



Simulation Statistics

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Contents

Histograms for verification of energy conservation (energy resolution, variation of aggregate cluster energy and aggregate tower energy with generated energy) for the following detector-particle pairs:

- FEMC: electron
- FHCAL: electron
- FEMC + FHCAL: electron

Simulation Parameters

- Particle: e^-
- Events: 100,000
- momentum (p): 0 to 30 GeV/c
- Pseudorapidity (η): -4 to 4
- Azimuth (Φ): $-\pi$ to π

Cuts:

- detector-wise η cuts (intersection of η ranges in case of detector combinations)
- energy cuts in some plots

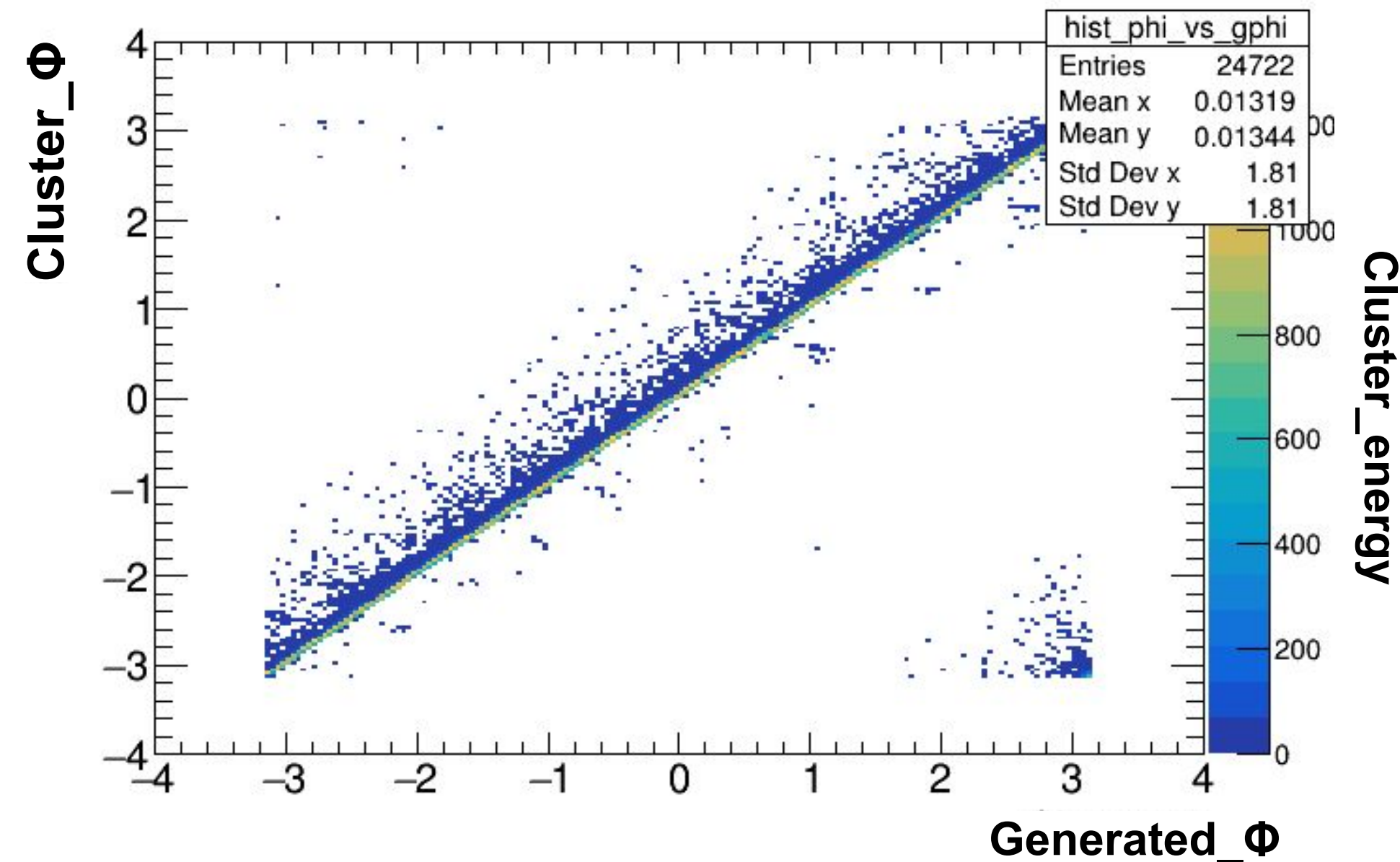
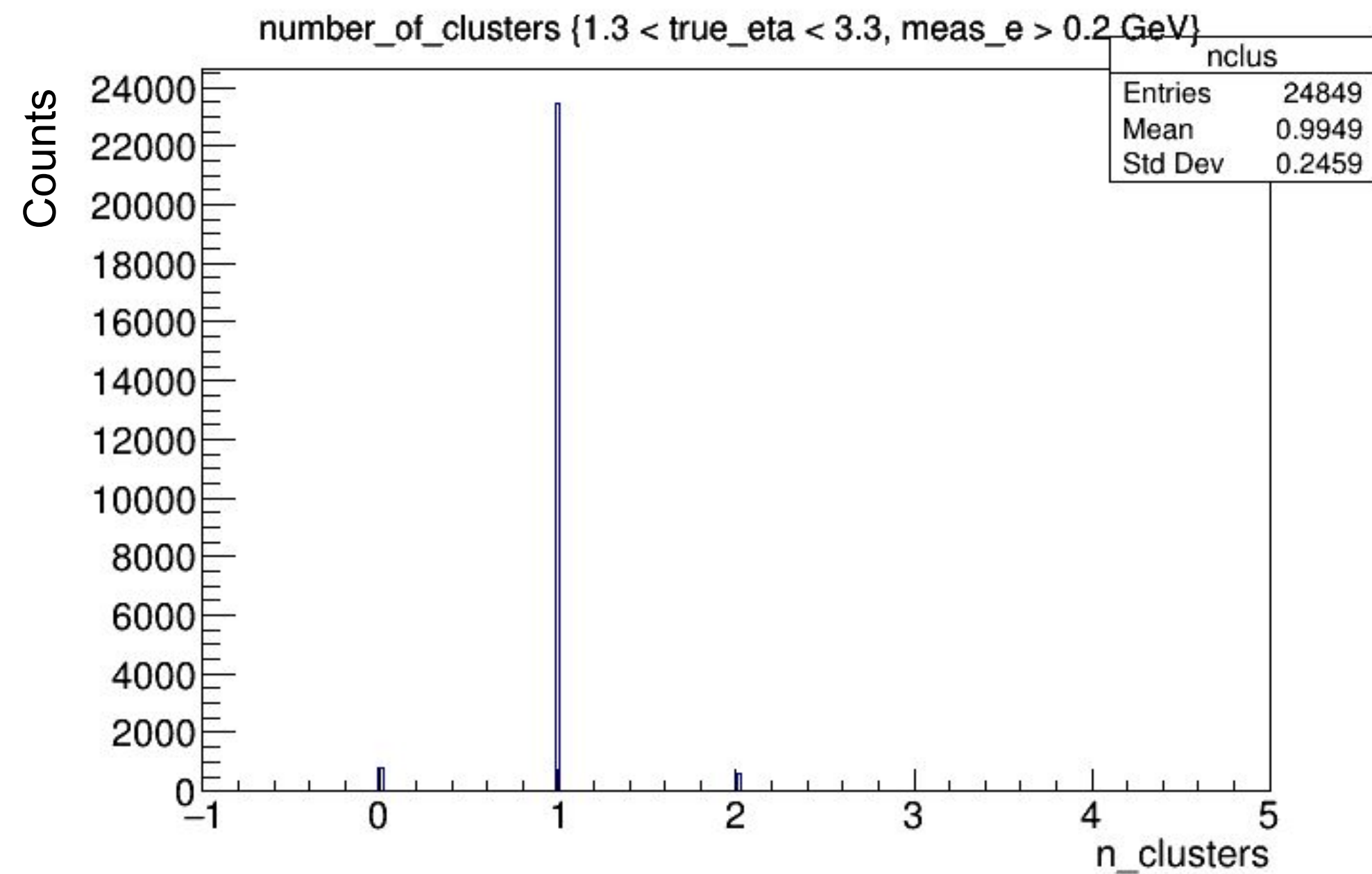


FEMC

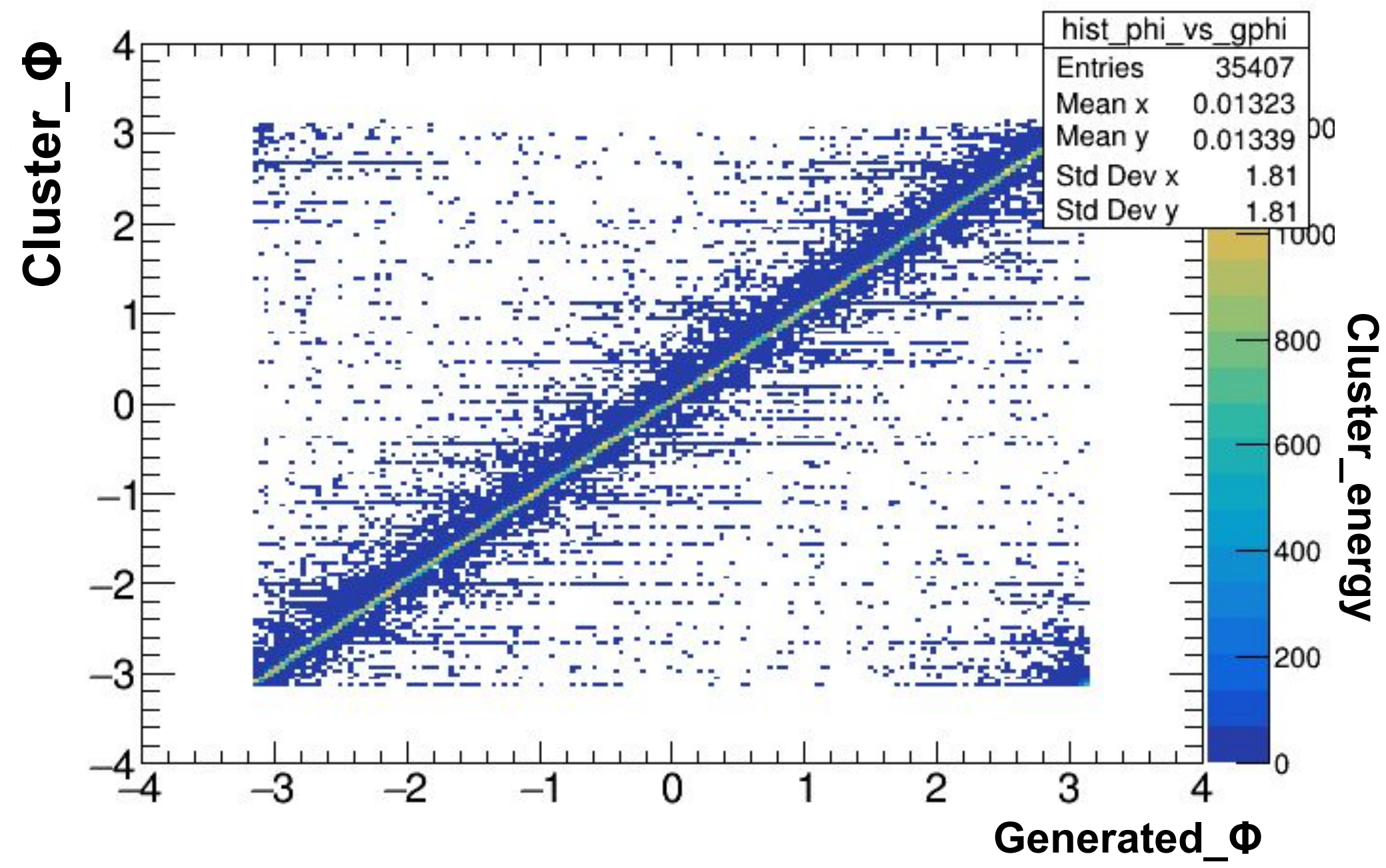
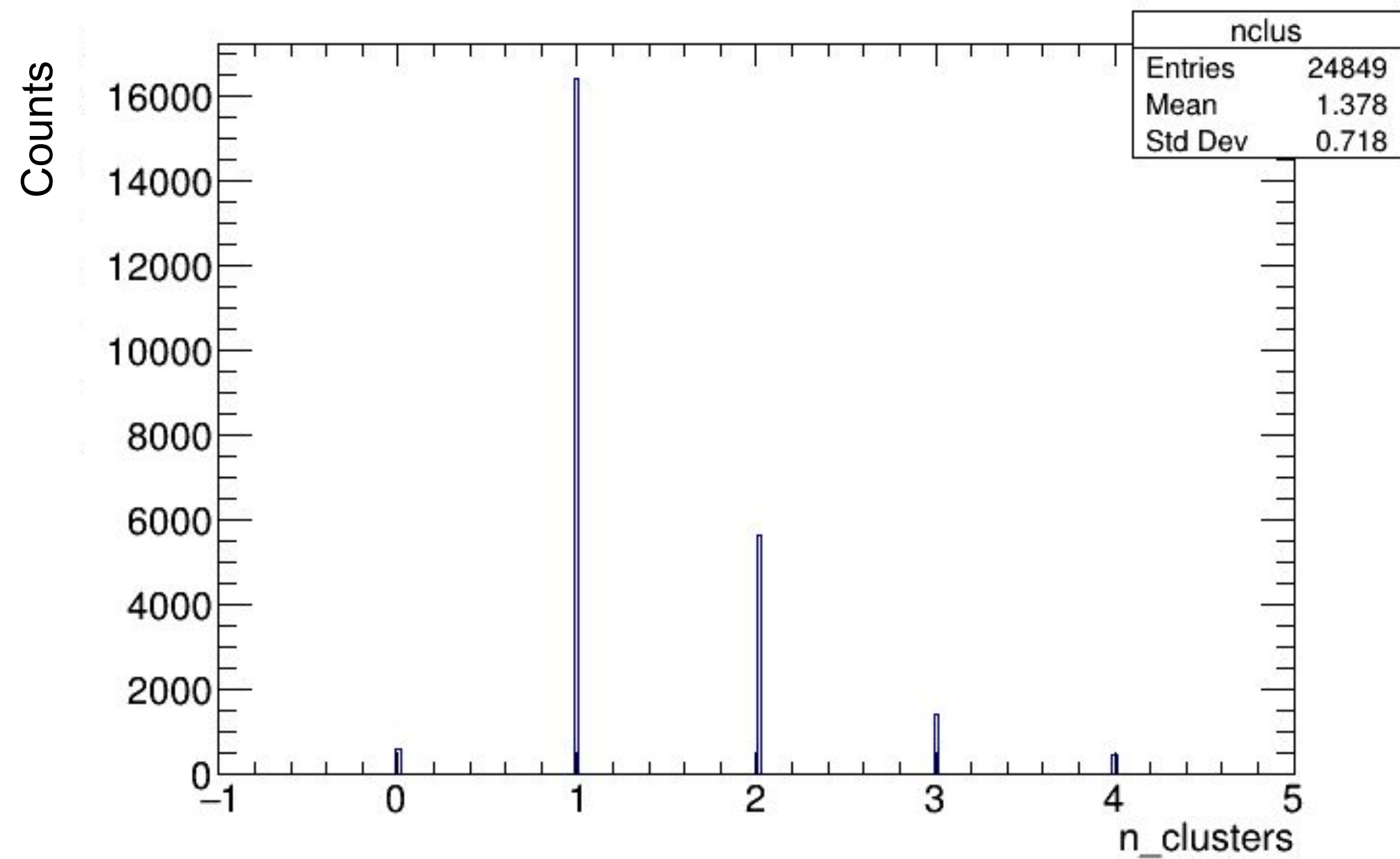
energy cut: $ce > 0.2$ GeV

FEMC

Explicit η cut: 1.3 to 3.3



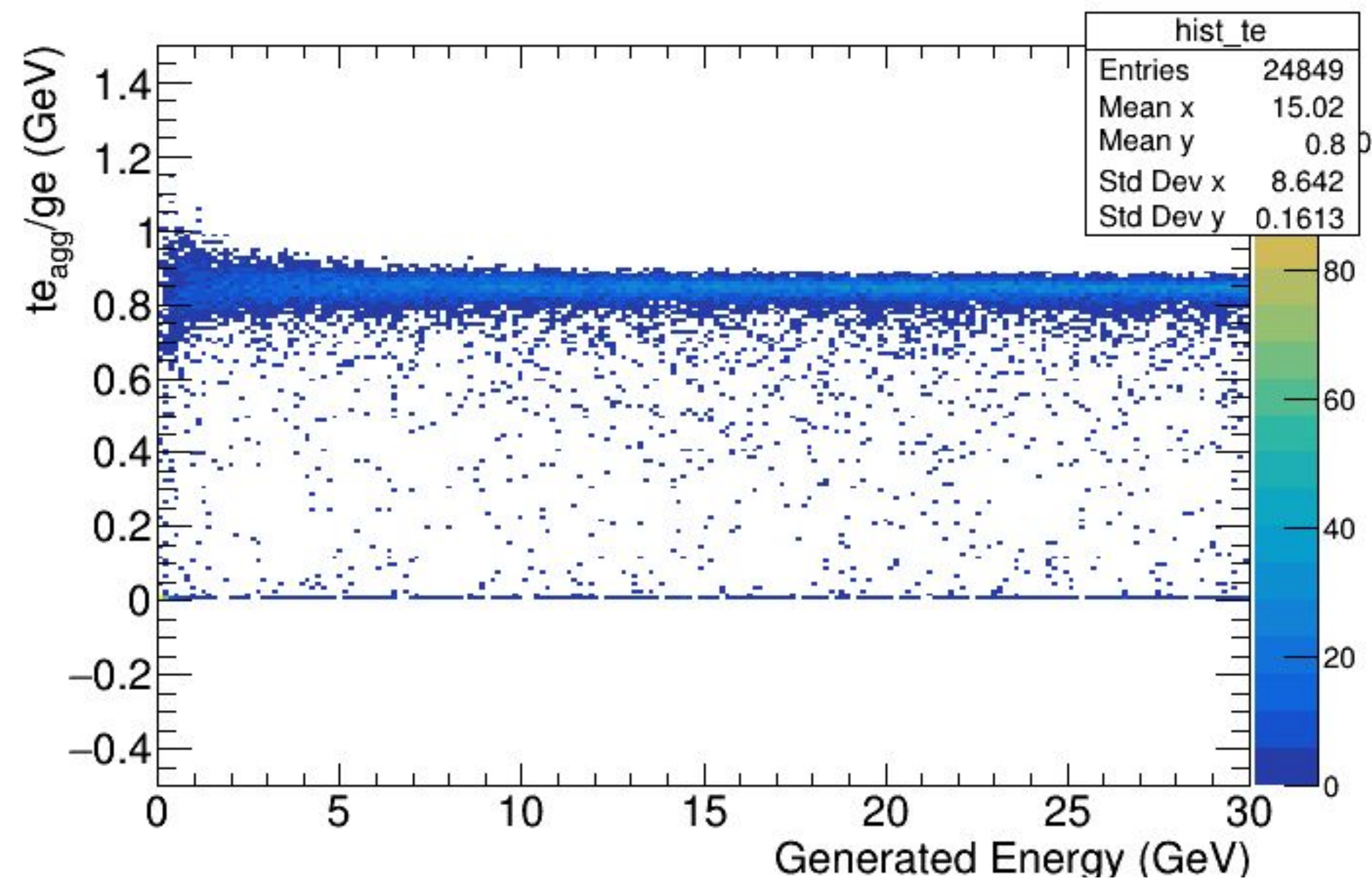
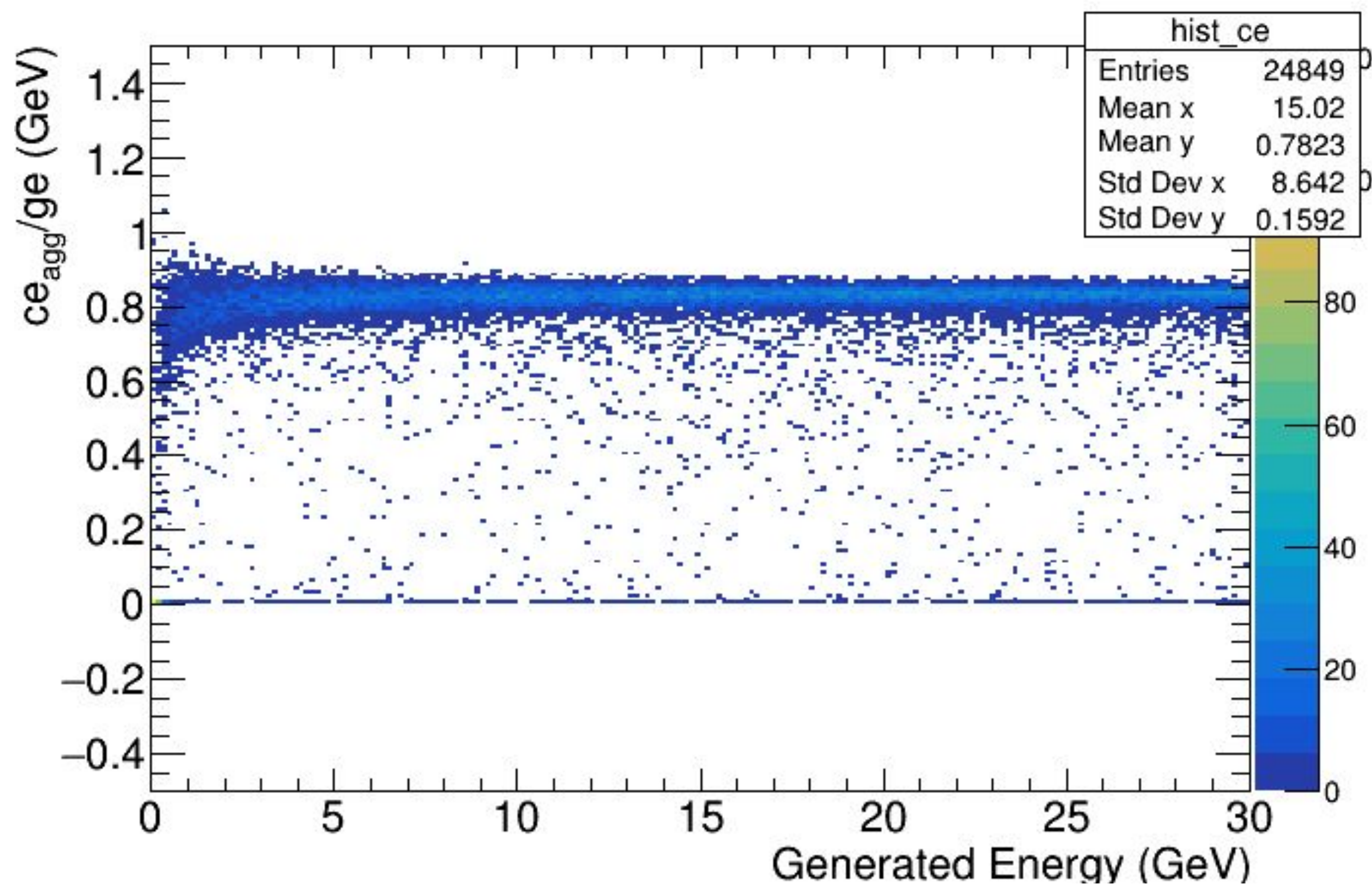
no energy cut



FEMC

Explicit η cut: 1.3 to 3.3

no energy cut



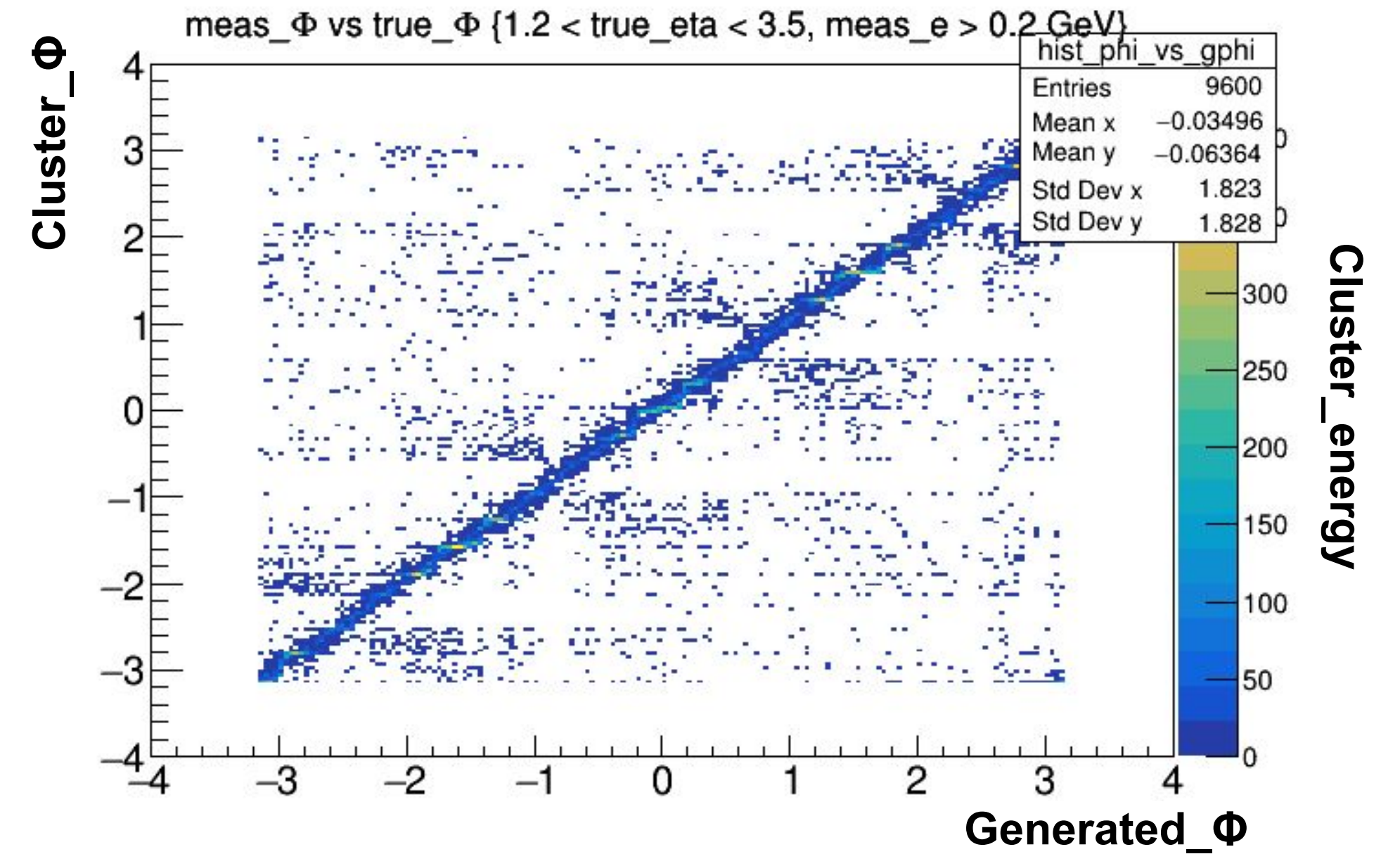
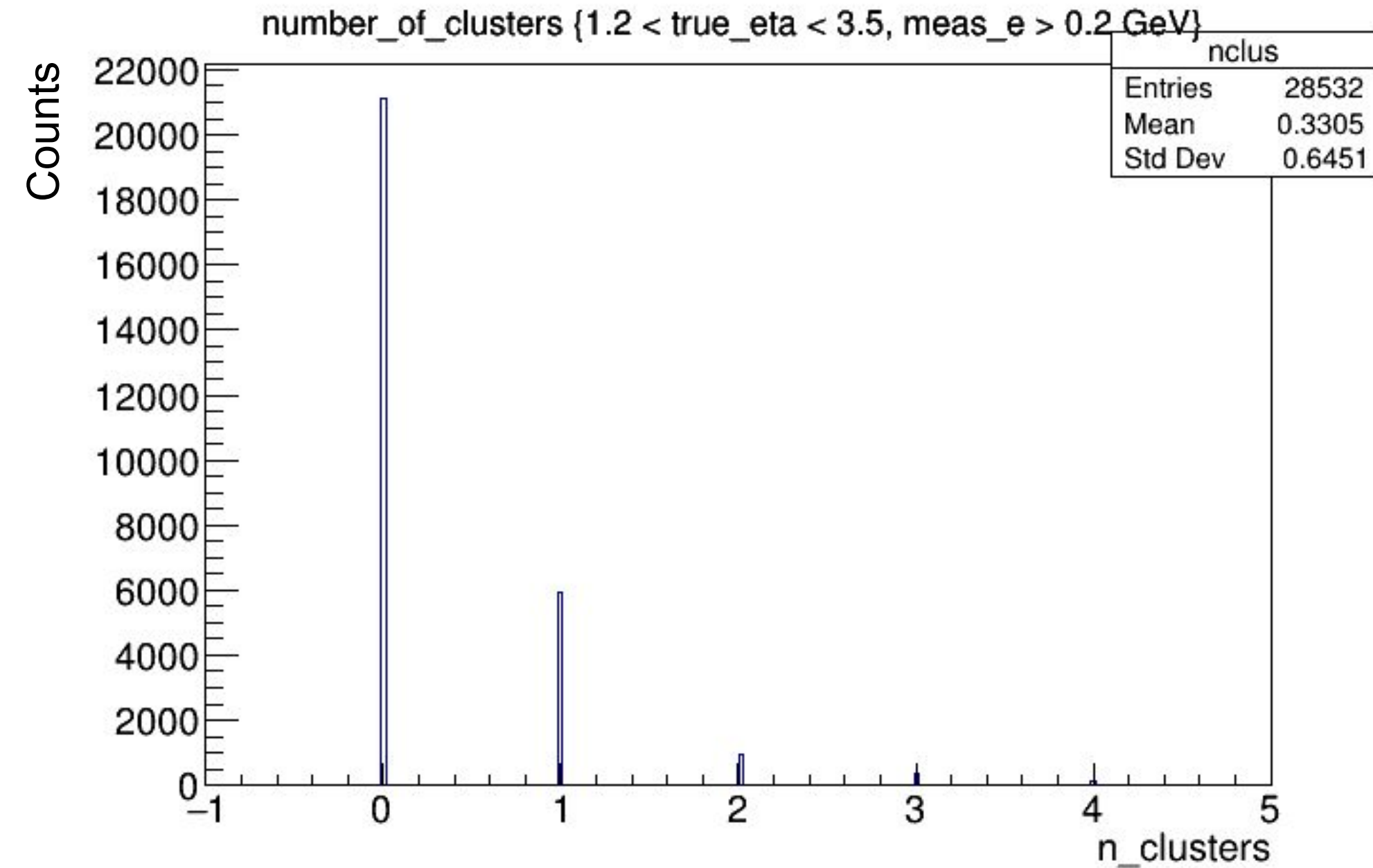


FHCAL

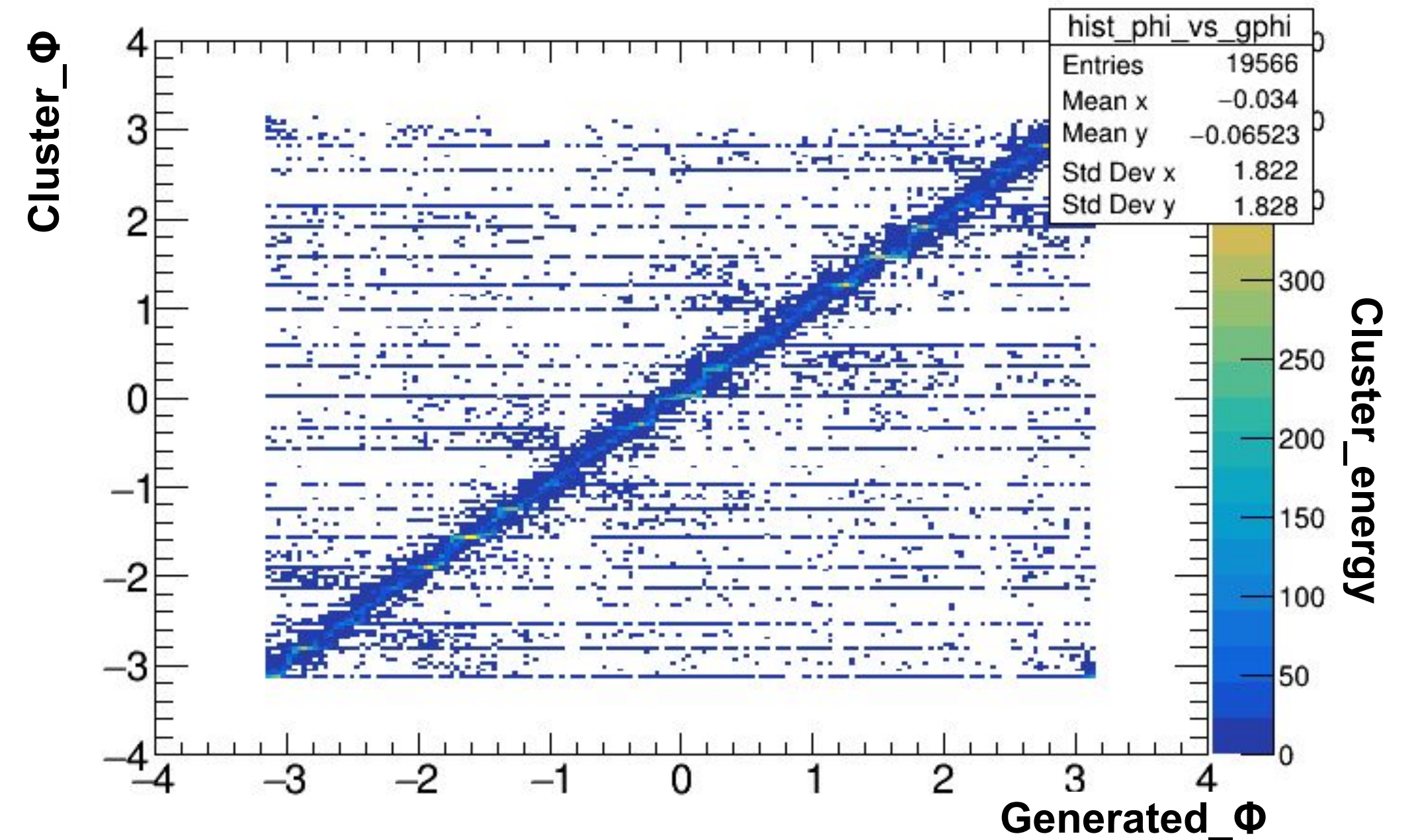
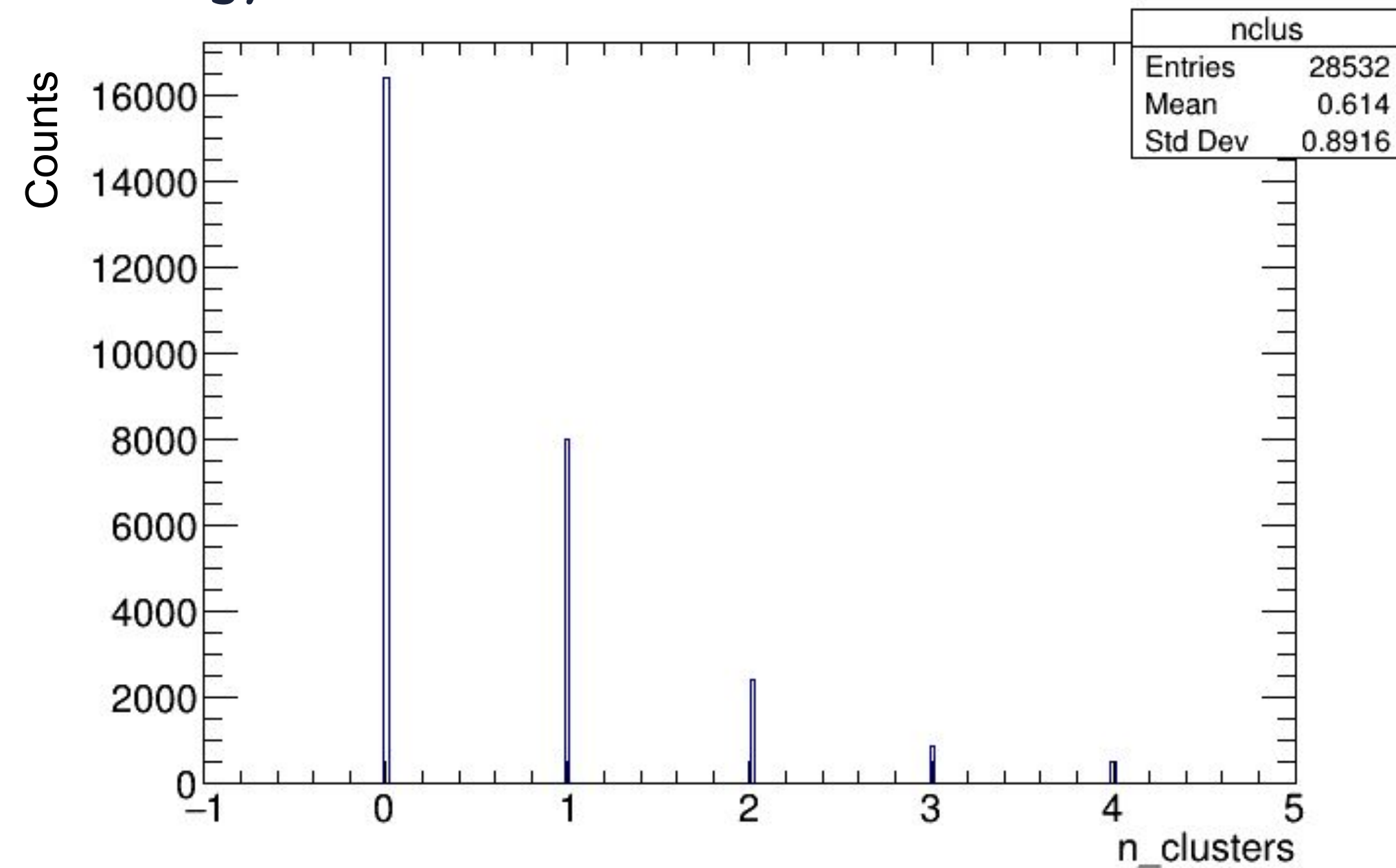
energy cut: $ce > 0.2$ GeV

