EMCal Testbeam Analysis 9/20

Position Corrections

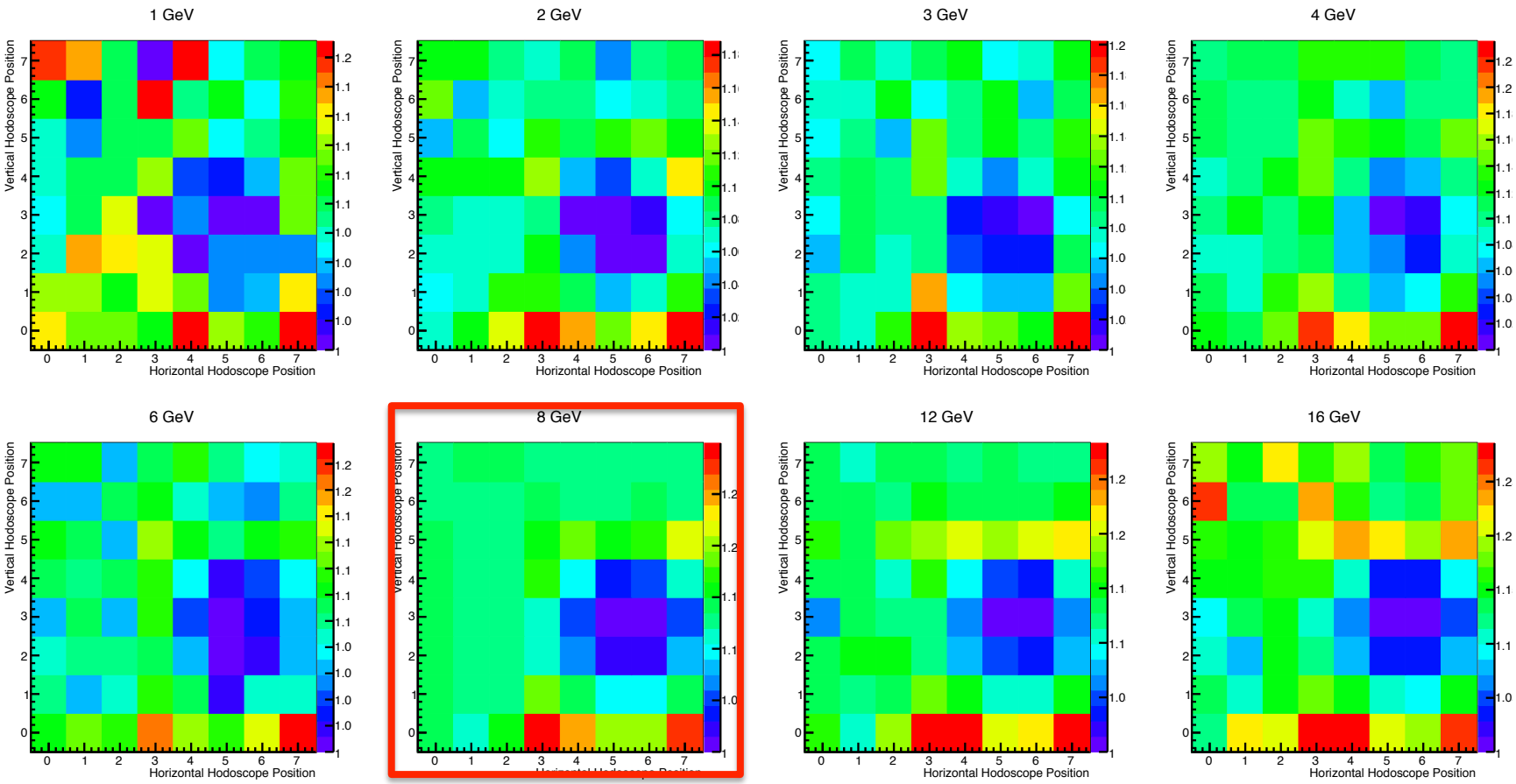
- We looked at two different position corrections
  - A: position is determined by hodoscope
  - B: position is determined by average shower position

