Background Studies

based on Yan's simulations at TAU

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17 December 2020

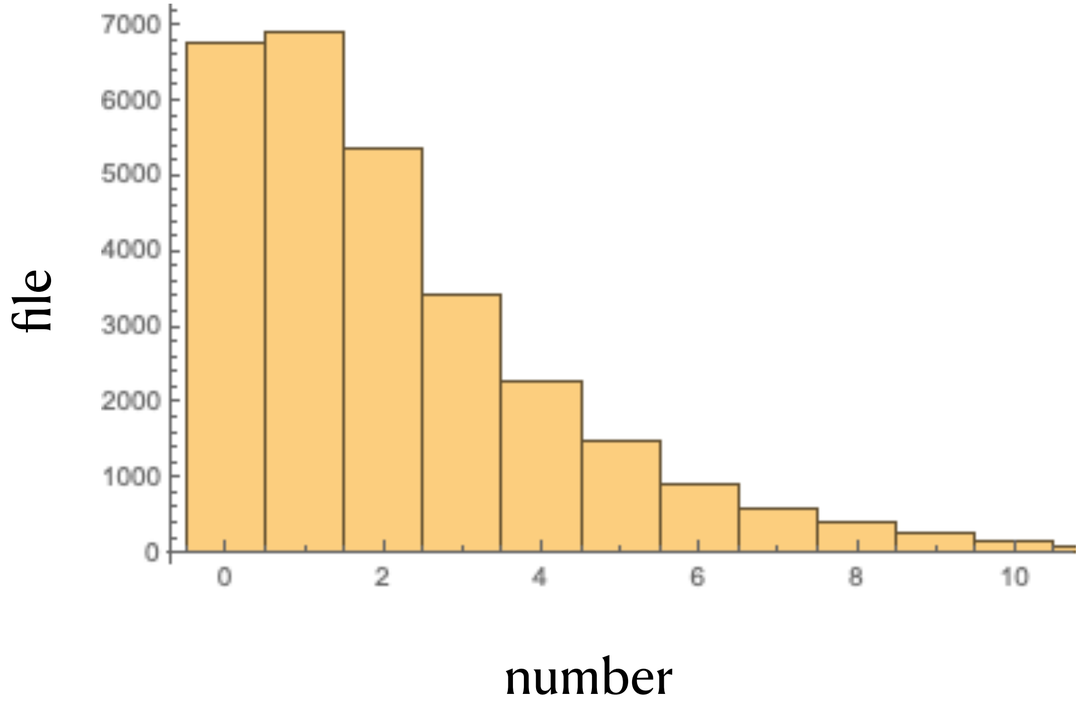
Yan's simulations
(03 Dec - 15 Dec)

- electron only background simulation
- 38 runs x 800 ".mac" per run
- 25k electron per ".mac"
- some failed runs (28725 sucesses)
- 28725 x 25k = **722M ~ 1/2 BX**
- *Summation over all...*

