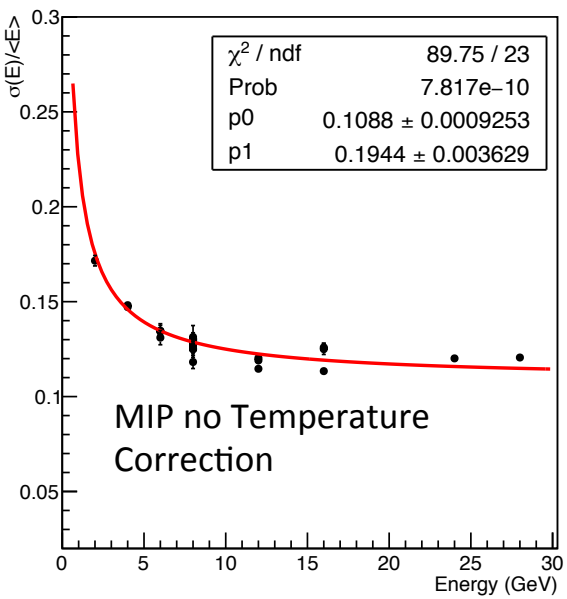
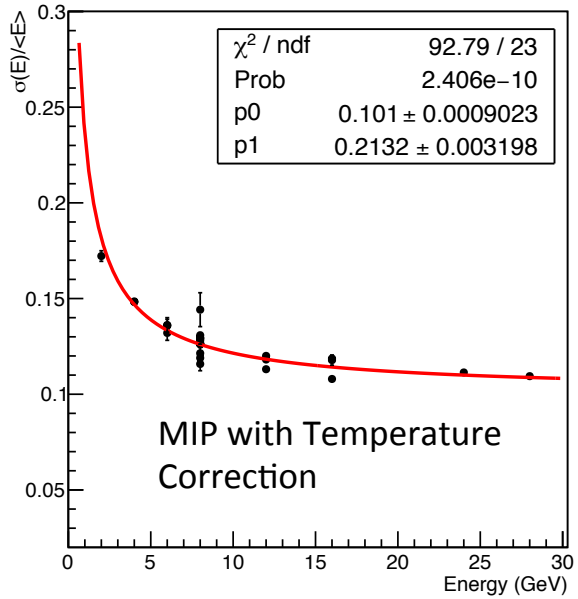
EMCal Testbeam Analysis 9/13

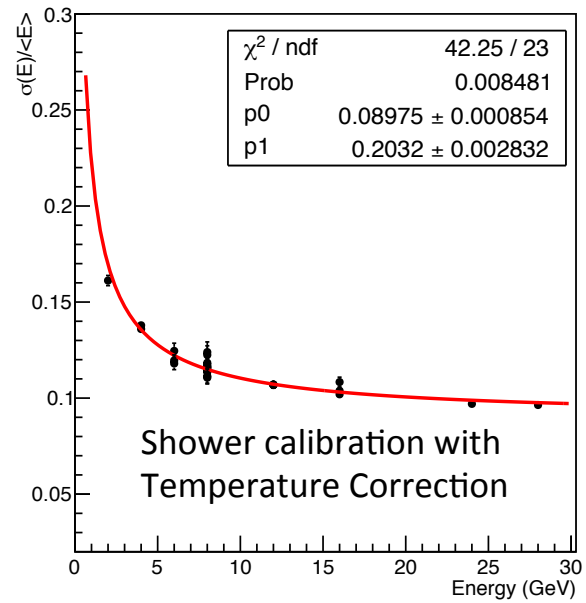
Temperature Correction with Third Energy Scan

- Because second energy scan has incomplete temperature data, we cannot apply the temperature correction to it
- 3rd energy scan has better temperature data, but less statistics