A. Position Correction with Hodoscope

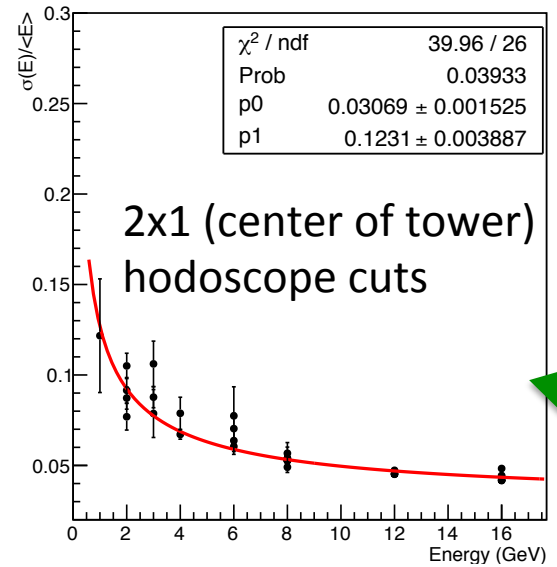
- Find mean energy of each pair of hodoscope cuts for each run
- The highest mean energy is given a coefficient of 1. All other pairs are given a coefficient of (highest energy/mean energy)
- Each event's 5 by 5 energy is multiplied by the coefficient for the hodoscope pair it hit

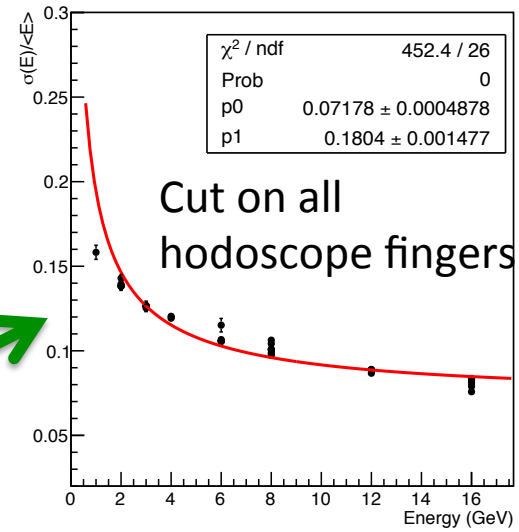
A.

Hodoscope Correction Coefficients



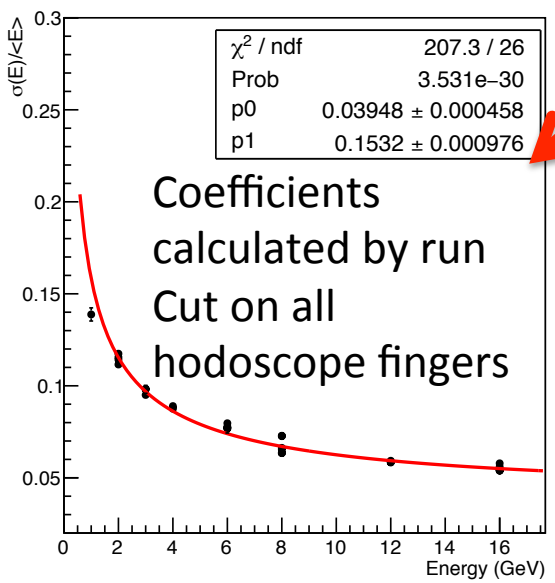
A. MIP Calibration without Temperature Correction