FHCAL

Explicit η cut: 1.2 to 3.5

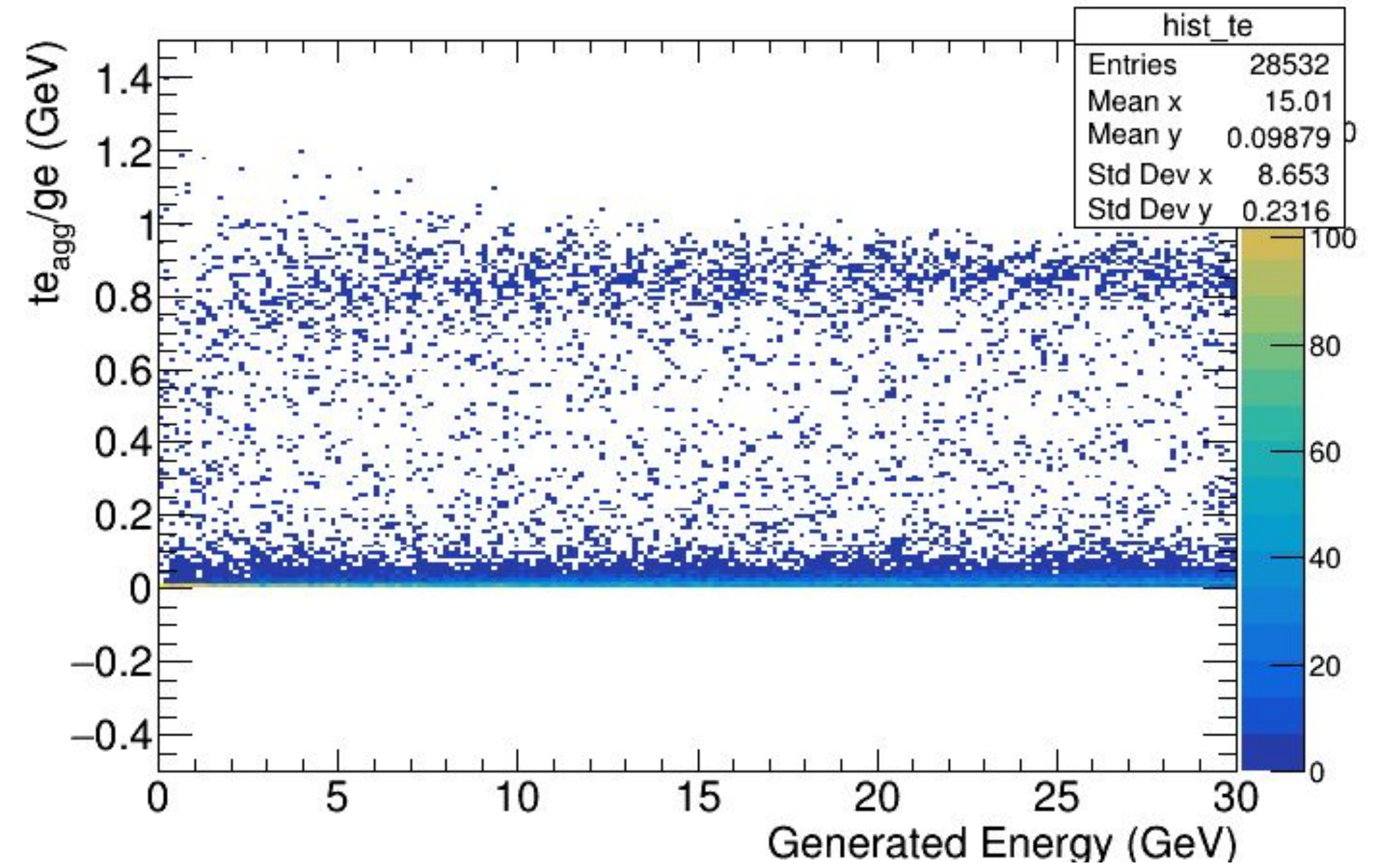
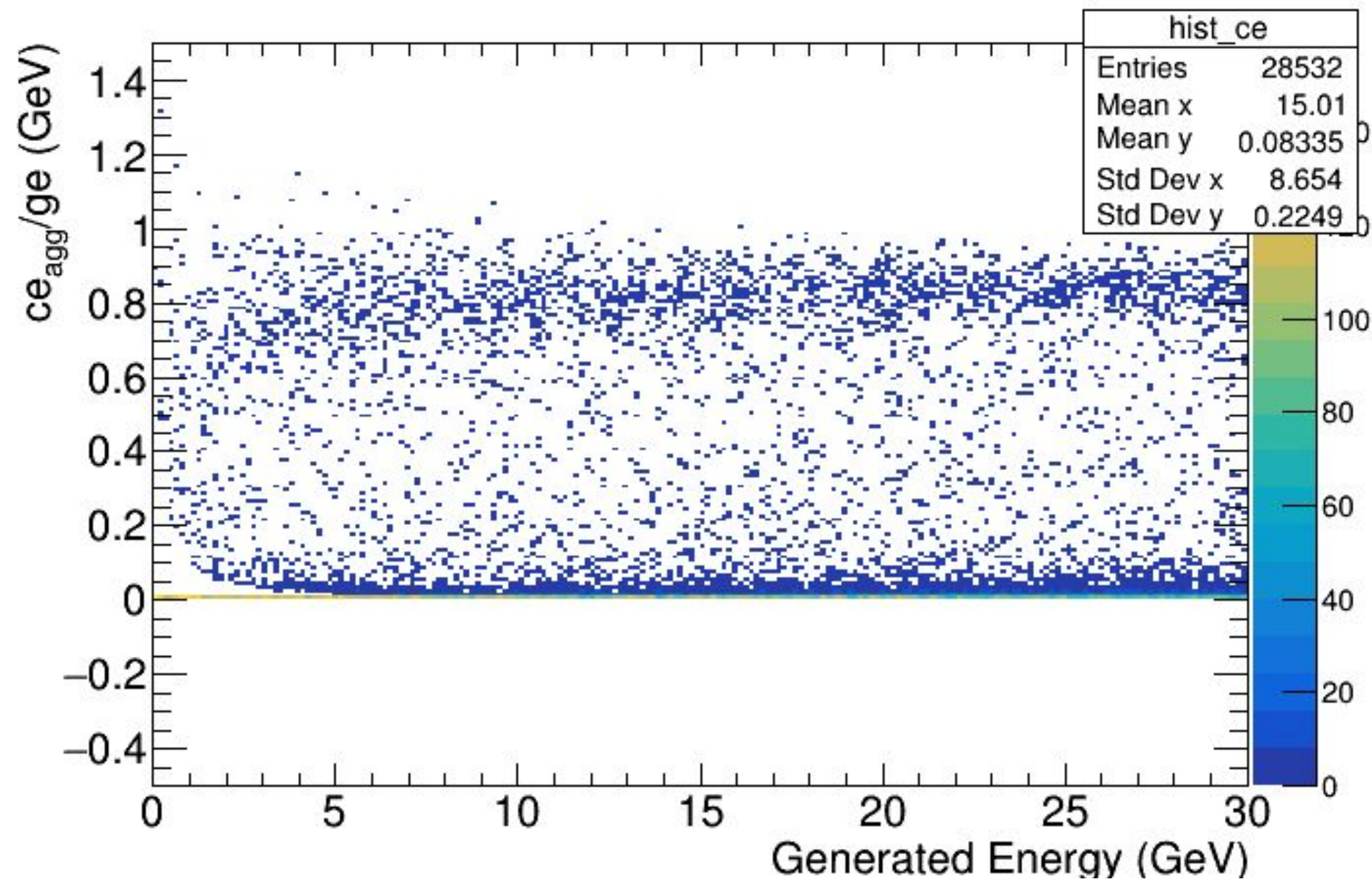


no energy cut



FHCAL

Explicit η cut: 1.2 to 3.5
no energy cut

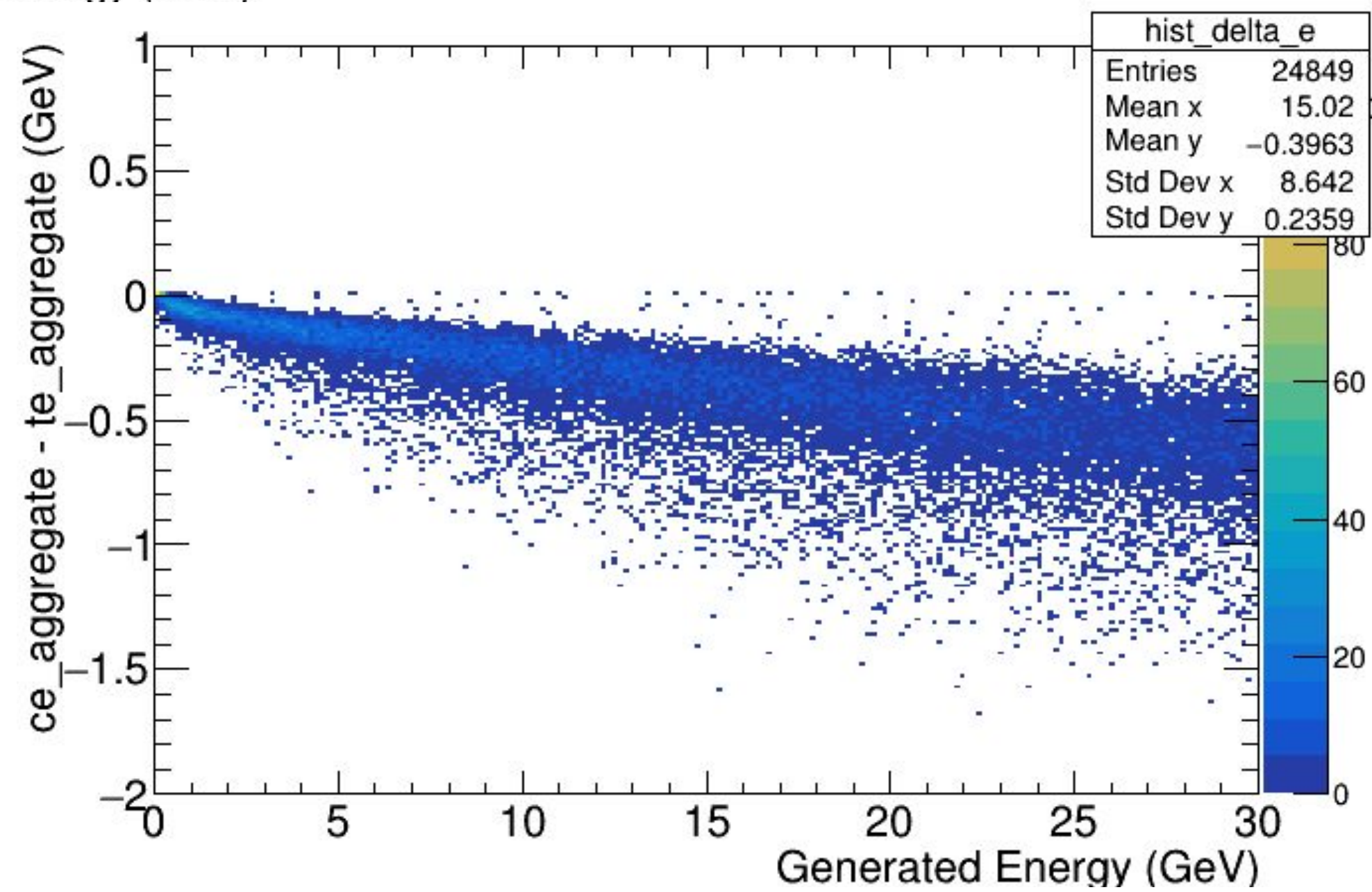
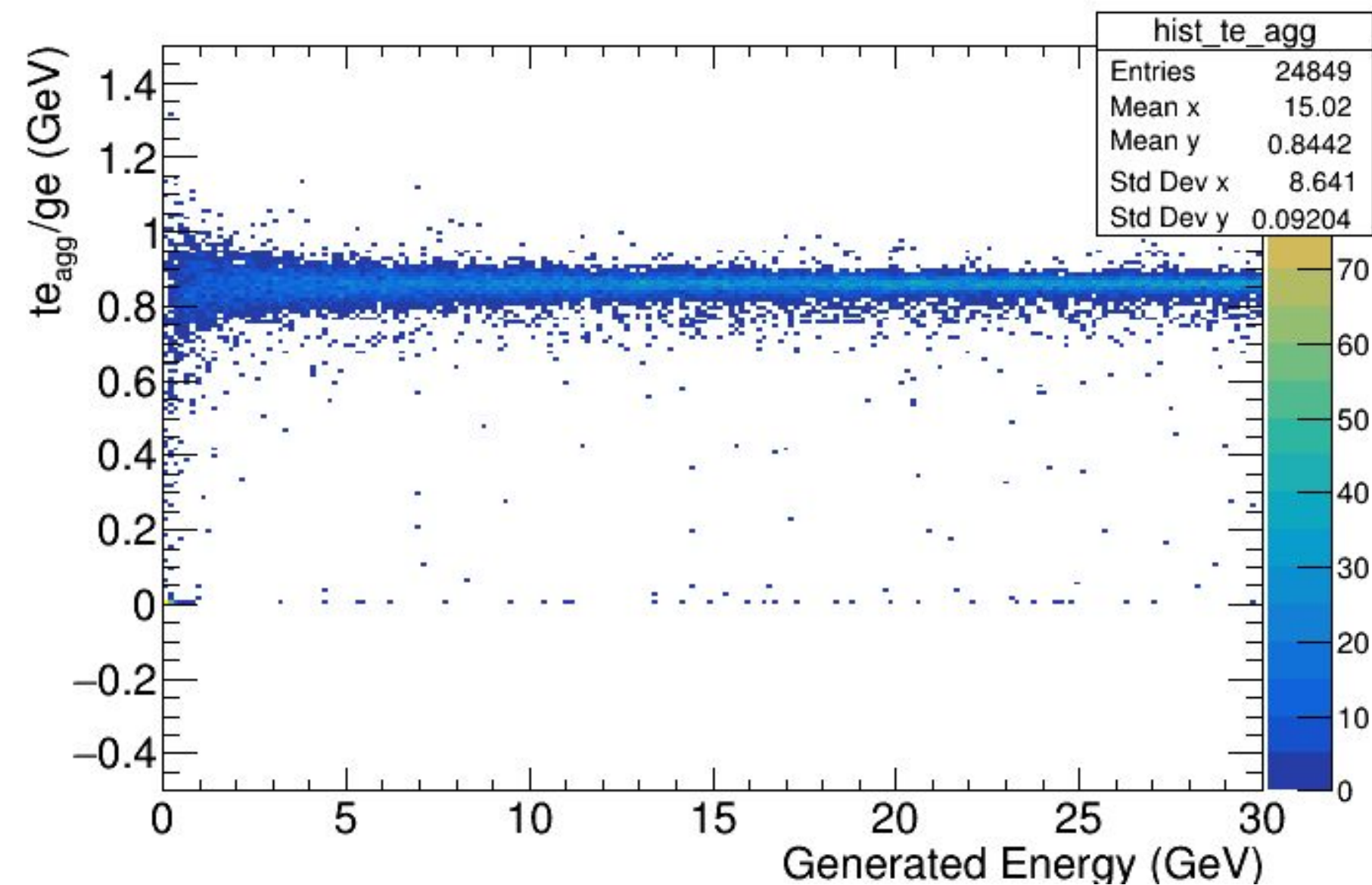
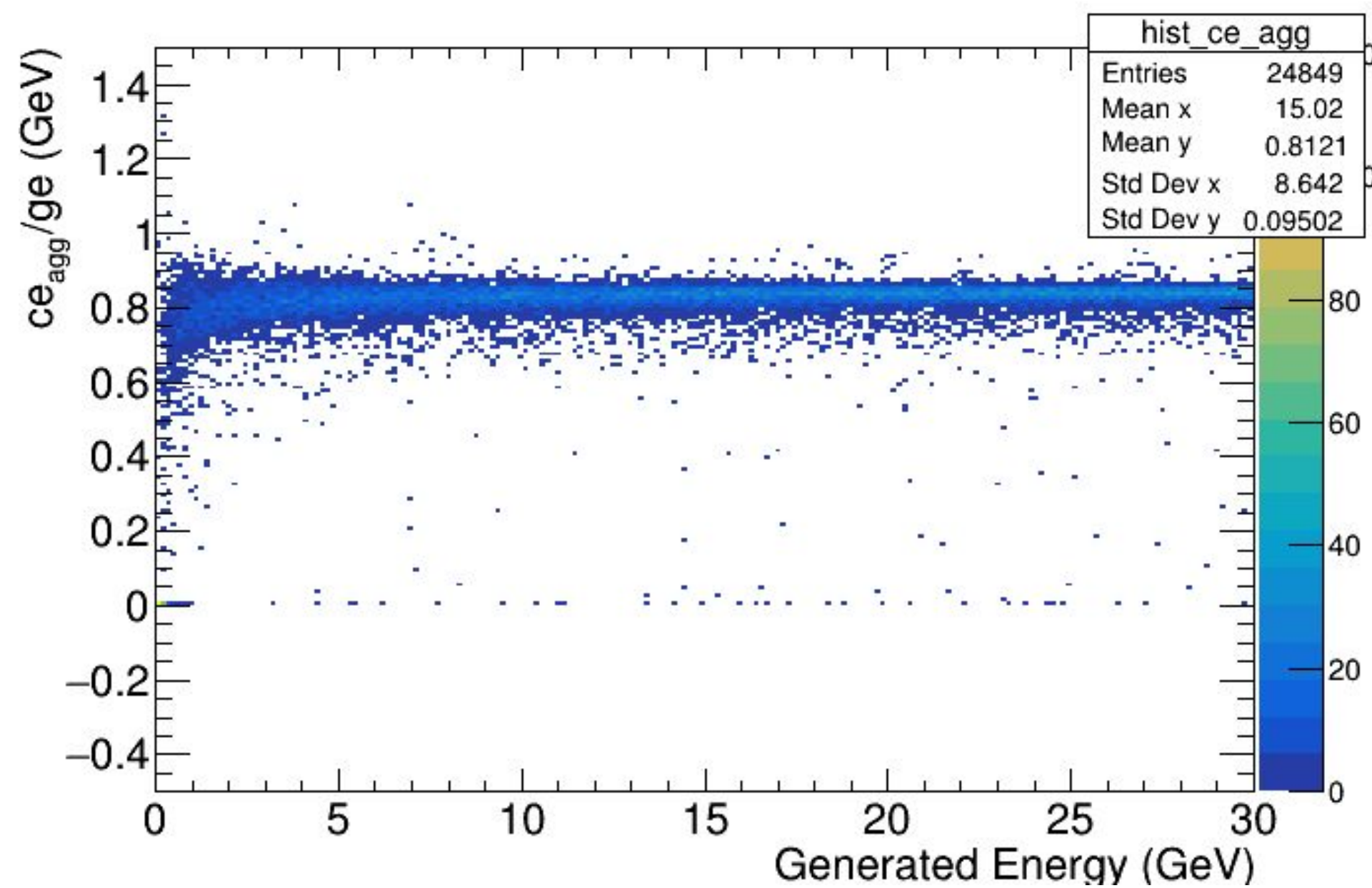


A teal geometric graphic consisting of several overlapping triangles and quadrilaterals, creating a complex, abstract shape on the left side of the slide.

FEMC + FHCAL

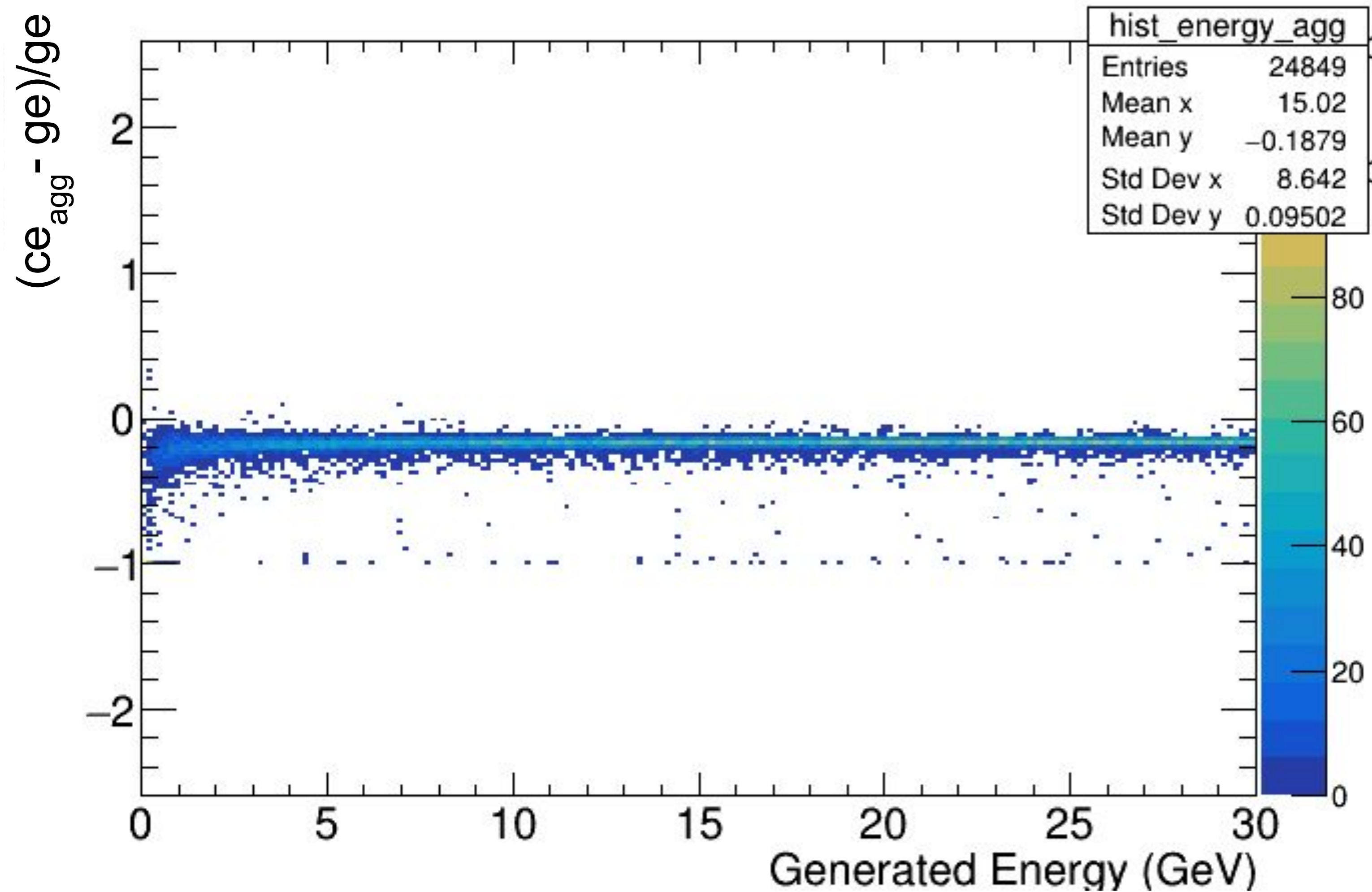
FEMC + FHCAL

Explicit η cut: 1.3 to 3.3
no energy cut



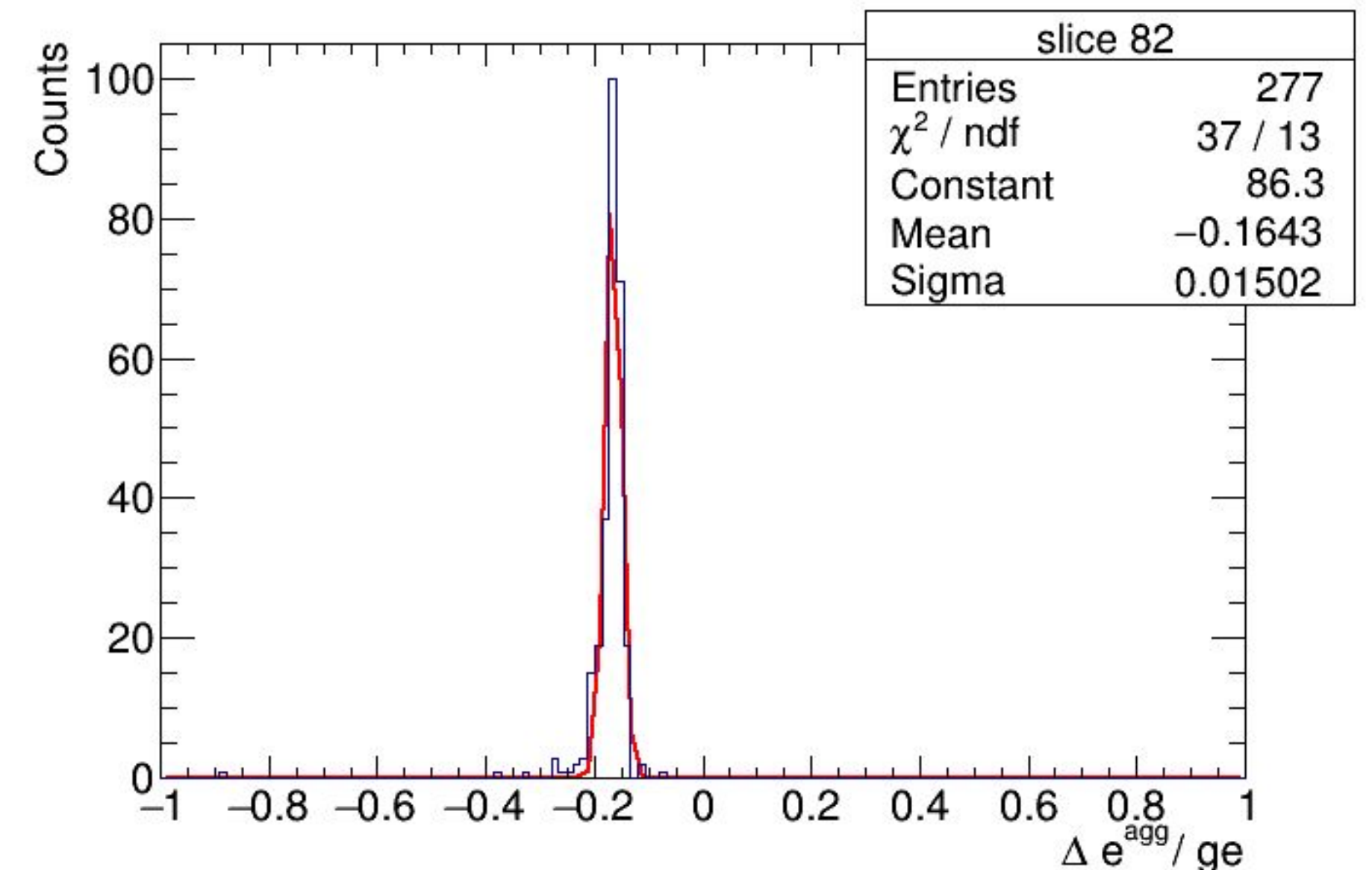
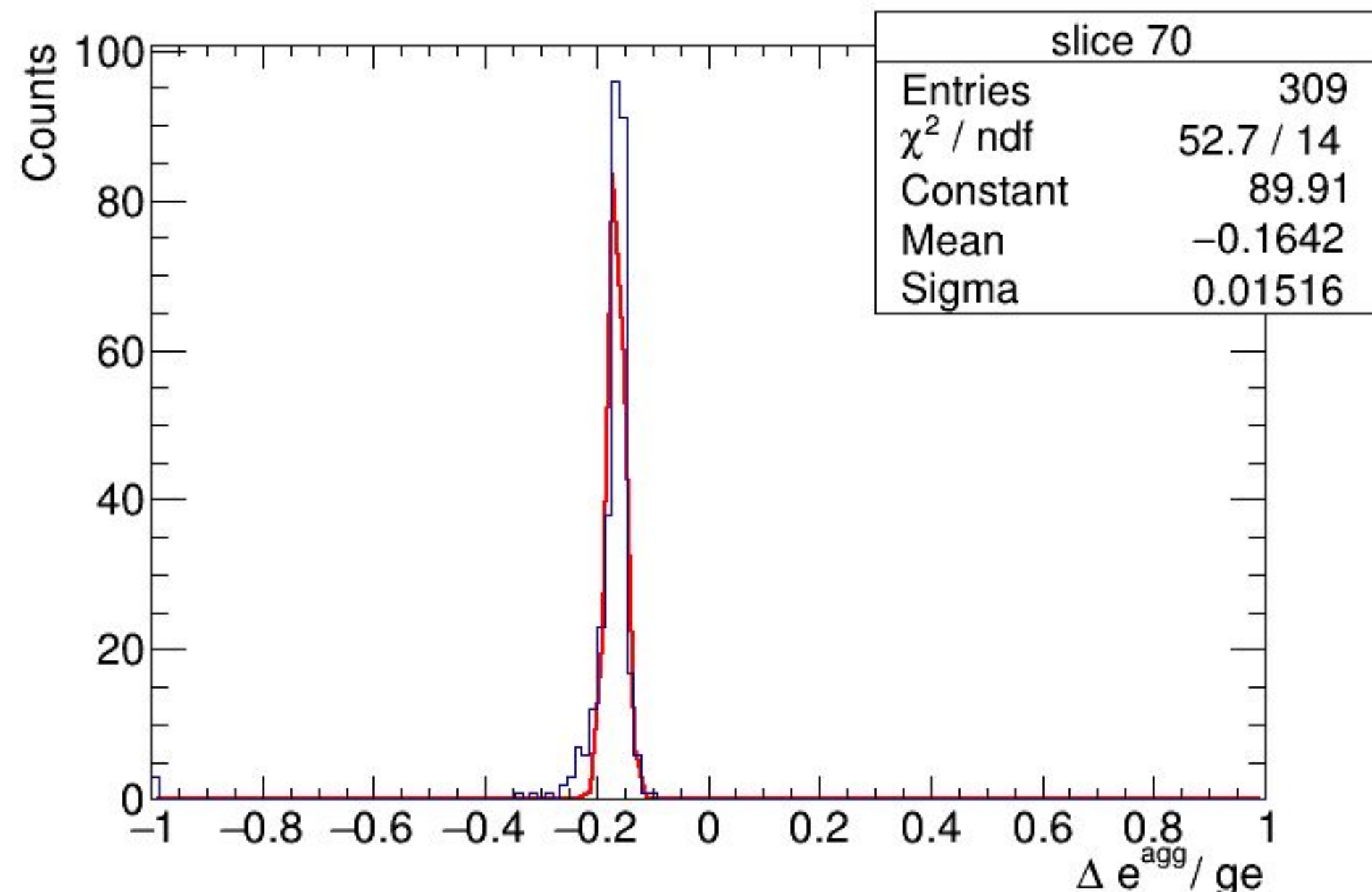
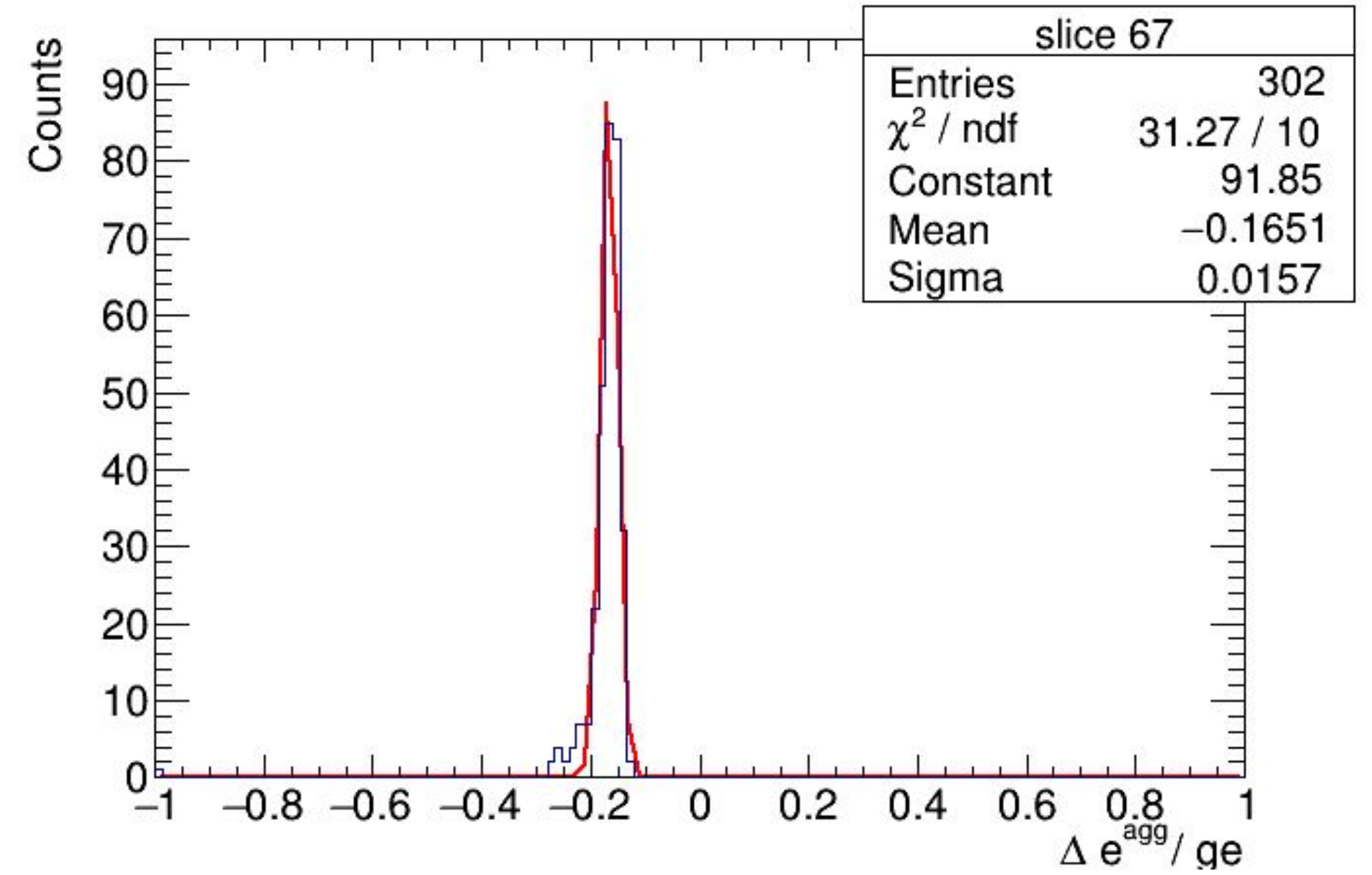
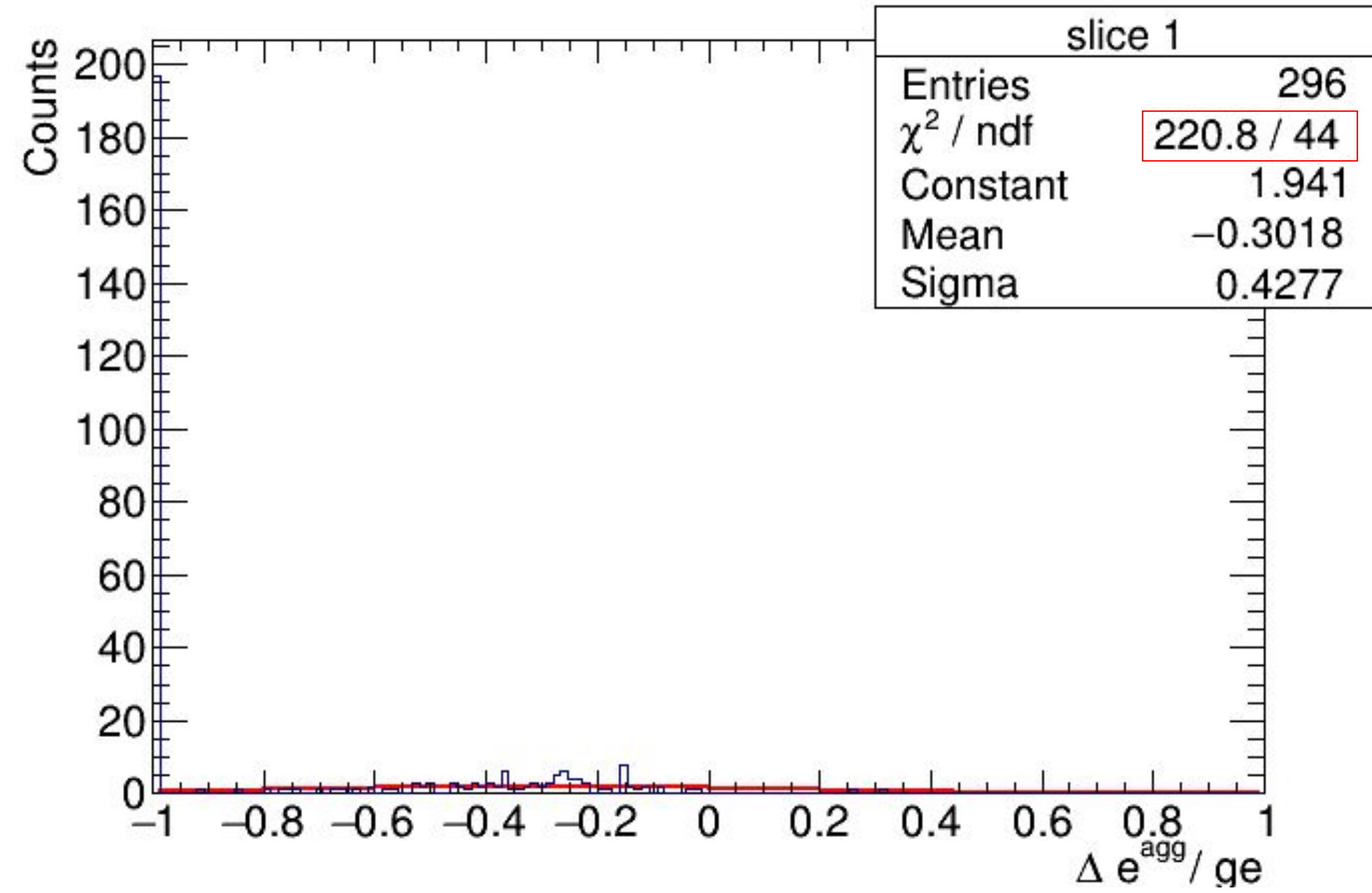
FEMC + FHCAL (e^-)

(ce-ge)/ge vs ge
Explicit η cut: 1.3 to 3.3
no energy cut



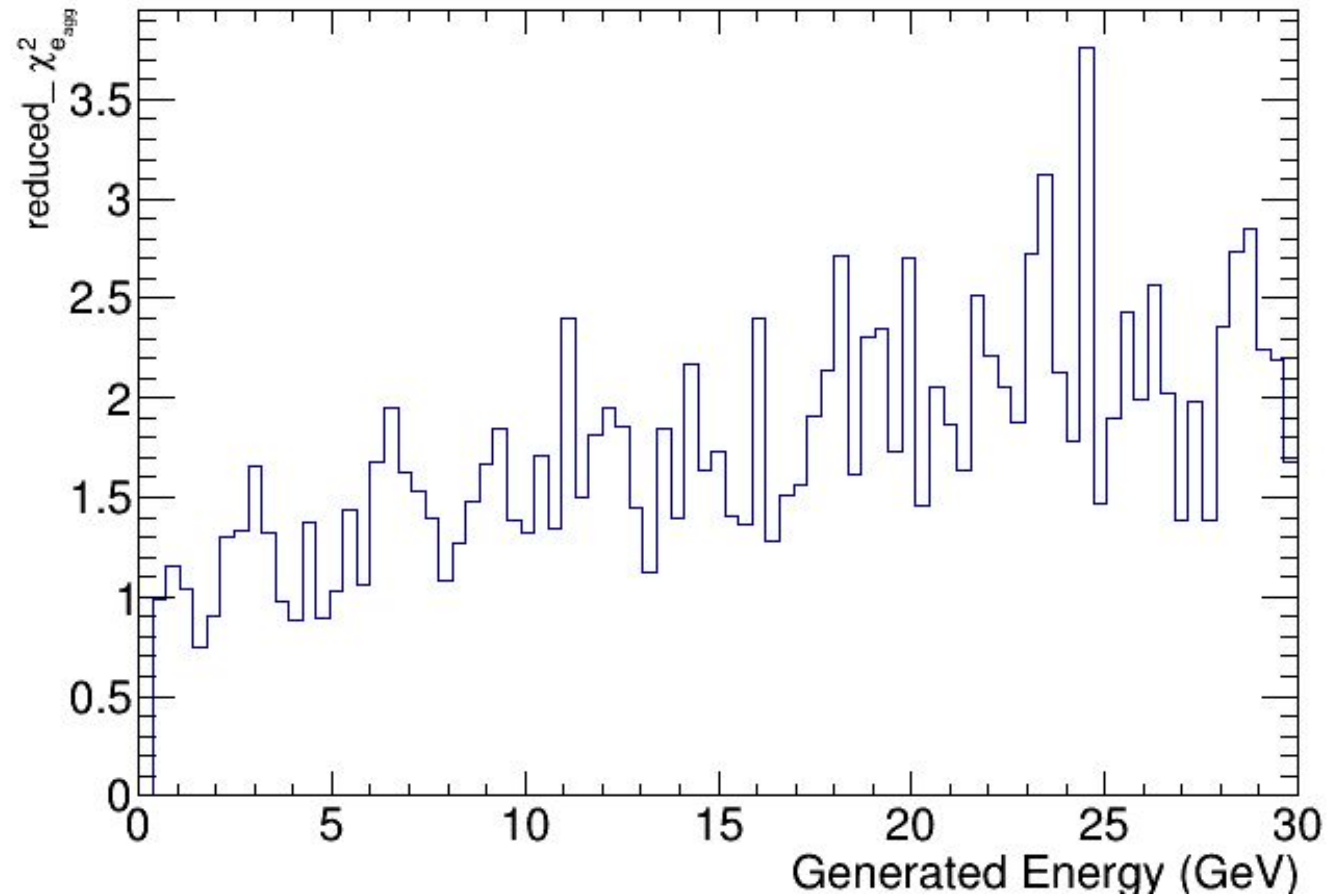
FEMC + FHICAL

Some of the fitted Gaussians



FEMC + FHCAL (e^-)

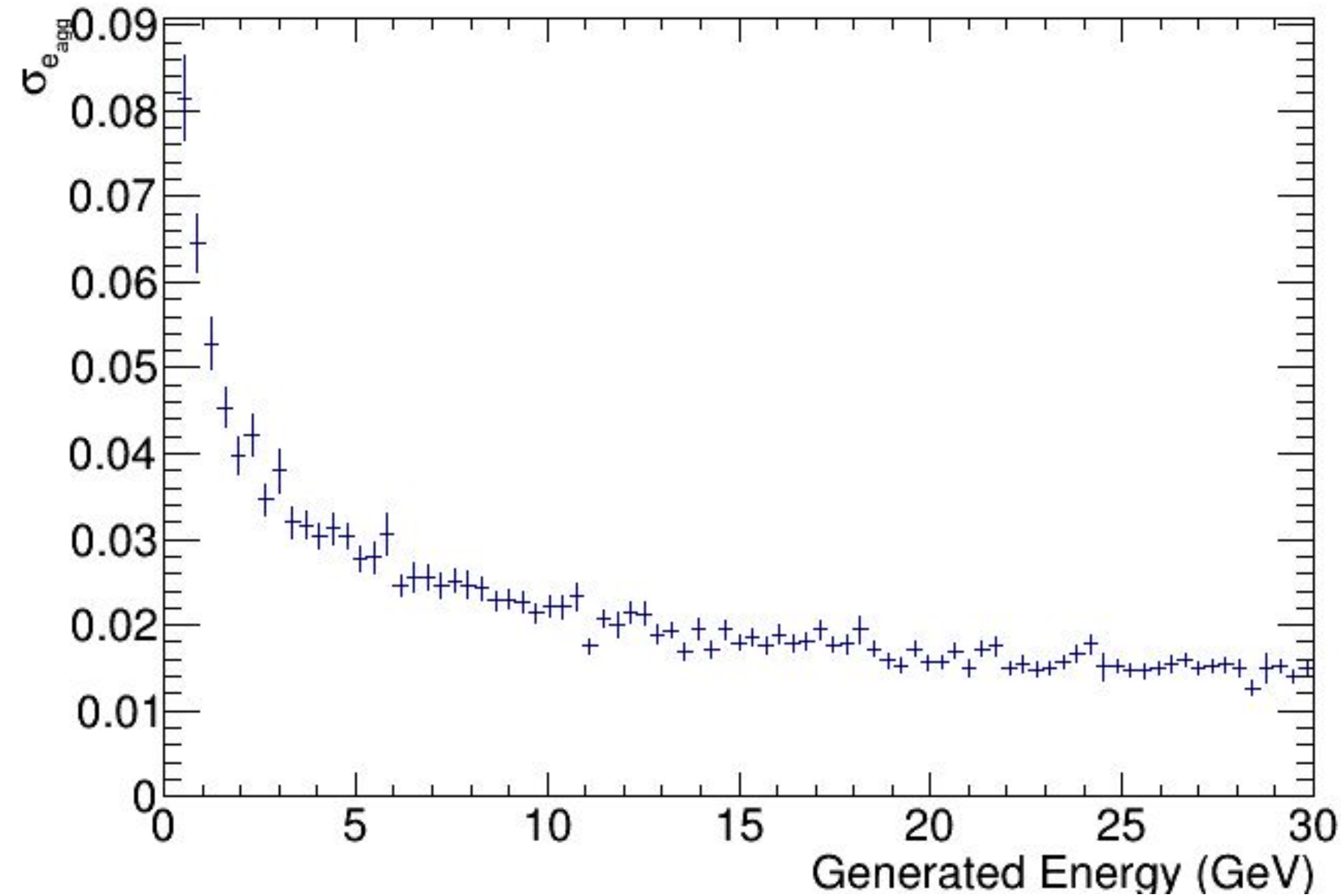
reduced_chi2 vs ge
Explicit η cut: 1.3 to 3.3



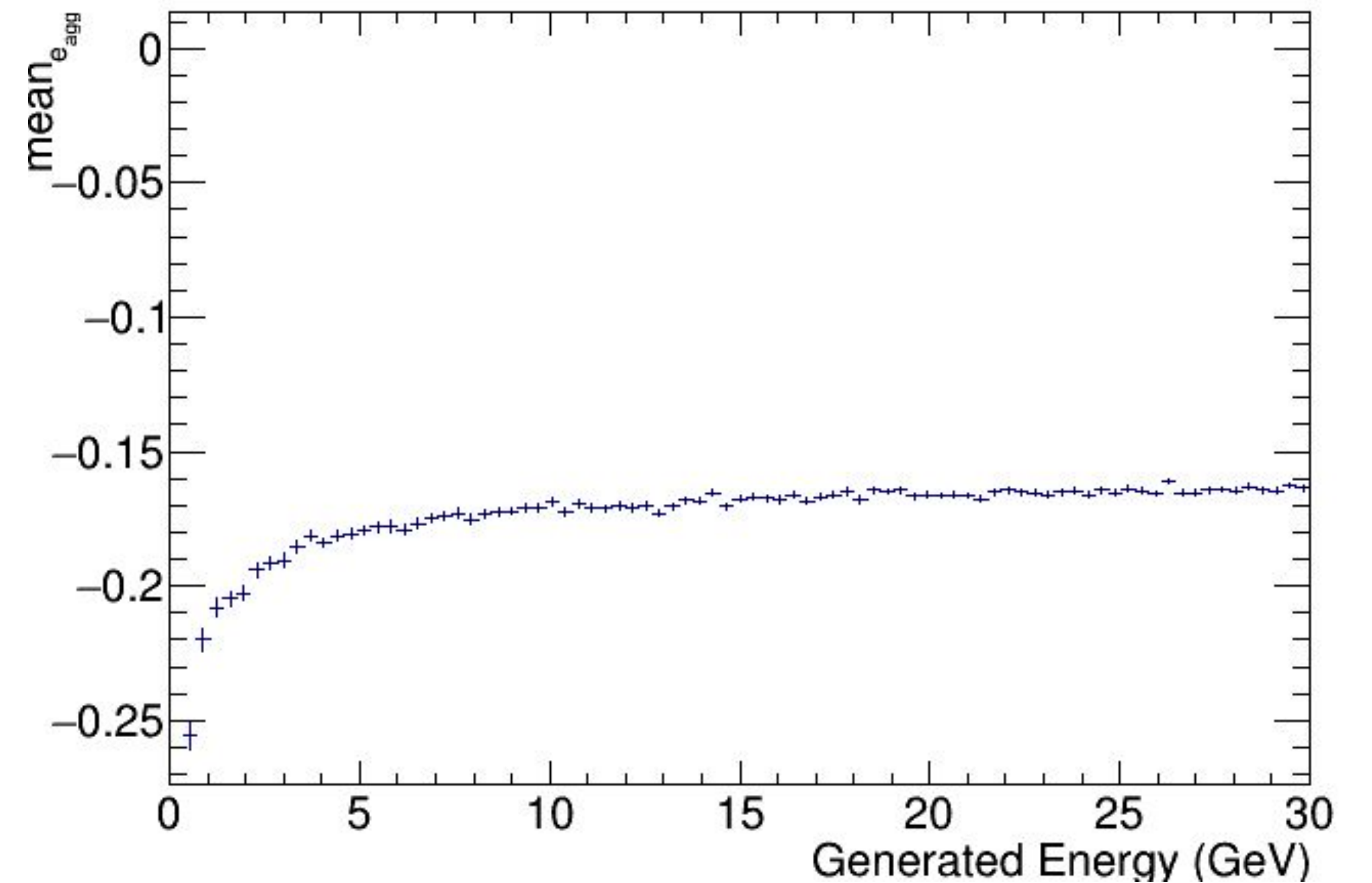
reduced_χ² of the Gaussians fitted to the slices of the $(ce-ge)/ge$ vs ge plot.

