EMCal Analysis Update 8/2

Second Energy Scan Runs

Energy	Runs
1 GeV	2297, 2298*
2 GeV	2265, 2266, 2267, 2268*
3 GeV	2260*, 2261, 2262
4 GeV	2253, 2255*
6 GeV	2243, 2244, 2245, 2247*
8 GeV	2233, 2234, 2292, 2293, 2294, 2295*
12 GeV	2275, 2276*, 2277
16 GeV	2279, 2280*, 2281, 2282, 2283

*runs previously used in single run analysis

Production: Production_0428_MIP_set2_Cosmic

Cuts:

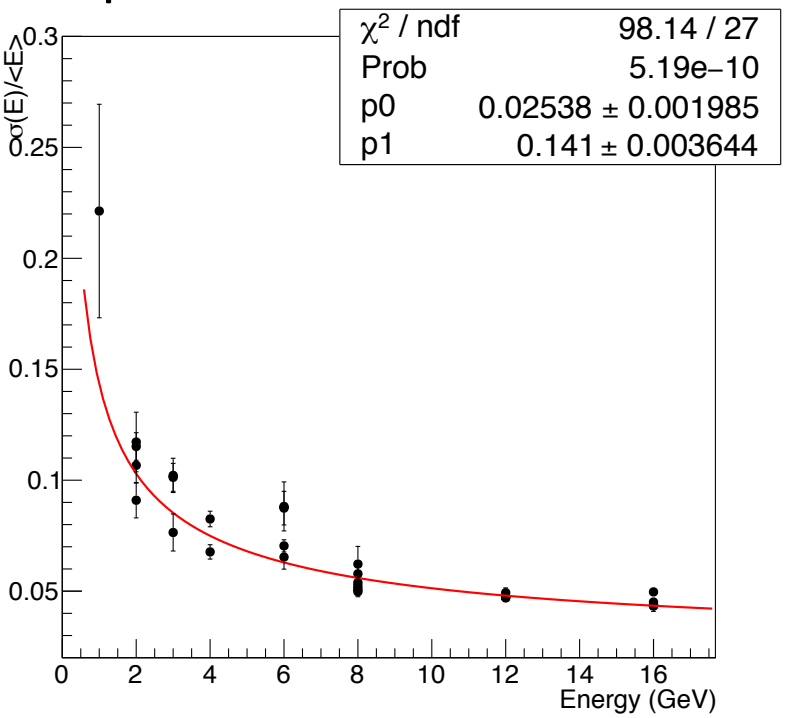
- Cherenkov: abs(C2_inner_t + C2_outer_t) > 100
- Veto: Veto1_t < 15 || Veto2_t < 15 || Veto3_t < 15 || Veto4_t < 15
- Horizontal hodoscope: abs(Horz_HODO_**R5**_t) > 30||abs(Horz_HODO_**R6**_t) > 30
- Vertical hodoscope: abs(Vert_HODO_**R3**_t) > 30

Previously

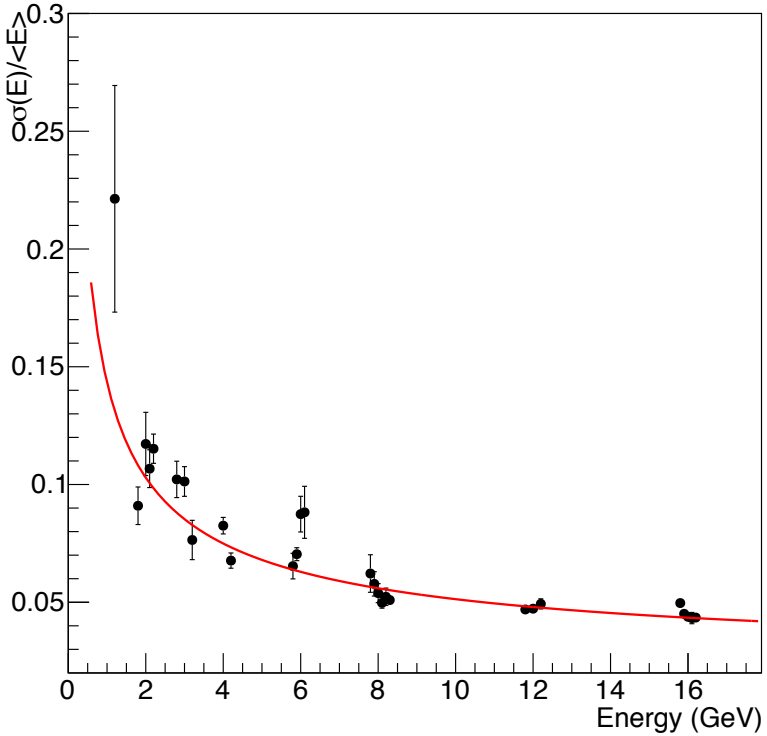
- When using single runs for our analysis we had an issue with low statistics for lower energy runs
- The runs we used were chosen somewhat arbitrarily (possibly not a good representation of the data)