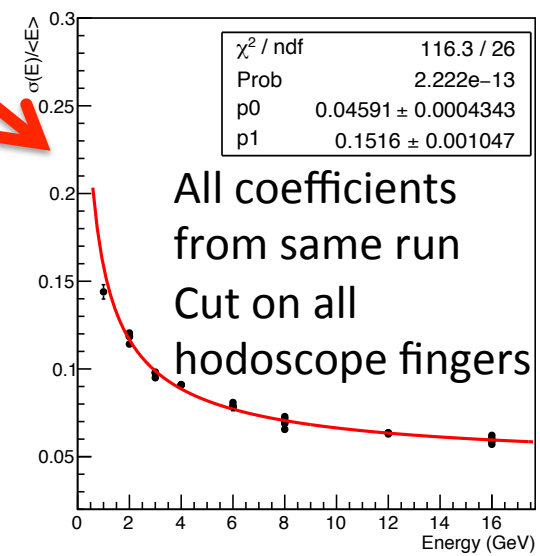




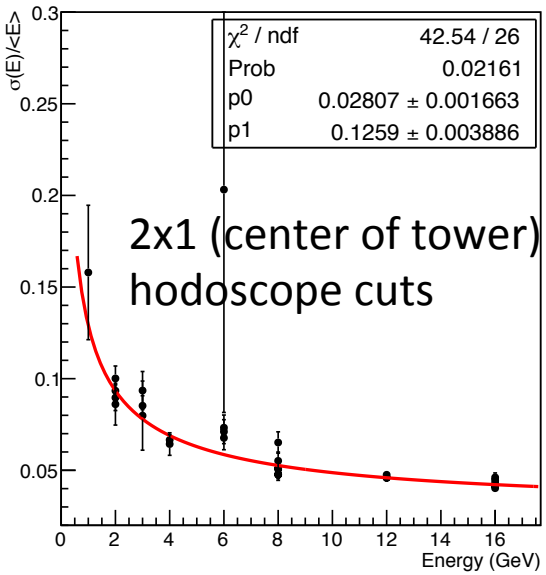
No position correction

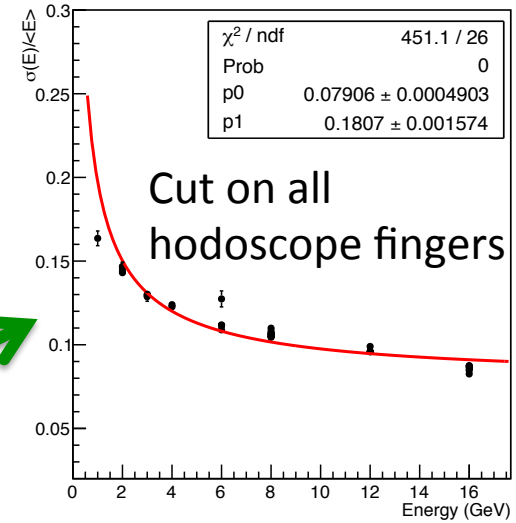
Position Corrected



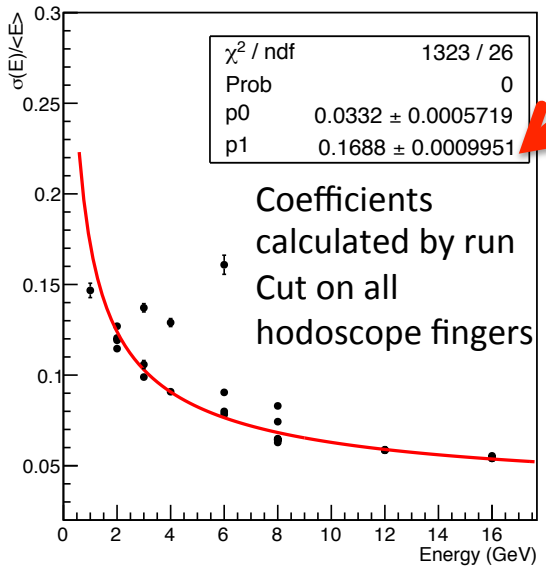


A. MIP Calibration with Temperature Correction

