Previous Issues

1. For the 100 MeV/c π+ beam, the pre-shower deposit E distribution need to be checked.

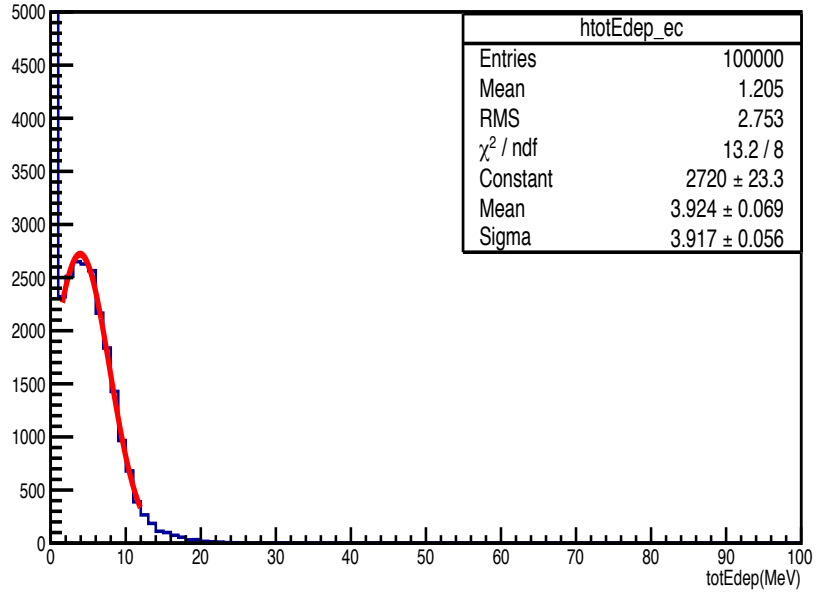
2. Which configuration do we need to do the beam test at Beijing IHEP (full ECAL or no pre-shower).

3. The 3cm-radius beam size has been applied in the simulation process

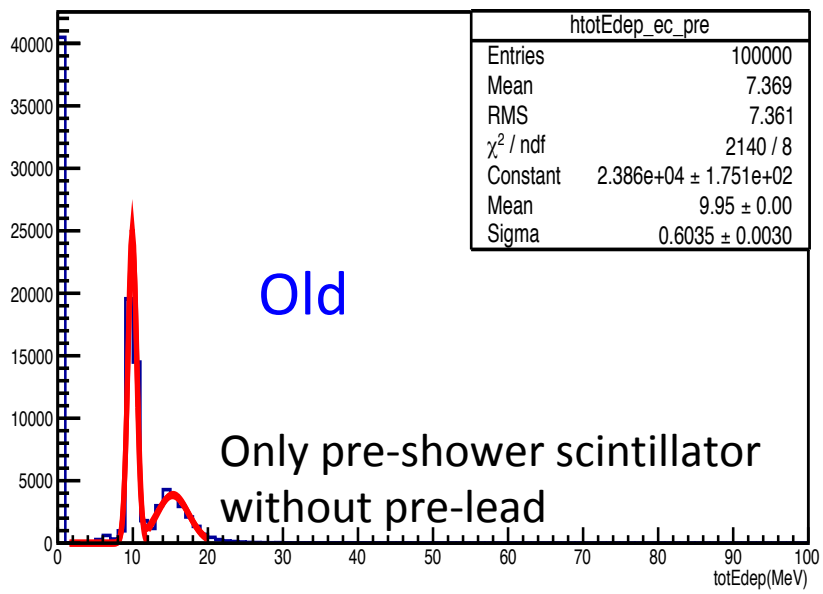
4 In order to check if a very good Cherenkov detector is needed to separate e and π, the preshower vs shower plots are shown for the 100 MeV/c and 200MeV/c cases, respectively.