Third Energy Scan Shower Calibration and Temperature Correction



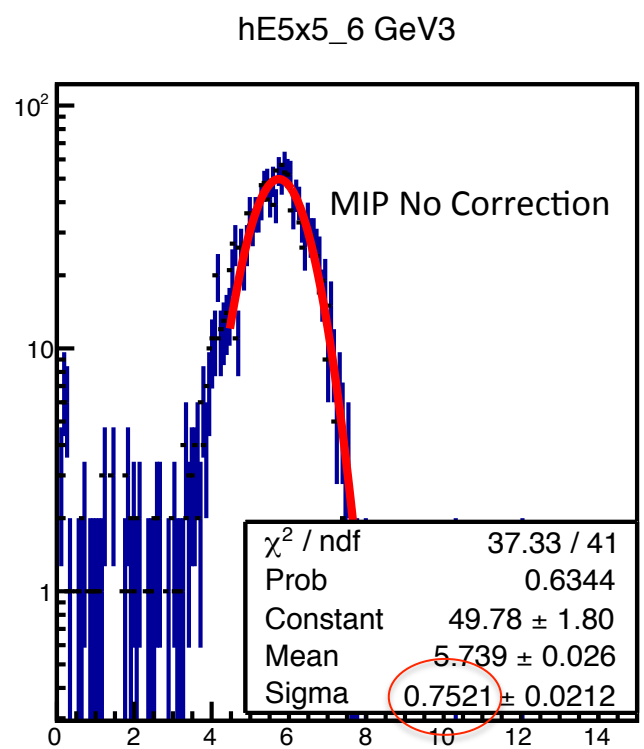


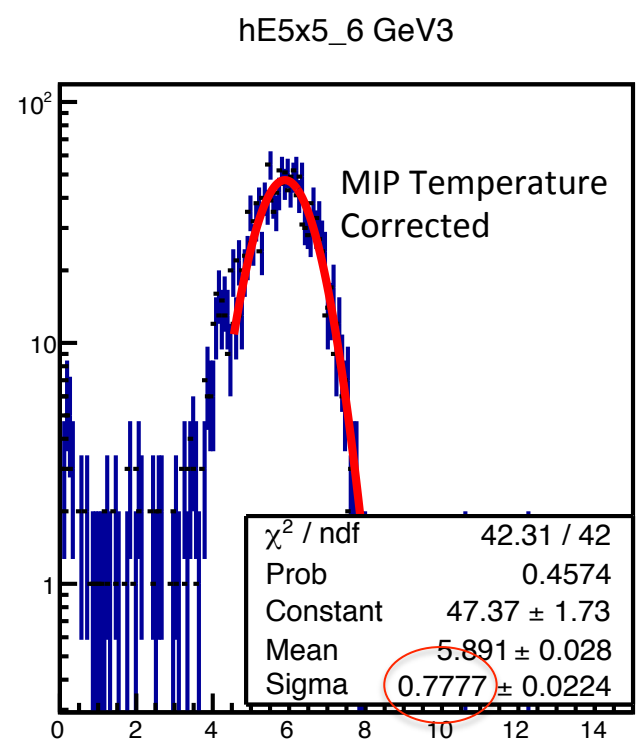


Not sure why temperature corrected data gives worse resolution

3rd Energy Scan Temperature Correction

Why does the temperature corrected data have a larger spread?



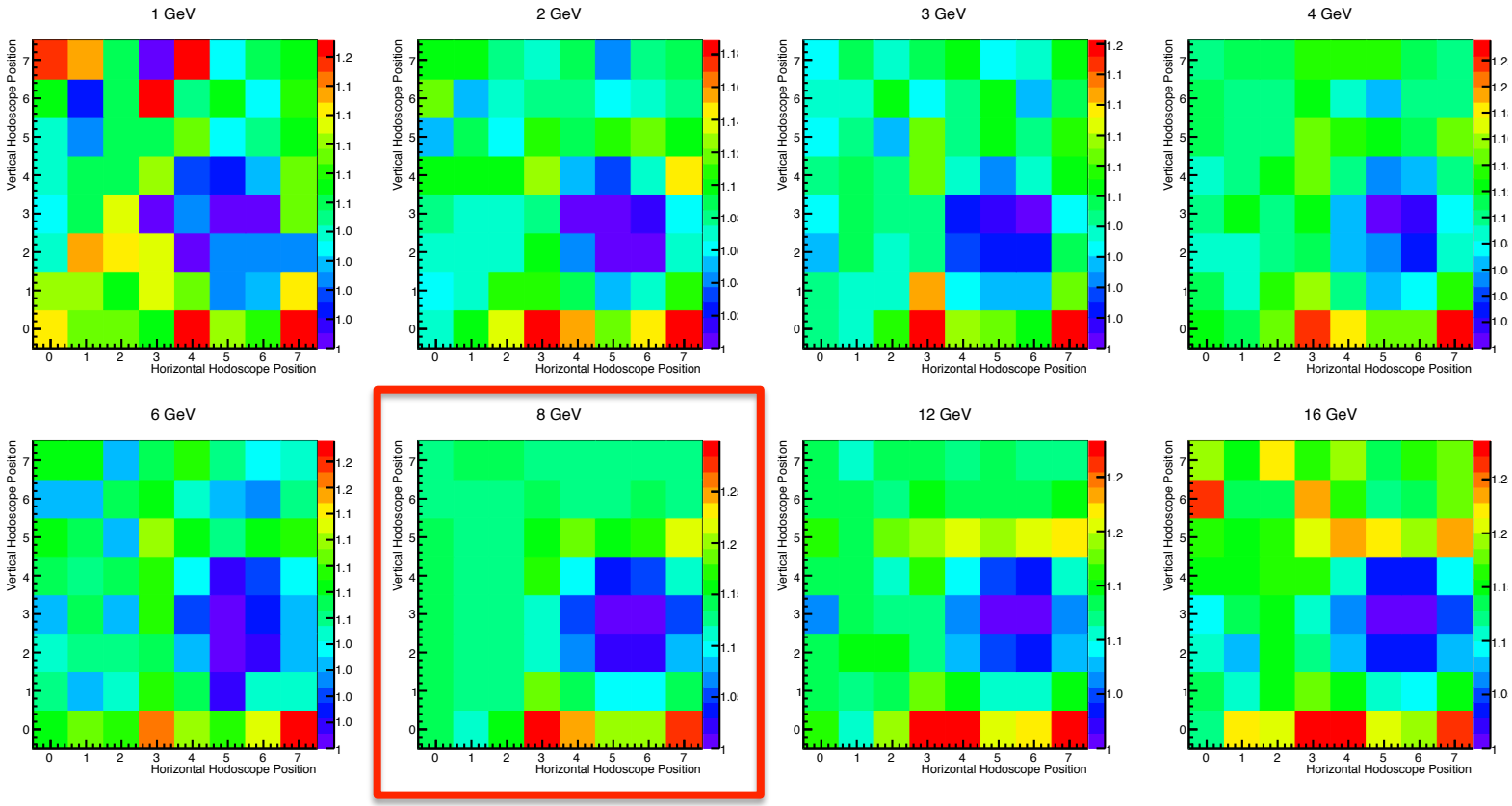


Position Correction

- Find mean energy of each pair of hodoscope cuts for each run
- The highest mean energy is given a coefficient of 1. All other pairs are given a coefficient of (highest energy/mean energy)
- Each event's 5 by 5 energy is multiplied by the coefficient for the hodoscope pair it hit

Correction Coefficients

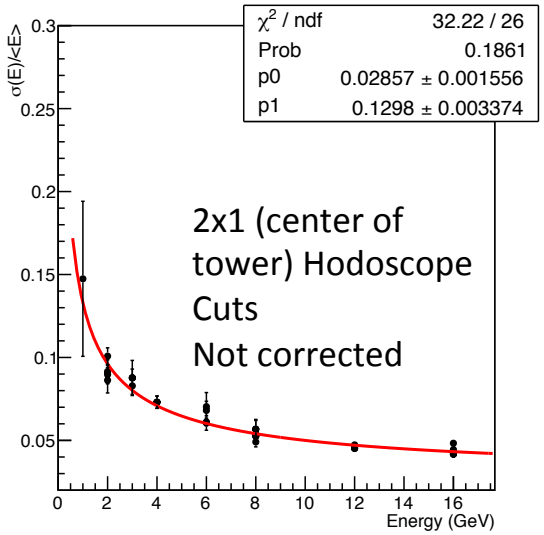
- Coefficients for each pair of hodoscope fingers
- 8 GeV run looks best- has good statistics