FEMC + FHCAL (e^-)

Explicit η cut: 1.3 to 3.3



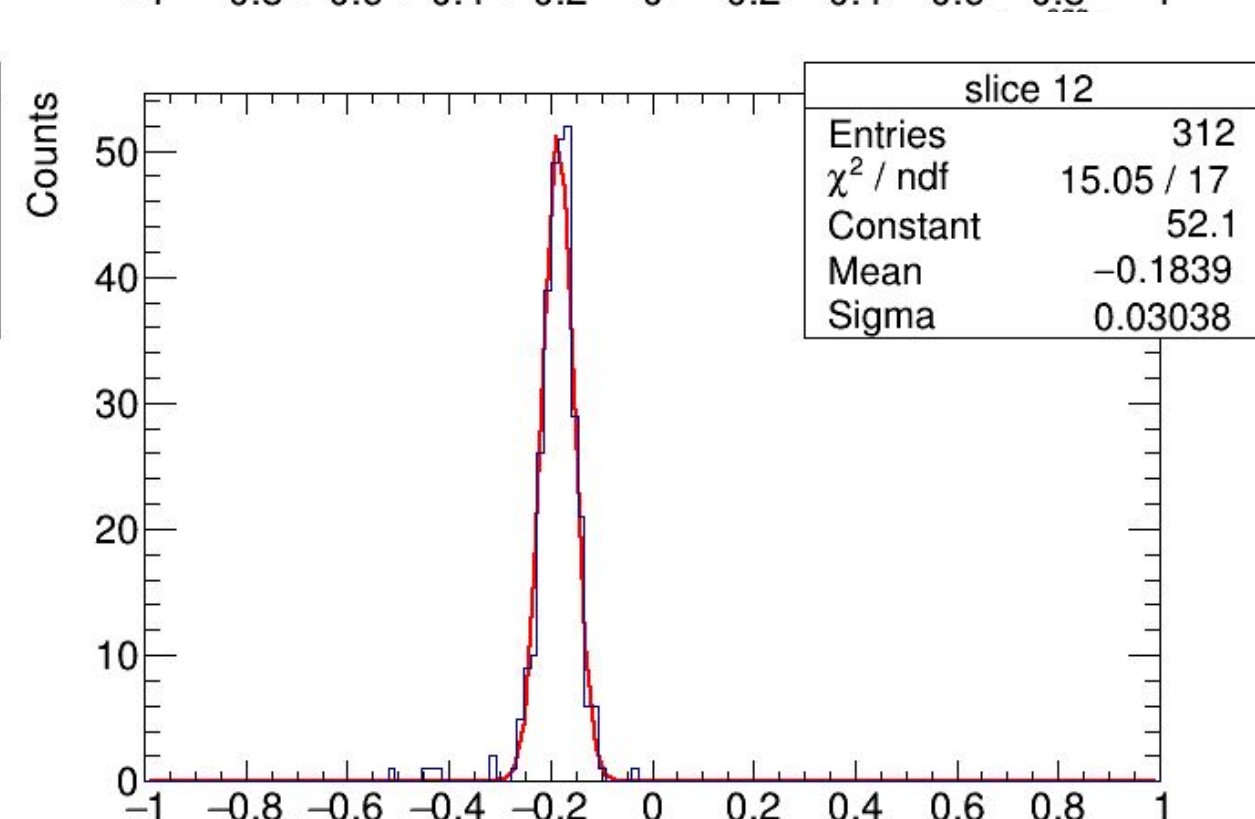
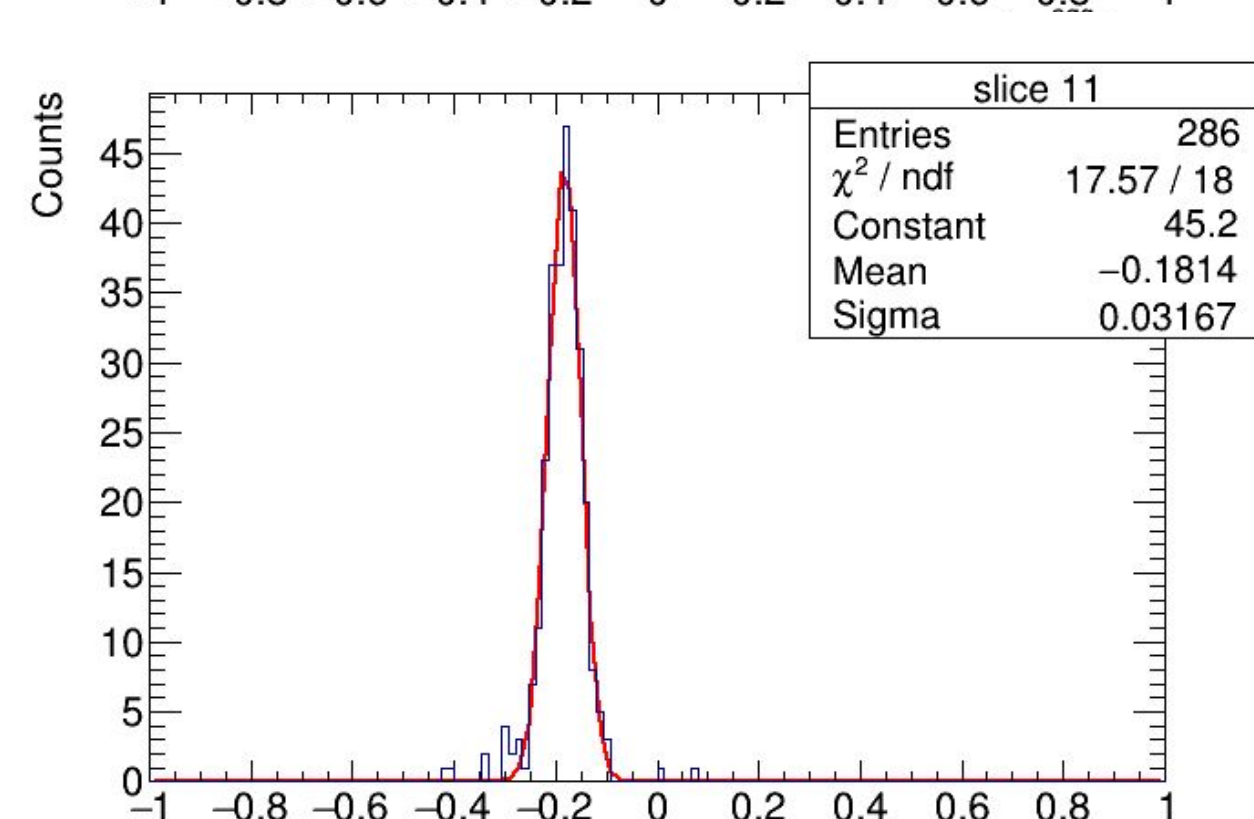
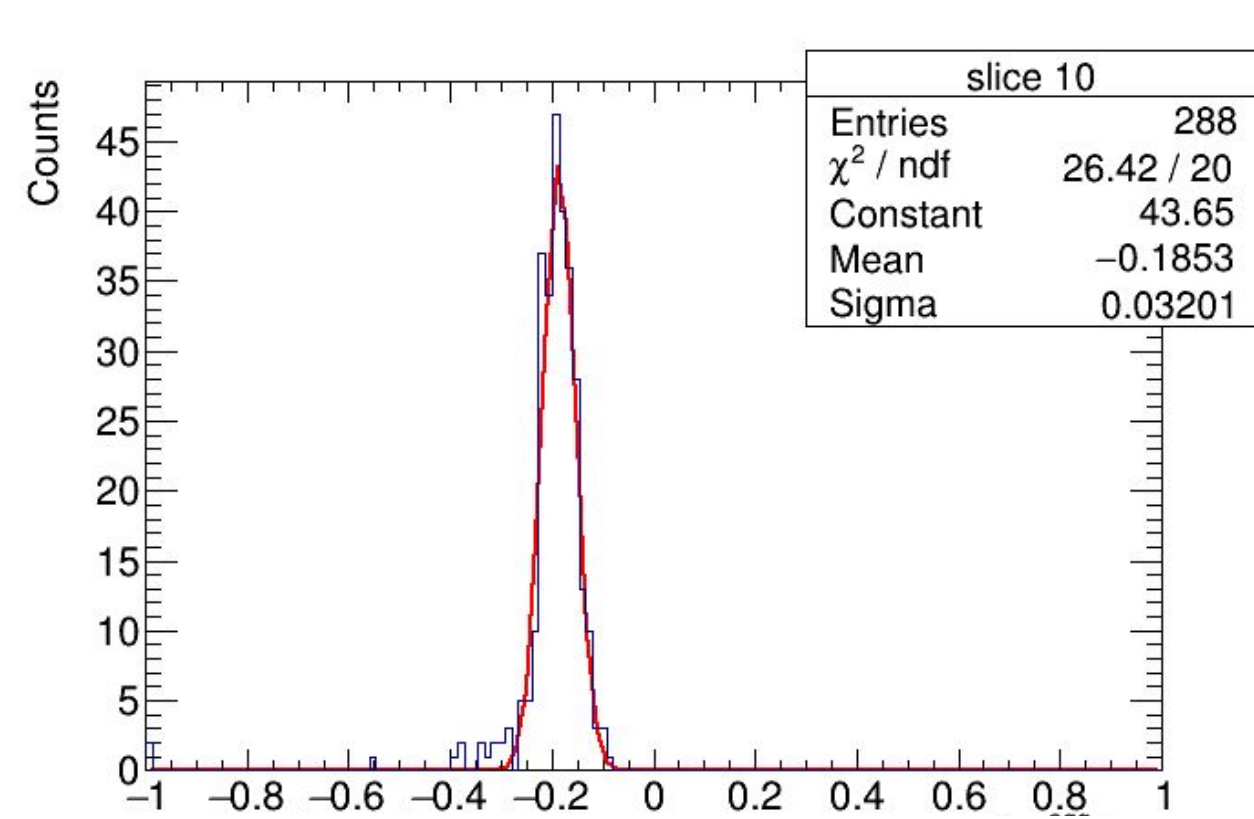
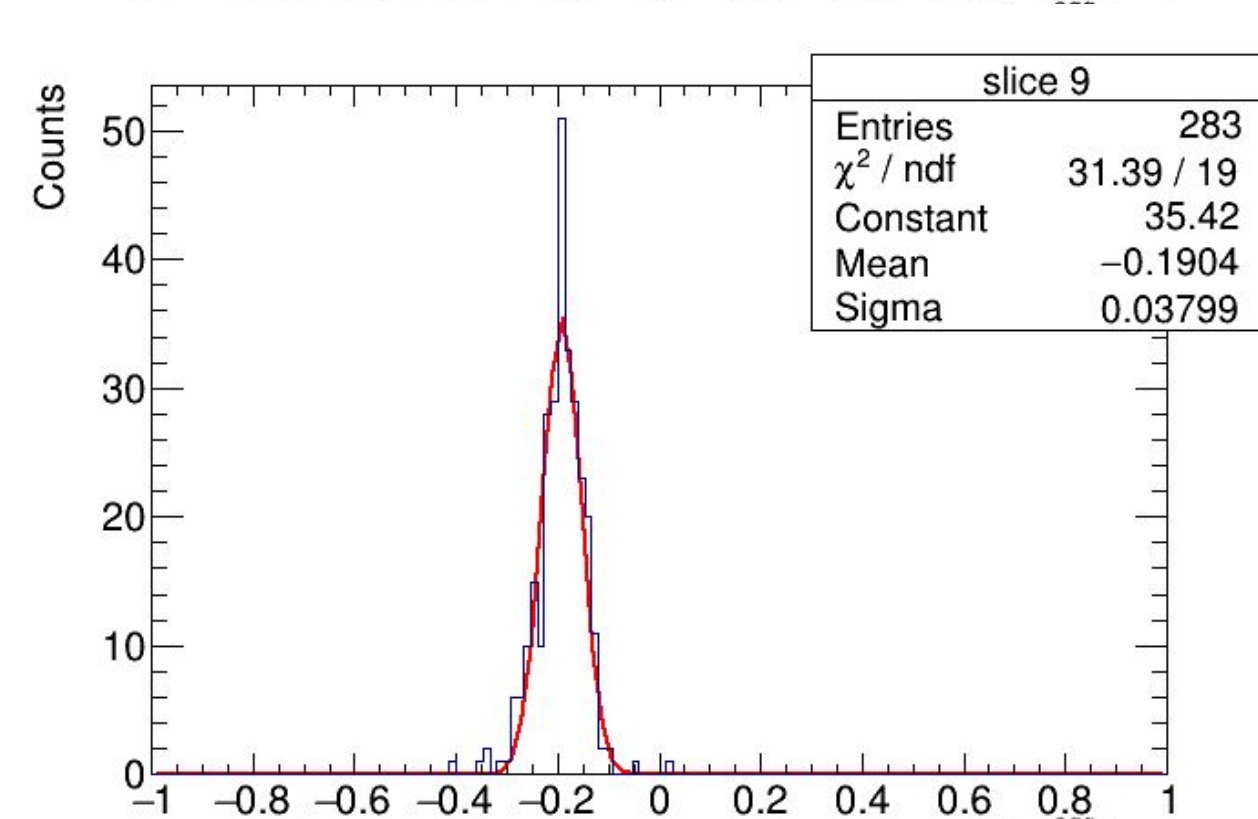
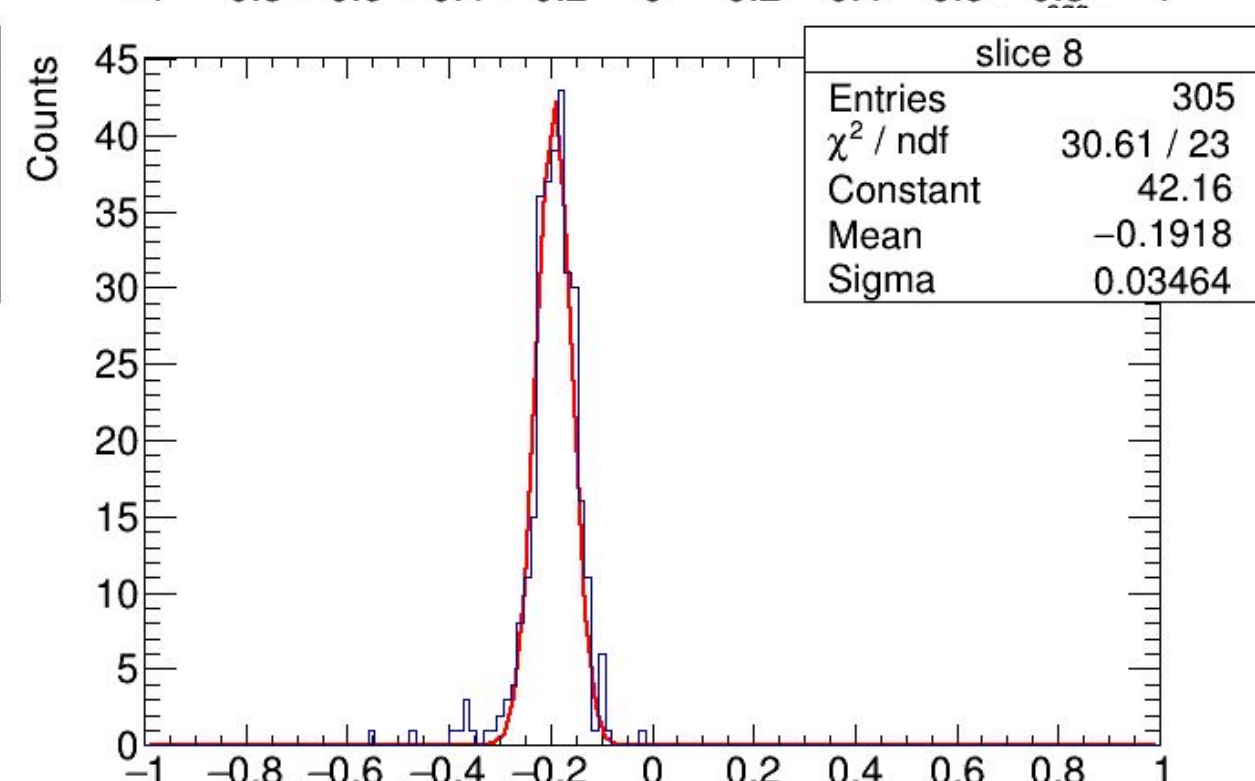
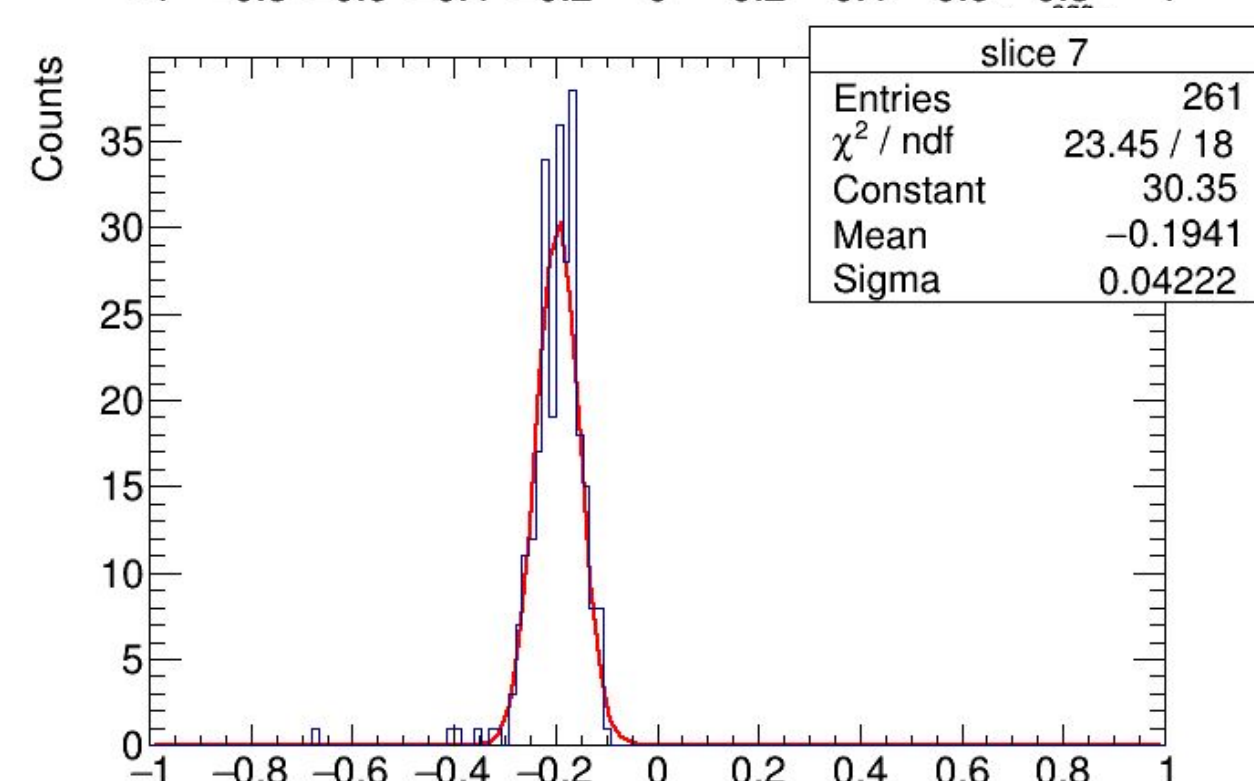
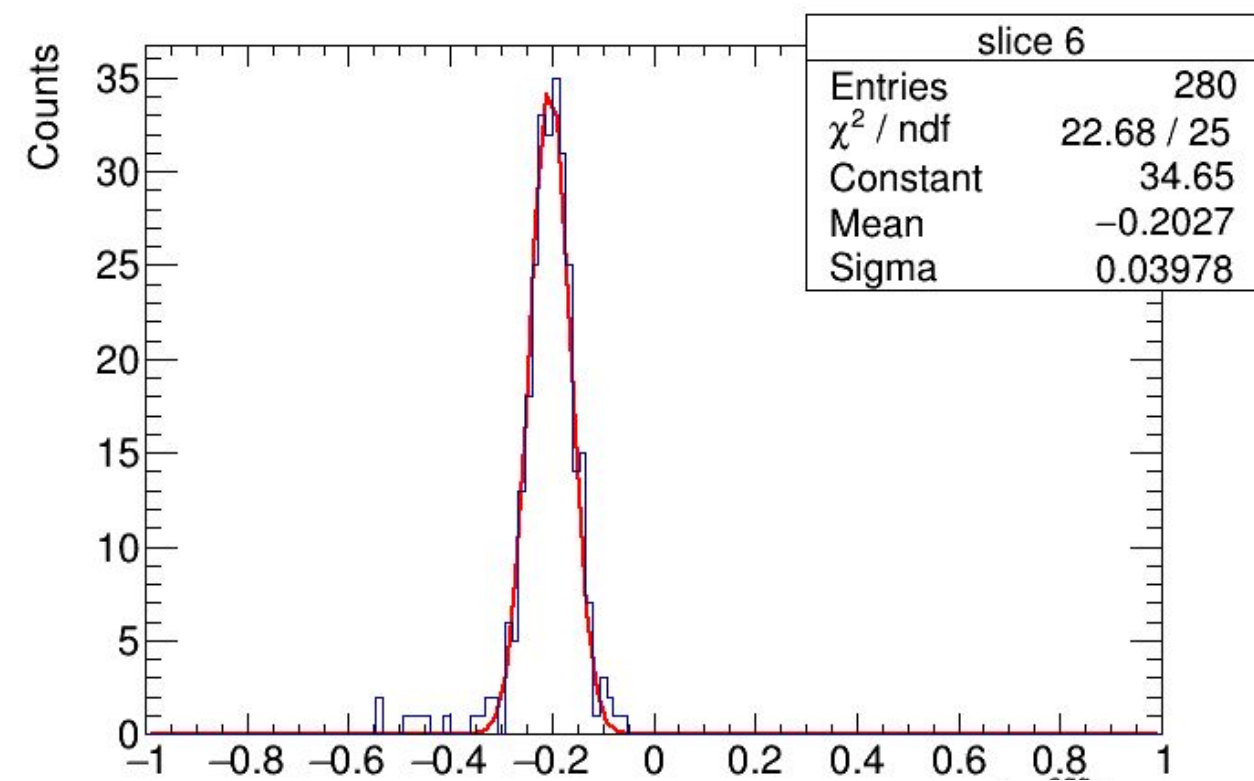
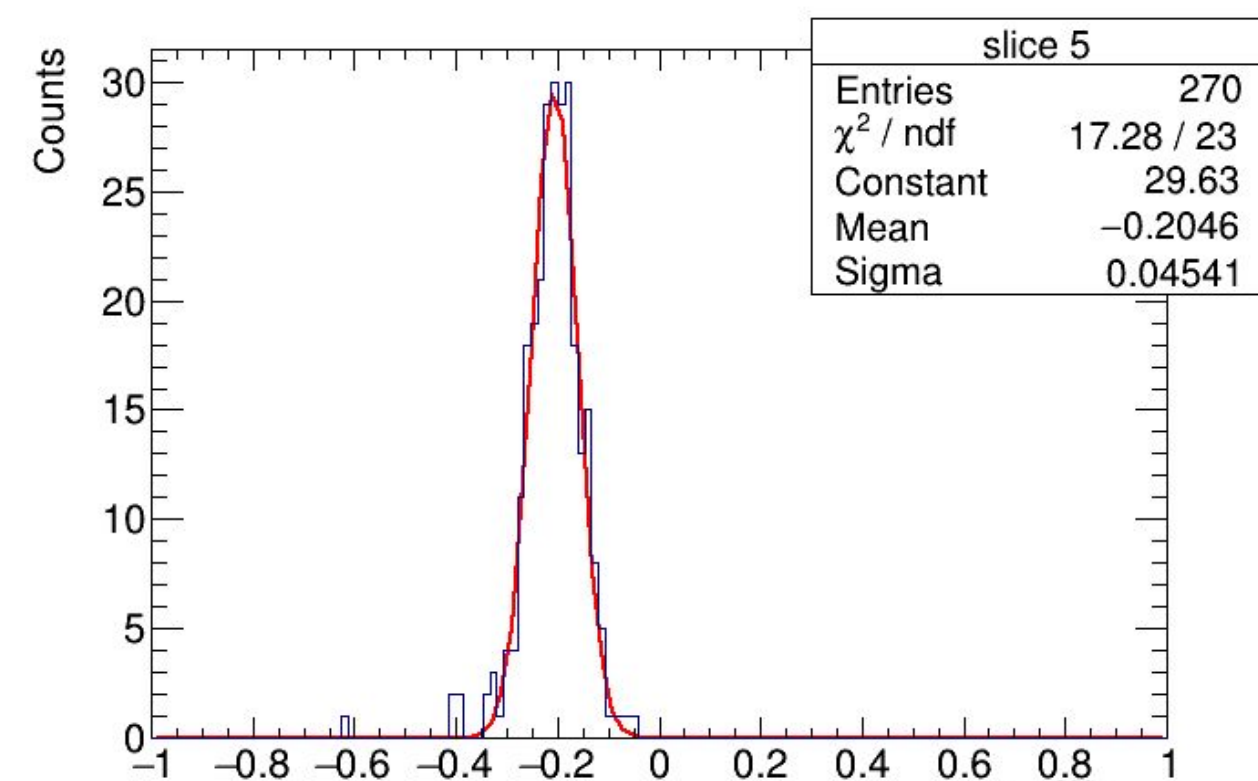
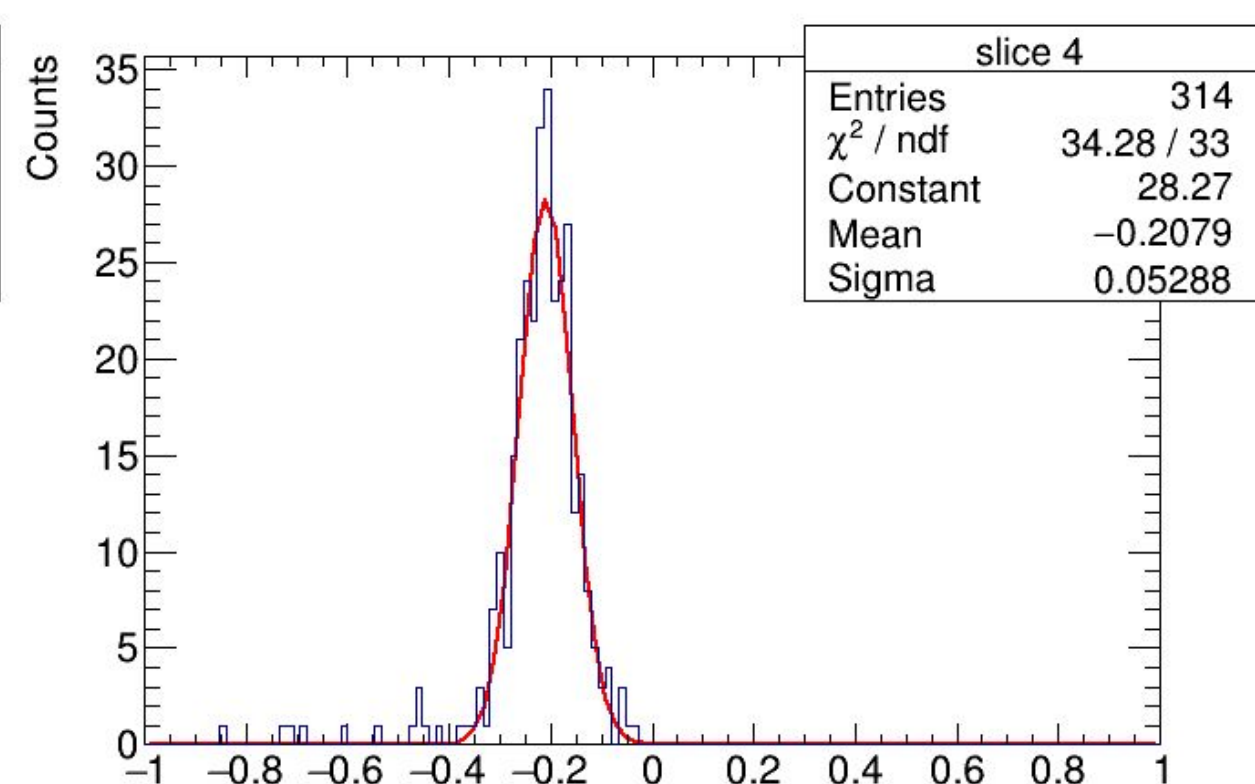
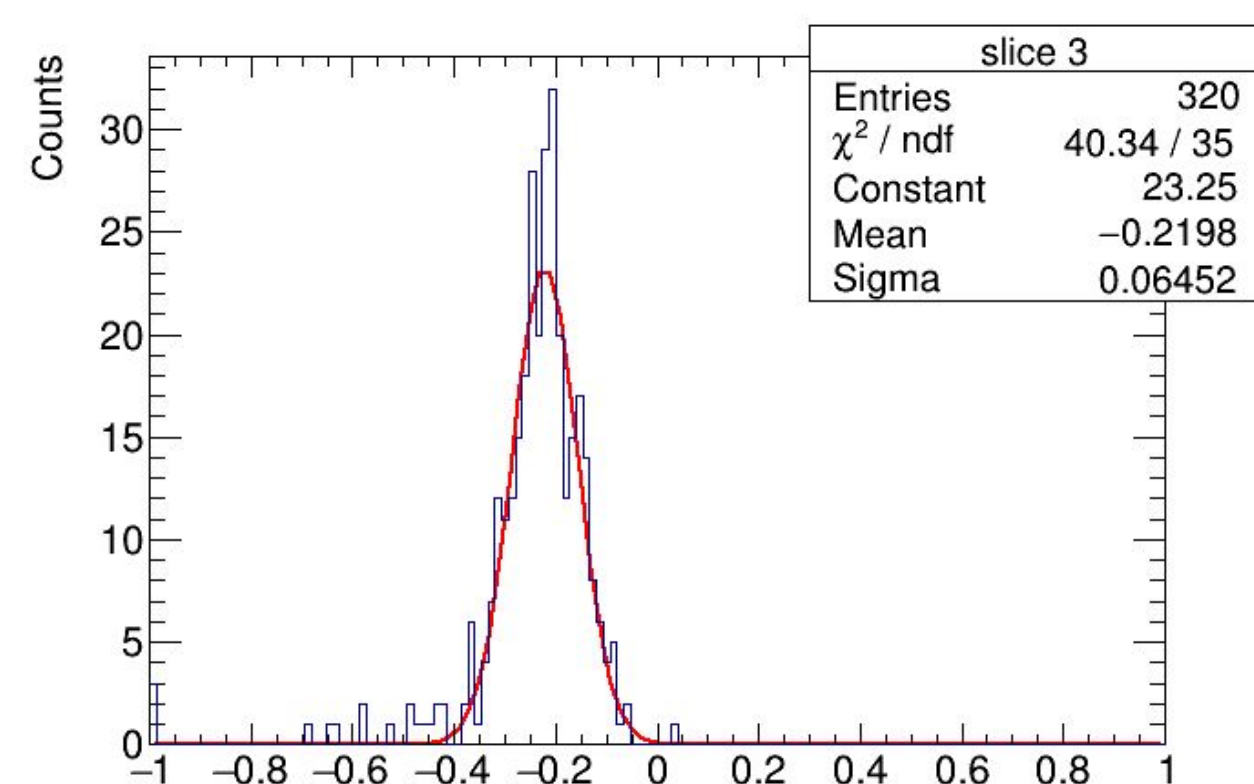
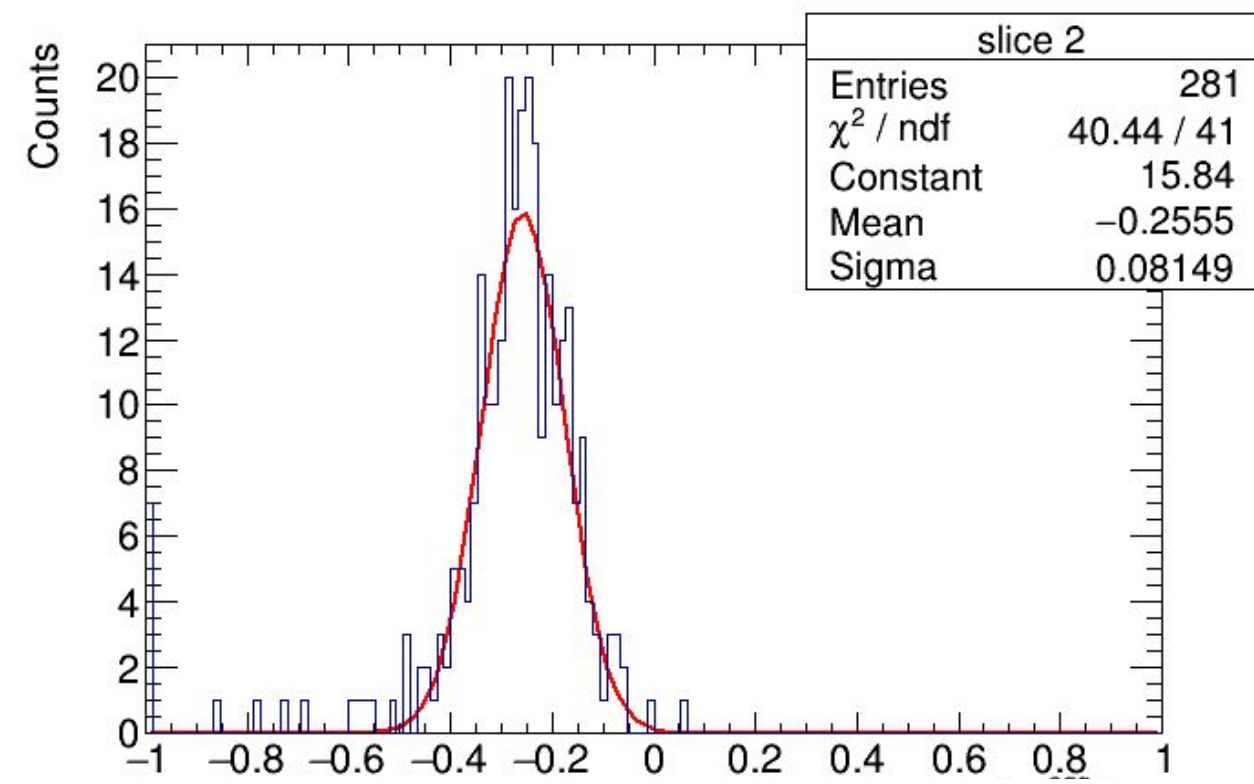
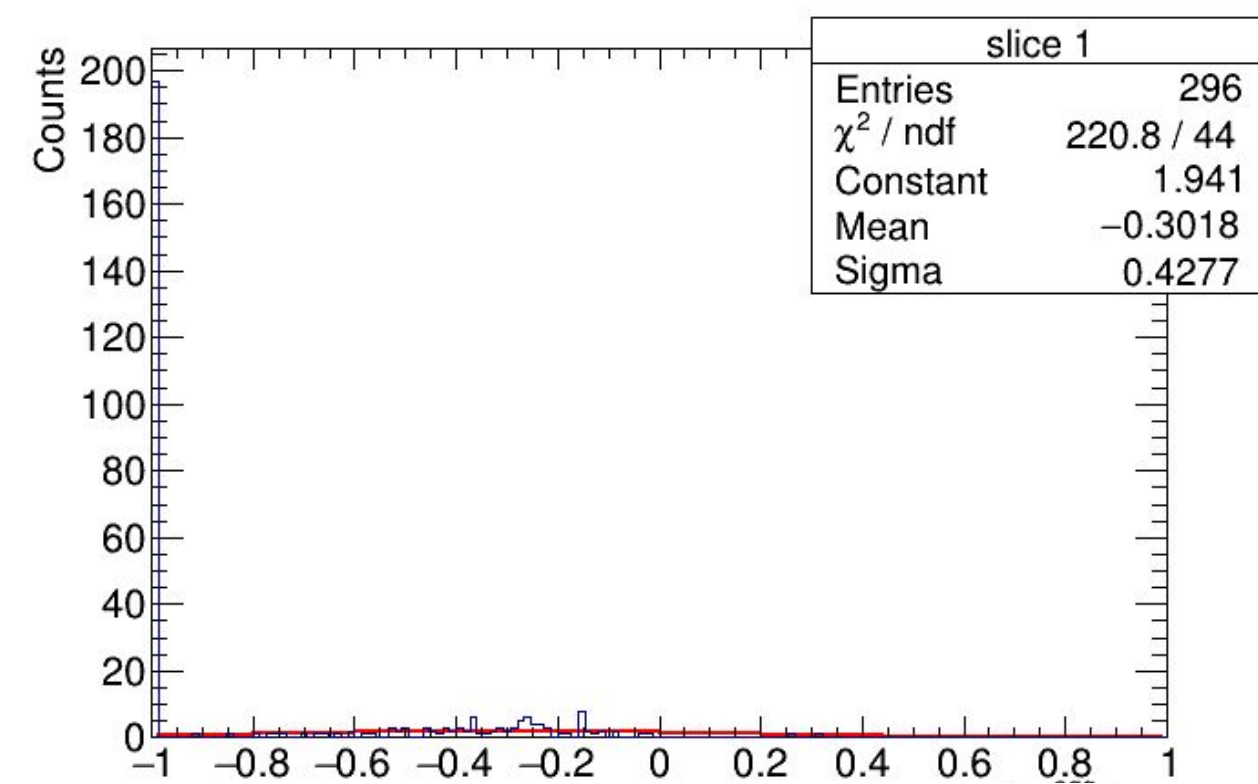
σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce-ge)/ge$ vs ge plot. (shown on the previous slide)



Mean of the Gaussians fitted to the slices of the $(ce-ge)/ge$ vs ge plot.

