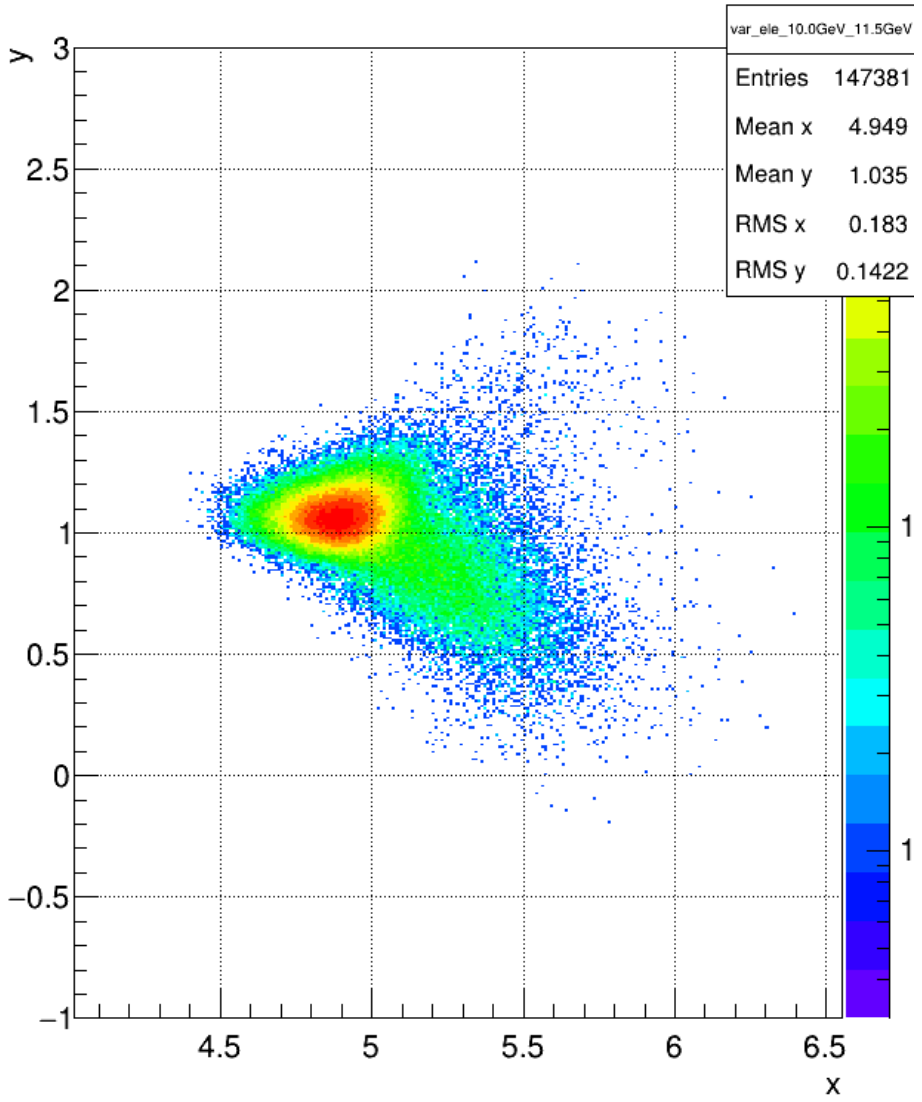
Positron Spectrum

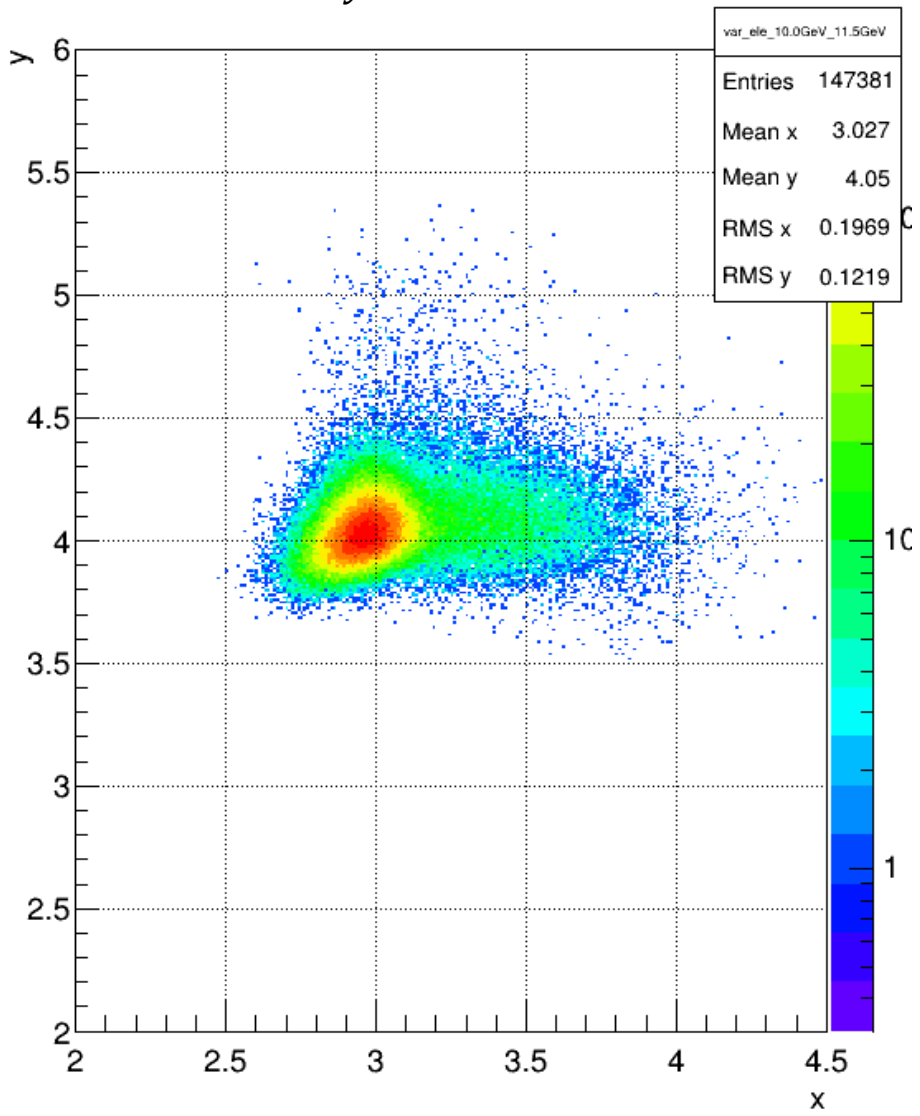
Yu Nie　2024.12.05

Var x

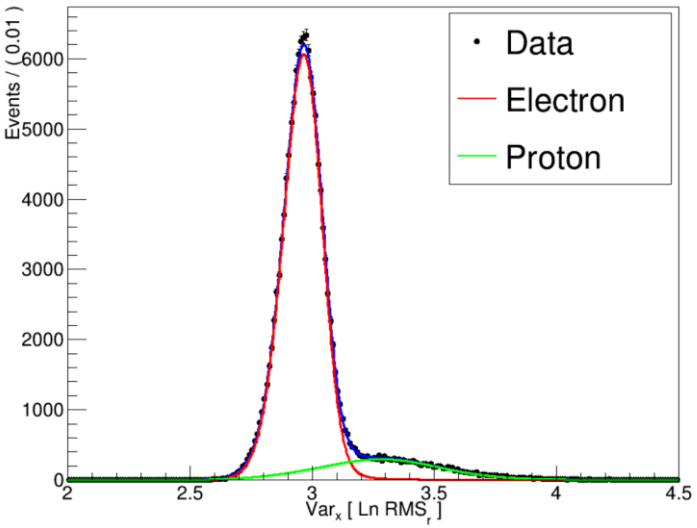
$$var_x = 0.75 \times \ln RMS_r + 0.6614 \times \ln RMS_l$$
$$var_y = -0.6614 \times \ln RMS_r + 0.75 \times \ln RMS_l$$

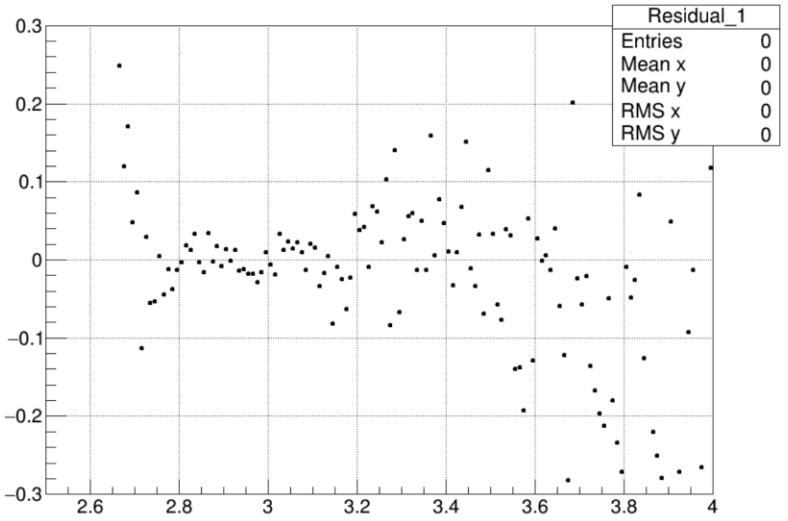


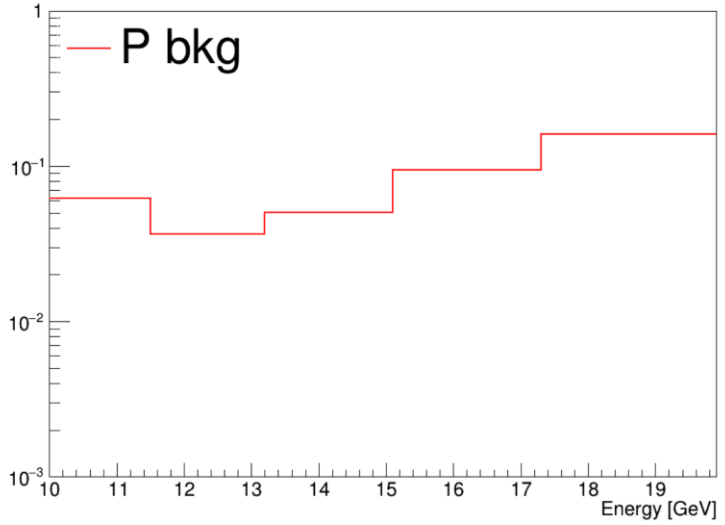
$$var_x = \ln RMS_r$$
$$var_y = \ln RMS_l$$

