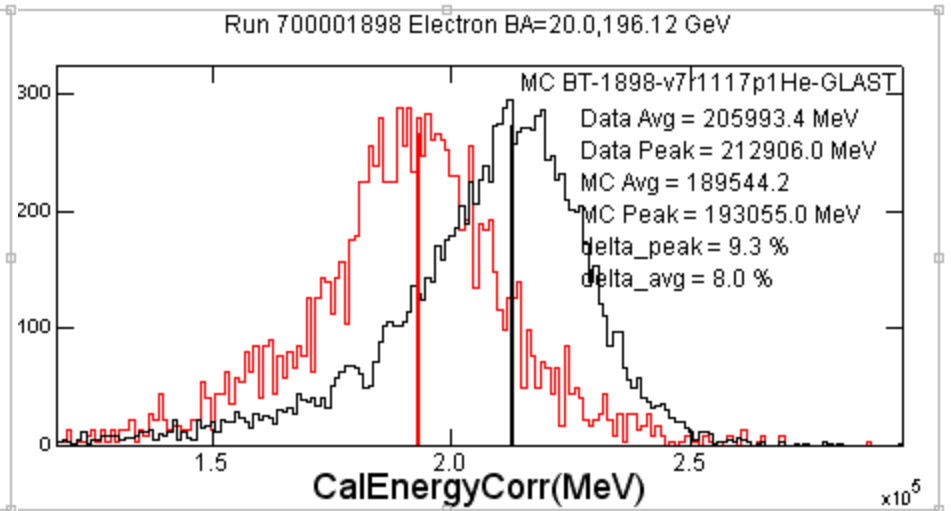
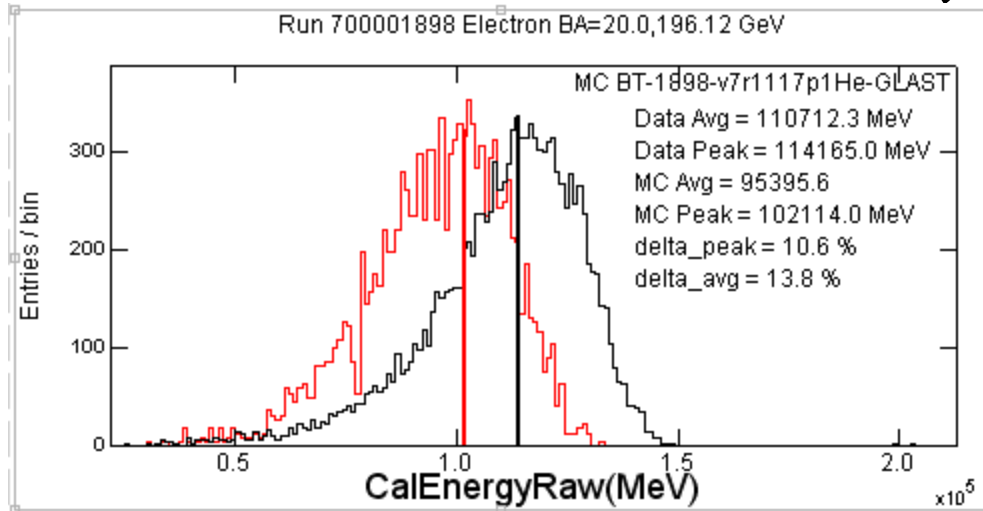
196 GeV, BA=0, bin = 1 GeV



