



# Simulation Statistics

By Sagar and Siddhant  
Under the guidance of Dr. Ankhi Roy, Dr. Chris Pinkenburg, and Dr. Kolja Kauder

November 12, 2021

IIT Indore



# Contents

1D histograms representing counts of aggregated tower energies and pseudorapidity distributions weighted with aggregated tower energies for all detectors (CEMC, EEMC, FEMC, FHCAL, HCALIN, HCALOUT) using uni-energetic pions and muons.

# Simulation Parameters

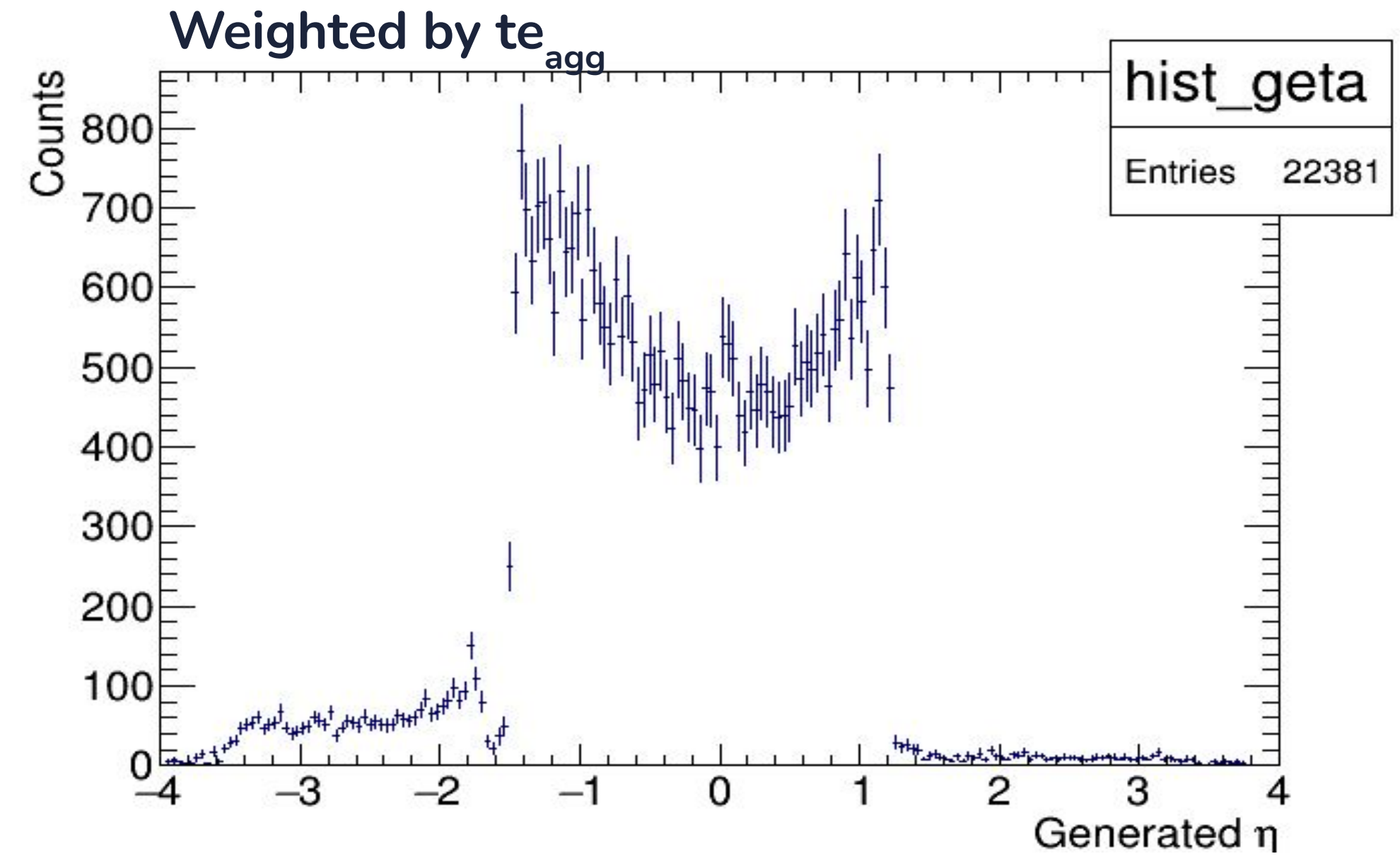
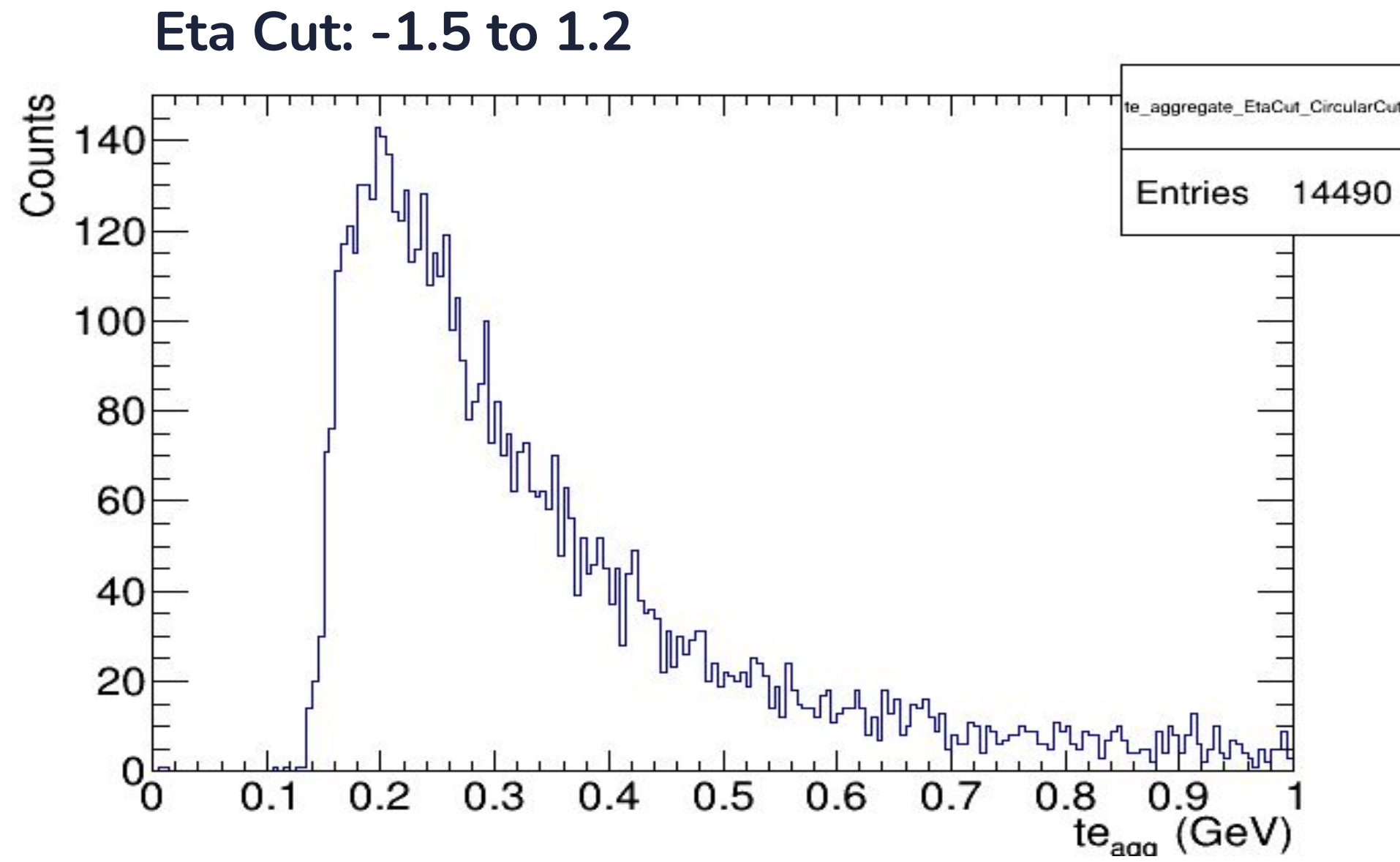
- Particles:  $\pi^-$ ,  $\mu^-$
- Events: 42300 ( $\pi^-$ ), 46900 ( $\mu^-$ )
- momentum ( $p$ ): 4 GeV/c
- Pseudorapidity ( $\eta$ ): -4 to 4
- Azimuth ( $\Phi$ ):  $-\pi$  to  $\pi$