FEMC + FHCAL

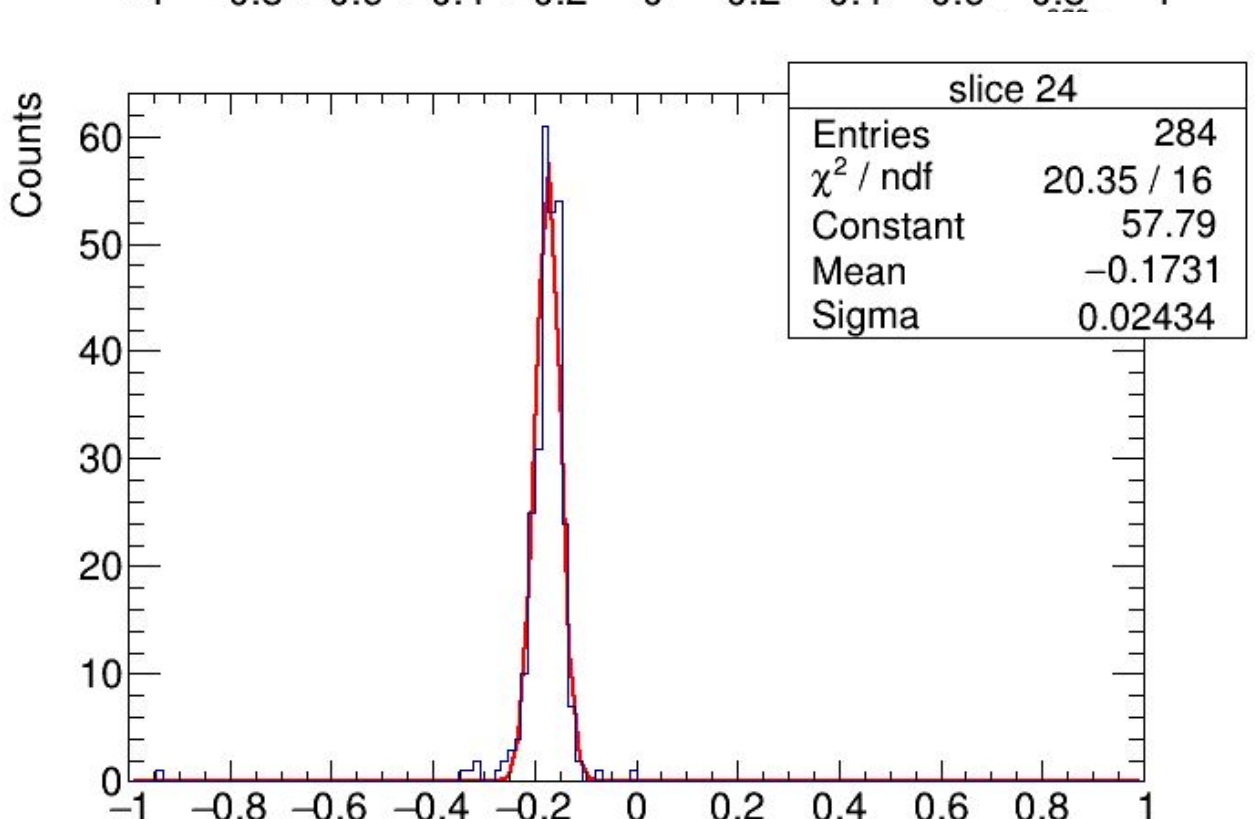
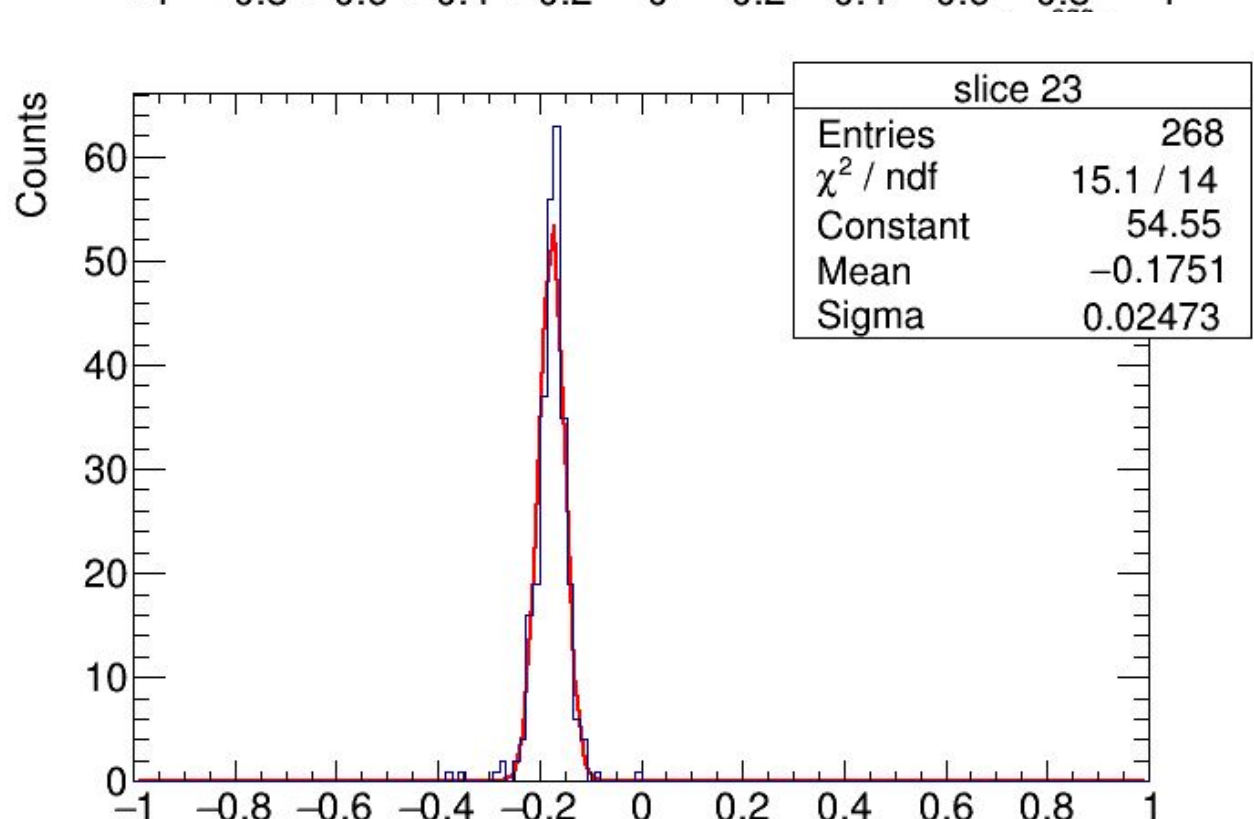
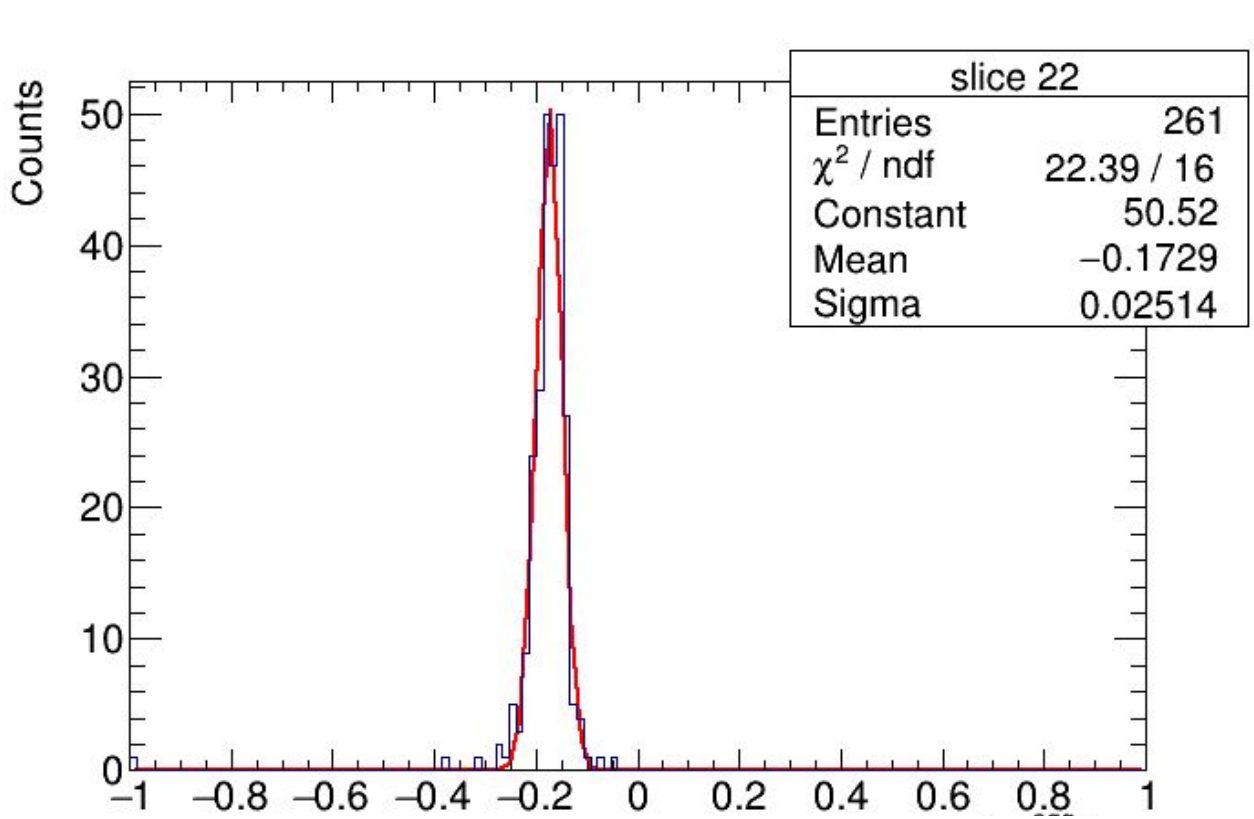
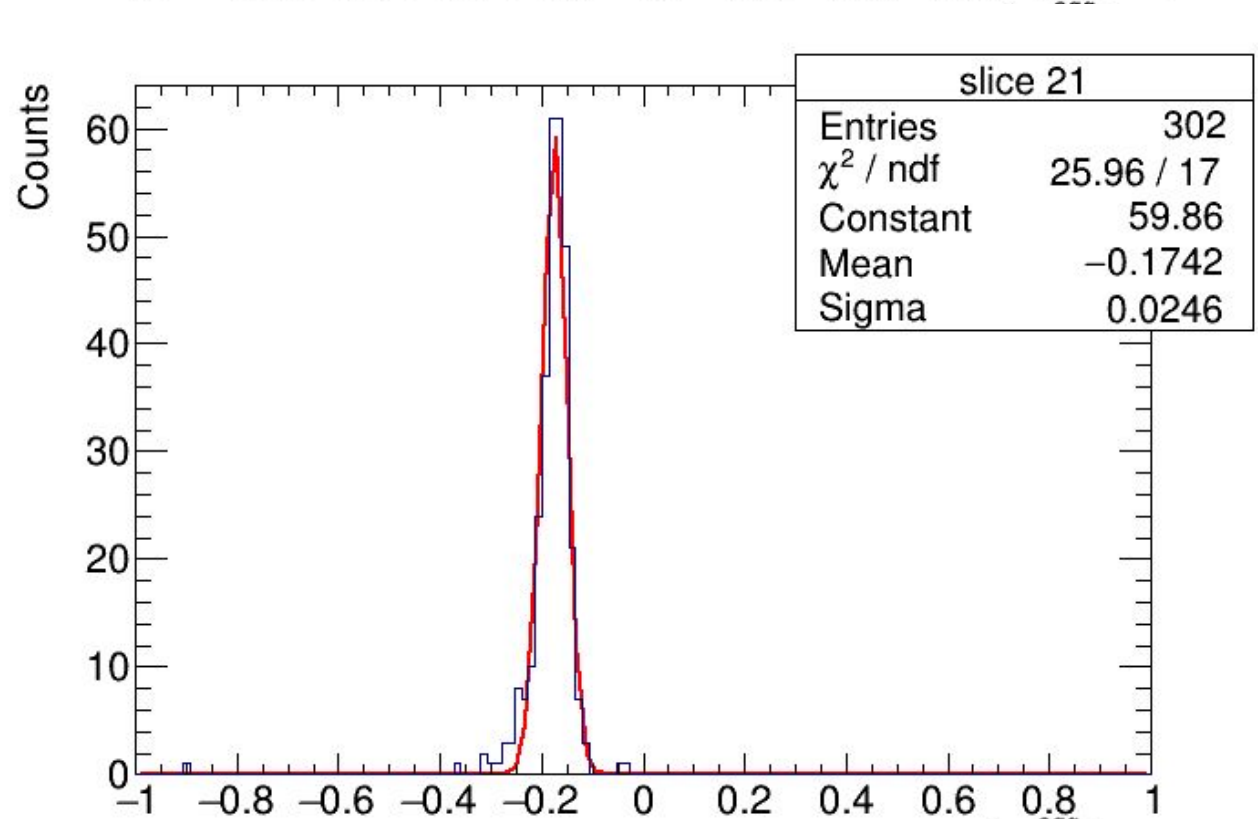
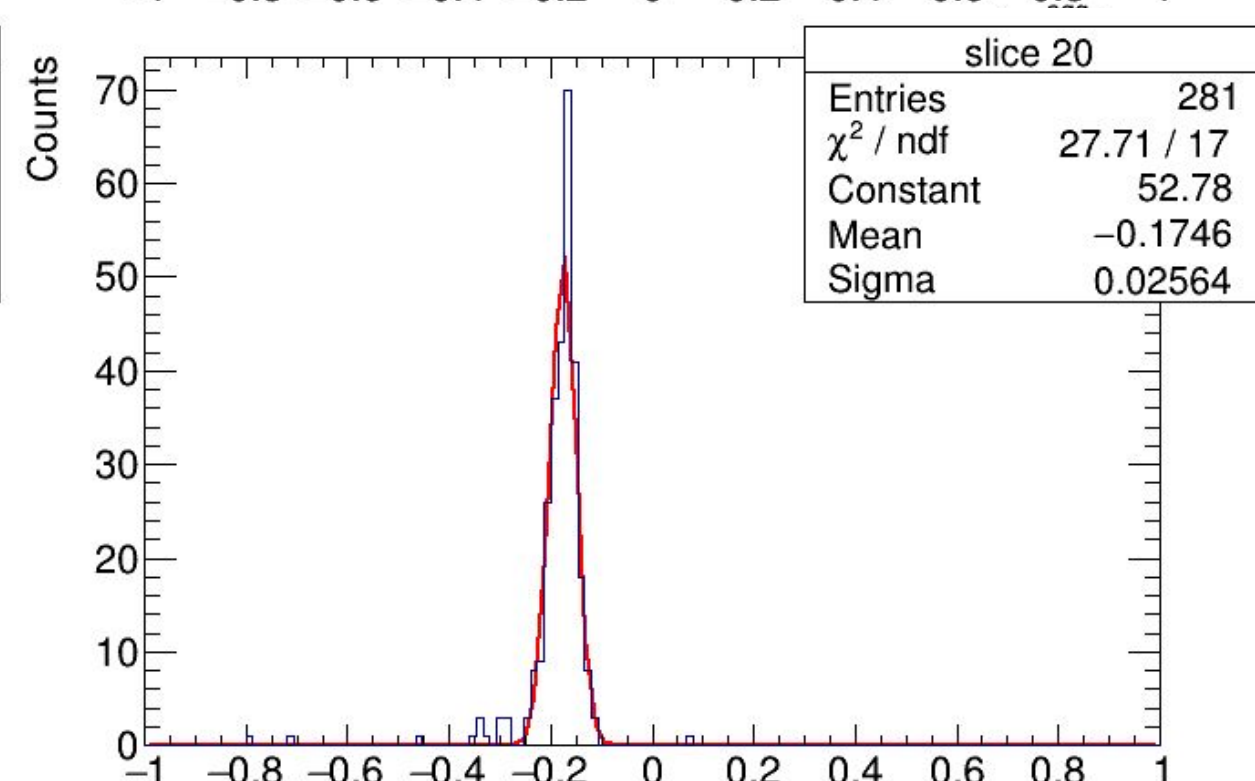
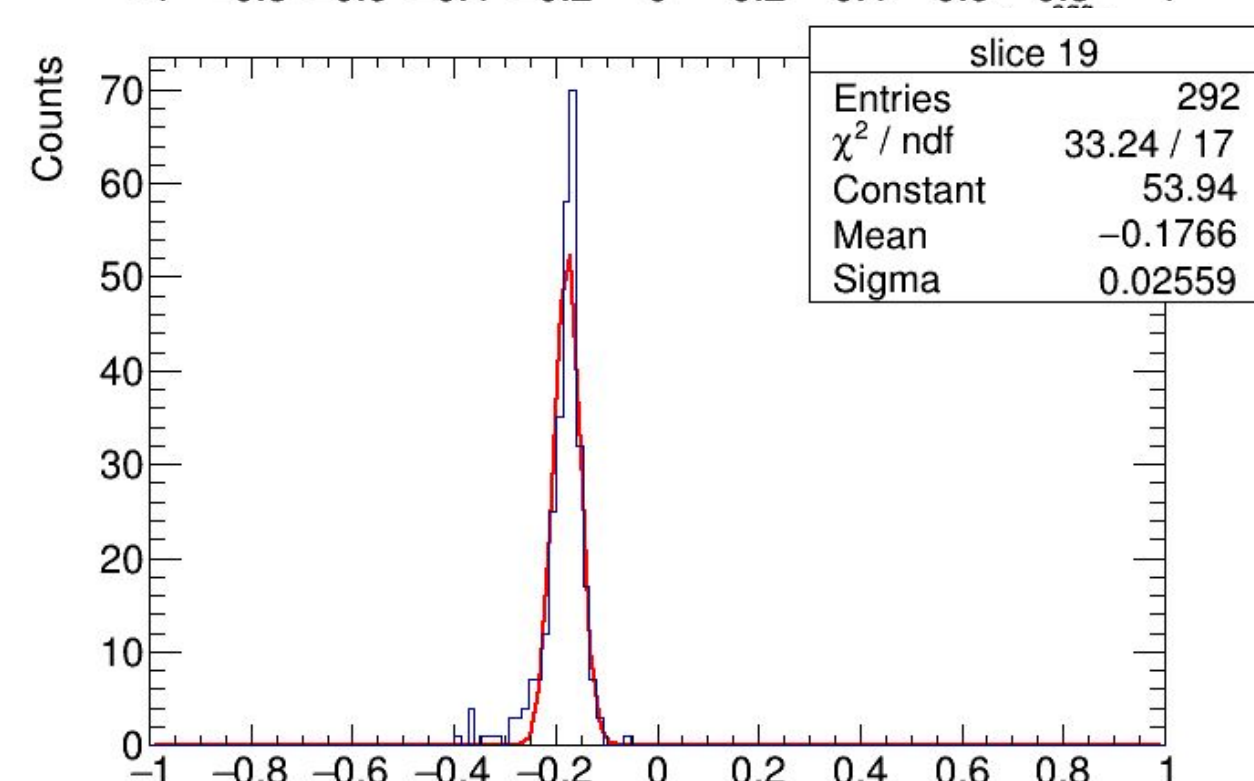
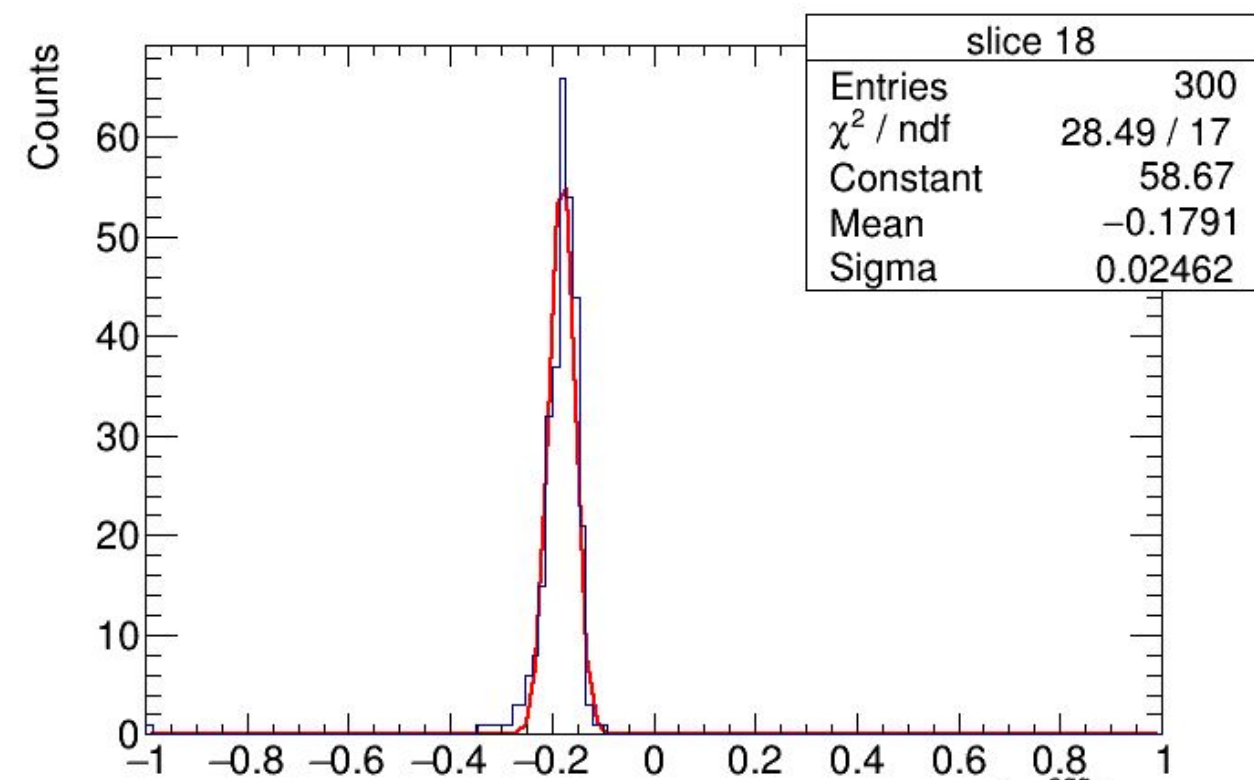
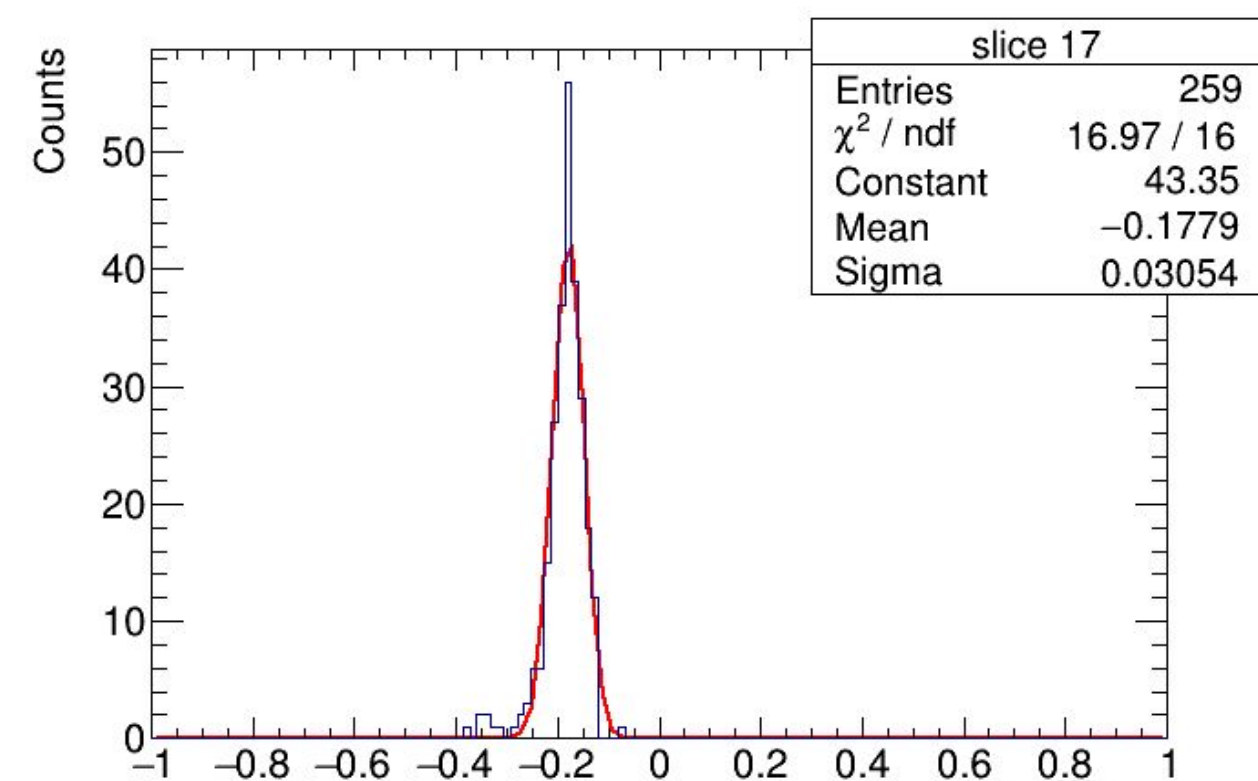
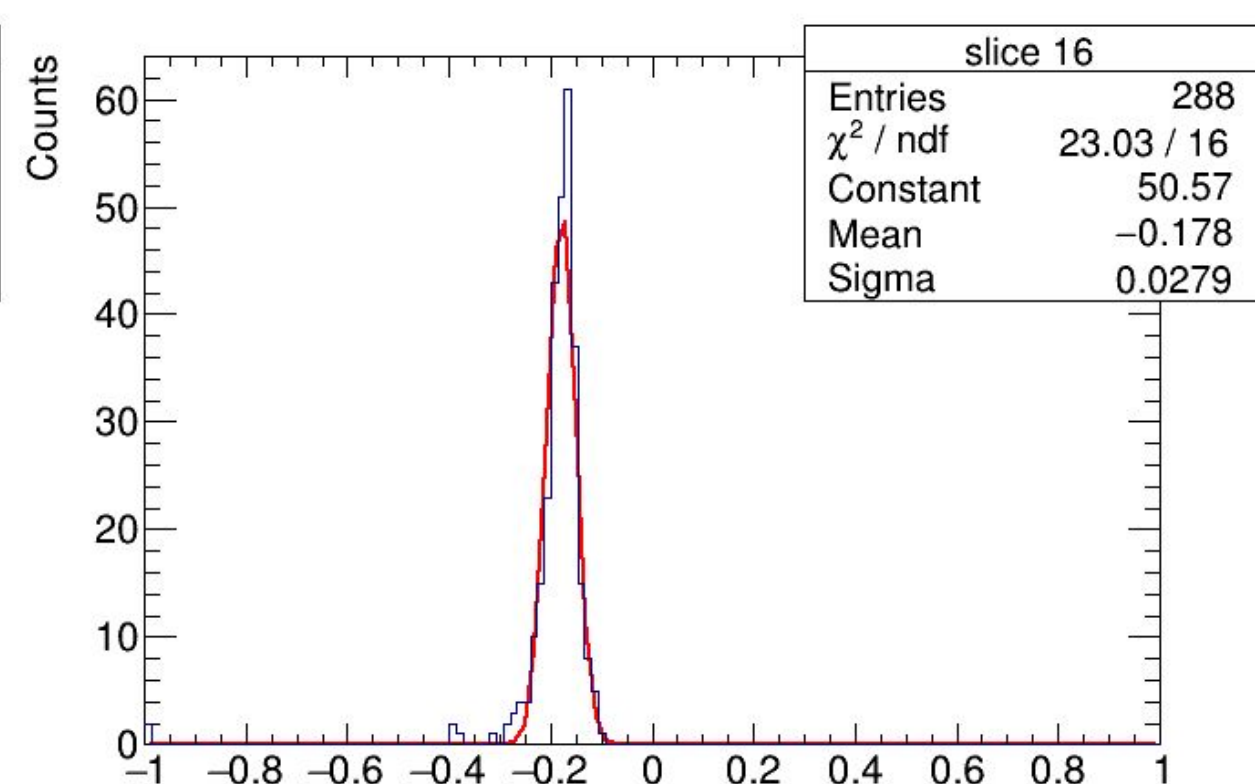
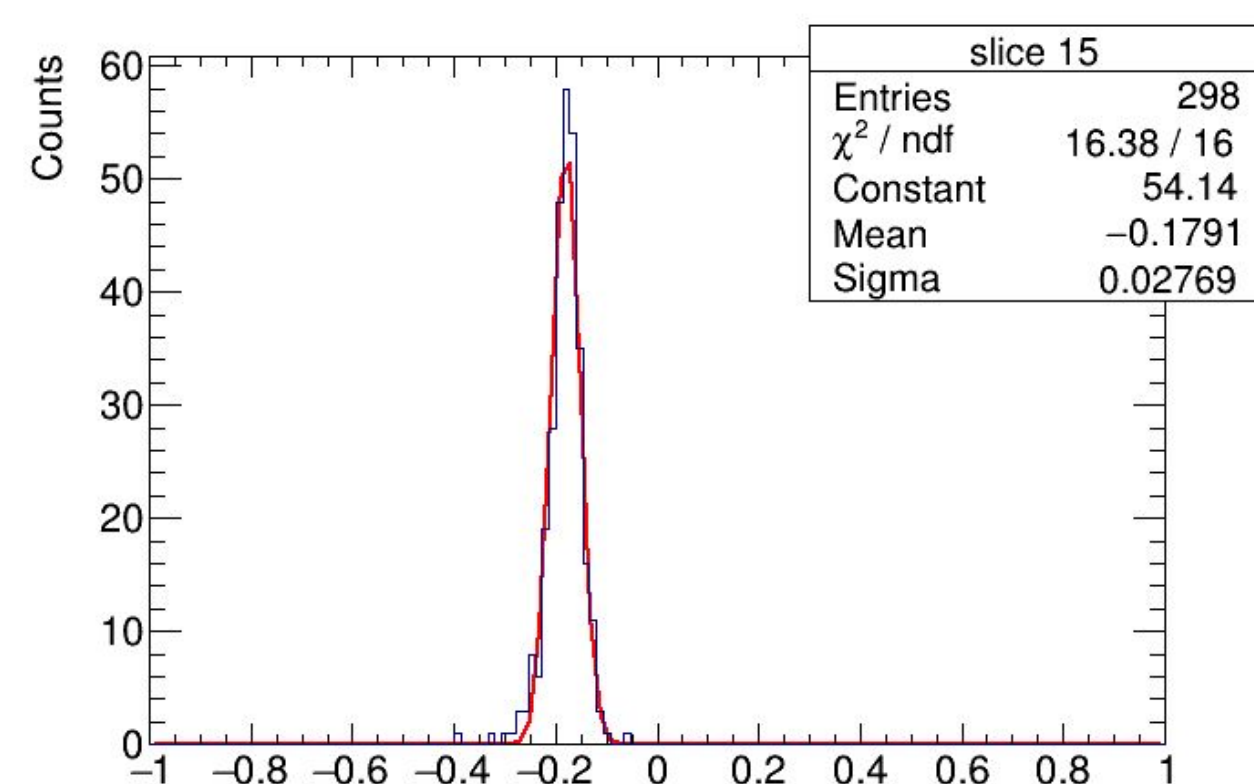
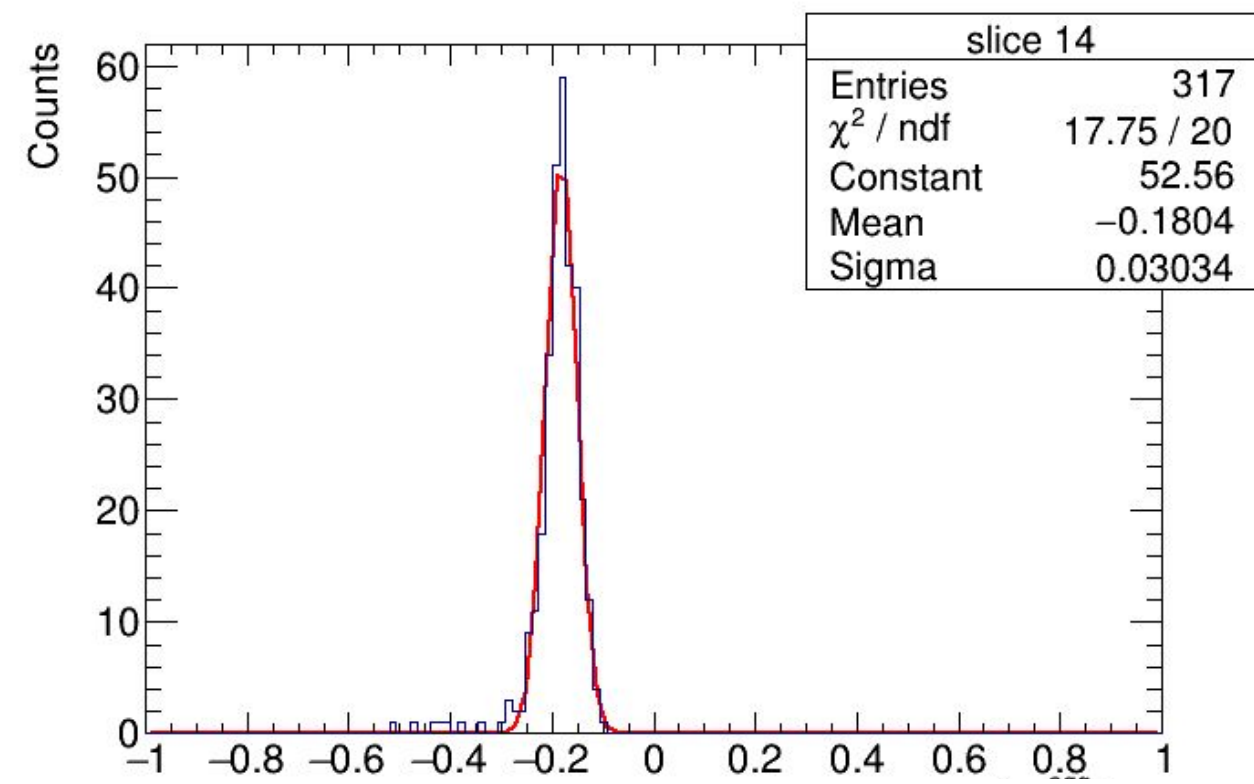
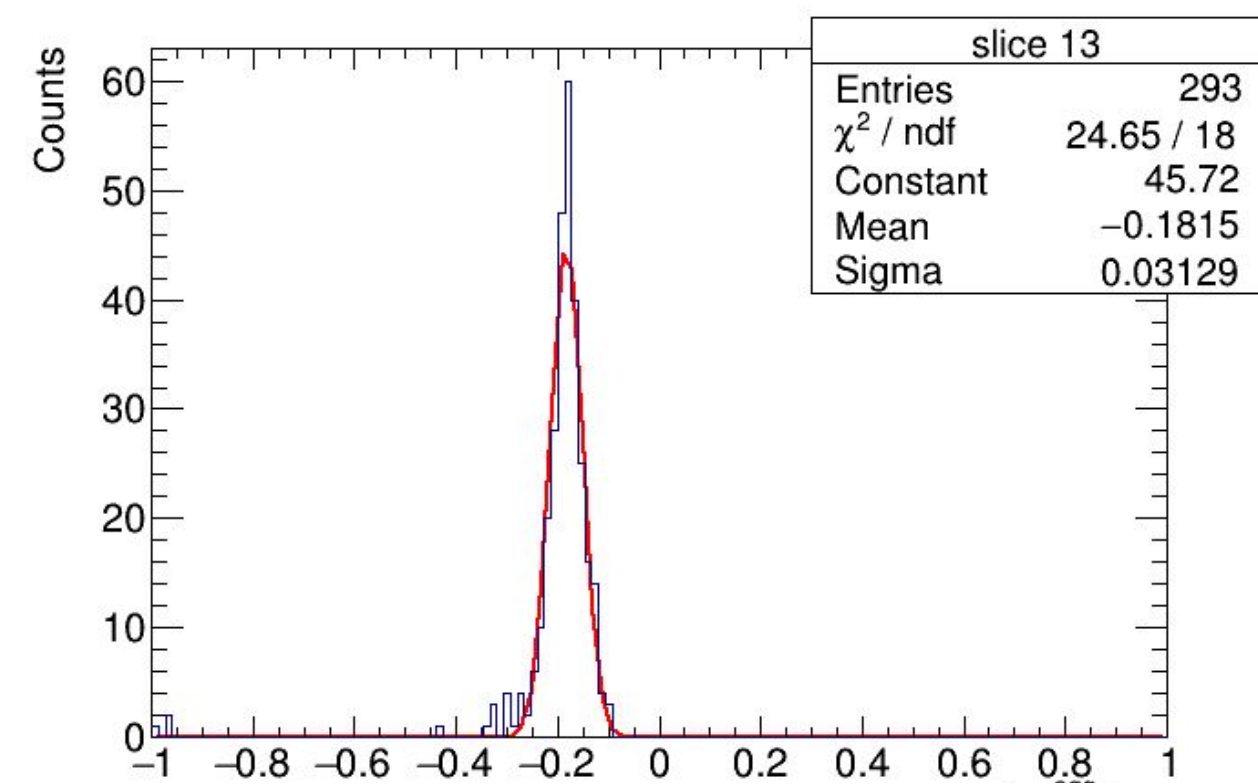
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/ge$

