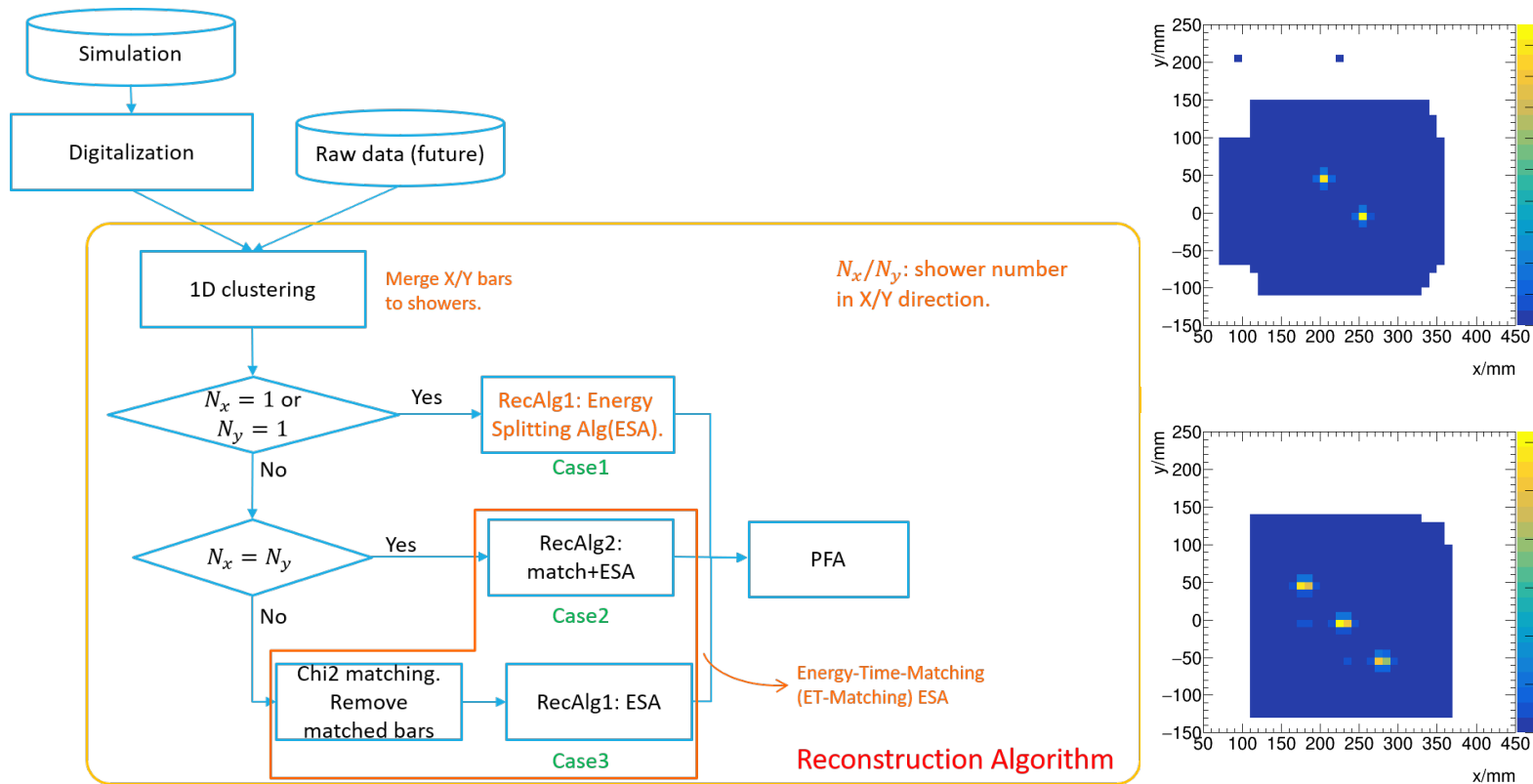


Pi⁺ reconstruction in ECal

FANGYI GUO

CEPC Ecal reconstruction

Previous: had an algorithm to solve the ghost hit problem for EM shower

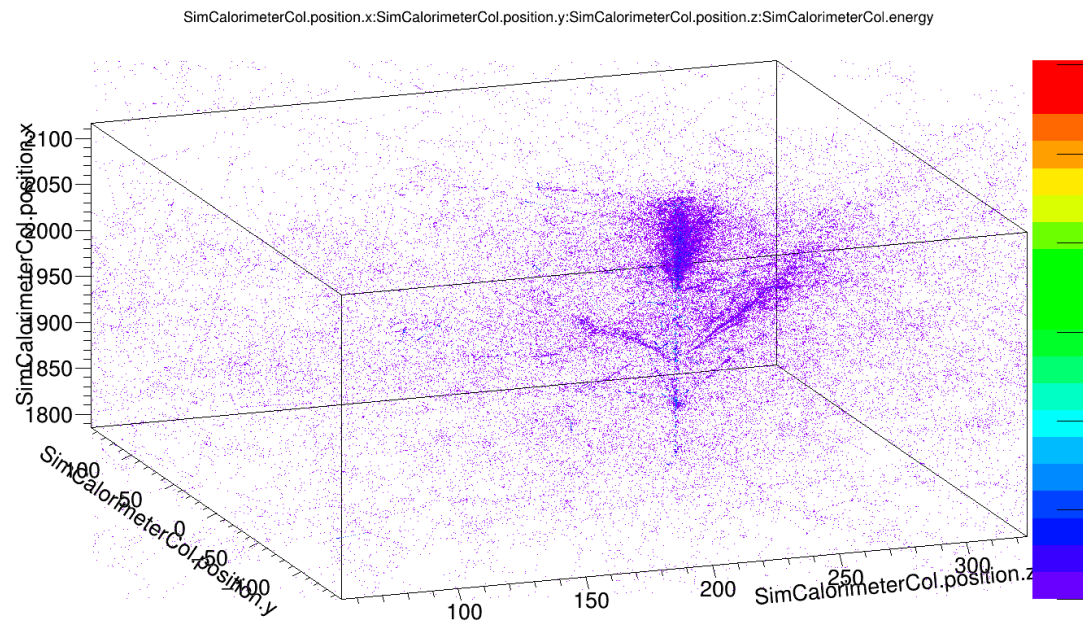