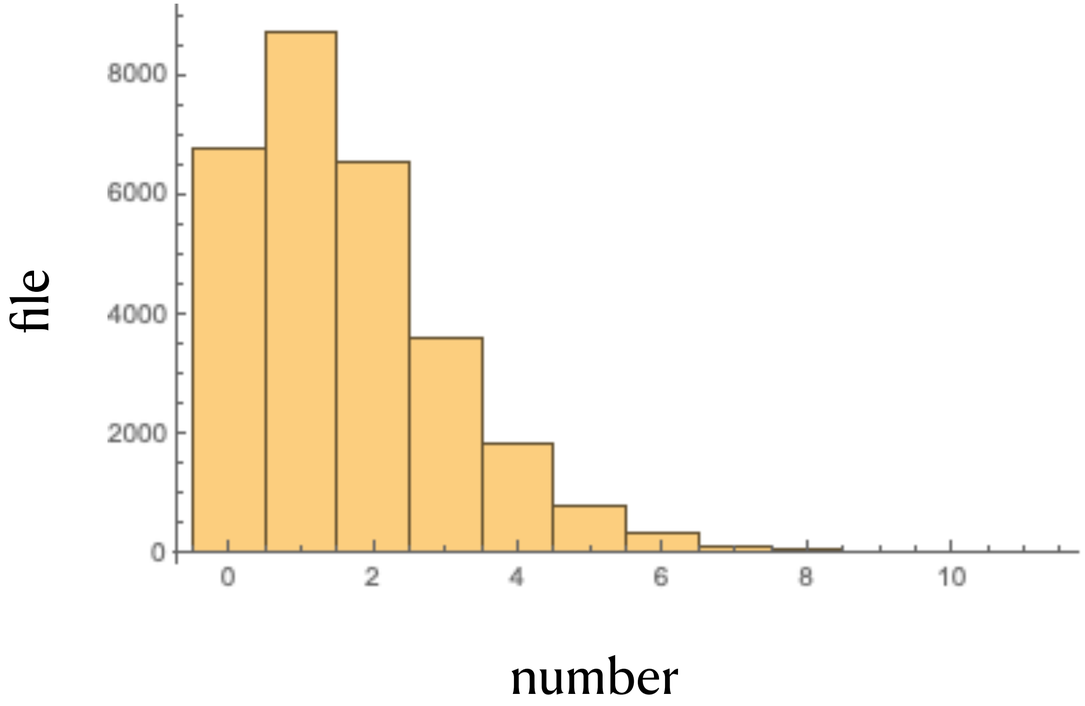
The key questions

- How many (backscattered) background particles entered ECAL and their energy deposit
- What's the background's distribution in ECAL
- What's the source's distribution?
- How does source to edeps be connected?