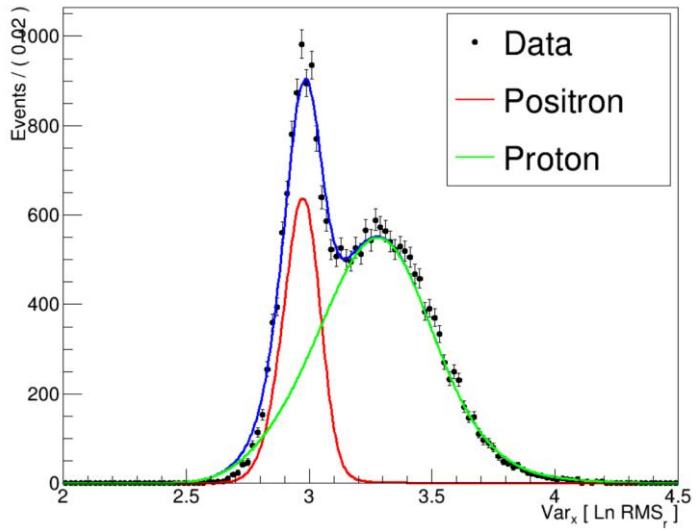


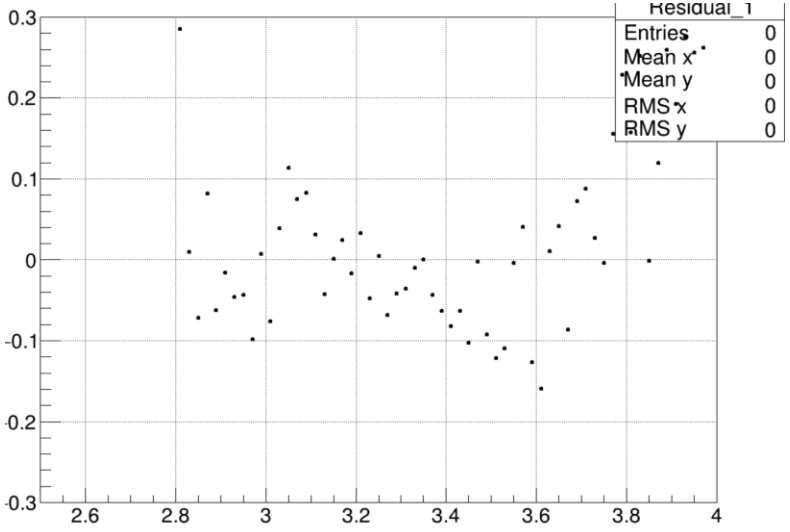
Ep discrimination

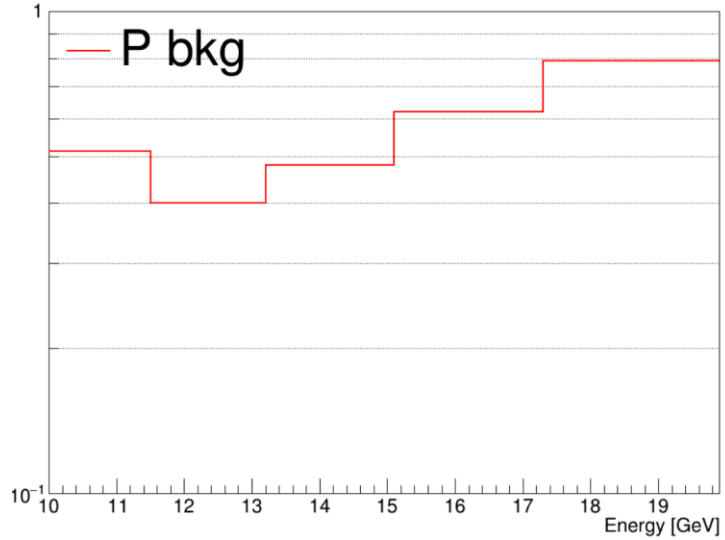




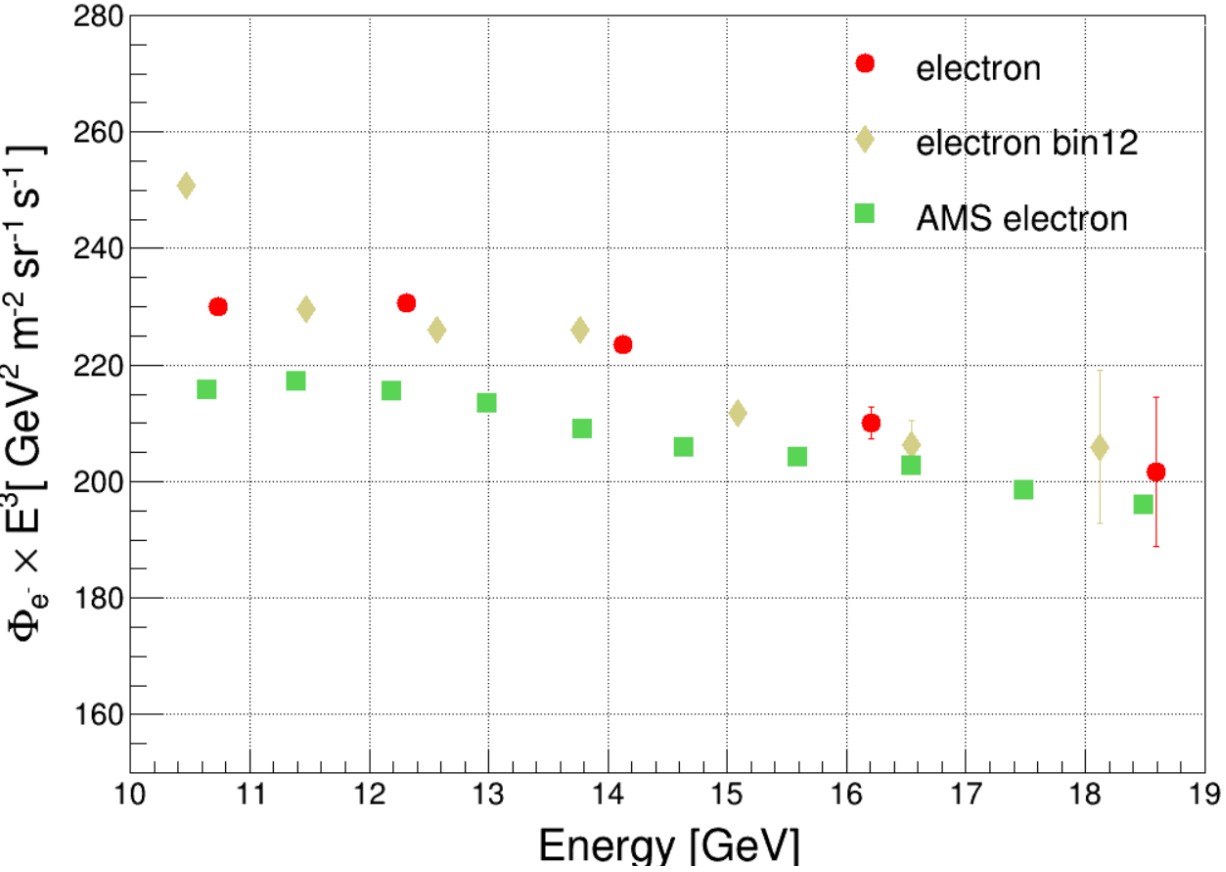


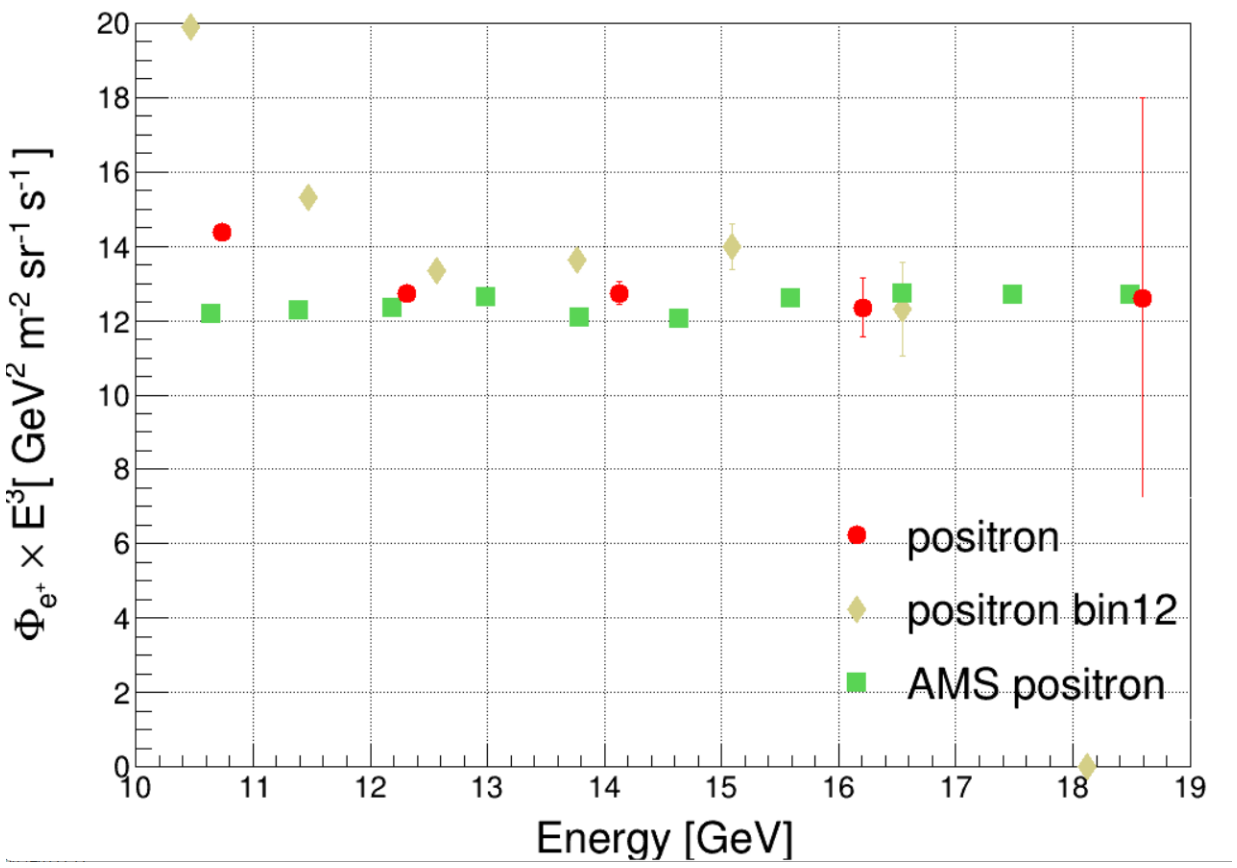




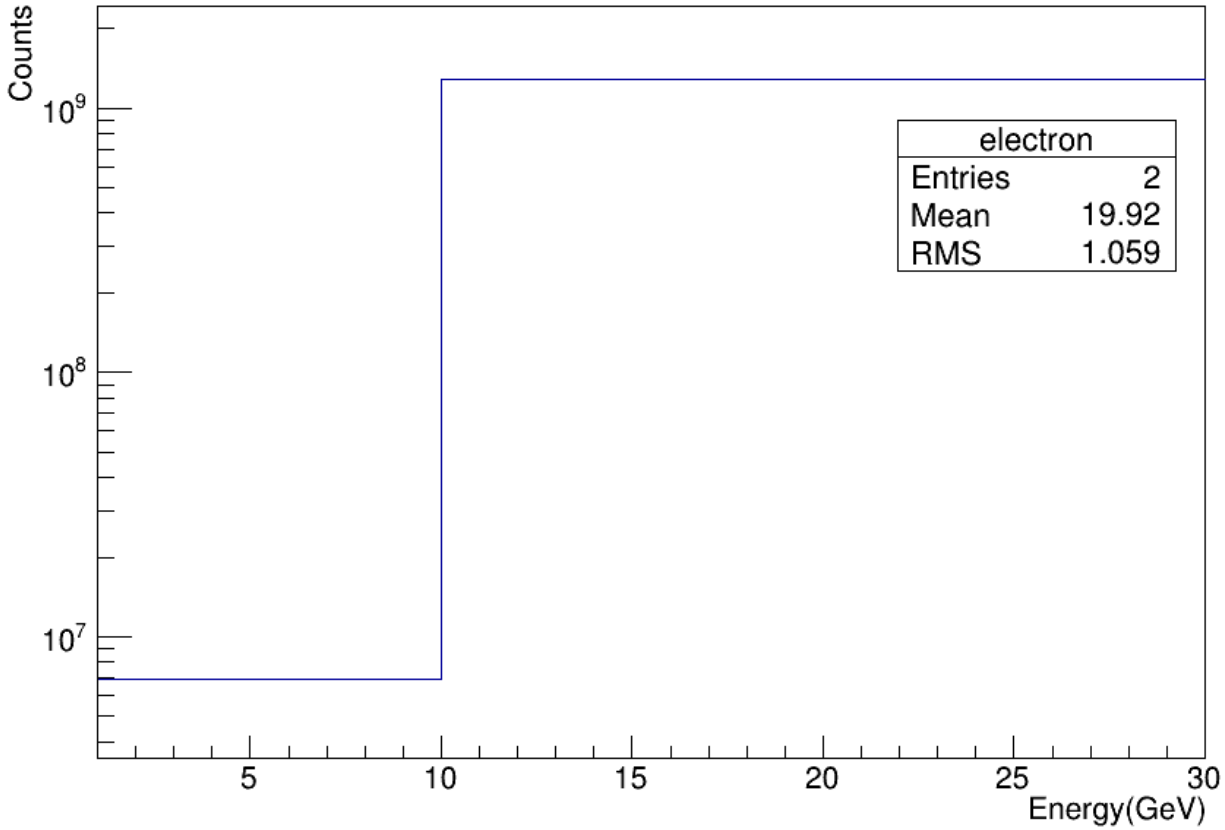