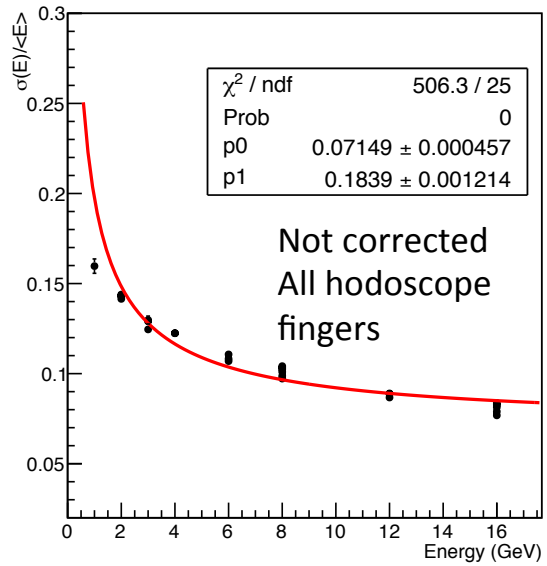


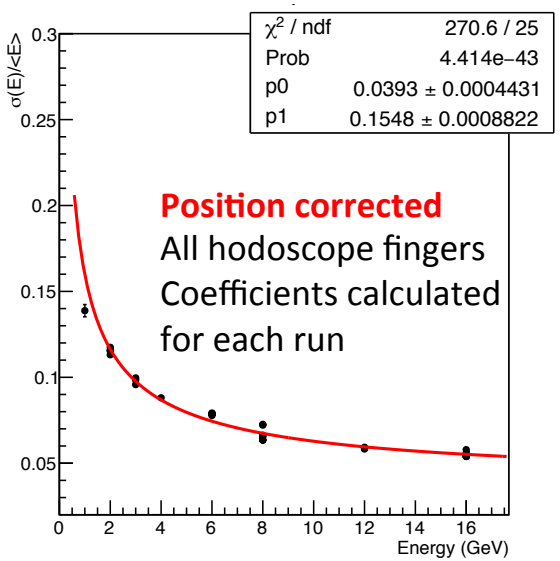
Note: These are coefficients from single runs, not all runs shown (coefficients determined on a run by run basis)

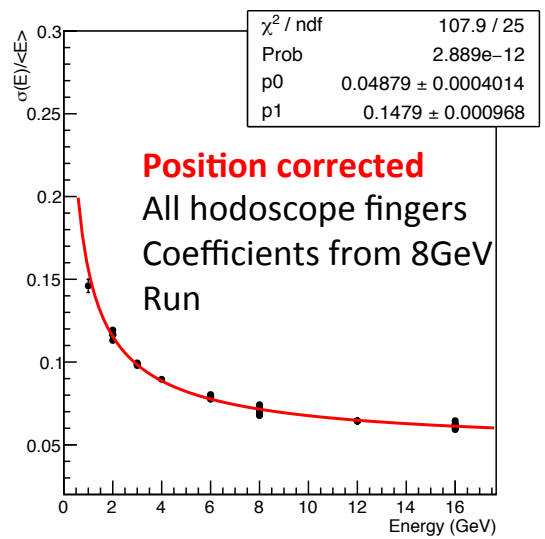
Scan 2 MIP Calibration Resolution

- Cut on all hodoscope fingers (at least one has a value >30)
- Usual Cherenkov and Veto cuts









Run Variations

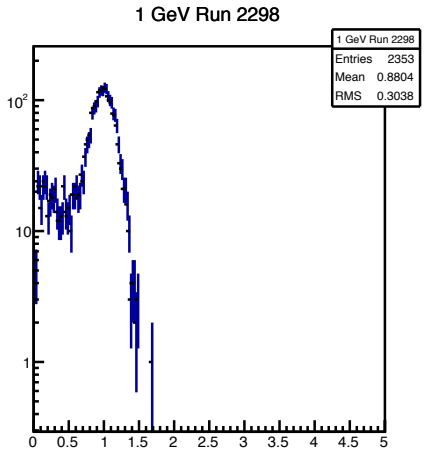
- Plotted energy distributions for each run at a certain energy to see the run by run variations
- We did this for:
  - Second energy scan MIP calibration without position correction, cutting on all hodoscope fingers
  - Third energy scan shower calibration without position correction, cutting on all hodoscope fingers

Backup Slides

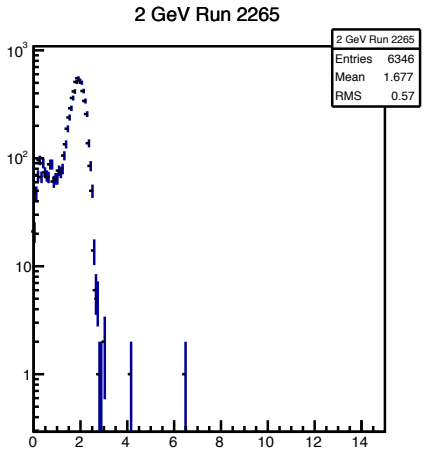
Second Energy Scan

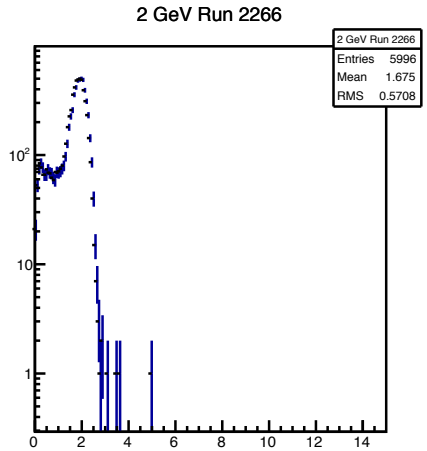
- MIP calibration
- No temperature correction
- No position correction
- Regular cherenkov and veto cuts
- Cut on all hodoscope fingers (at least one >30)