CEPC Ecal reconstruction

Consider jet: 10GeV π^+ in Ecal, 10 events.

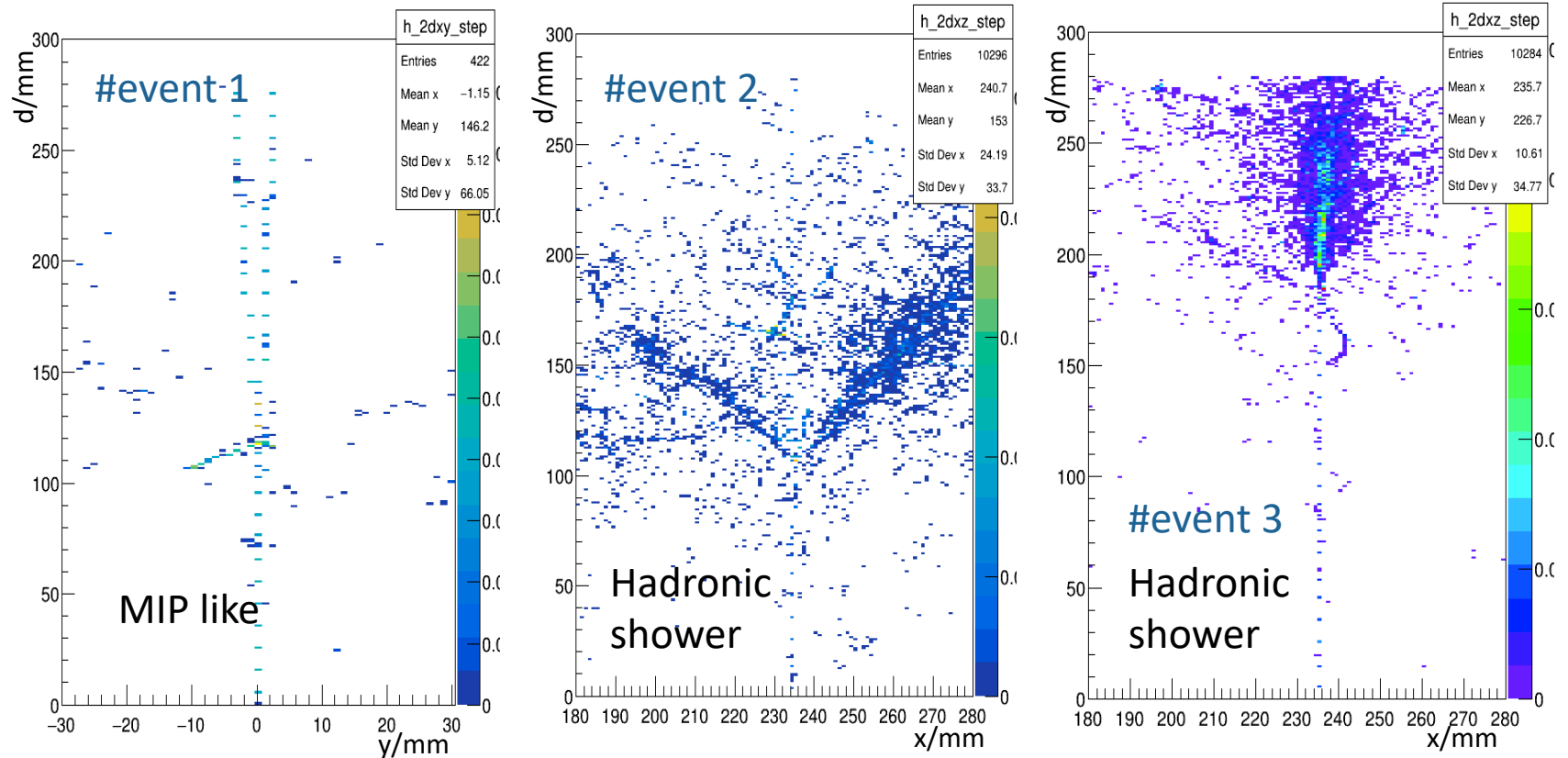
- MIP
- Hadronic shower(at the end of Ecal)
- Hadrons fly away.
- Missing energy(not visible)
- Energy leakage in Hcal.