## Cuts:

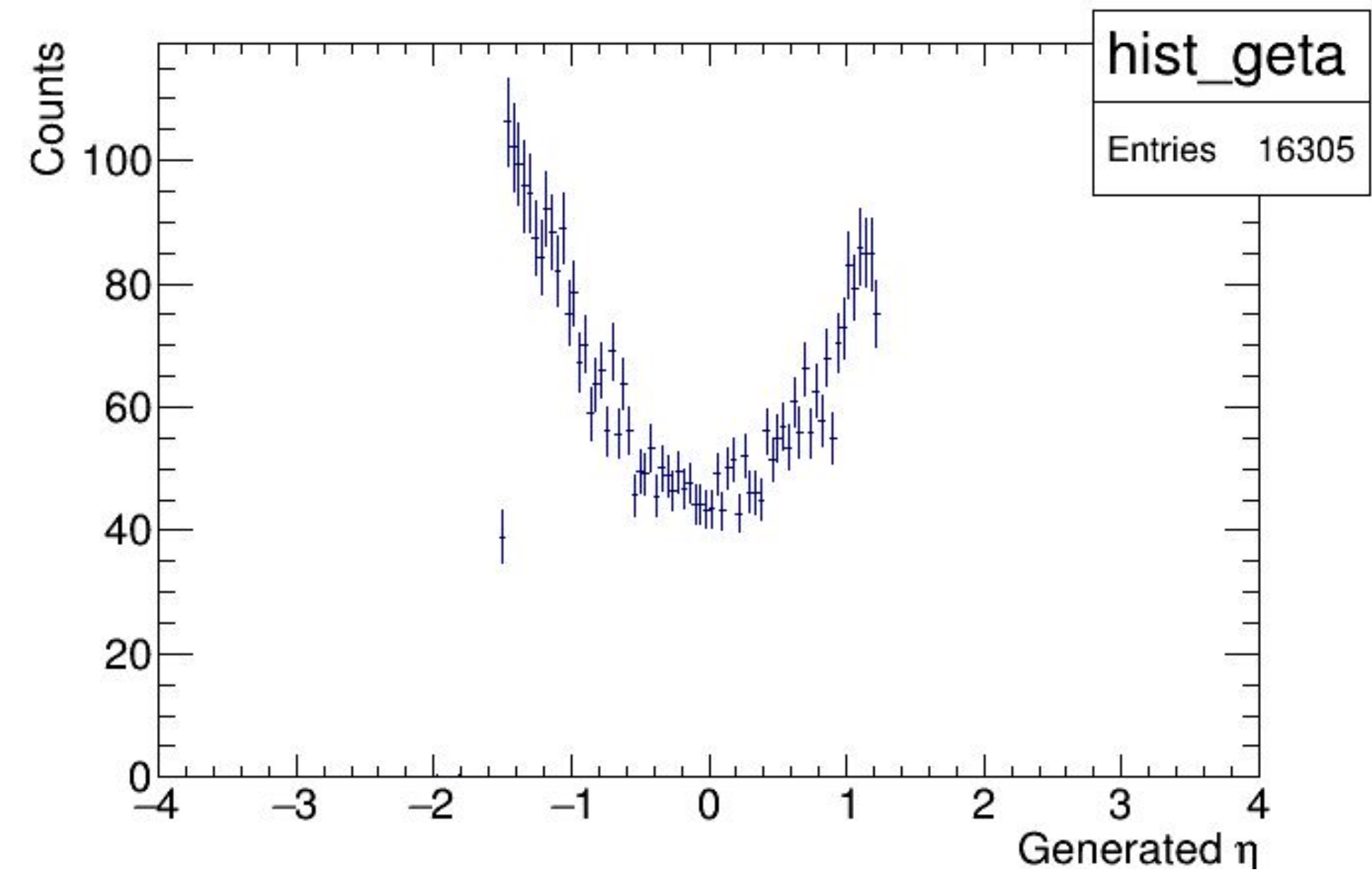
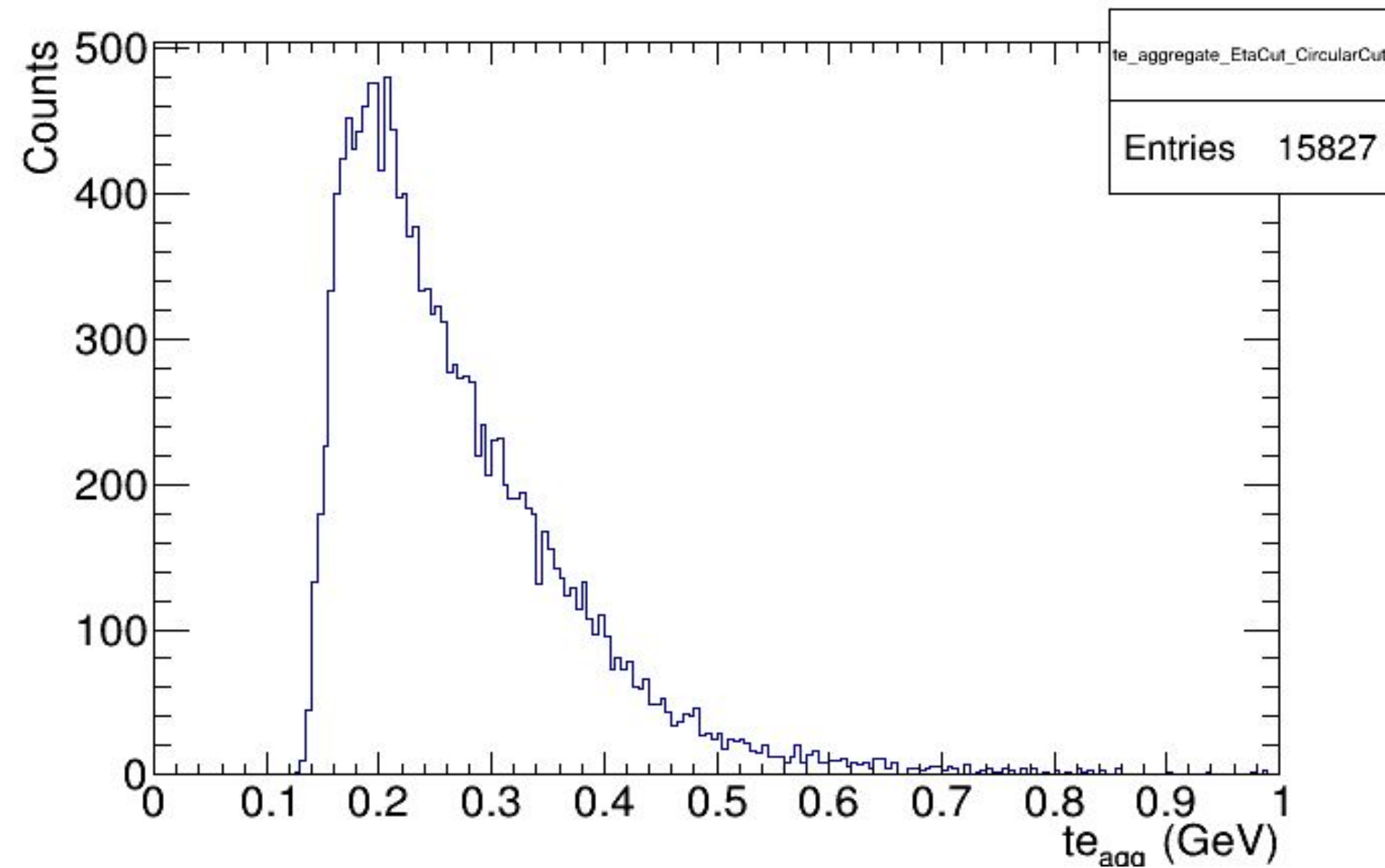
- Detector-wise  $\eta$  cuts on the counts vs  $te_{\text{agg}}$  plot

# CEMC

pion

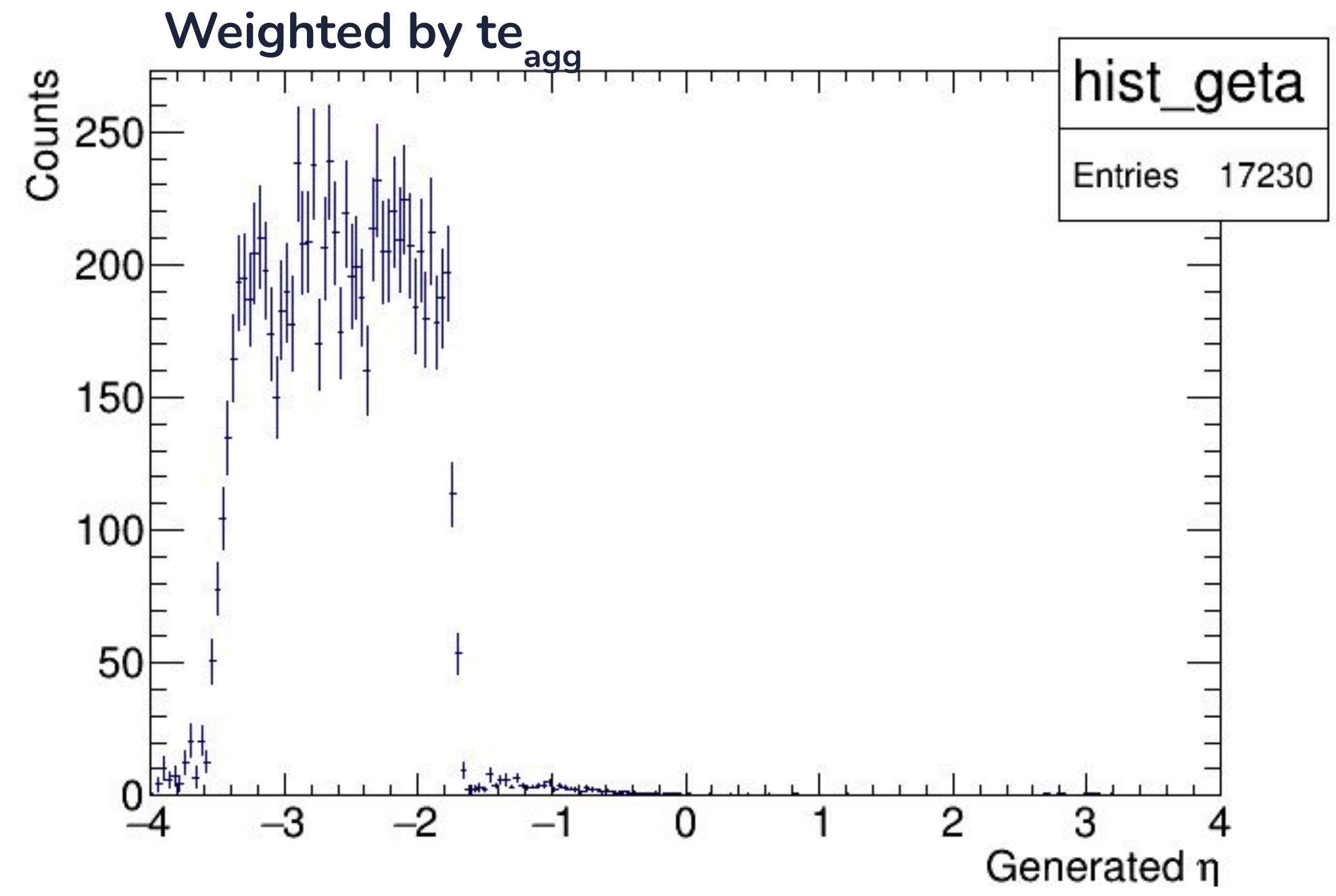
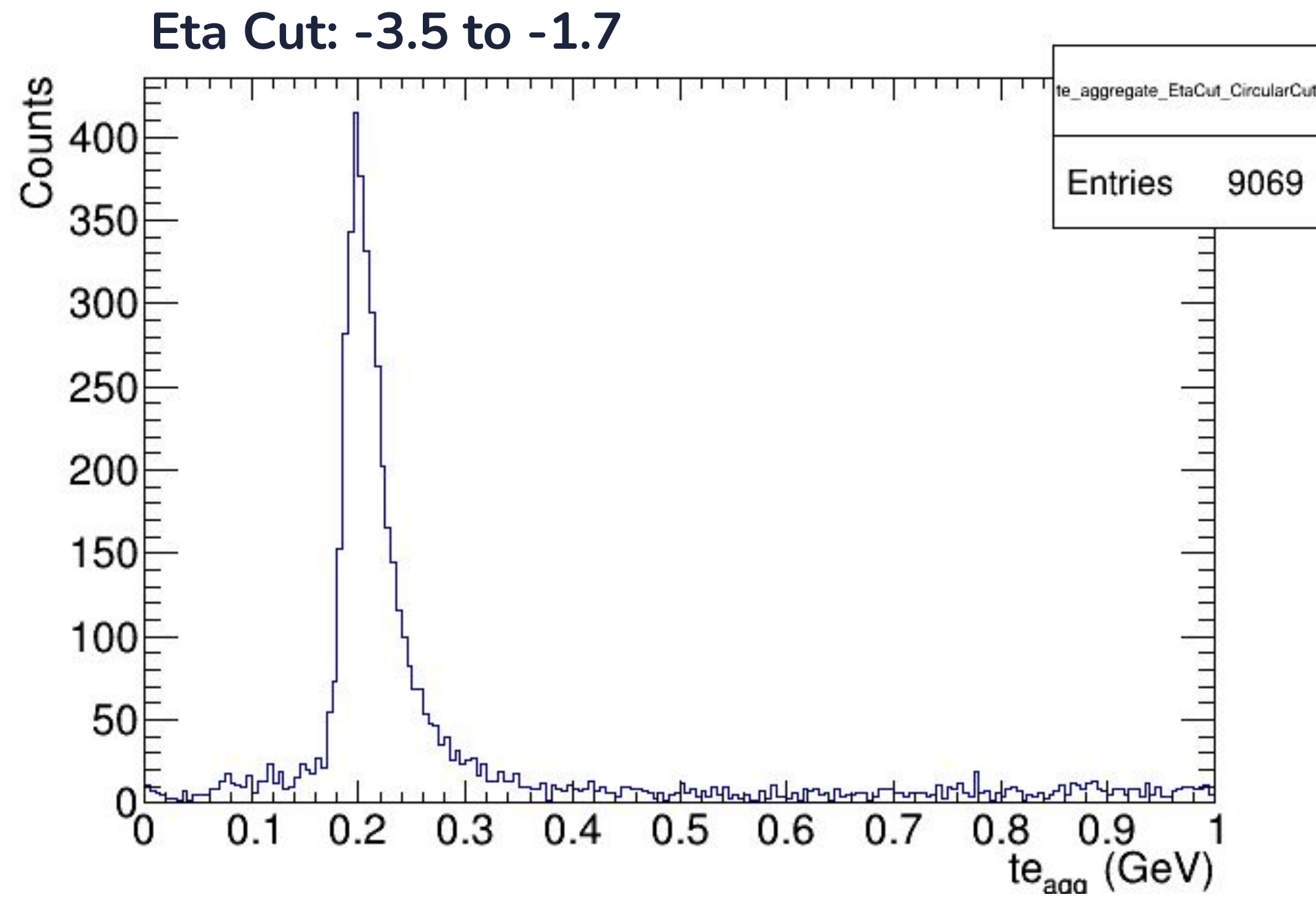