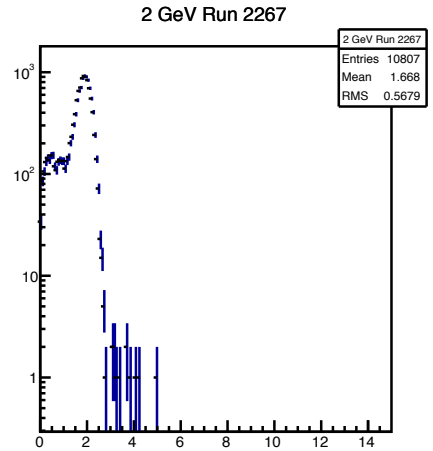
2nd Energy Scan 1 GeV

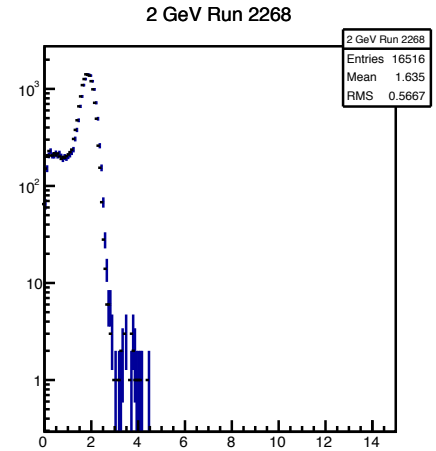


2nd Energy Scan 2 GeV

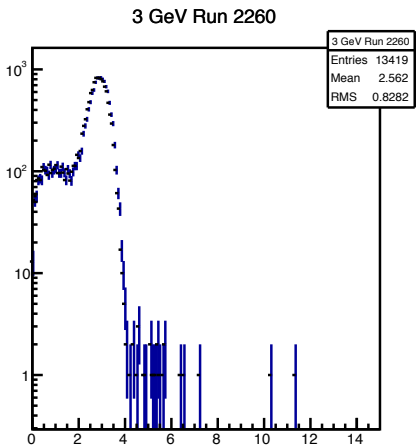


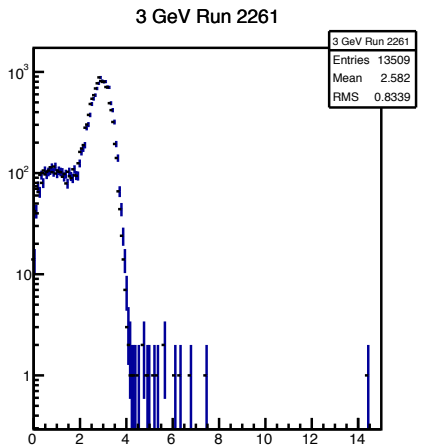


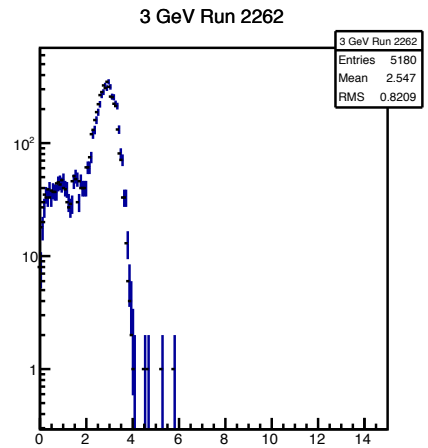




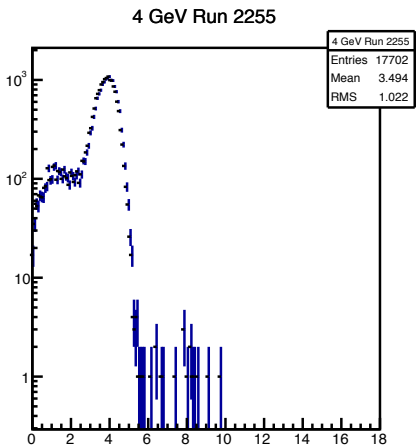
2nd Energy Scan 3 GeV



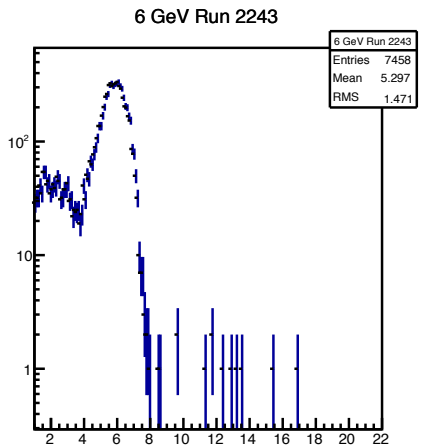


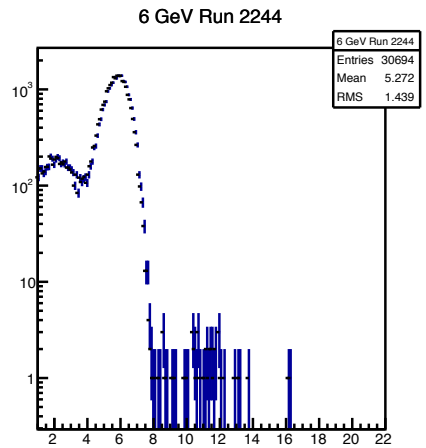


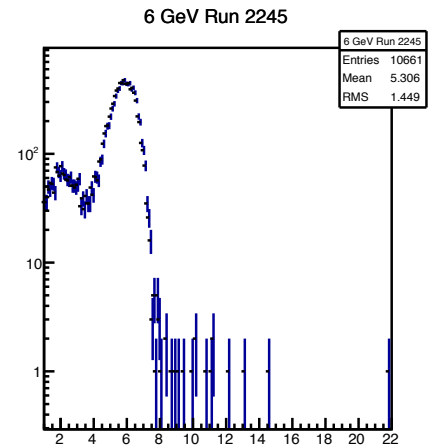
2nd Energy Scan 4 GeV

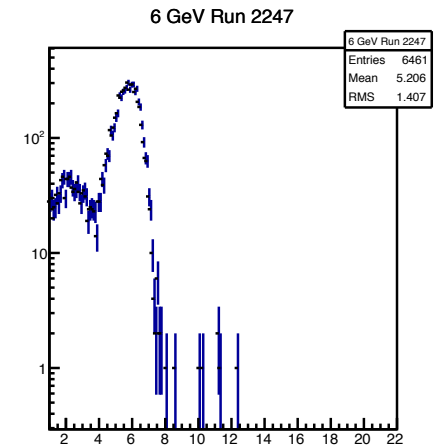