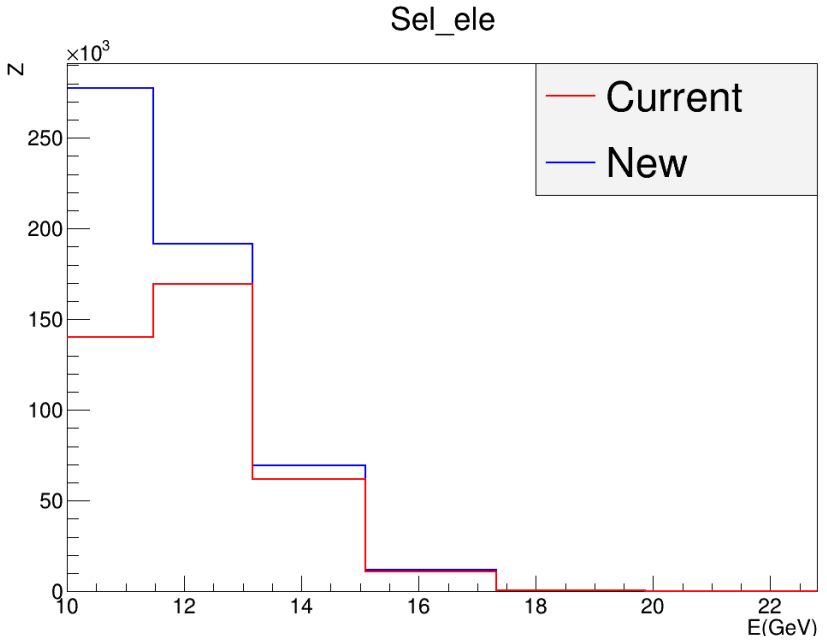
Flux

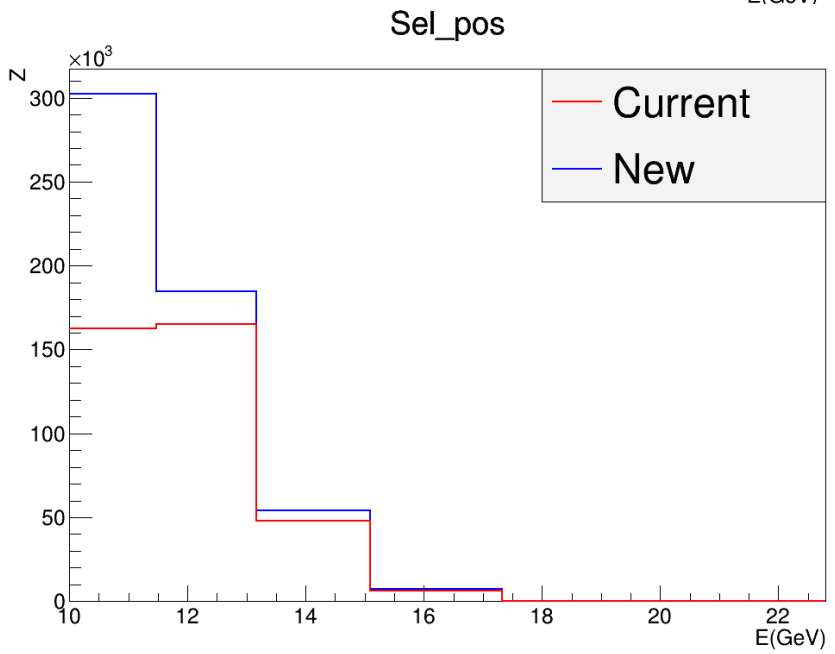

electron
electron bin12
AMS electron
$\Phi_{e^-} \times E^3$[GeV^2 m^{-2} sr^{-1} s^{-1}]
Energy [GeV]


positron
positron bin12
AMS positron
$\Phi_{e^+} \times E^3$[GeV^2 m^{-2} sr^{-1} s^{-1}]
Energy [GeV]