muon

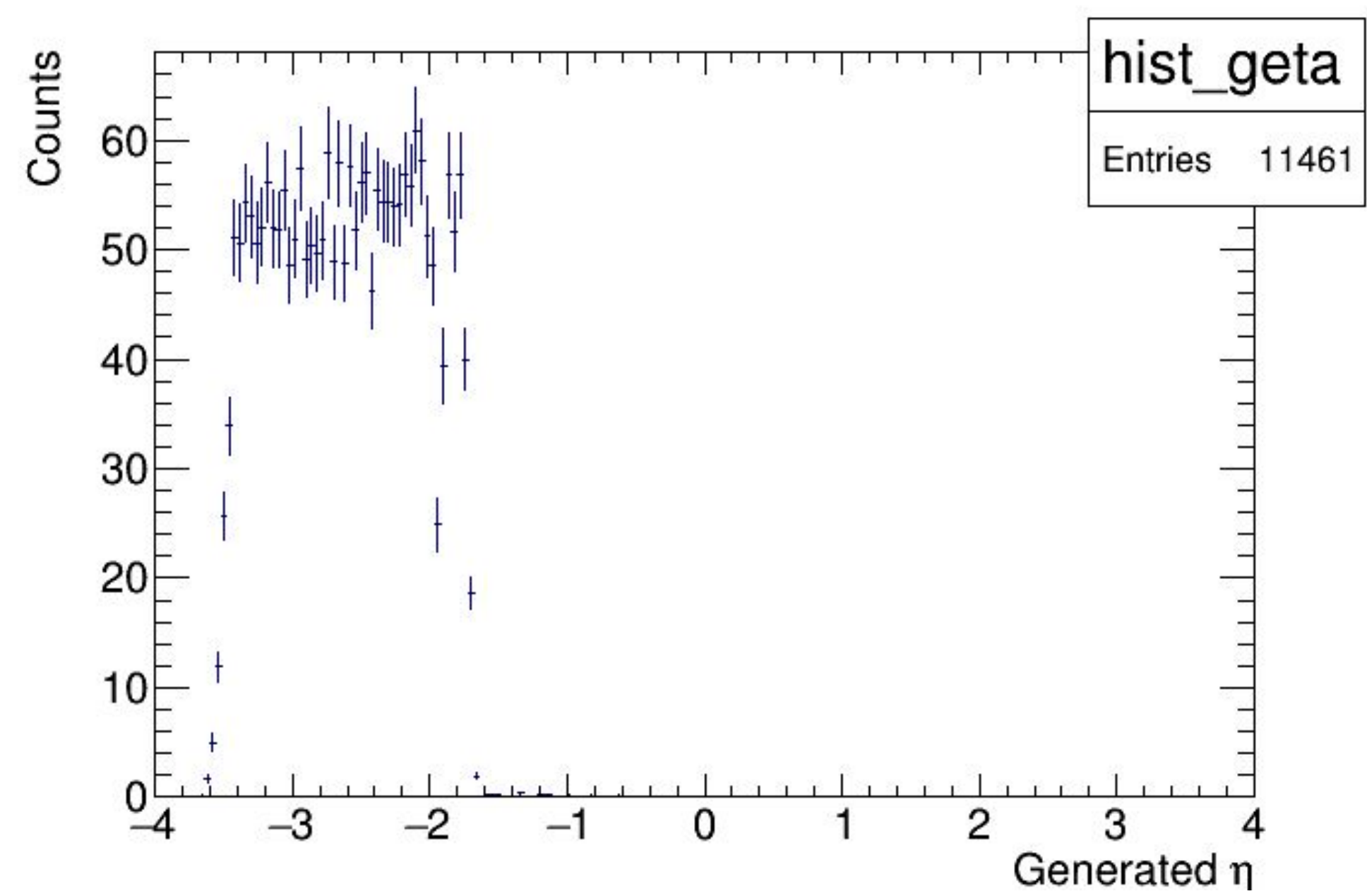
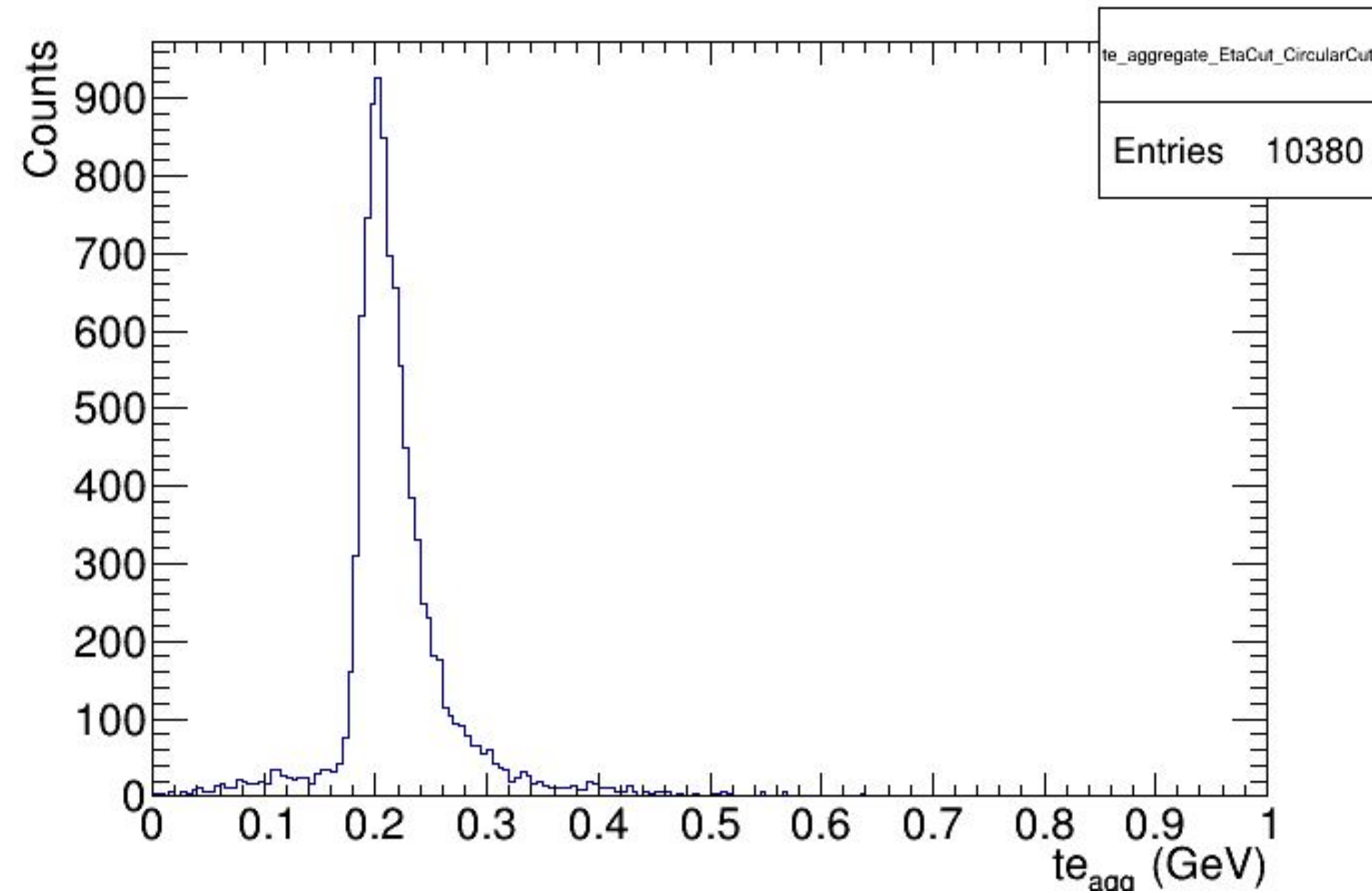