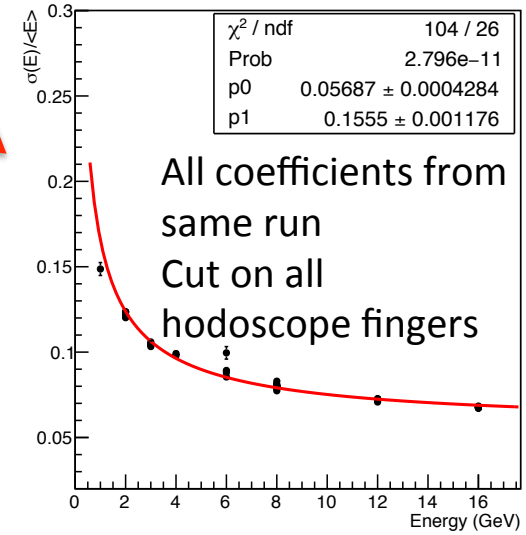




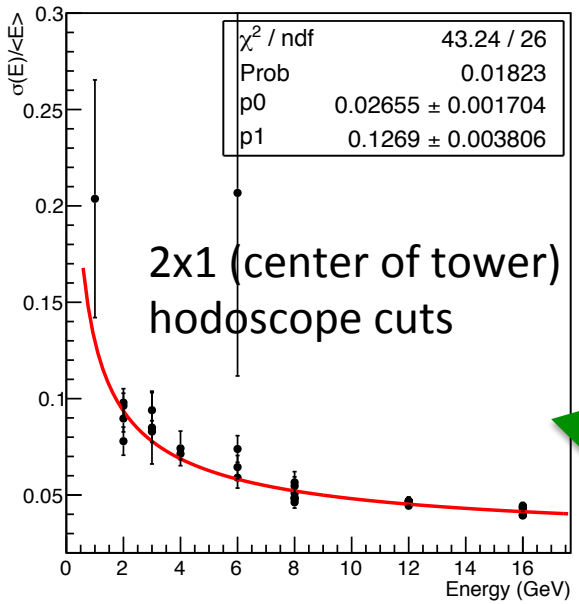
No position correction

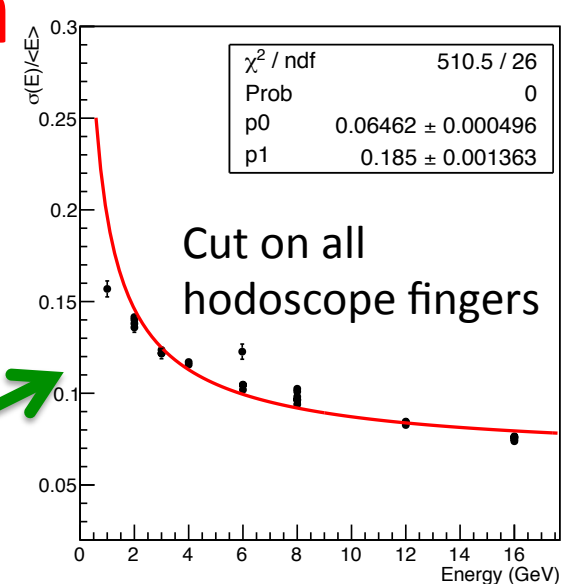


Position Corrected



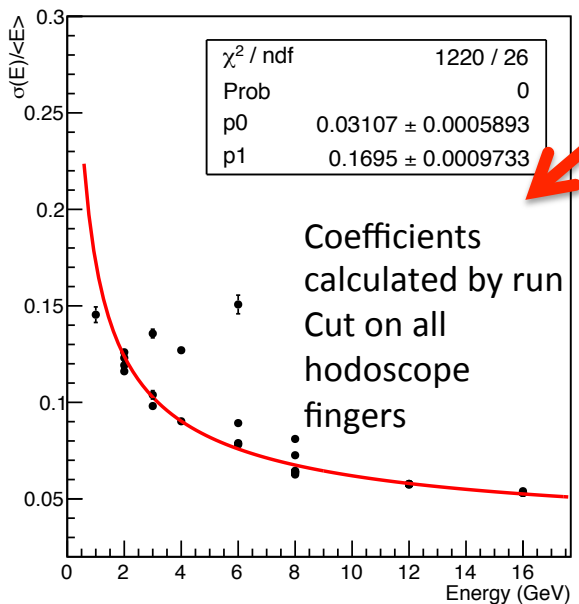
A. Shower Calibration with Temperature Correction