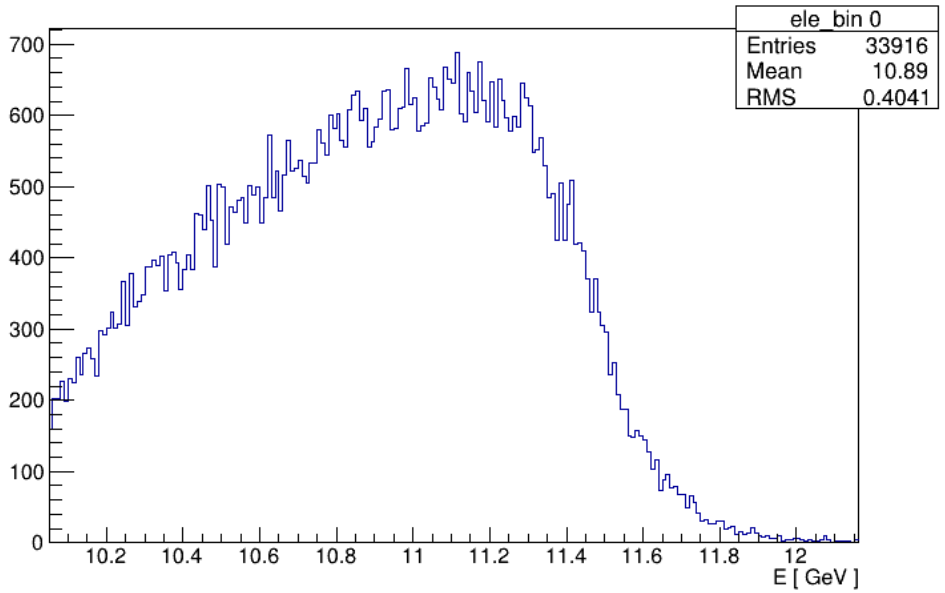
New MC

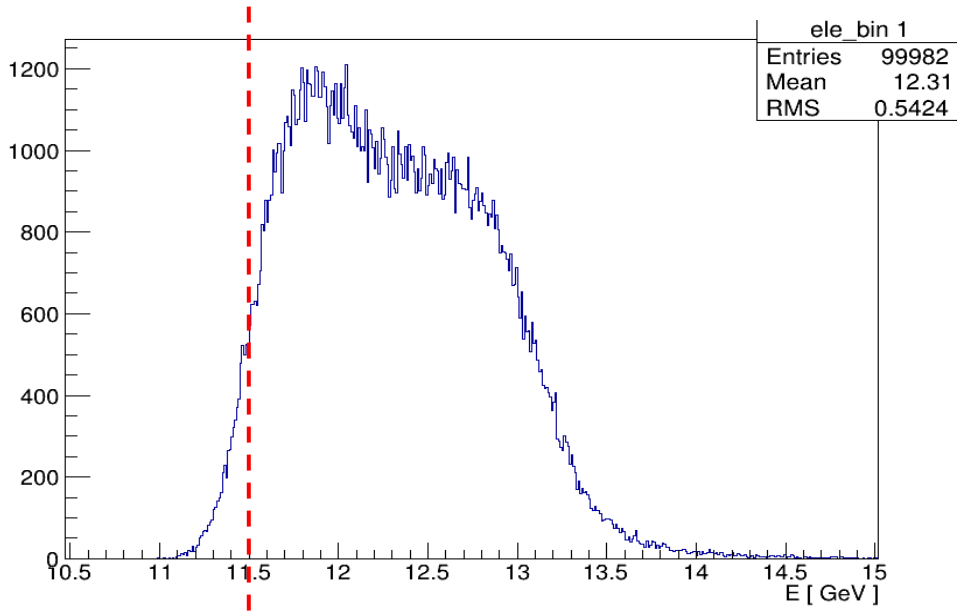

Counts
10^9
10^8
10^7
electron
Entries 2
Mean 19.92
RMS 1.059
5
10
15
20
25
30
Energy(GeV)

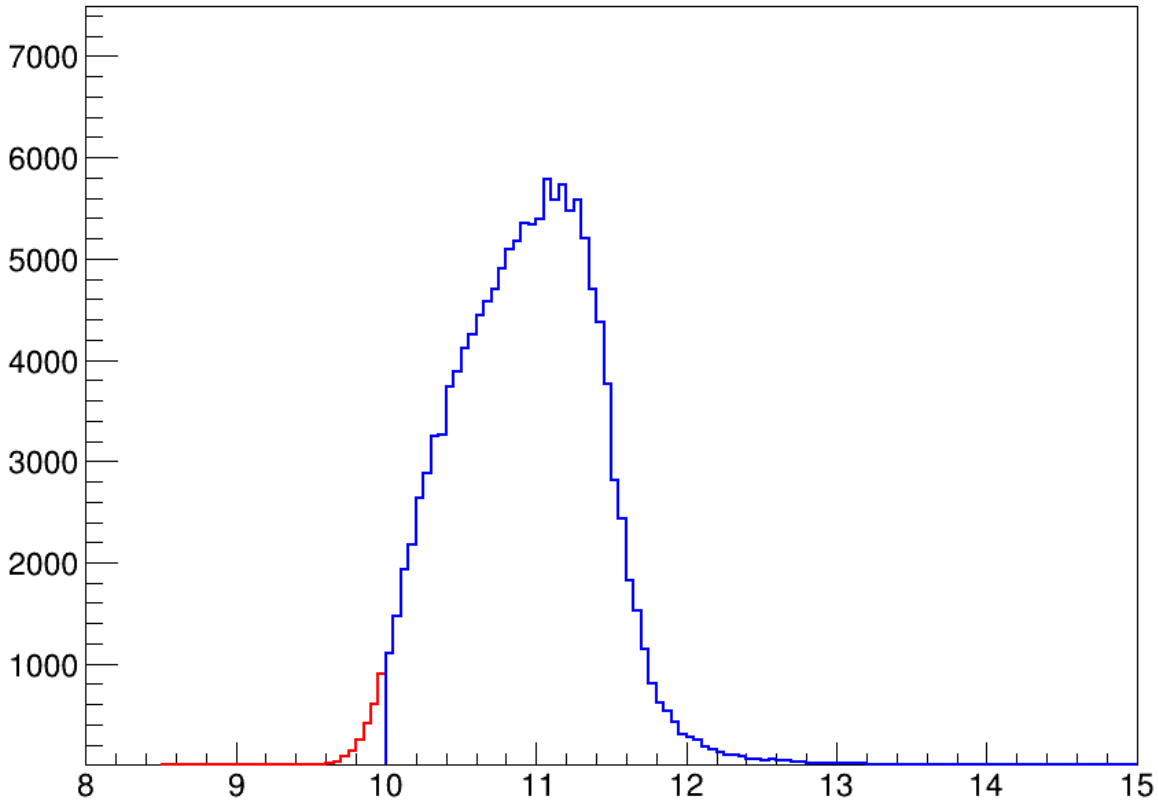

Sel_ele
N
$\times 10^3$
250
200
150
100
50
0
Current
New
10
12
14
16
18
20
22
E(GeV)


Sel_pos
N
$\times 10^3$
300
250
200
150
100
50
0
Current
New
10
12
14
16
18
20
22
E(GeV)