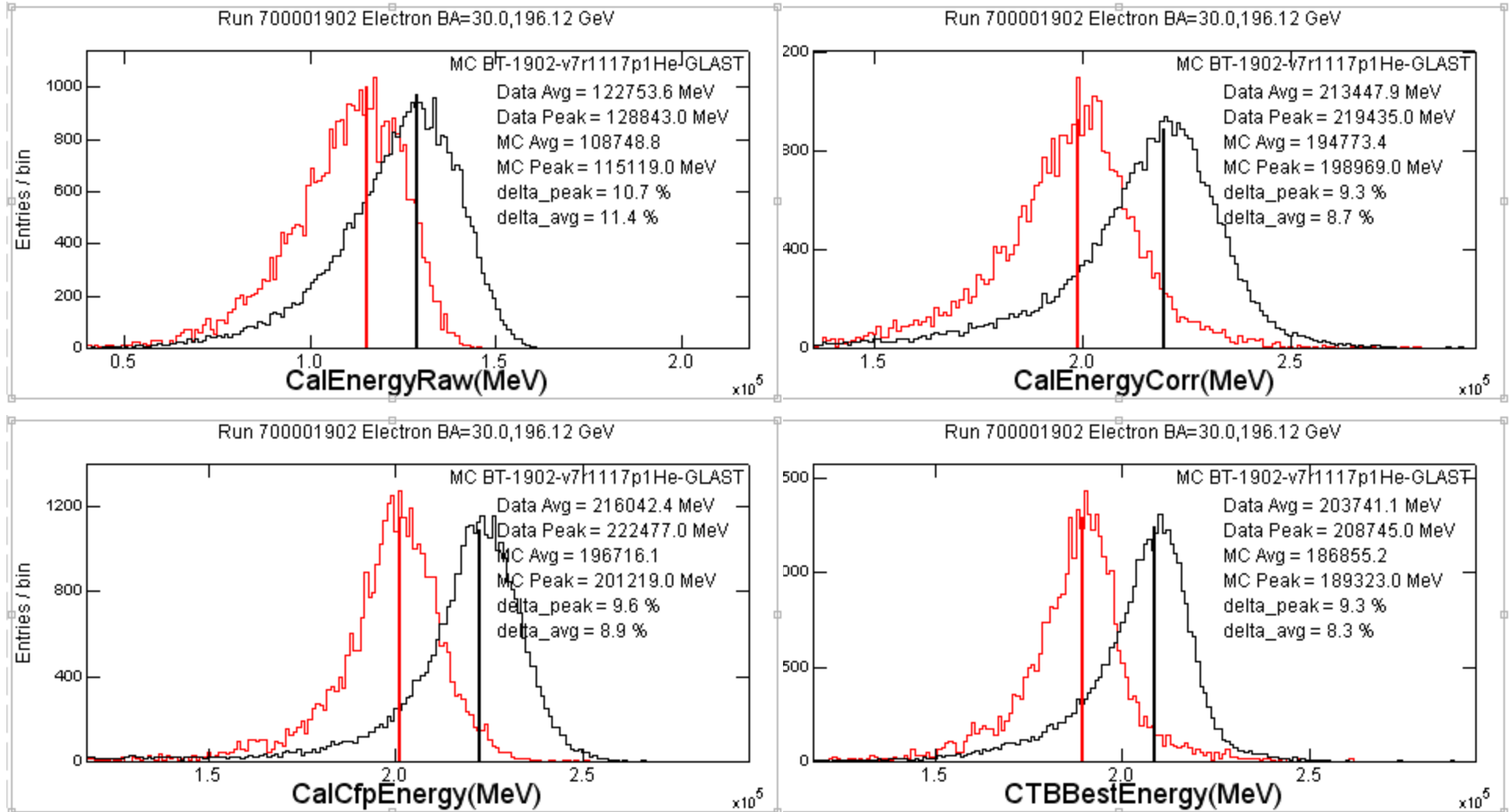
196 GeV, BA = 10°



196 GeV, BA = 20°



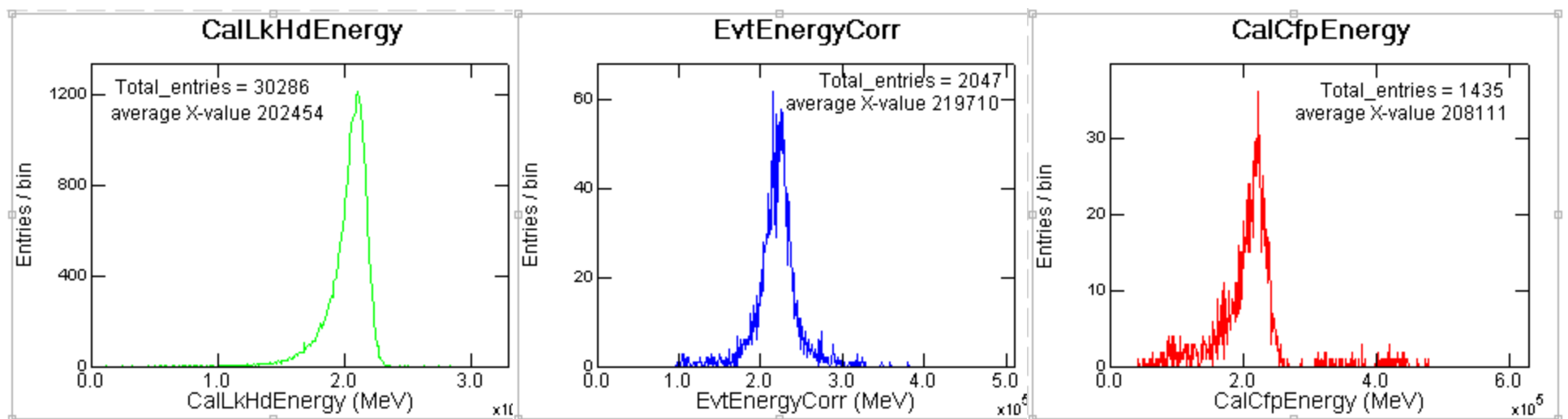
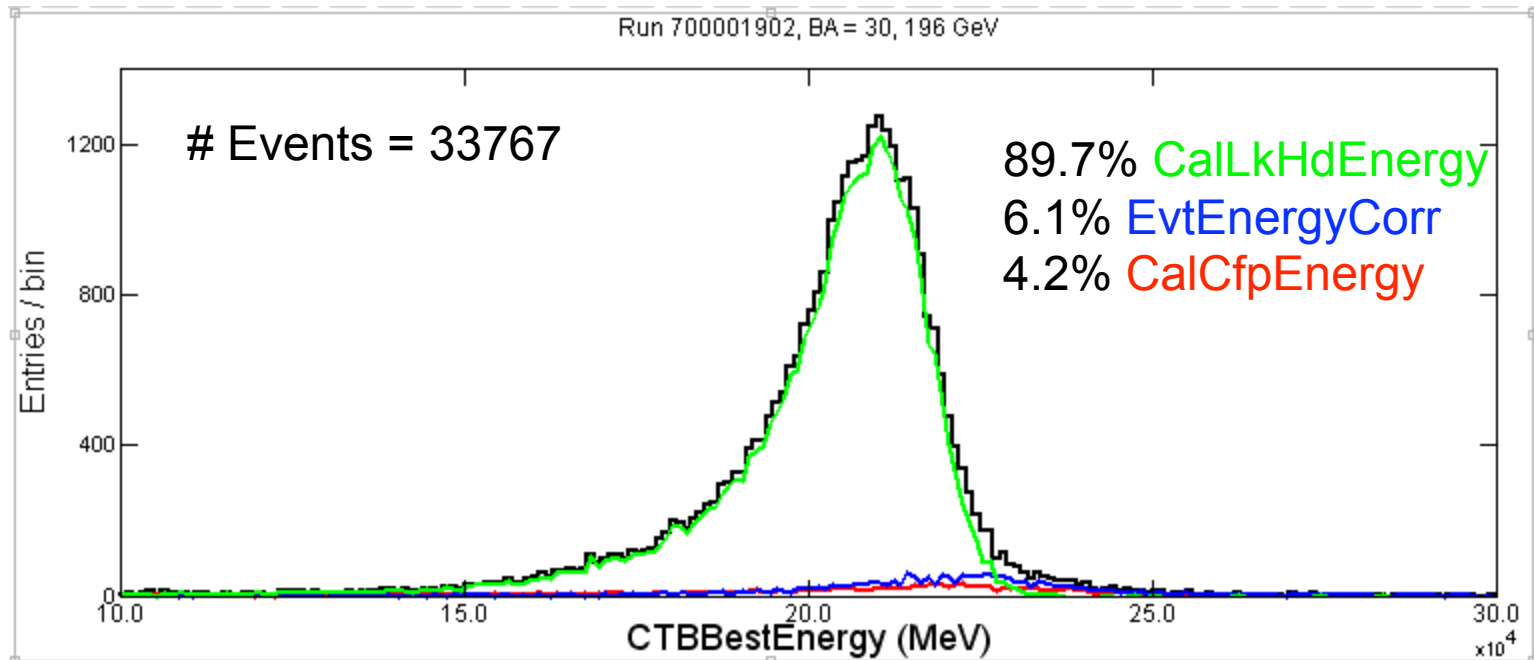
196 GeV, BA = 30°



A Closer Look at Energy Reconstruction for Run 700001902:

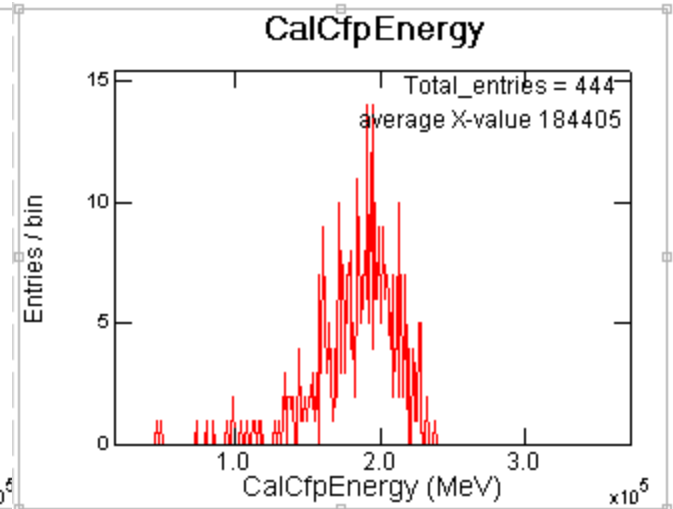
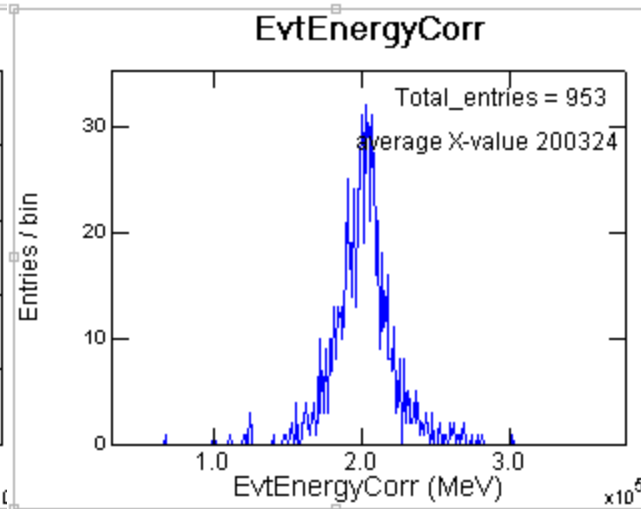
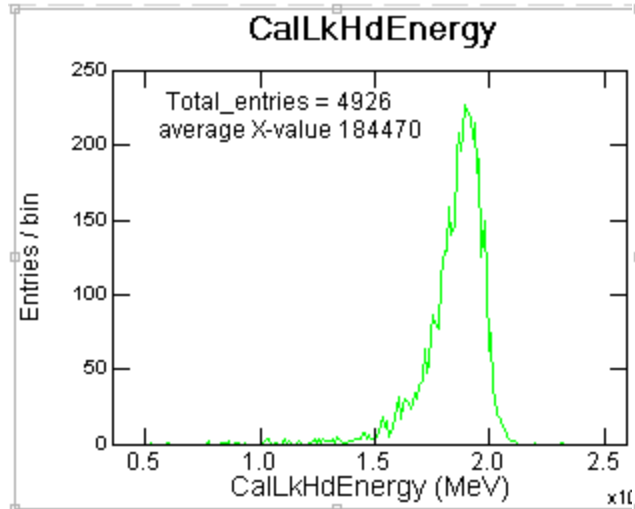
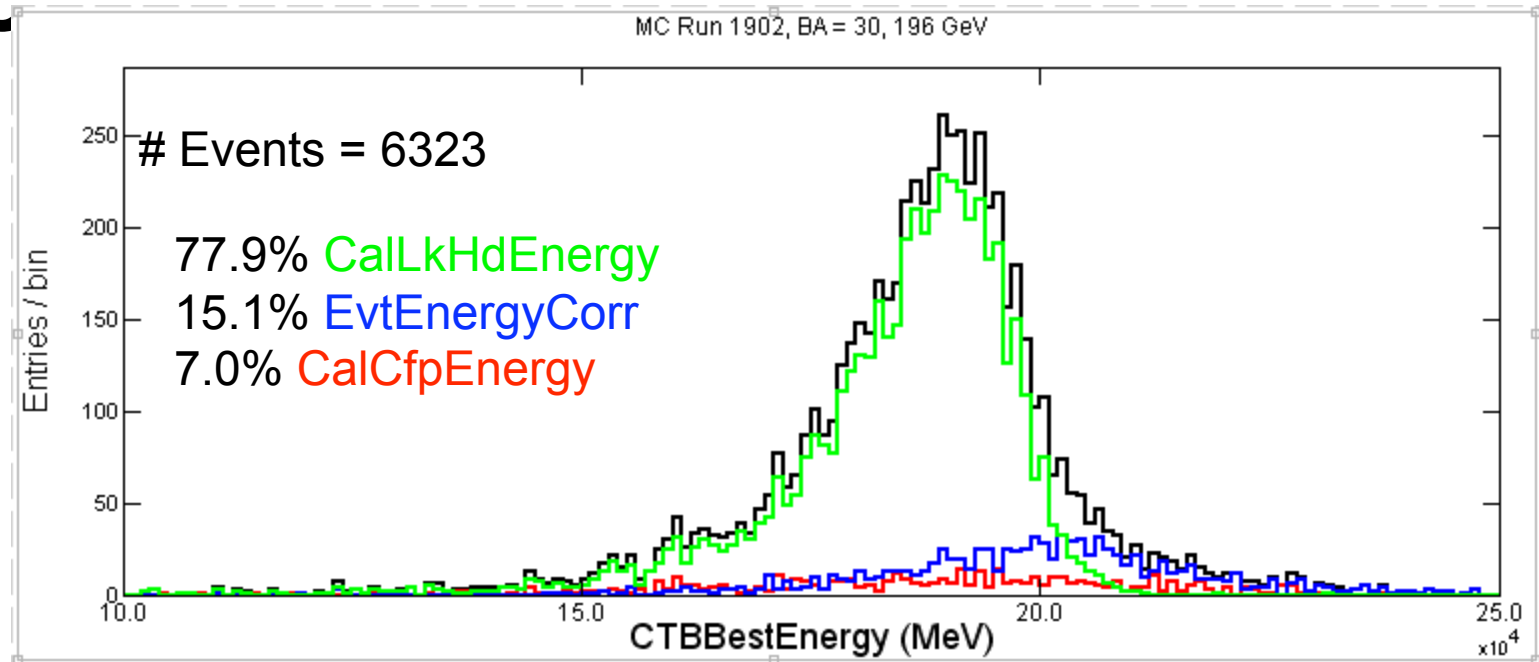
196 GeV, BA = 30°