Second Scan All Runs

- Each run is plotted individually
- Still have some statistics issues, especially with the 1 GeV point

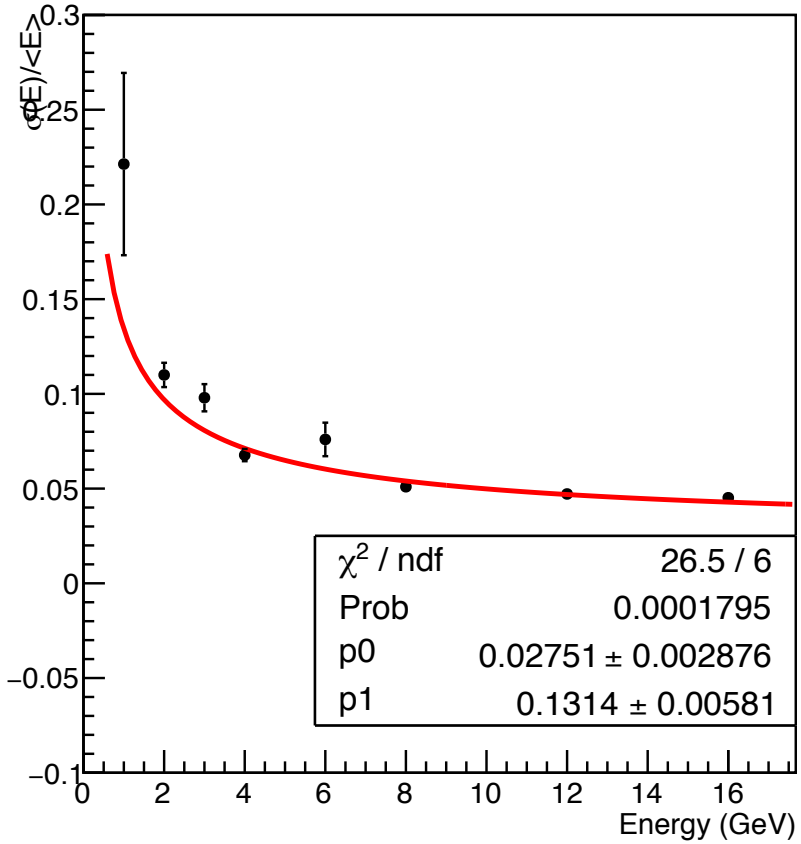


Actual points used for fit

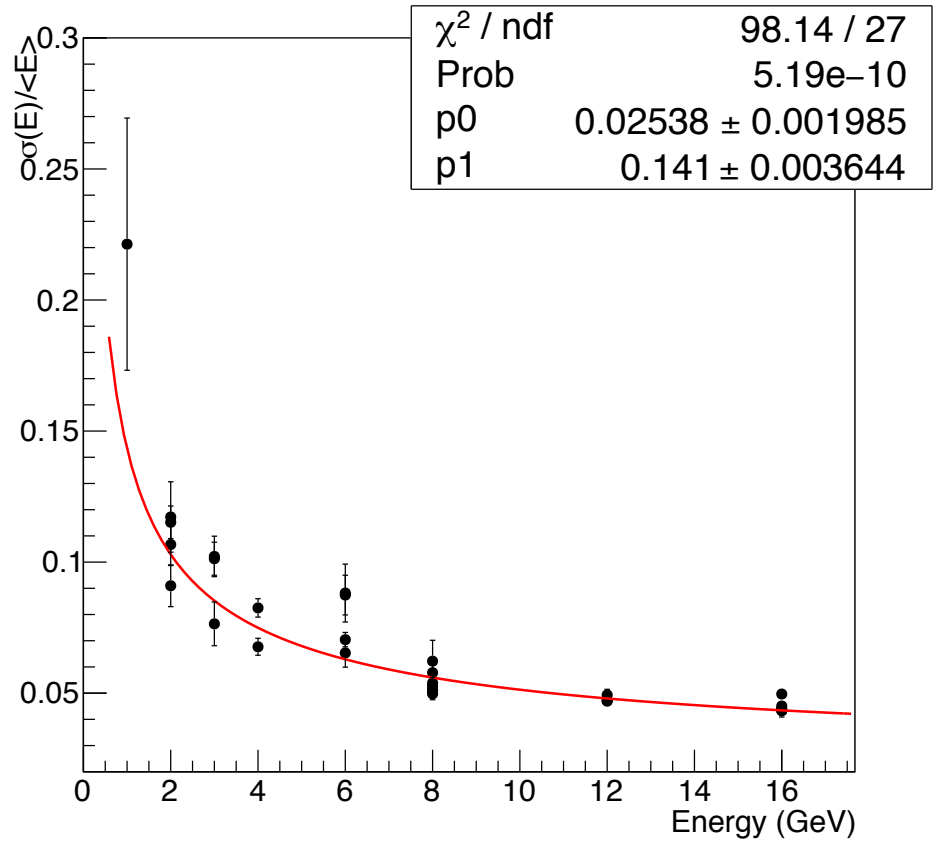


Spread out points with fit from left