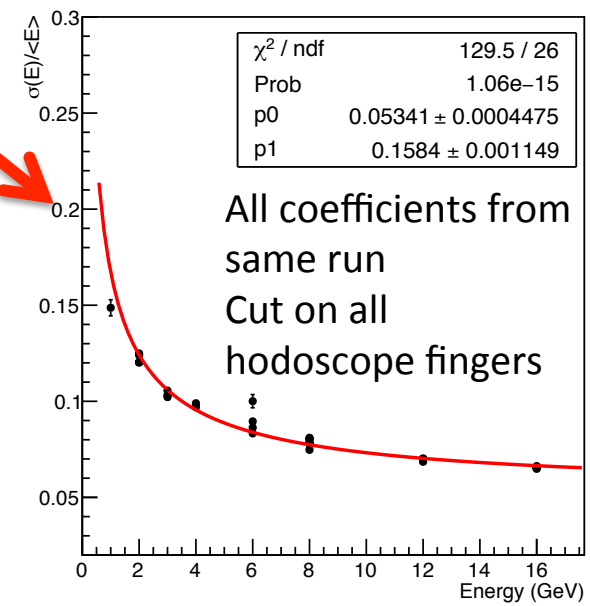




No position correction

Position Corrected



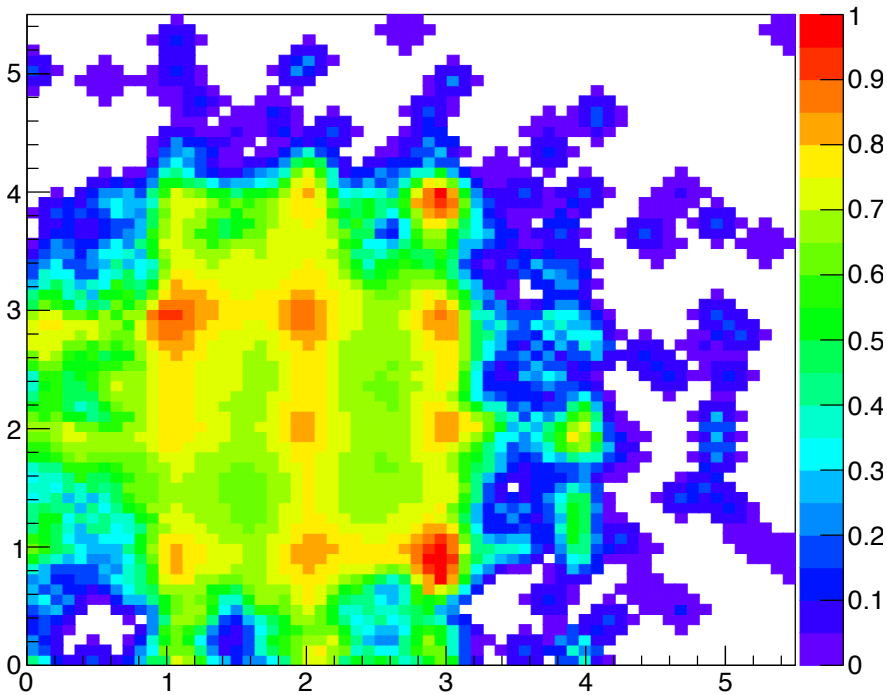


B. Position Correction with Average Shower Position

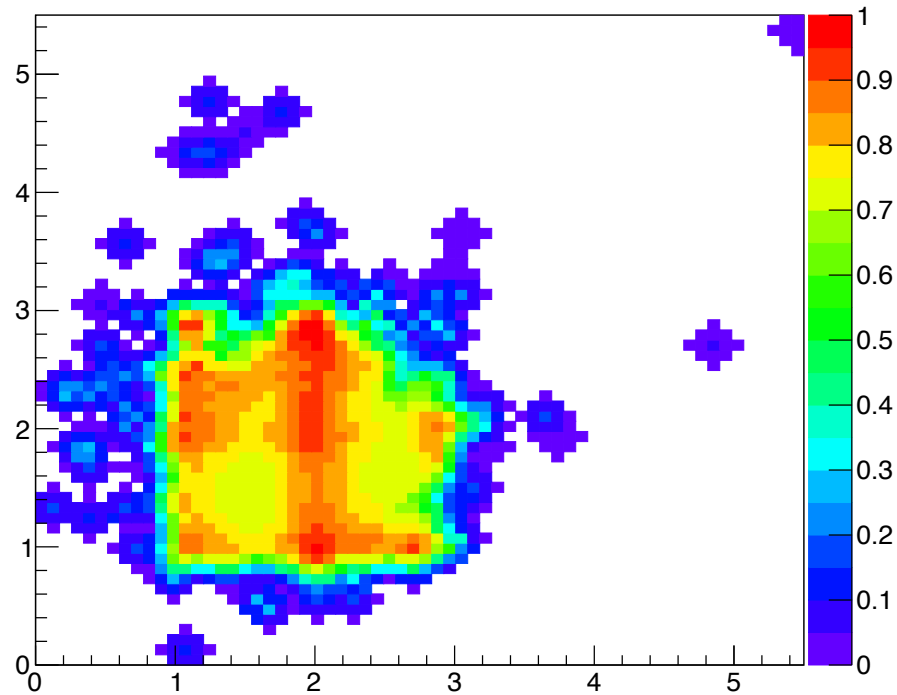
- Find mean energy for average shower position (used 64x64 bins)
- The highest mean energy is given a coefficient of 1. All other pairs are given a coefficient of (highest energy/mean energy)
- Each event's 5 by 5 energy is multiplied by the coefficient for its average shower position

B.