Acceptance correction

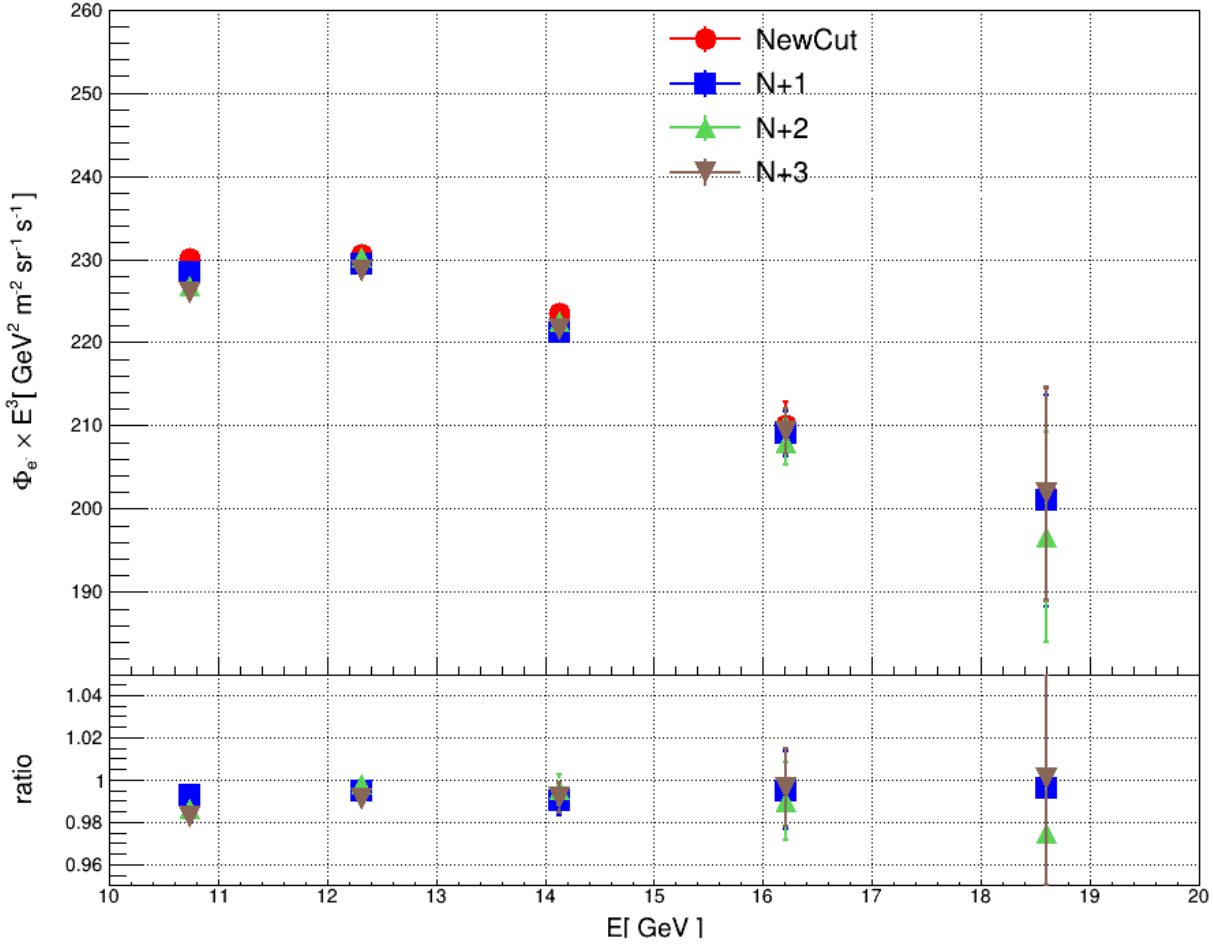


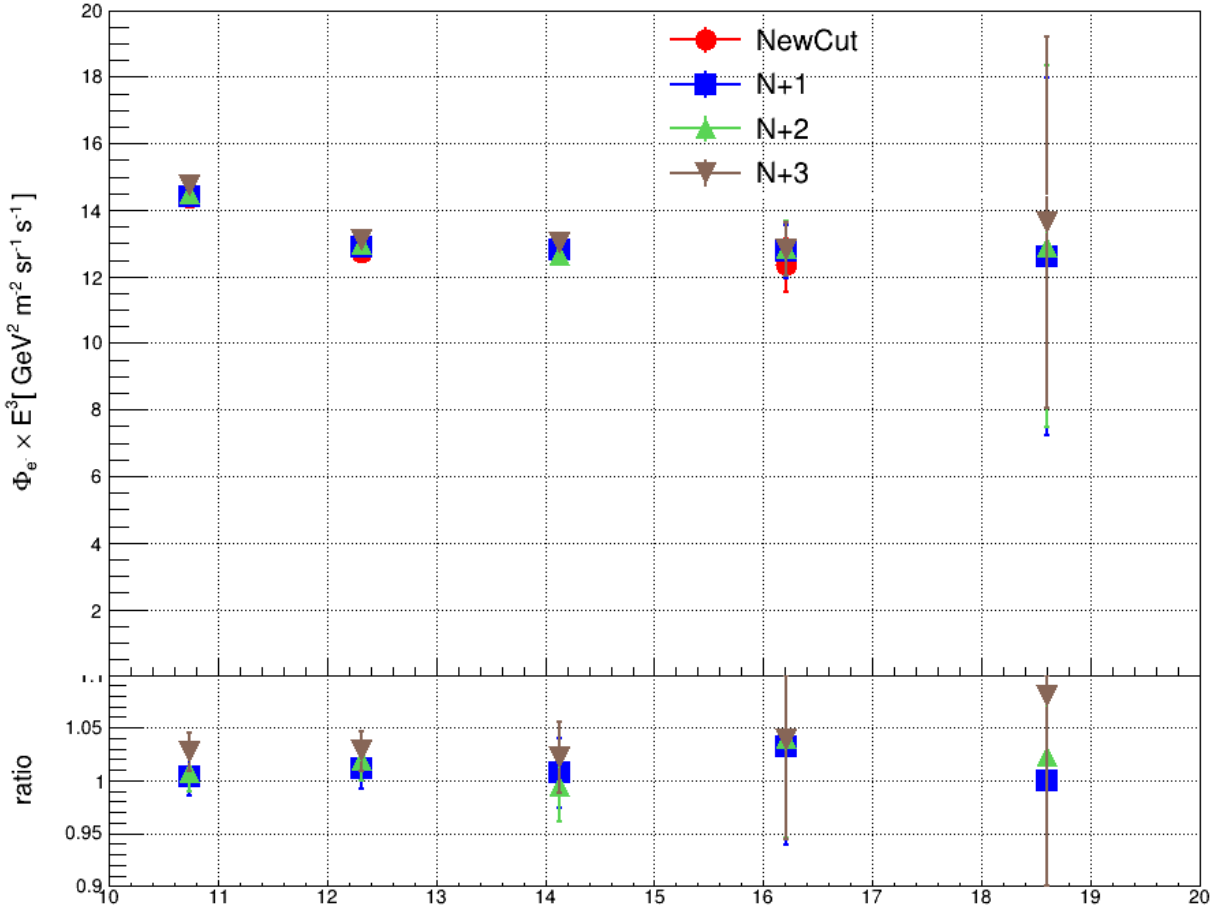




Systematic Uncertainty (1)