# EEMC

pion

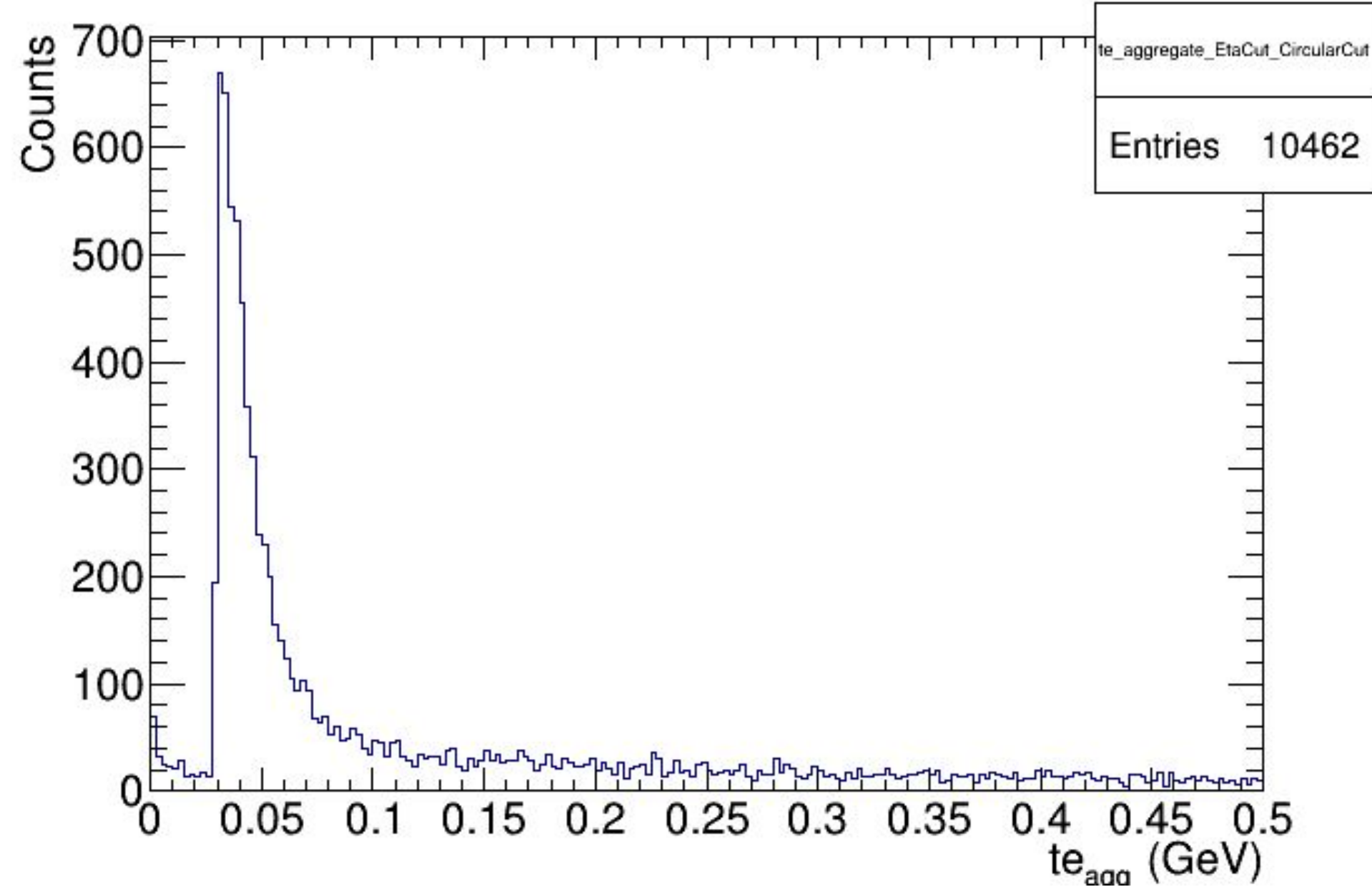


muon



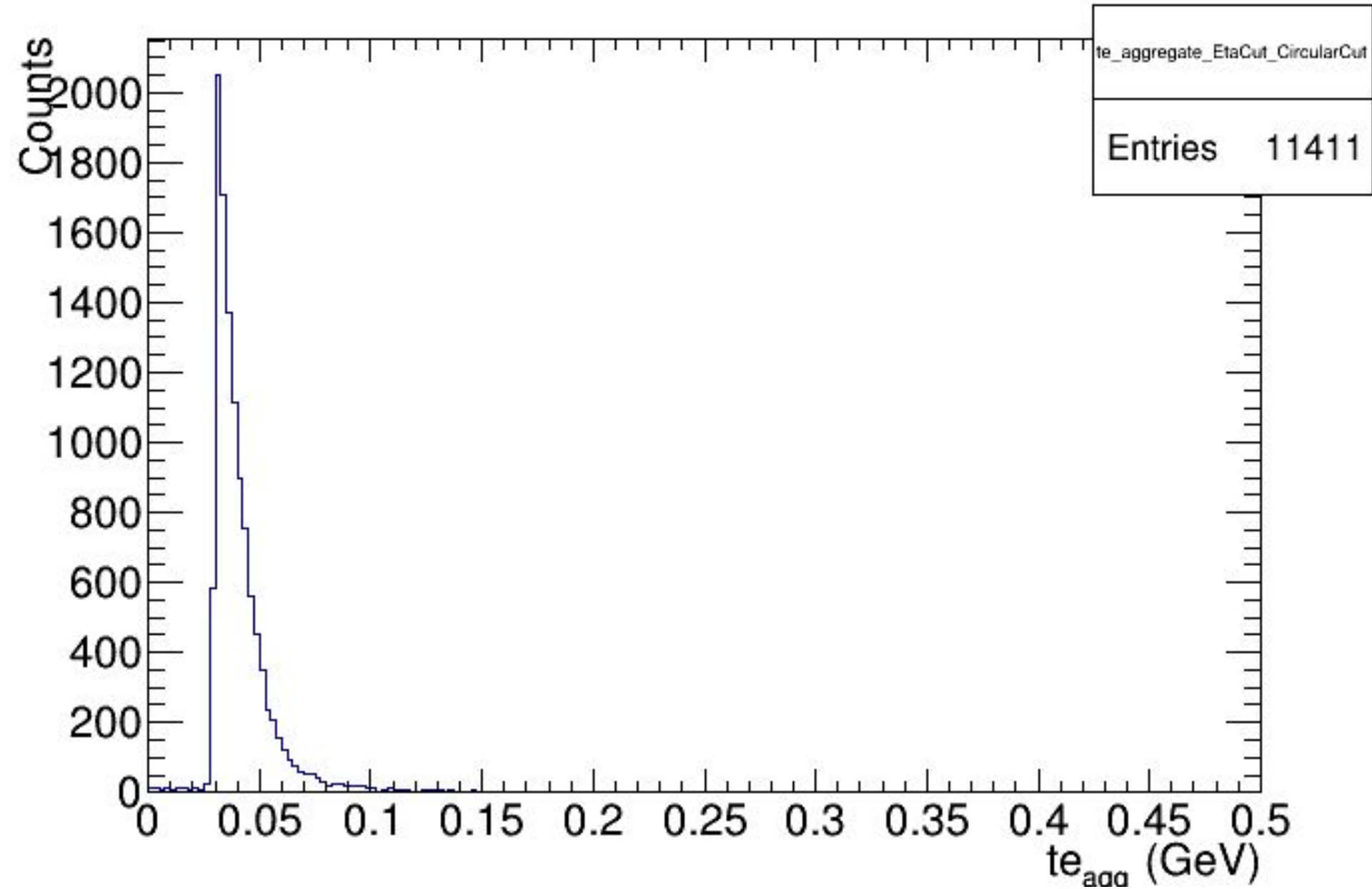
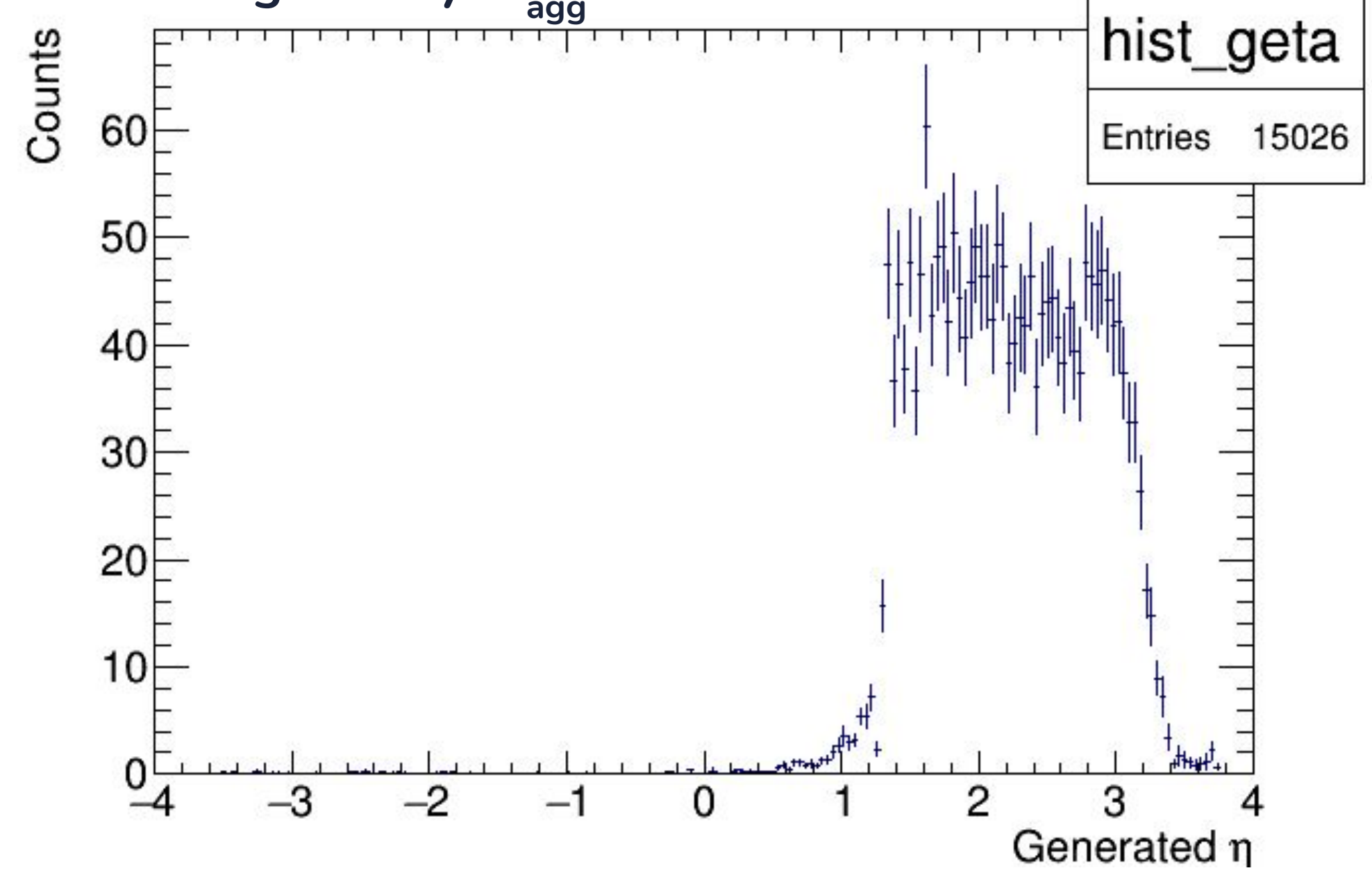
# FEMC

