



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:

- CEMC + HCALIN + HCALOUT: electron and pion
- FEMC + FHCAL: electron and pion
- EEMC: electron and pion

Miscellaneous

- Histograms showing number of clusters per event for CEMC and FEMC (electrons).
- Histograms showing geta distribution keeping aggregate cluster energies as weights.

Simulation Parameters

e^- , π^- (100k)

p: [0,30] GeV/c

detector-wise
eta cuts

Eta: [-4,4]

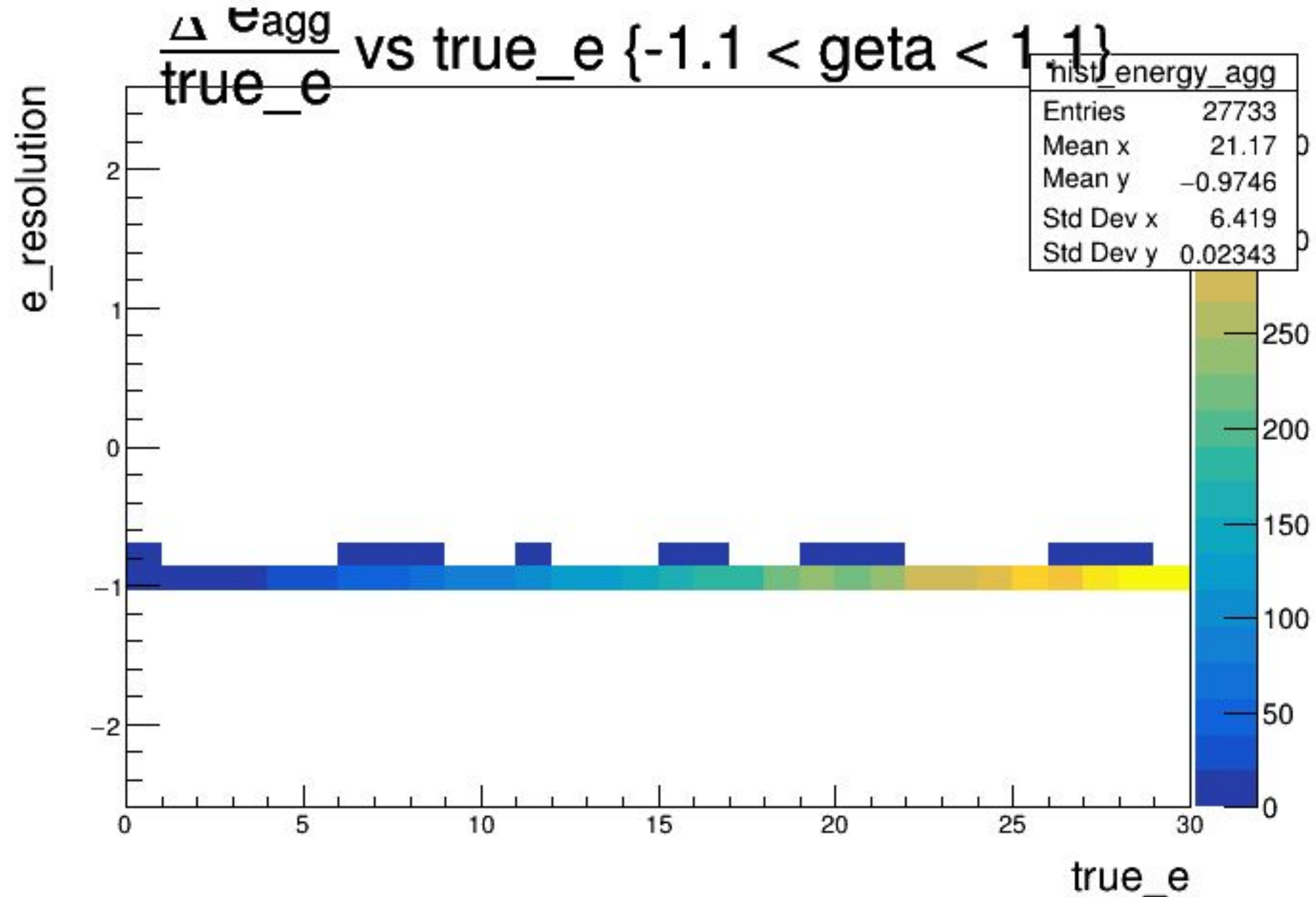
phi: [- π , π]



CEMC + HCALIN + HCALOUT

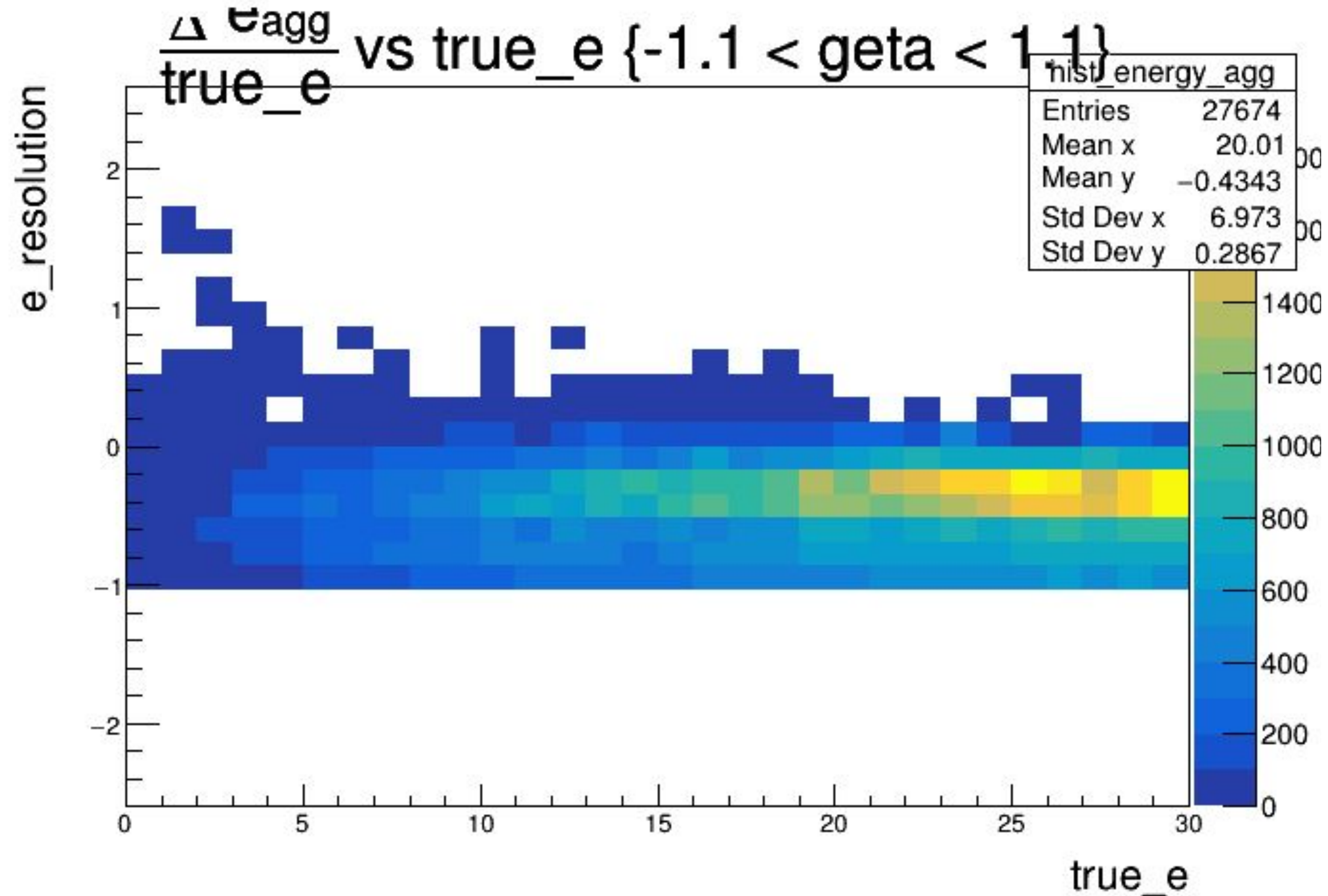
CEMC + HCALIN + HCALOUT (e^-)

(ce-ge)/ge vs ge
Explicit η cut: -1.1 to 1.1



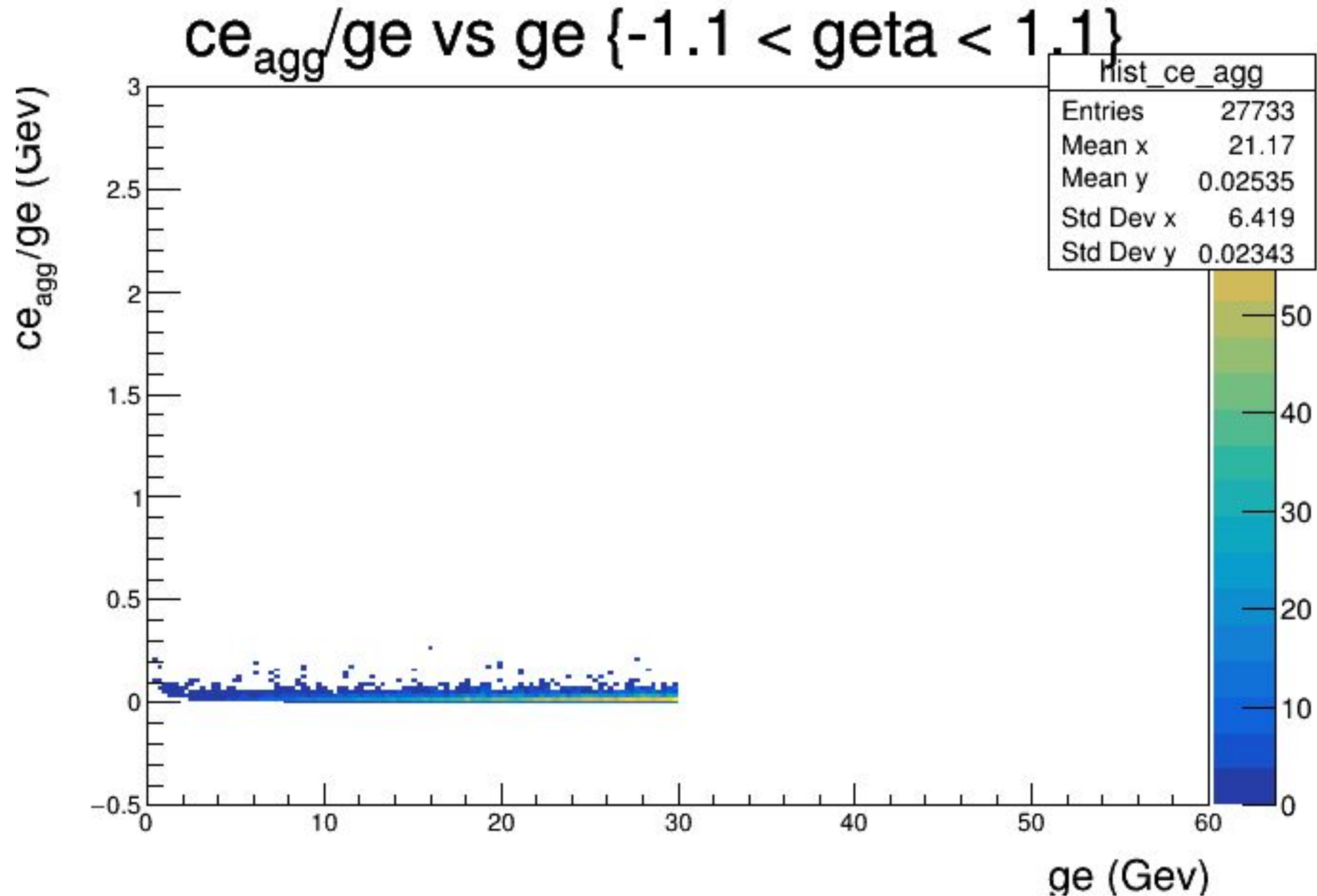
CEMC + HCALIN + HCALOUT (π^-)

(ce-ge)/ge vs ge
Explicit η cut: -1.1 to 1.1



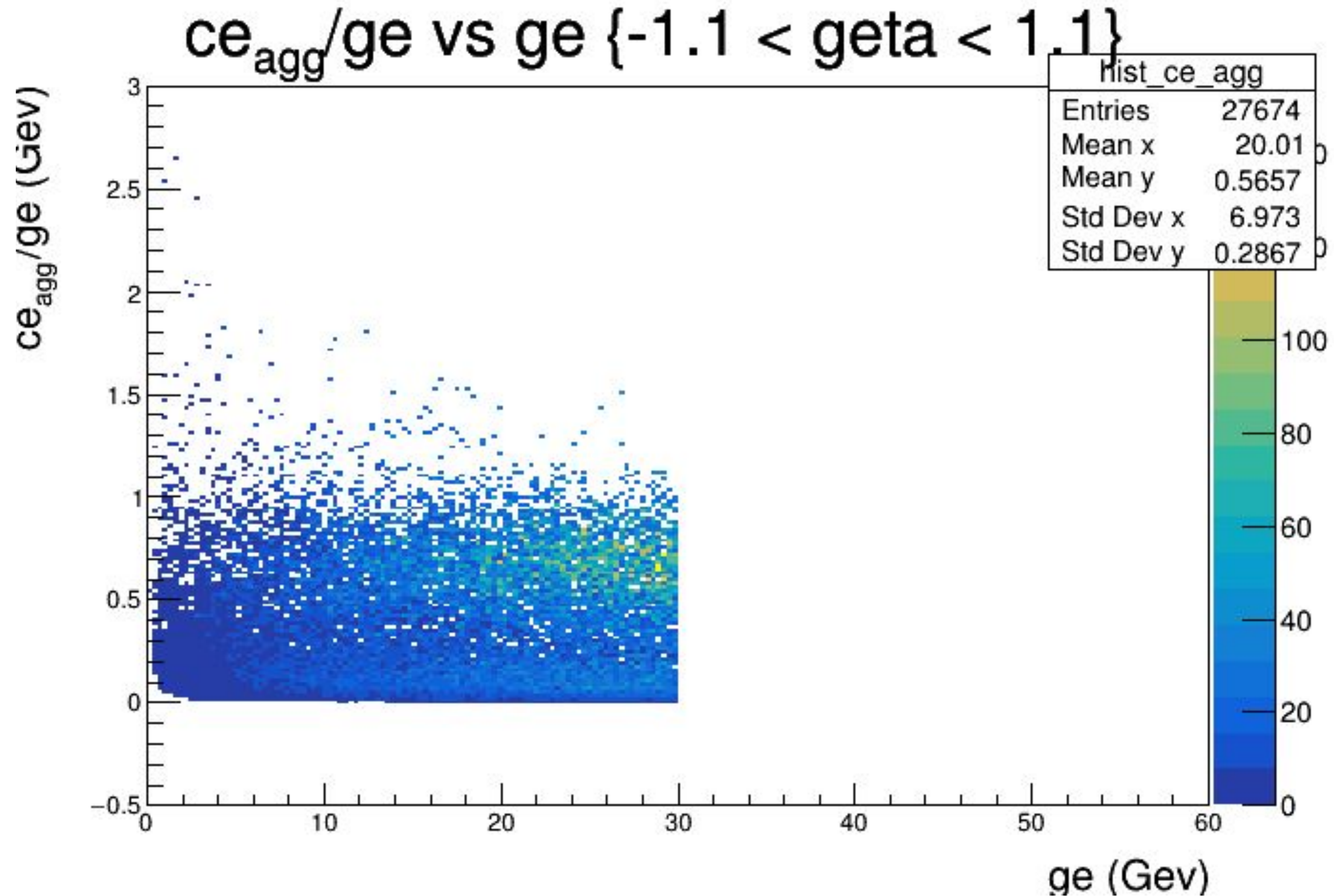
CEMC + HCALIN + HCALOUT (e^-)

ce/ge vs ge
Explicit η cut: -1.1 to 1.1



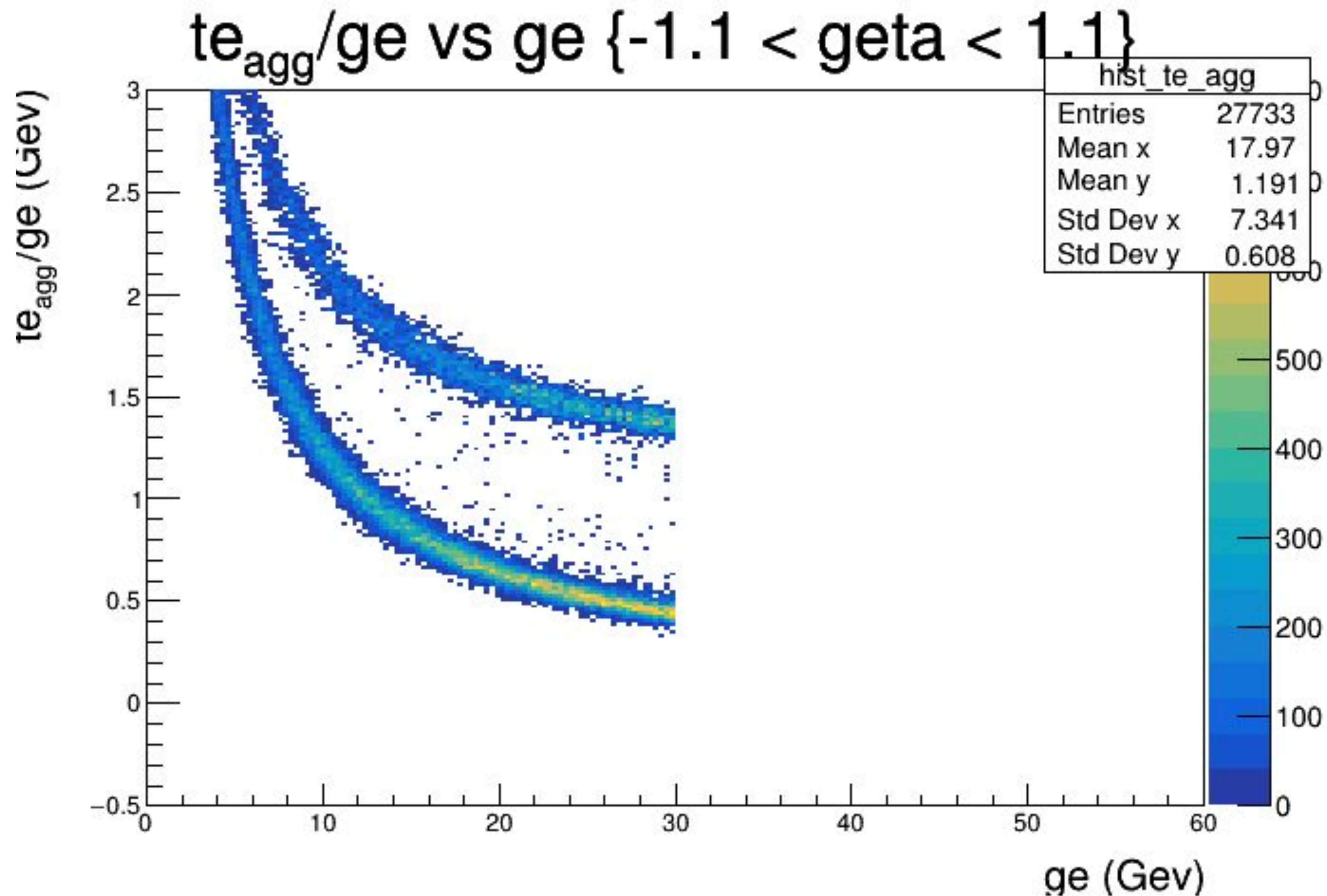
CEMC + HCALIN + HCALOUT (π^-)

ce/ge vs ge
Explicit η cut: -1.1 to 1.1



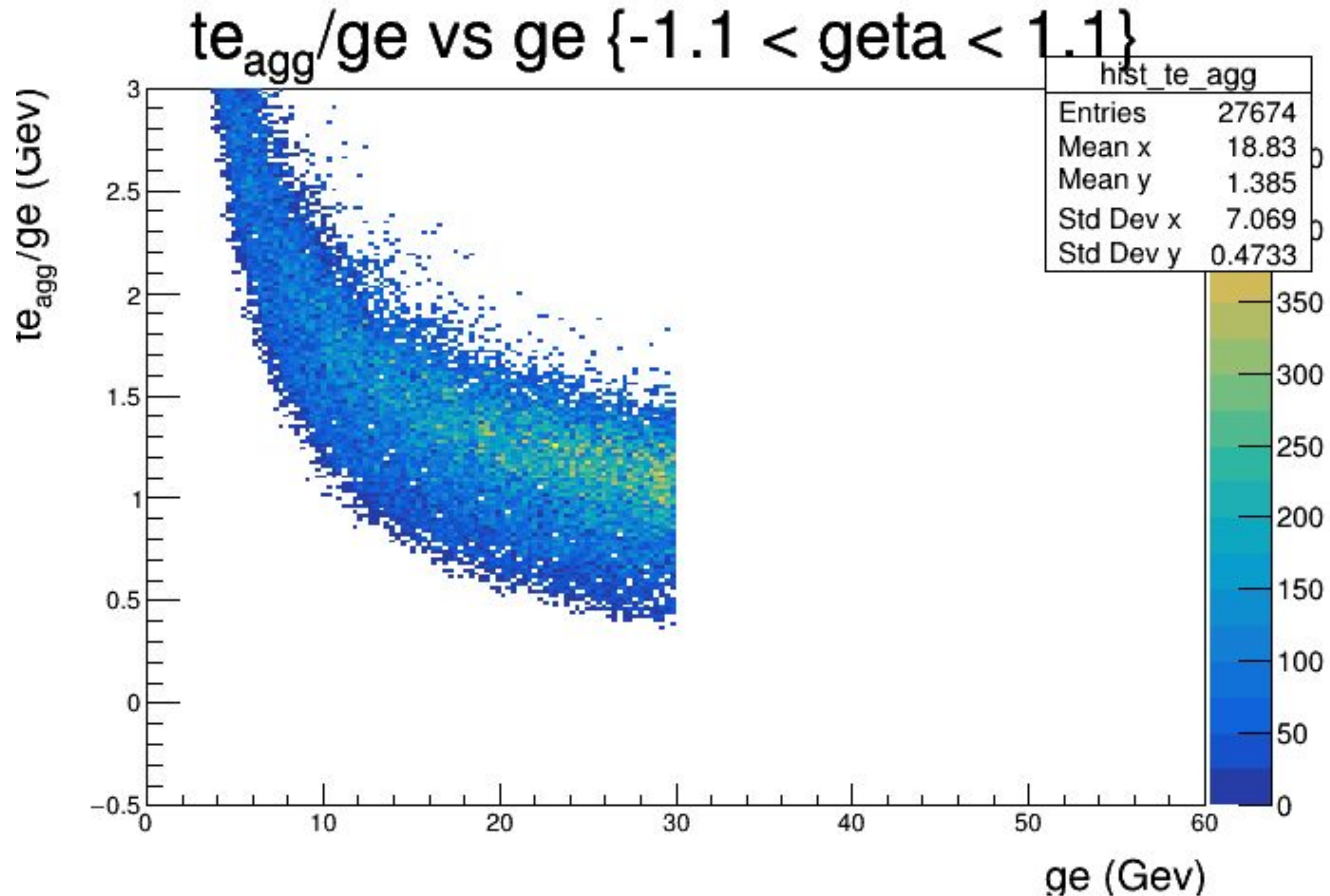
CEMC + HCALIN + HCALOUT (e^-)