1/Coefficients 8GeV Run



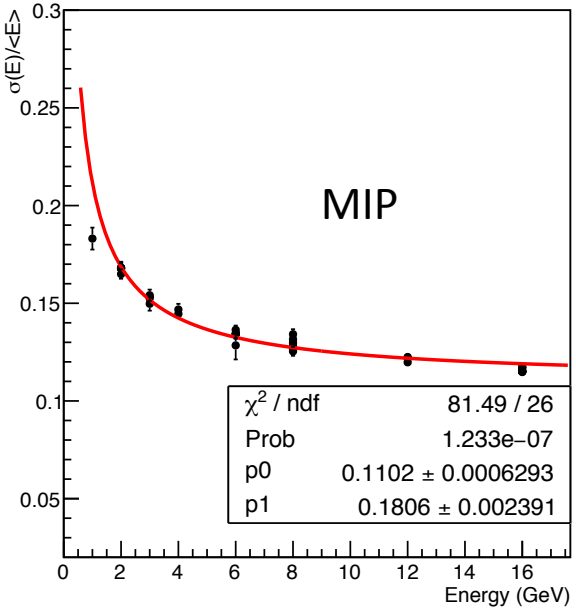
No hodoscope cuts

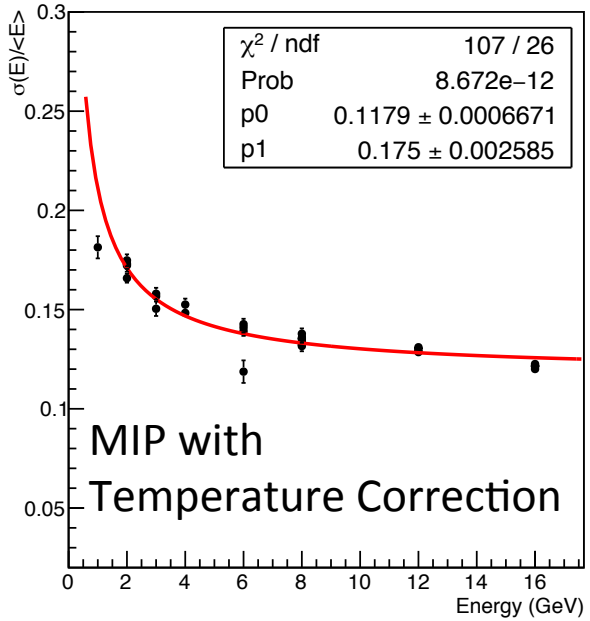


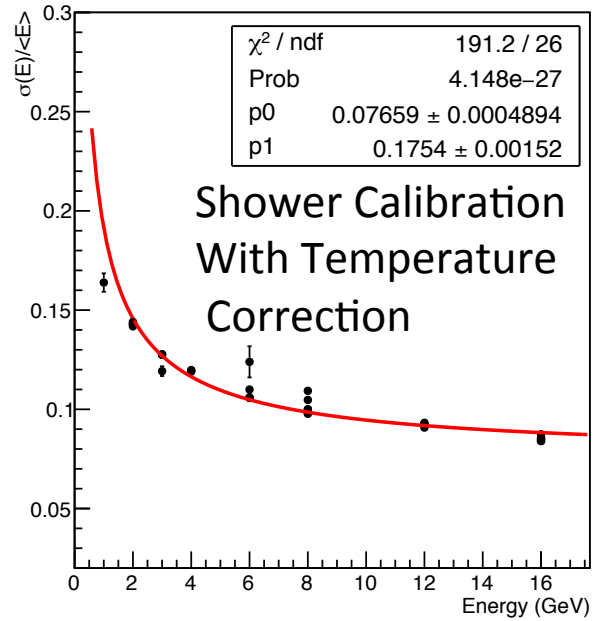
At least one hodoscope finger is hit

- Around the edges we have very small mean energies- these get overcorrected
- Want to use hodoscope cuts to look at only events near the center of the beam