100 MeV/c, π+

EC shower



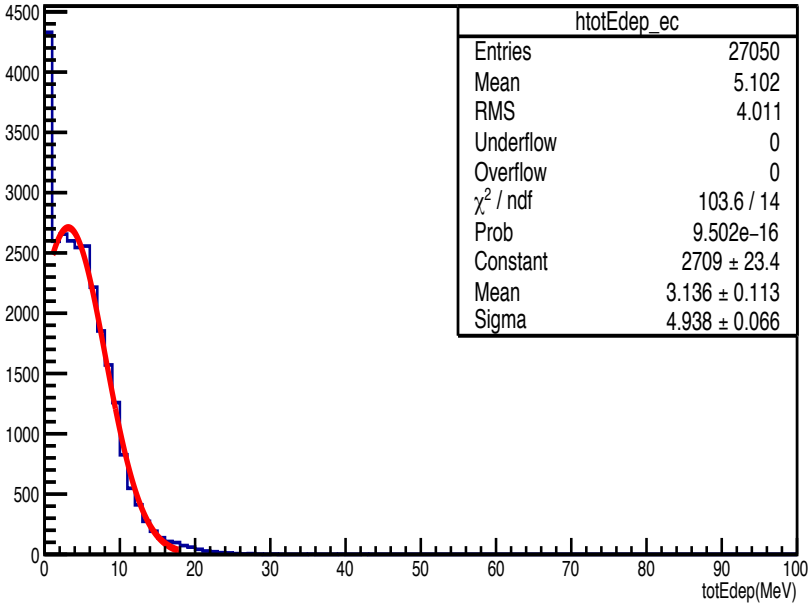
EC preshower



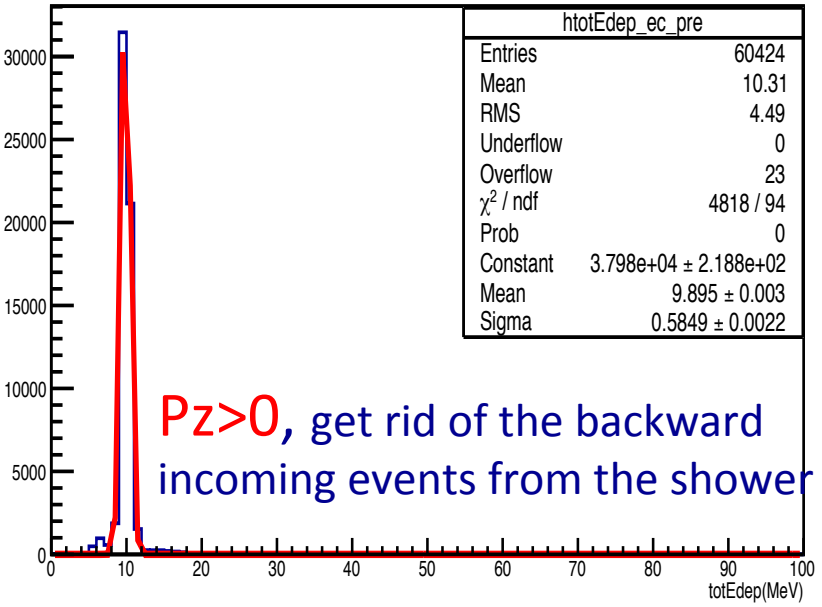
Old

Only pre-shower scintillator without pre-lead