DATA

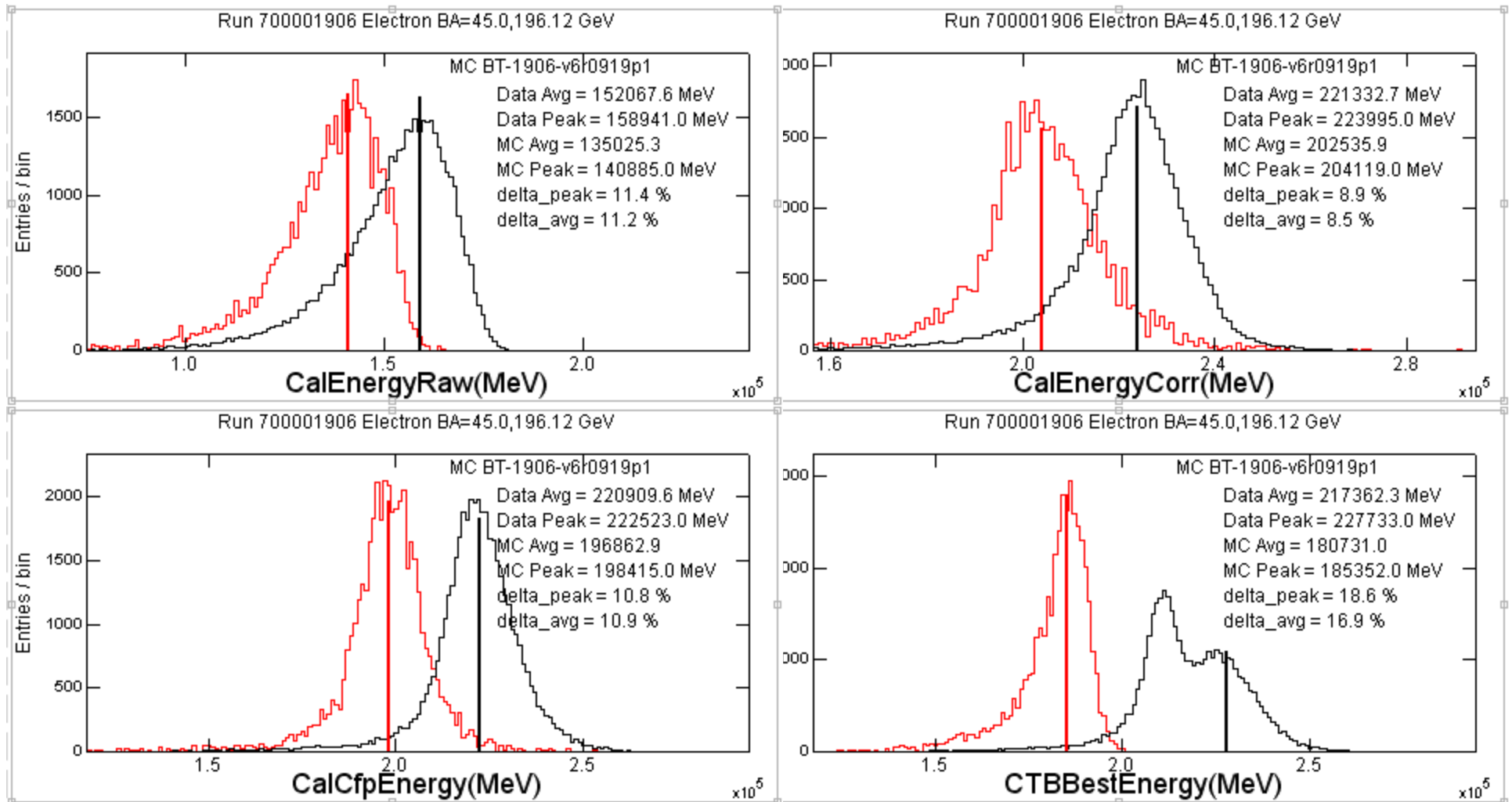


A Closer Look at Energy Reconstruction for MC 1902: 196 GeV, BA = 30°

MC



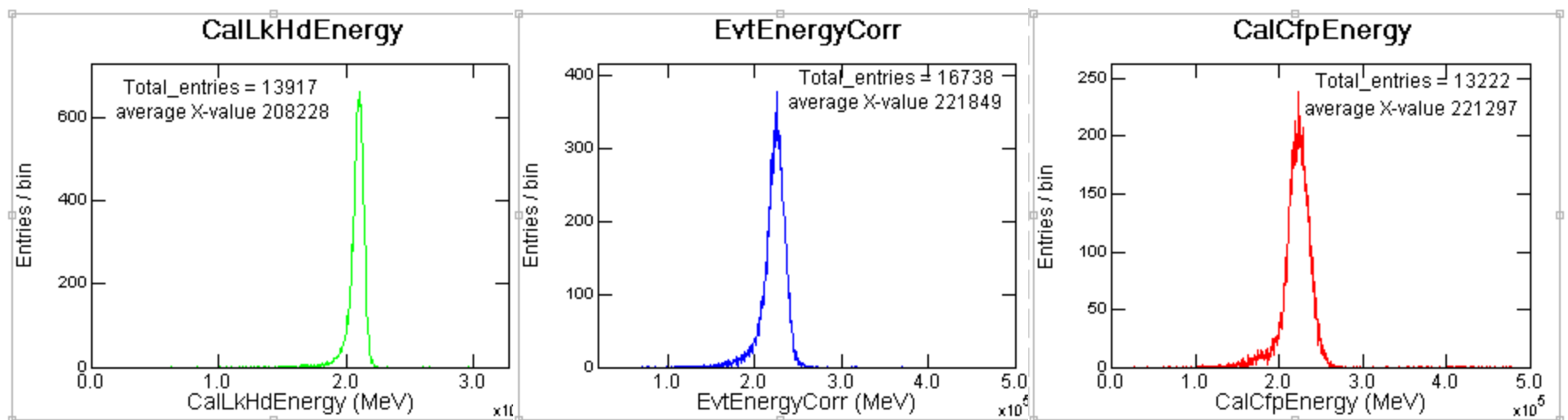
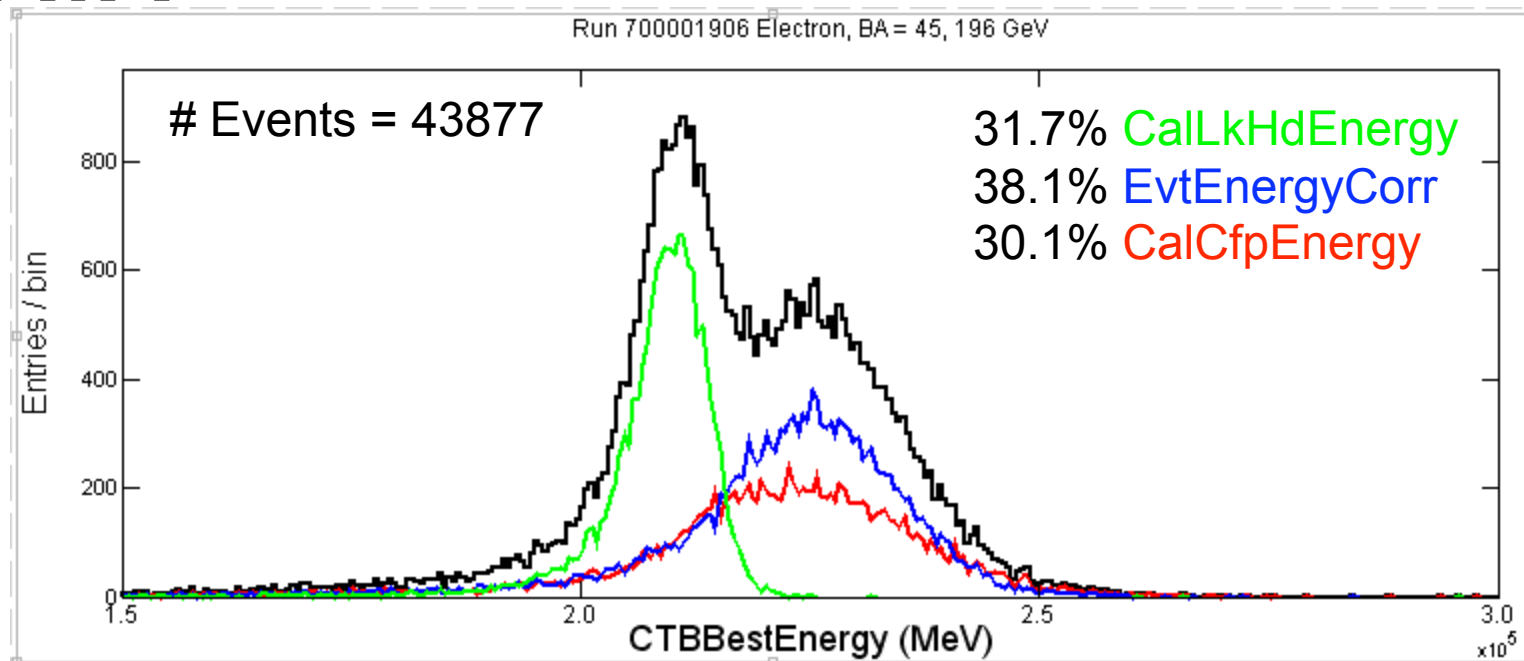
196 GeV, BA = 45°