Second Scan All Runs



Single runs

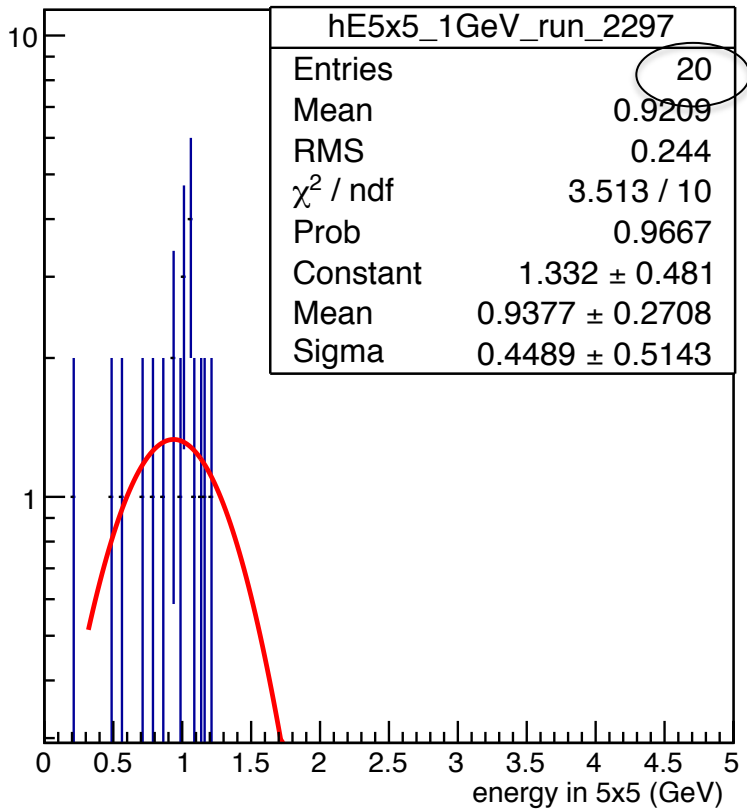


All runs

Removing Runs

- Removed runs with “bad” 5 by 5 energy distribution fits:
  - Very low statistics runs
  - Fits that do not accurately describe the higher energy end of the distribution