2nd Energy Scan 6 GeV

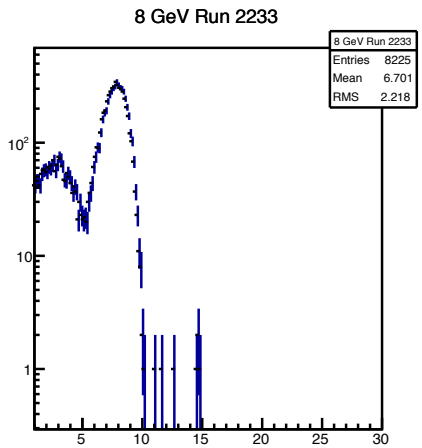


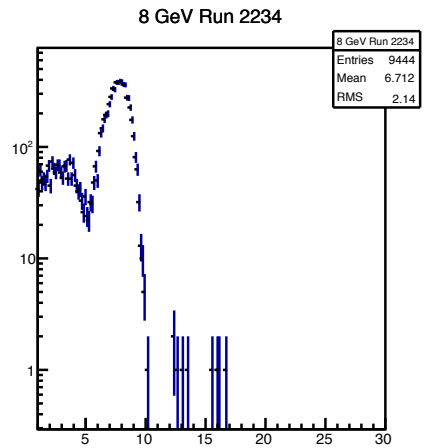


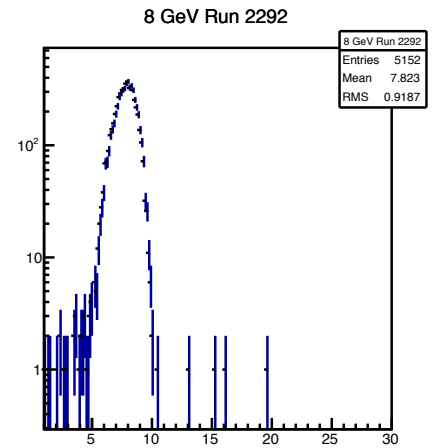


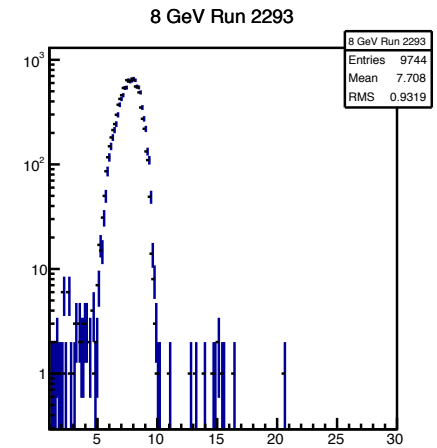


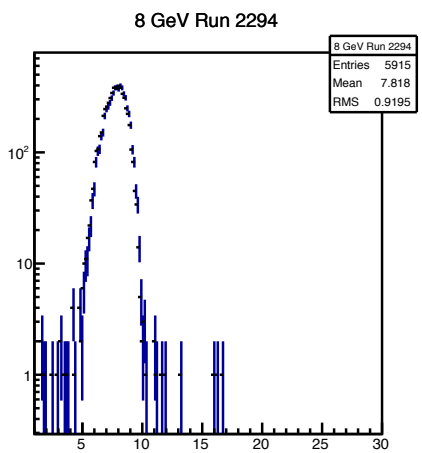
2nd Energy Scan 8 GeV

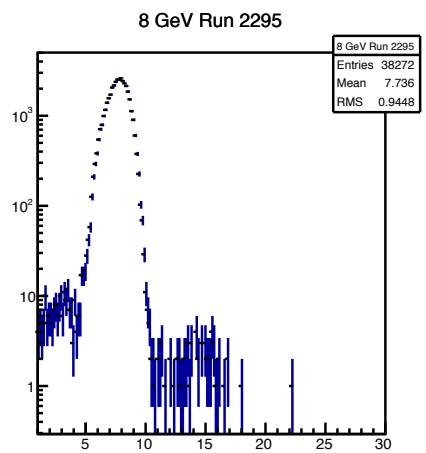




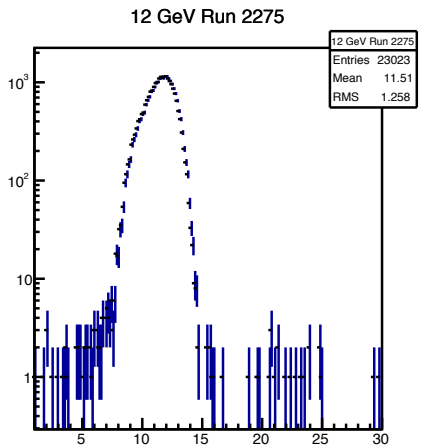


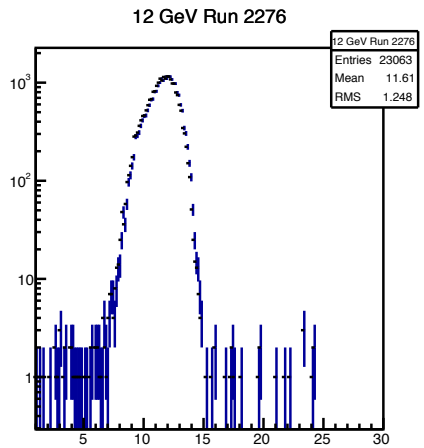


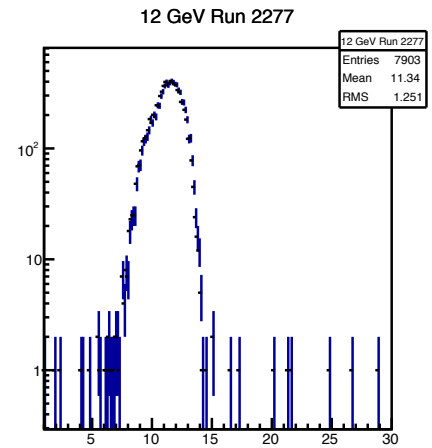




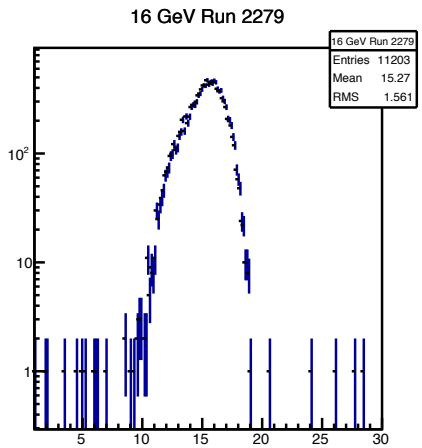
2nd Energy Scan 12 GeV