EC shower



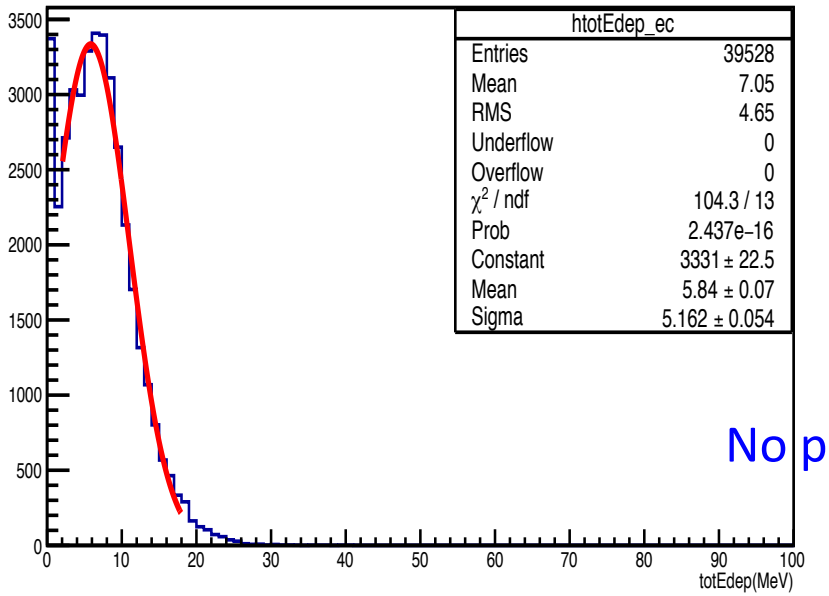
EC preshower



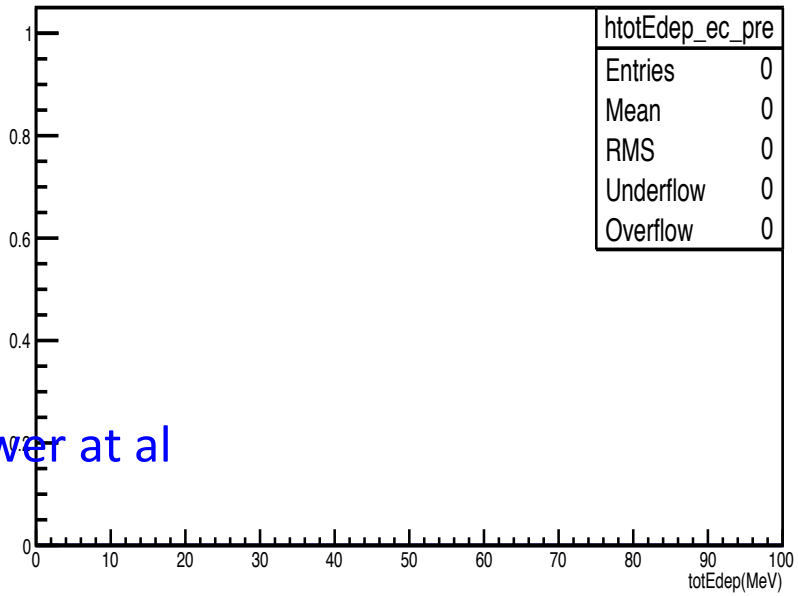
Pz>0, get rid of the backward incoming events from the shower