Need some methods to deal with



CEPC Ecal reconstruction

Truth G4step hitmap



CEPC Ecal reconstruction

Reconstructed shower number in X/Y

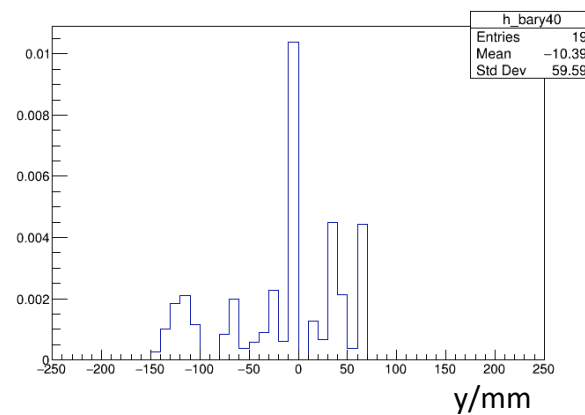
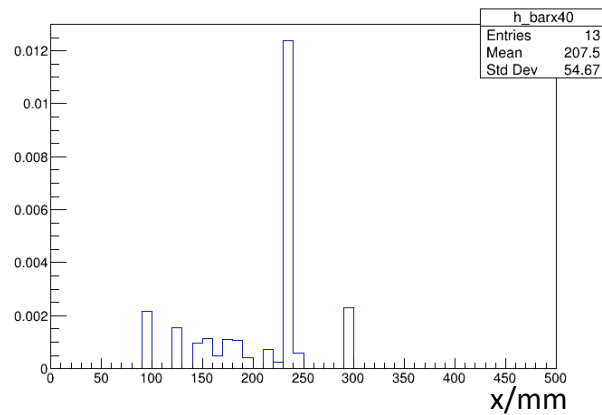
layer	#sh X	#sh Y
0	1	1
1	2	1
2	1	1
3	1	1
4	1	2
5	1	1
6	1	2
7	2	1
8	1	1
9	1	2
10	1	1
11	2	1
12	1	1
13	1	1

layer	#sh X	#sh Y
0	1	2
1	1	3
2	1	1
3	1	2
4	2	3
5	1	2
6	1	1
7	3	1
8	2	2
9	2	2
10	1	2
11	2	1
12	1	2
13	3	2