A Closer Look at Energy Reconstruction for Run 700001906:

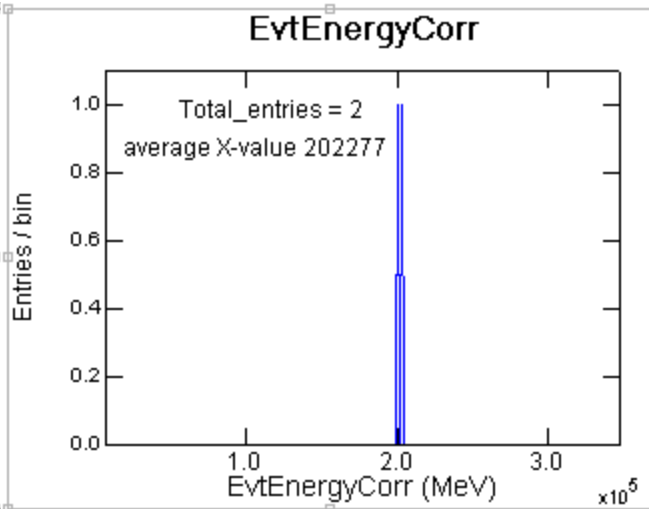
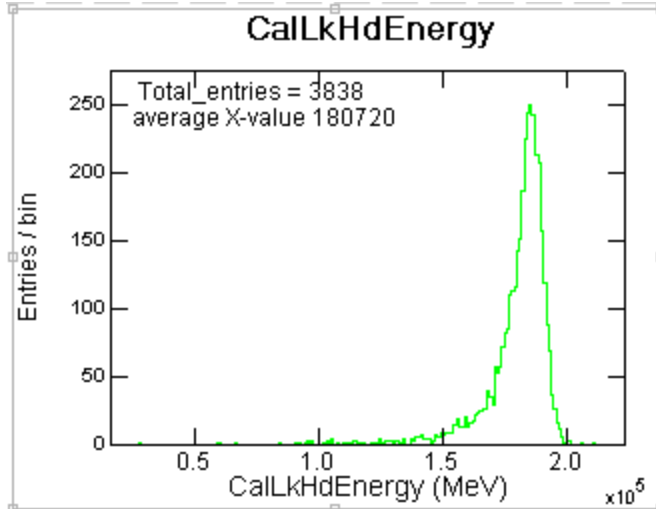
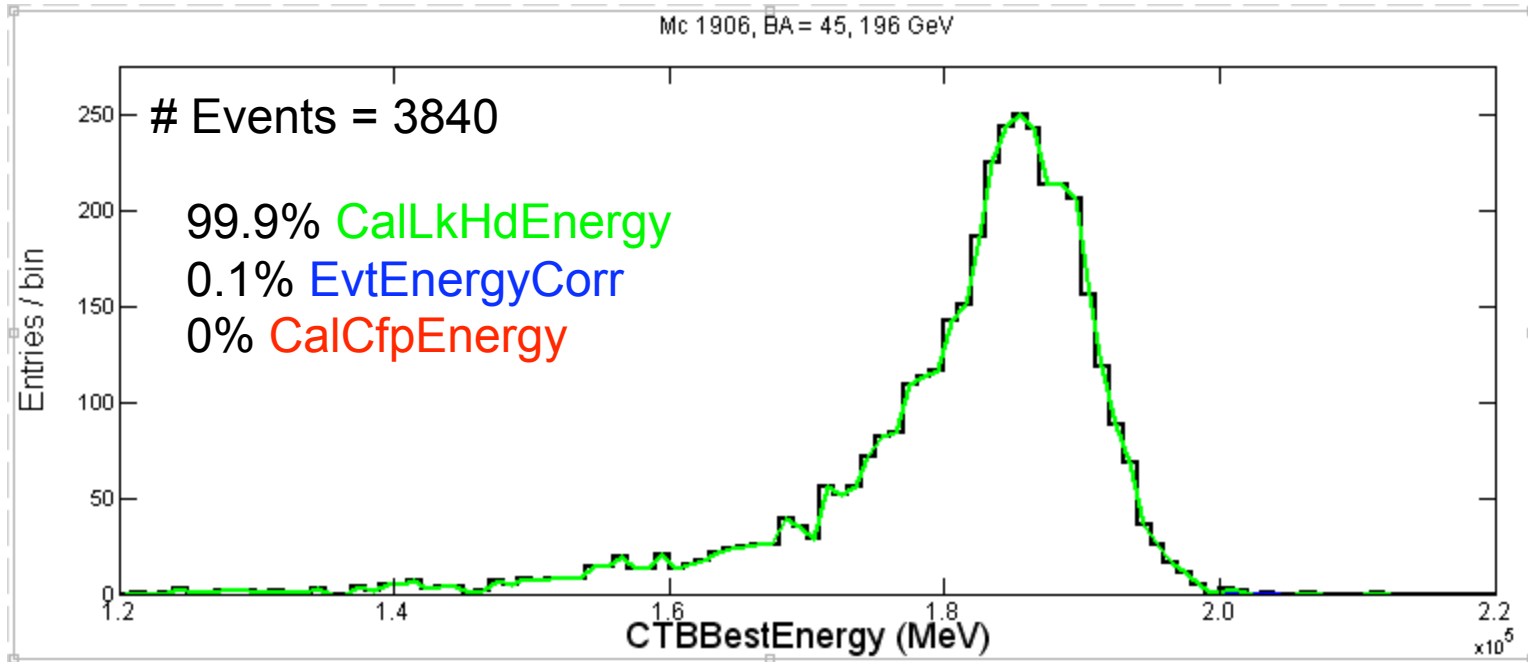
DATA