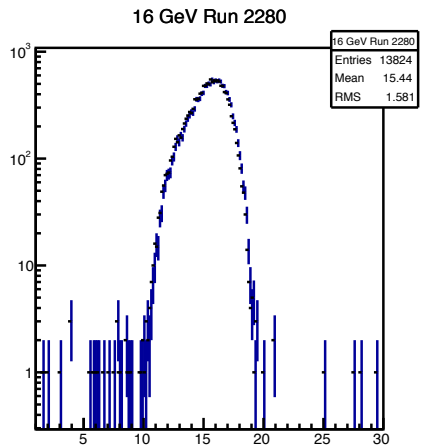


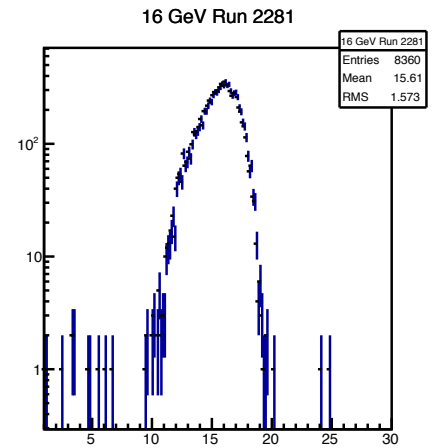


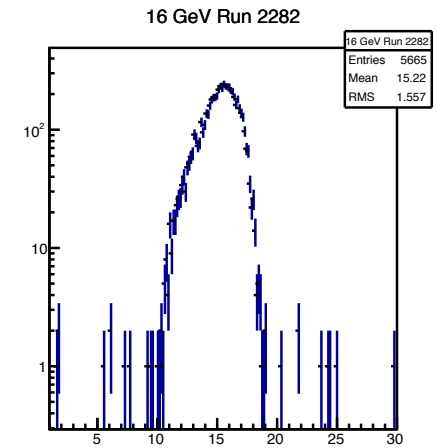


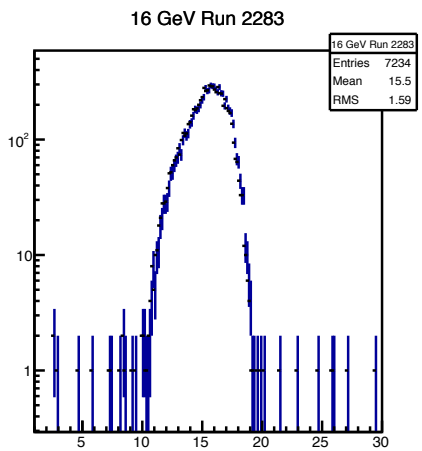
2nd Energy Scan 16 GeV







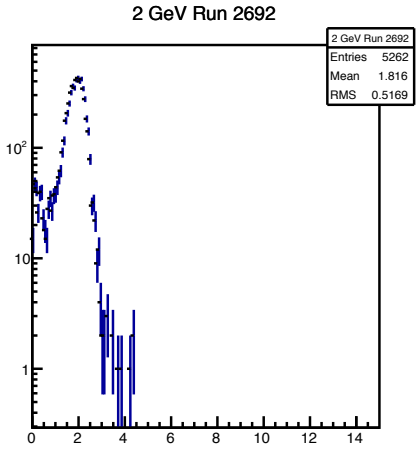




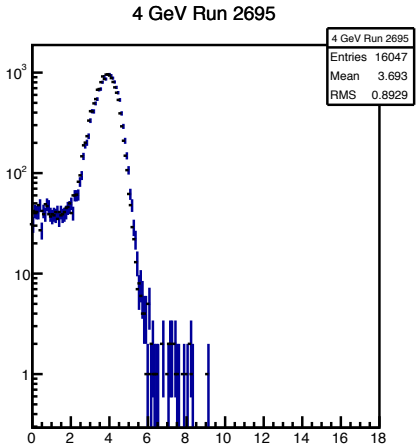
Third Energy Scan

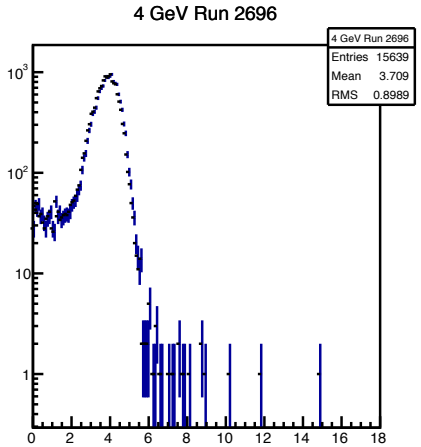
- Shower calibration
- Temperature correction
- No position correction
- Regular cherenkov and veto cuts
- Cut on all hodoscope fingers (at least one >30)