100 MeV/c, π+

EC shower

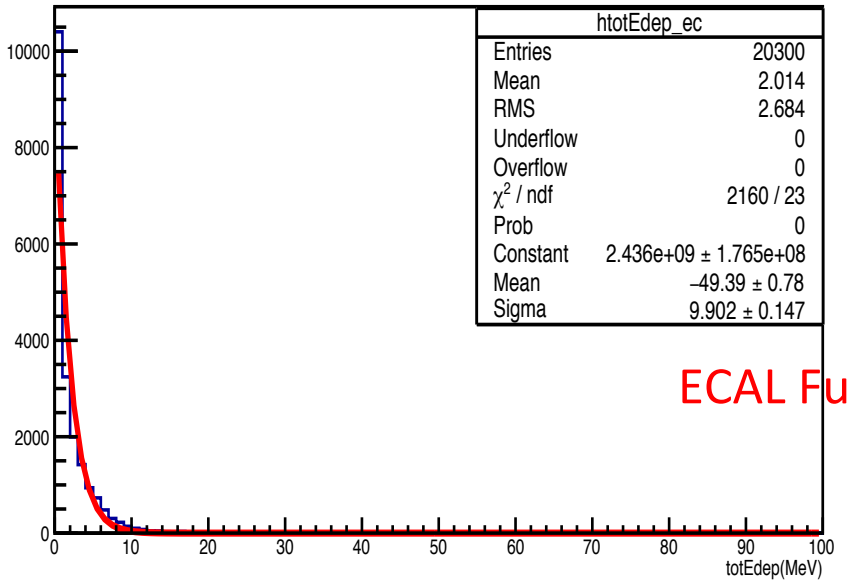


EC preshower

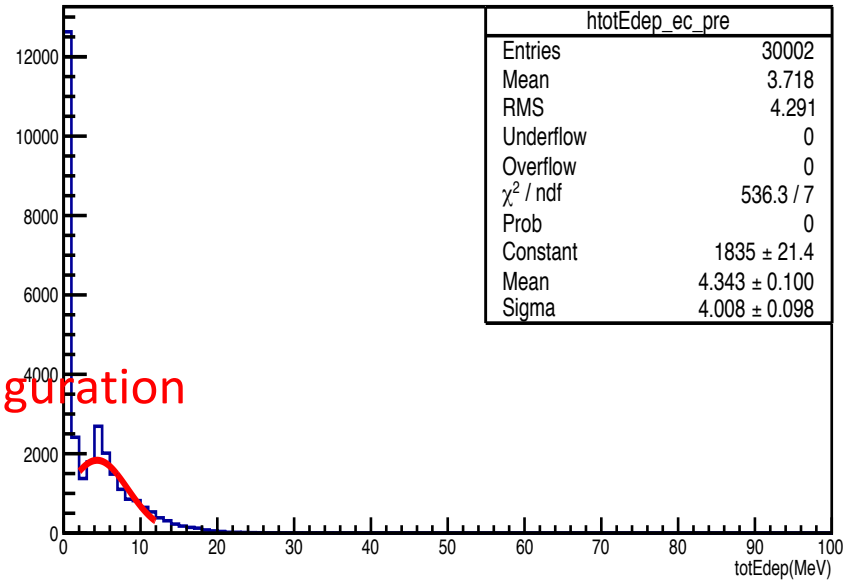


No pre-shower at al

EC shower