196 GeV, BA = 45°

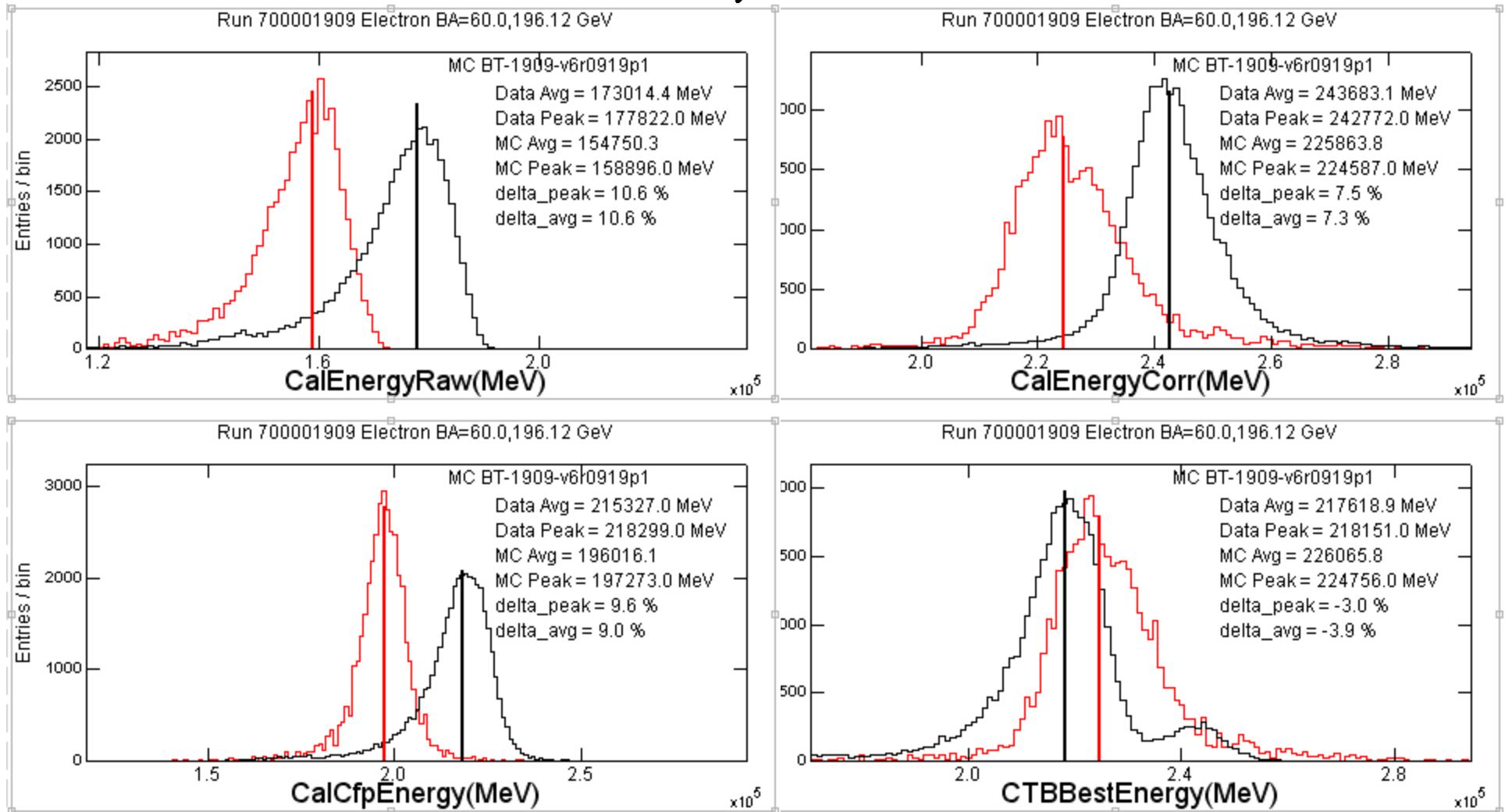


A Closer Look at Energy Reconstruction for MC 1906: 196 GeV, BA = 45°

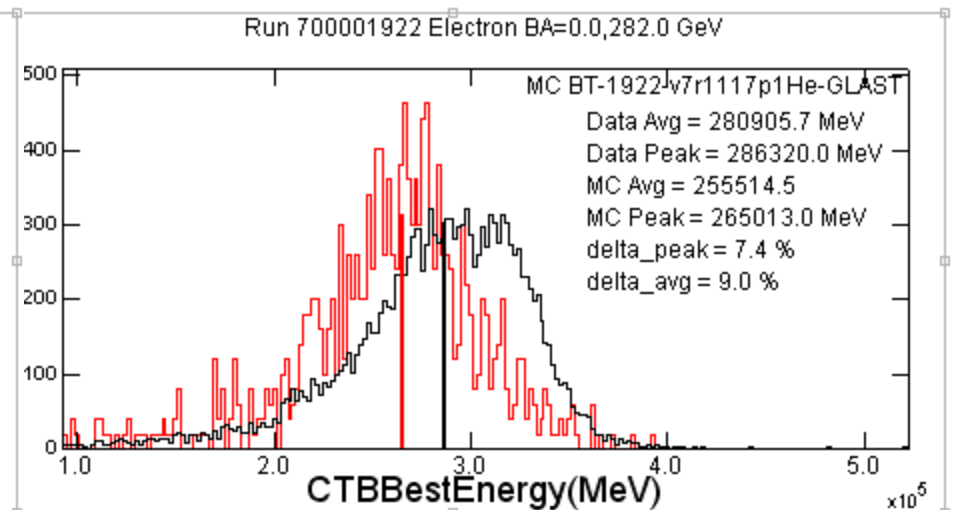
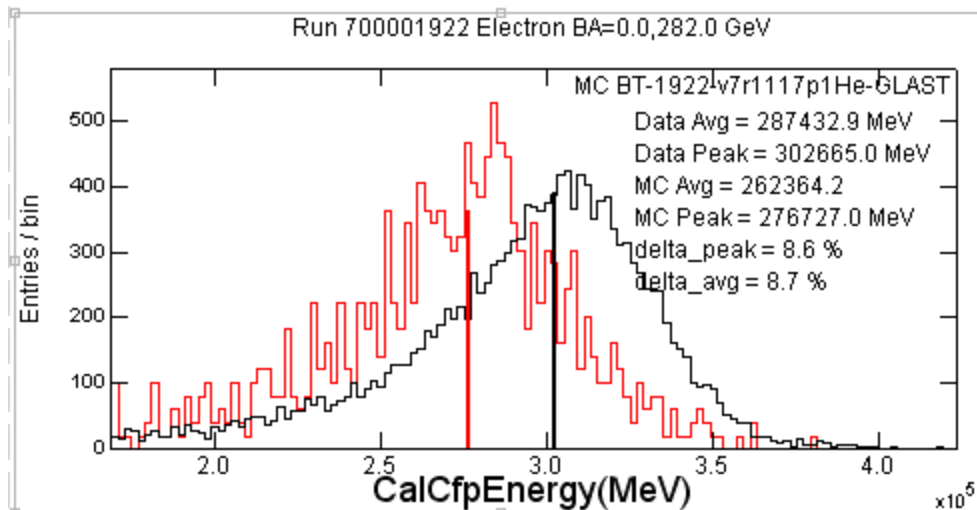
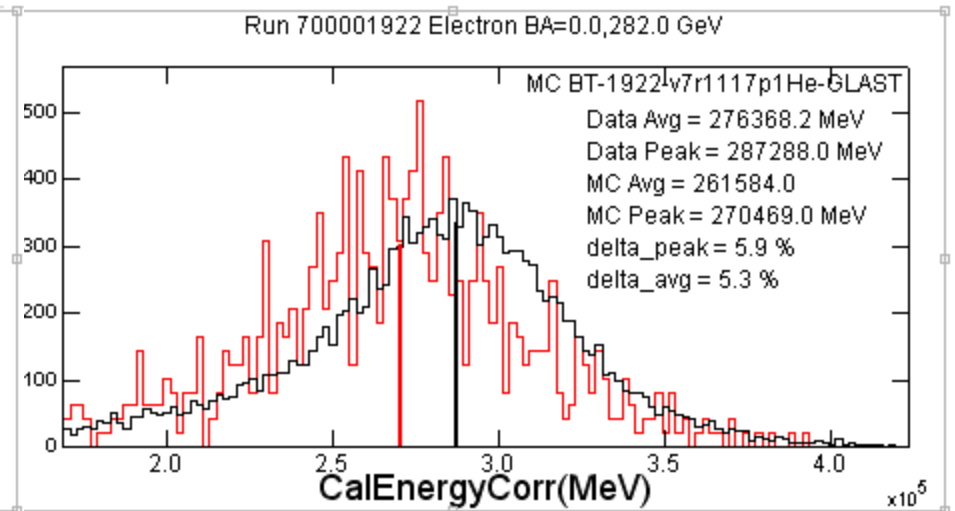
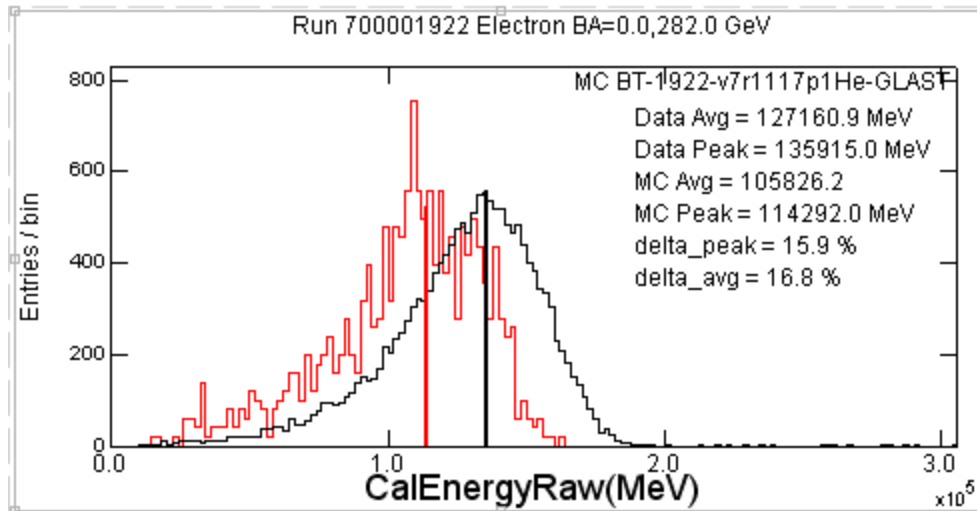
MC