FEMC + FHCAL

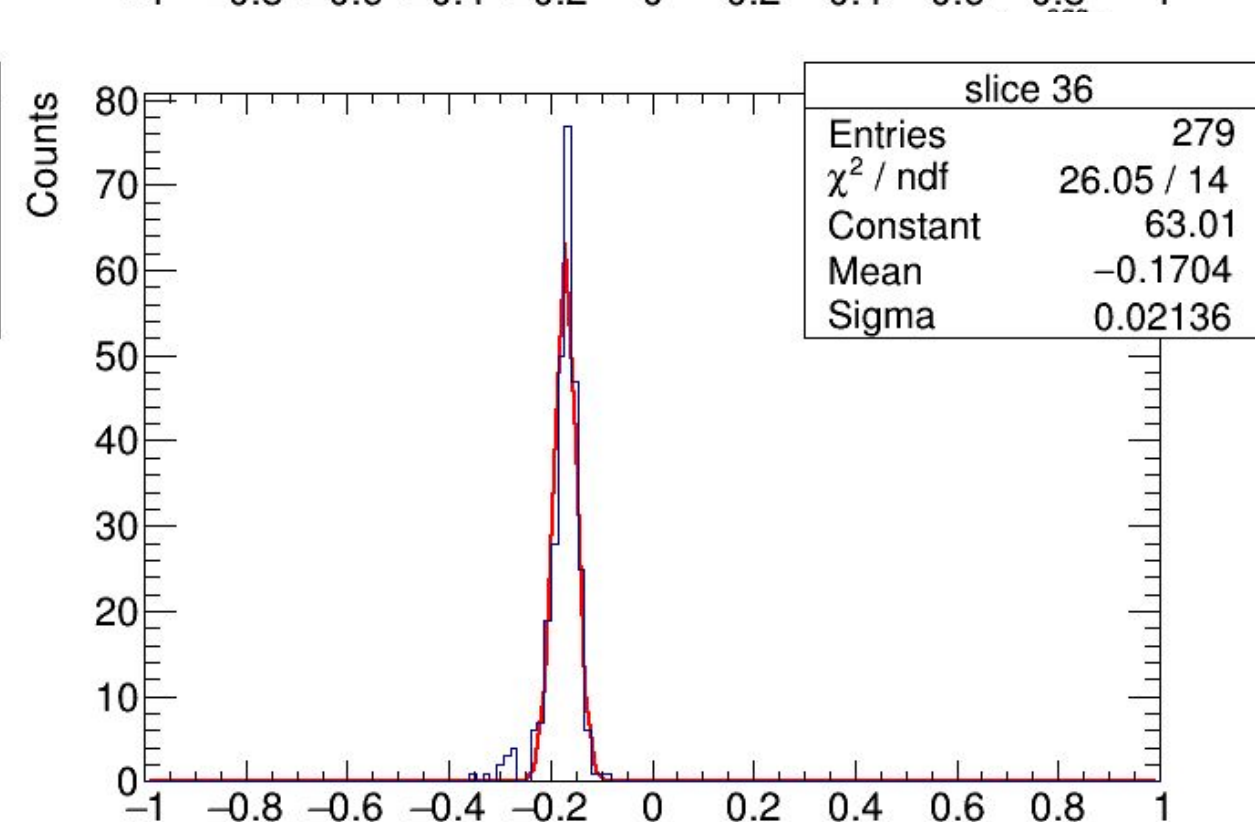
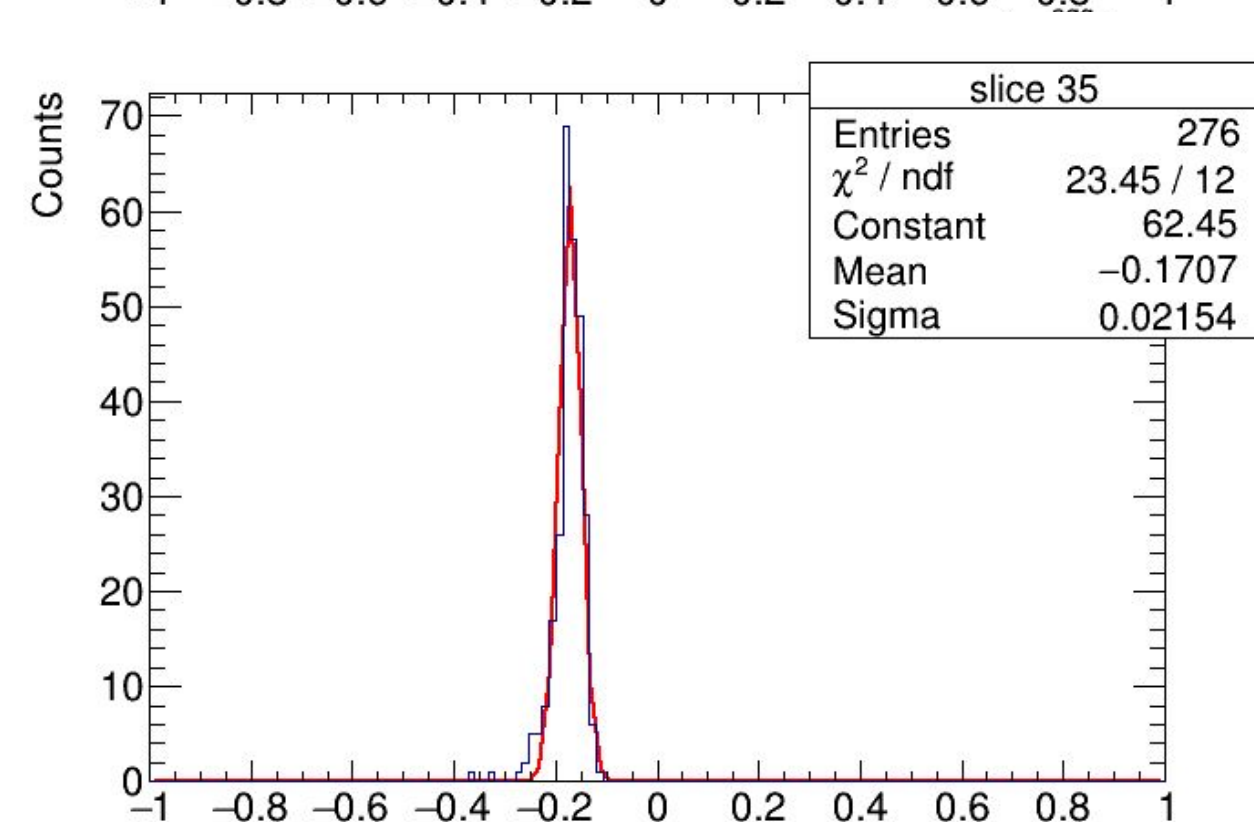
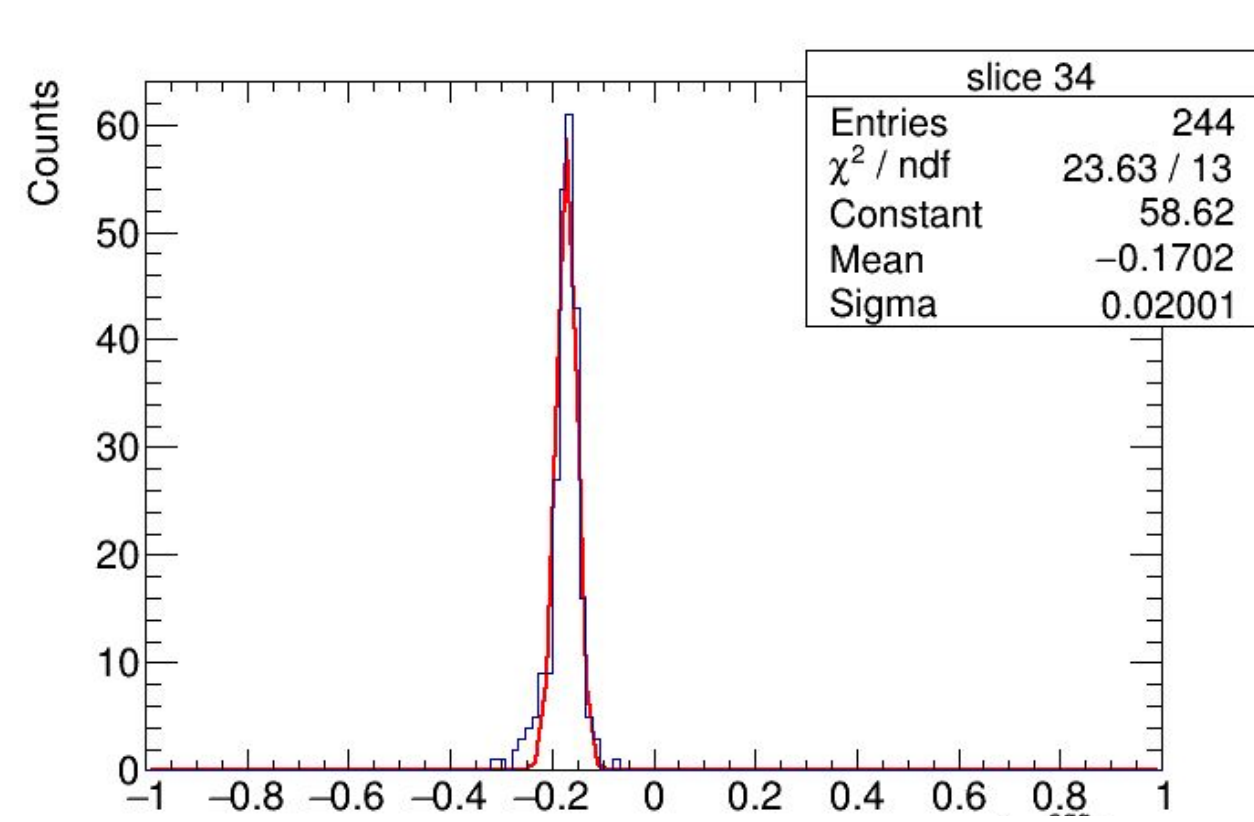
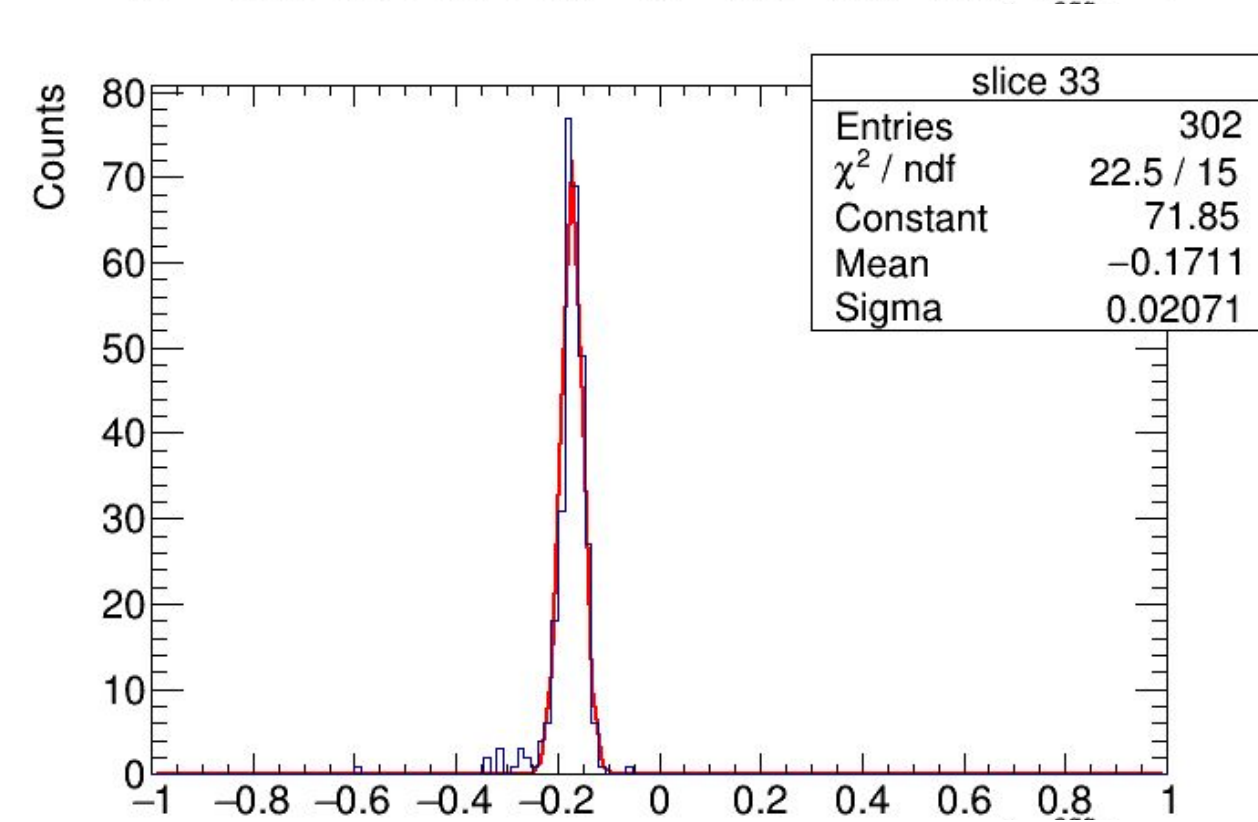
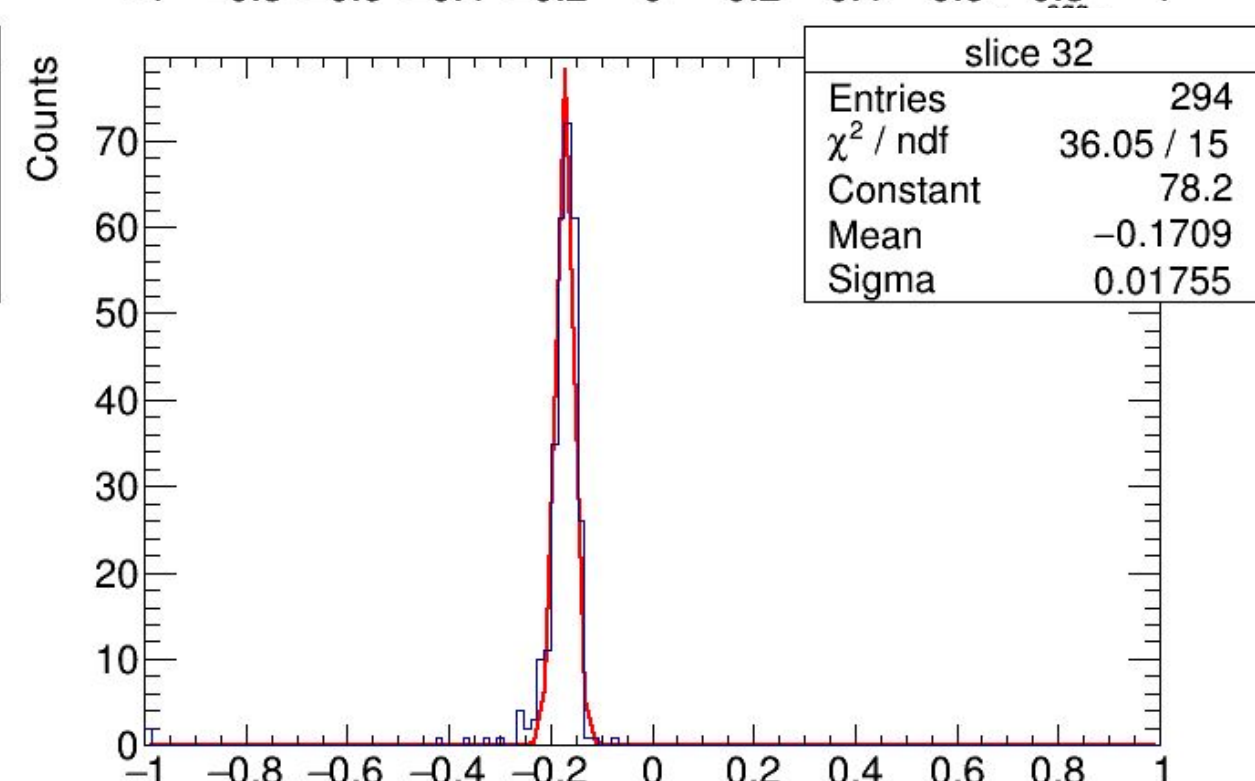
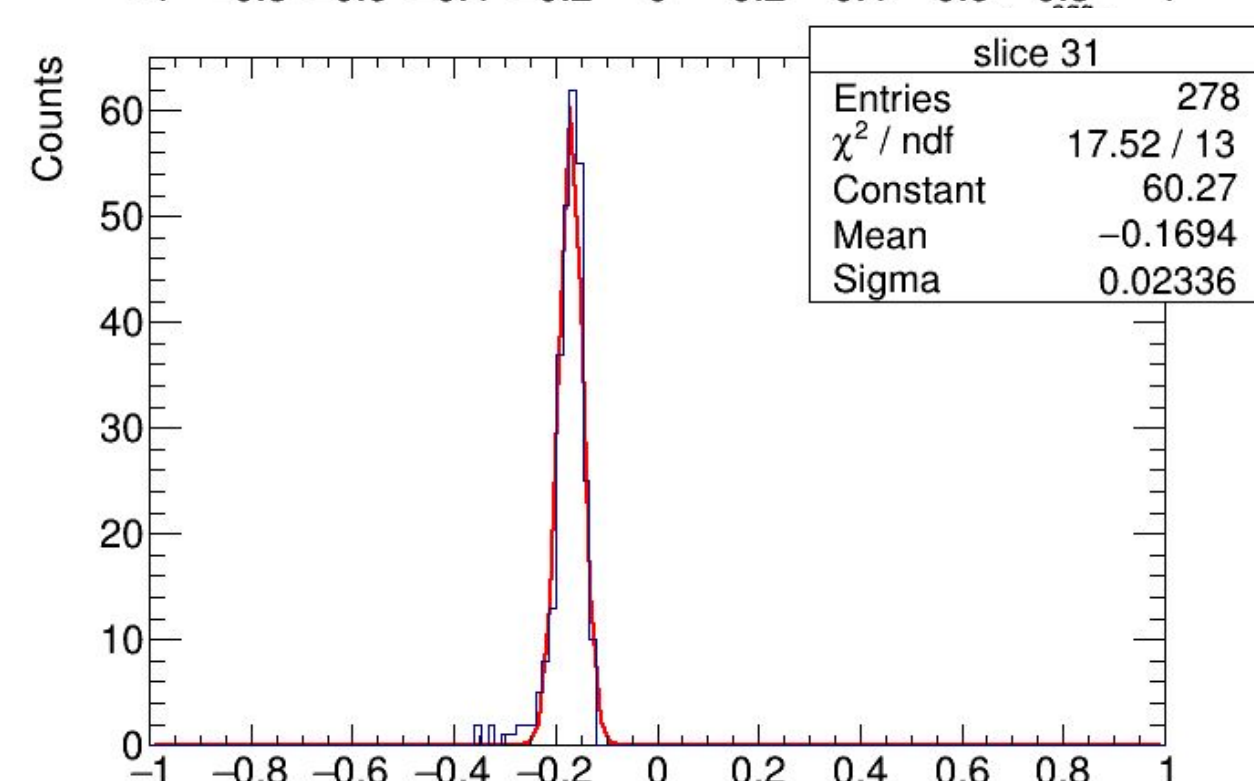
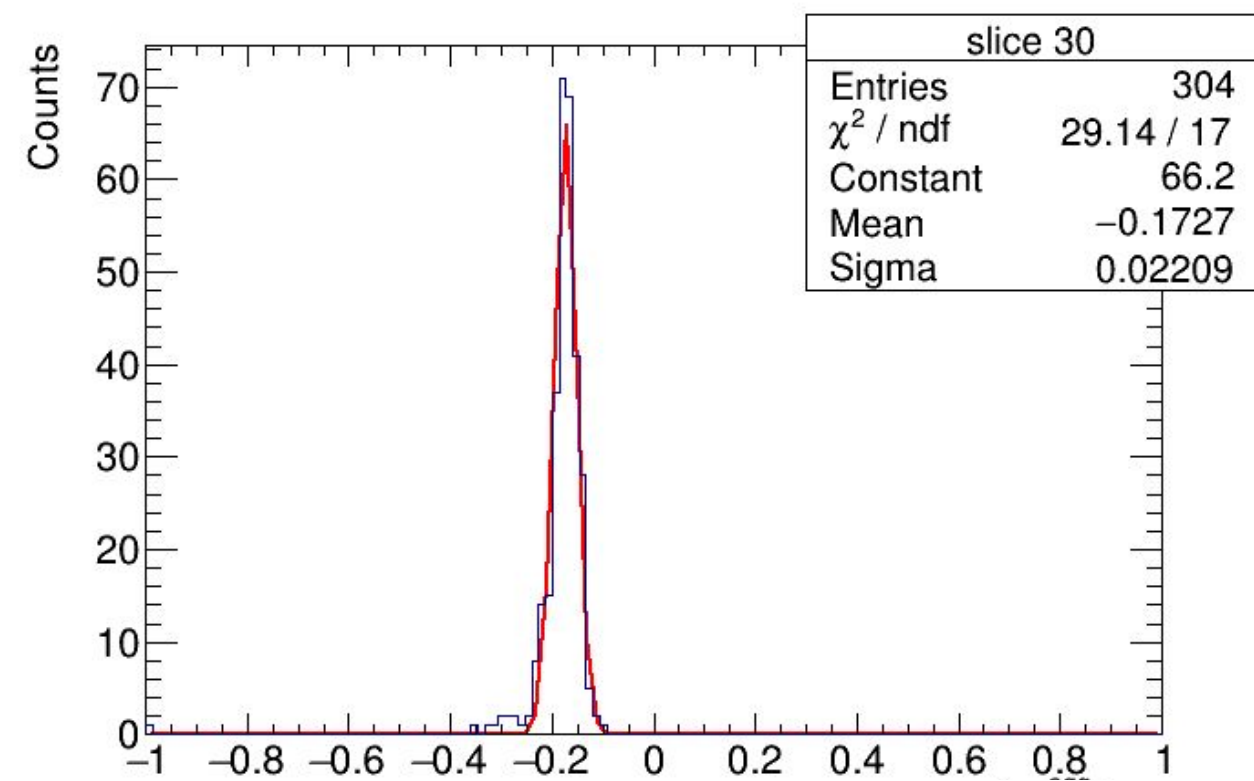
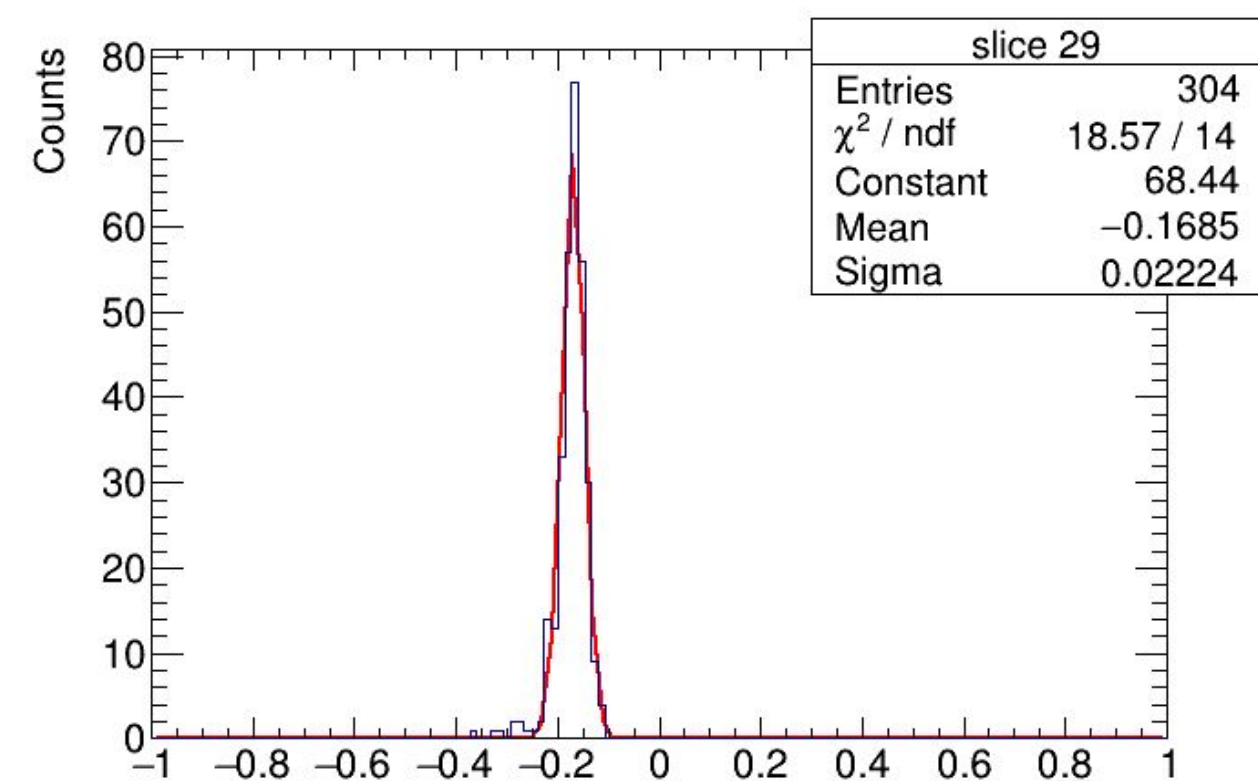
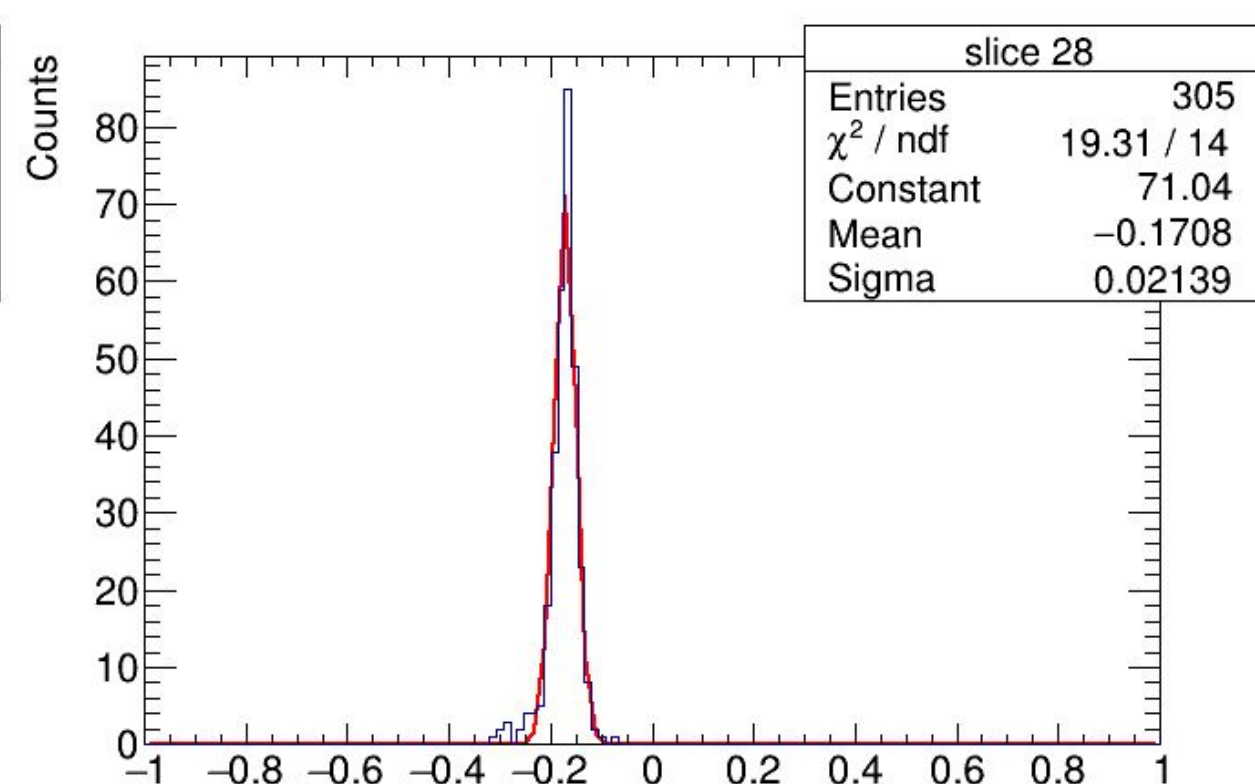
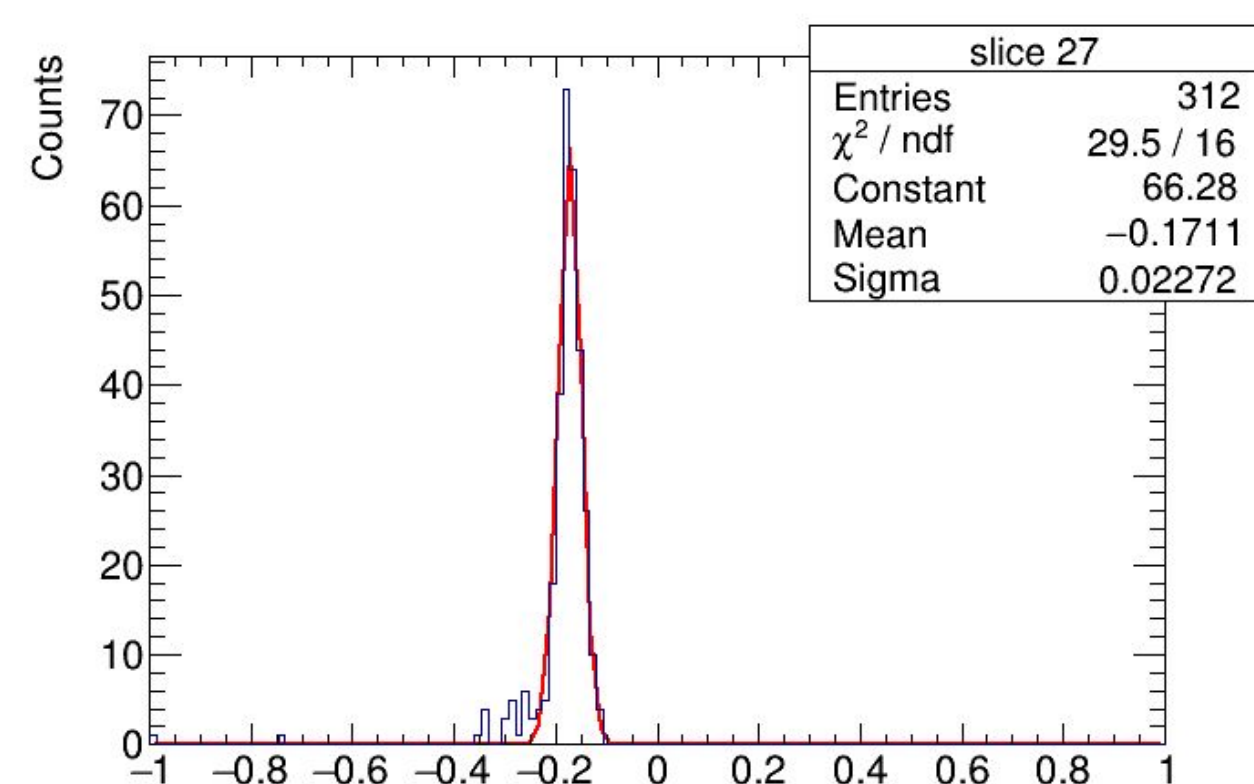
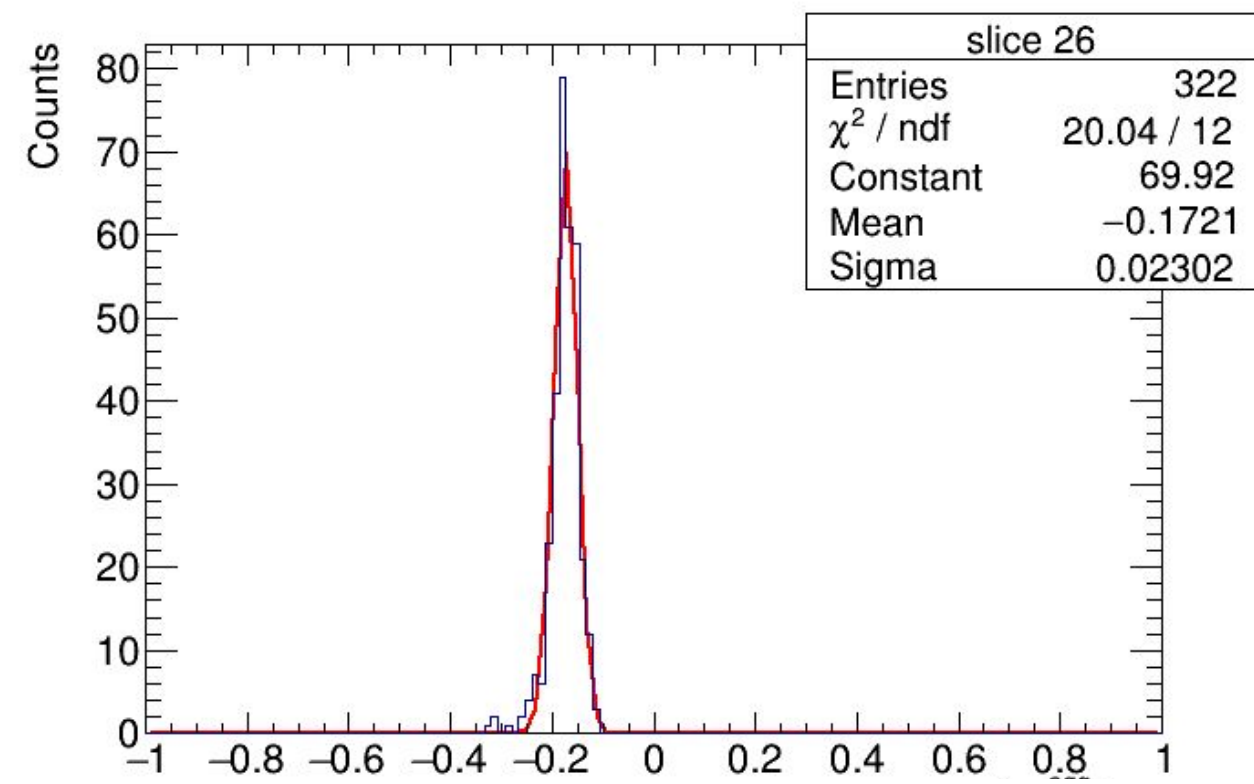
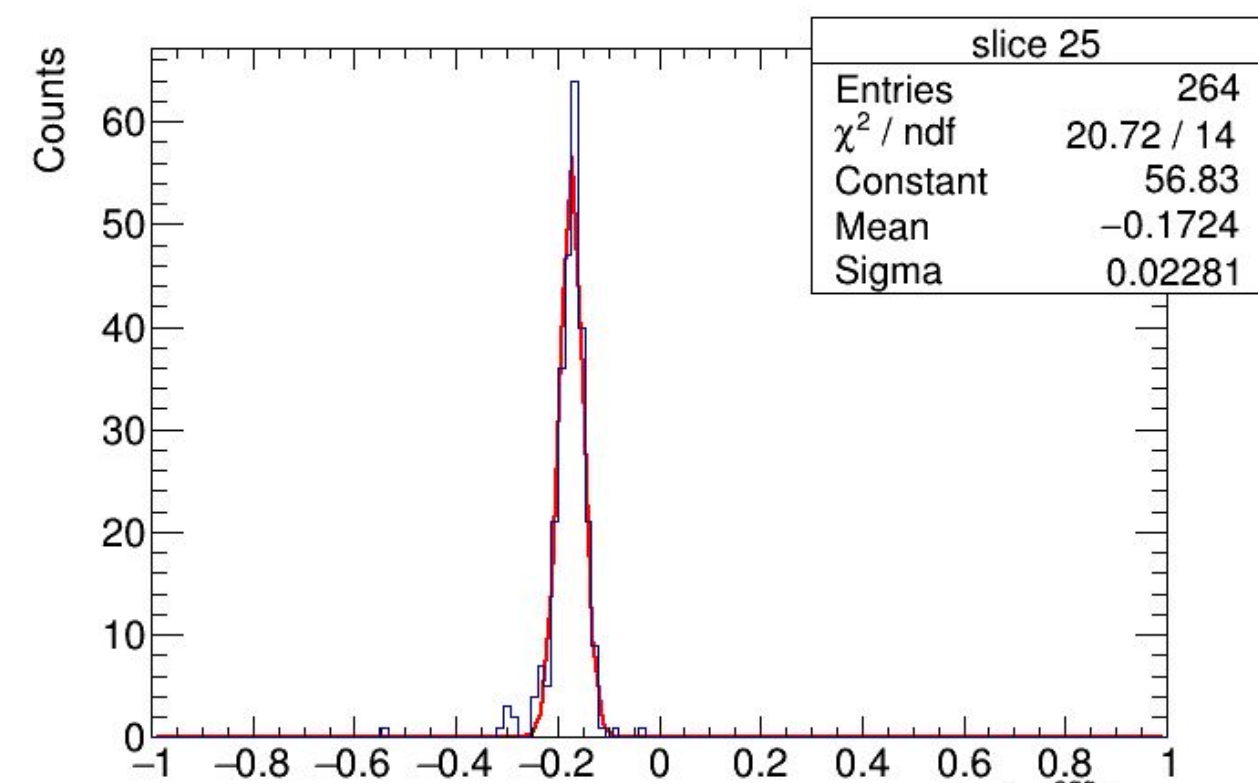
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/ge$

FEMC + FHCAL

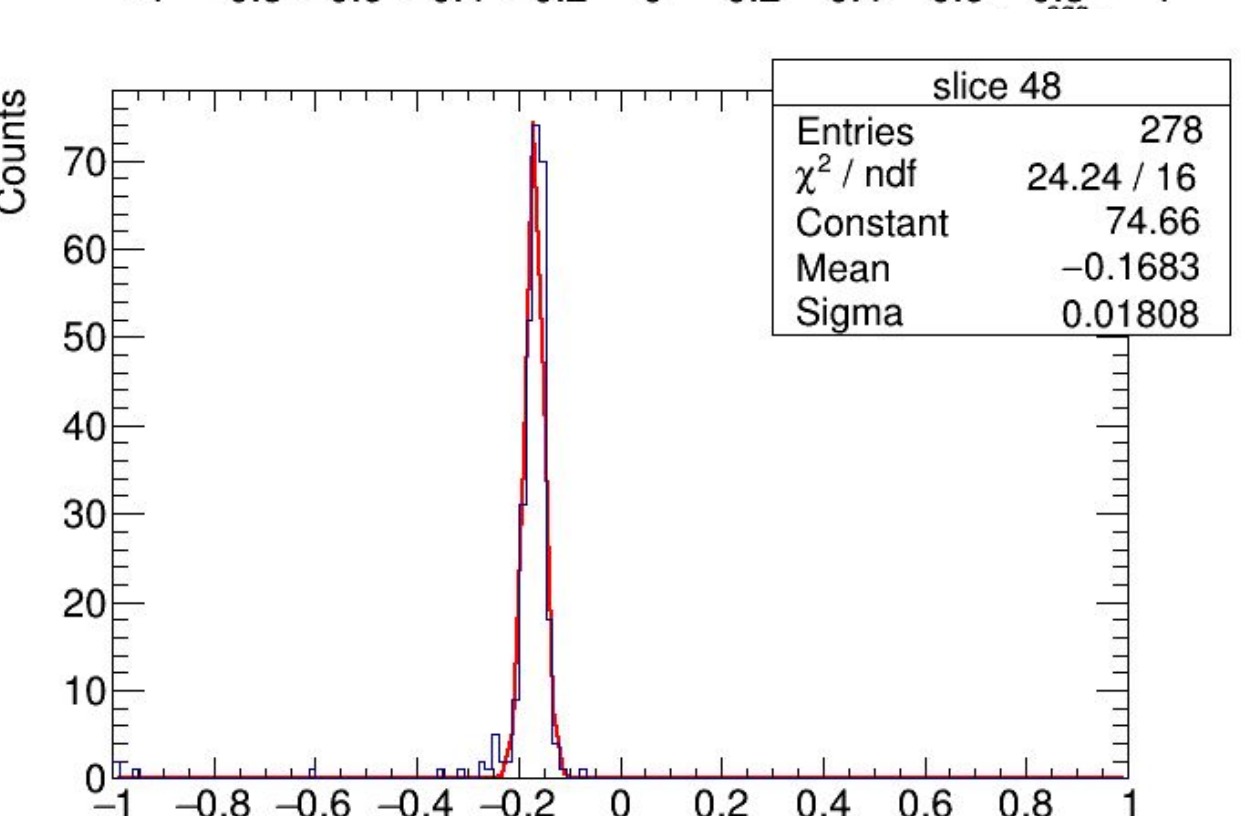
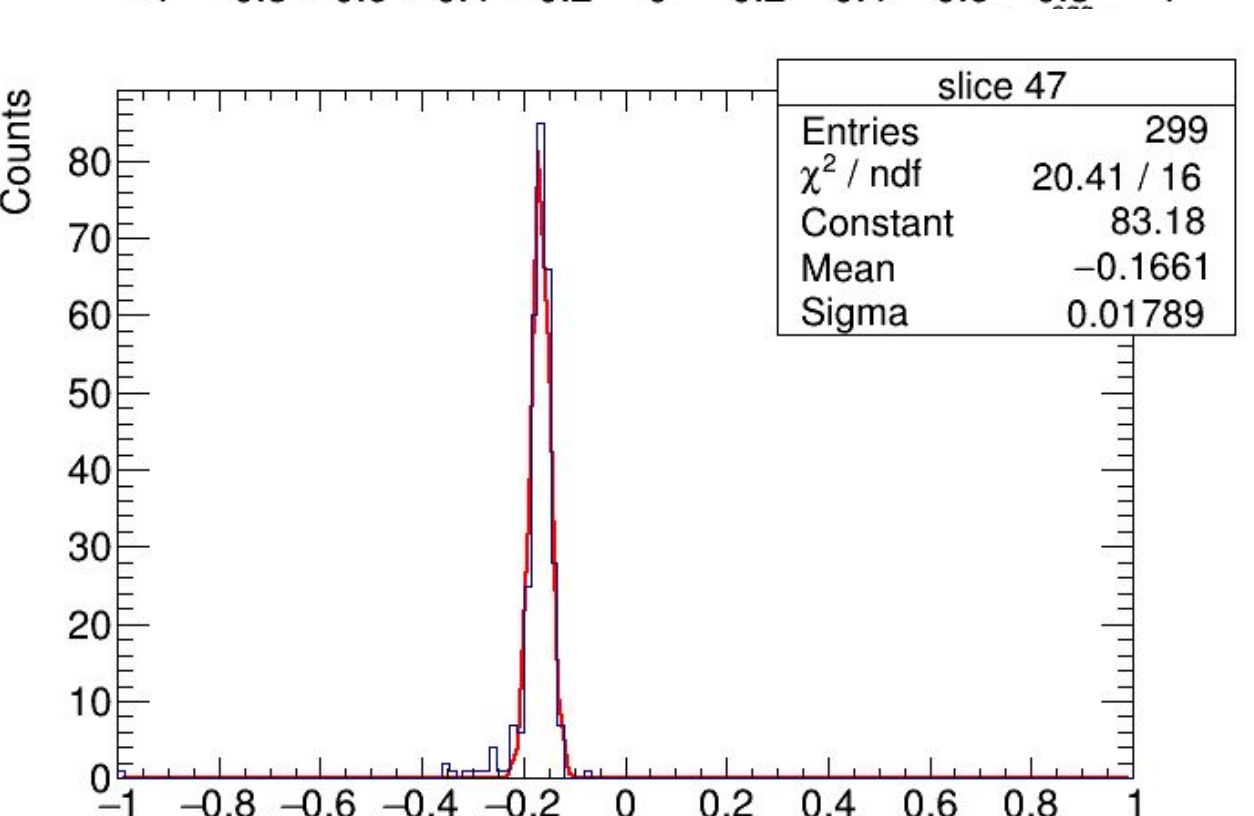
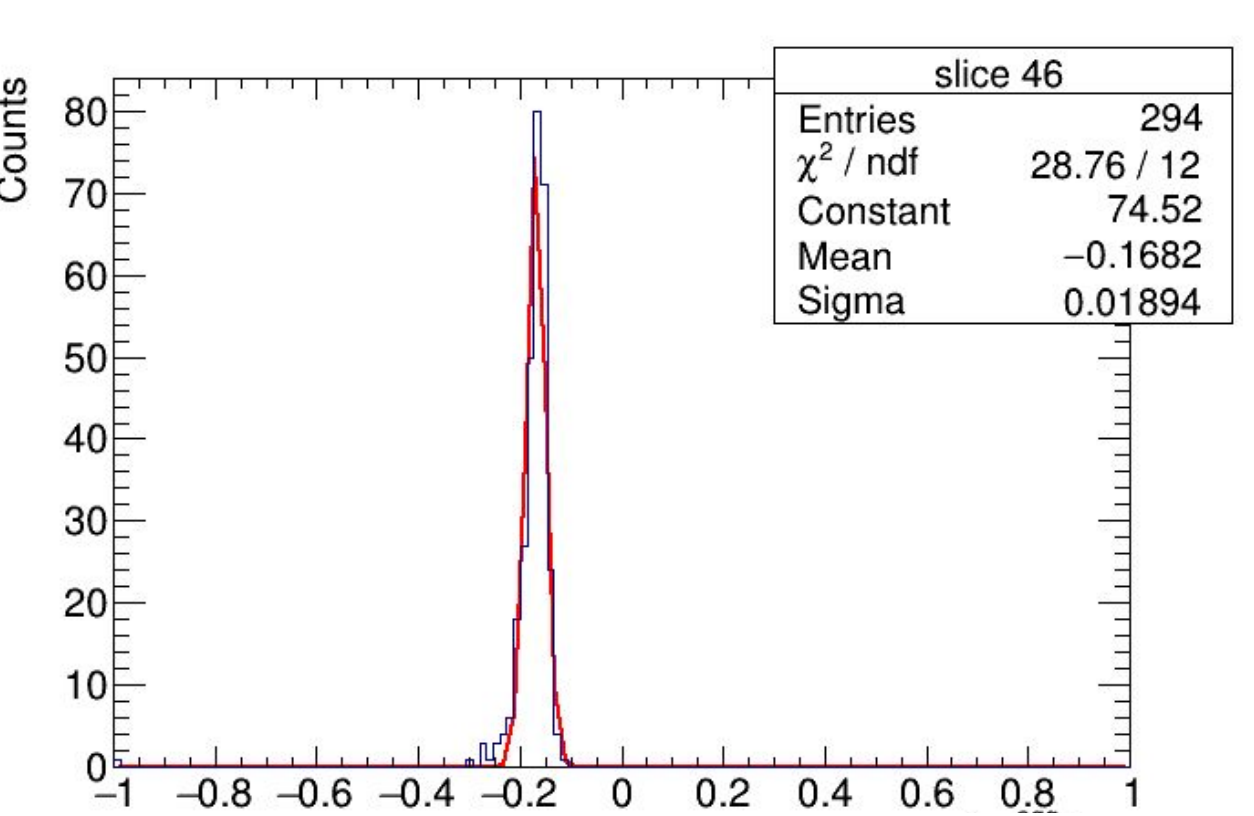
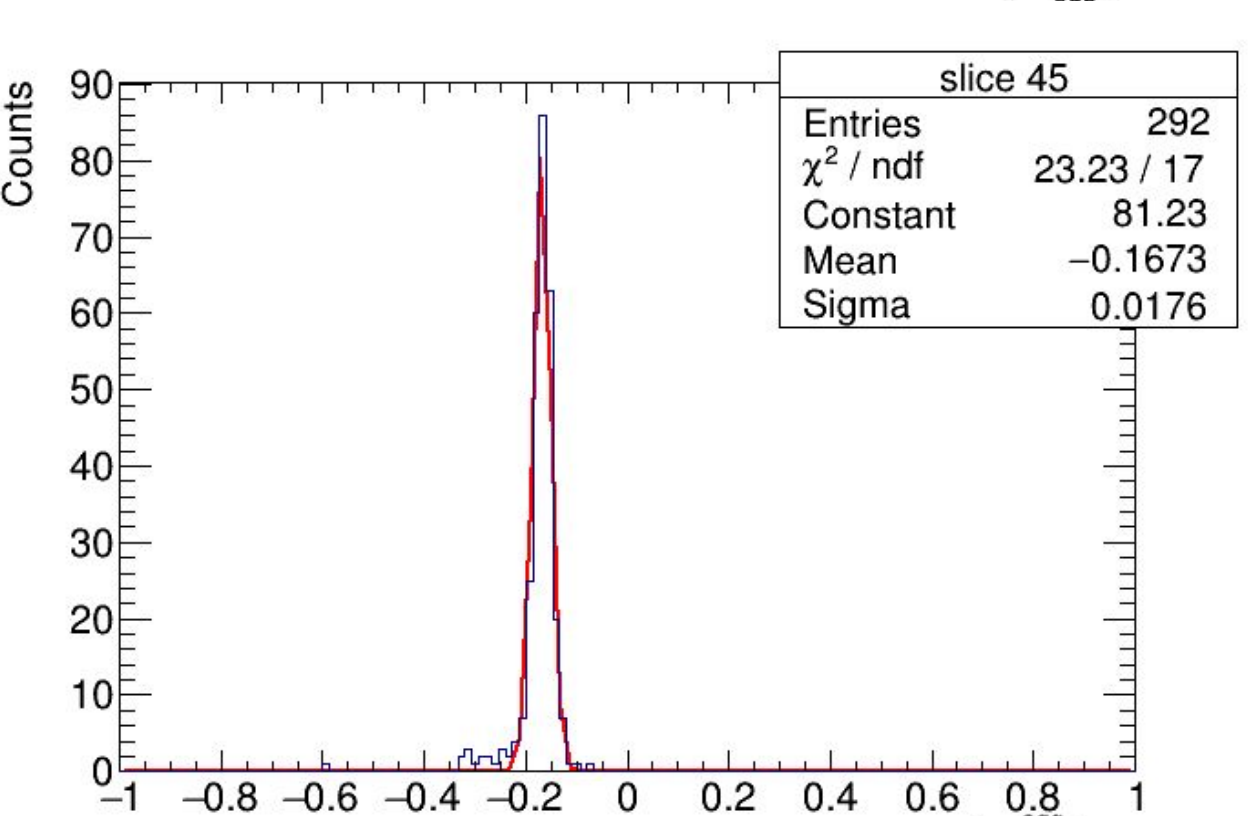
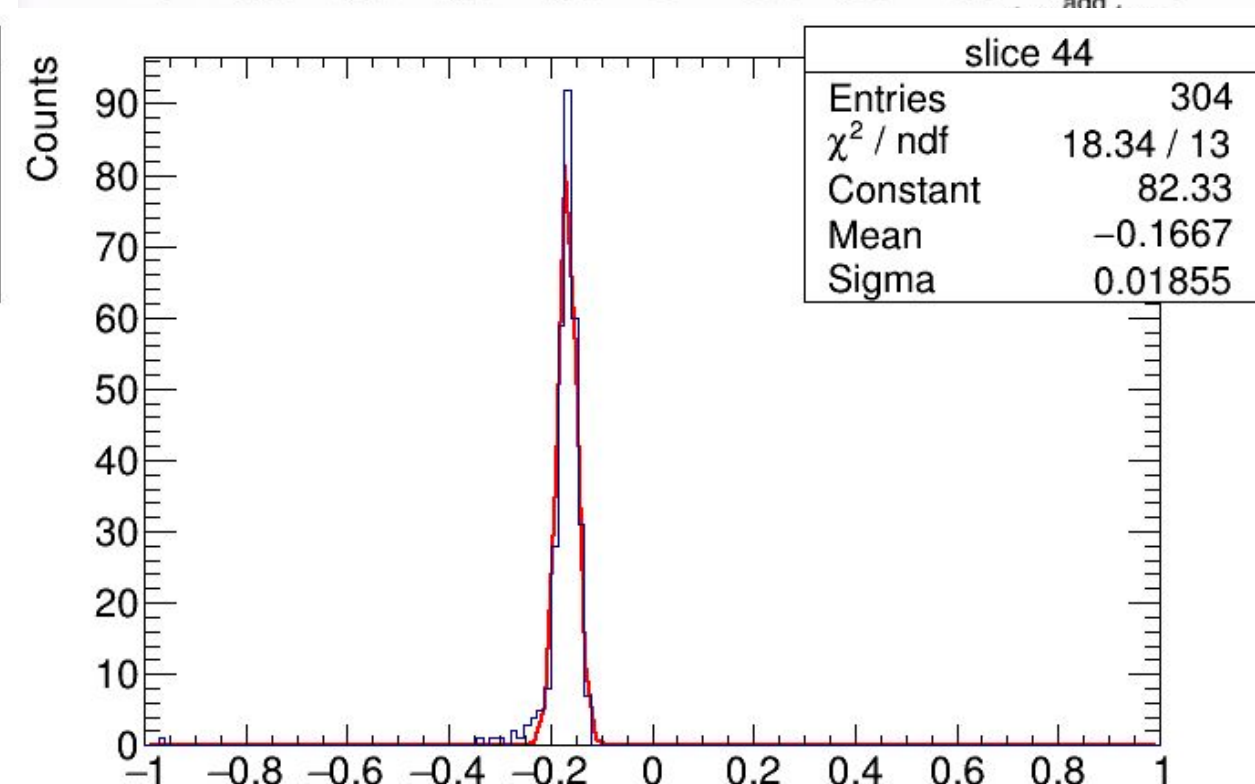
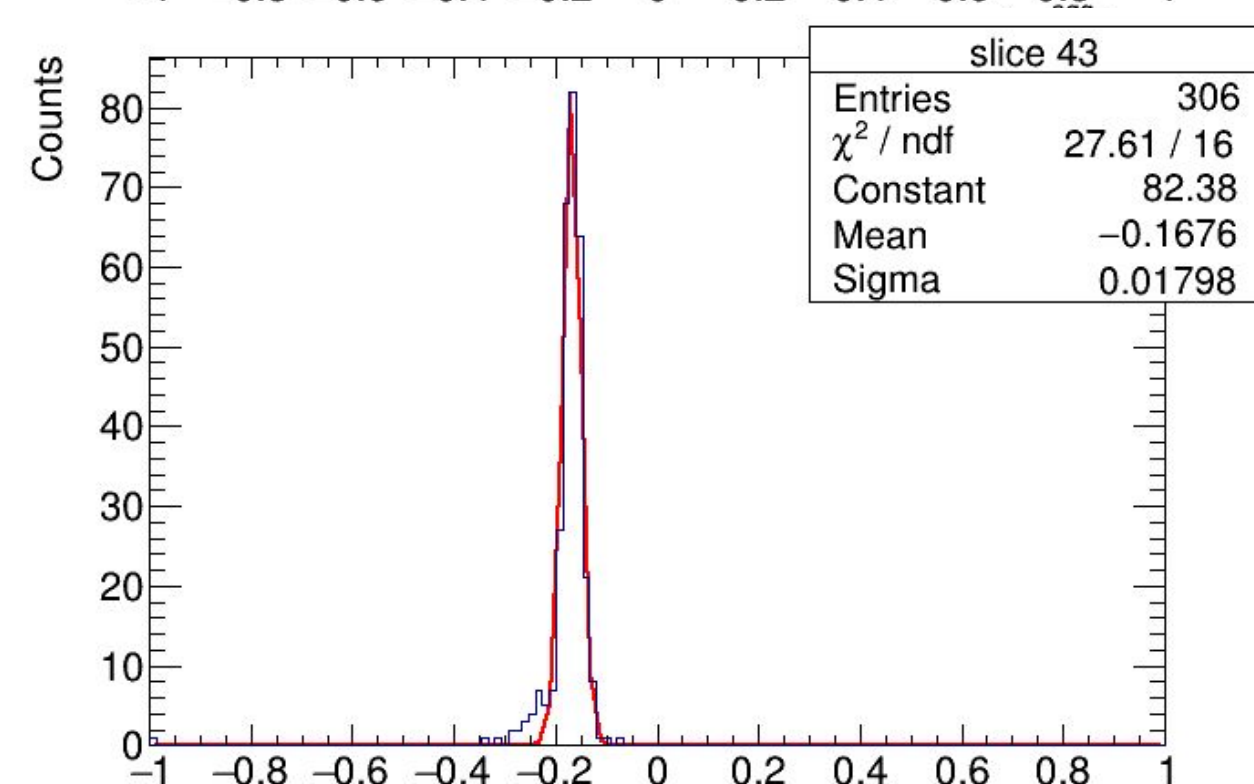
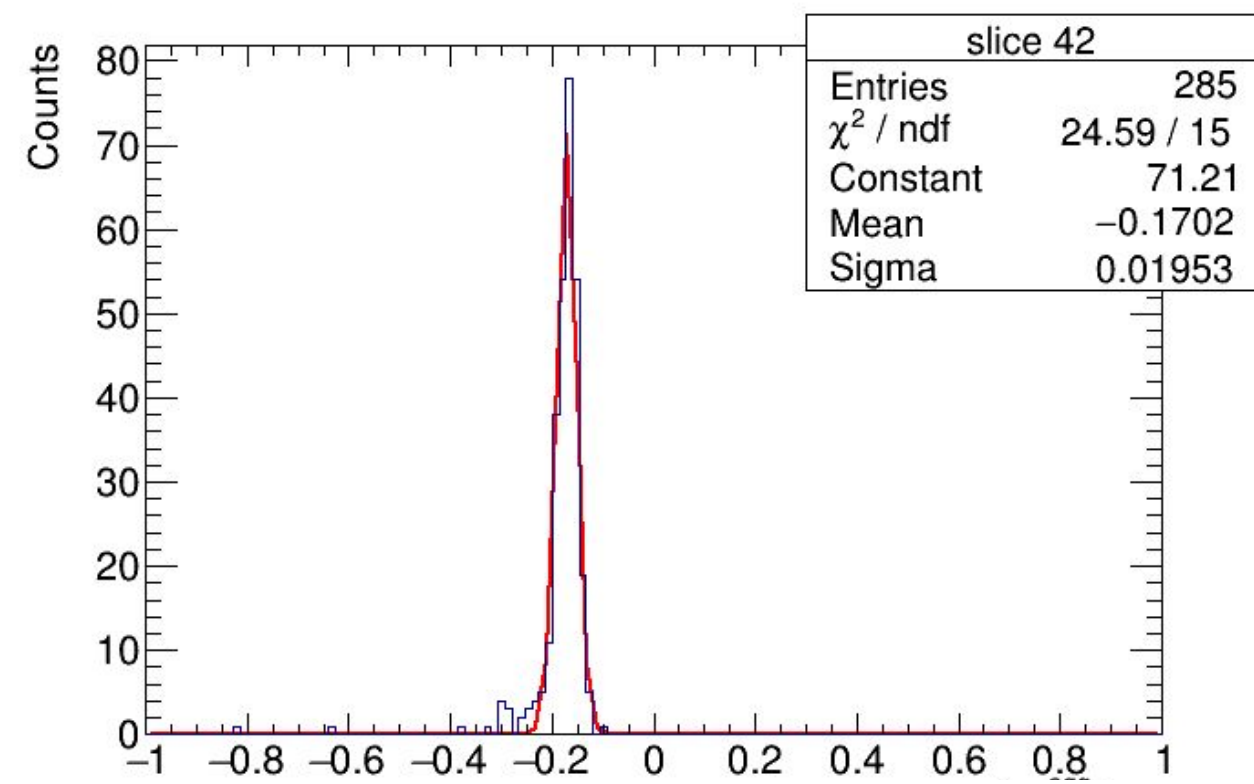
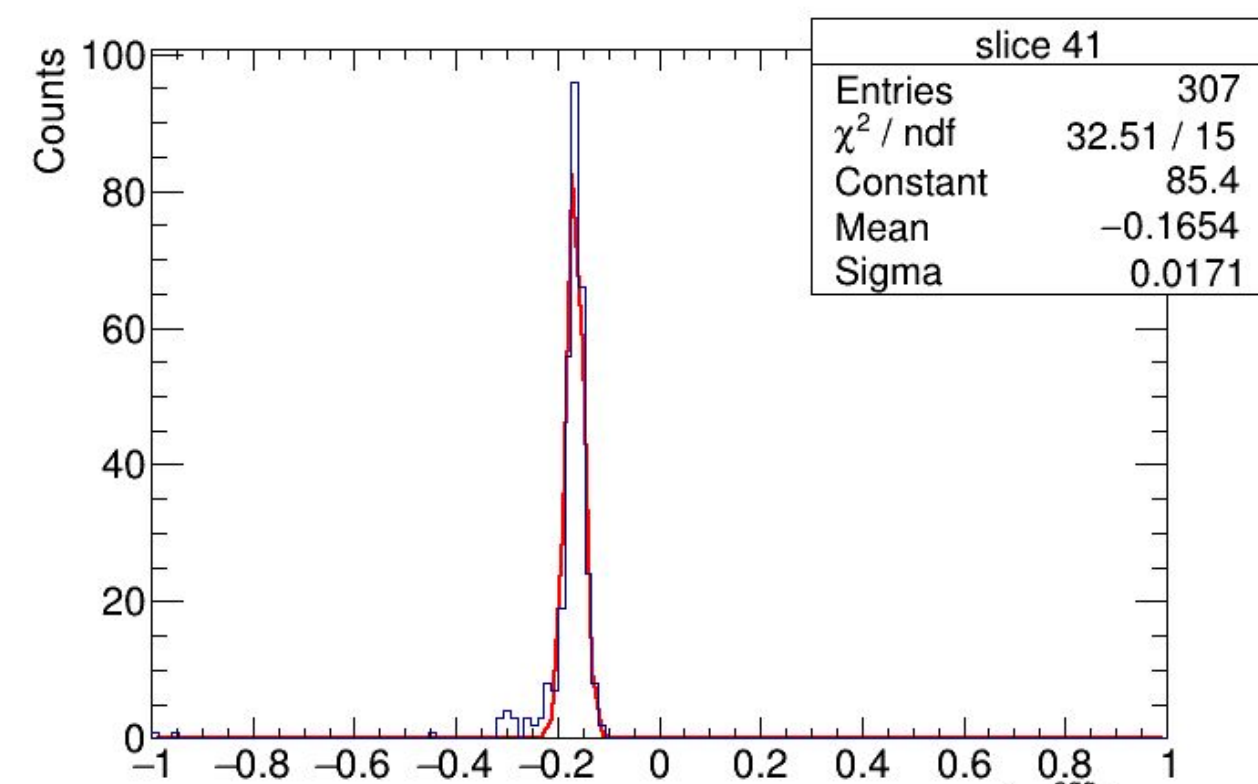
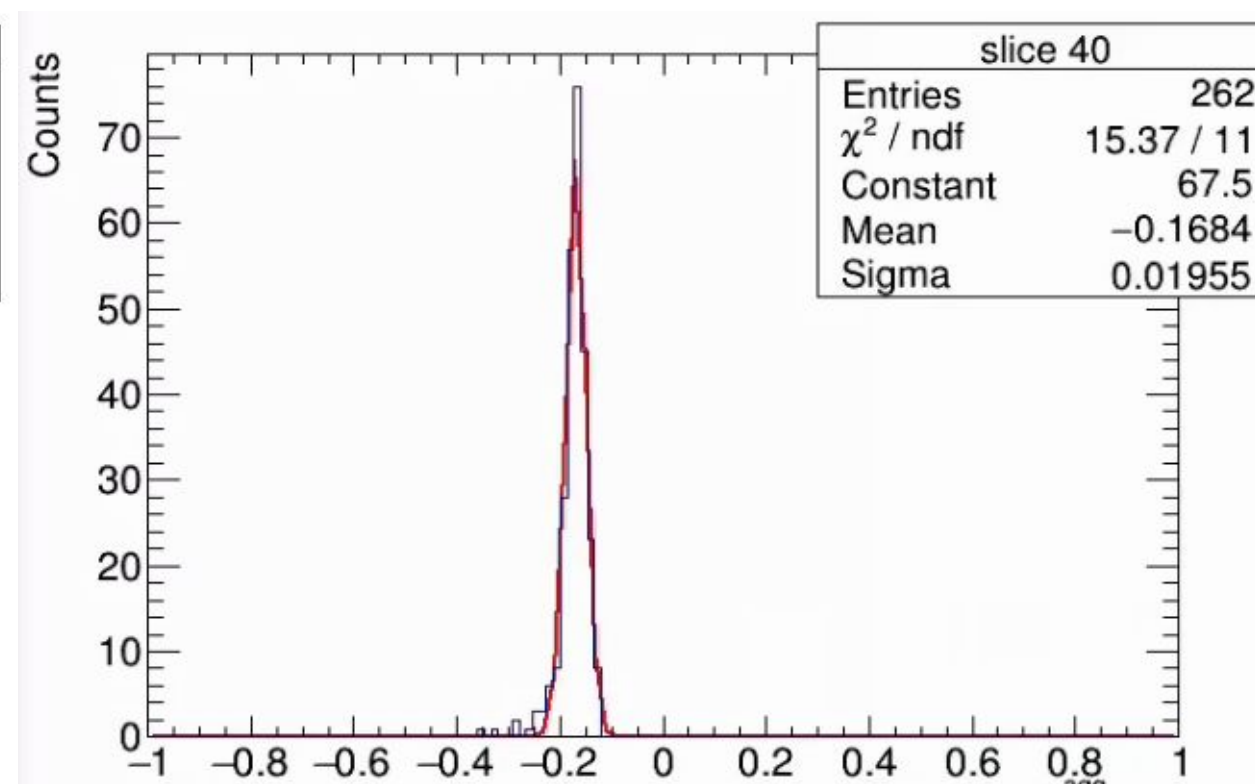
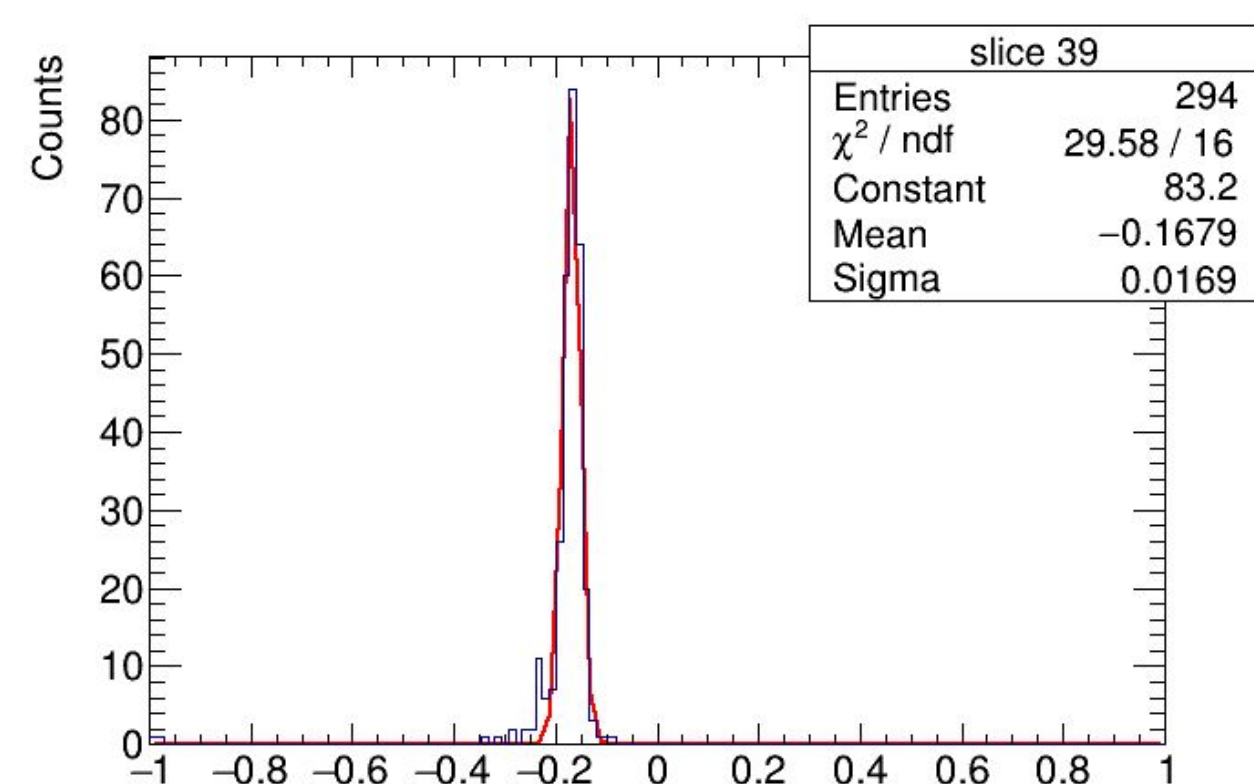
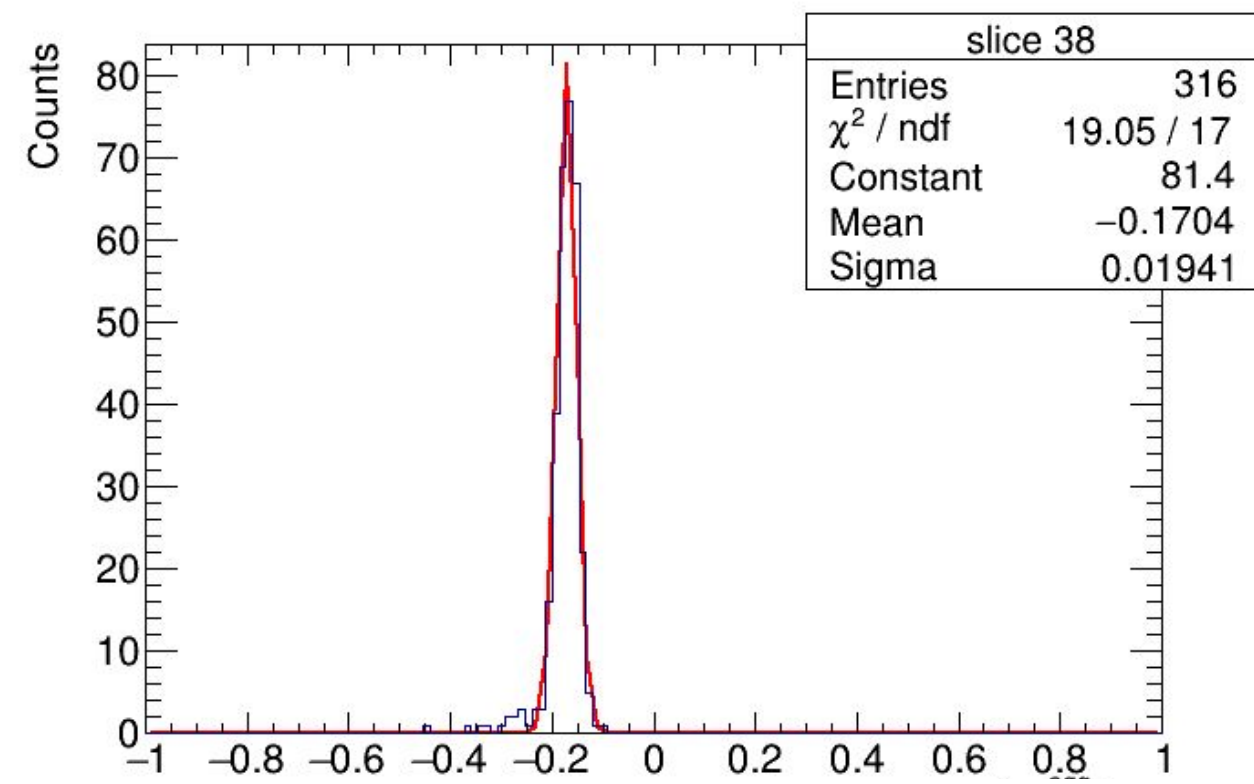
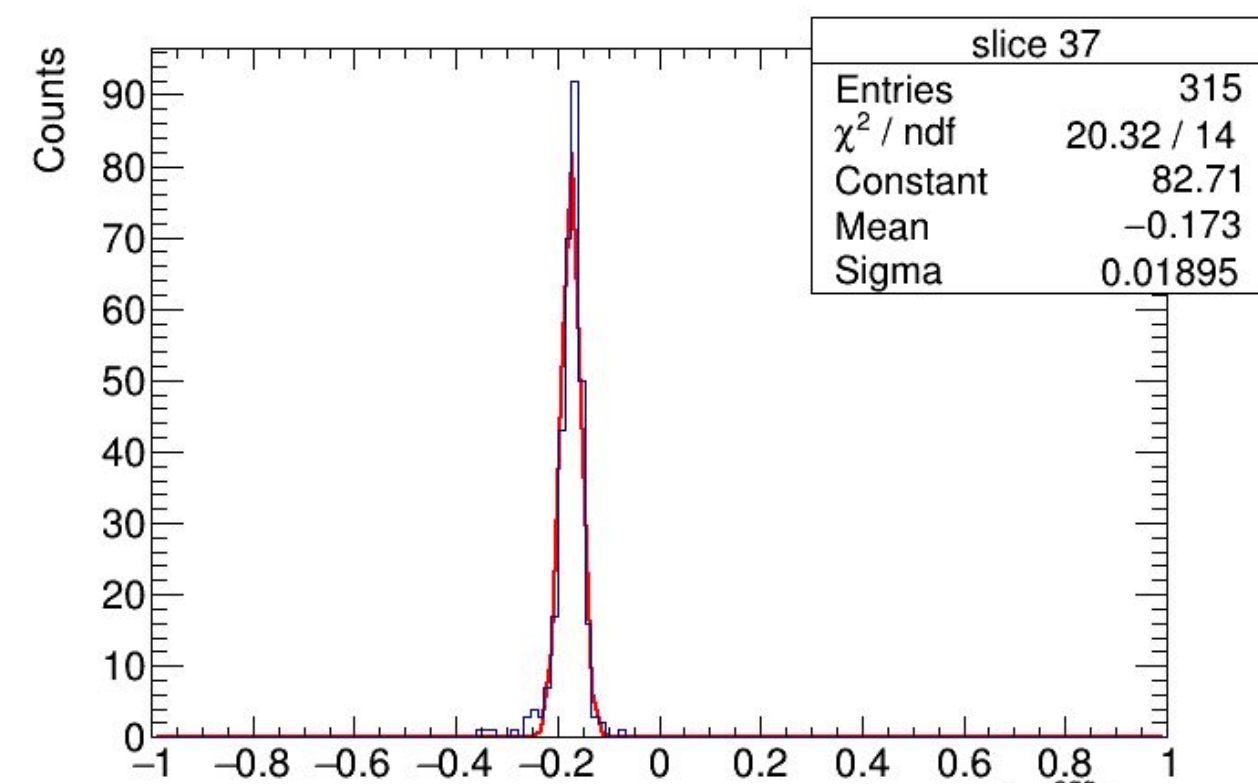
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/ge$