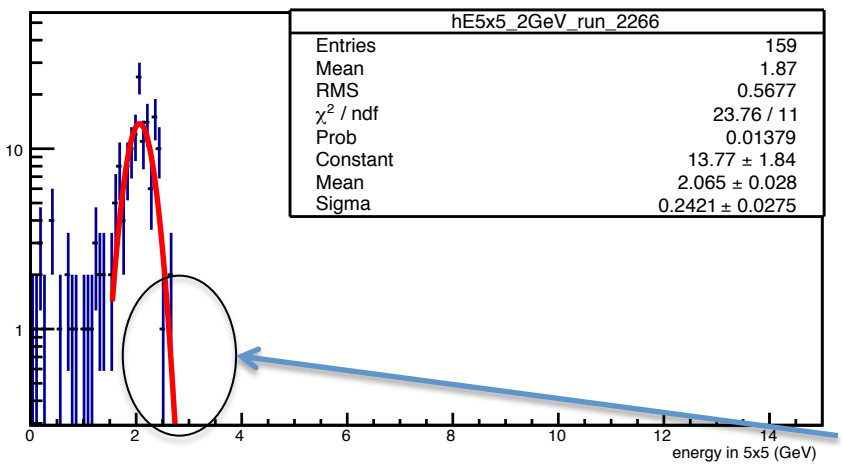
Fits of Points Removed

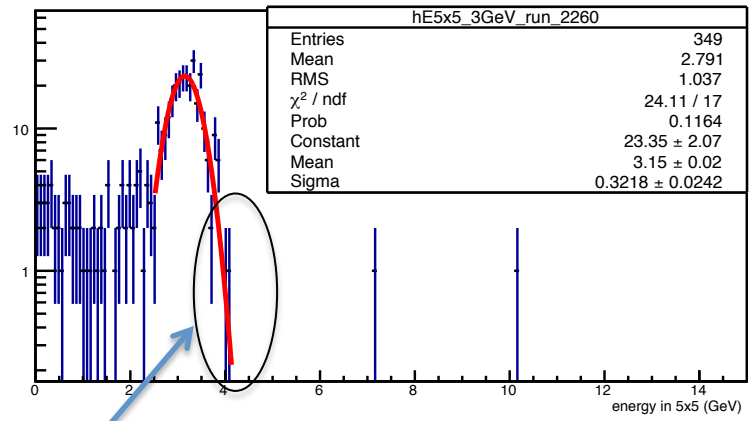


Low statistics

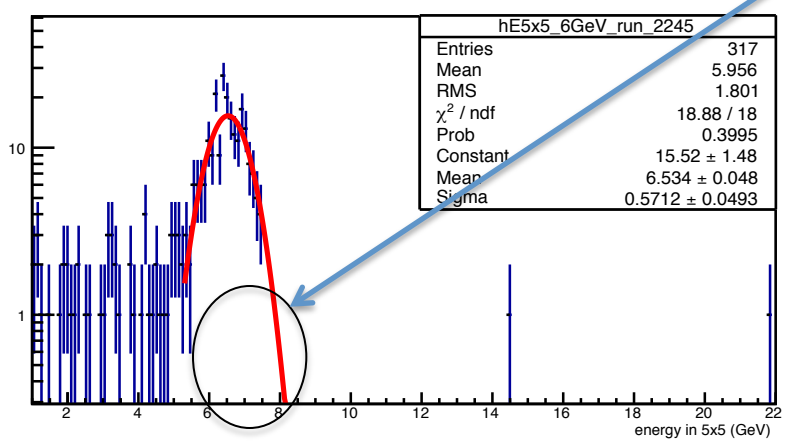
Fits of Points Removed

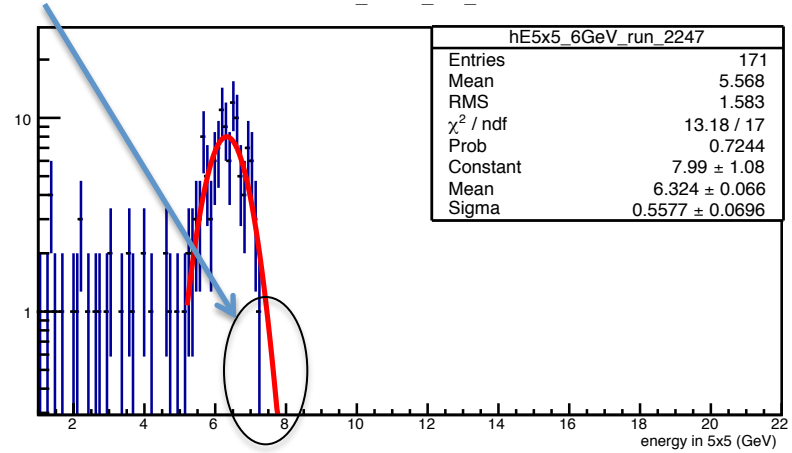
Could possibly fix these fit issues with a modified fitting procedure