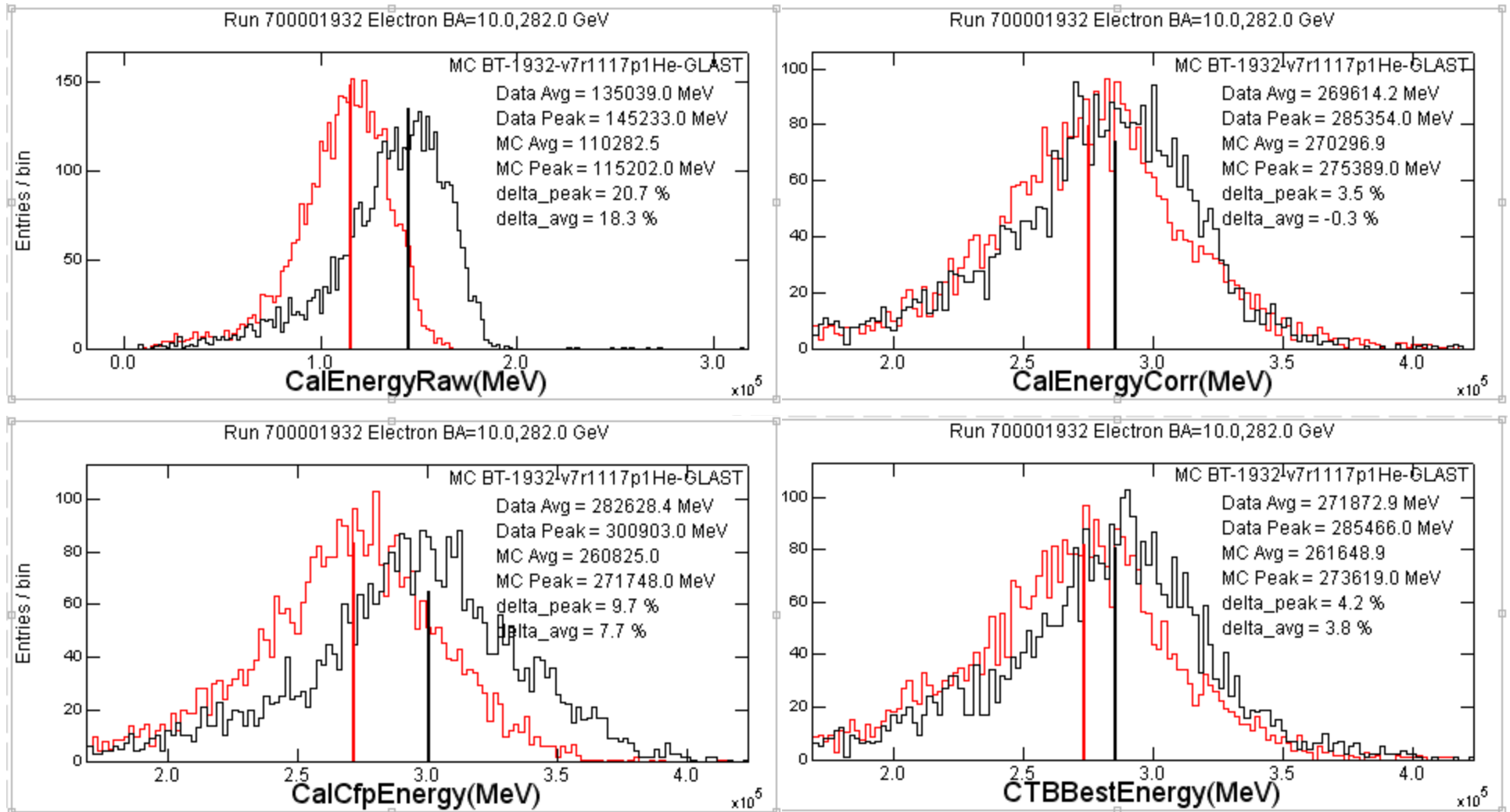
196 GeV, BA = 60°



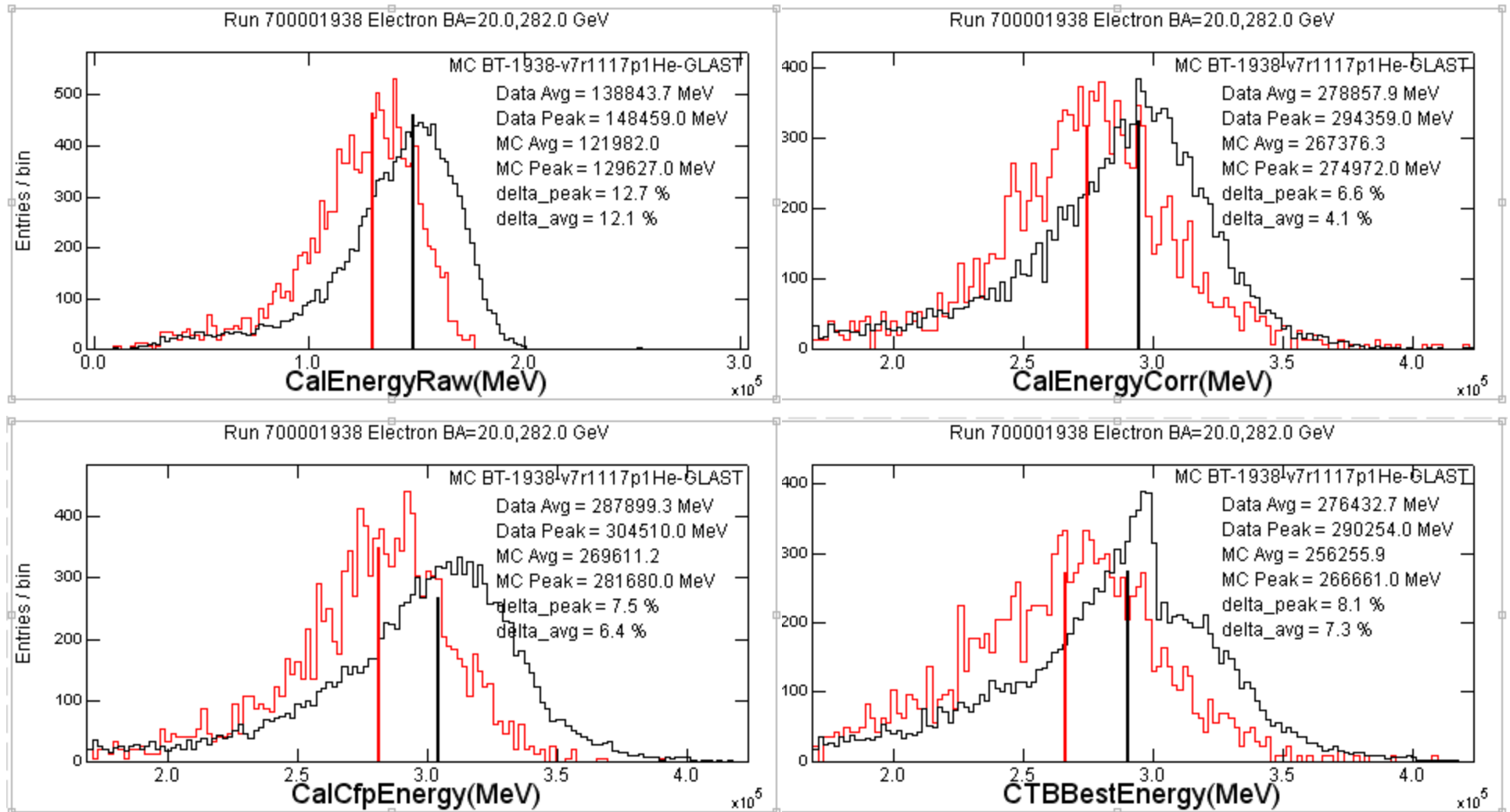
282 GeV, BA = 0, bin = 2 GeV



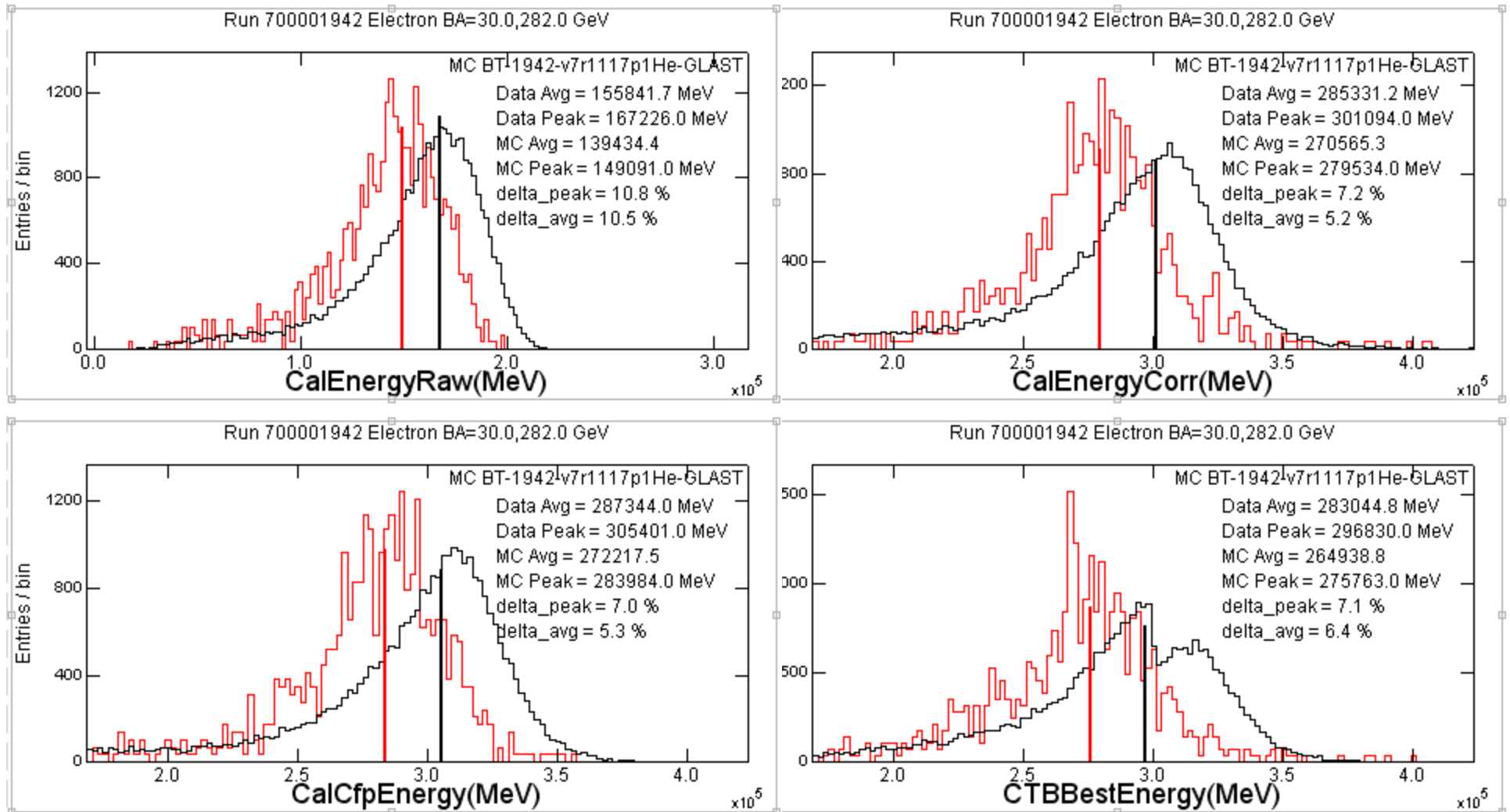
282 GeV, BA = 10°



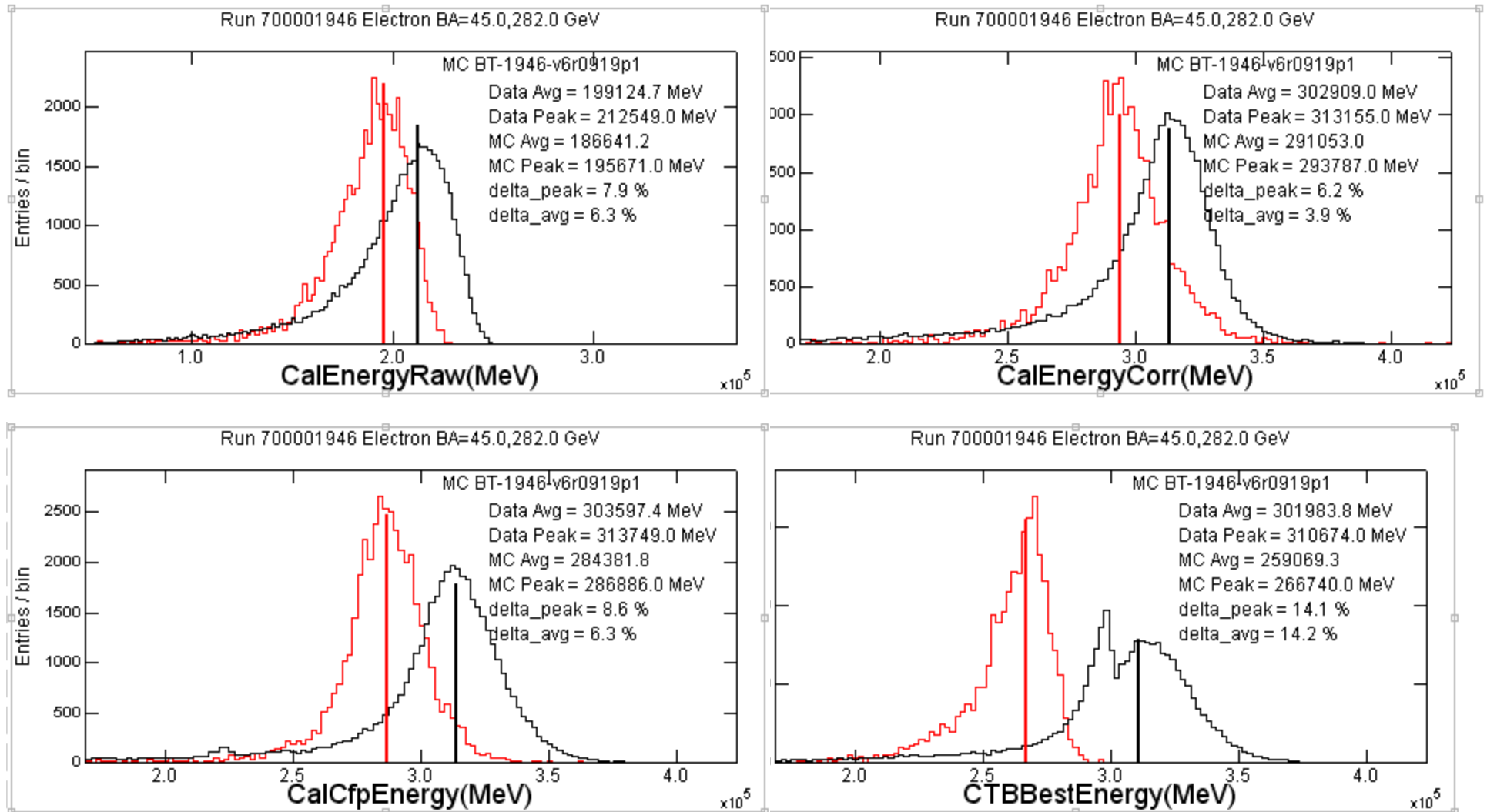