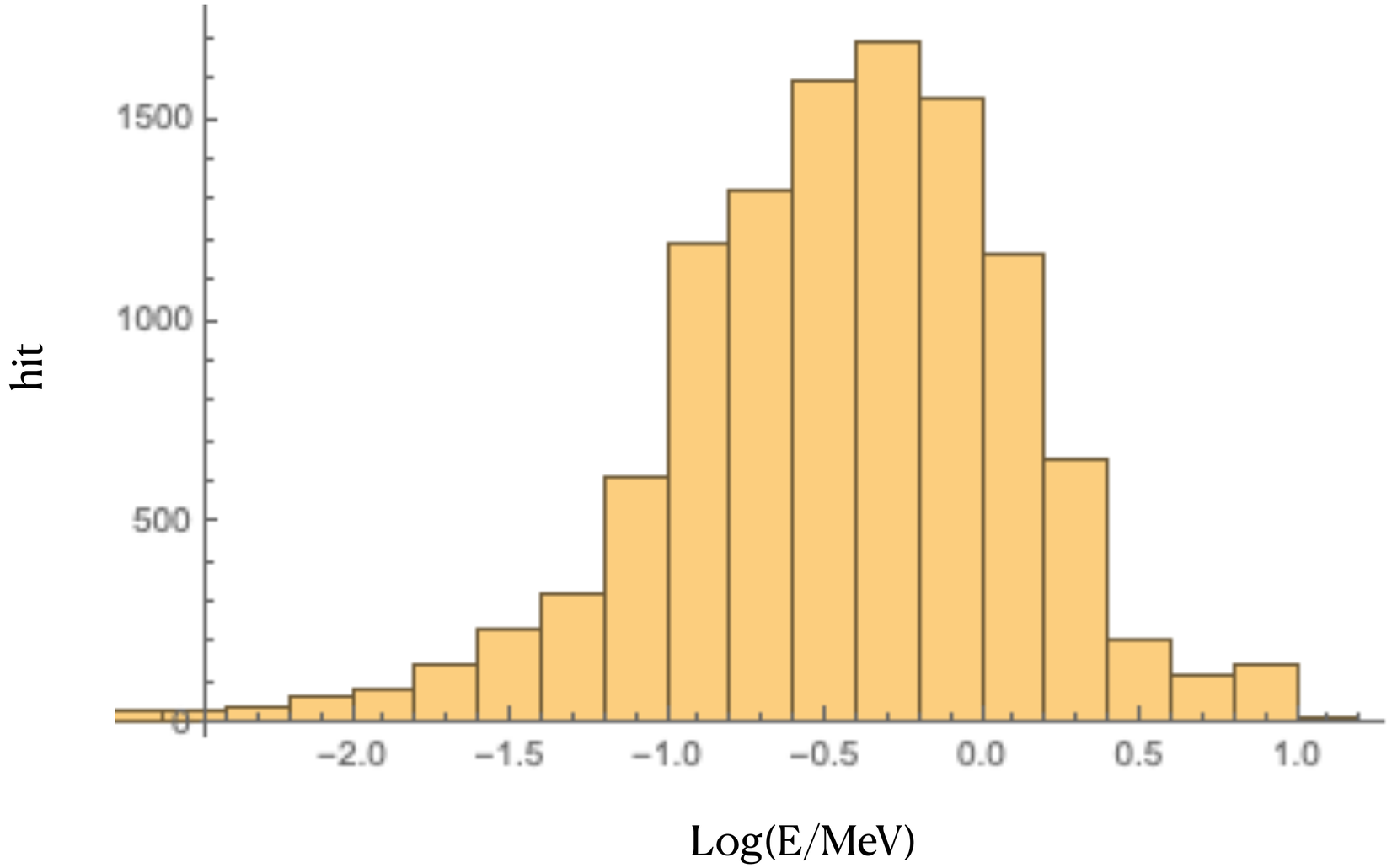
Tracks per file, 64k tracks totally

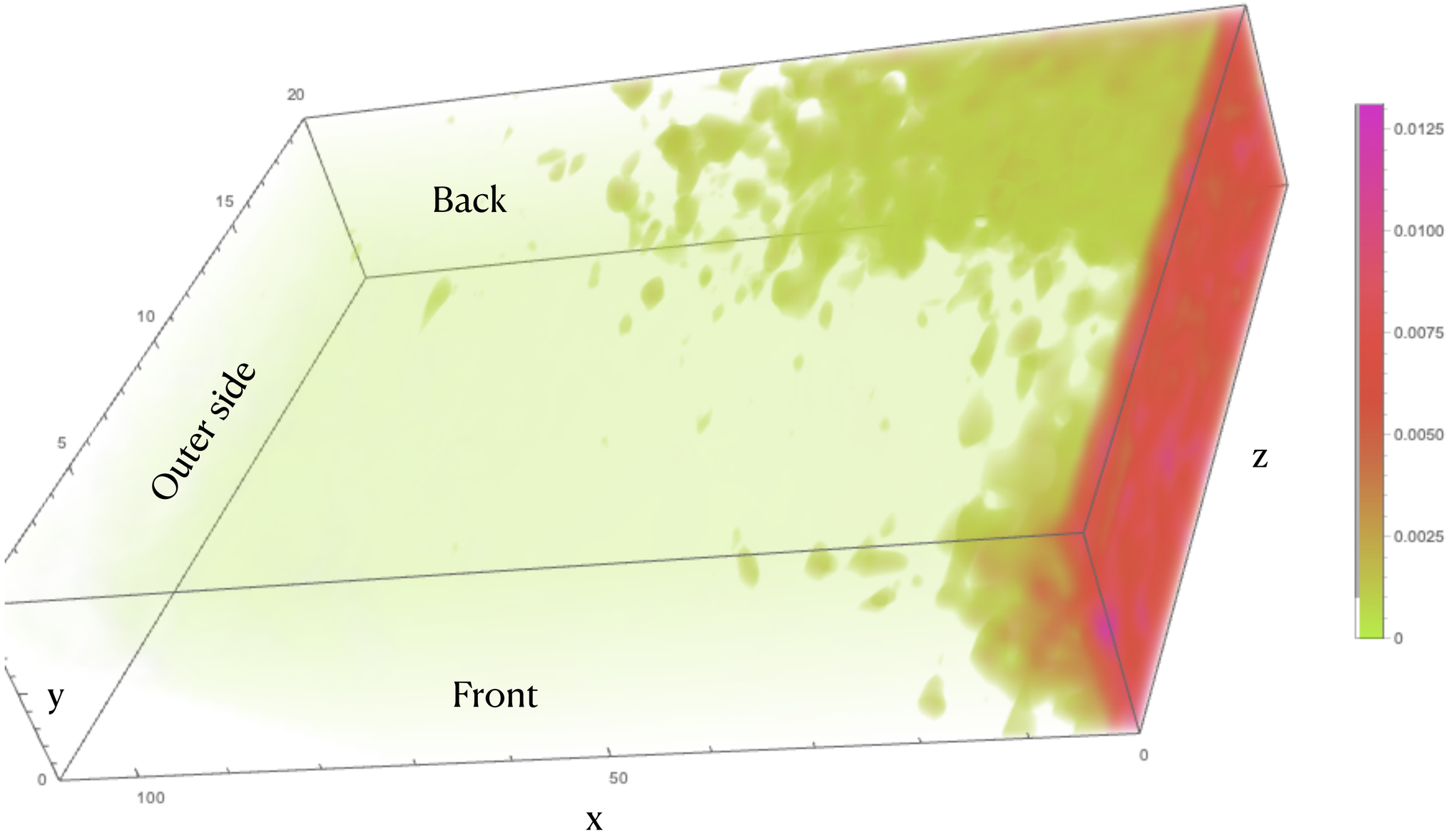