te/ge vs ge
Explicit η cut: -1.1 to 1.1



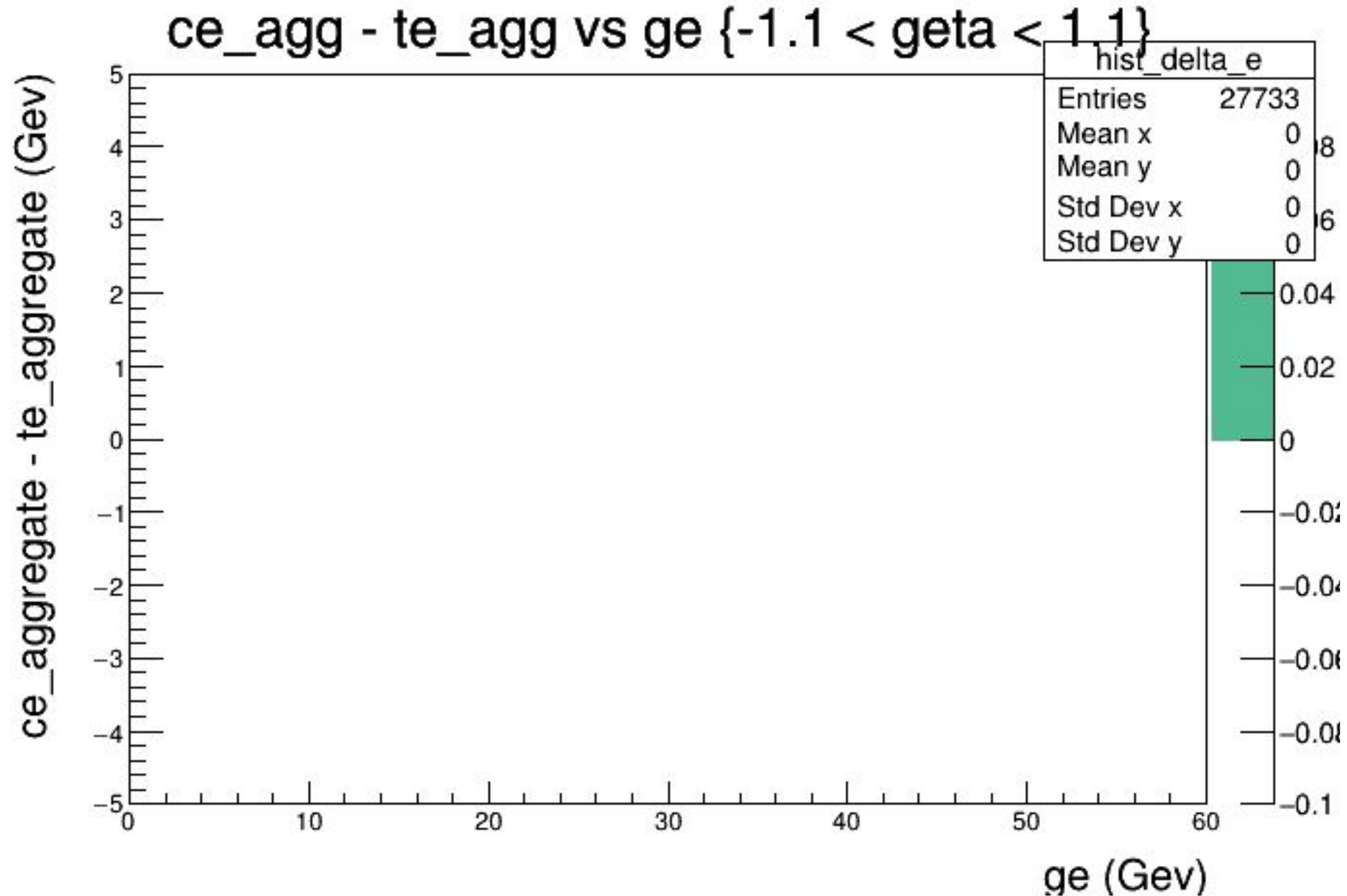
CEMC + HCALIN + HCALOUT (π^-)

te/ge vs ge
Explicit η cut: -1.1 to 1.1



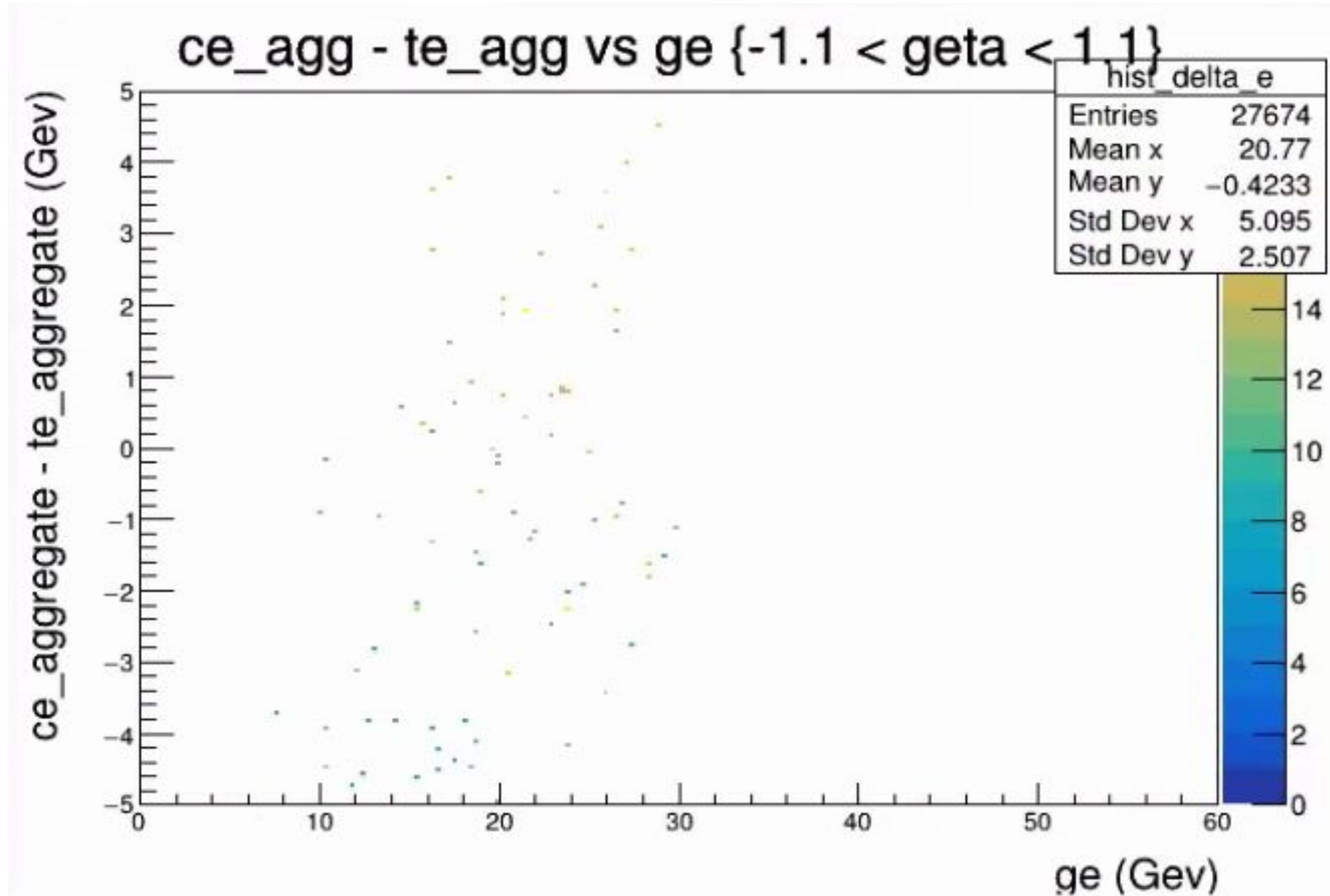
CEMC + HCALIN + HCALOUT (e^-)

(ce-te) vs ge
Explicit η cut: -1.1 to 1.1



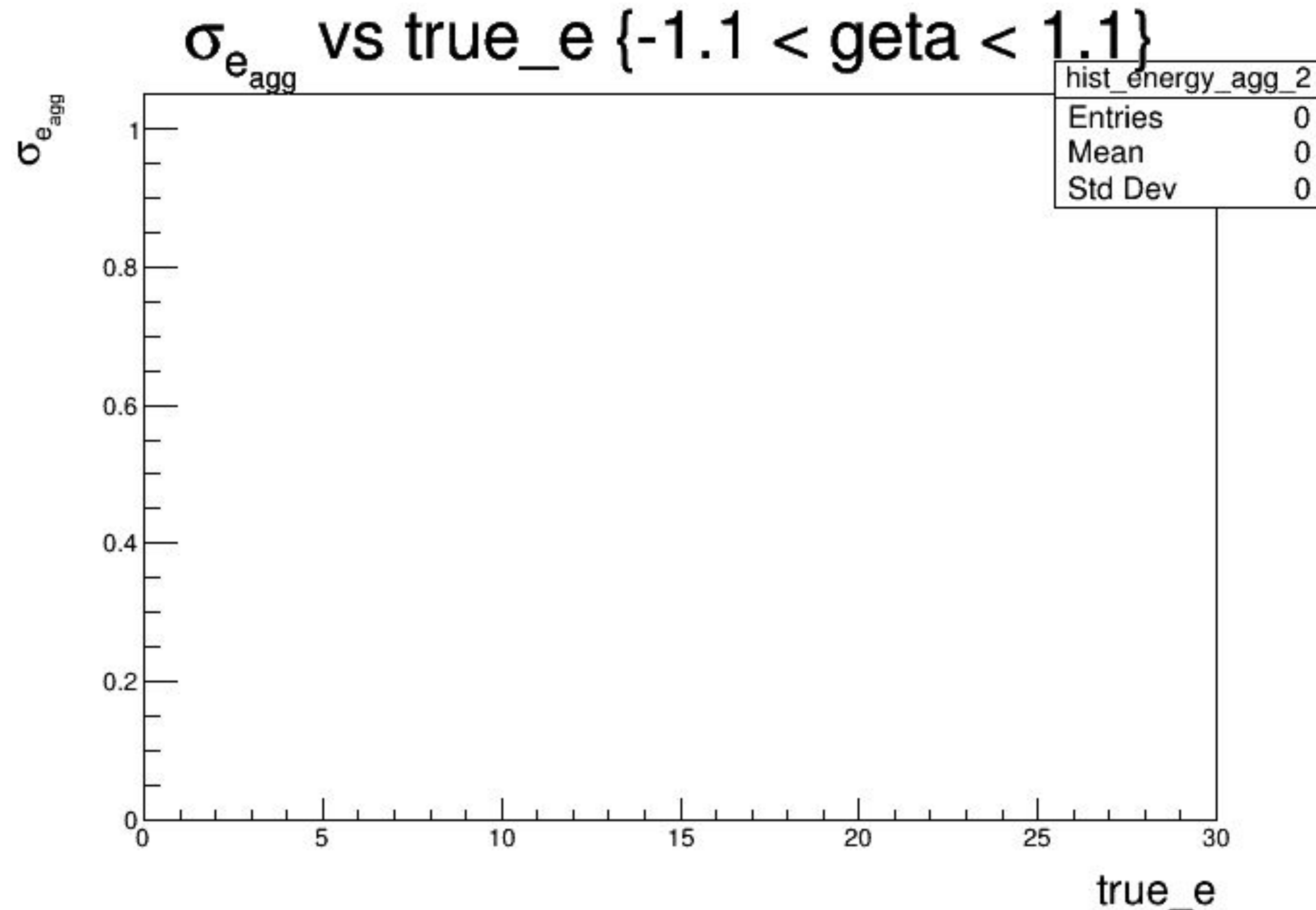
CEMC + HCALIN + HCALOUT (π^-)

(ce-te) vs ge
Explicit η cut: -1.1 to 1.1



CEMC + HCALIN + HCALOUT (e^-)

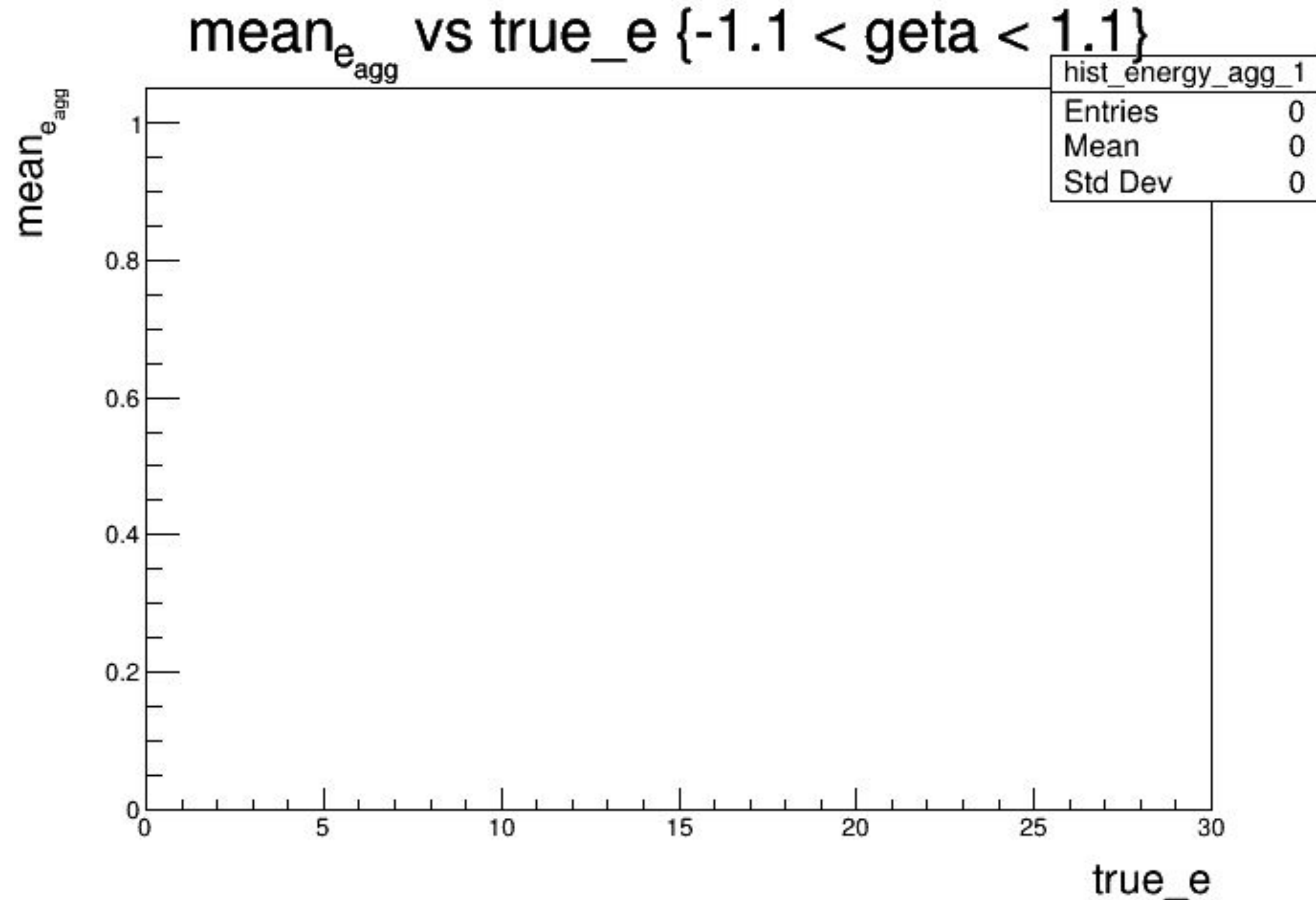
σ_e vs g_e
Explicit η cut: -1.1 to 1.1



σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce-ge)/ge$ vs g_e plot

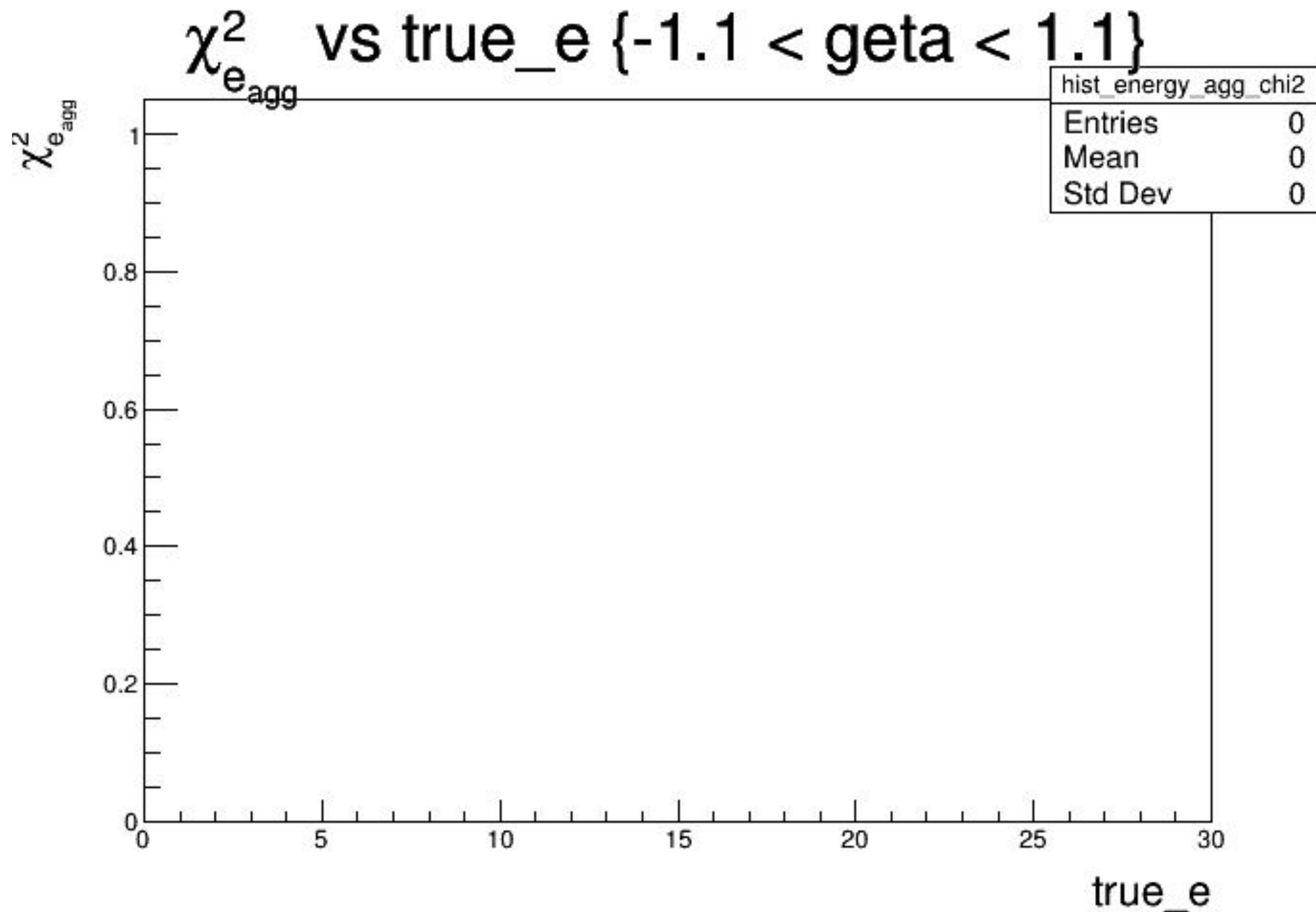
CEMC + HCALIN + HCALOUT (e^-)

mean vs ge
Explicit η cut: -1.1 to 1.1



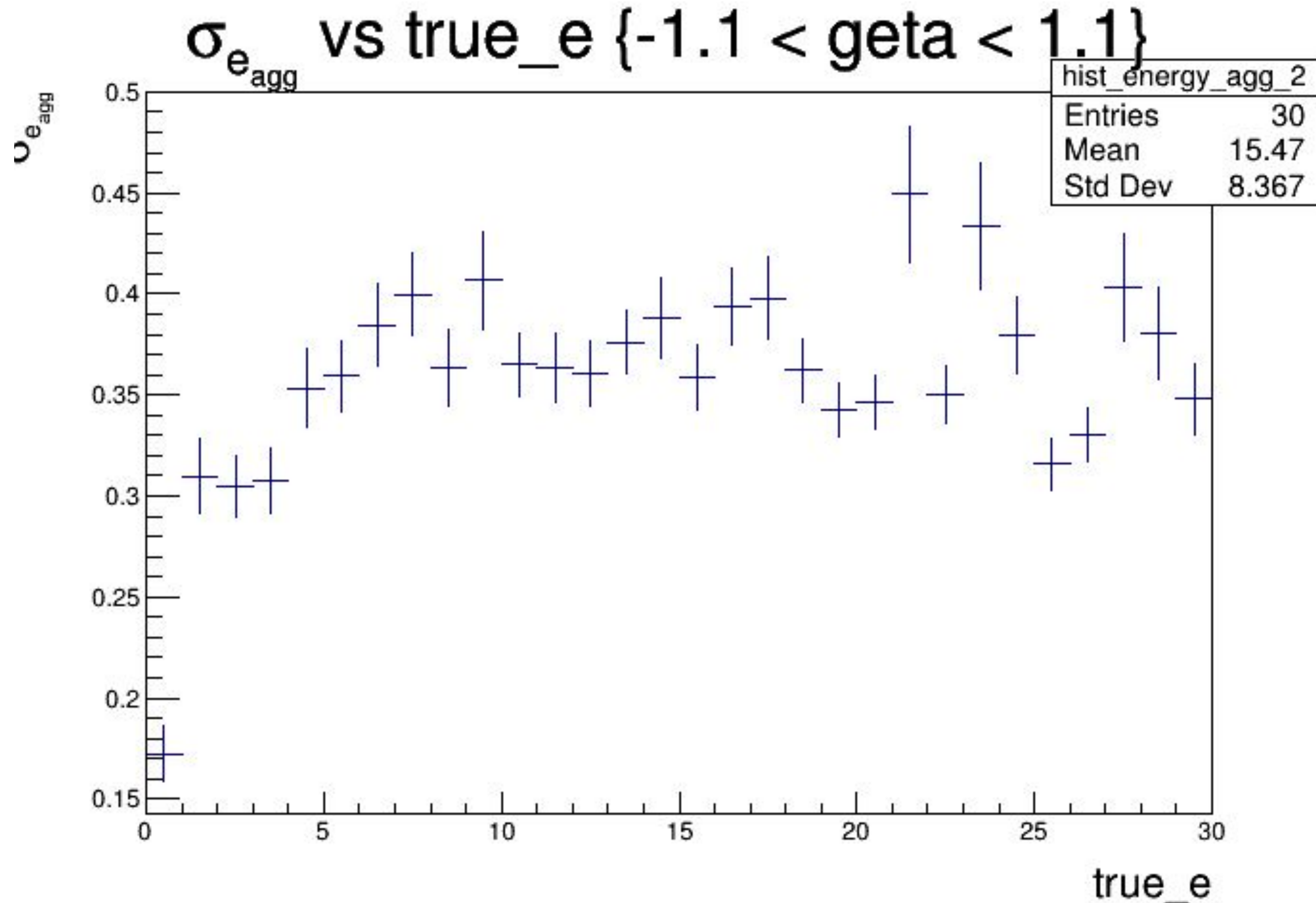
CEMC + HCALIN + HCALOUT (e^-)

chi2 vs ge
Explicit η cut: -1.1 to 1.1



CEMC + HCALIN + HCALOUT (π^-)