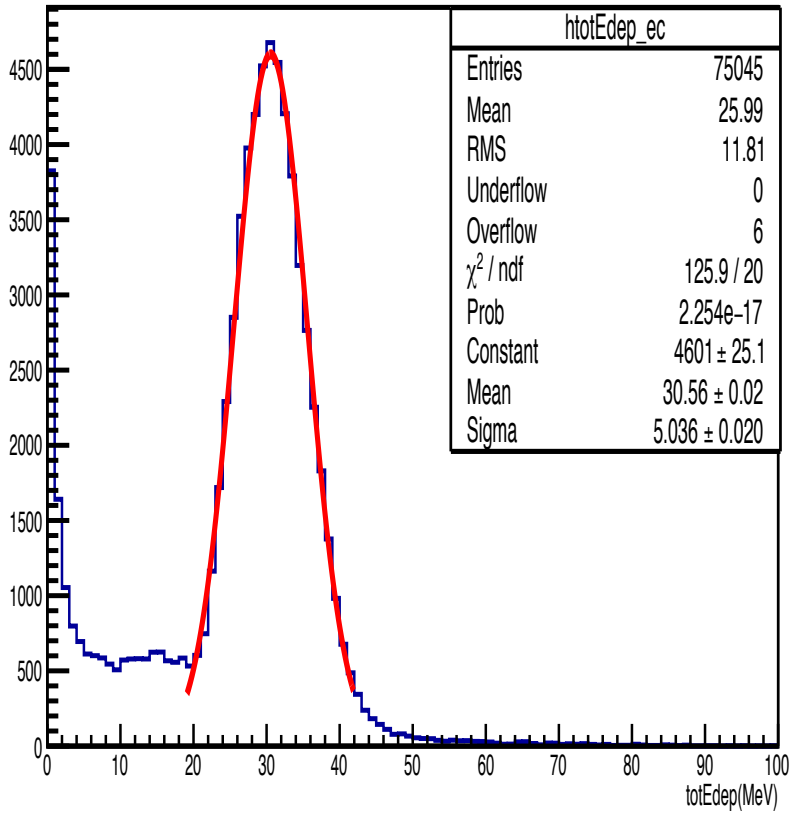
EC preshower



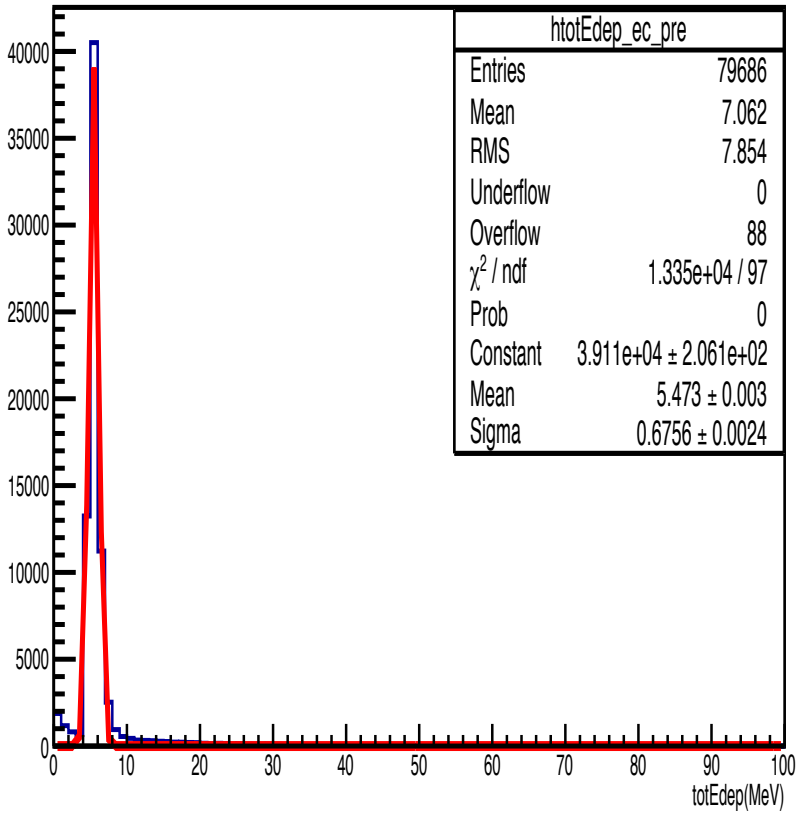
ECAL Full configuration

200 MeV/c, π+ With ECAL Full Configuration