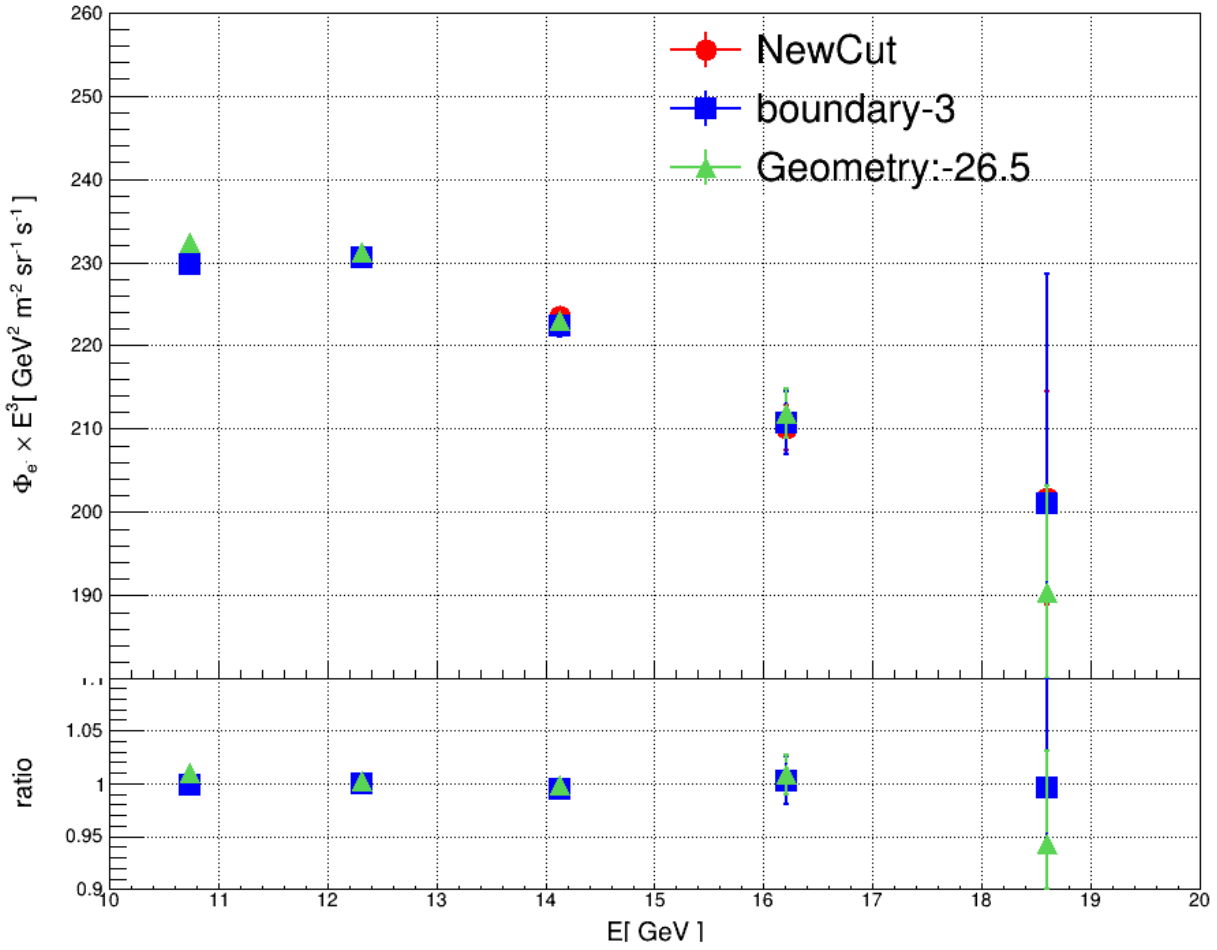
- N fire Limit

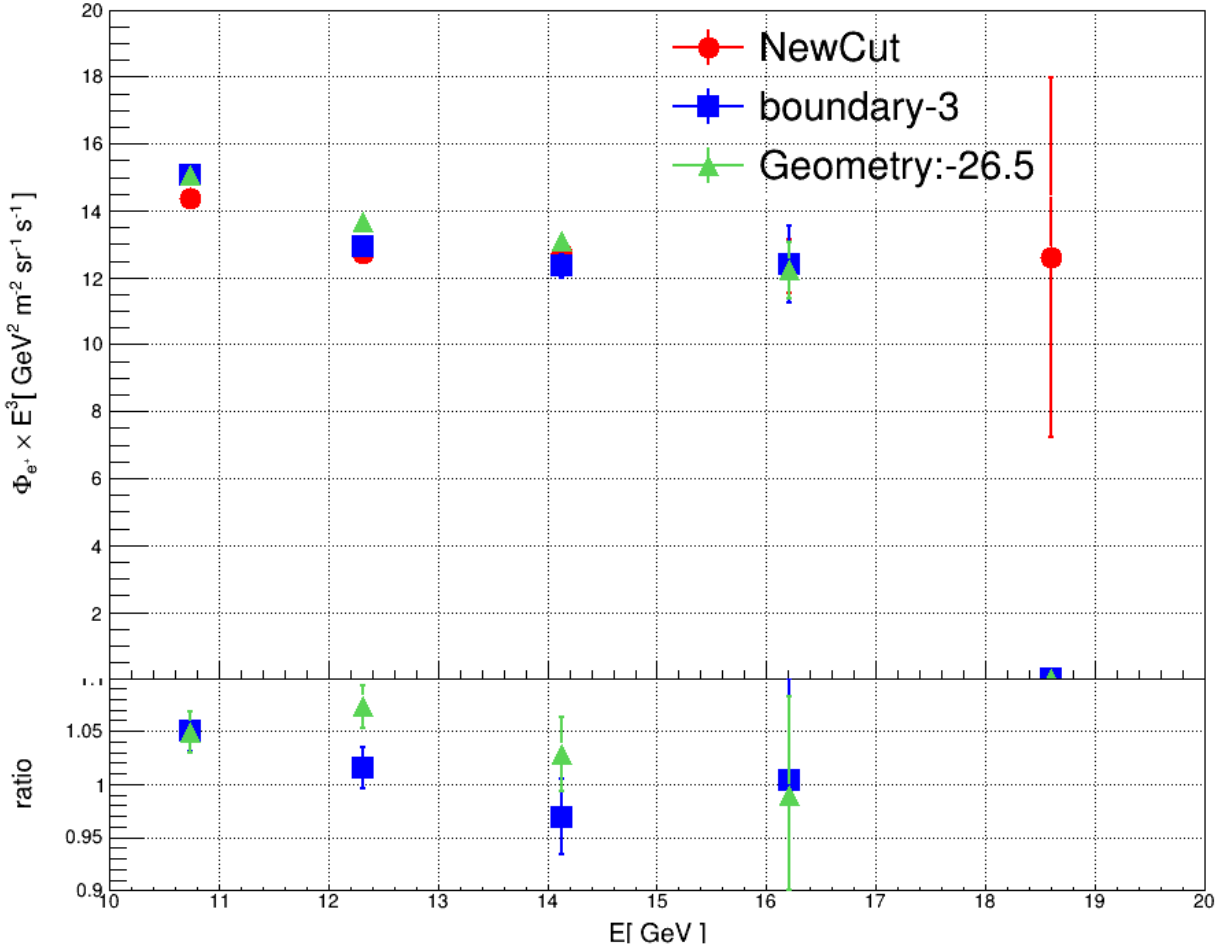




Systematic Uncertainty (2)

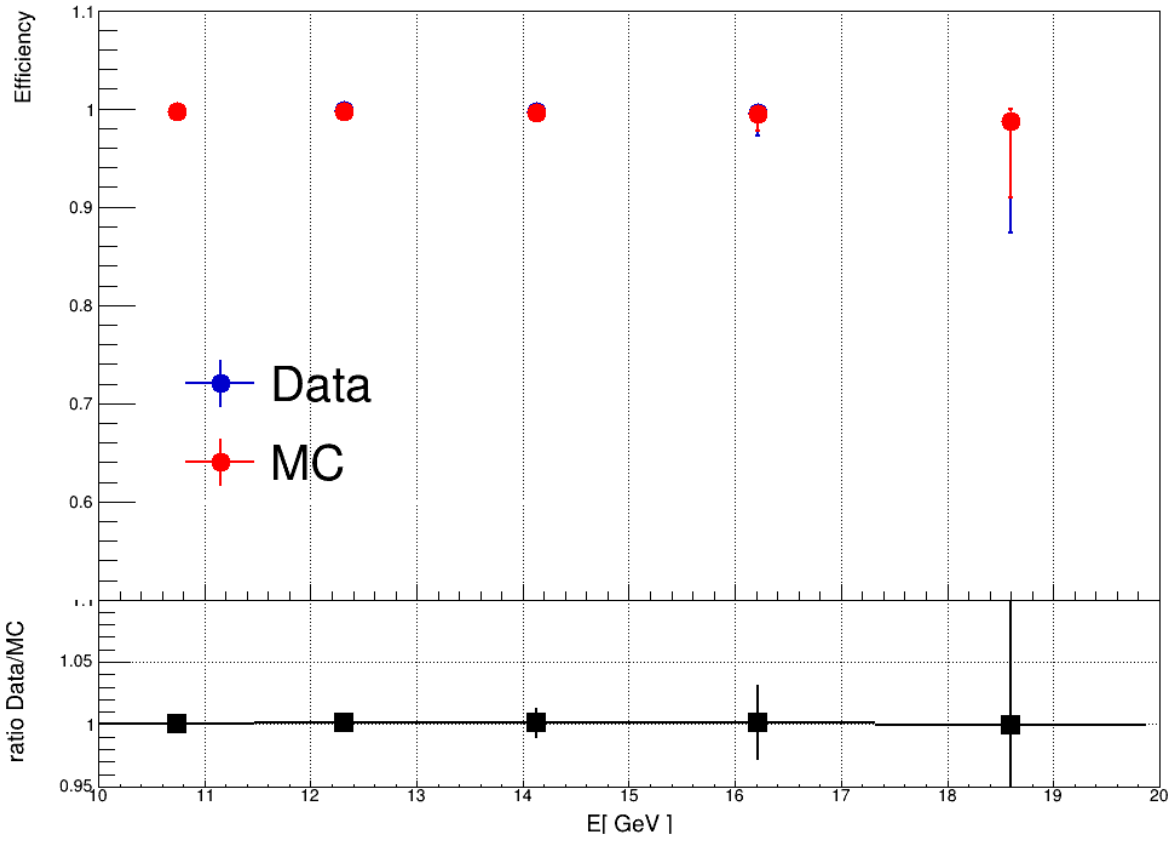
- East West Effect Cut
- Geometry cut



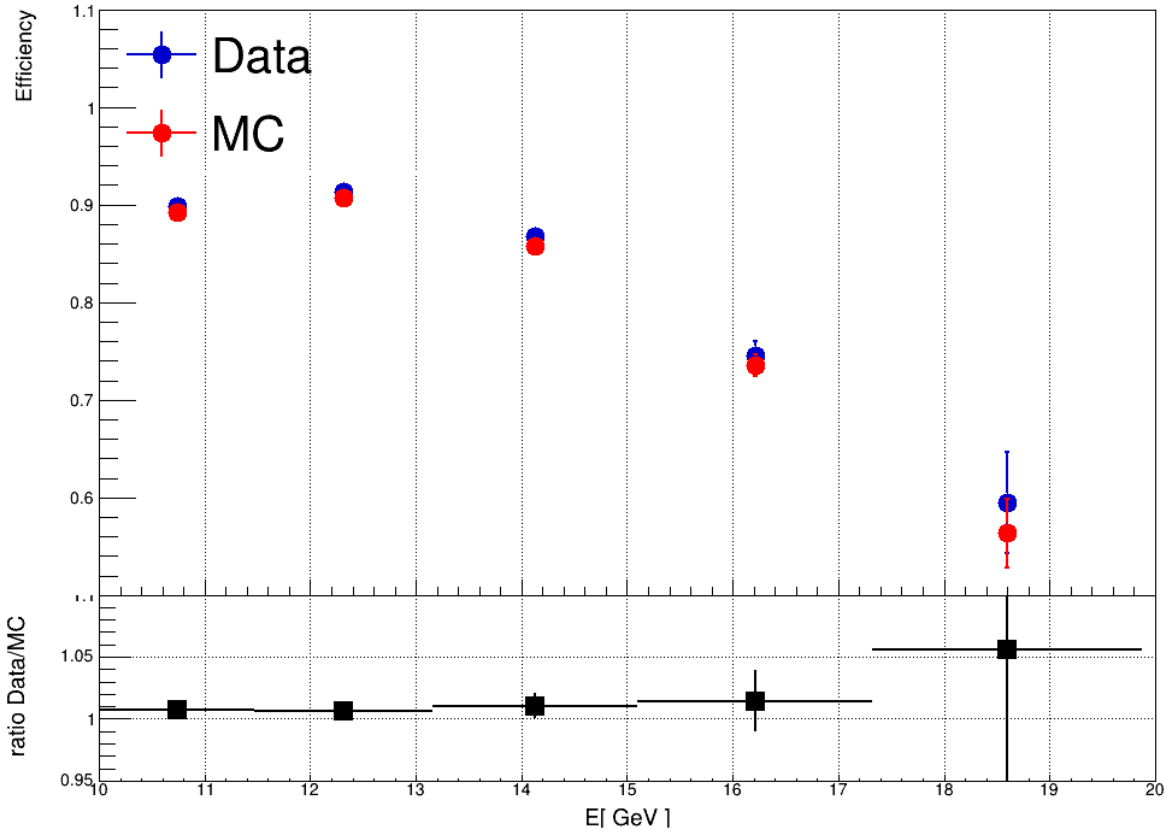


Systematic Uncertainty (3): $ln\ RMS_x < 3$

- Charge : (0, 1.8)
  a) StkAdc (layer 0): (20, 80)