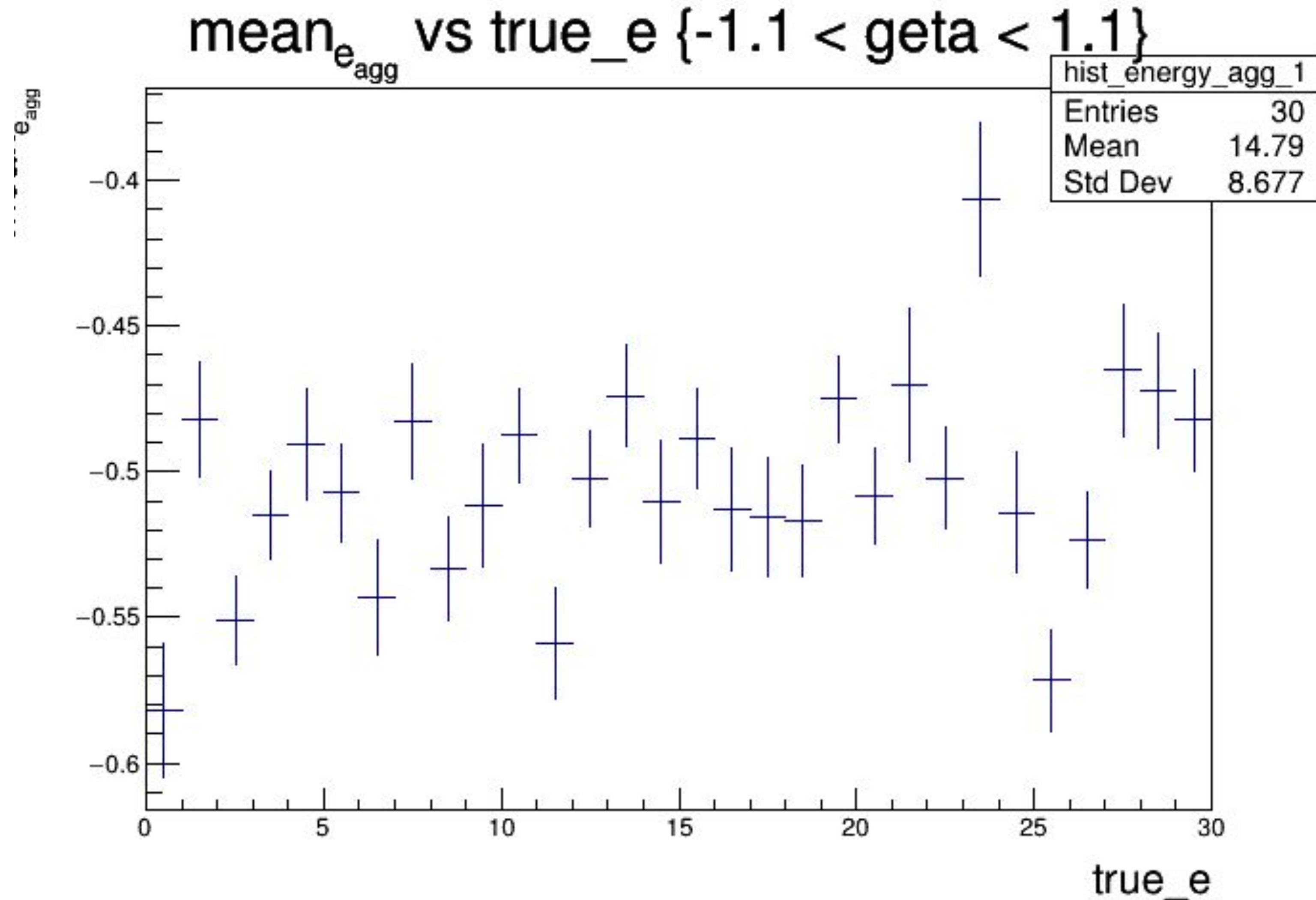
σ_e vs g_e
Explicit η cut: -1.1 to 1.1



σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce - ge) / ge$ vs g_e plot

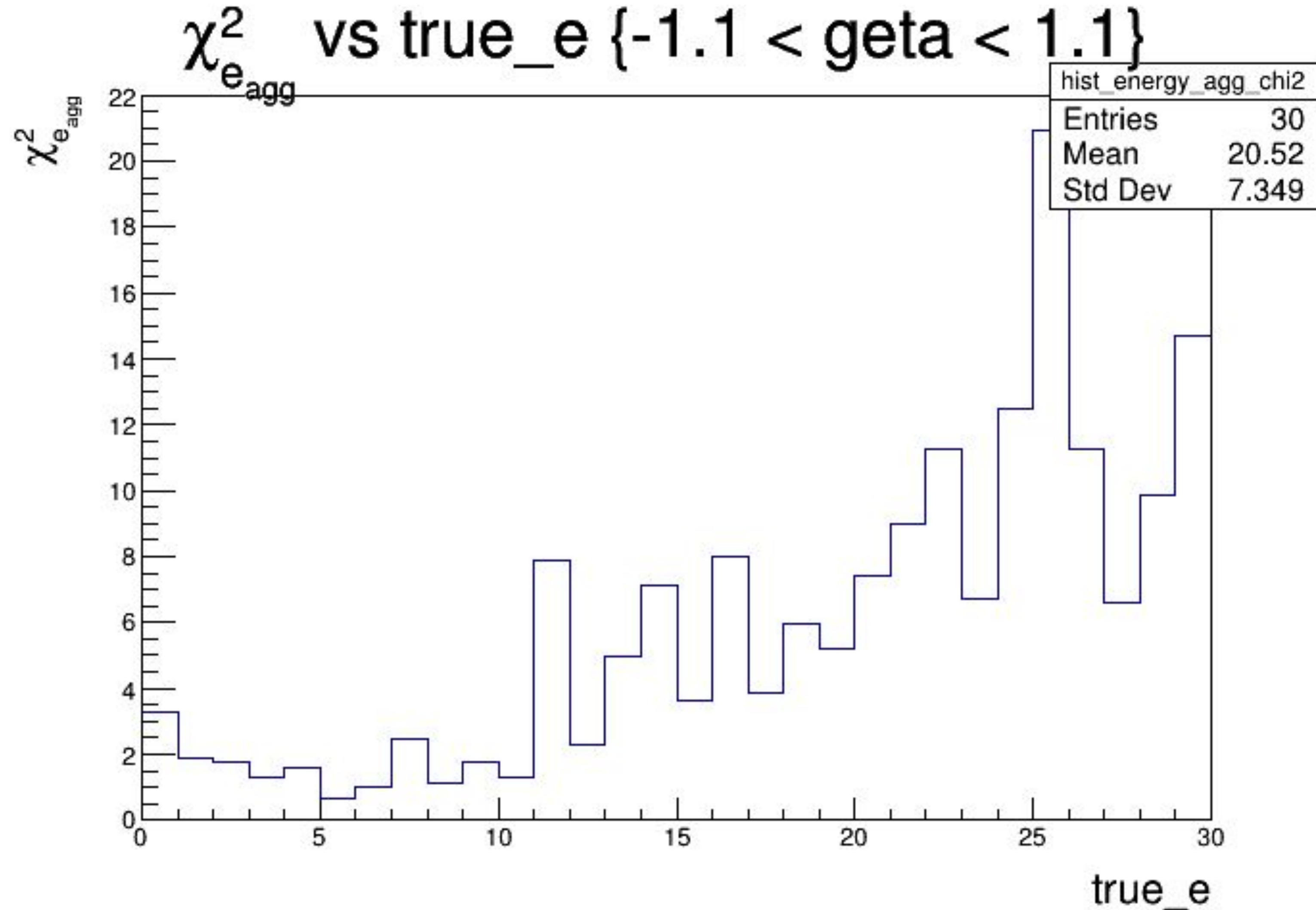
CEMC + HCALIN + HCALOUT (π^-)

mean vs ge
Explicit η cut: -1.1 to 1.1



CEMC + HCALIN + HCALOUT (π^-)

chi2 vs ge
Explicit η cut: -1.1 to 1.1



CEMC + HCALIN + HCALOUT (e^-)

Total Energy Counts
Explicit η cut: -1.1 to 1.1

The total ce is:	4974.4 GeV
The total te is:	418838.0 GeV
The total ge is:	414981.0 GeV

CEMC + HCALIN + HCALOUT (π^-)

Total Energy Counts
Explicit η cut: -1.1 to 1.1

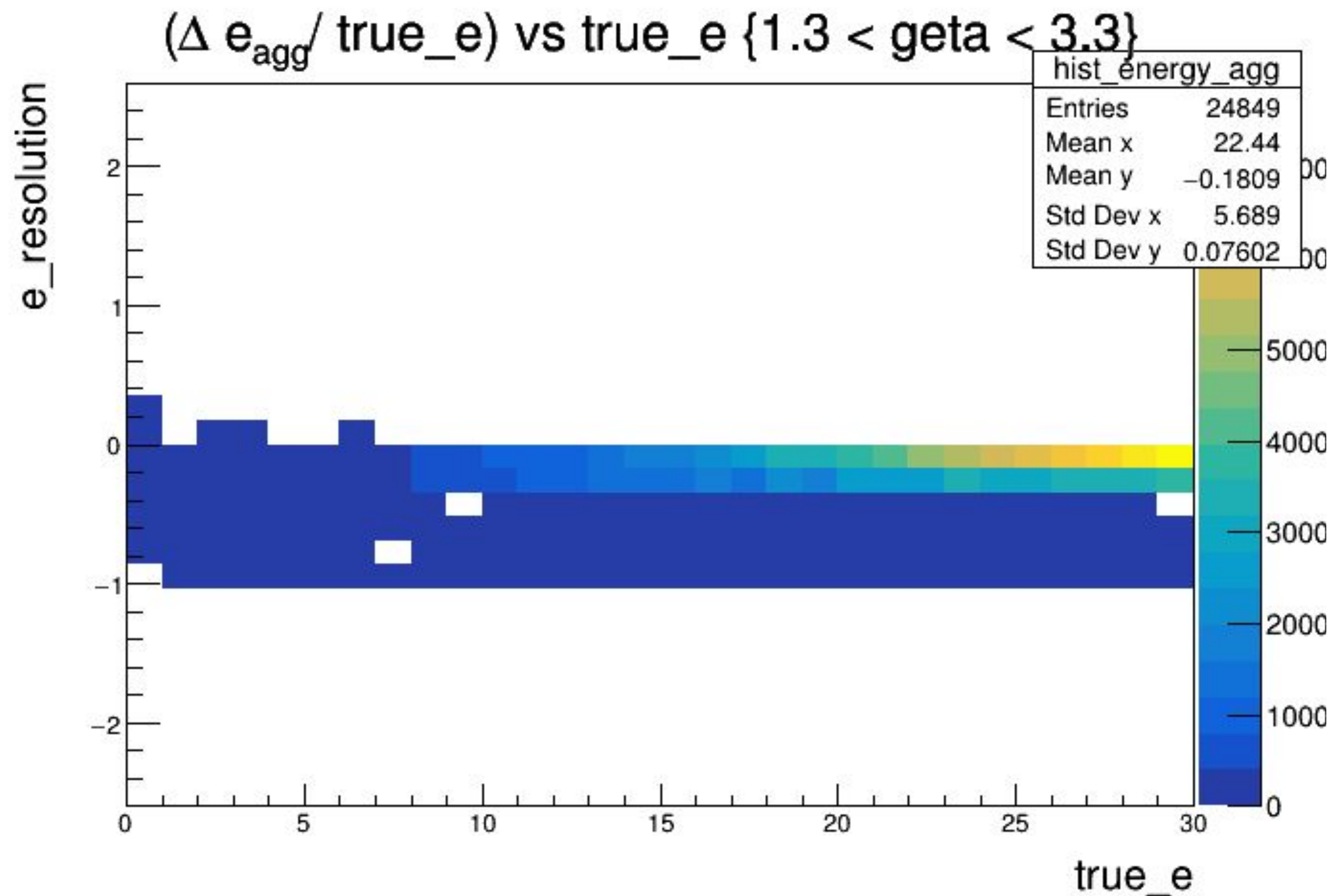
The total ce is:	112323 GeV
The total te is:	560768 GeV
The total ge is:	414236 GeV



FHCAL + FEMC

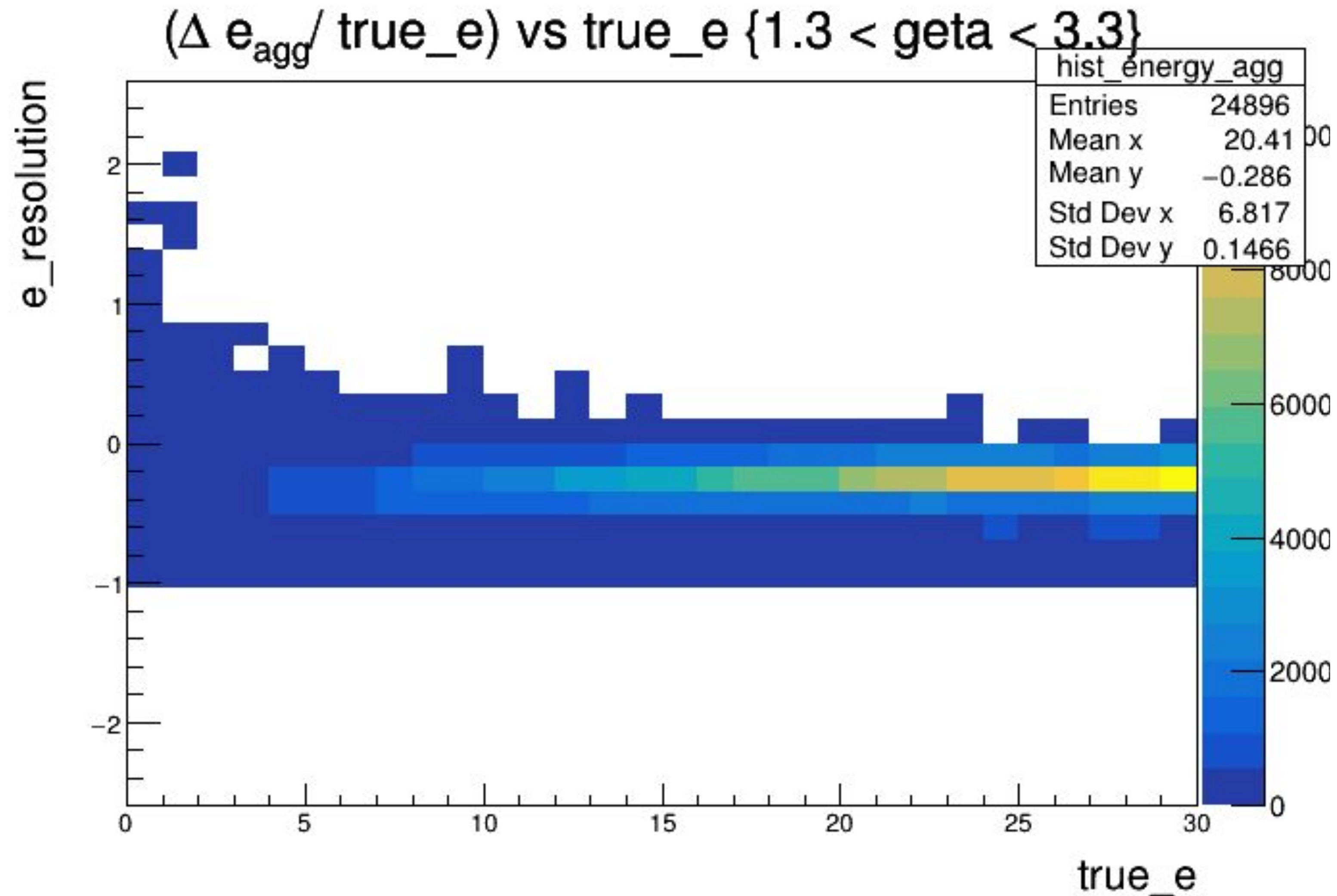
FHCAL + FEMC (e^-)

(ce-ge)/ge vs ge
Explicit η cut: 1.3 to 3.3



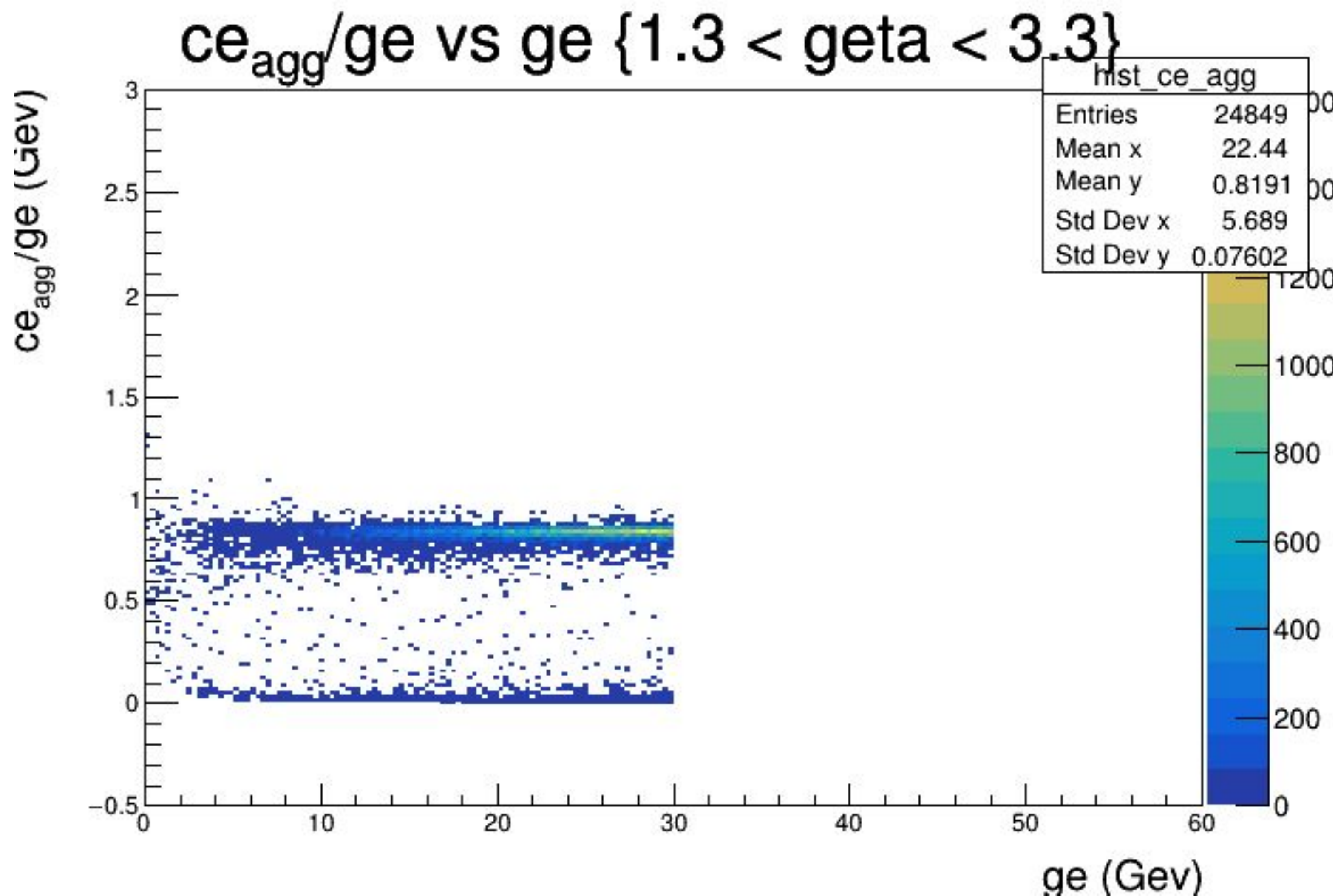
FHCAL + FEMC (π^-)

(ce-ge)/ge vs ge
Explicit η cut: 1.3 to 3.3



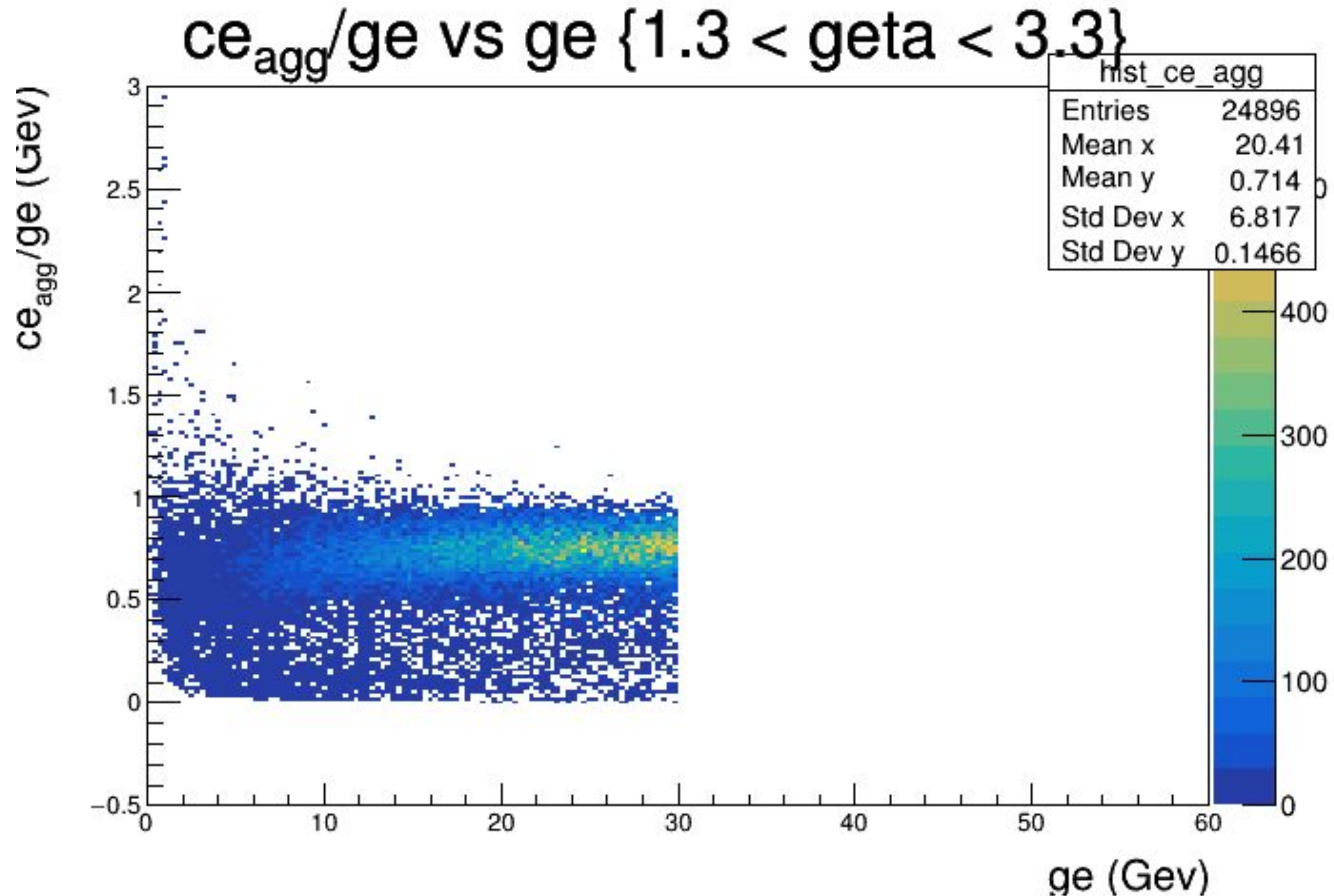
FHCAL + FEMC (e^-)