3rd Energy Scan 2 GeV

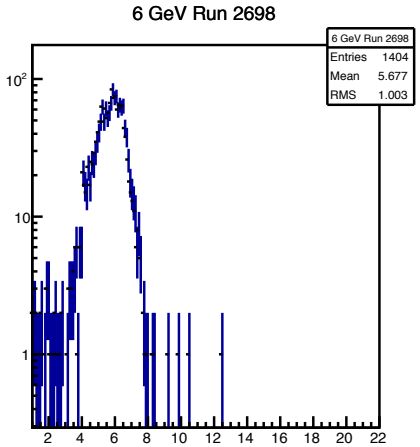


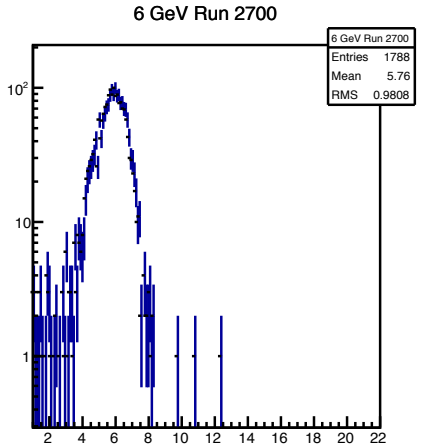
3rd Energy Scan 4 GeV

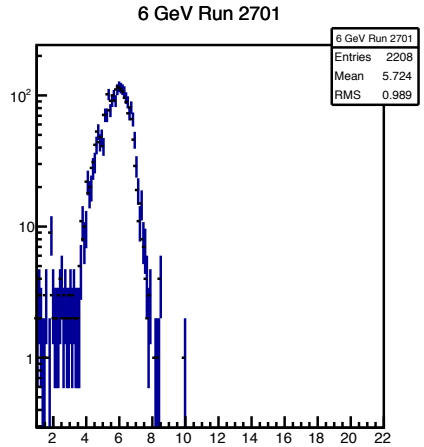




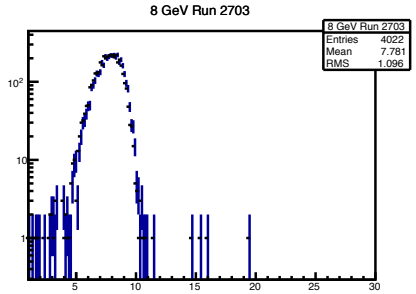
3rd Energy Scan 6 GeV

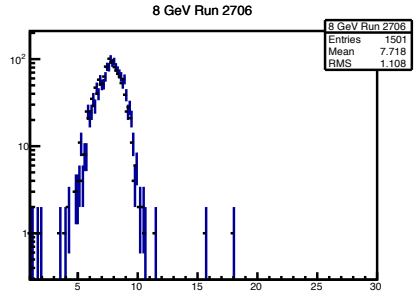


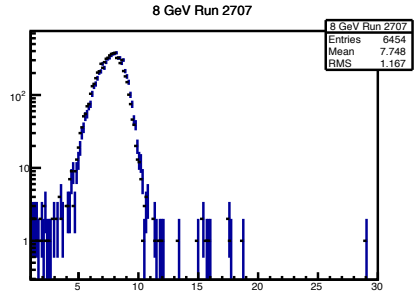


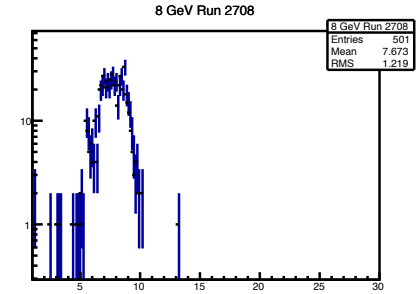


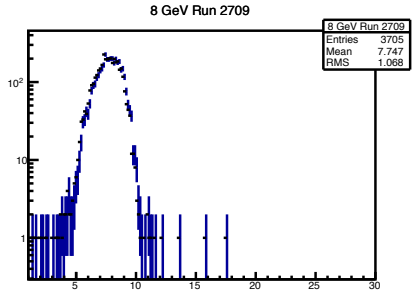
3rd Energy Scan 8 GeV

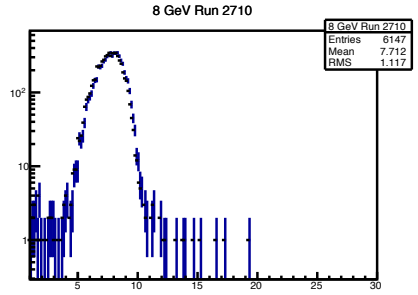


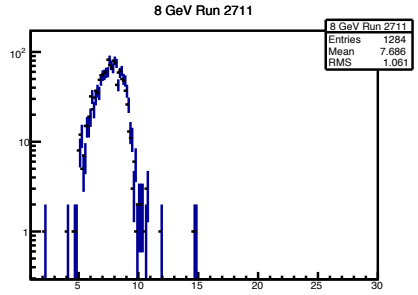


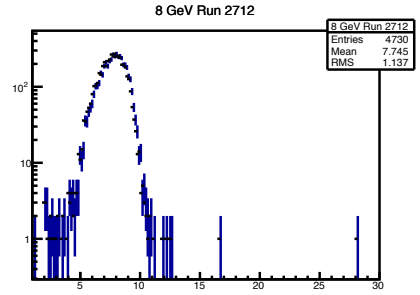