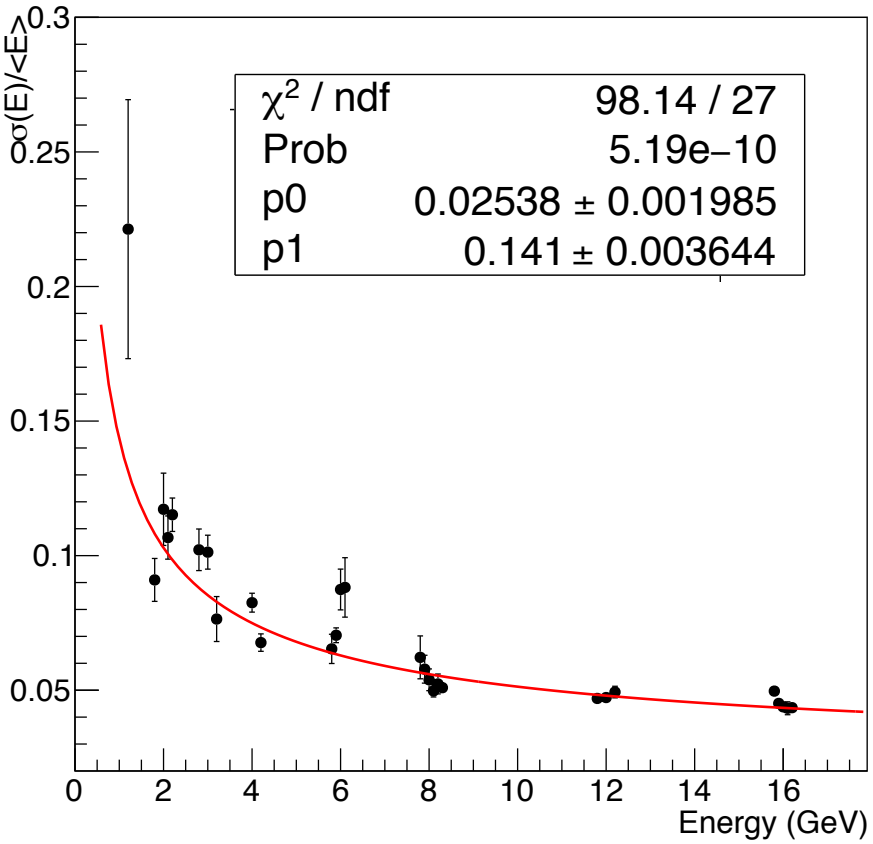


Bad fits

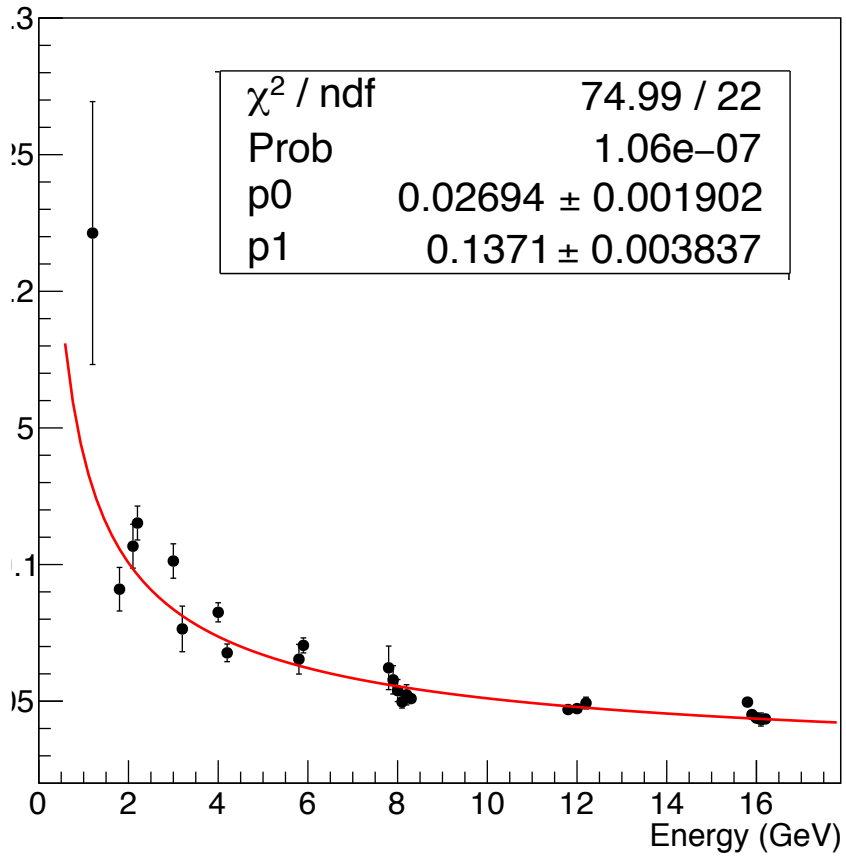




Resolution

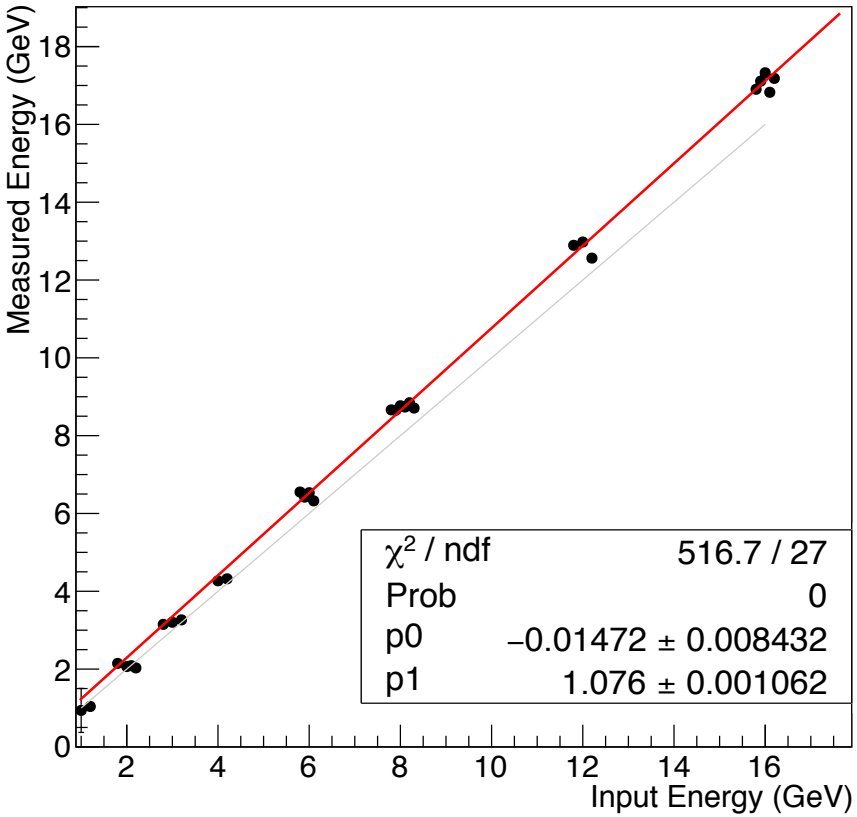


With all points

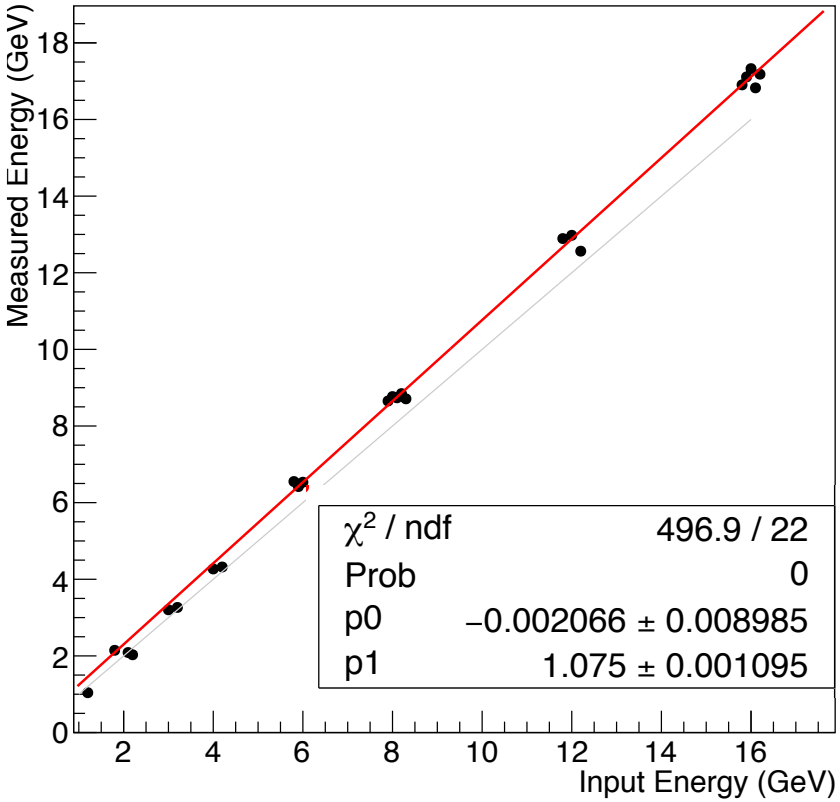