ce/ge vs ge
Explicit η cut: 1.3 to 3.3



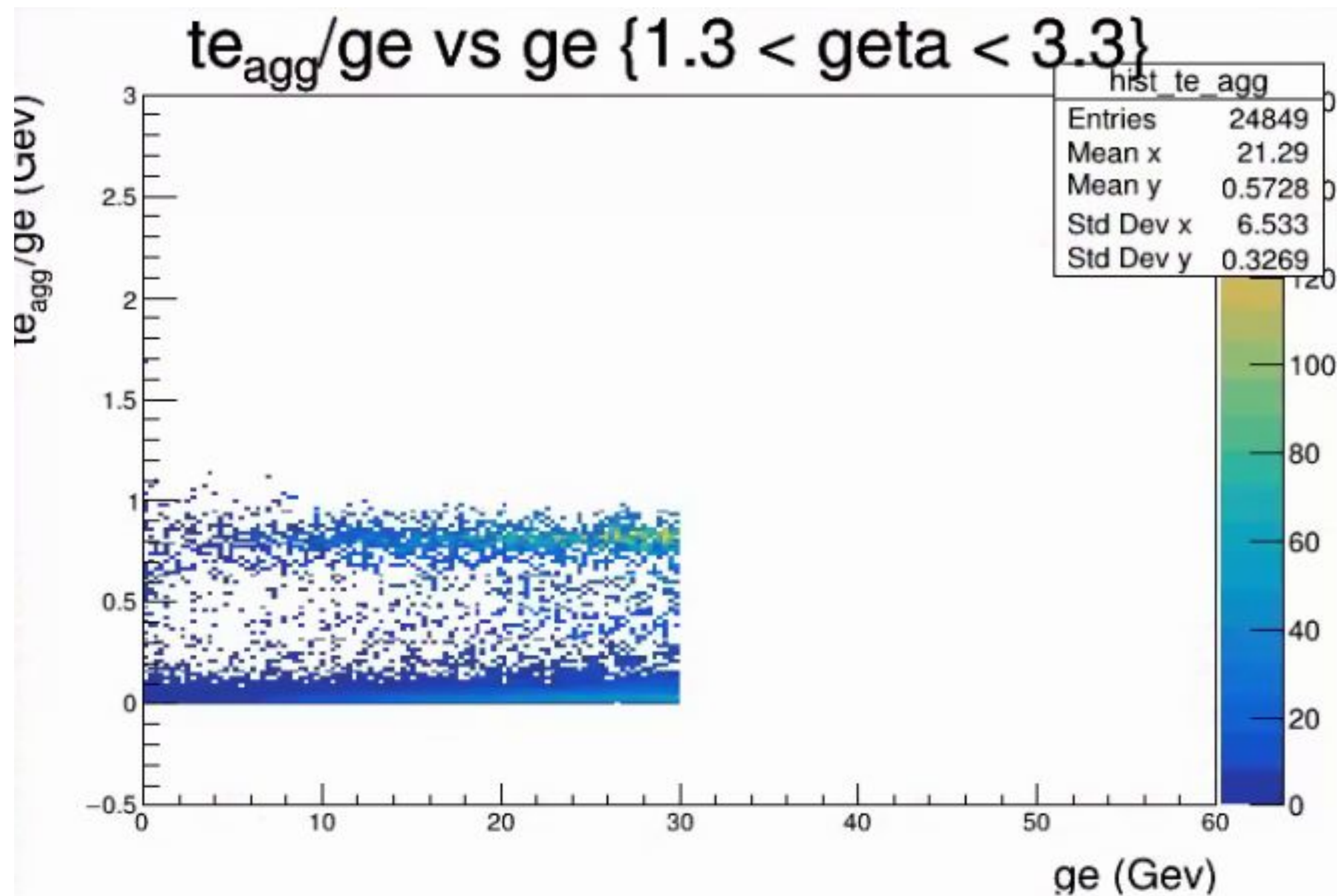
FHCAL + FEMC (π^-)

ce/ge vs ge
Explicit η cut: 1.3 to 3.3



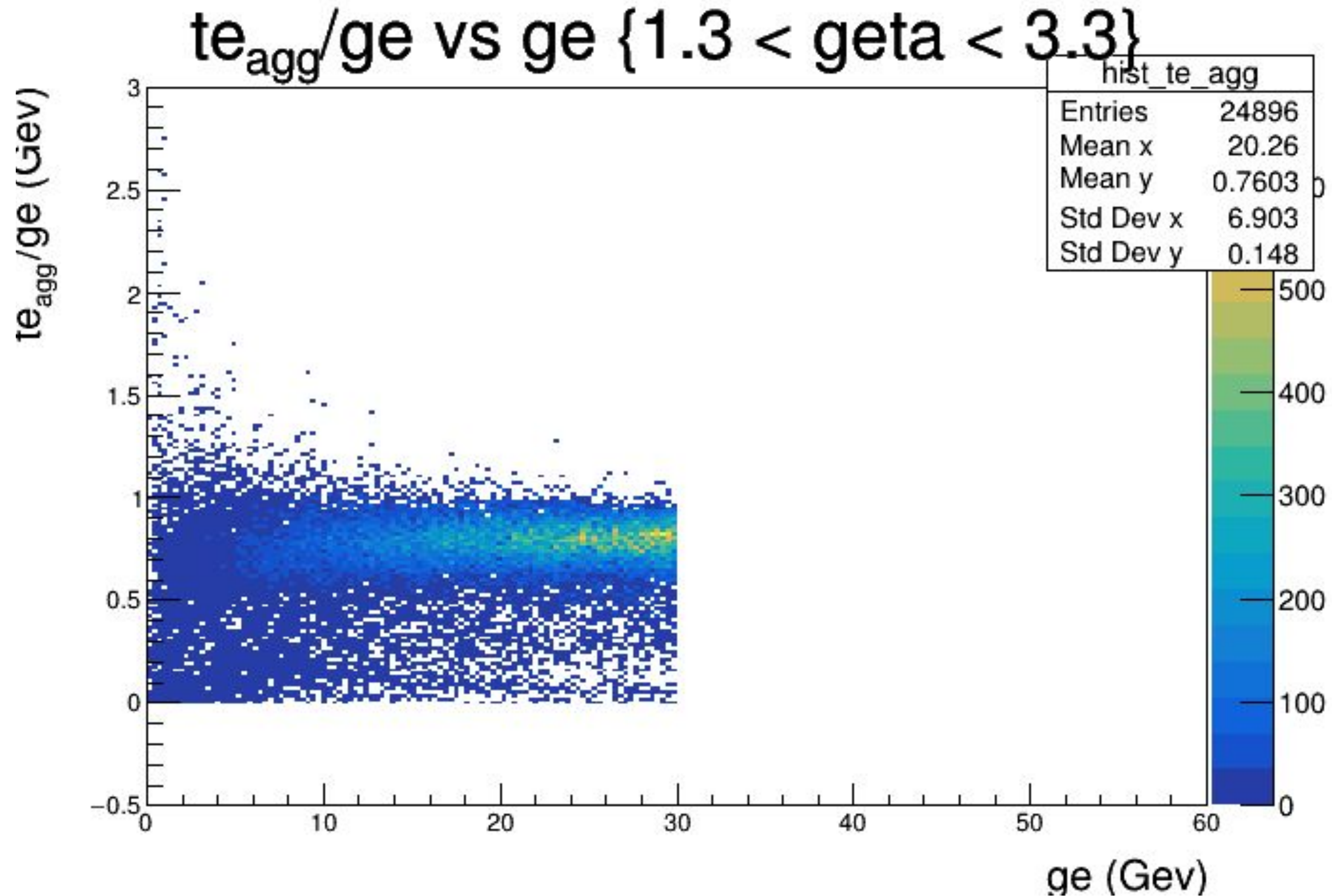
FHCAL + FEMC (e^-)

t_e/g_e vs g_e
Explicit η cut: 1.3 to 3.3



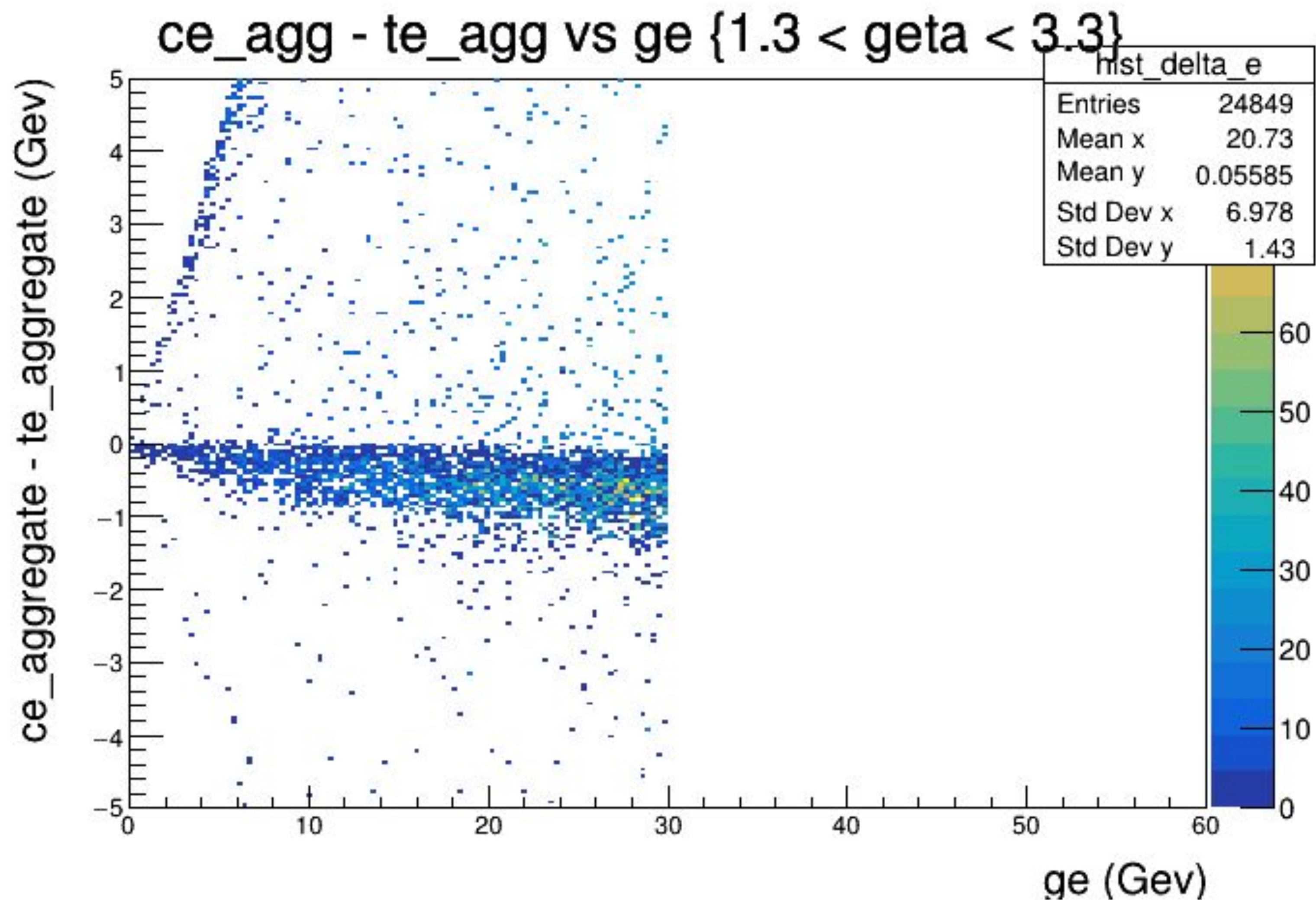
FHCAL + FEMC (π^-)

te/ge vs ge
Explicit η cut: 1.3 to 3.3



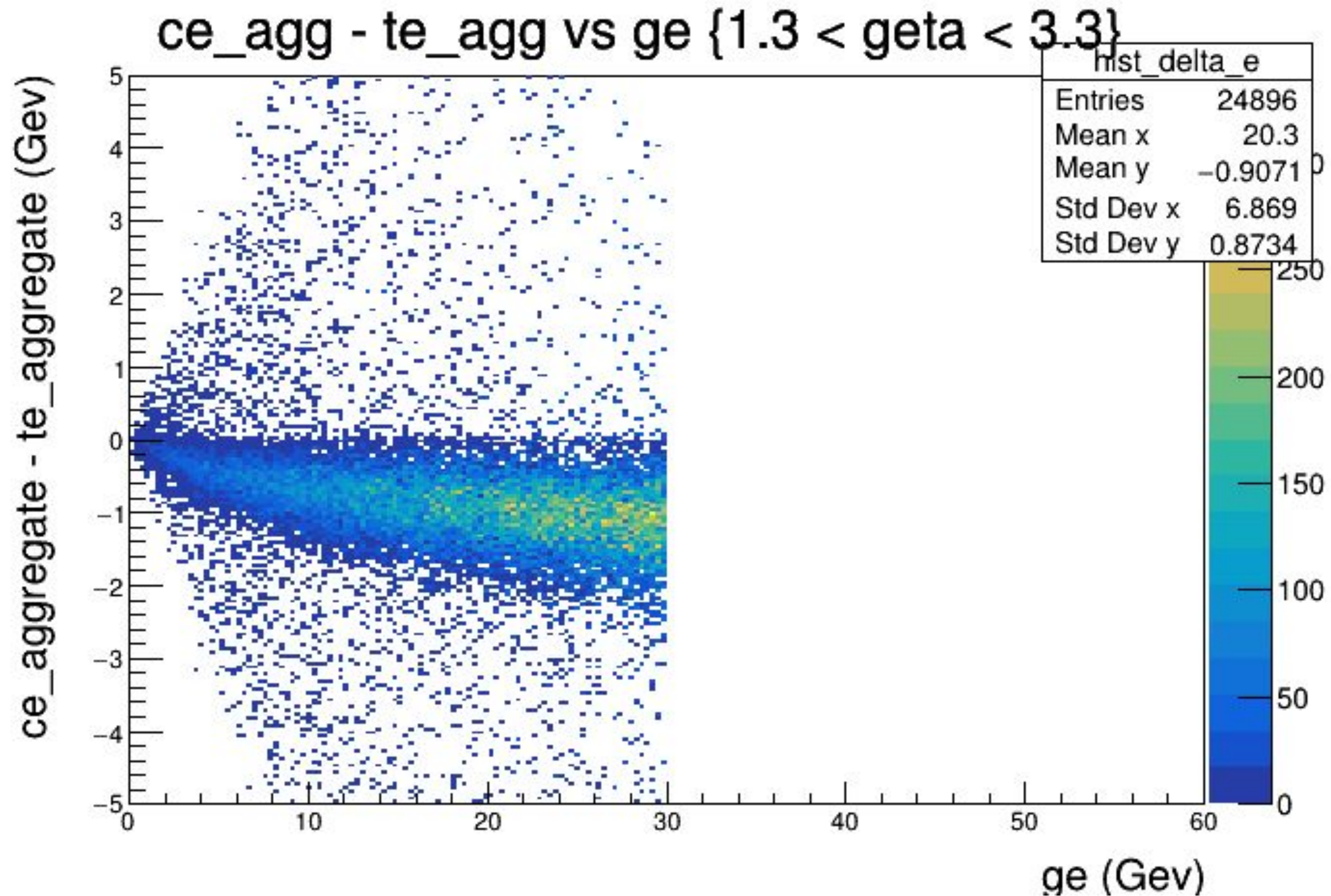
FHCAL + FEMC (e^-)

(ce-te) vs g_e
Explicit η cut: 1.3 to 3.3



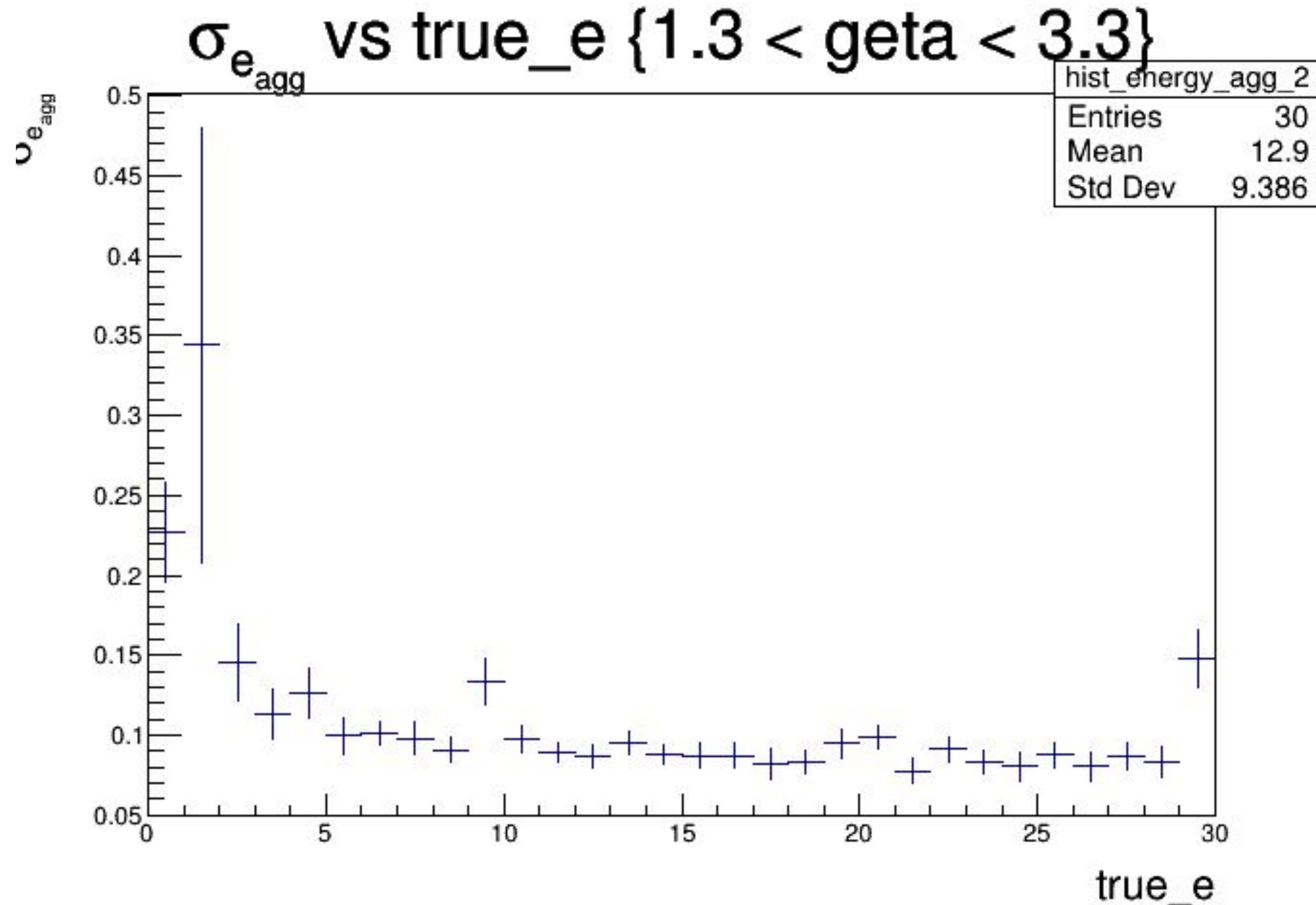
FHCAL + FEMC (π^-)

(ce-te) vs ge
Explicit η cut: 1.3 to 3.3



FHCAL + FEMC (e^-)

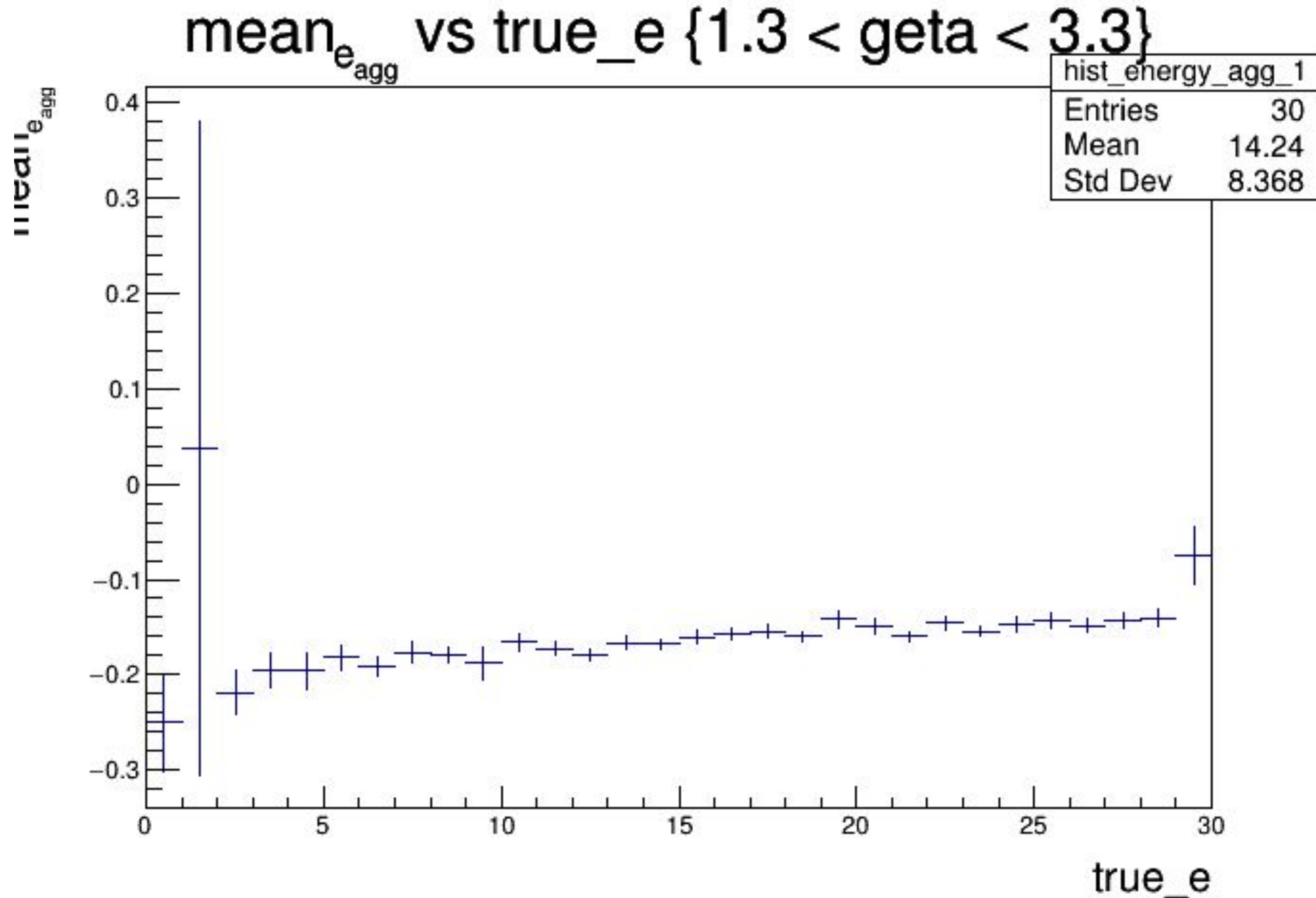
σ_e vs g_e
Explicit η cut: 1.3 to 3.3



σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce - ge) / ge$ vs g_e plot

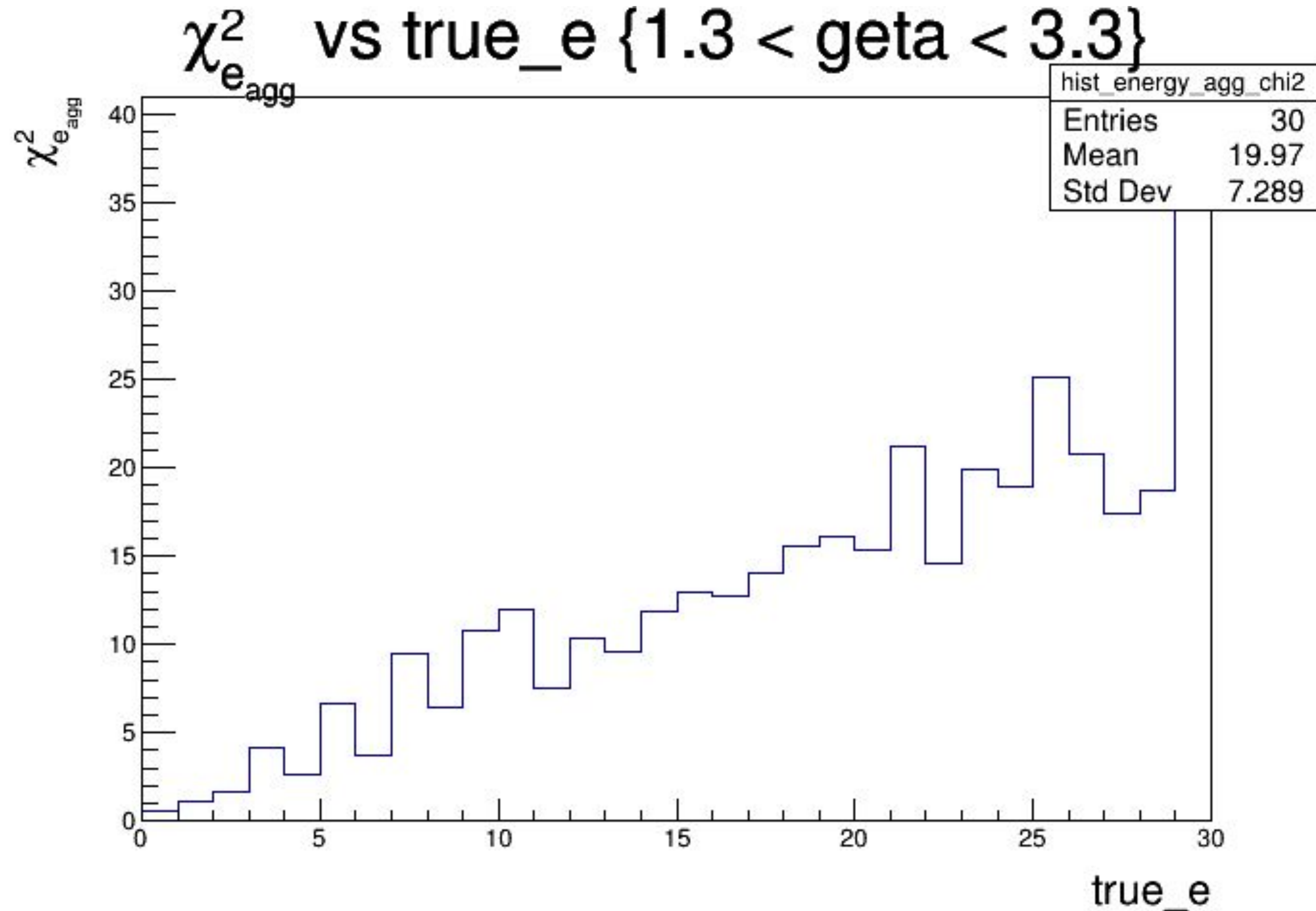
FHCAL + FEMC (e^-)