FEMC + FHICAL

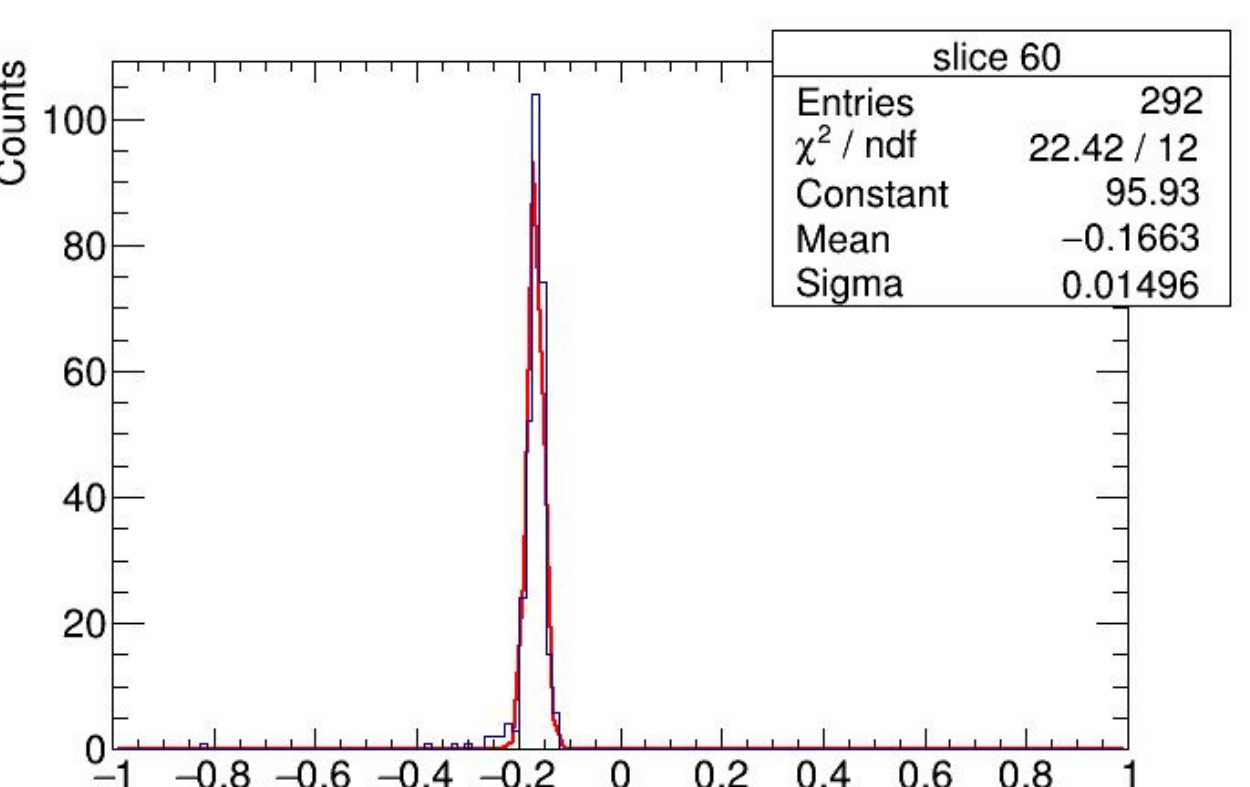
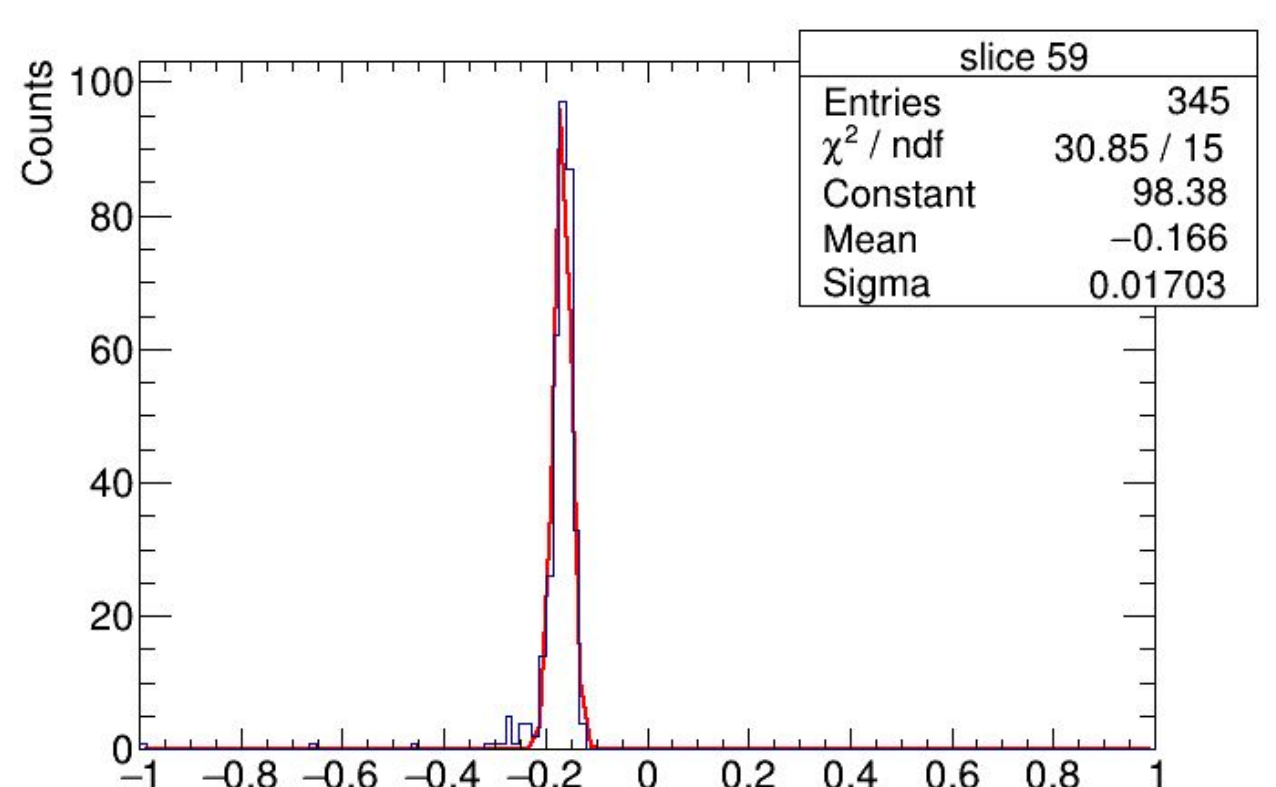
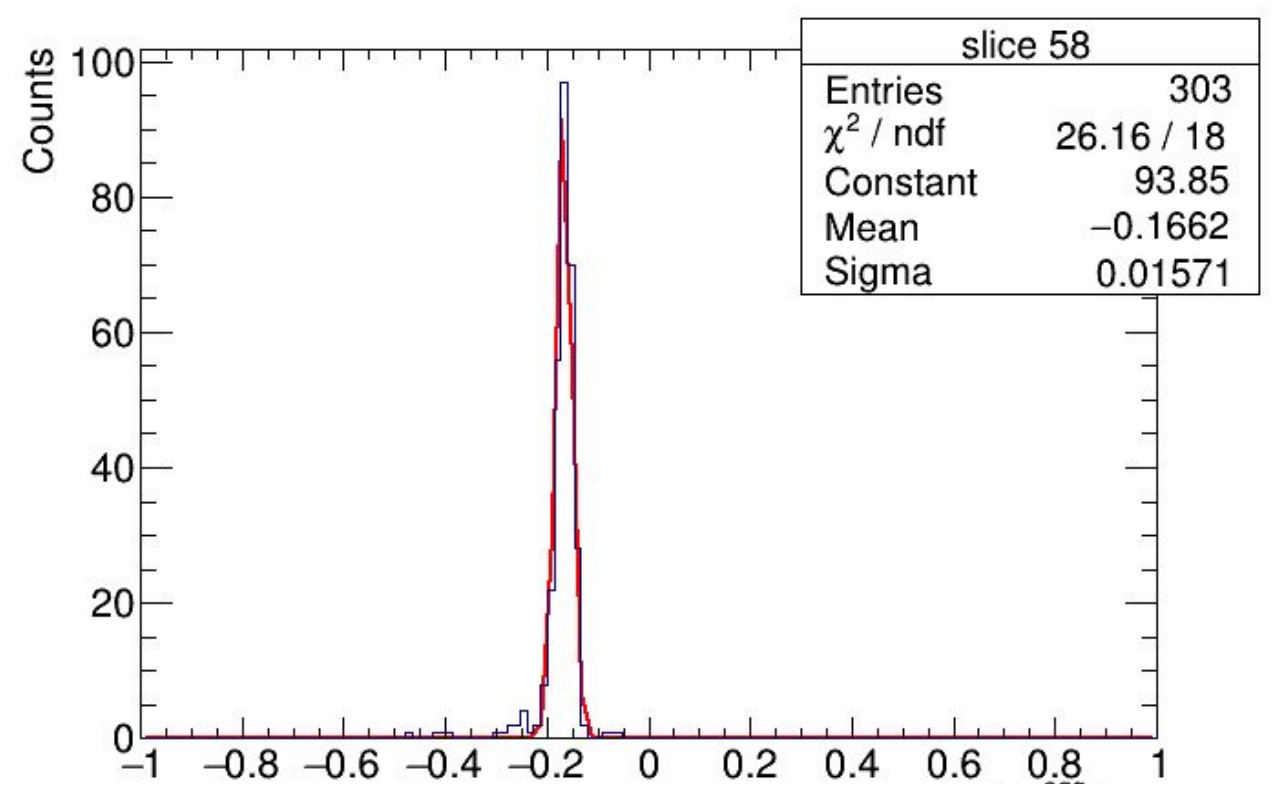
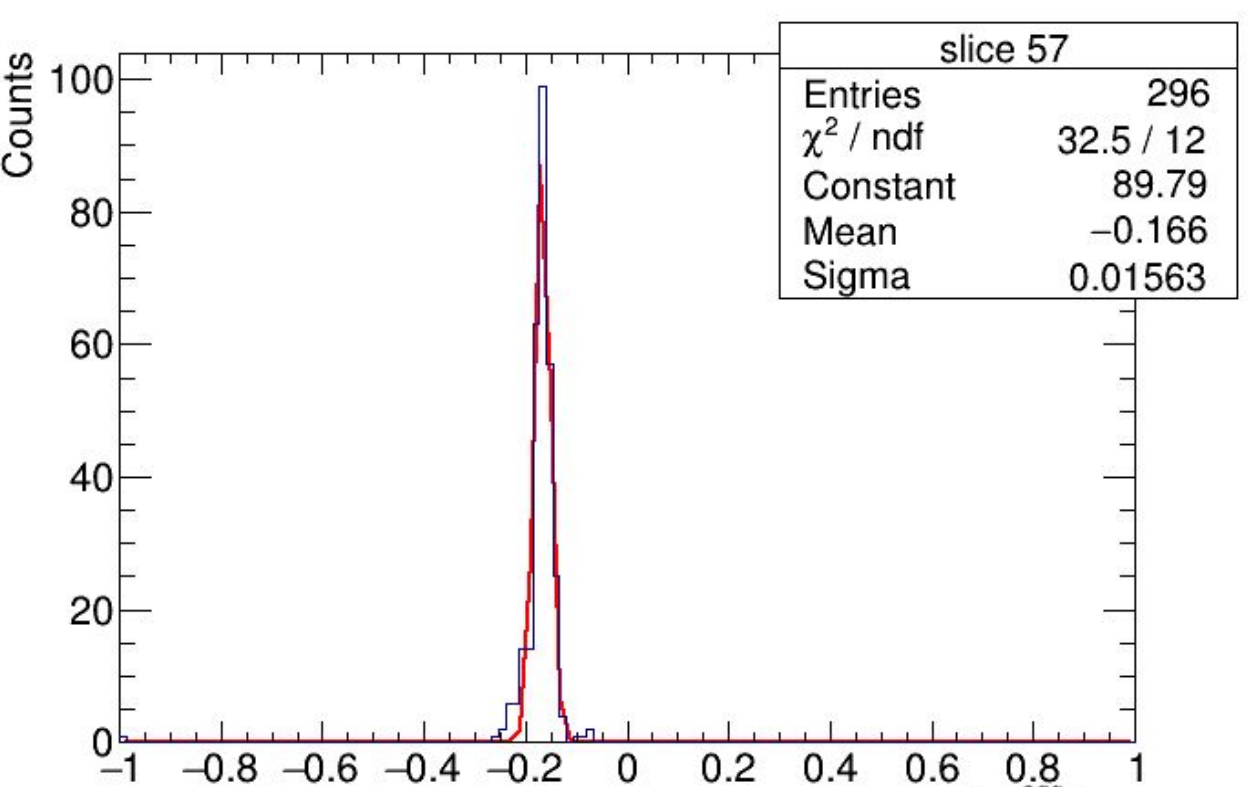
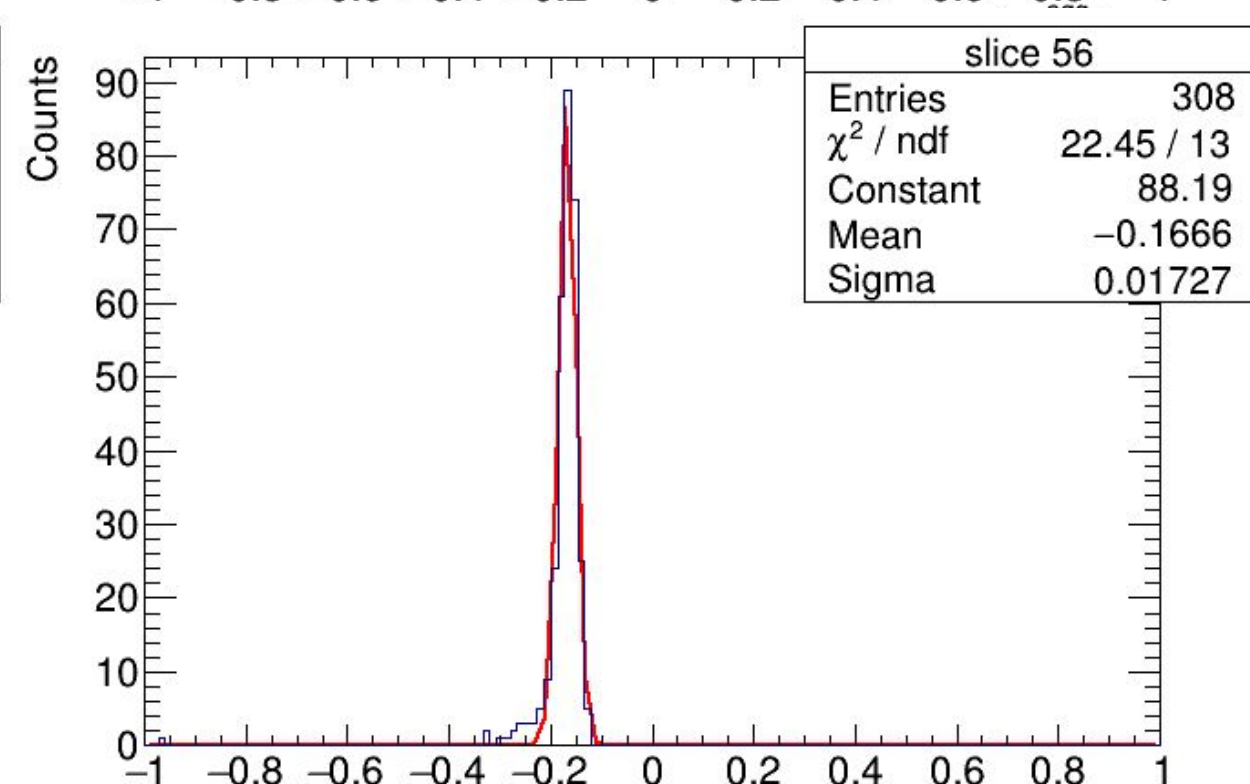
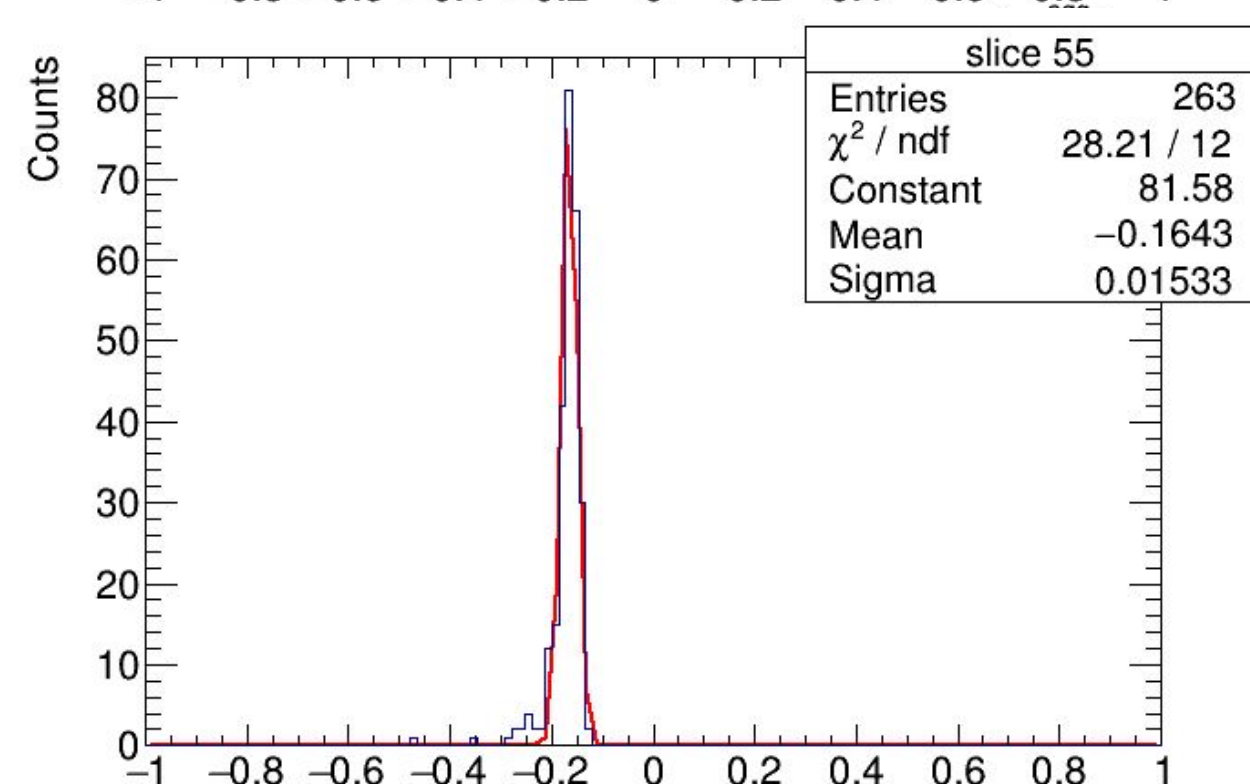
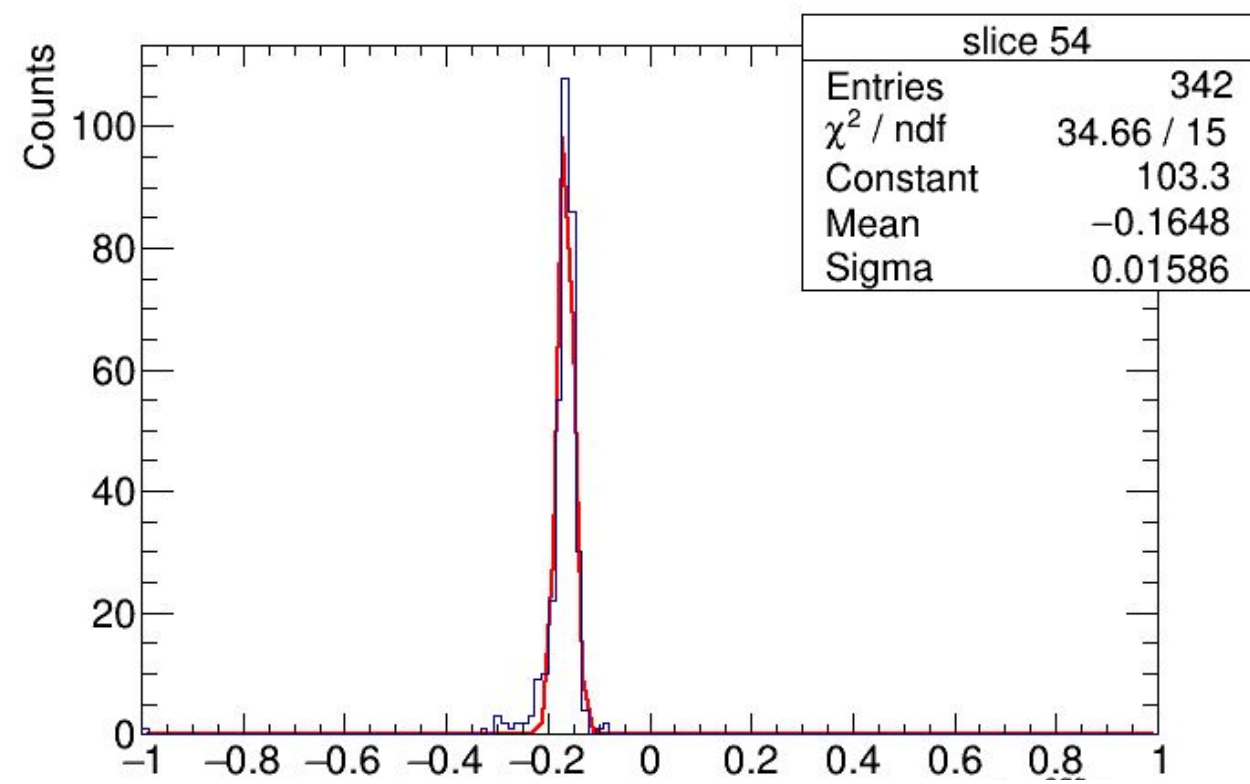
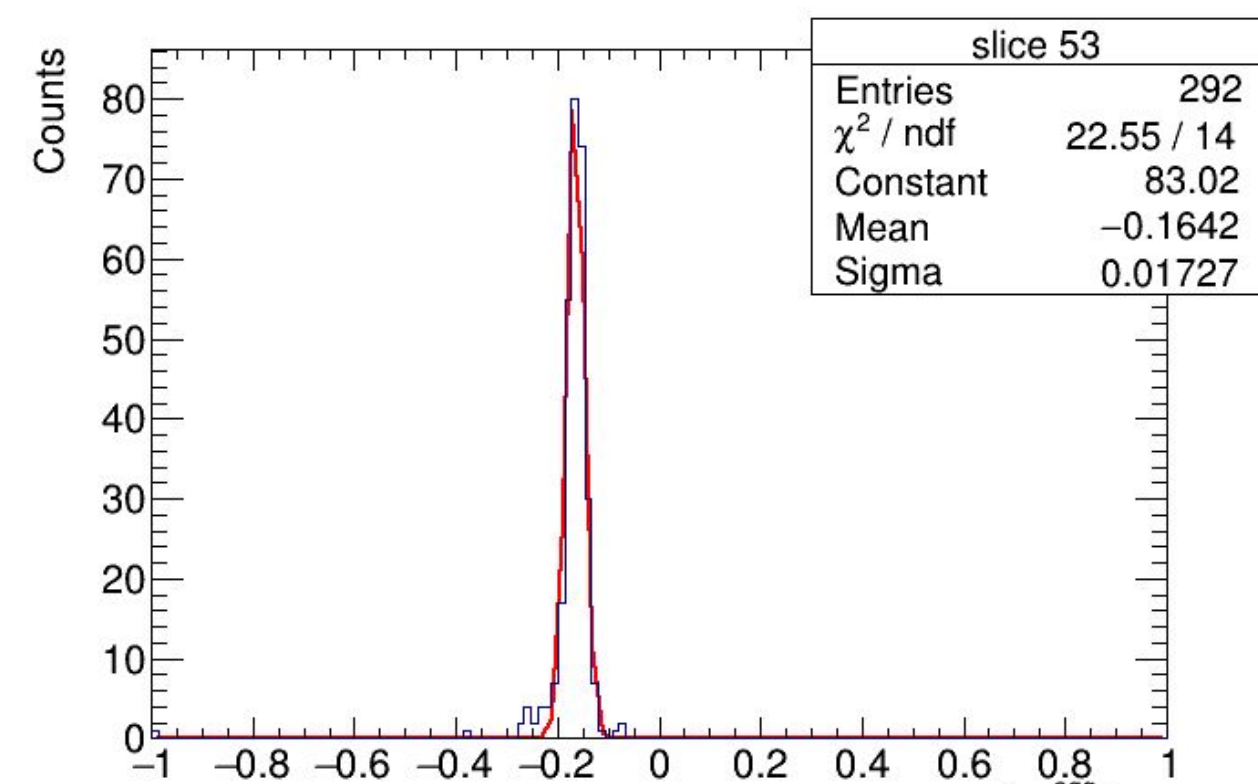
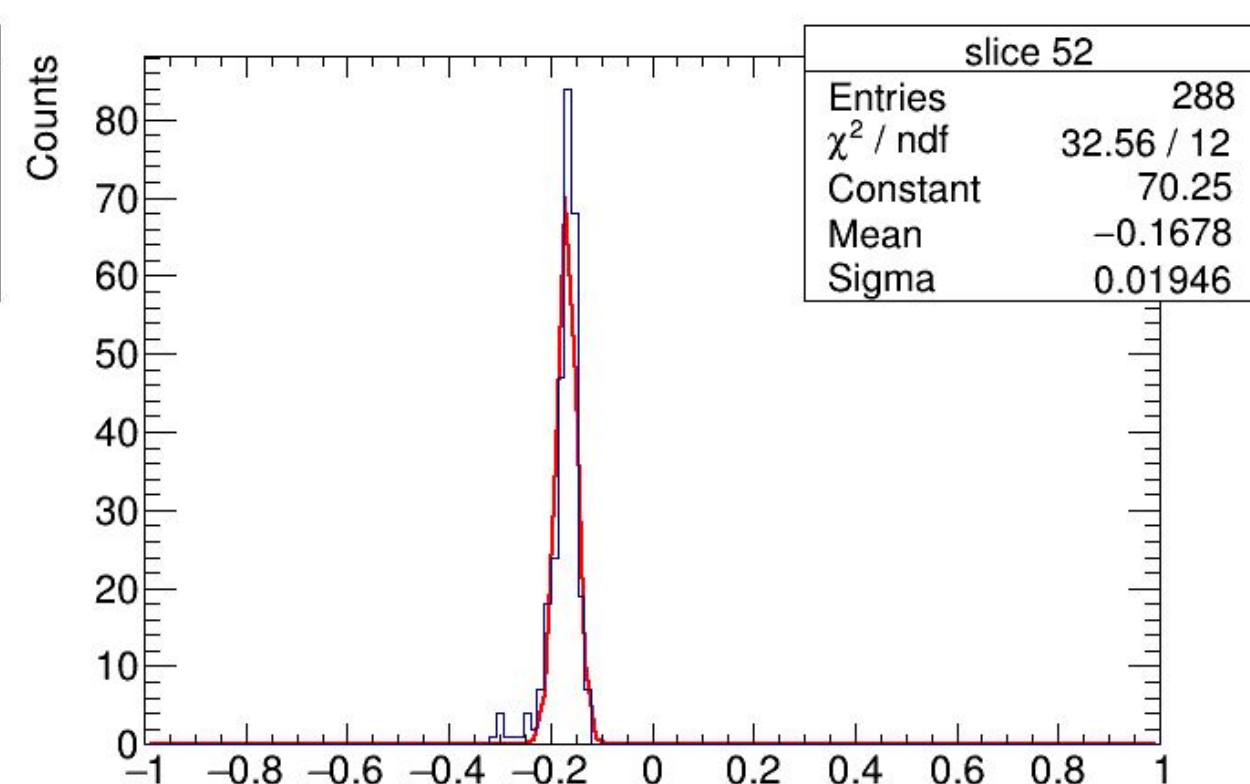
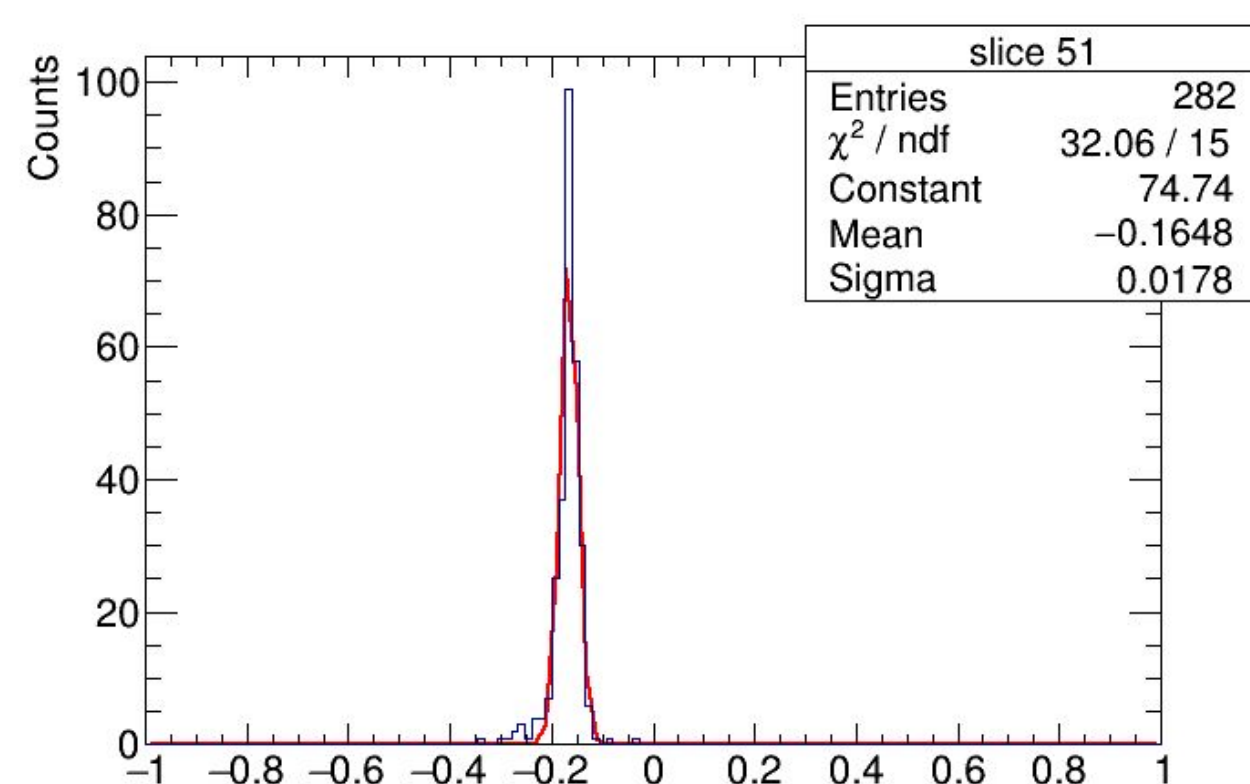
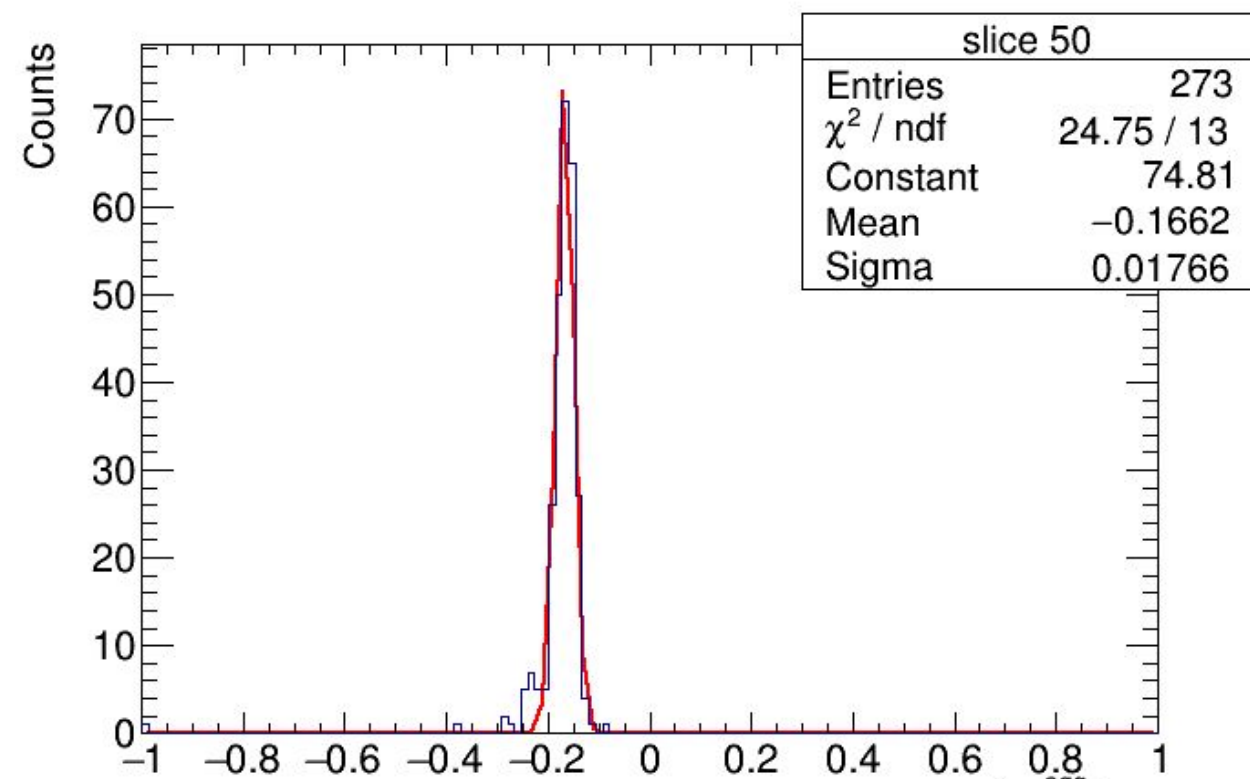
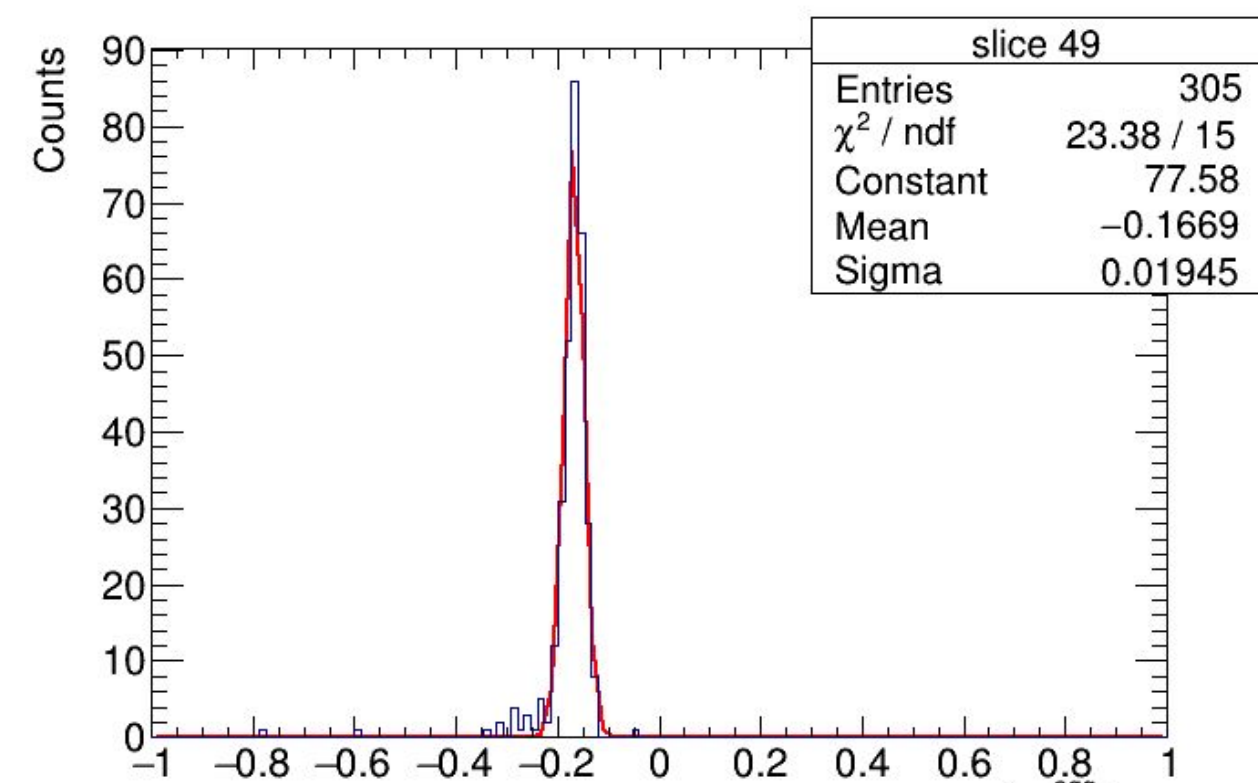
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/\text{ge}$