282 GeV, BA = 20°



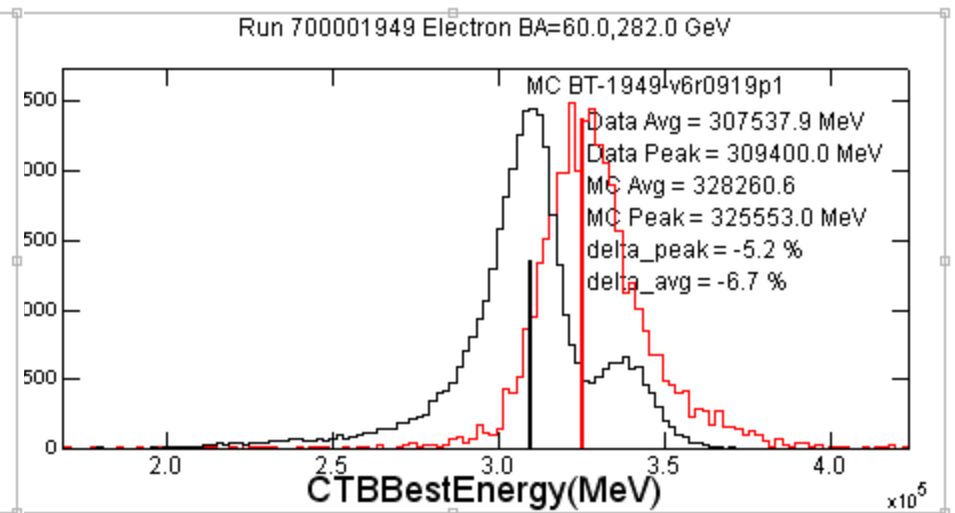
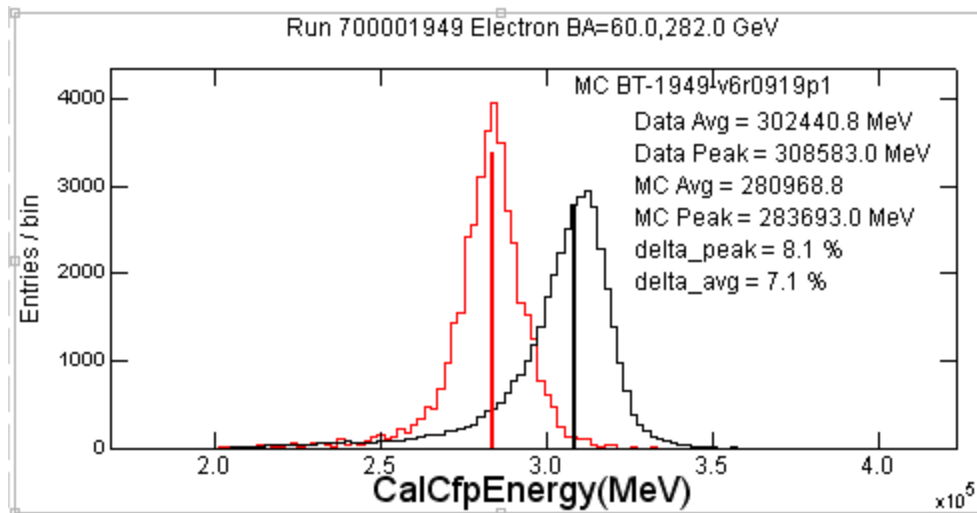
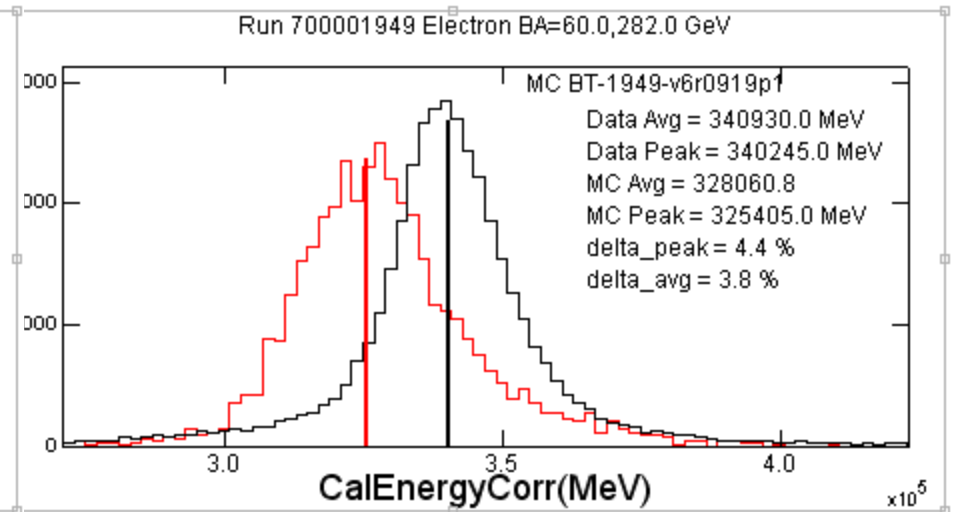
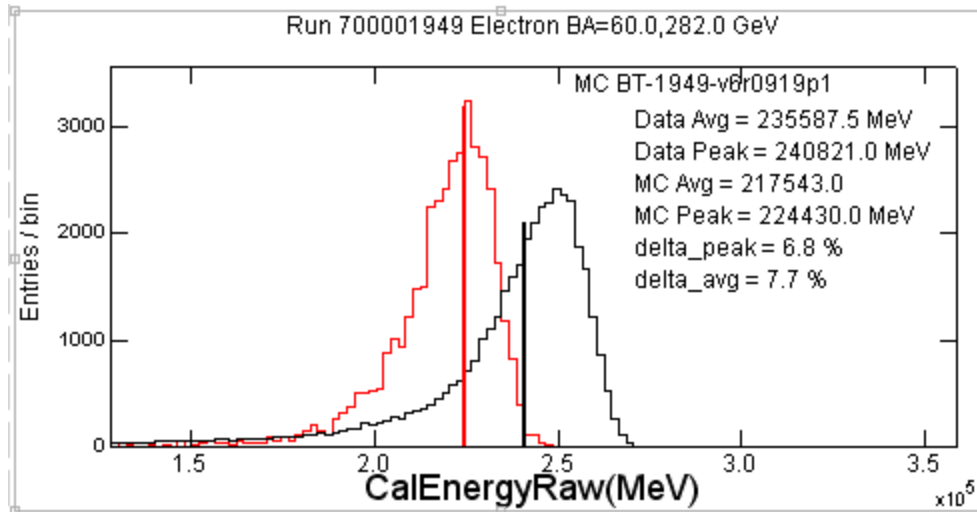
282 GeV, BA = 30°



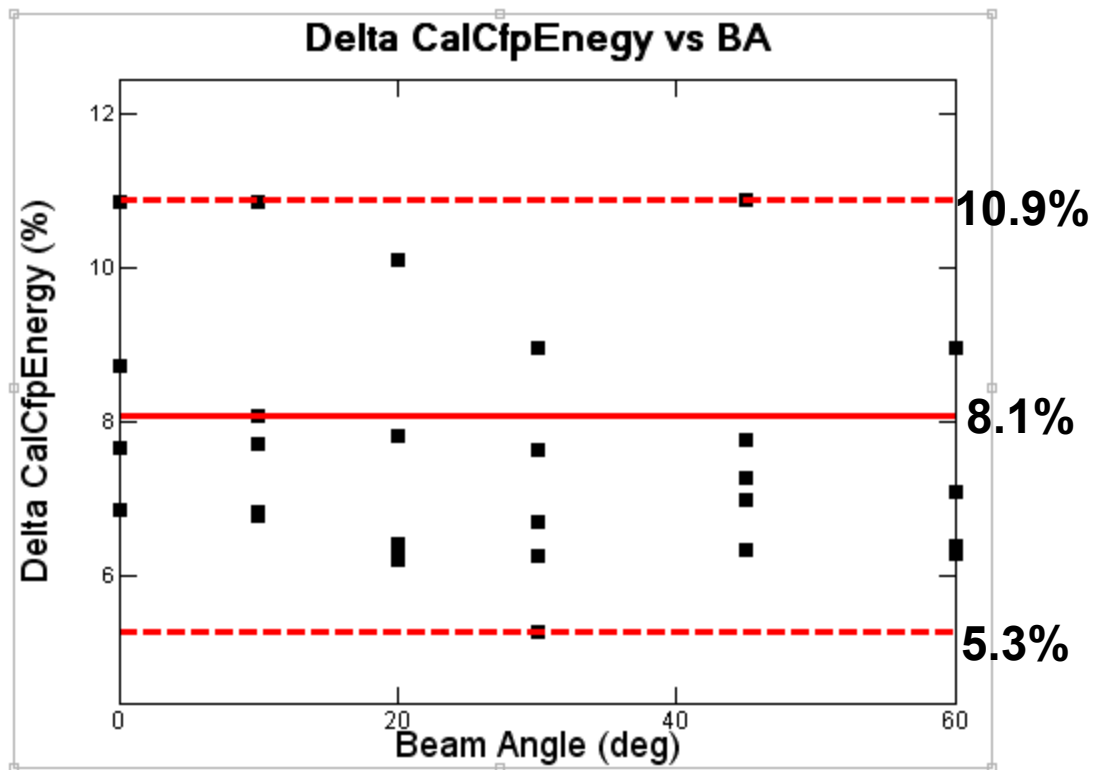