mean vs ge
Explicit η cut: 1.3 to 3.3



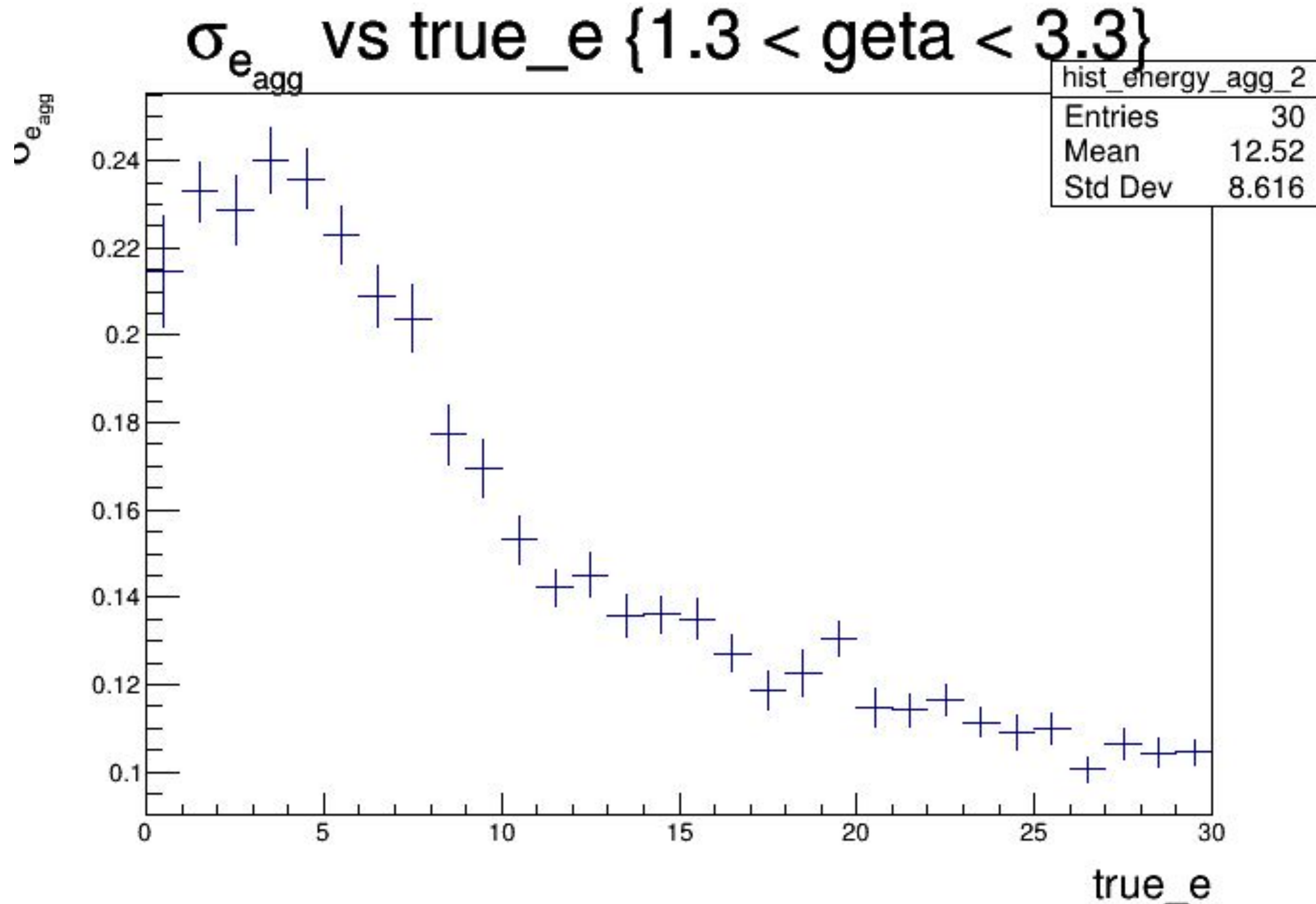
FHCAL + FEMC (e^-)

chi2 vs ge
Explicit η cut: 1.3 to 3.3



FHCAL + FEMC (π^-)

σ_e vs g_e
Explicit η cut: 1.3 to 3.3

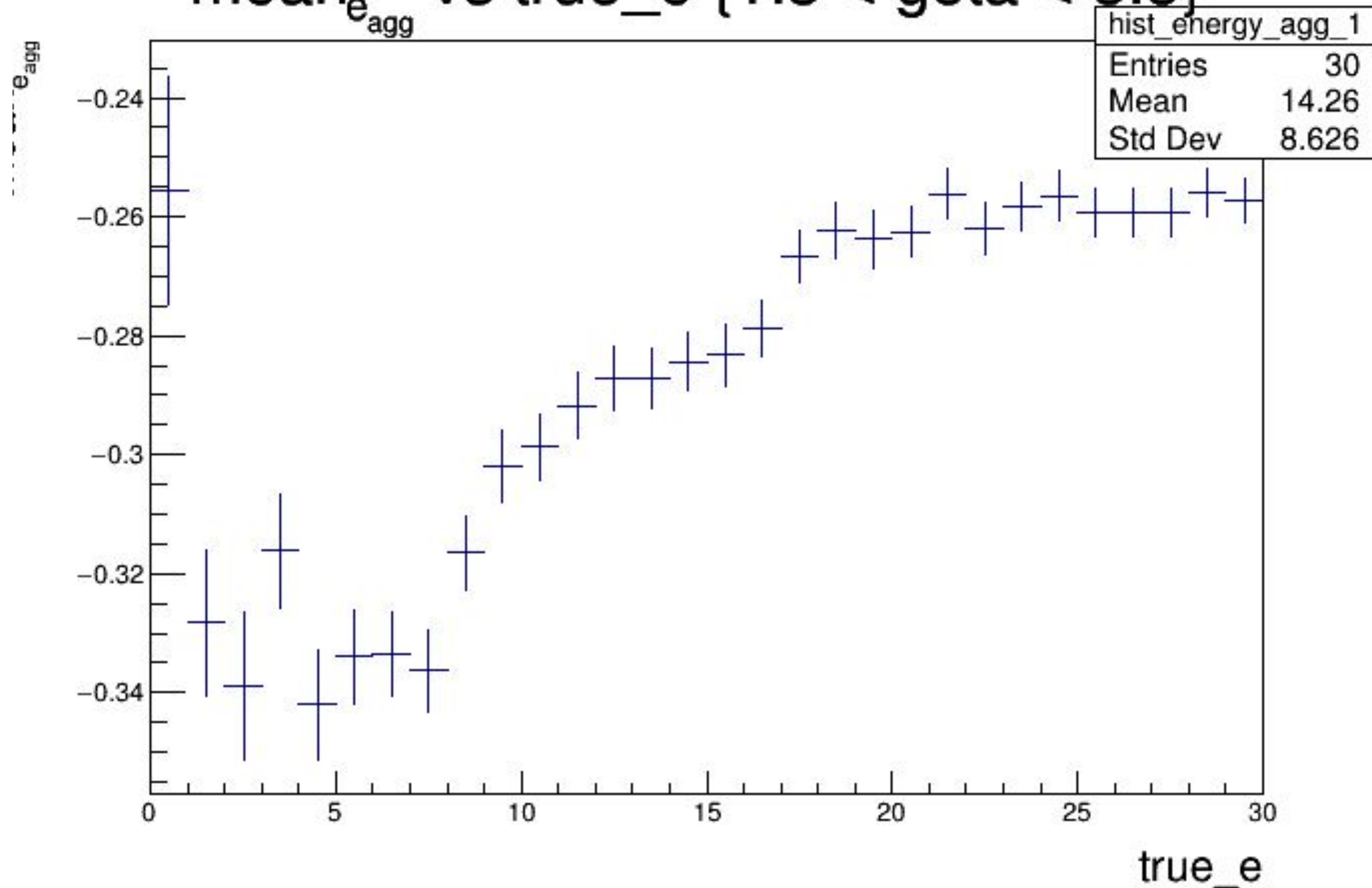


σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce - ge) / ge$ vs g_e plot

FHCAL + FEMC (π^-)

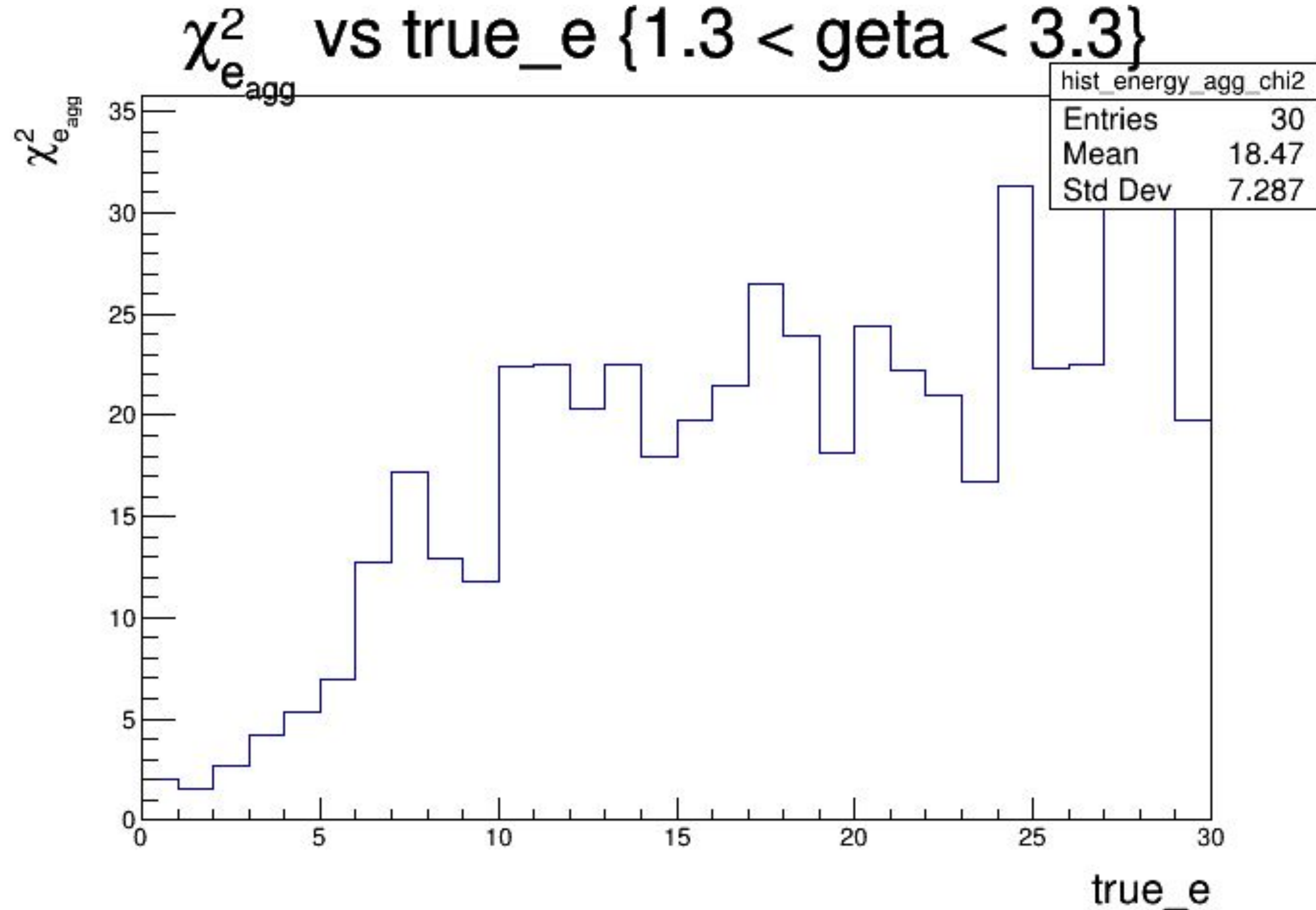
mean vs ge
Explicit η cut: 1.3 to 3.3

mean $_{e_{agg}}$ vs true_e {1.3 < geta < 3.3}



FHCAL + FEMC (π^-)

chi2 vs ge
Explicit η cut: 1.3 to 3.3



FHCAL + FEMC (e^-)

Total Energy Counts
Explicit η cut: 1.3 to 3.3

The total ce is:	127694.0 GeV
The total te is:	40609.4 GeV
The total ge is:	373190.0 GeV

FHCAL + FEMC (π^-)

Total Energy Counts
Explicit η cut: 1.3 to 3.3

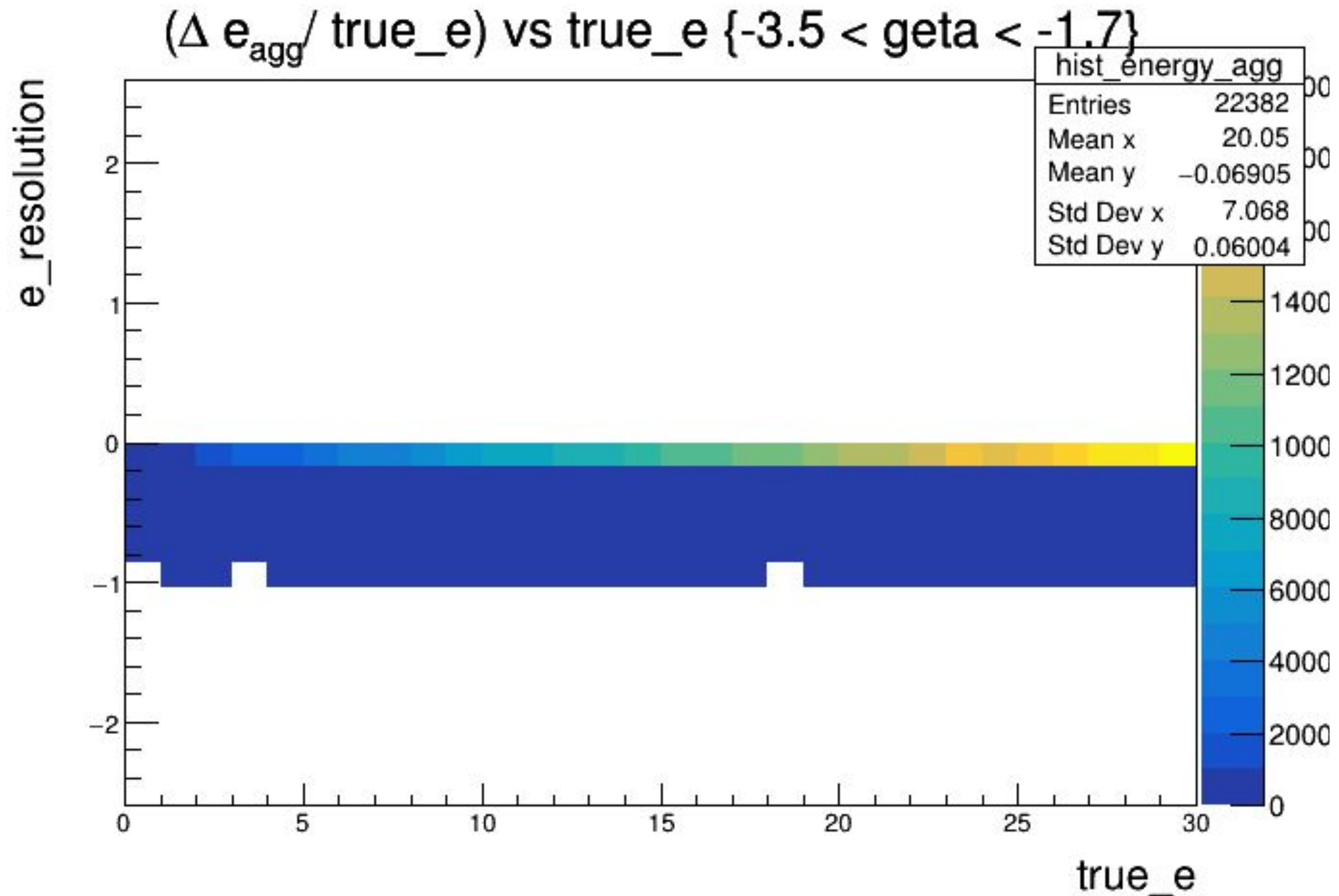
The total ce is:	239302 GeV
The total te is:	259665 GeV
The total ge is:	372203 GeV



EEMC

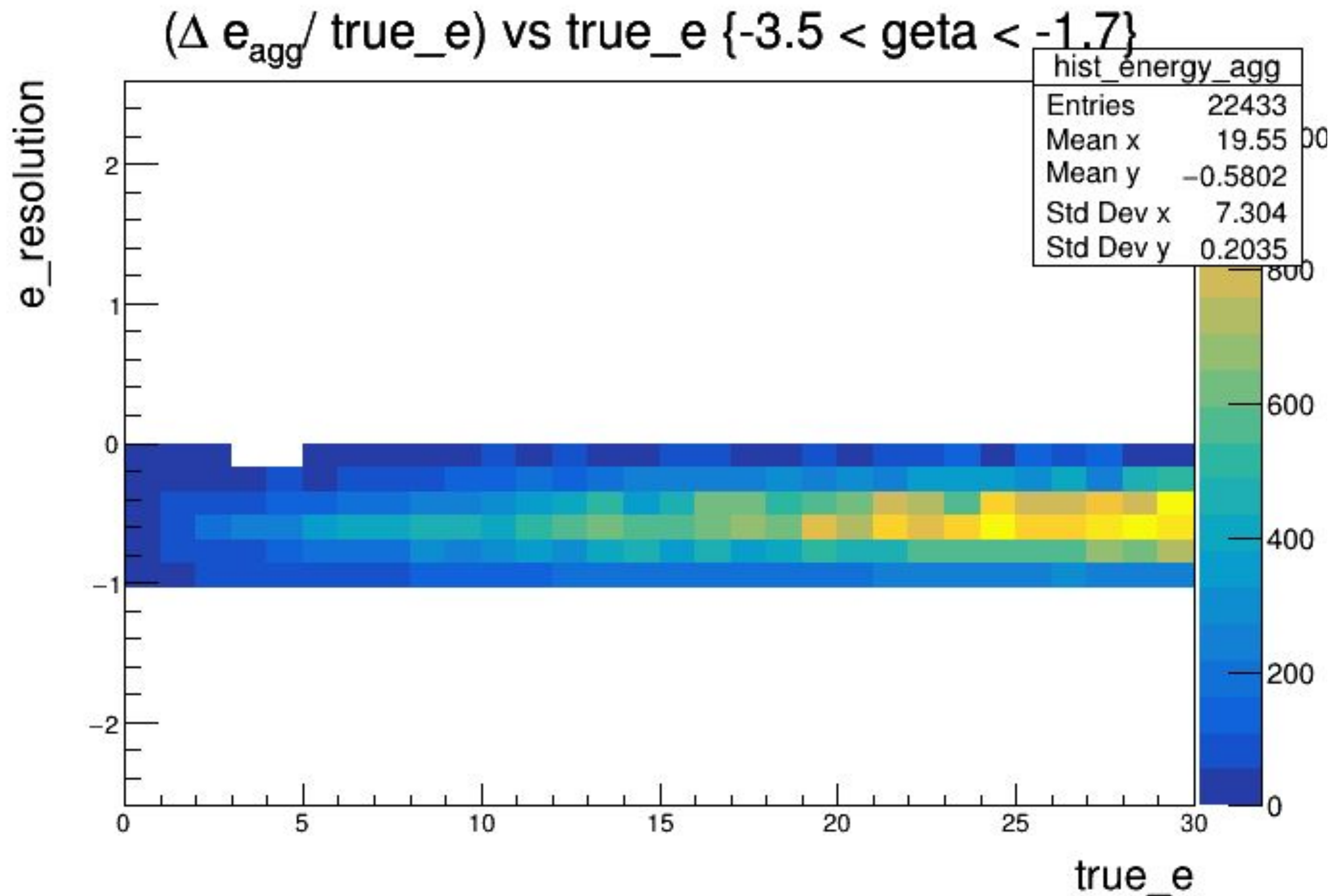
EEMC (e^-)

(ce-ge)/ge vs ge
Explicit η cut: -3.5 to -1.7



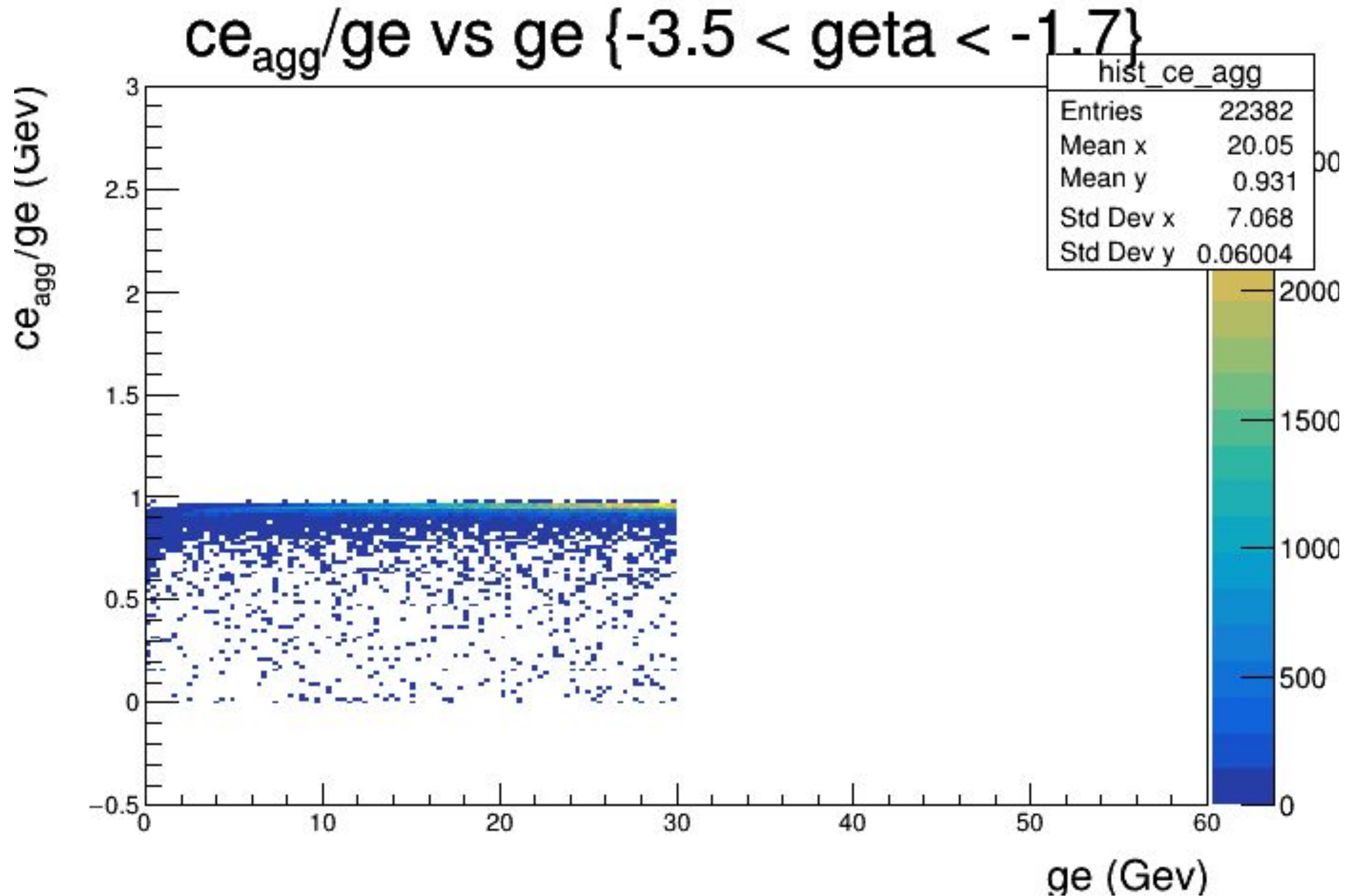
EEMC (π^-)