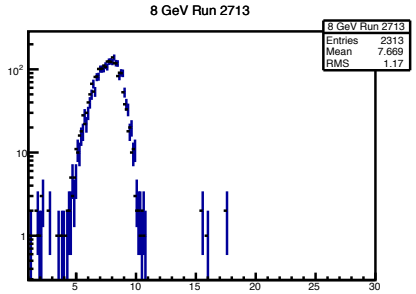


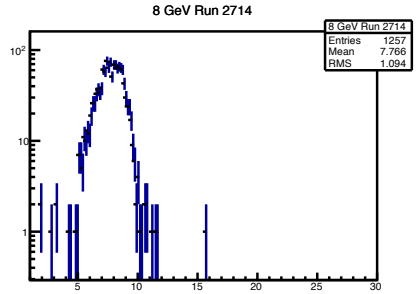


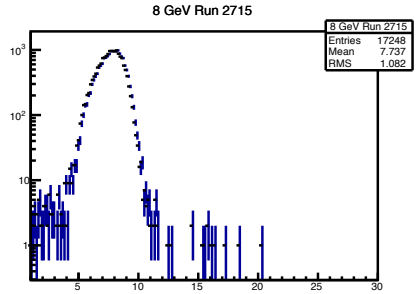




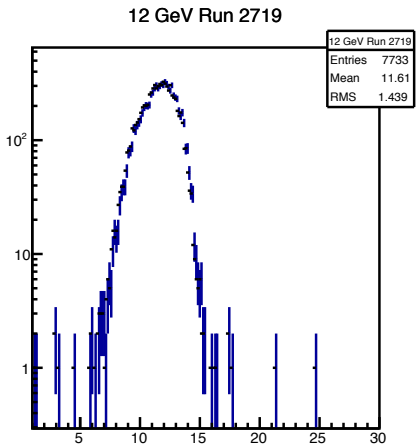


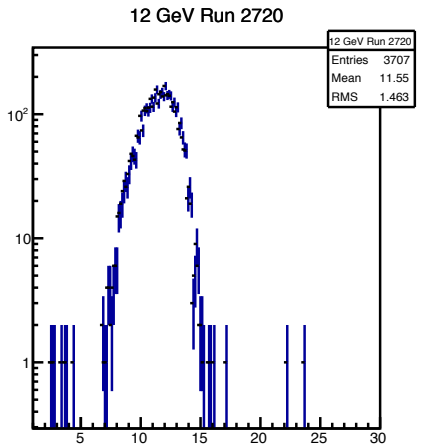


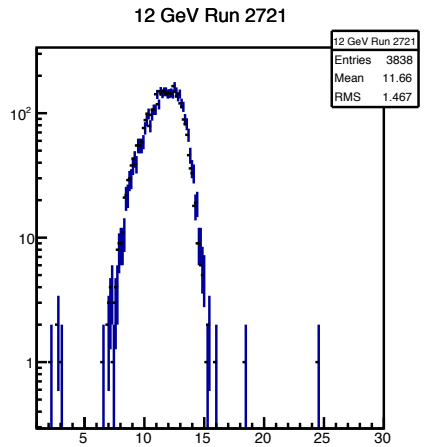




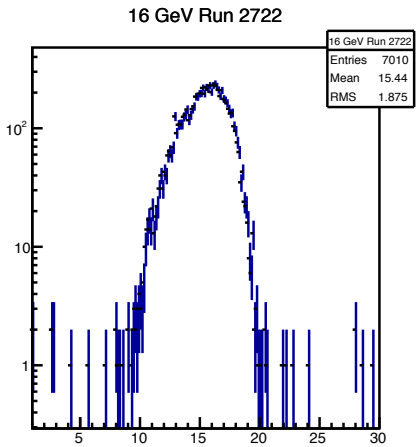
3rd Energy Scan 12 GeV

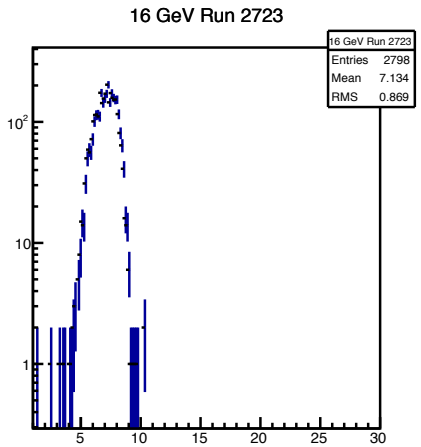


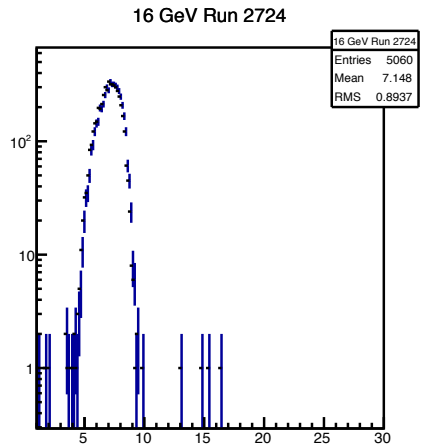




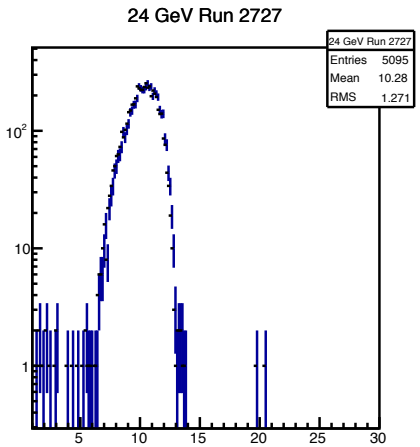
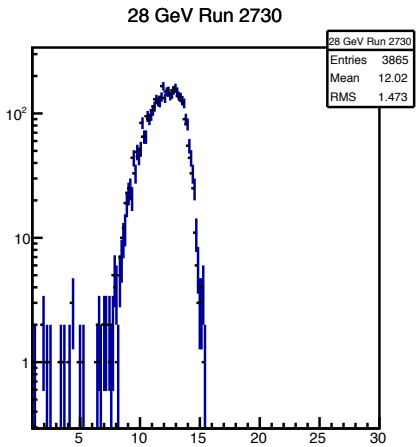
3rd Energy Scan 16 GeV







3rd Energy Scan 24 GeV



3rd Energy Scan 28 GeV