FEMC + FHCAL

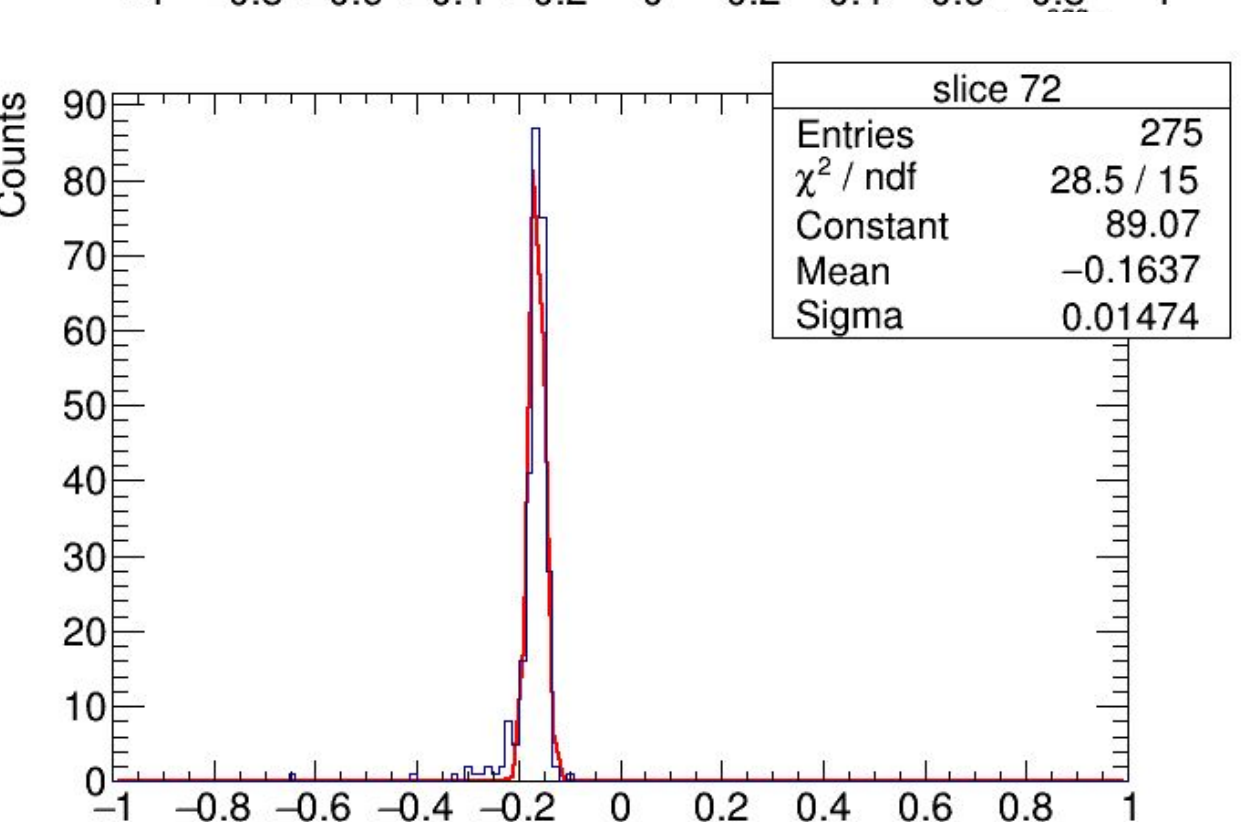
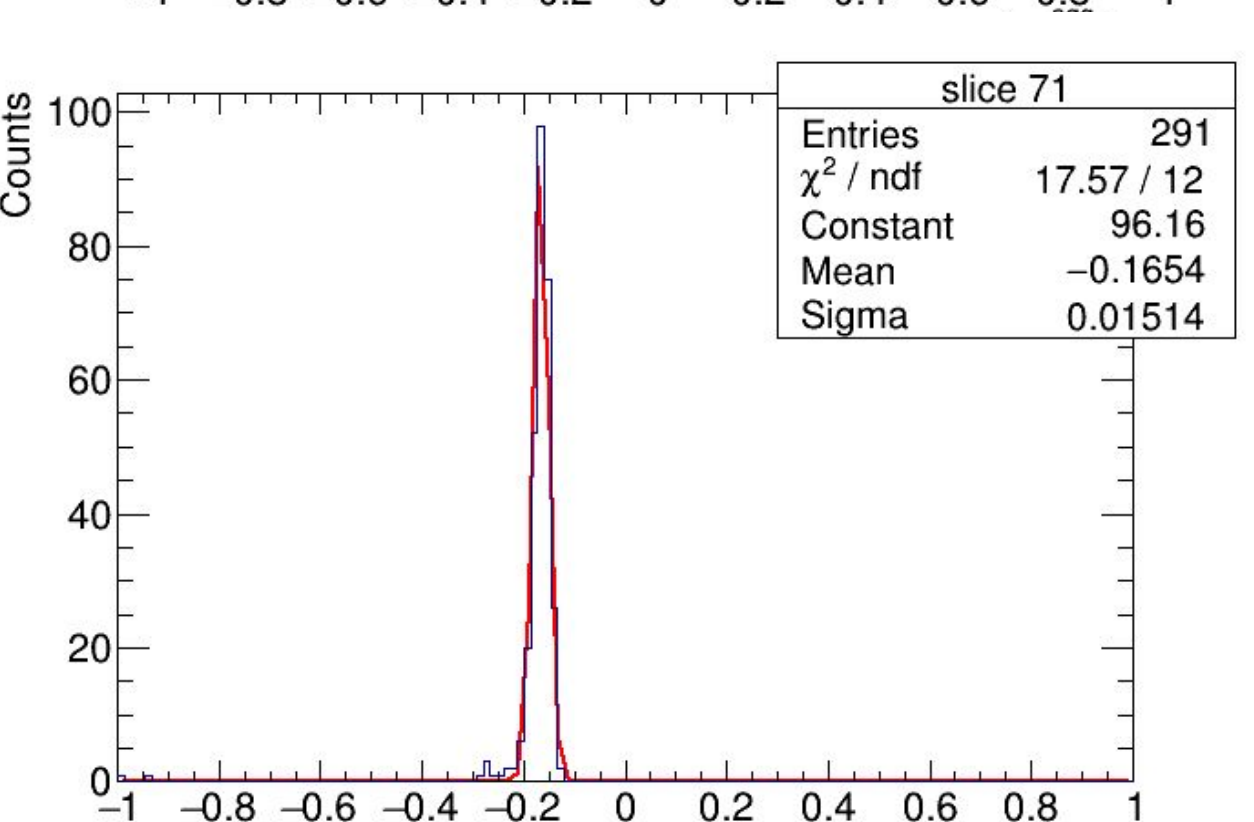
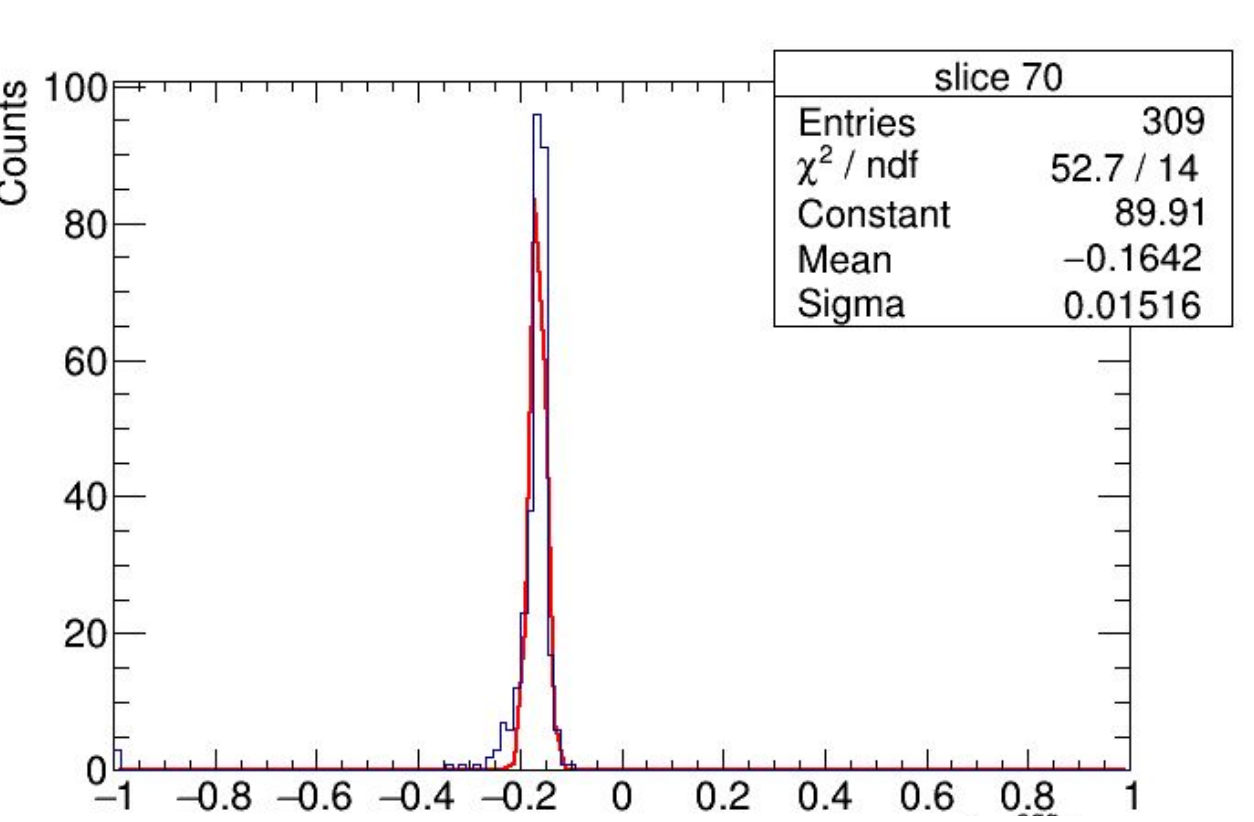
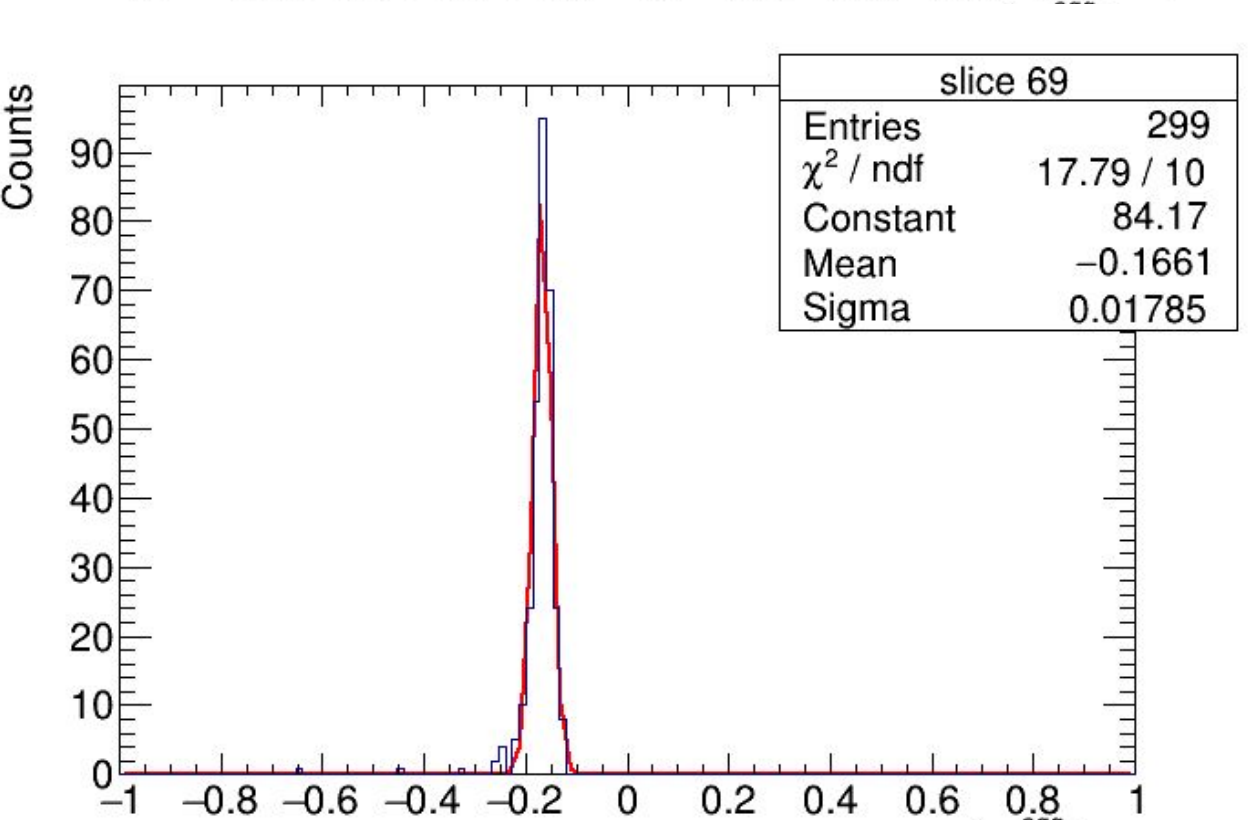
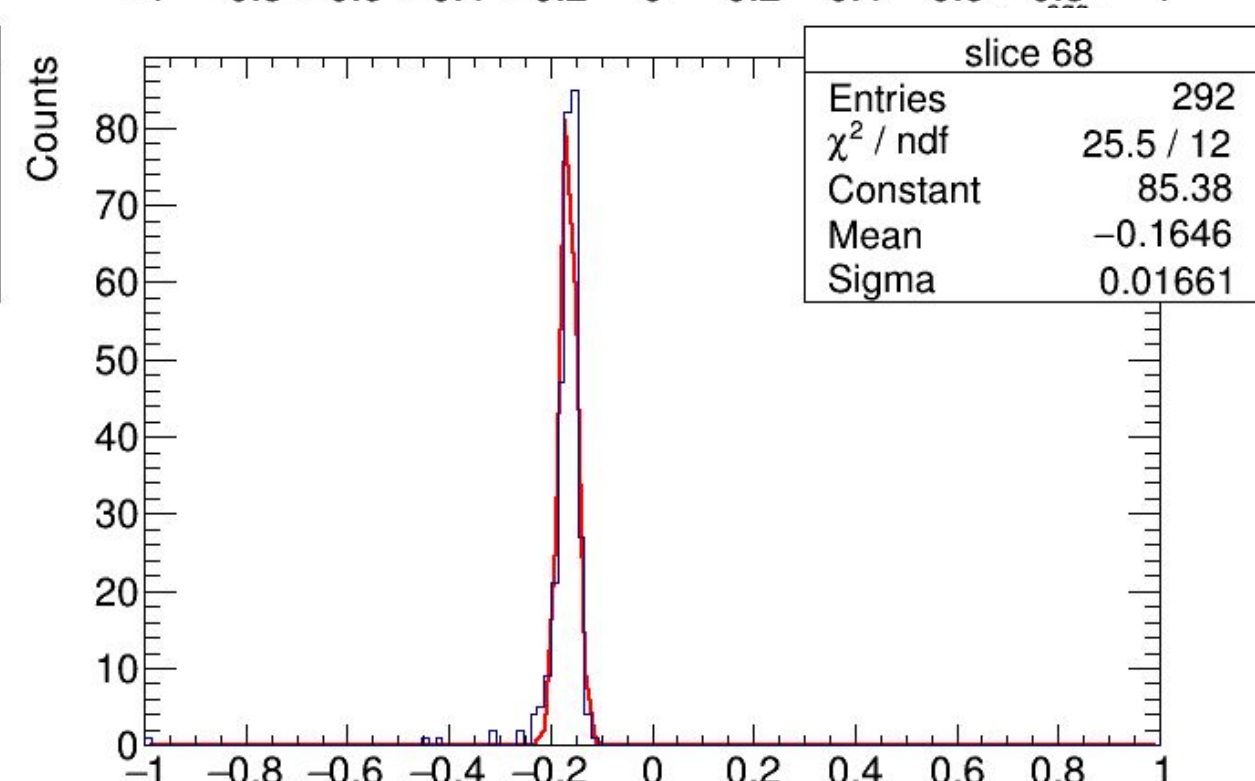
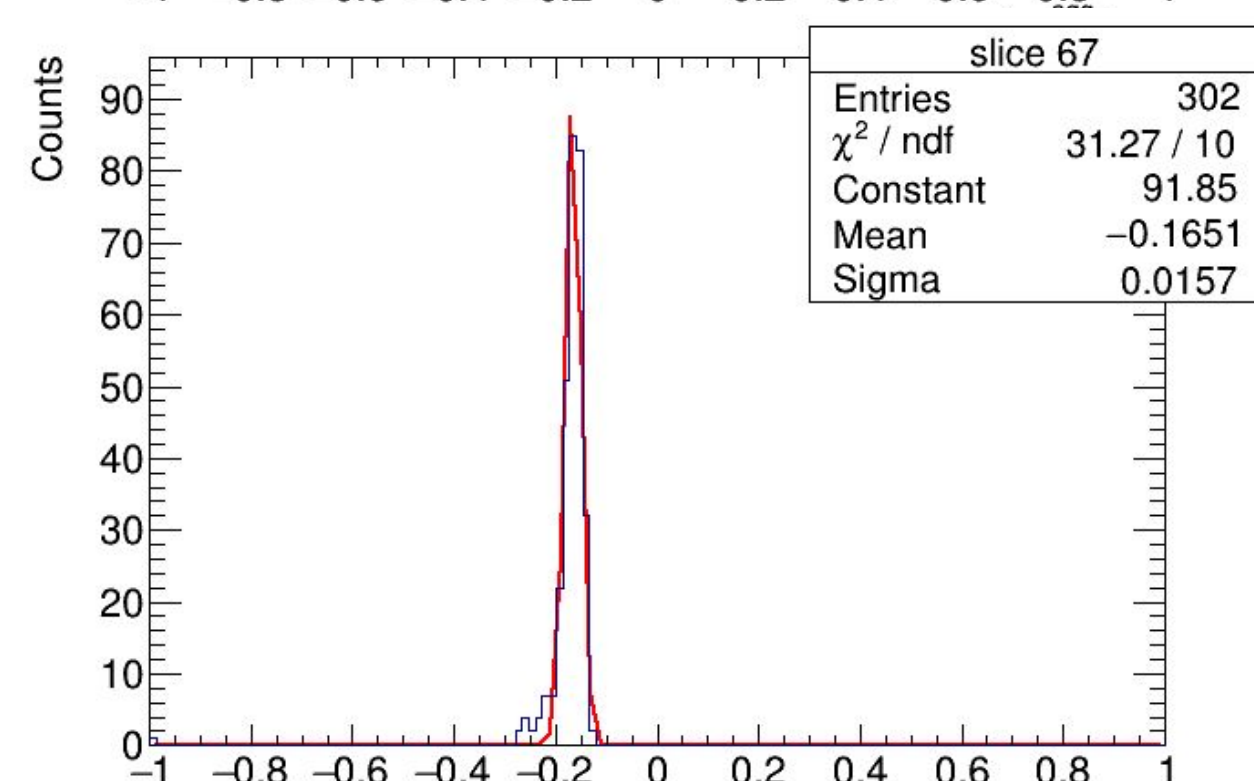
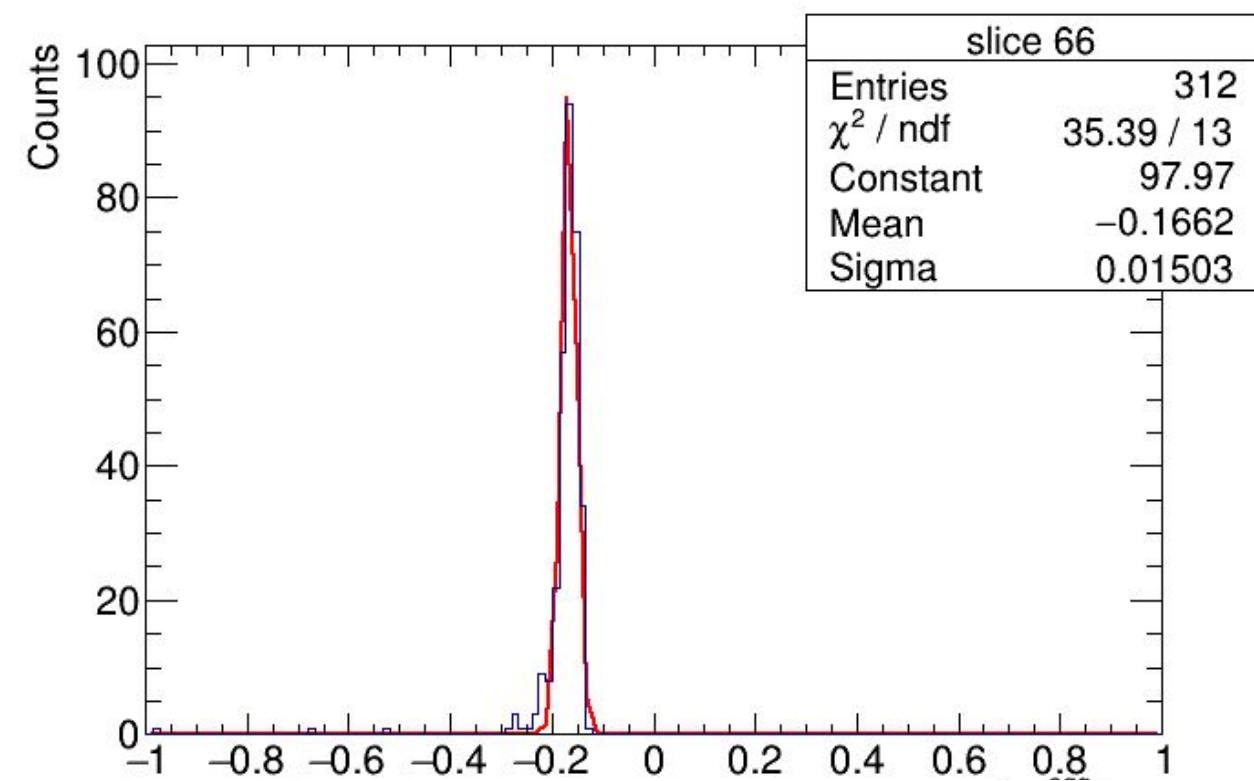
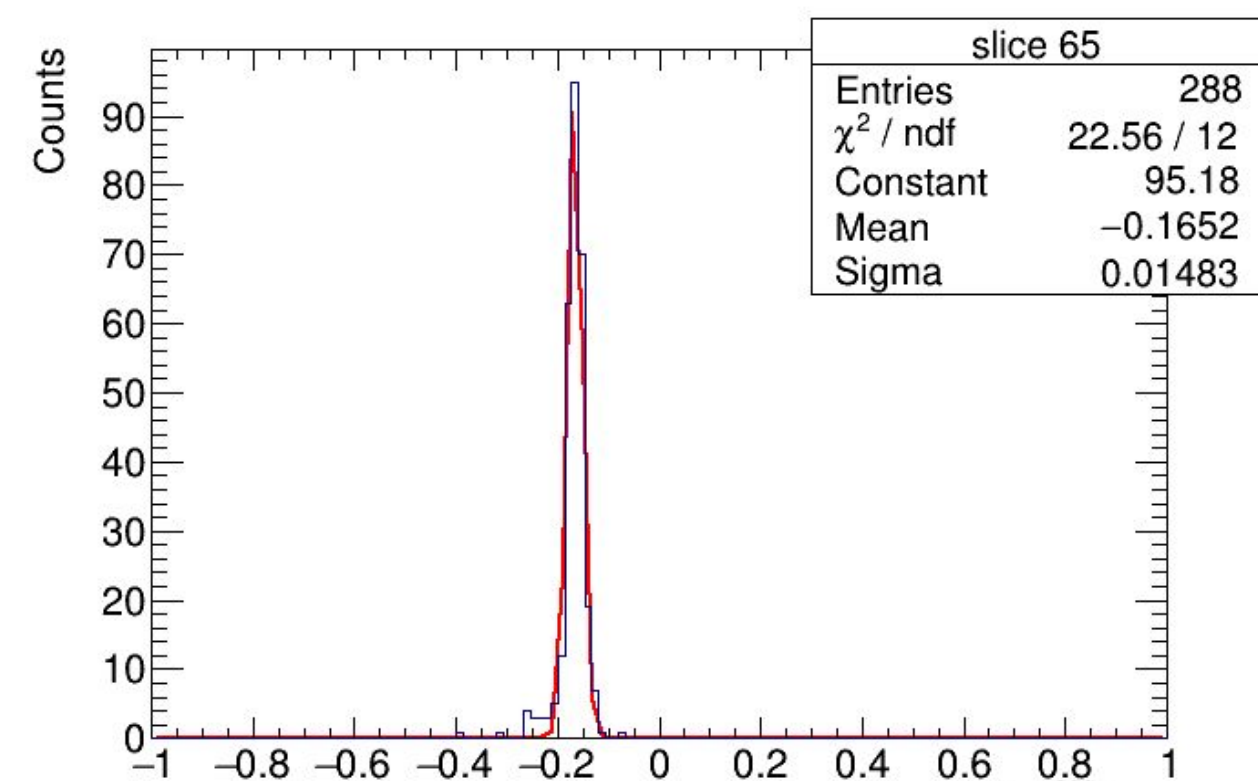
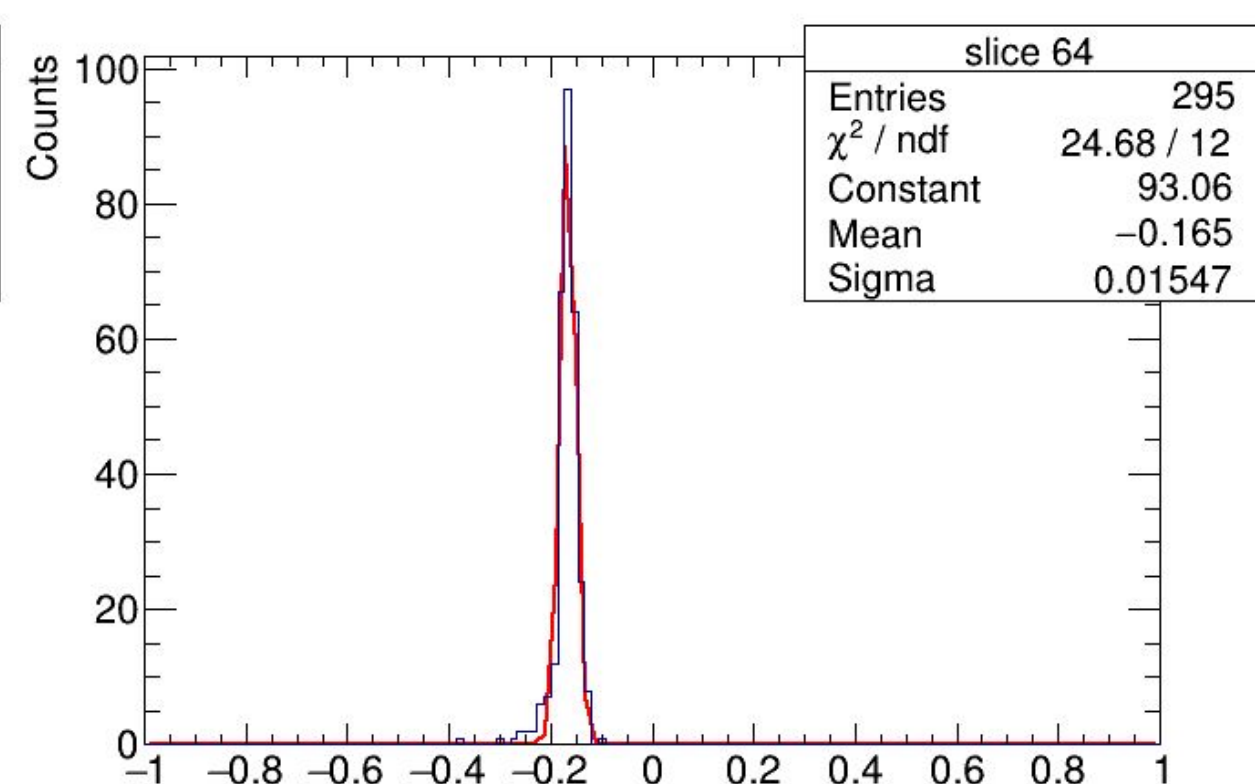
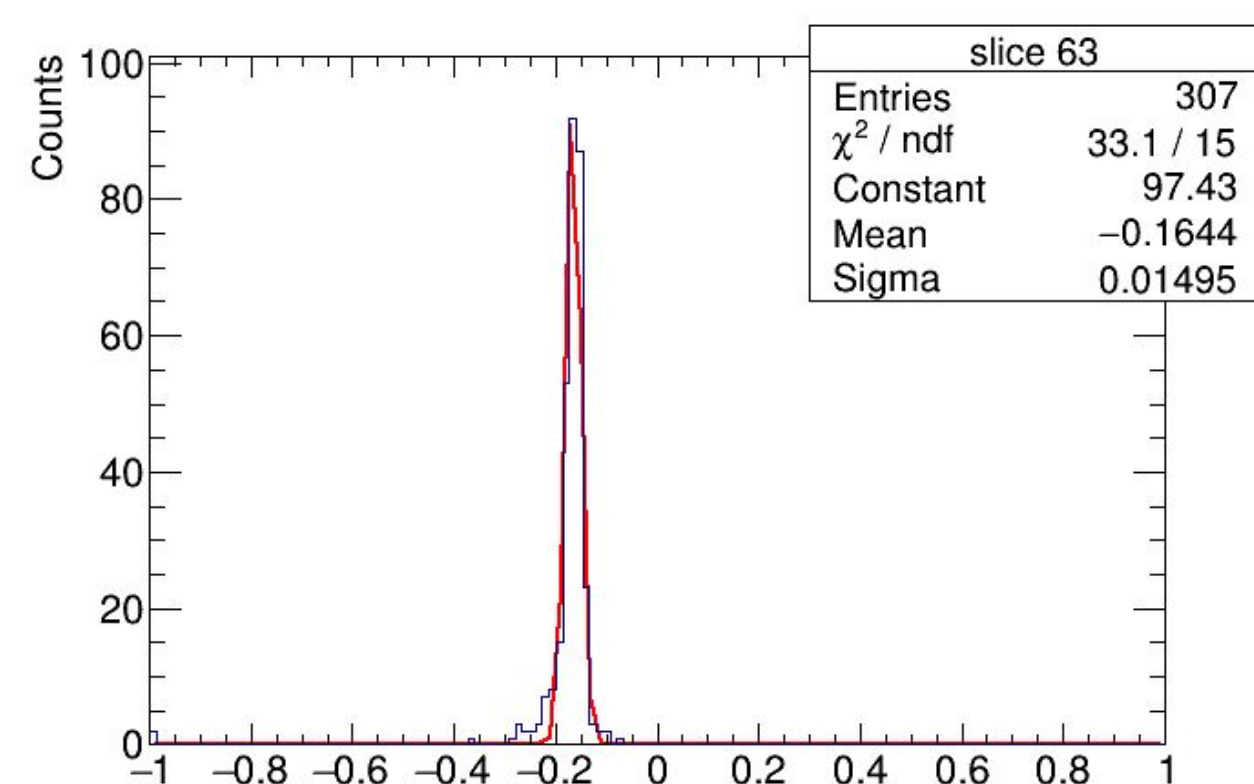
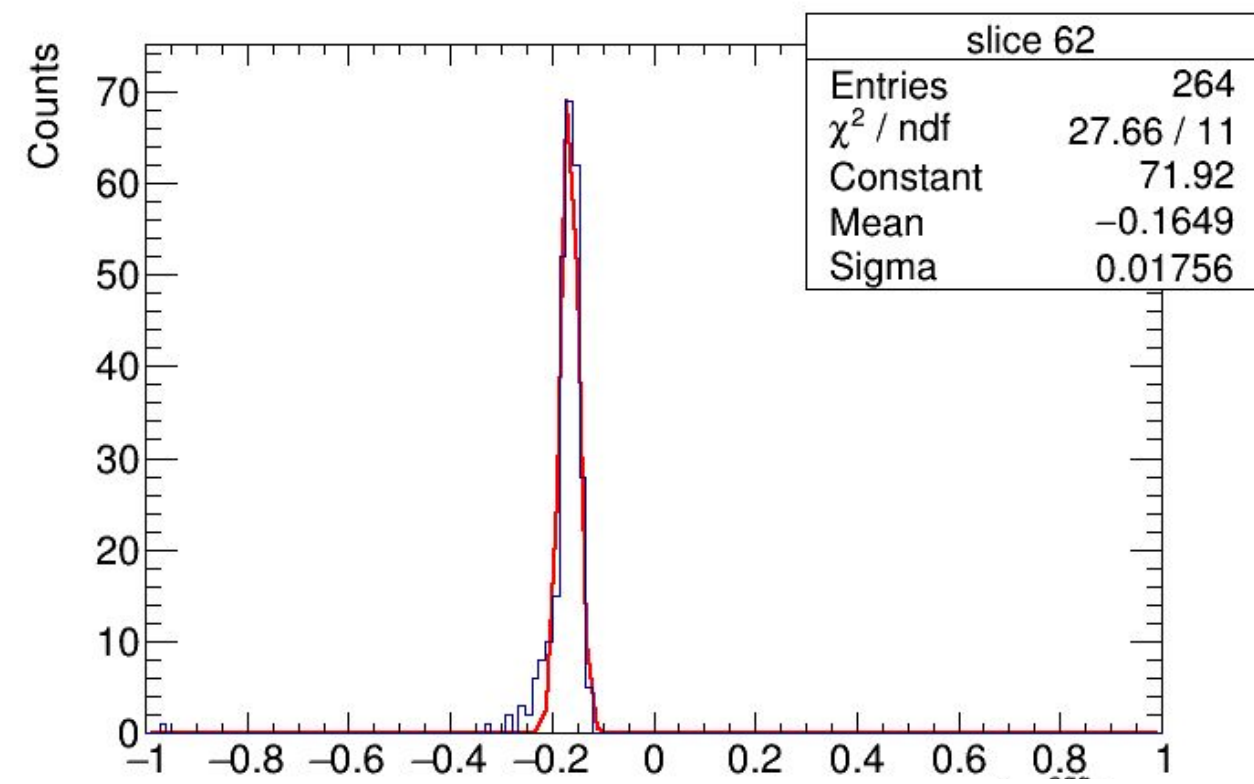
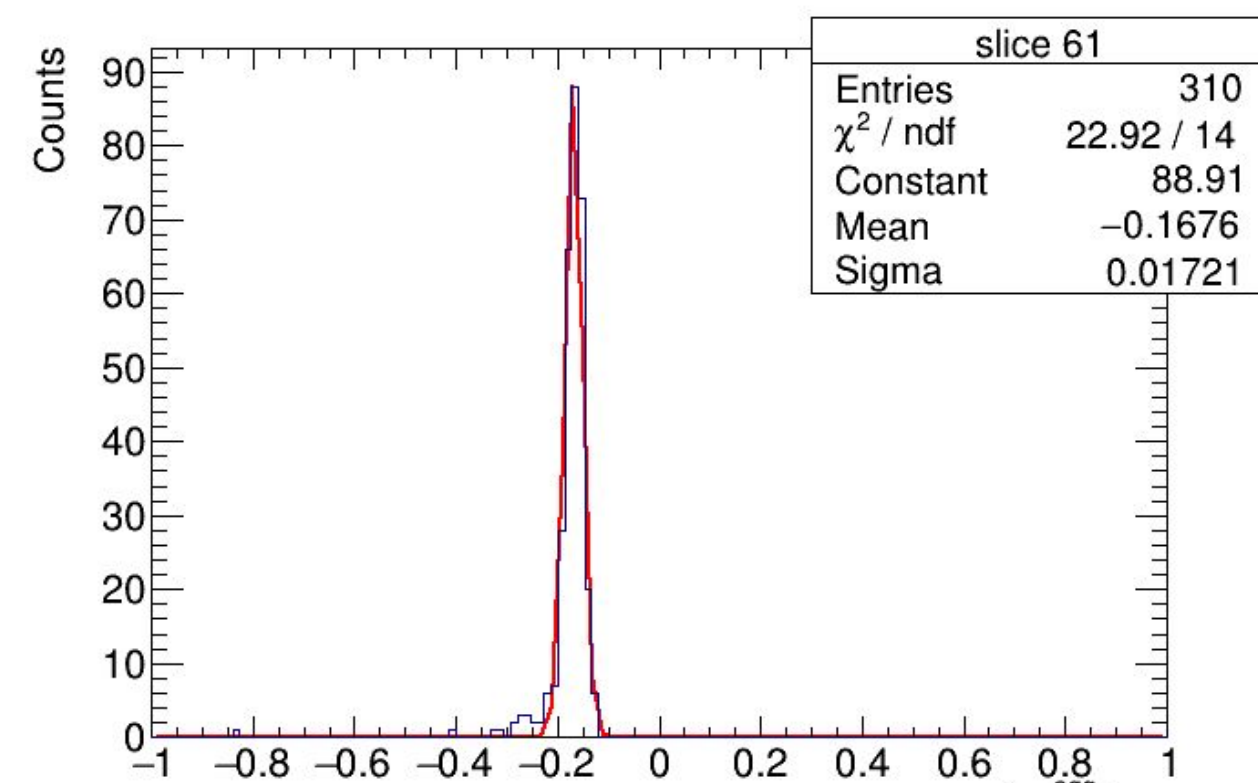
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/\text{ge}$