EC shower

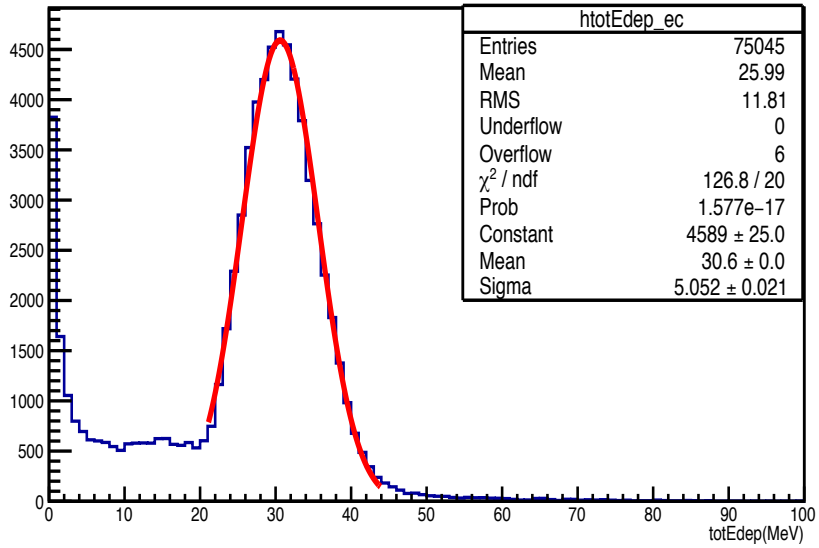


EC preshower

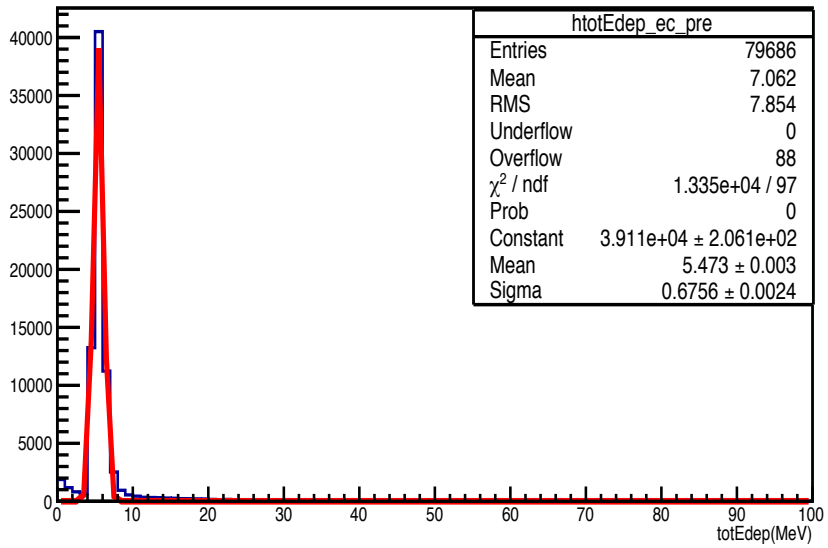


100 MeV/c, e+

EC shower