Hits per file, 47k hits totally

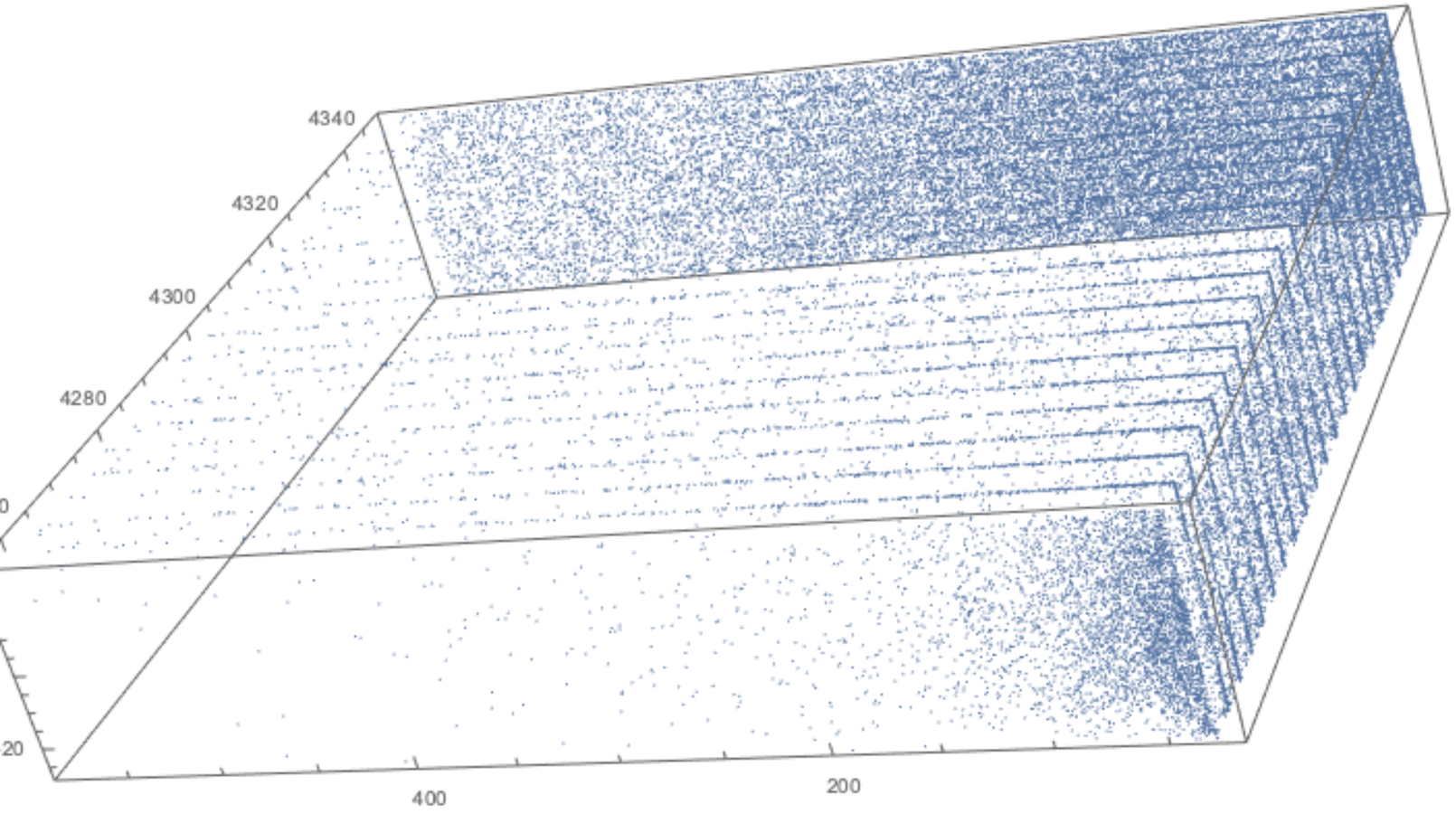


Deposit energy




Back
Outer side
Front
y
x
z
0
5
10
15
20
0
50
100
0
0.0025
0.0050
0.0075
0.0100
0.0125

Problem: Goes from Hits tree to Tracks tree...