(ce-ge)/ge vs ge
Explicit η cut: -3.5 to -1.7



EEMC (e^-)

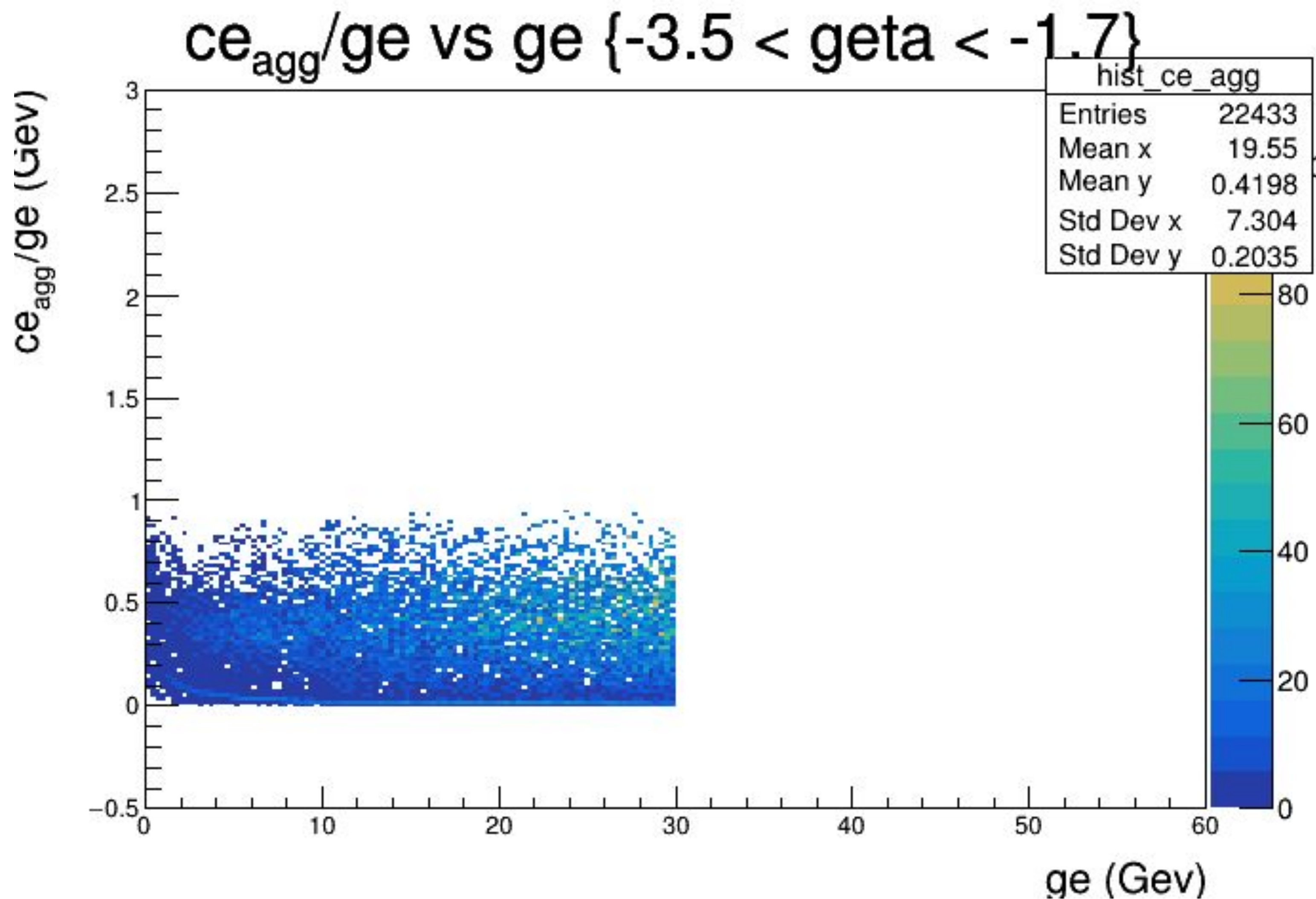
ce/ge vs ge
Explicit η cut: -3.5 to -1.7



EEMC (π^-)

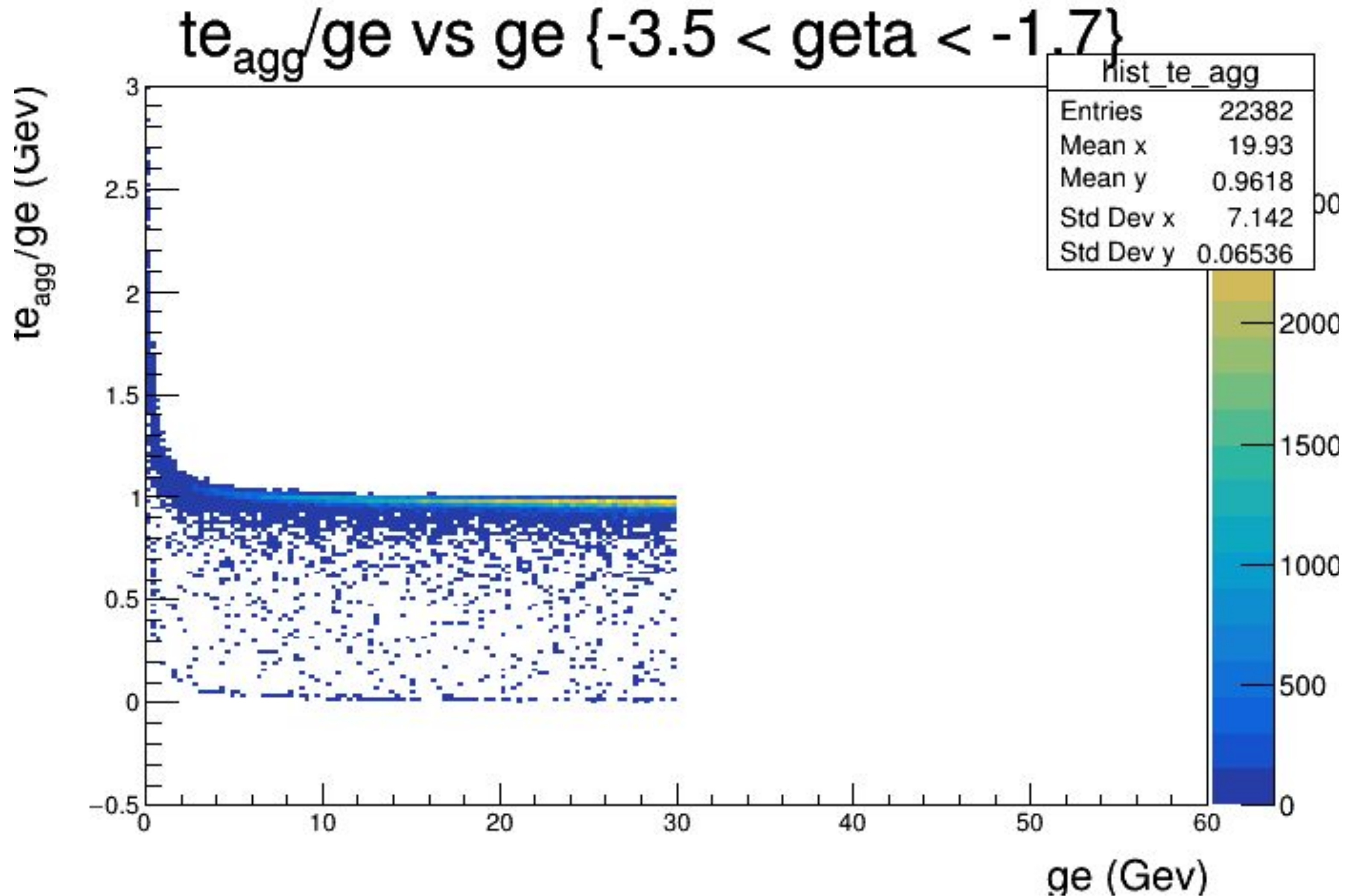
ce/ge vs ge

Explicit η cut: -3.5 to -1.7



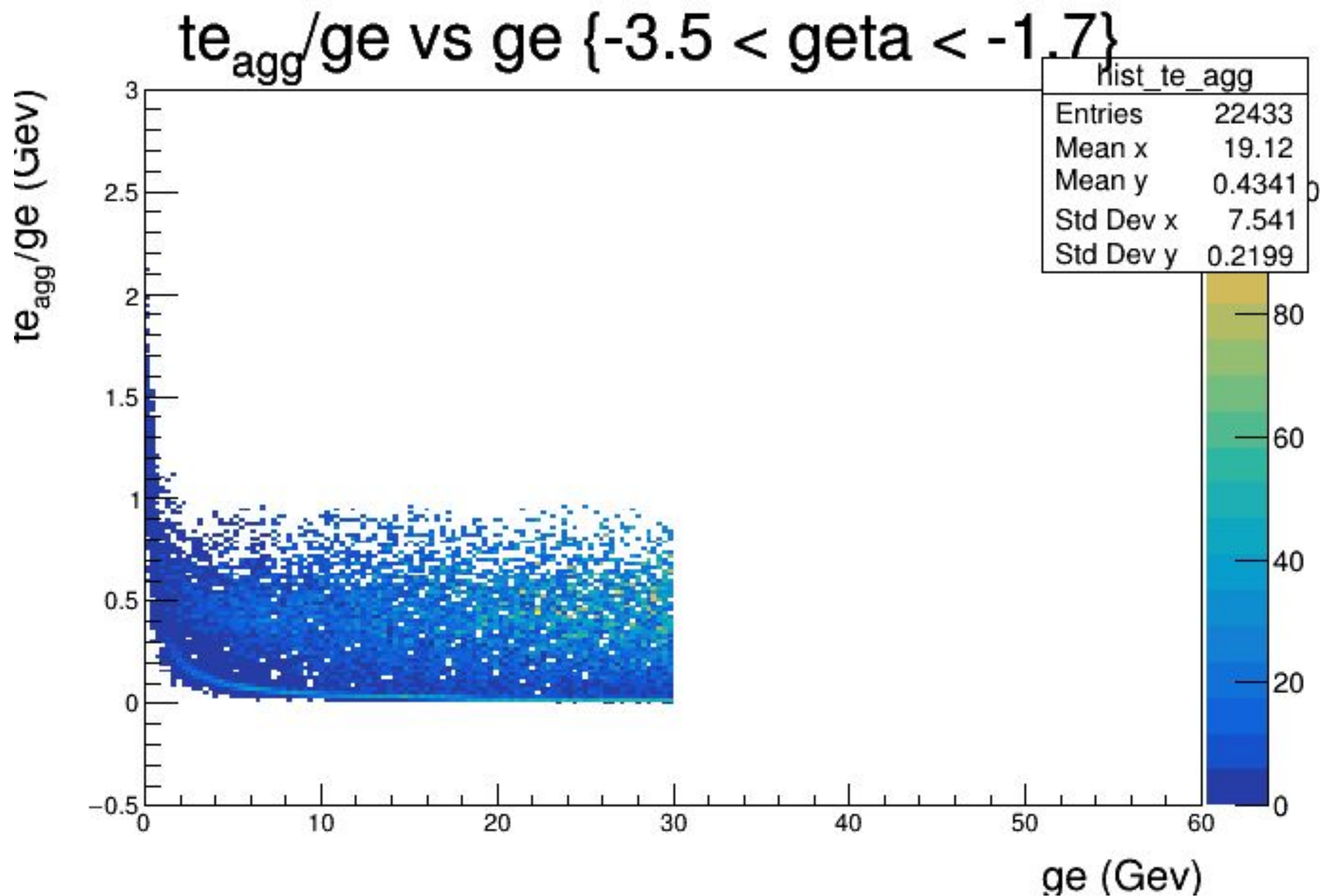
EEMC (e^-)

te/ge vs ge
Explicit η cut: -3.5 to -1.7



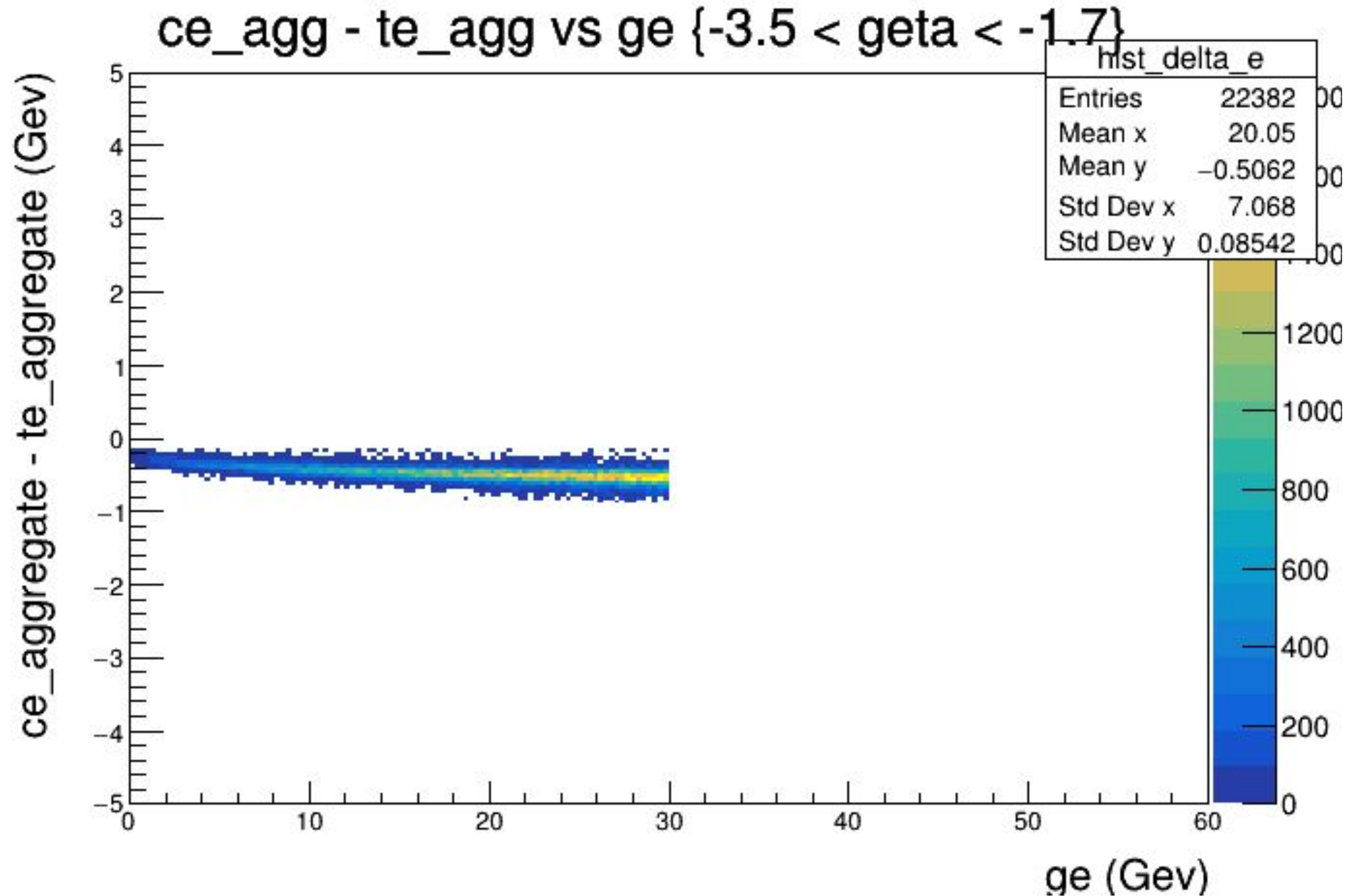
EEMC (π^-)

te/ge vs ge
Explicit η cut: -3.5 to -1.7



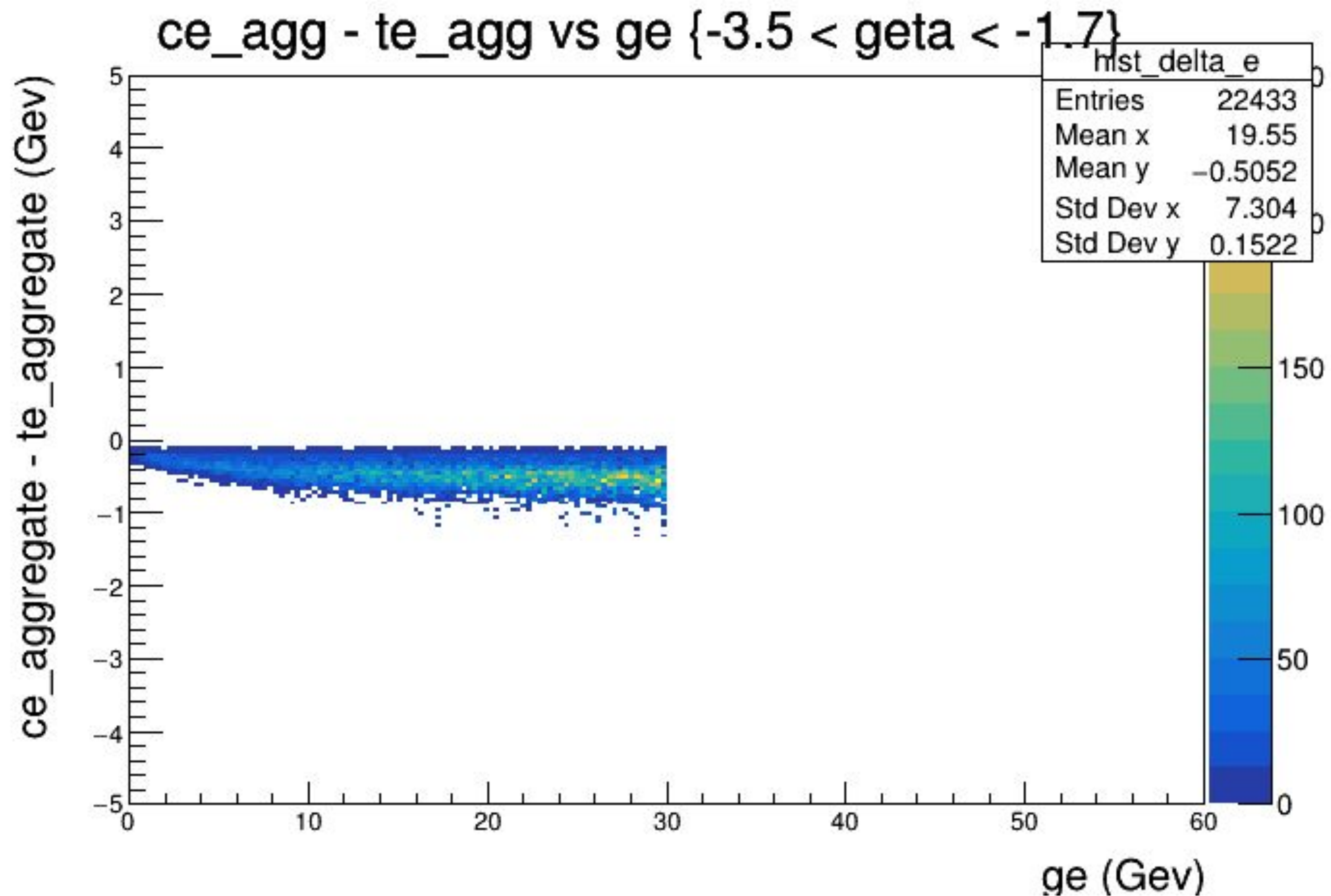
EEMC (e^-)

(ce-te) vs ge
Explicit η cut: -3.5 to -1.7



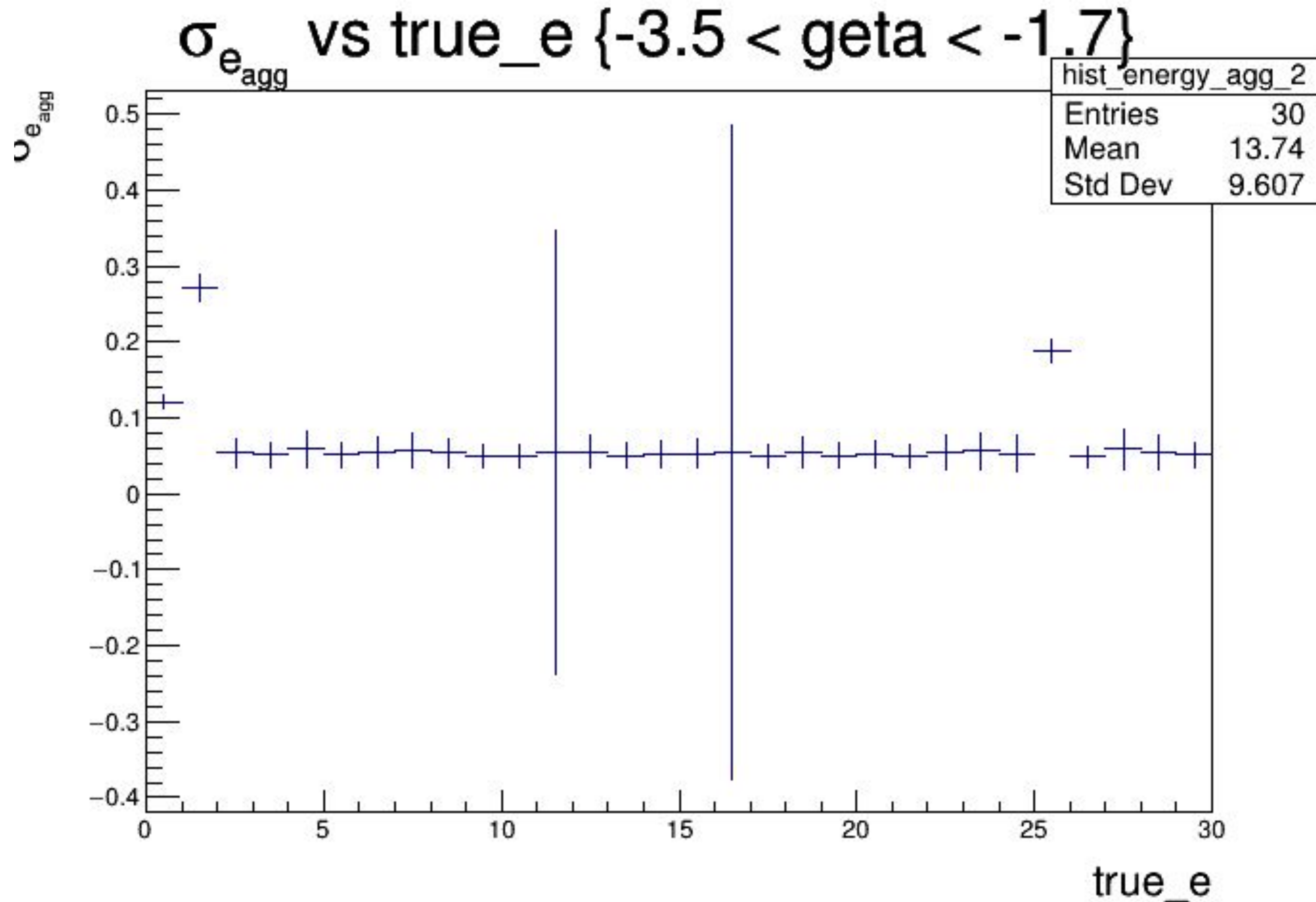
EEMC (π^-)