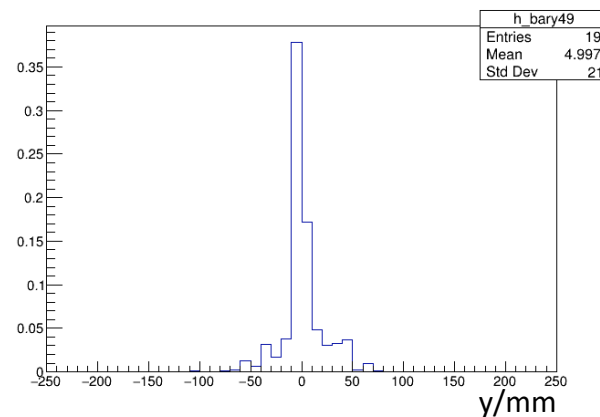
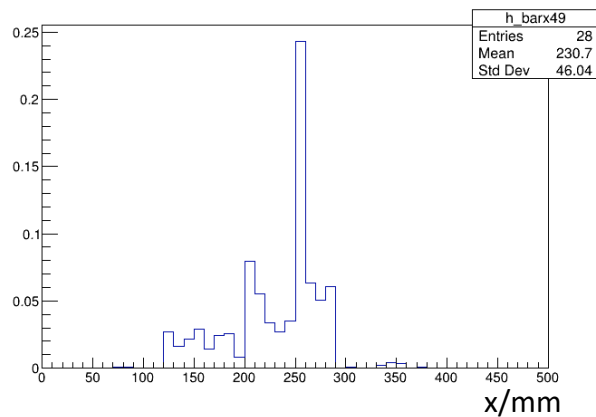
layer	#sh X	#sh Y
0	1	1
1	1	1
2	1	1
3	1	1
4	1	1
5	1	2
6	2	1
7	1	2
8	1	1
9	1	1
10	1	1
11	1	1
12	1	1
13	1	2

CEPC Ecal reconstruction

Deposited energy in bars for #event2:



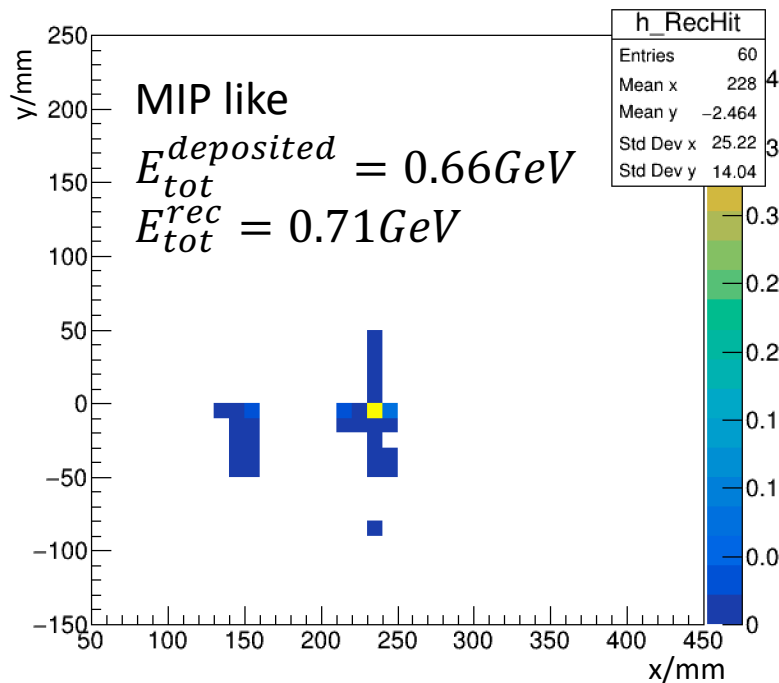
Layer #4



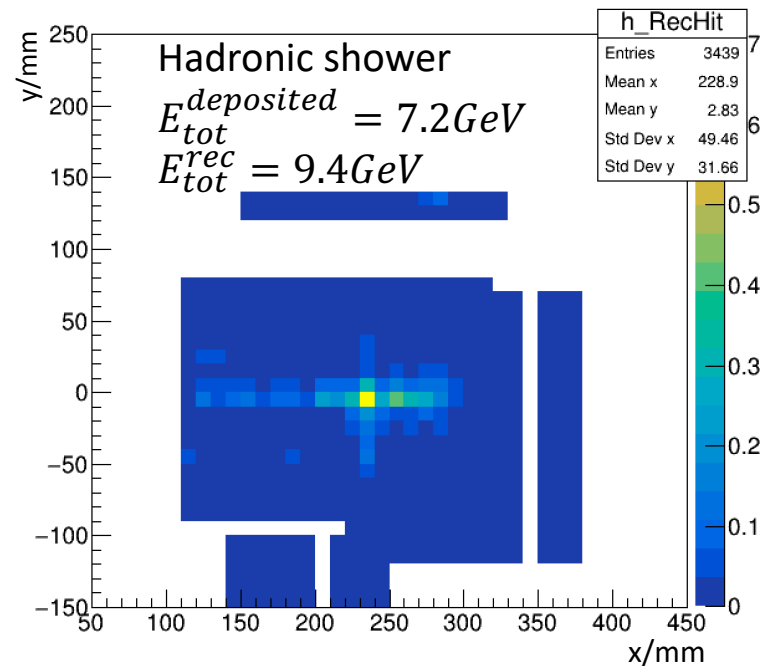
Layer #7

CEPC Ecal reconstruction

Reconstructed hit map



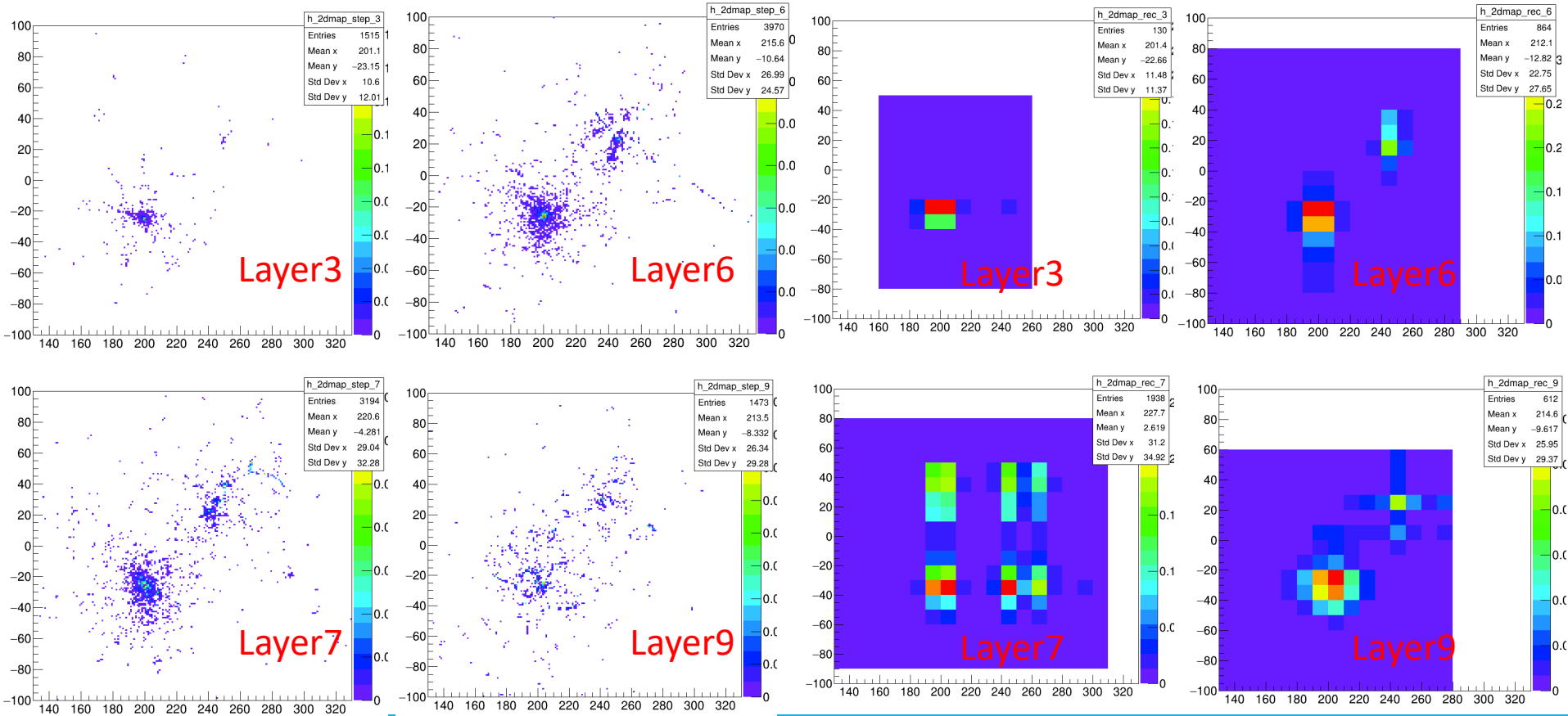
#event 1



#event 2

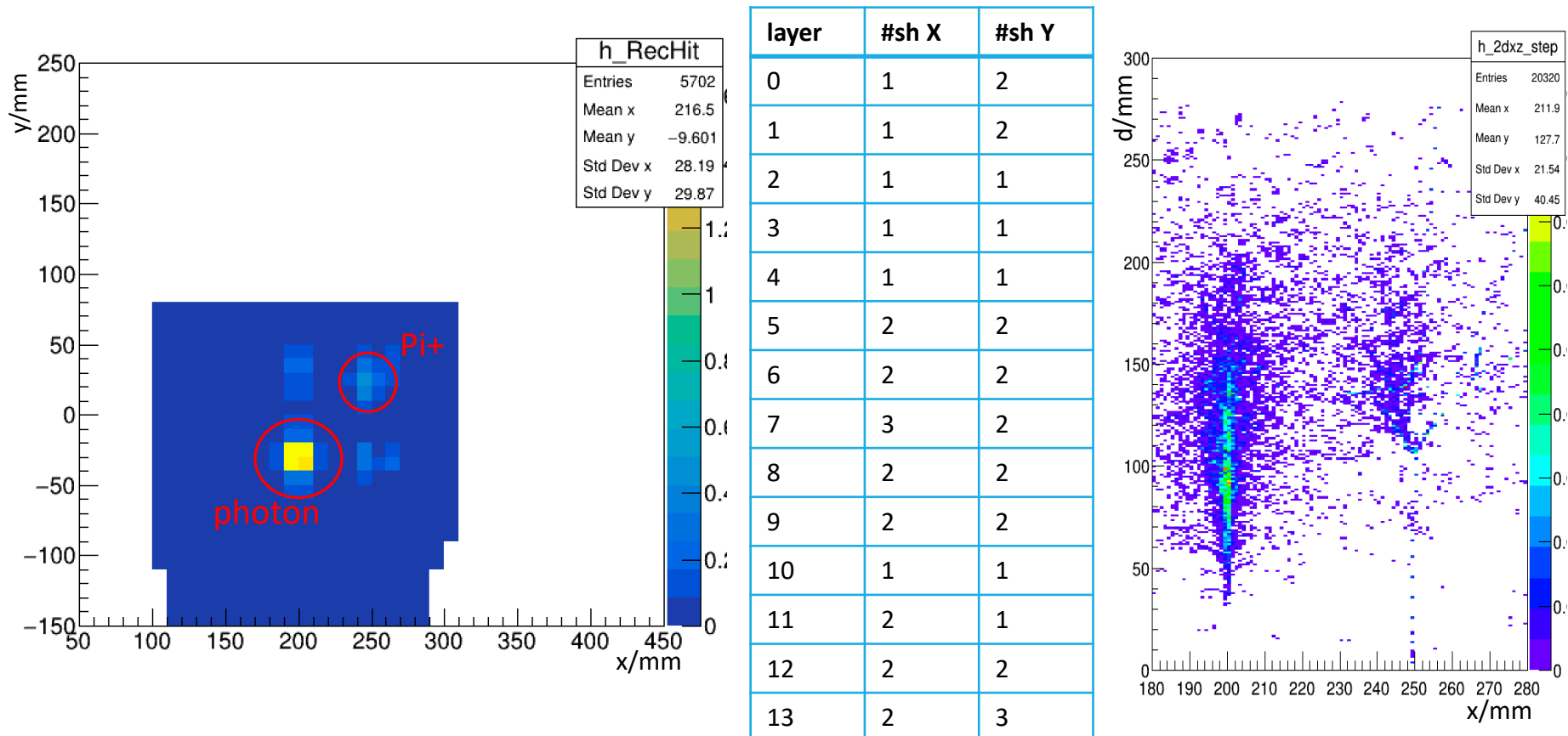
CEPC Ecal reconstruction

10GeV pi+ & 10GeV gamma: G4step truth map



CEPC Ecal reconstruction

Ghost hit problem: 10GeV pi + 10GeV gamma



Summary

Checked the π^+ performance from truth information and reconstruction:

- Hadronic shower is much more complex than EM shower.
- Some reconstruction problem arise from 1D shower recognition and reconstructed energy.

Next:

- Check physical process in hadronic shower
- Consider a 3D shower building.