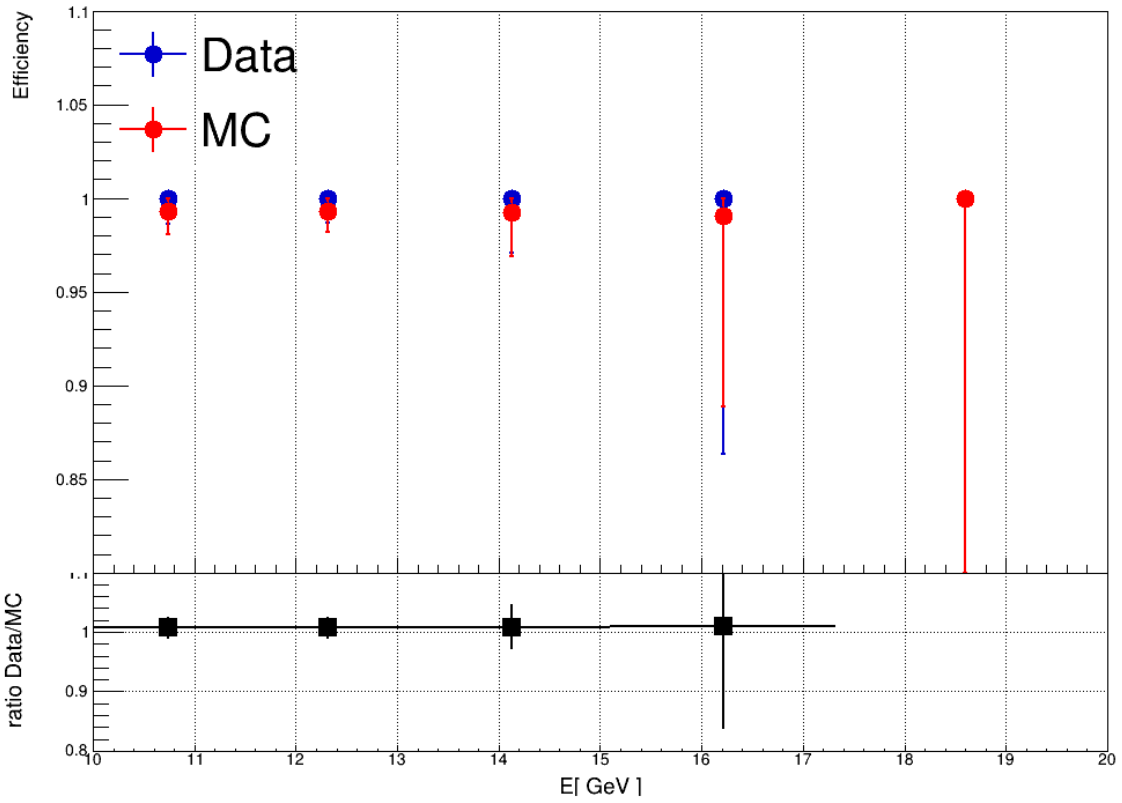
- MaxLayer Fraction : < 0.35

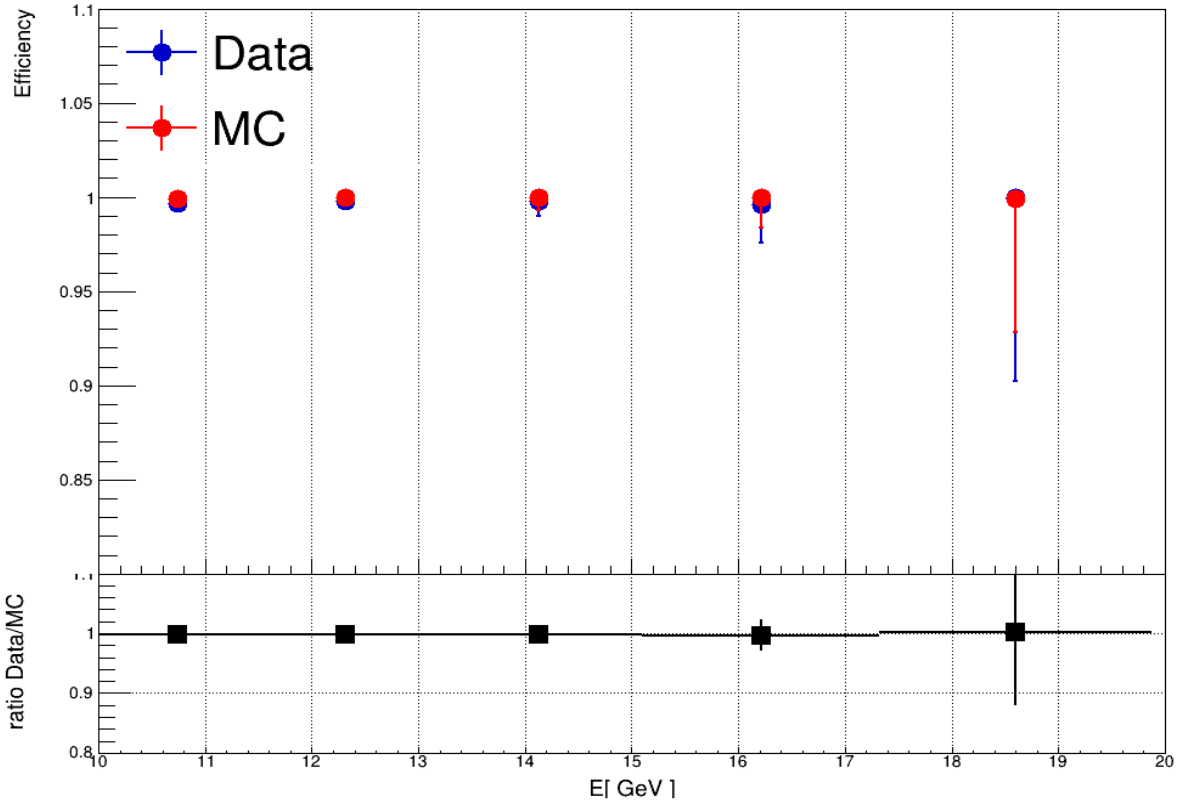


Systematic Uncertainty (4): $ln\ RMS_x < 3$

- Track : $TQ = \frac{1+E_r}{\ln D_{sum}} \times (1 + \frac{N_{tr}-3}{12})$
  a) BGO track

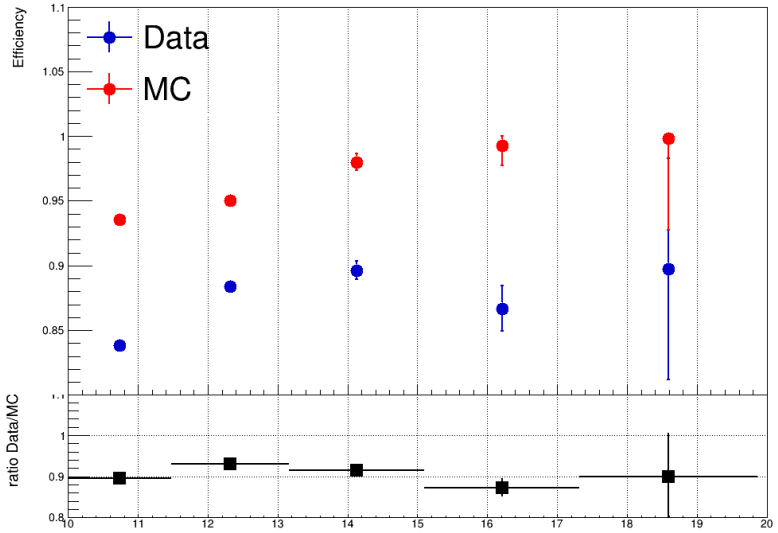
- Layer Fraction: < 0.01
- $\ln RMS_y < 4.5$