B. Position Correction by Average Shower Position

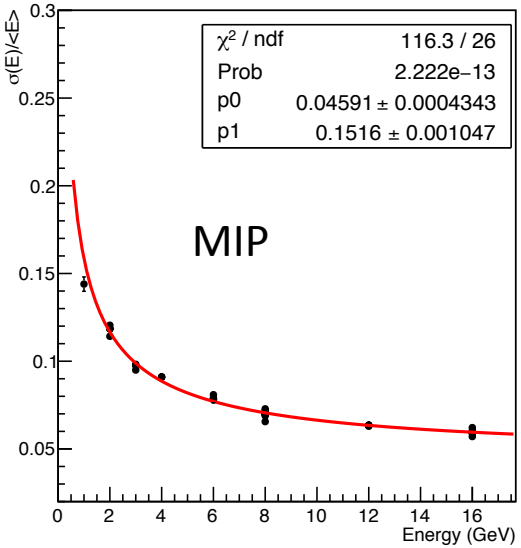


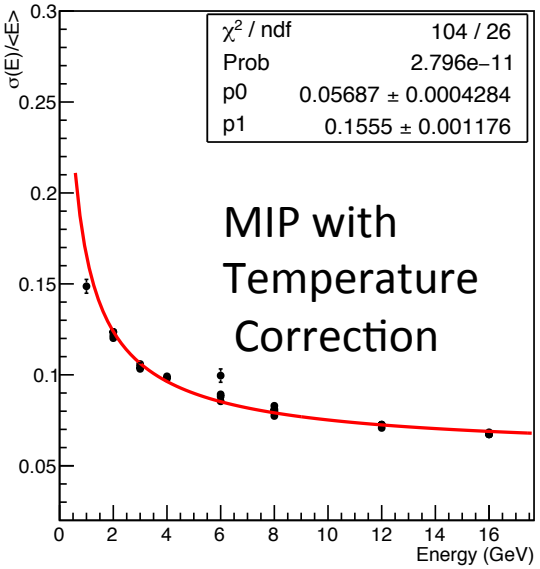


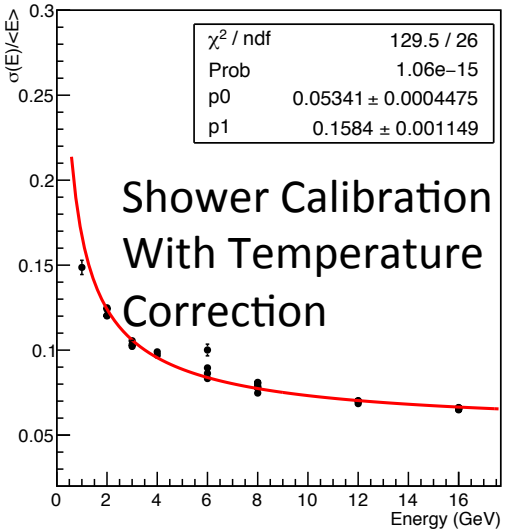


- All correction coefficients from 8 GeV run
- Cuts:
  - Veto: Veto1_t < 15 || Veto2_t < 15 || Veto3_t < 15 || Veto4_t < 15