Eta Cut: 1.3 to 3.3

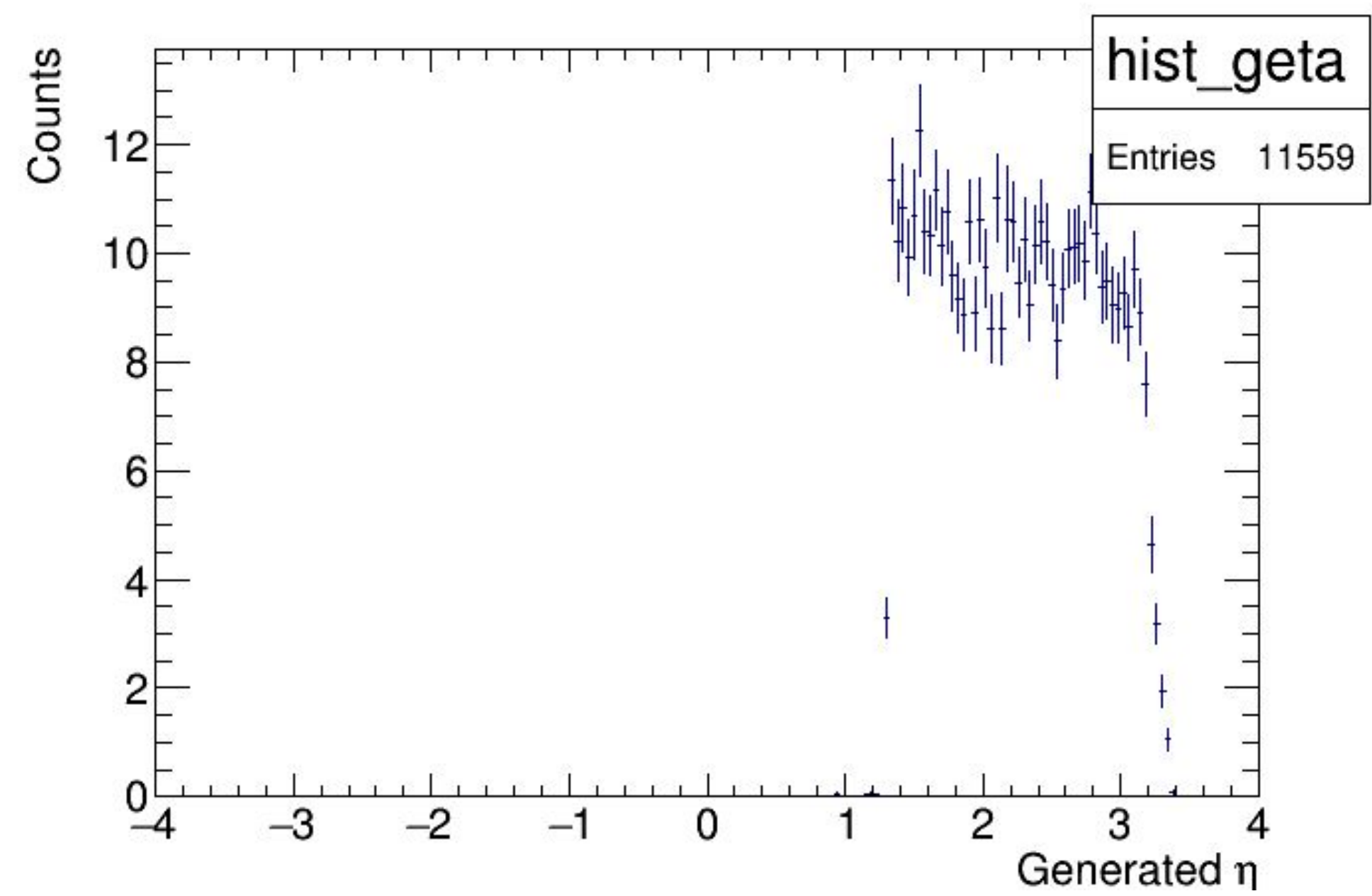


pion

Weighted by  $te_{agg}$

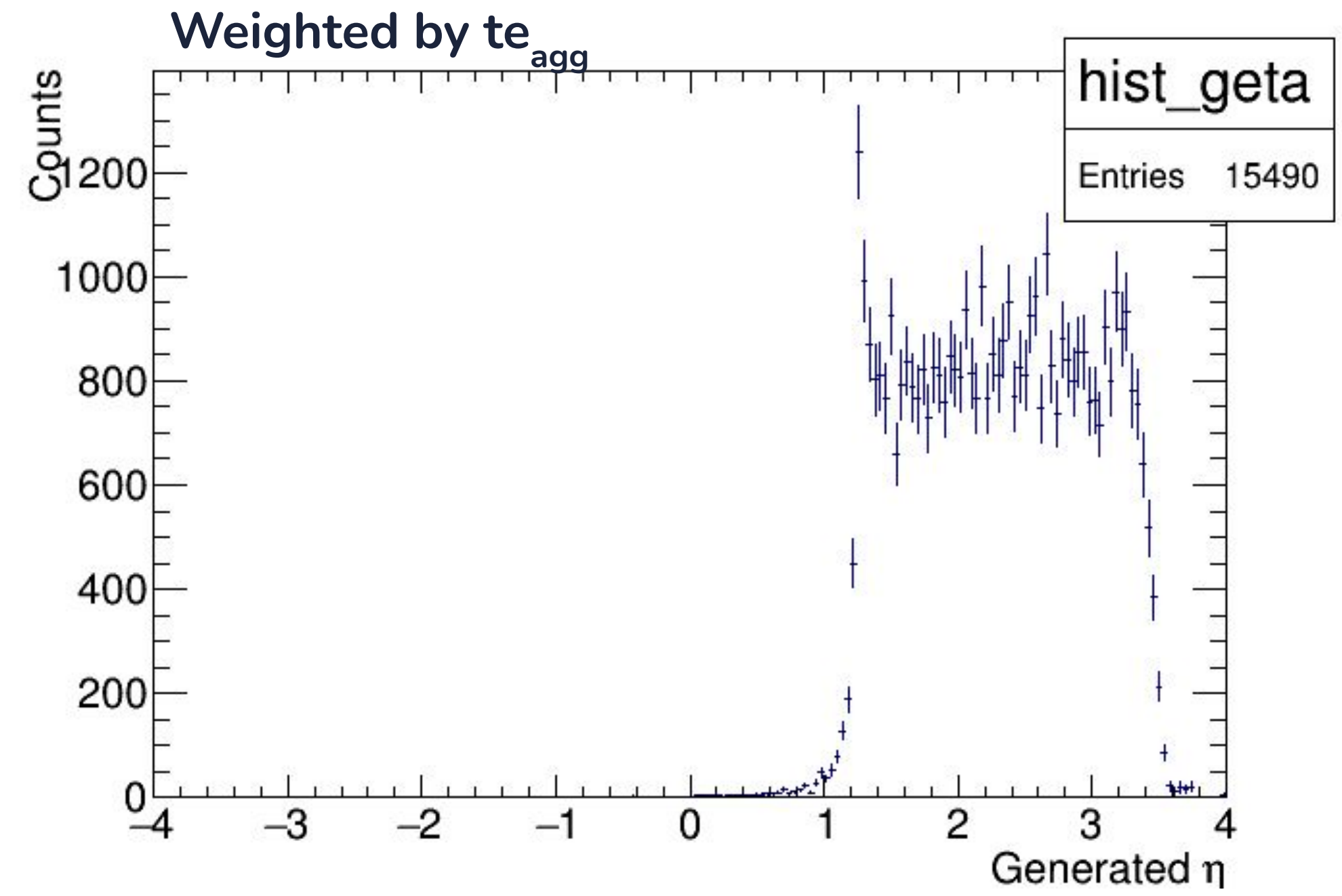
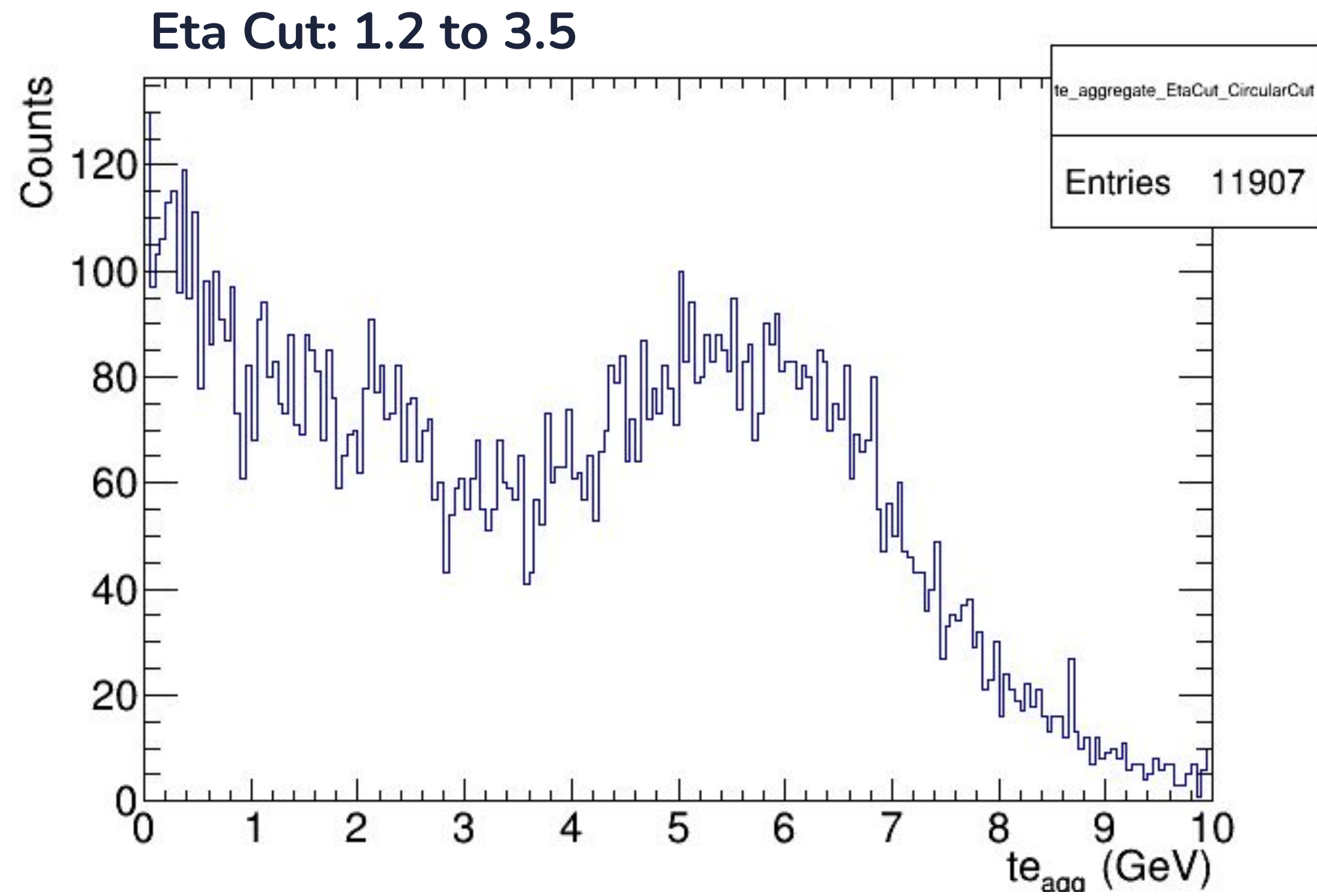