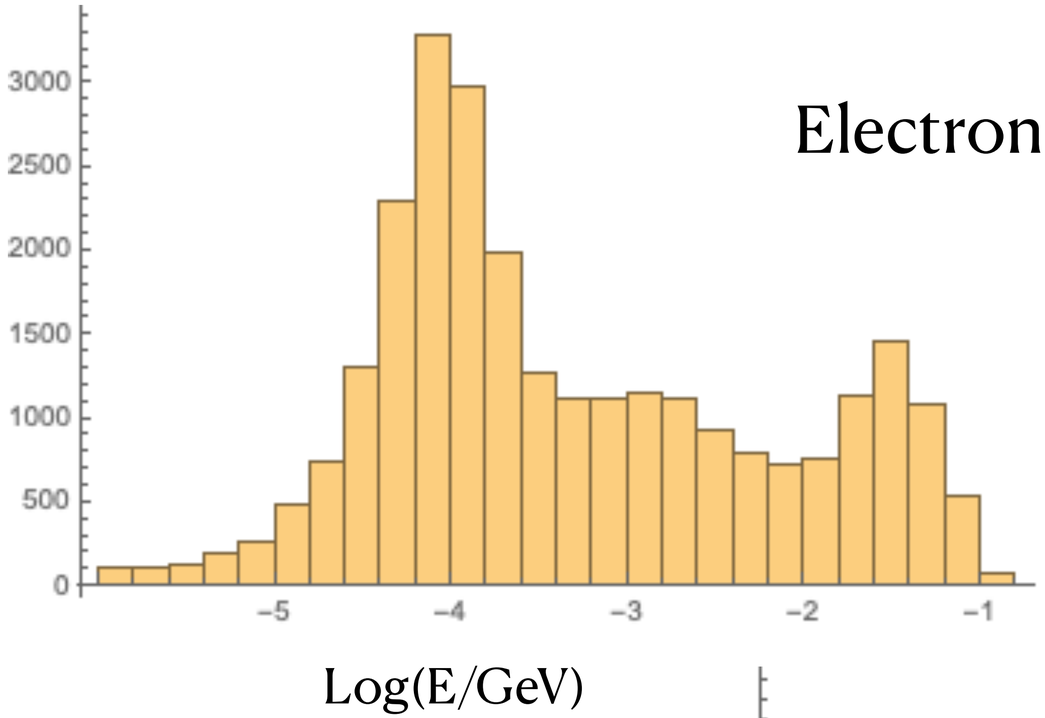


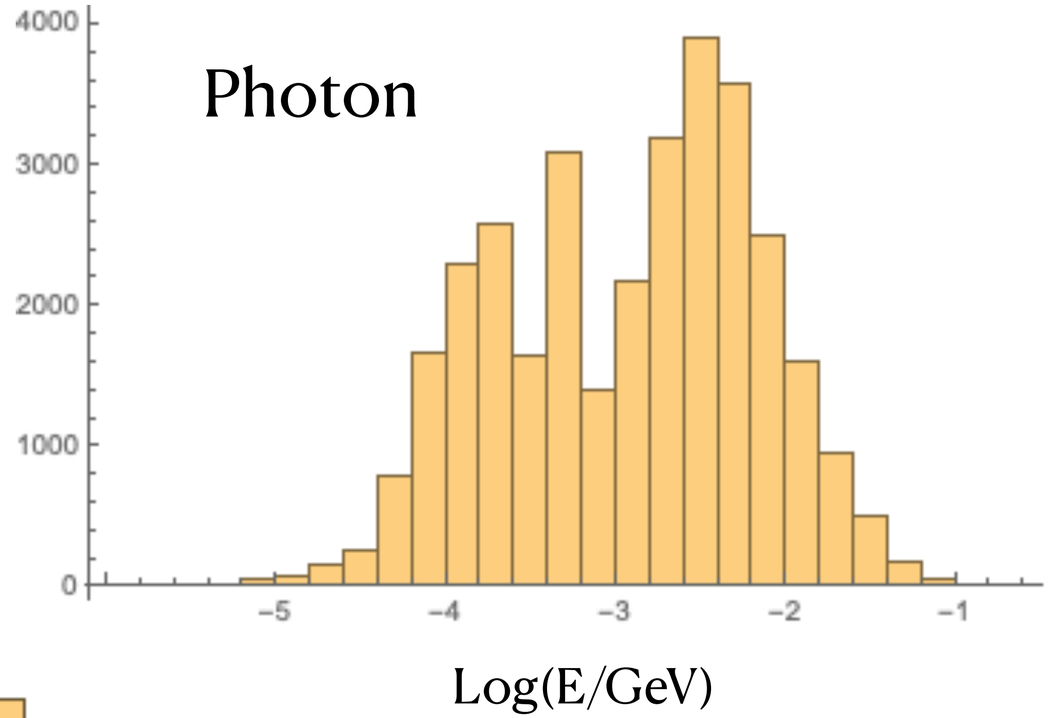
Hits total: 8.3 GeV

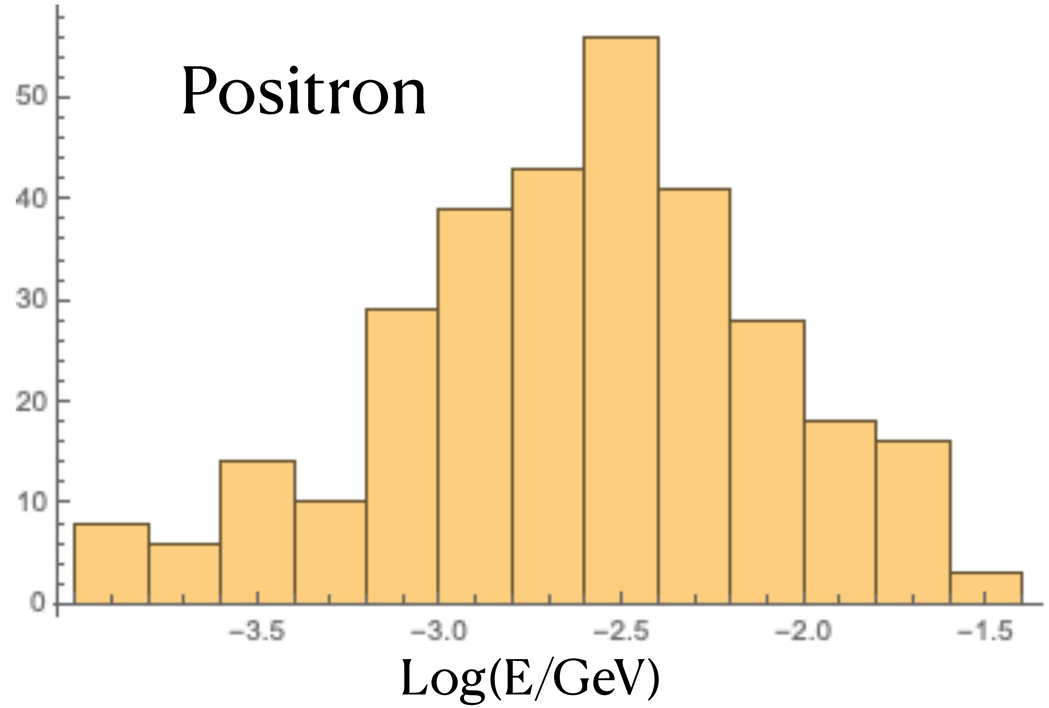
Goto Tracks tree with same eventid and trackid and detid
Obtained 60k tracks (< 64k)