(ce-te) vs ge
Explicit η cut: -3.5 to -1.7



EEMC (e^-)

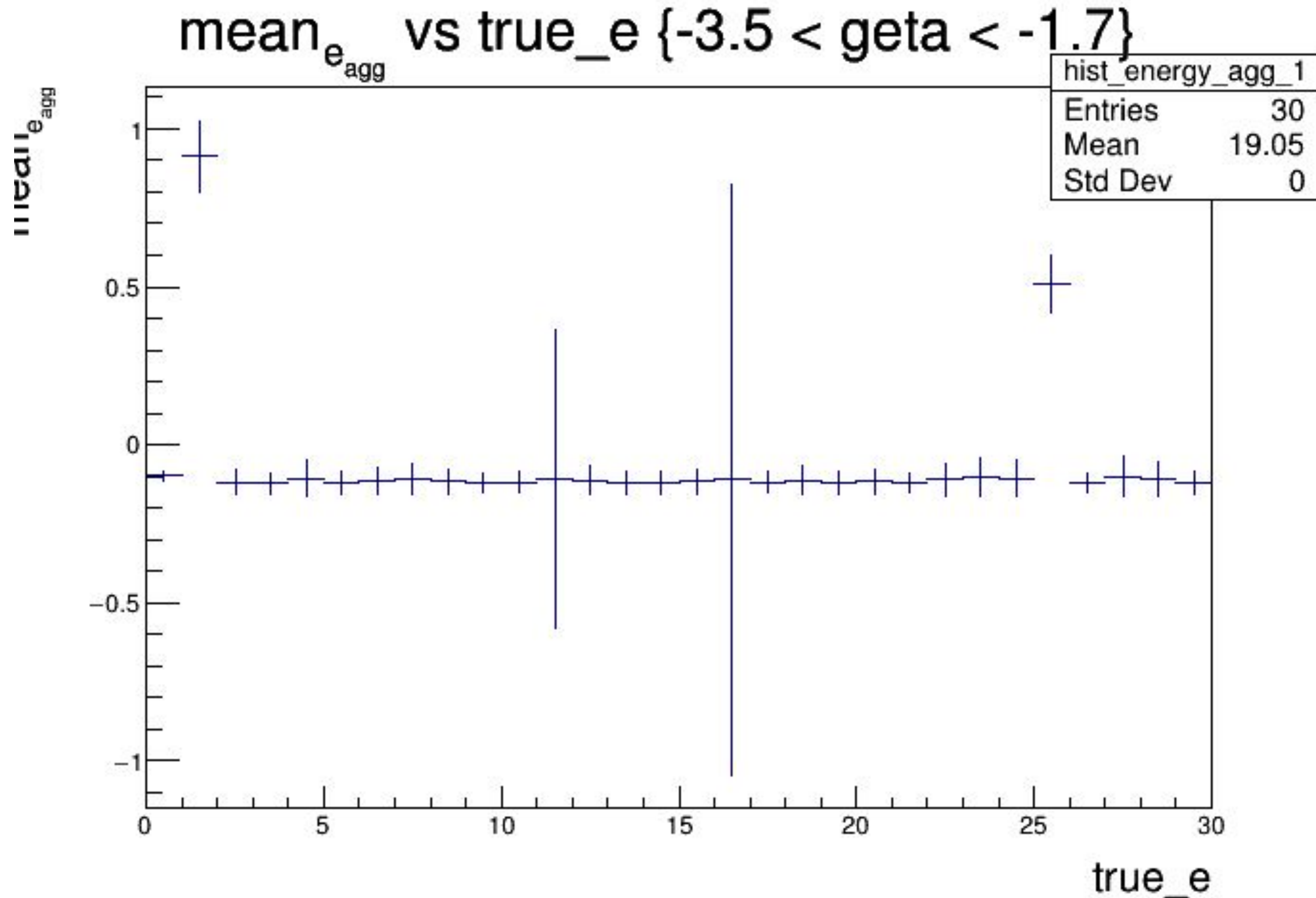
σ_e vs g_e
Explicit η cut: -3.5 to -1.7



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

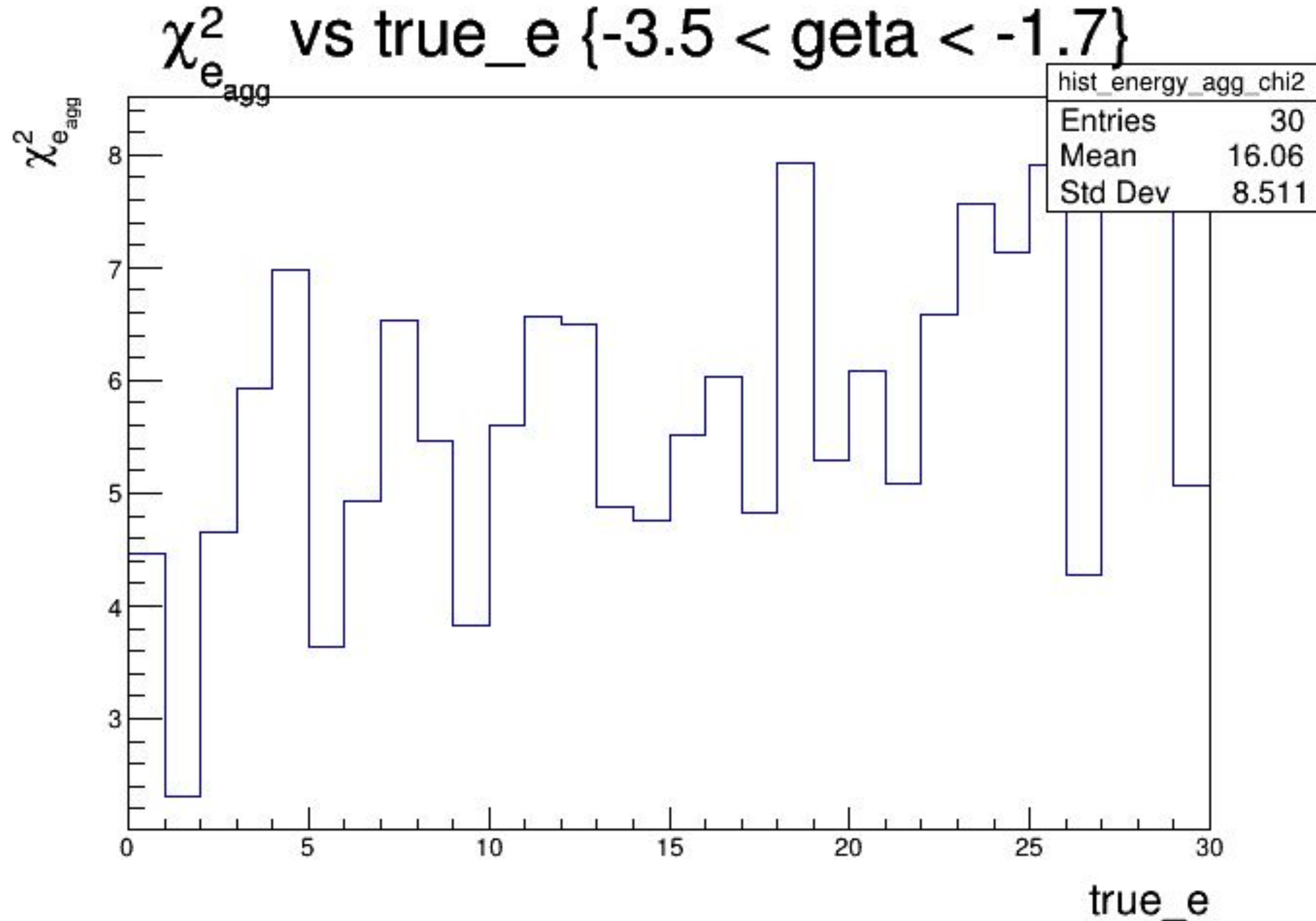
EEMC (e^-)

mean vs ge
Explicit η cut: -3.5 to -1.7



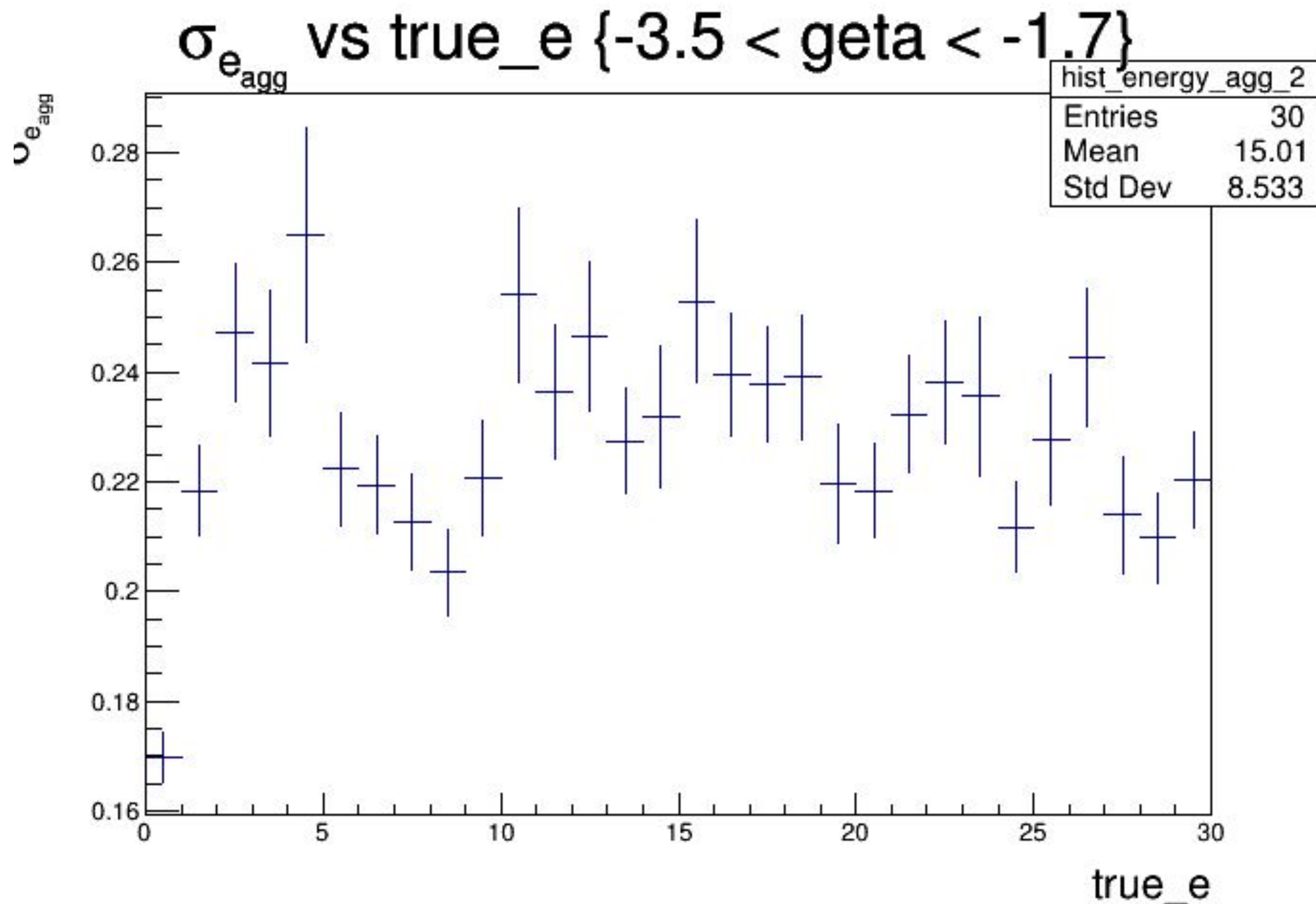
EEMC (e^-)

chi2 vs ge
Explicit η cut: -3.5 to -1.7



EEMC (π^-)

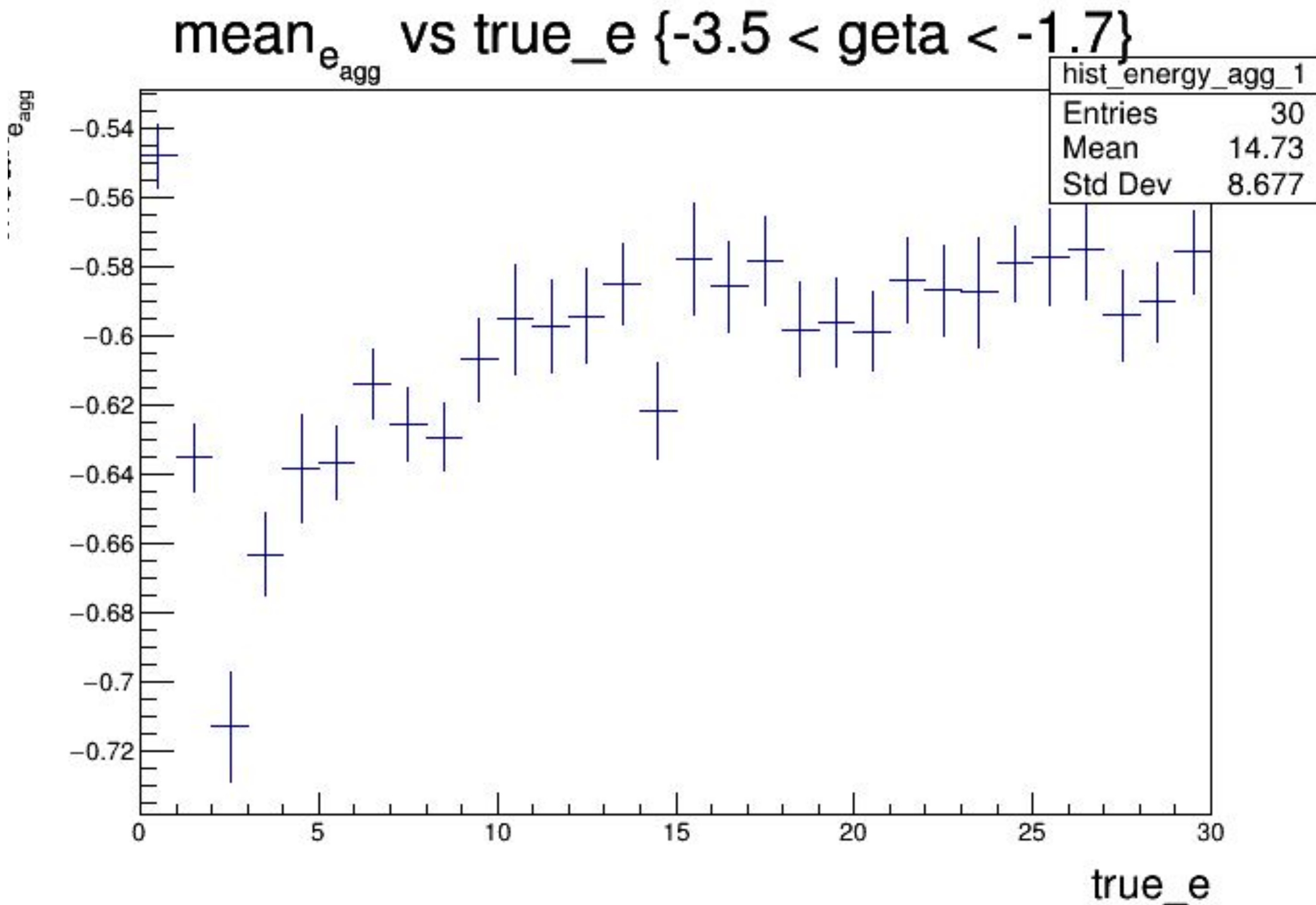
σ_e vs g_e
Explicit η cut: -3.5 to -1.7



σ_e refers to the standard deviation of the Gaussian fitted to a slice of the $(ce-ge)/ge$ vs g_e plot

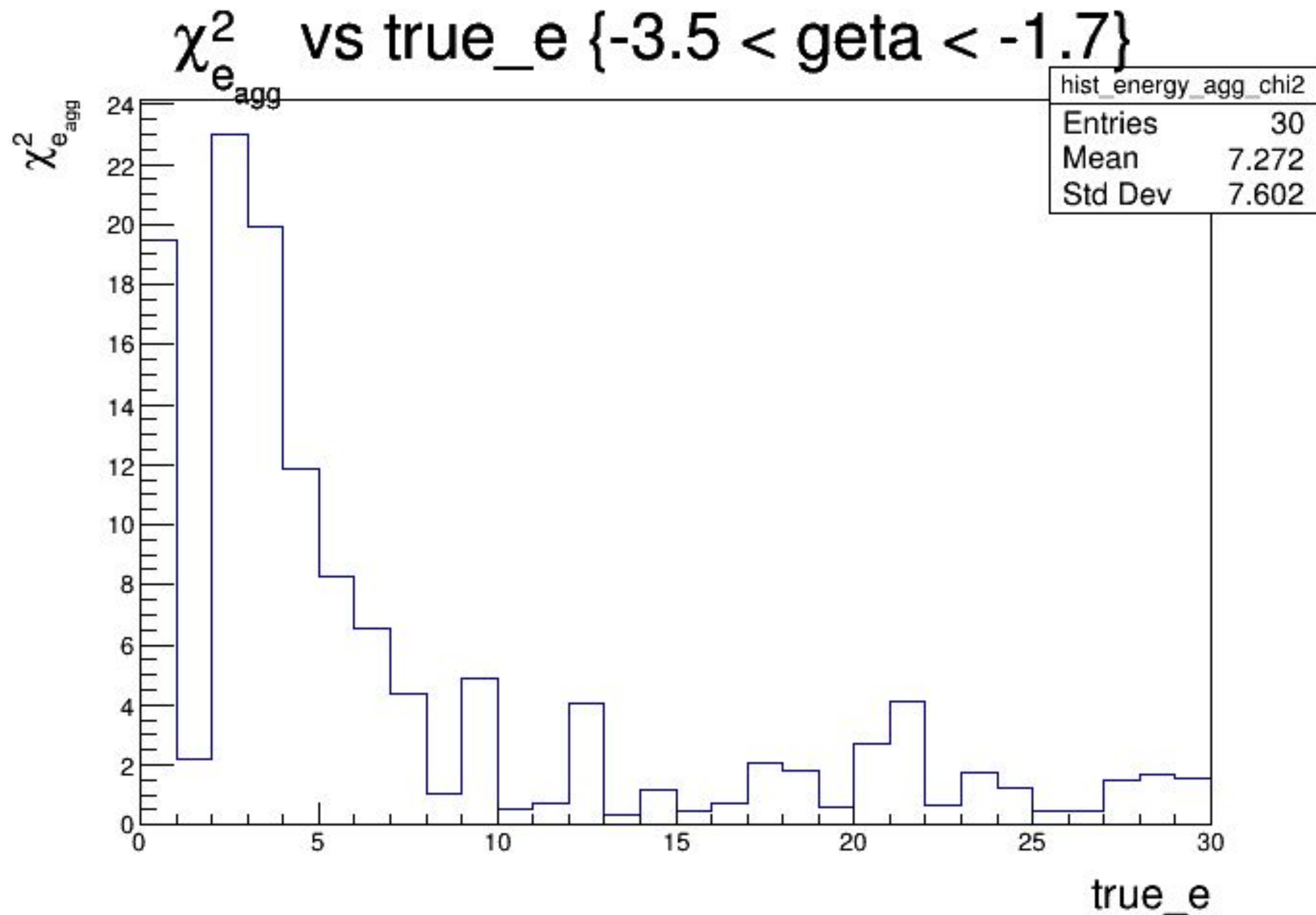
EEMC (π^-)

mean vs ge
Explicit η cut: -3.5 to -1.7



EEMC (π^-)

chi2 vs ge
Explicit η cut: -3.5 to -1.7



EEMC (e^-)

Total Energy Counts
Explicit η cut: -3.5 to -1.7

The total ce is:	308486	GeV
The total te is:	318776	GeV
The total ge is:	336252	GeV

EEMC (π^-)

Total Energy Counts
Explicit η cut: -3.5 to -1.7

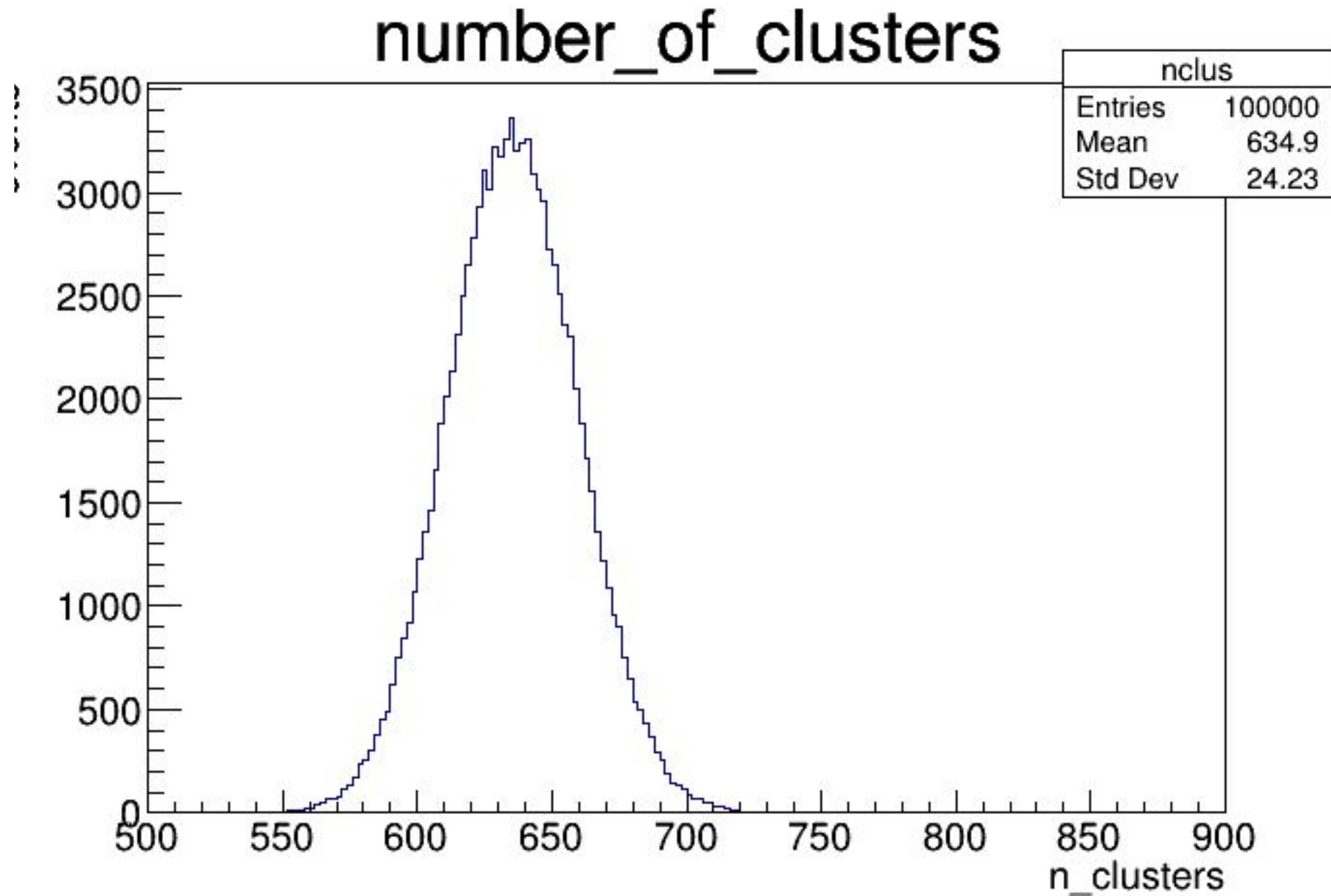
The total ce is:	55688.8 GeV
The total te is:	62972.5 GeV
The total ge is:	338713.0 GeV