muon

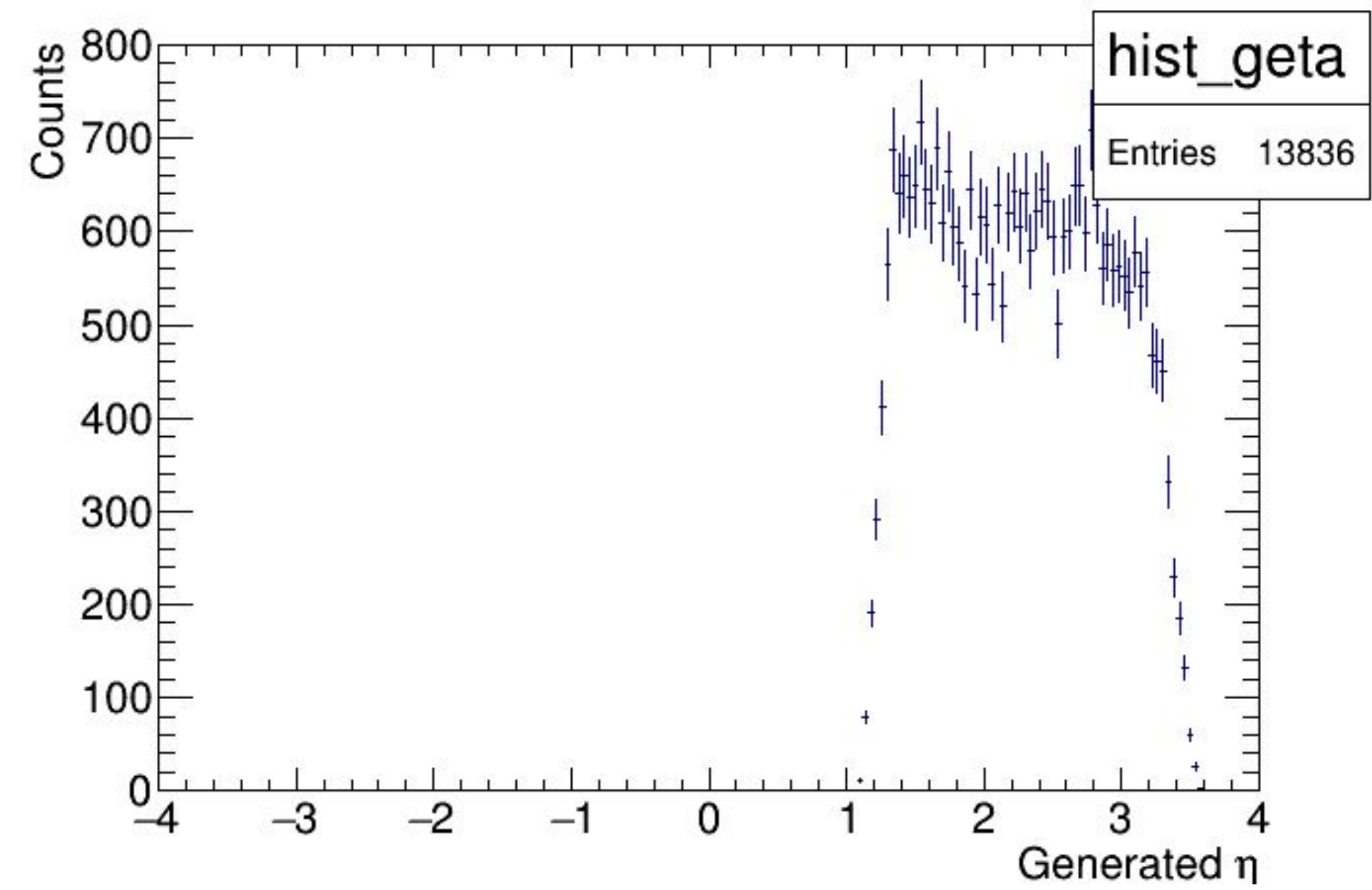
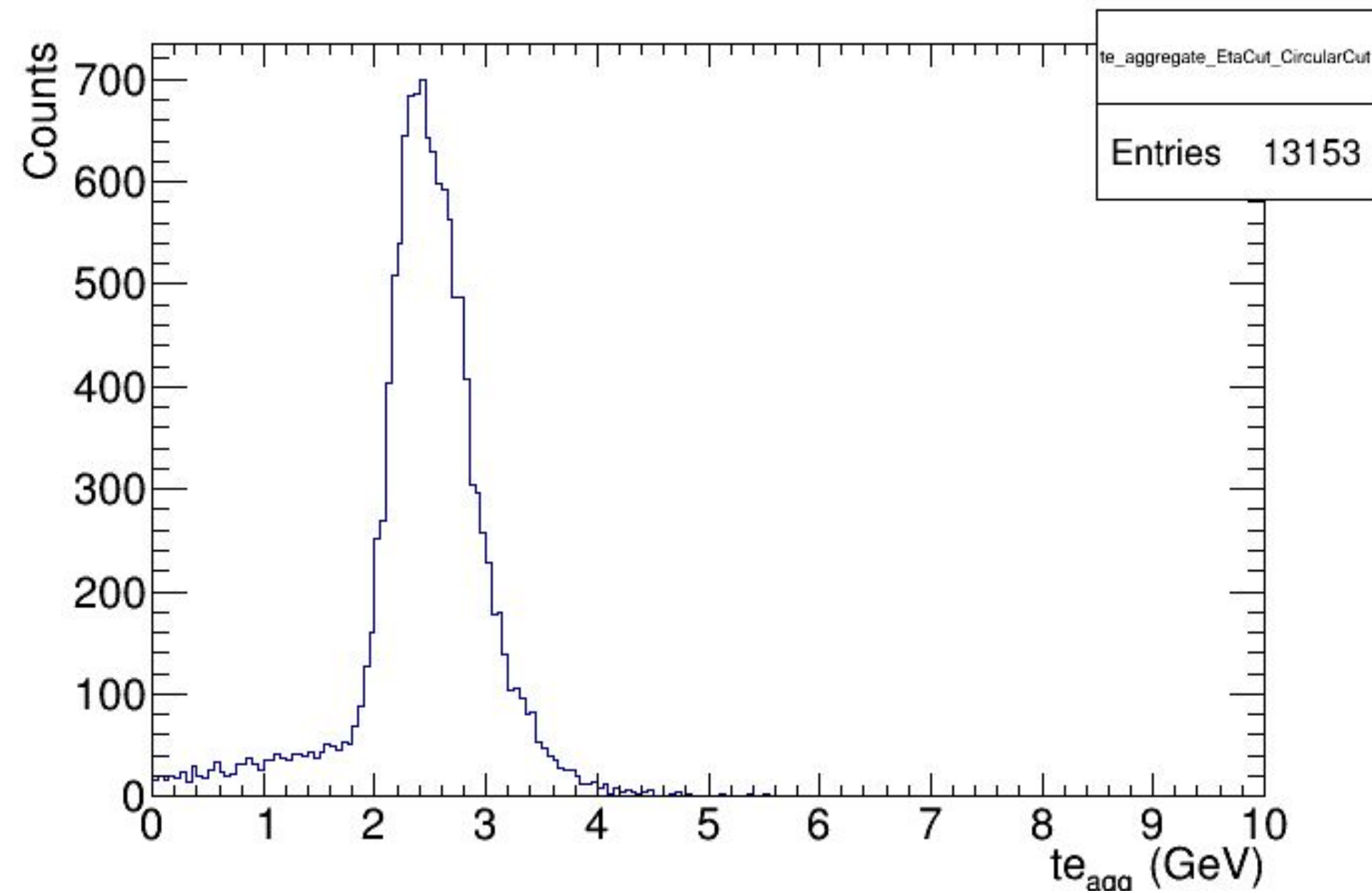