However...
- BG Photons: 132 GeV
- BG Electrons: 201 GeV
- BG Positrons: 1.4 GeV

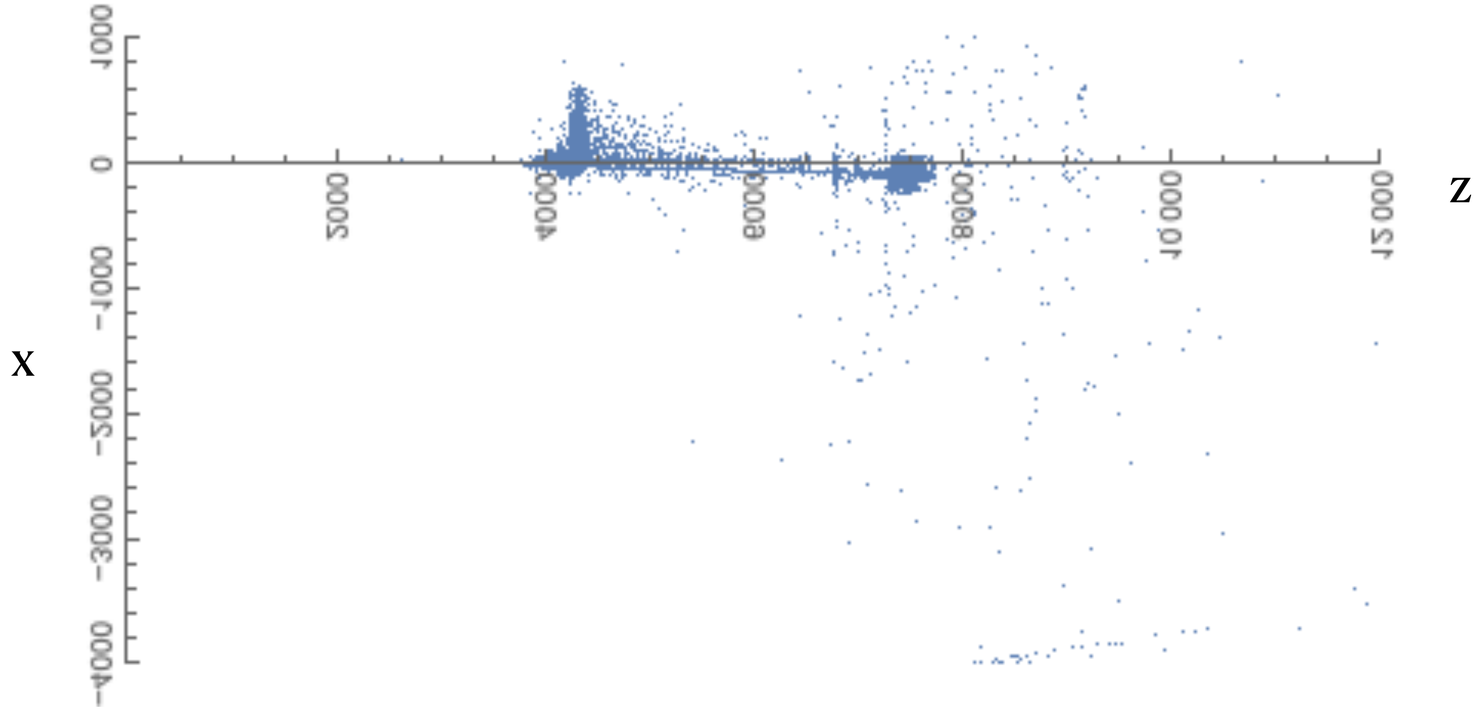
BG particles passing through?
Over-counting?