282 GeV, BA = 45°



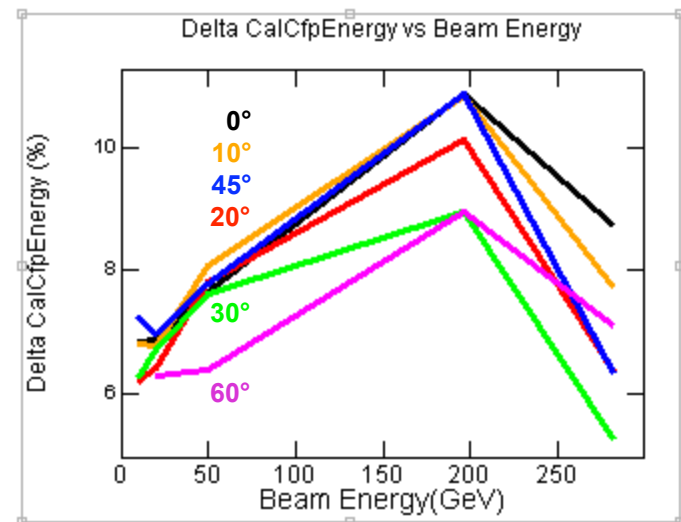
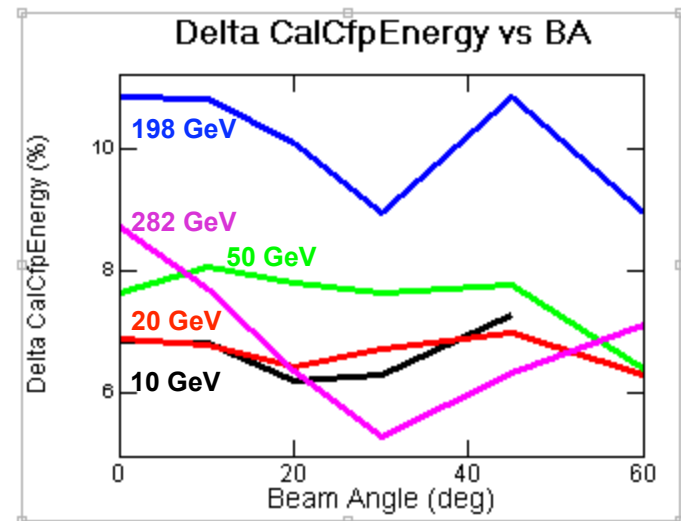
282 GeV, BA = 60°



Systematic Error on CalCfpEnergy for BT Electrons



$8.1 \pm 2.8\%$



CalCfpEnergy Energy Resolution