  - Cherenkov: abs(C2_inner_t + C2_outer_t) > 100
  - Hodoscope: hits at least one finger of the hodoscope

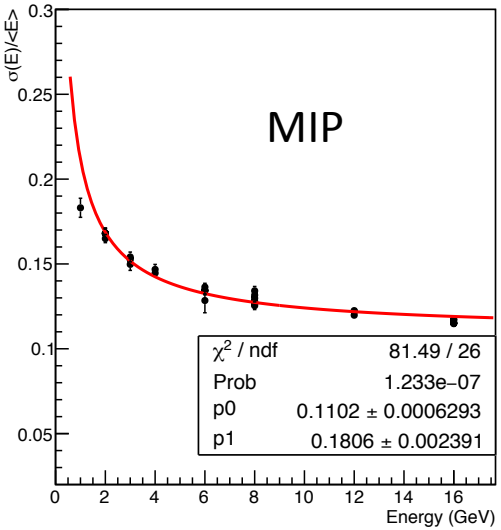
A.

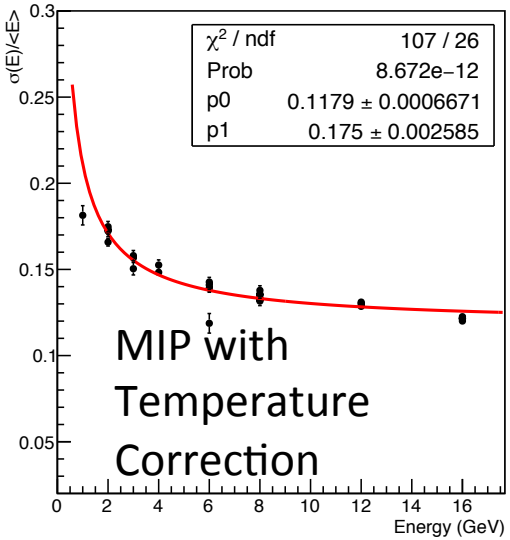


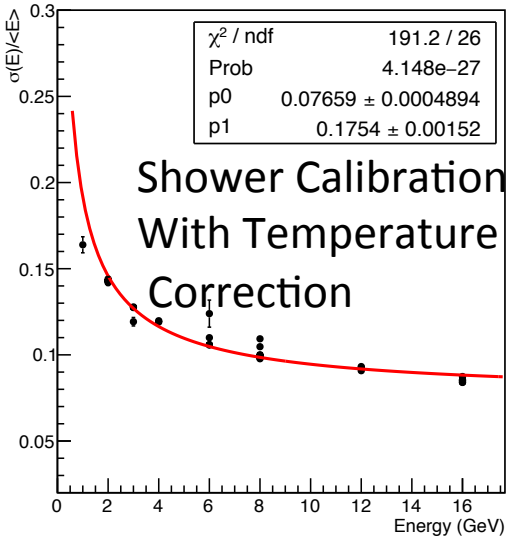




B.







A. Is using hodoscope position B. is using shower position