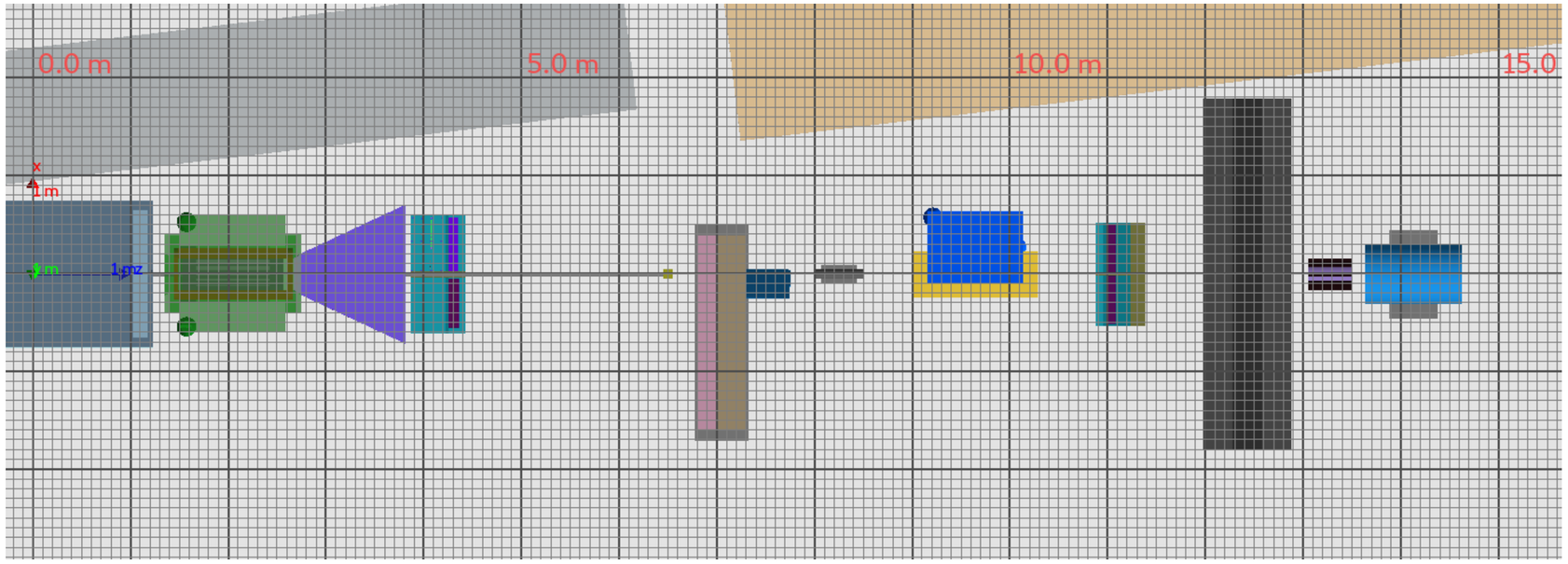

Electron
3000
2500
2000
1500
1000
500
0
−5
−4
−3
−2
−1
Log(E/GeV)


Photon
4000
3000
2000
1000
0
−5
−4
−3
−2
−1
Log(E/GeV)


Positron
50
40
30
20
10
0
−3.5
−3.0
−2.5
−2.0
−1.5
Log(E/GeV)

Vertex


x
z
1000
0
-1000
-2000
-3000
-4000
5000
10 000
15 000


0.0 m
5.0 m
10.0 m
15.0
1 m