FEMC + FHCAL

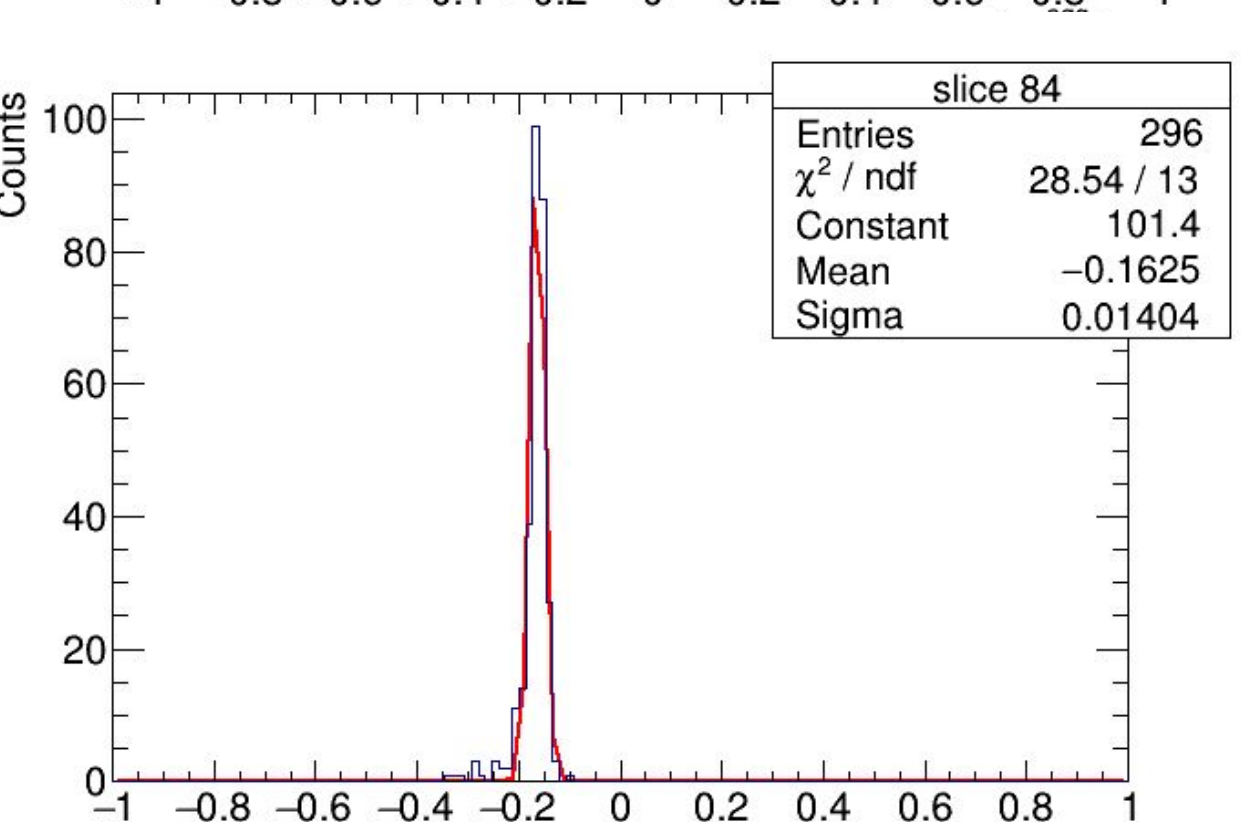
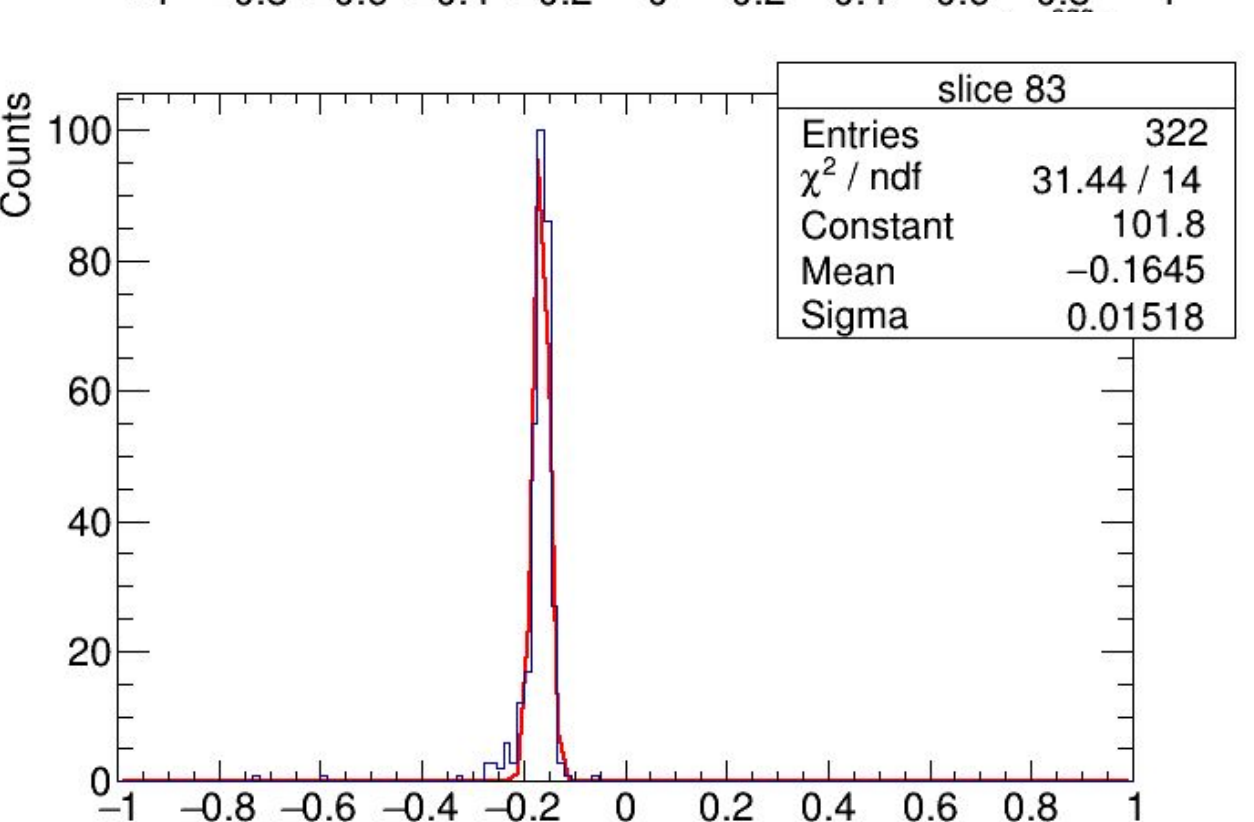
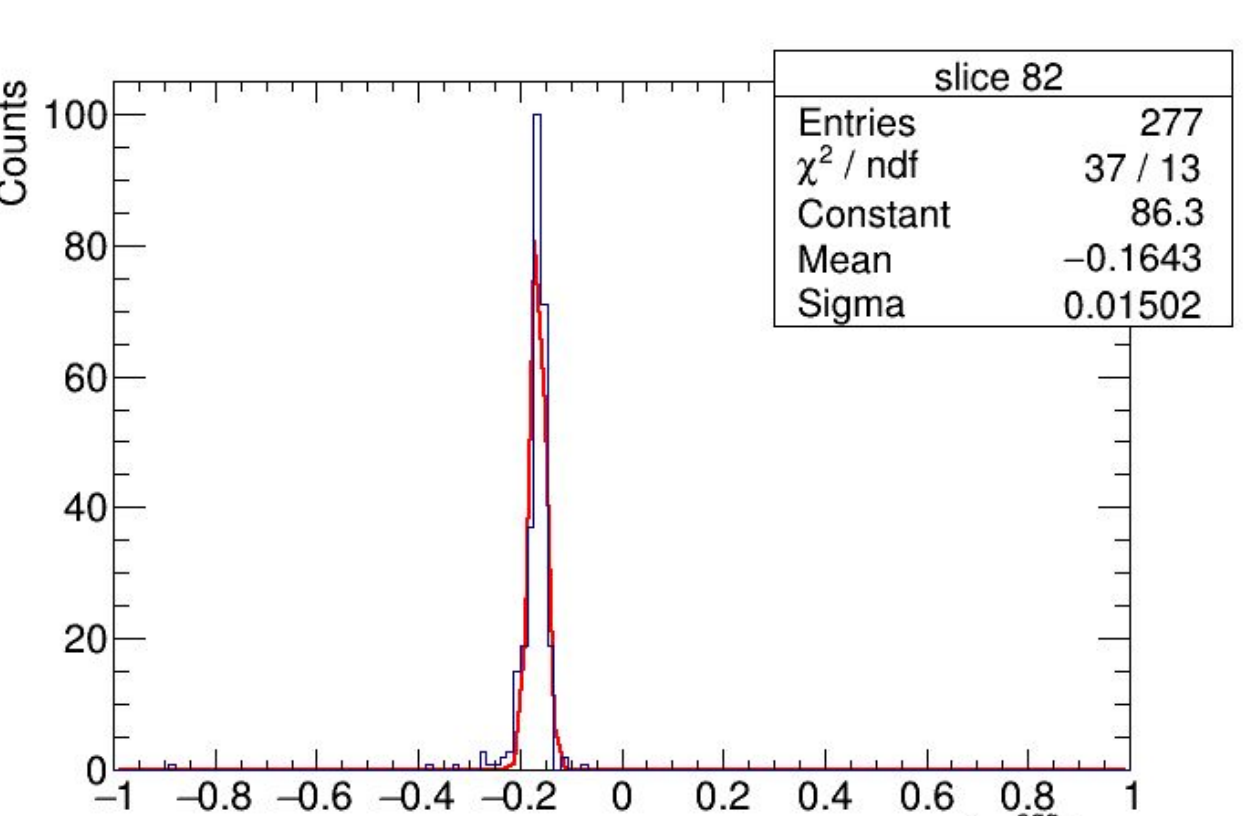
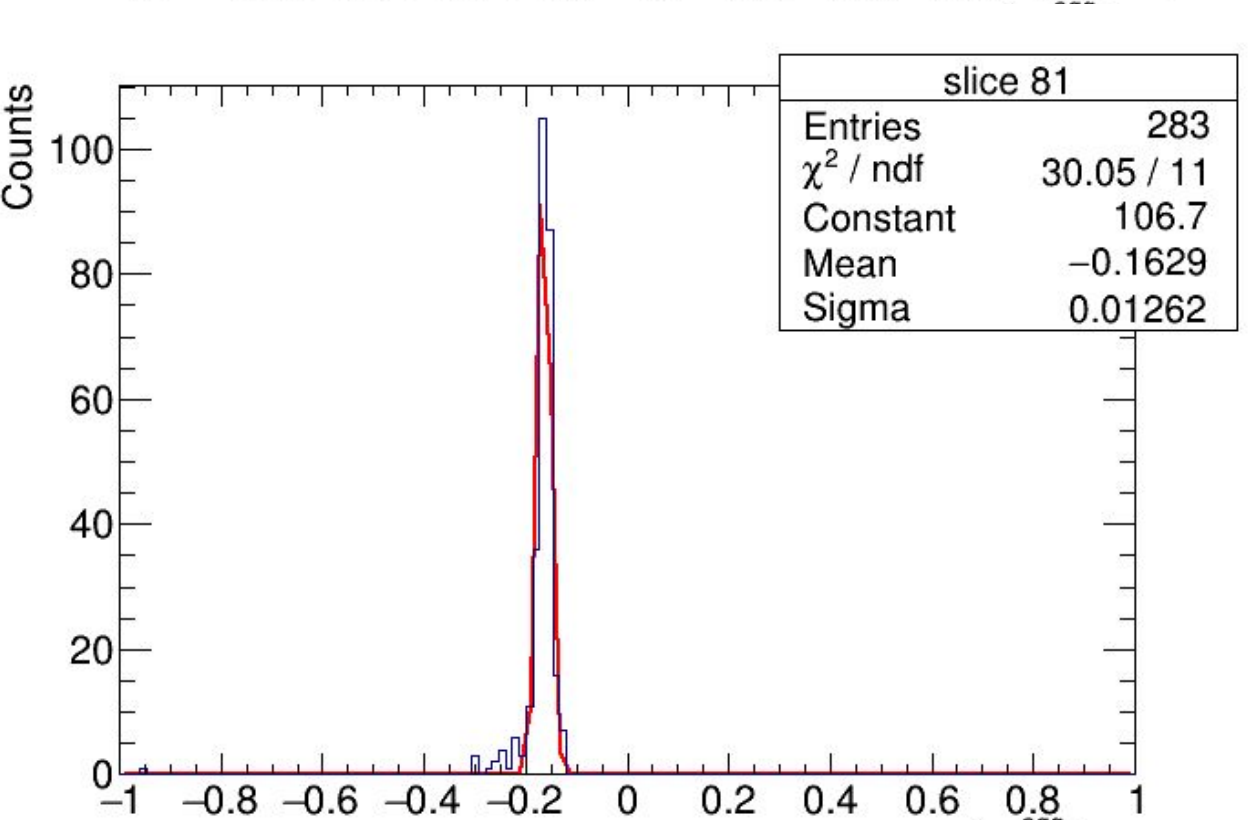
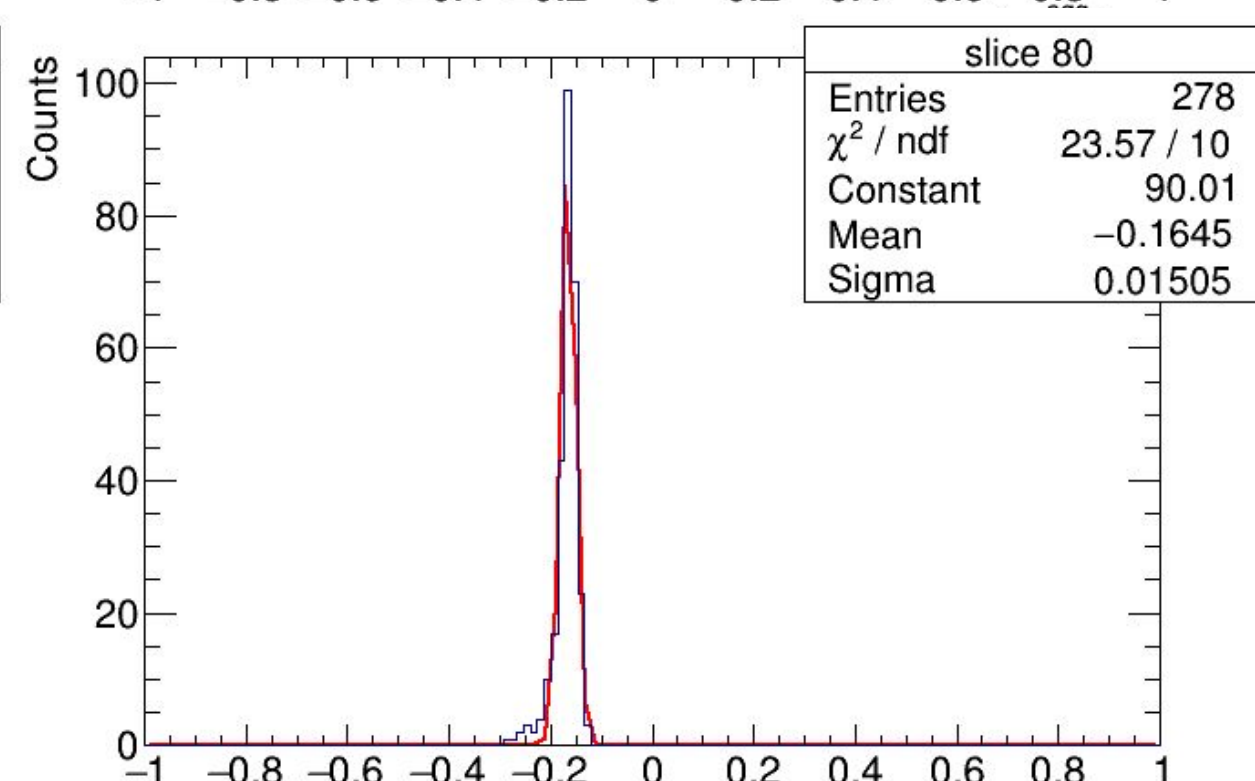
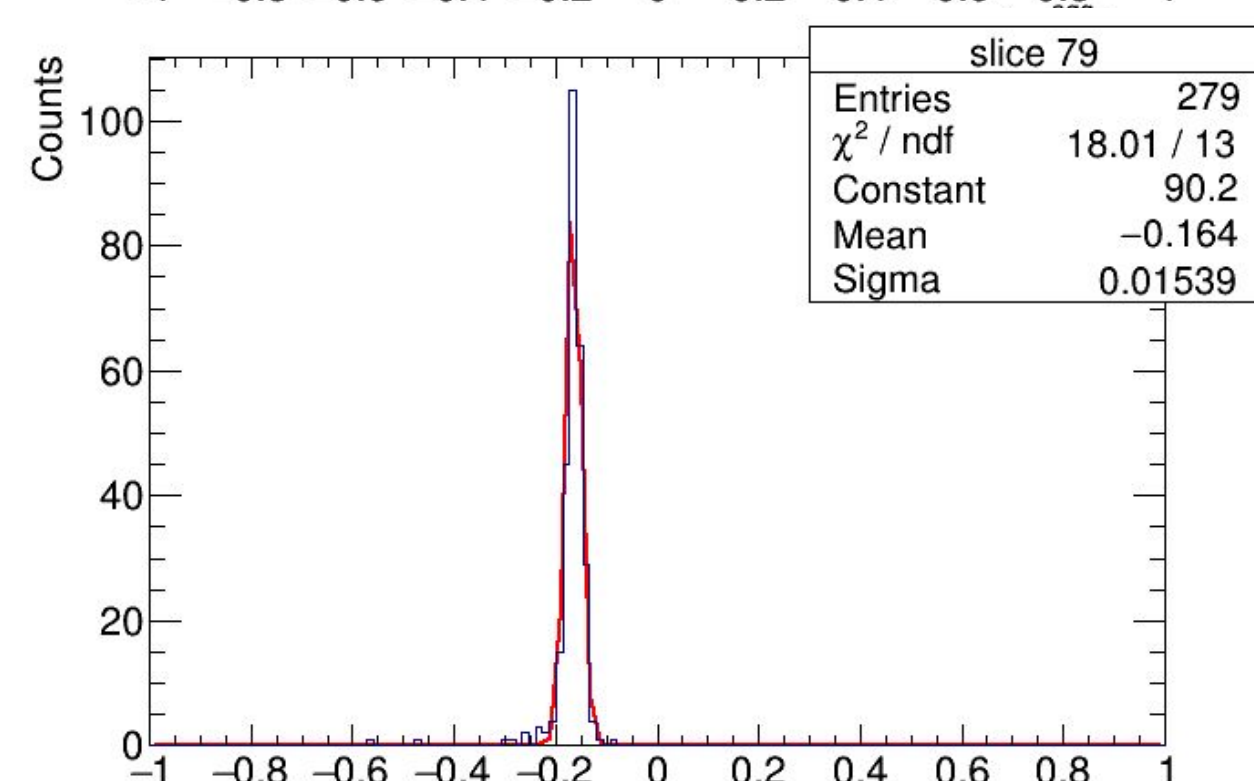
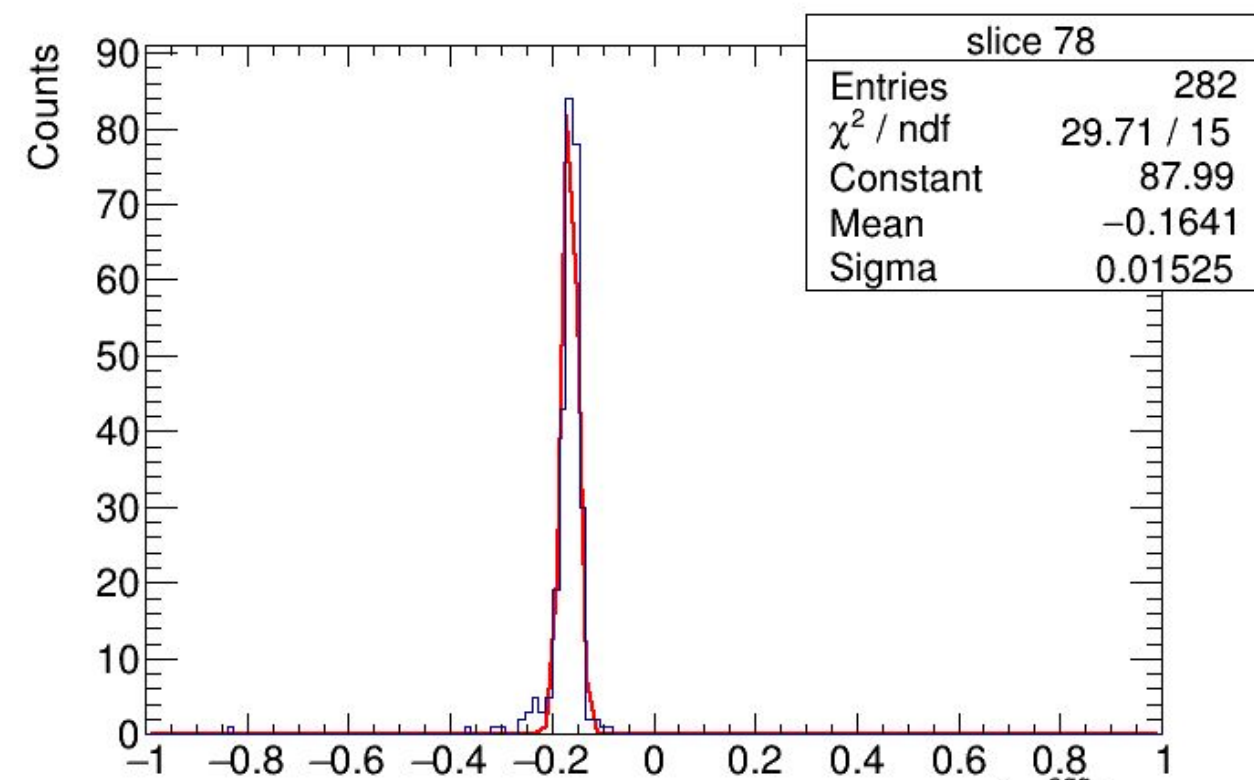
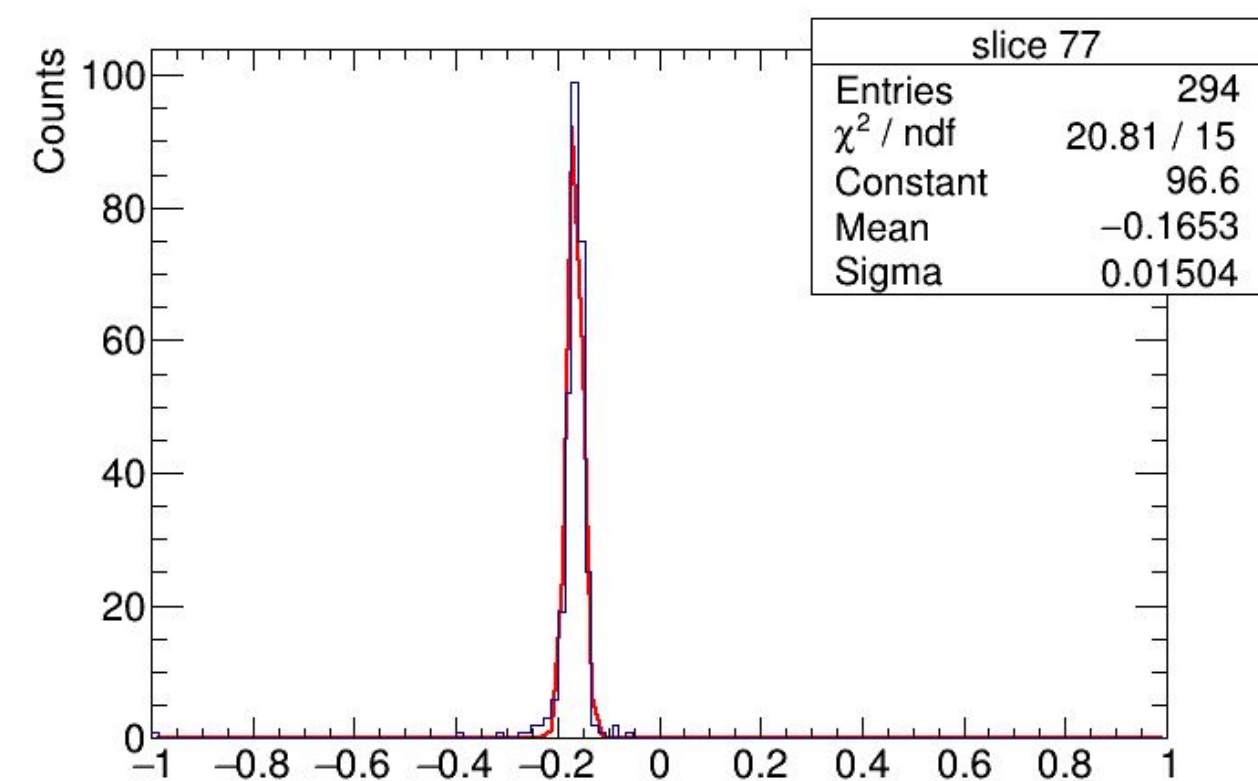
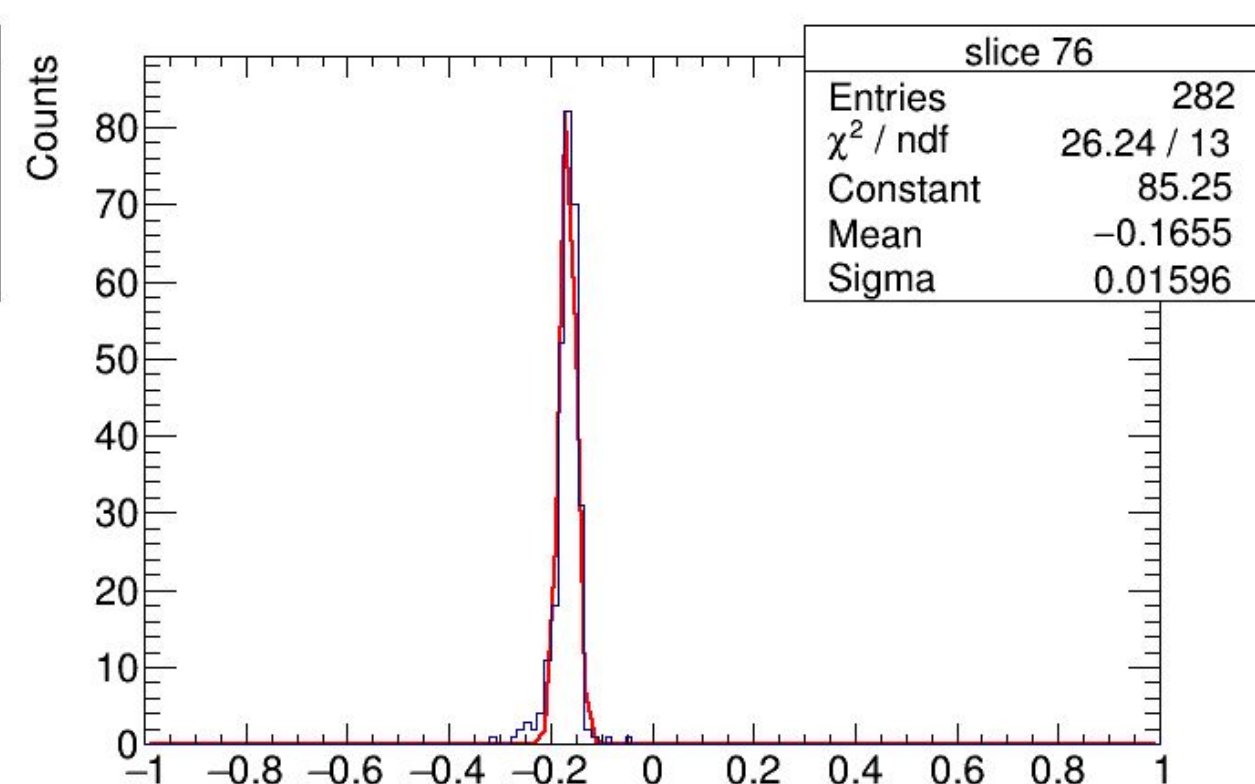
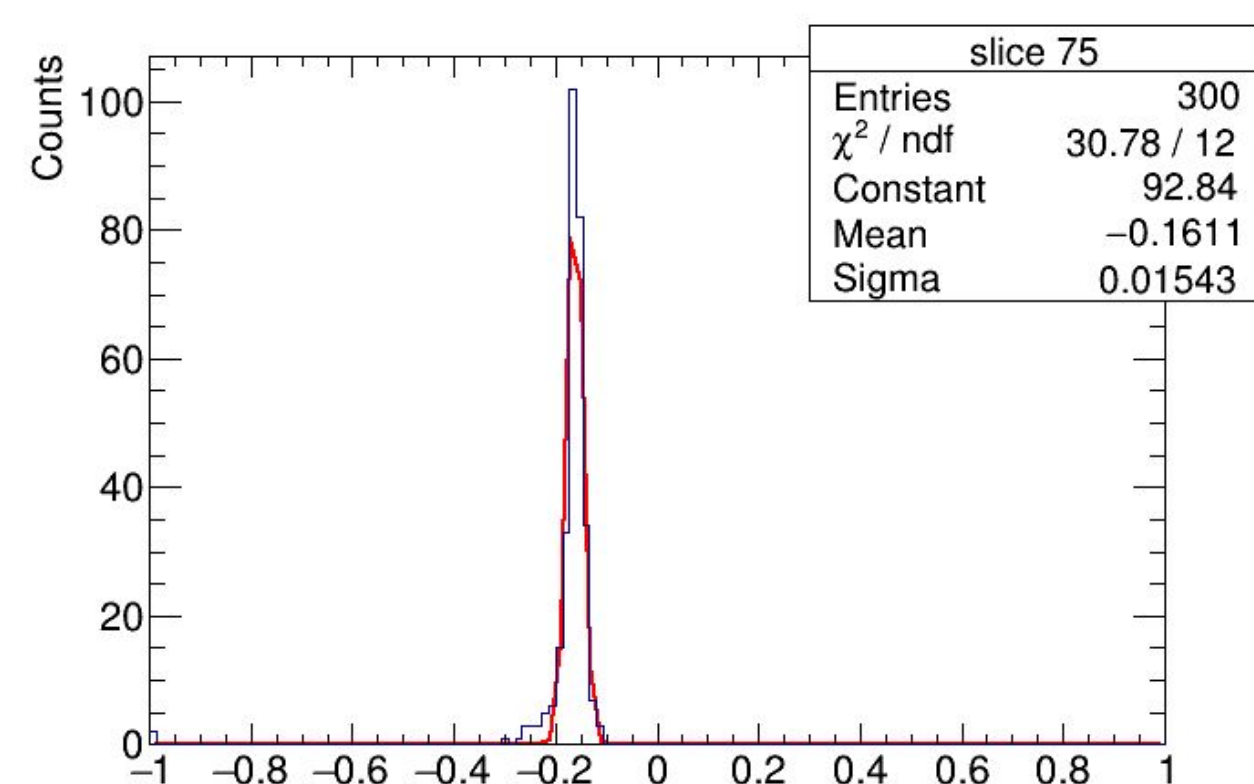
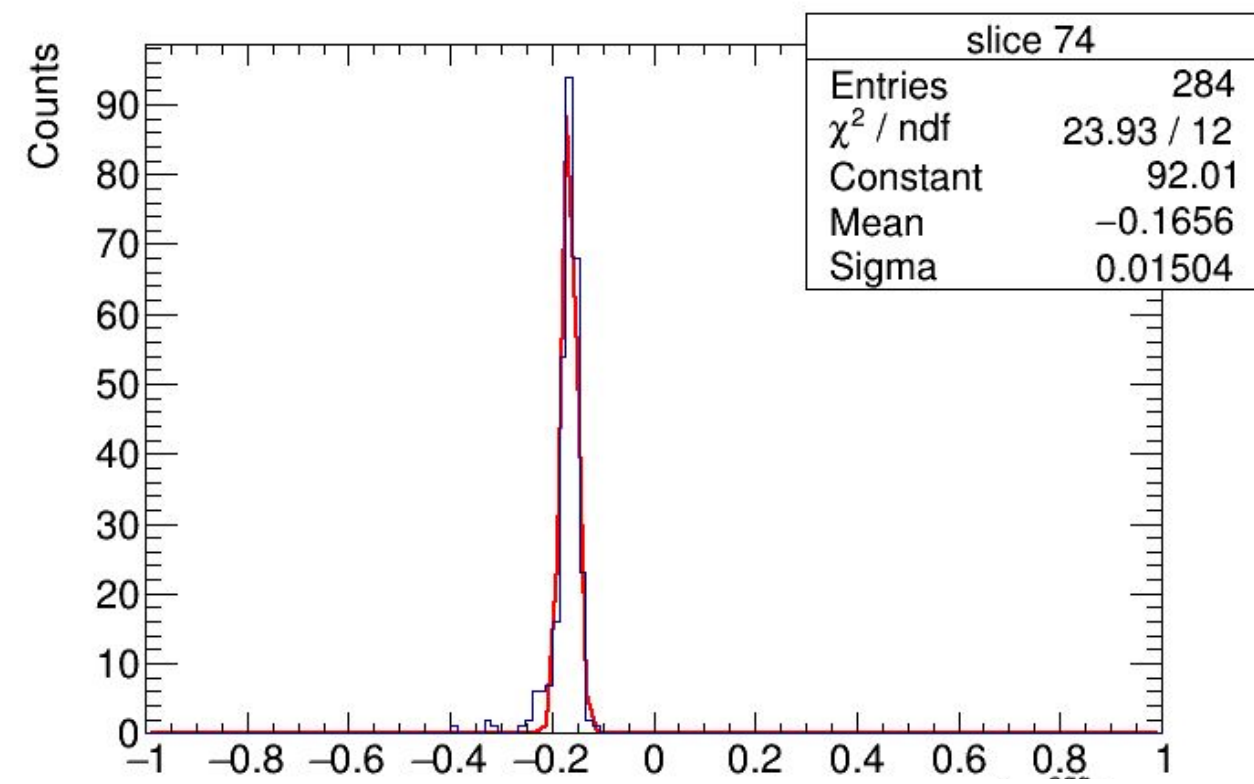
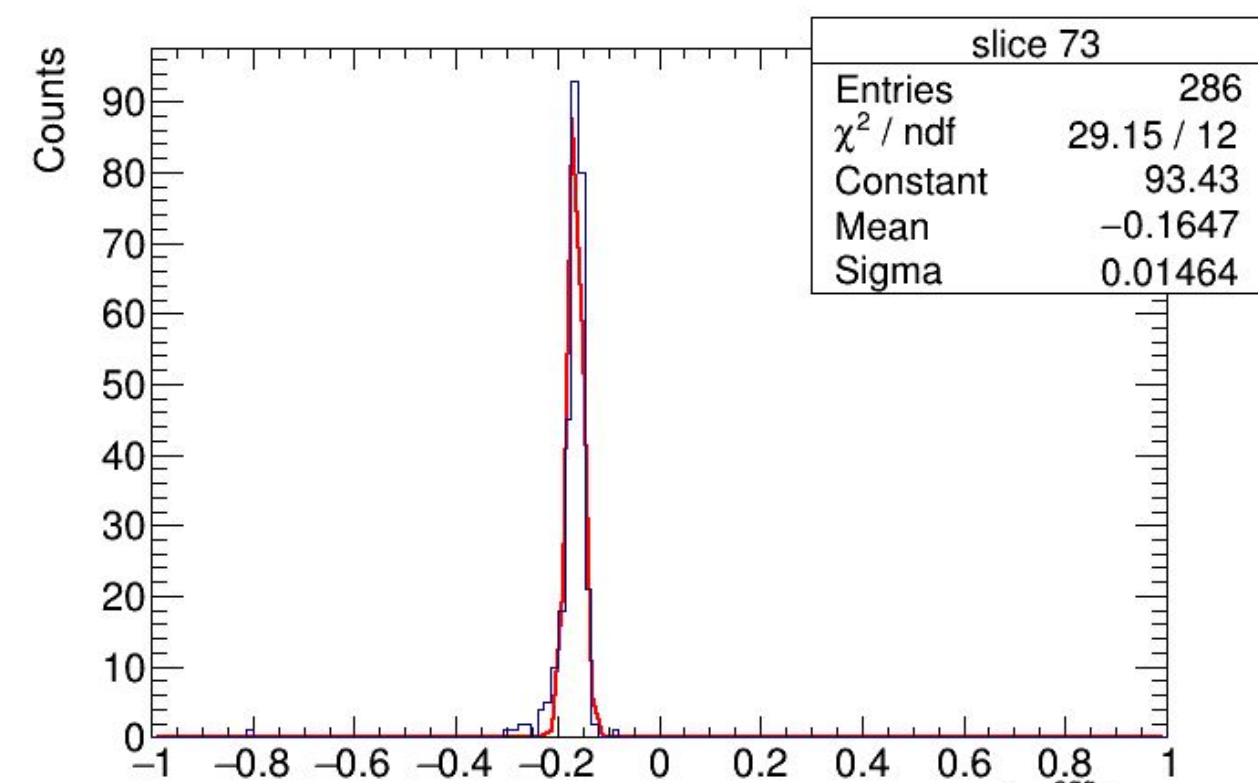
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/\text{ge}$

FEMC + FHCAL

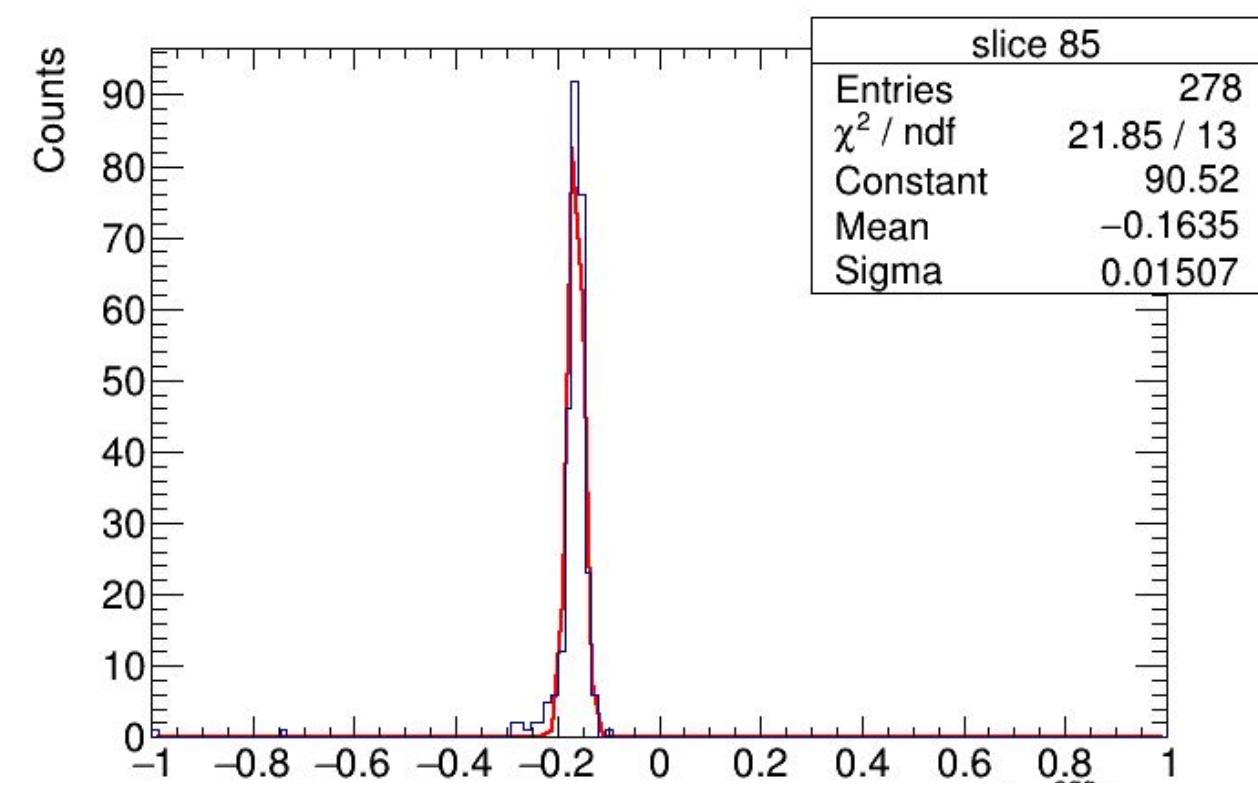
Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}} / \text{ge}$

FEMC + FHCAL

Fitted Gaussians



The x-axes denote $\Delta e_{\text{agg}}/g_e$