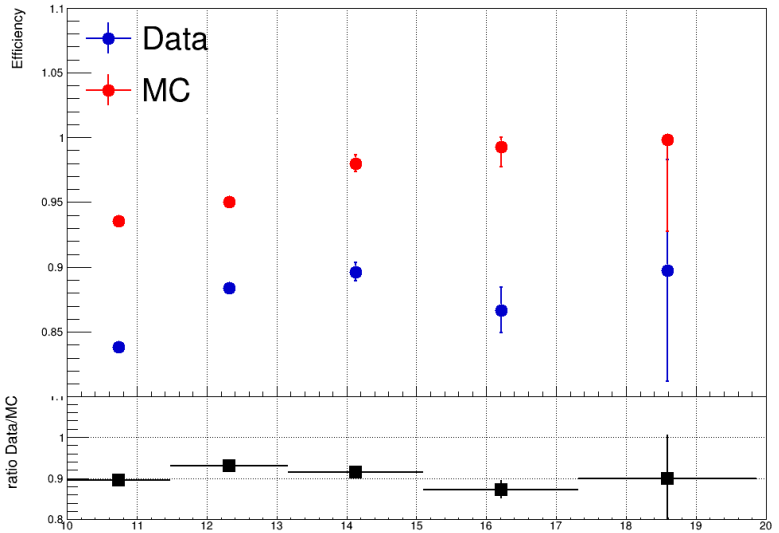


Systematic Uncertainty (5): $ln\ RMS_x < 3$

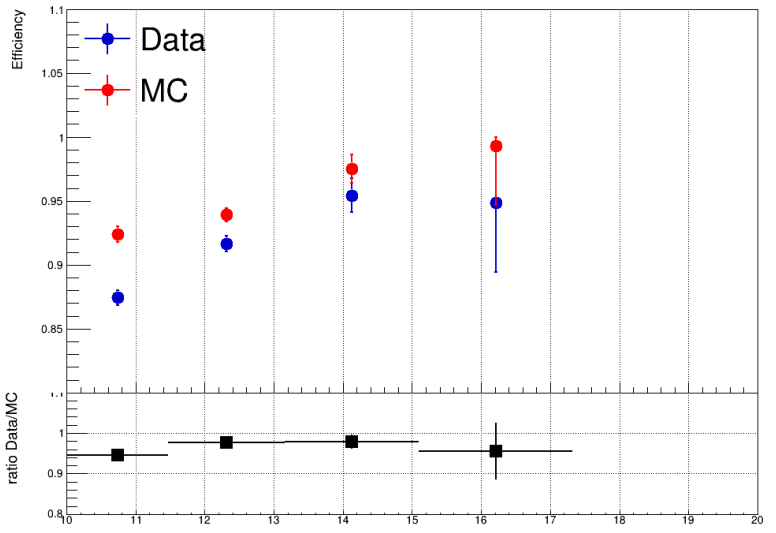
- HET: 4 layers



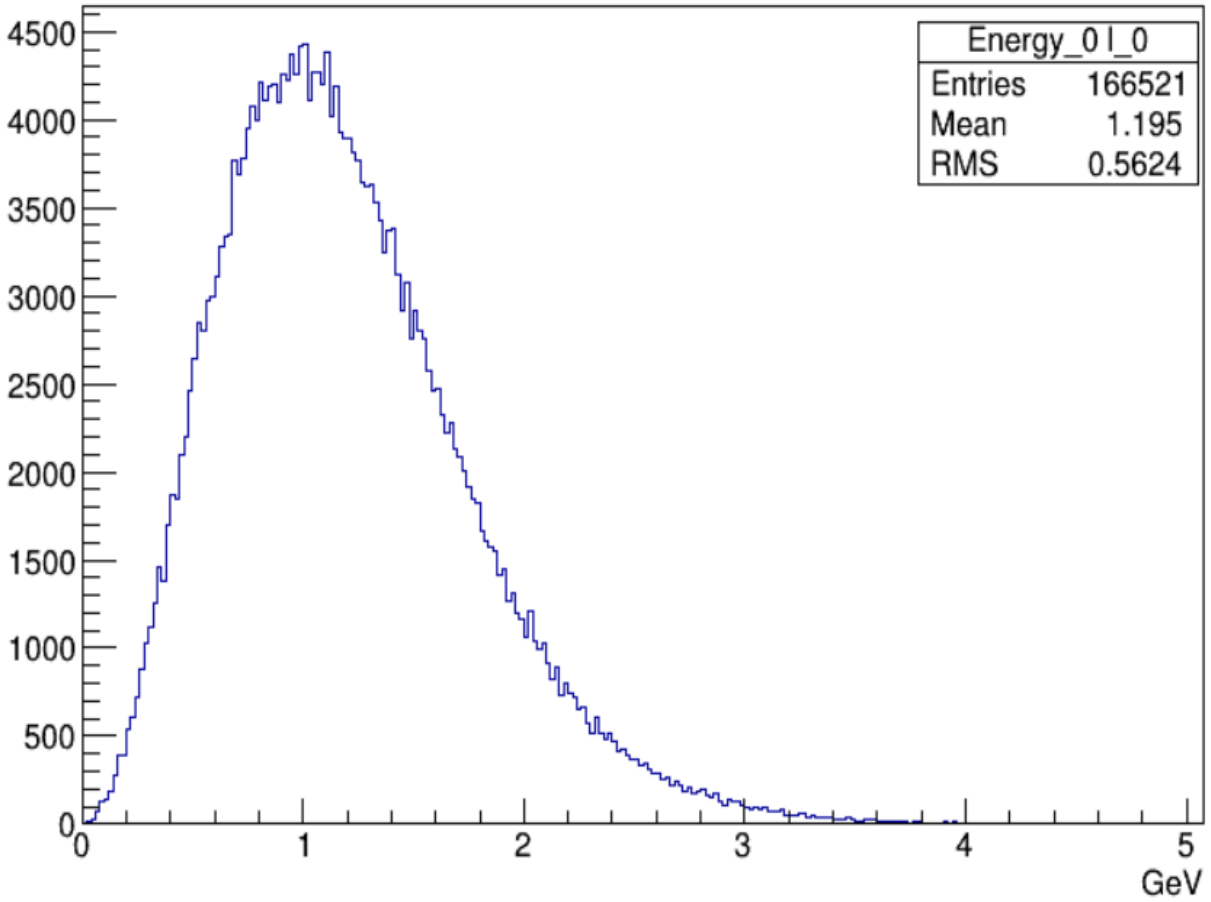
- HET: 4 layers – 26.5

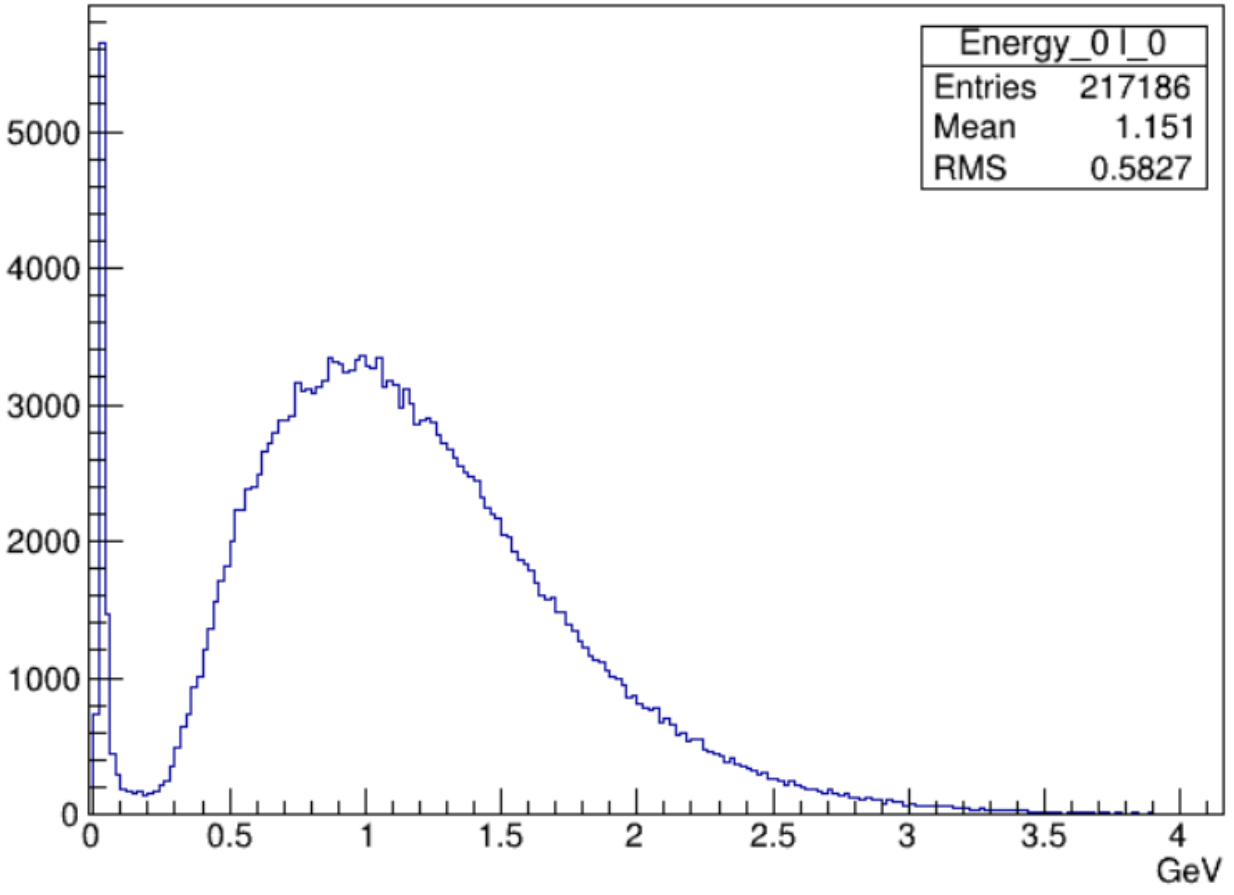


- HET: 14 layers



Systematic Uncertainty (5): $ln\ RMS_x < 3$





- HET Efficiency of proton : ~ 20%