Runs 2297, 2260, 2266, 2245, 2247 removed

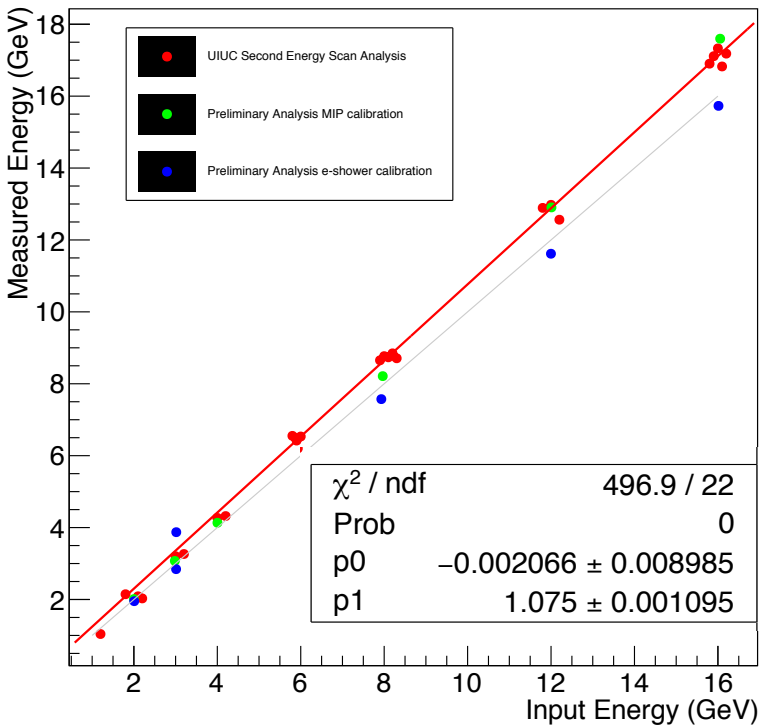
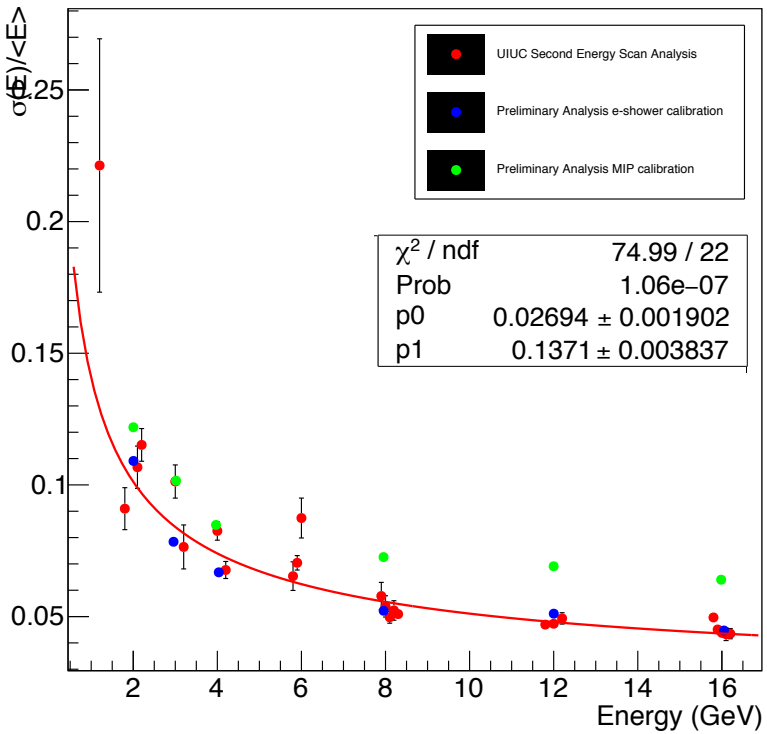
Linearity



With all points



Runs 2297, 2260, 2266, 2245, 2247 removed

Comparison with Preliminary Analysis

- Currently we are using MIP calibration data
- We want to see if the resolution will further improve with e-shower calibration as it did in the preliminary analysis