# FHCAL

pion

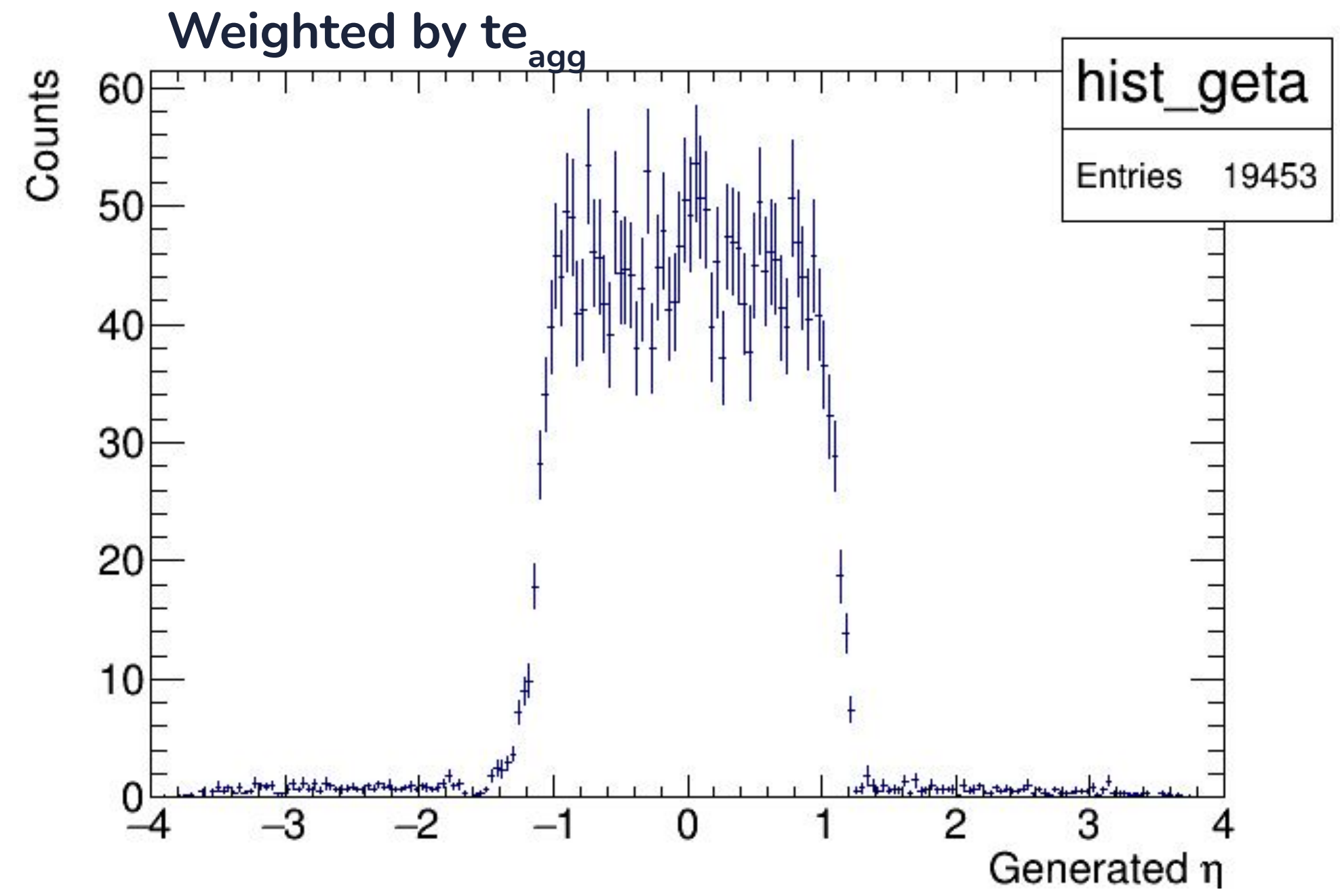
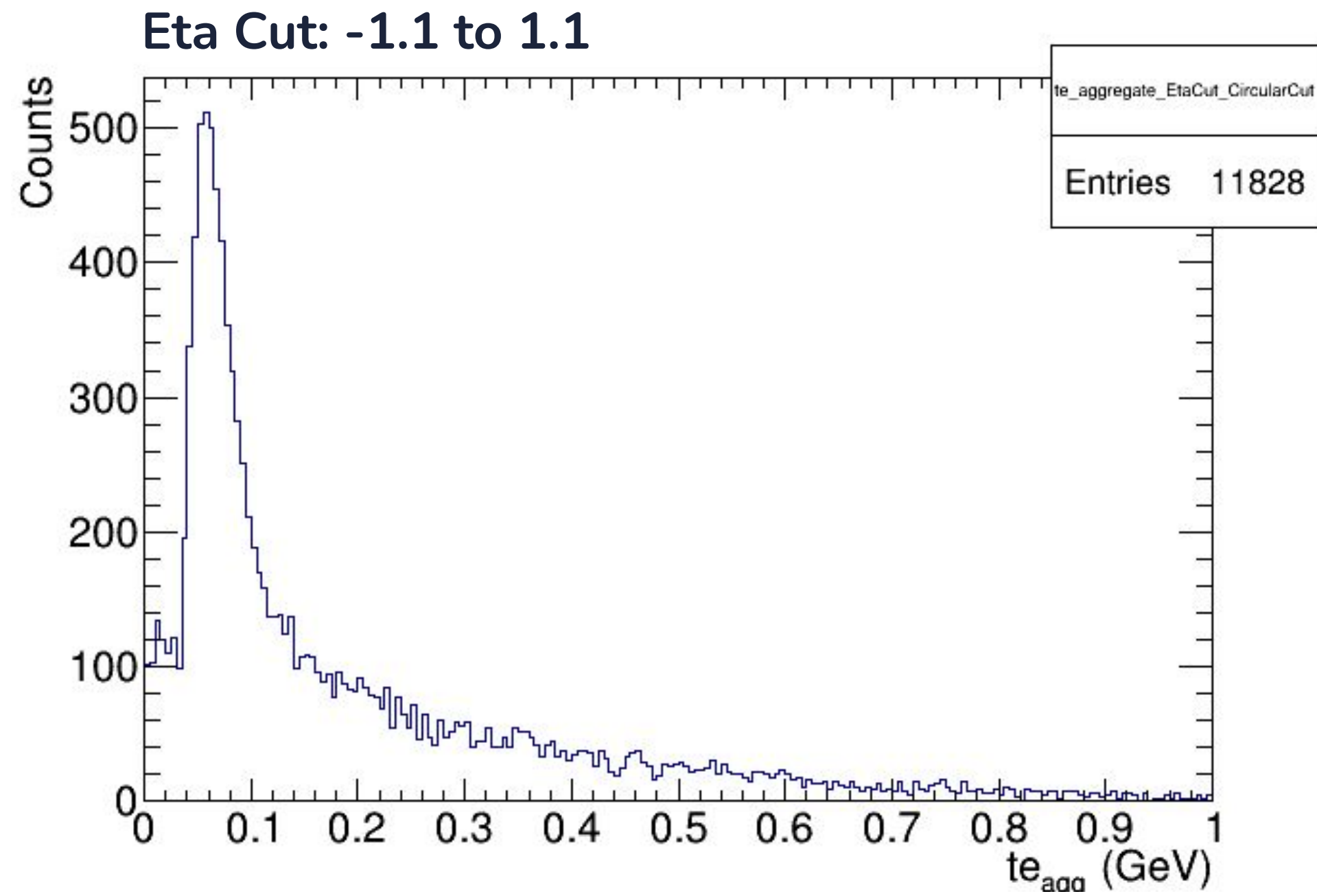


muon

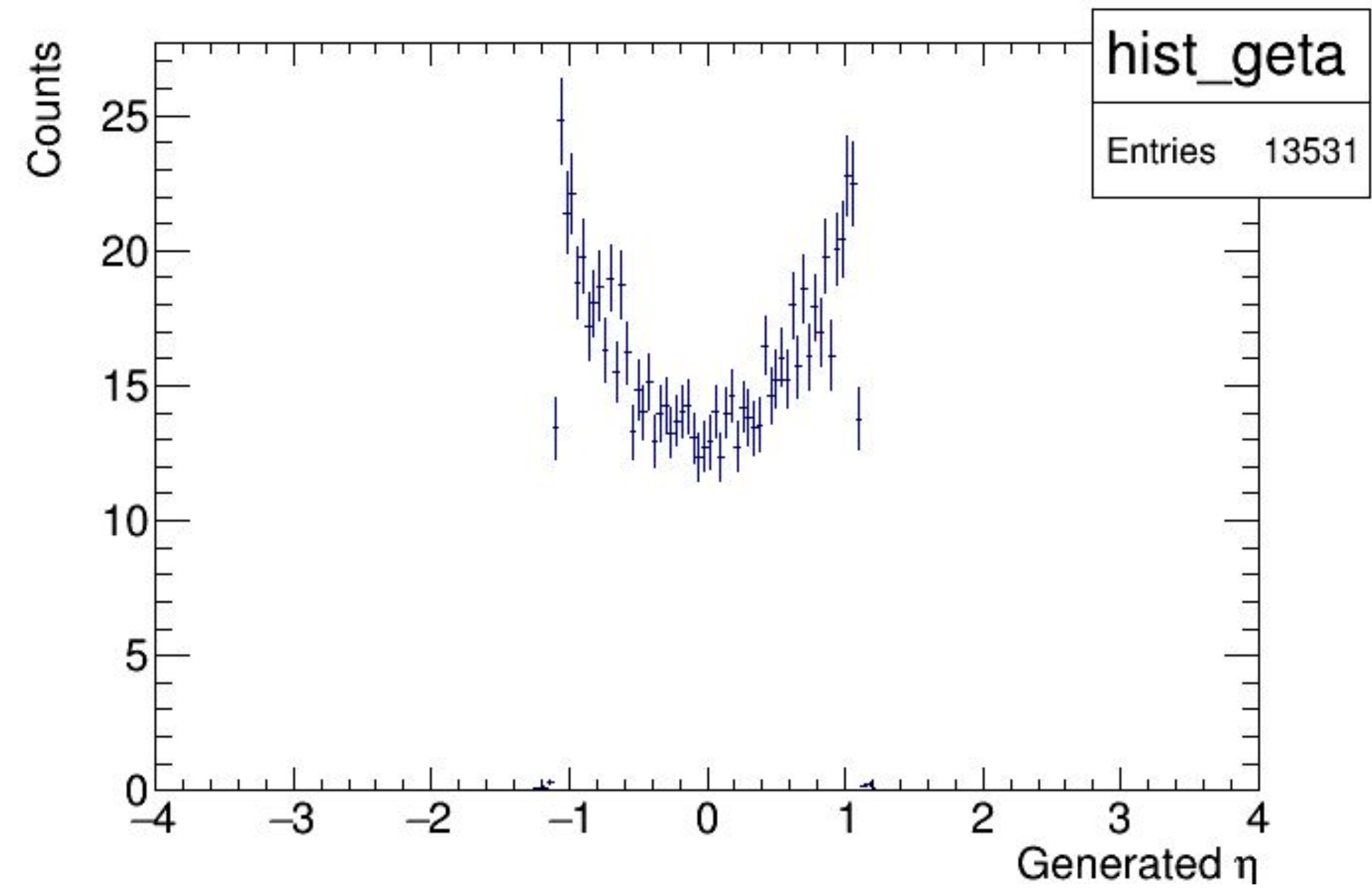
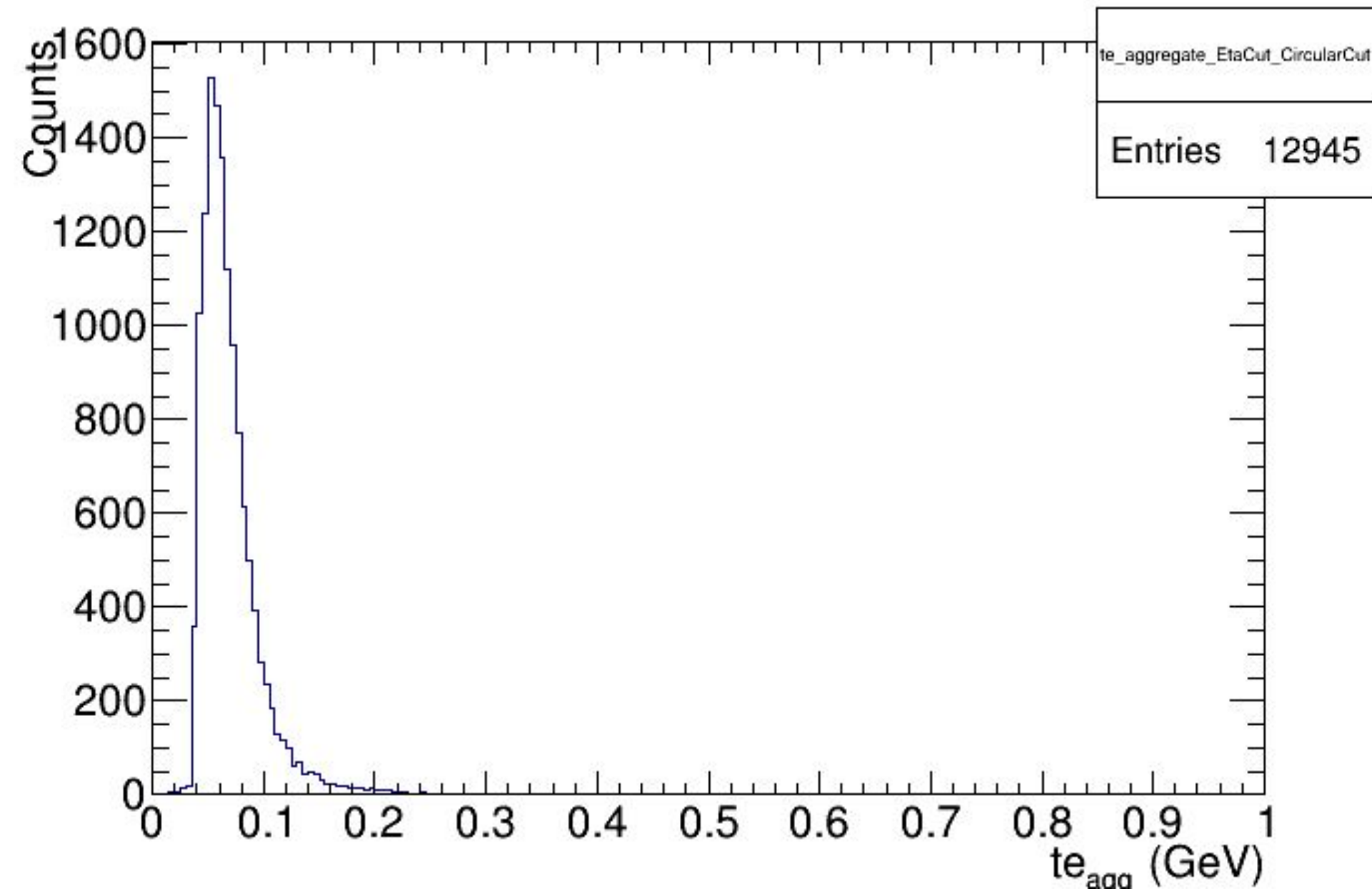