Miscellaneous

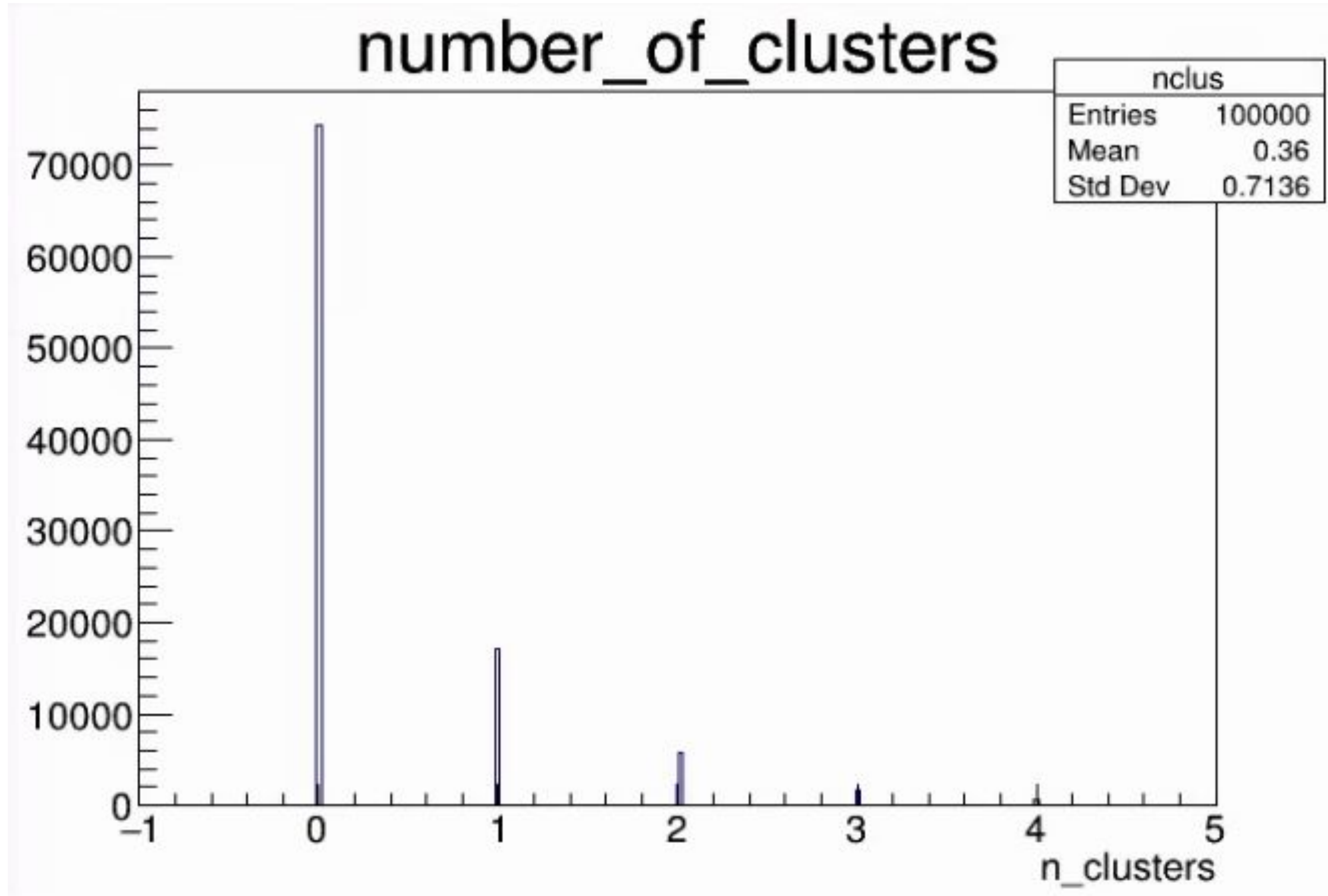
CEMC (e^-)

events vs nclusters



FEMC (e^-)

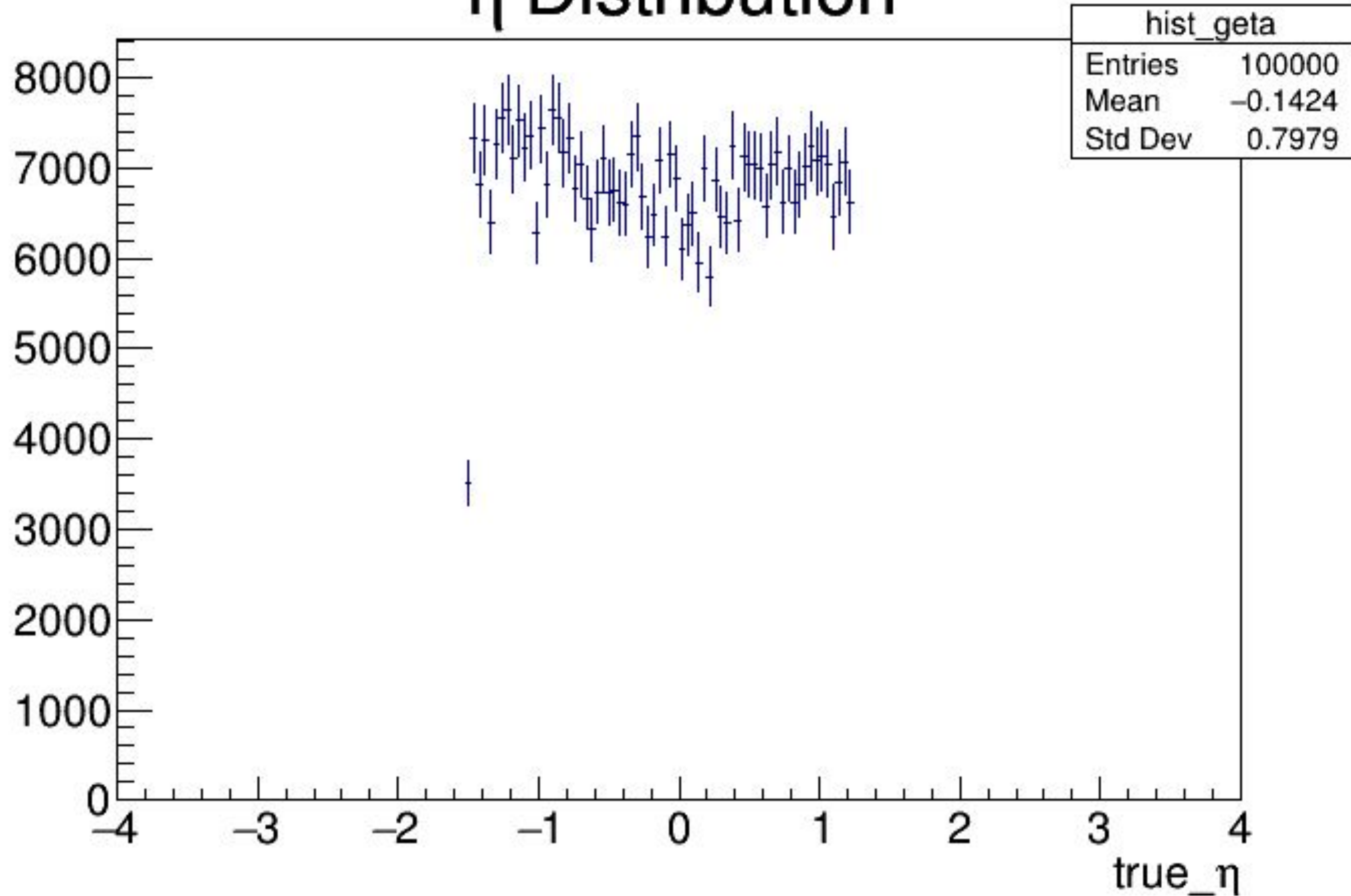
events vs nclusters



CEMC (e^-)

ce vs geta

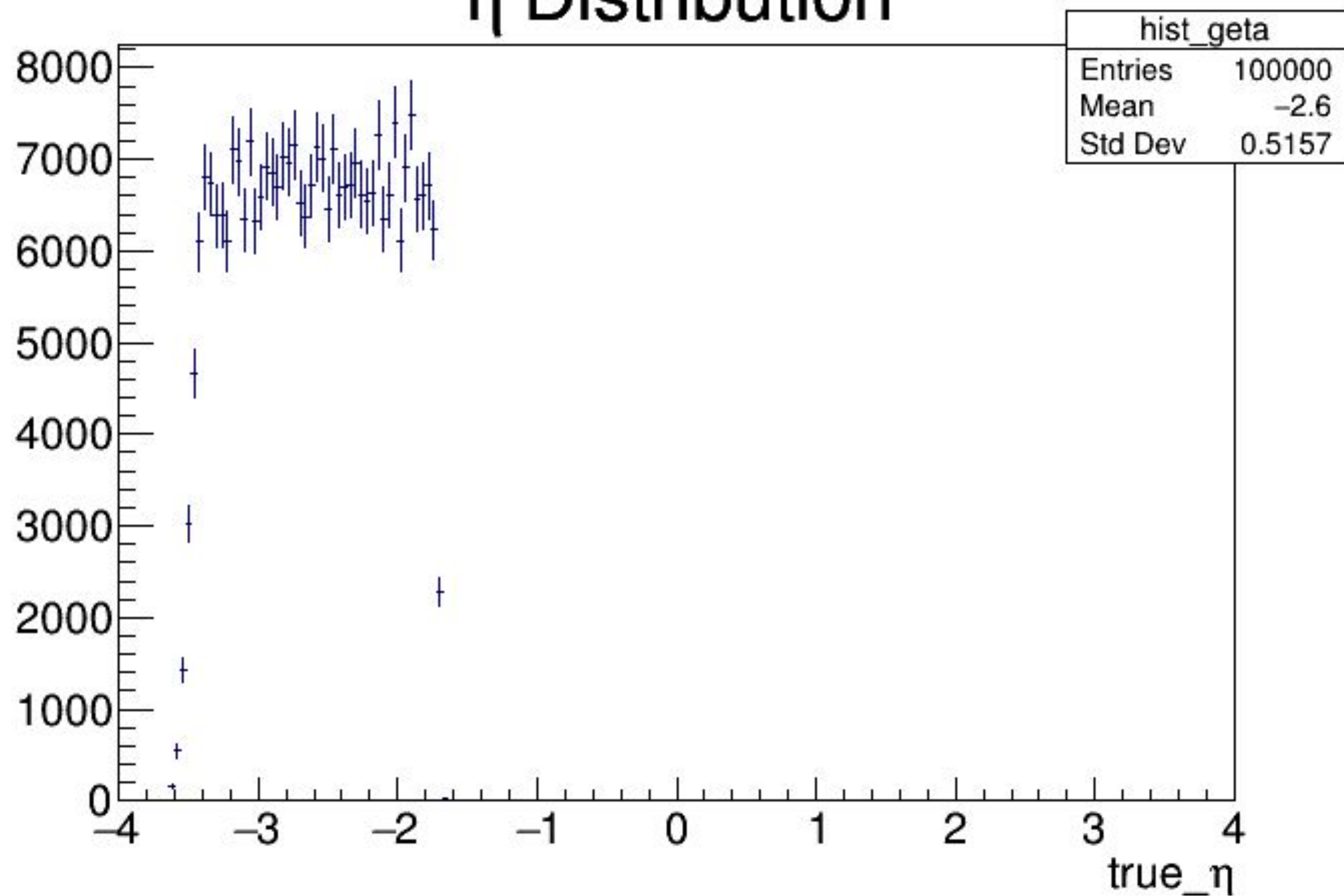
η Distribution



EEMC (e^-)

ce vs geta

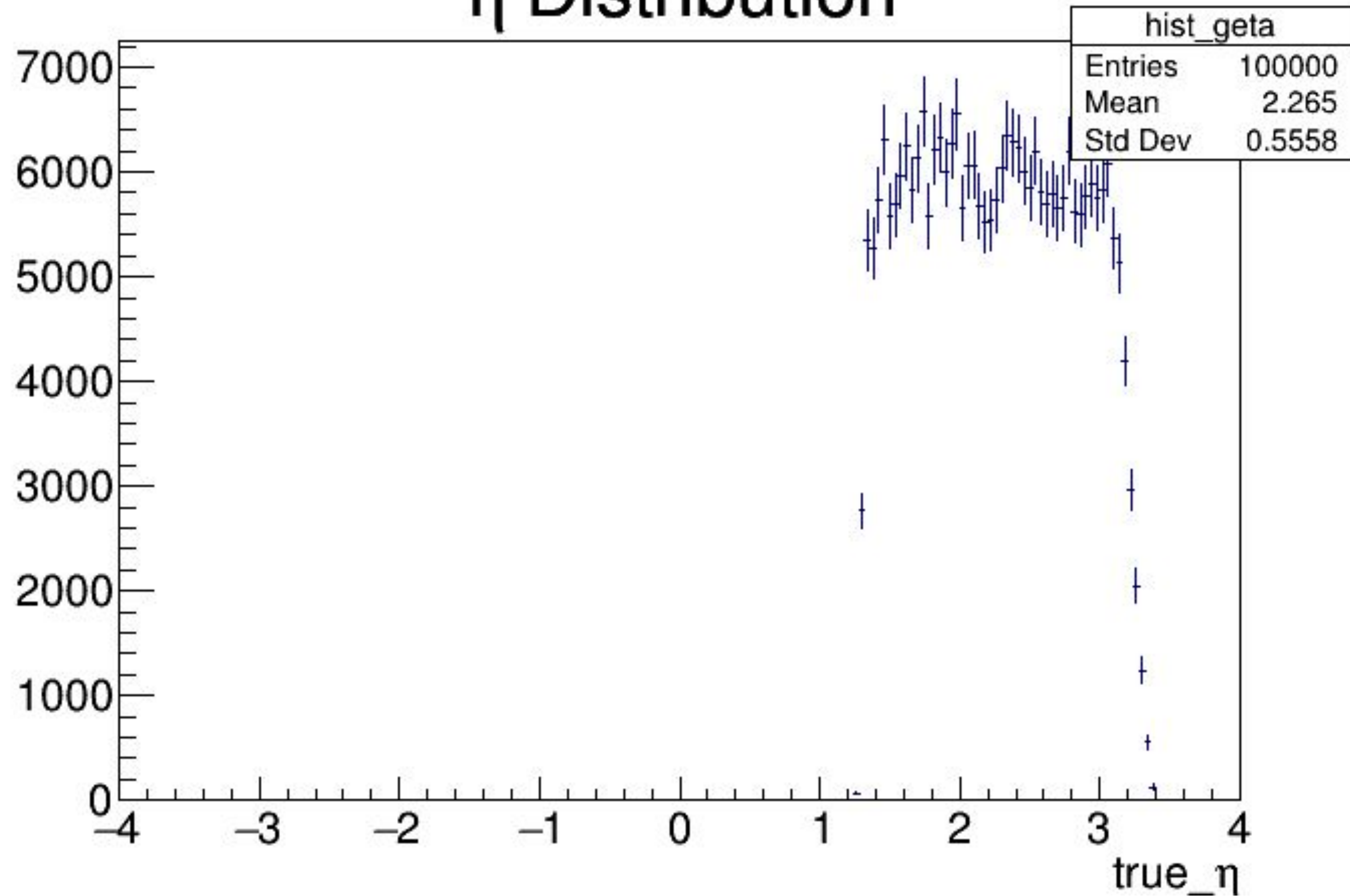
η Distribution



FEMC (e^-)

ce vs geta

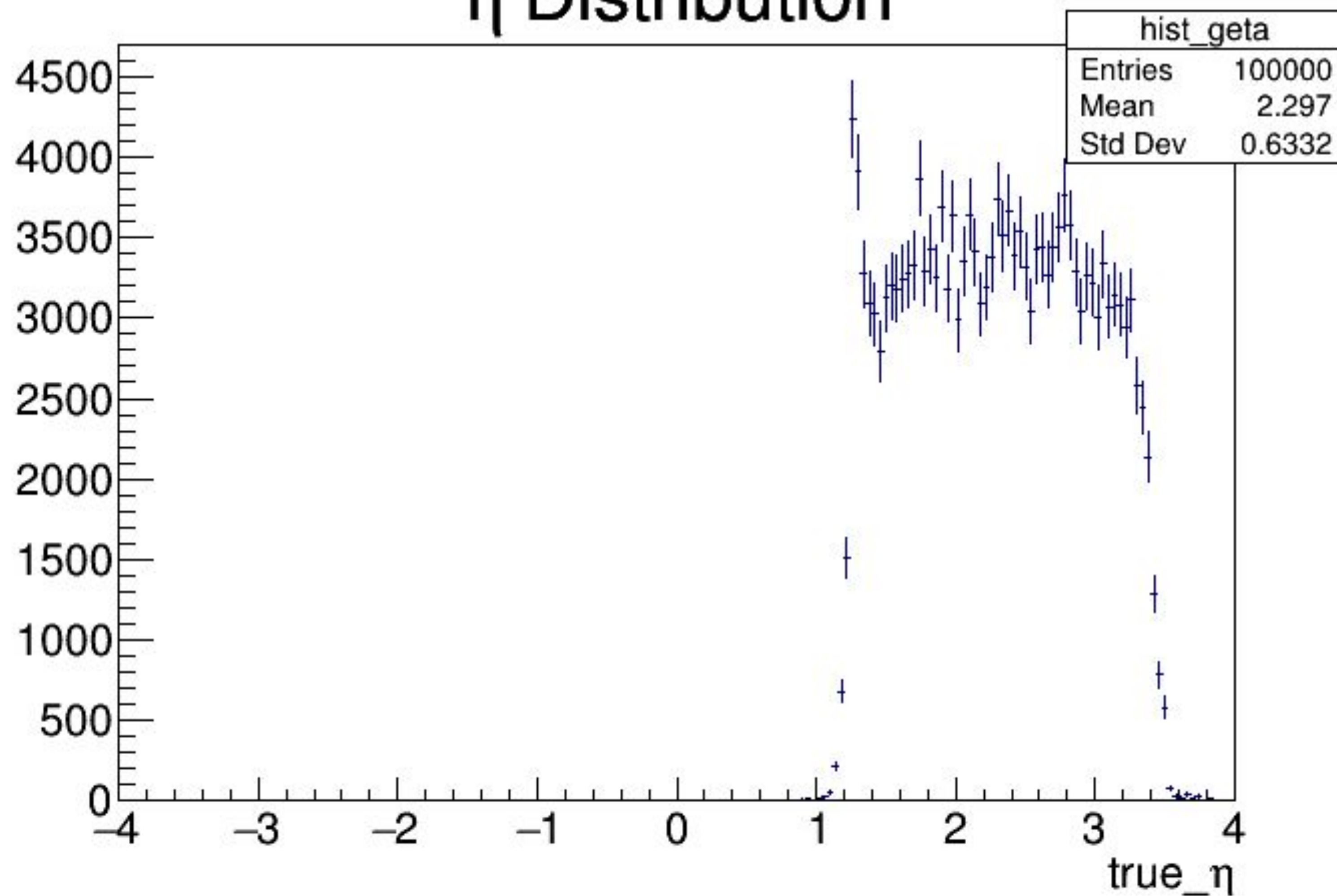
η Distribution



FHCAL (π^-)

ce vs geta

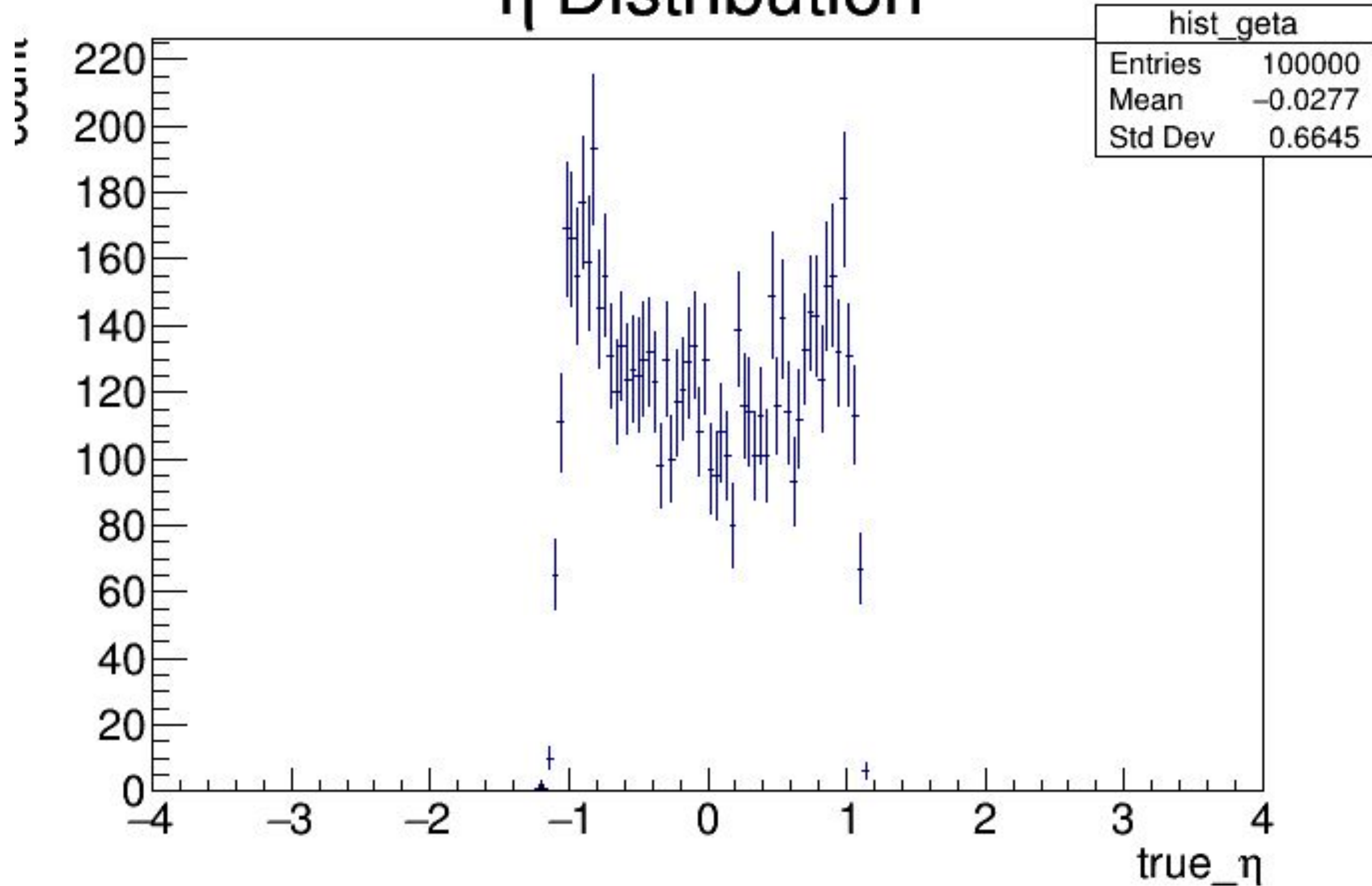
η Distribution



HCALIN (π^-)

ce vs geta

η Distribution



HCALOUT (π^-)

ce vs geta

η Distribution