# HCALIN

pion



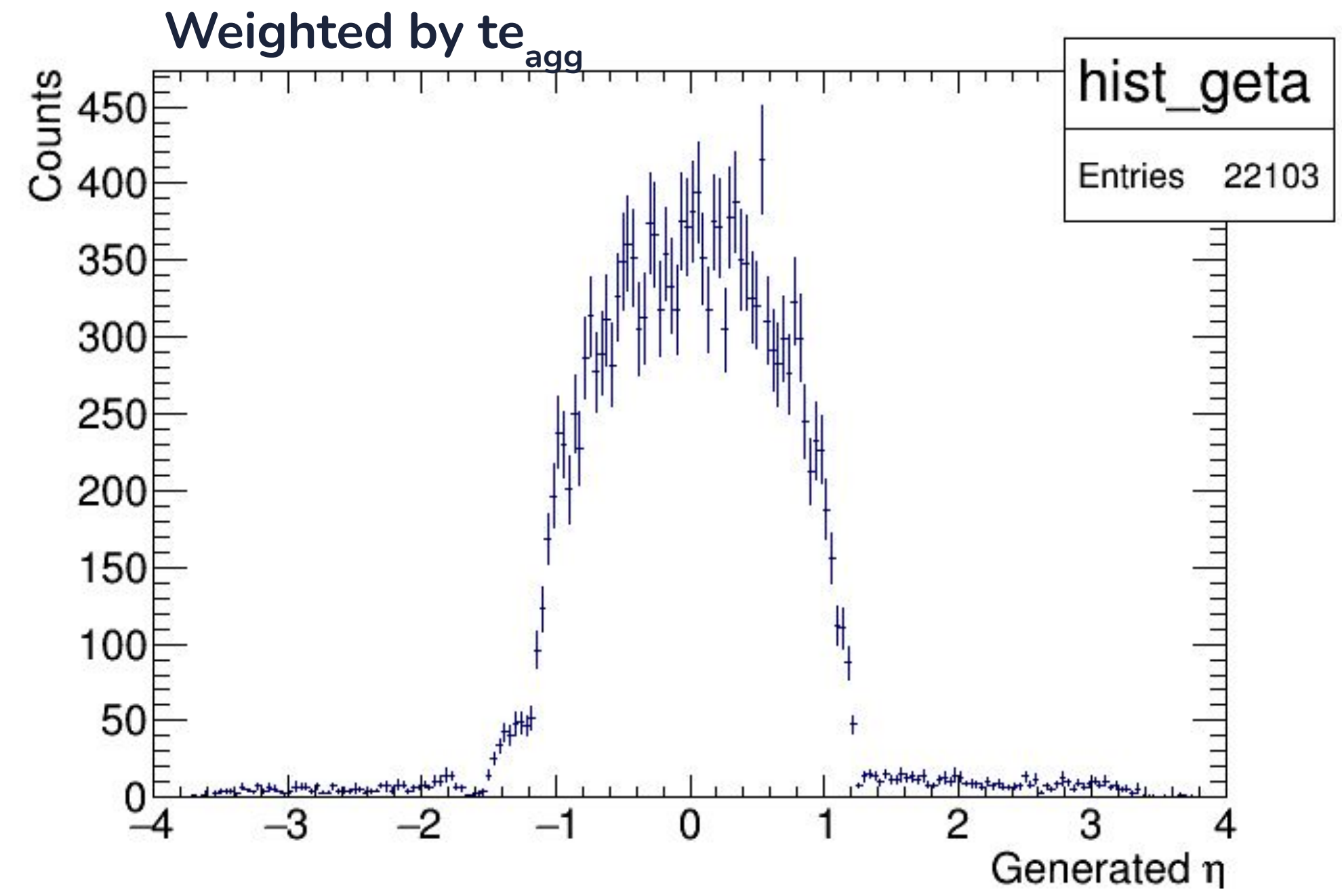
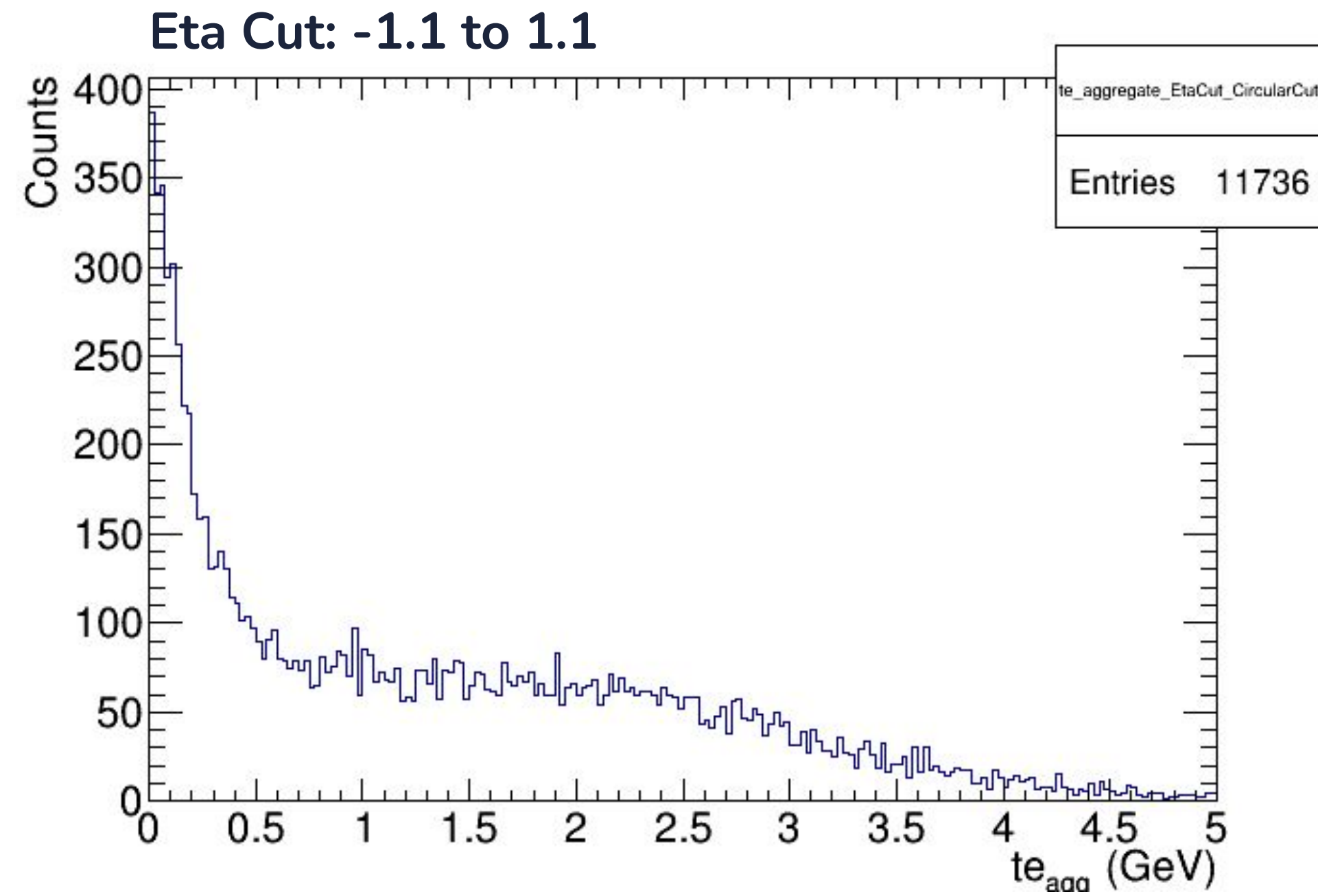
muon





# HCALOUT

pion



muon