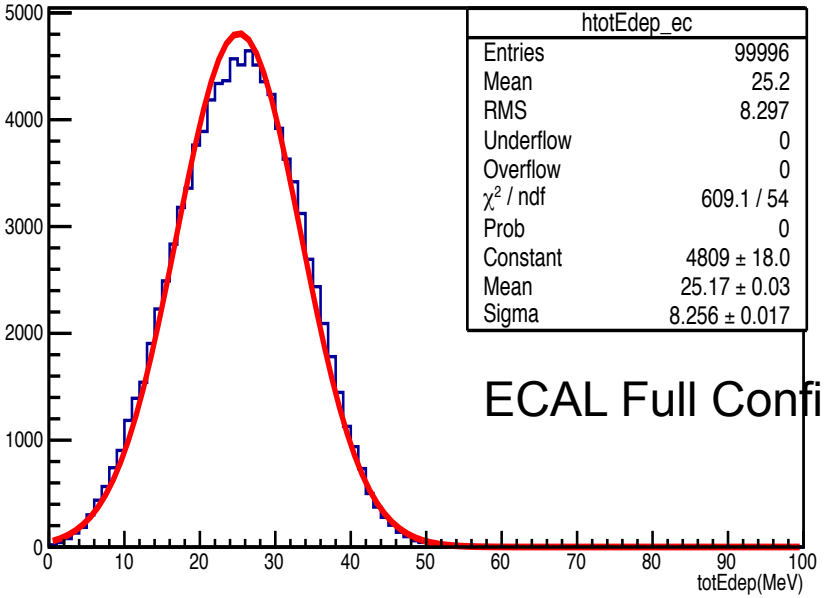


EC preshower

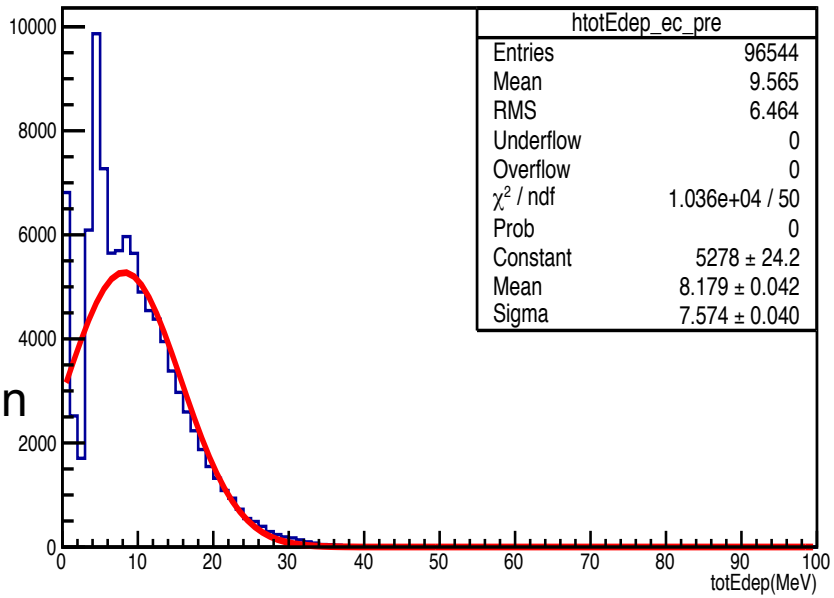


200 MeV/c, e+

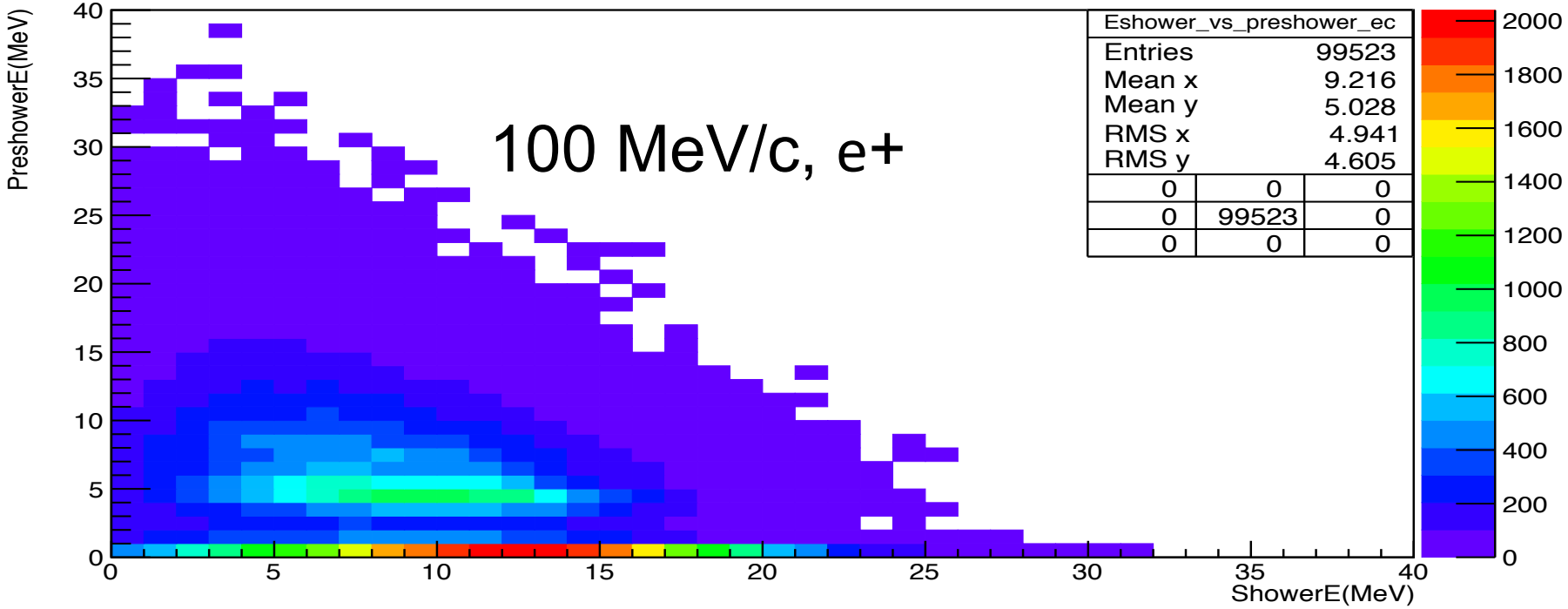
EC shower

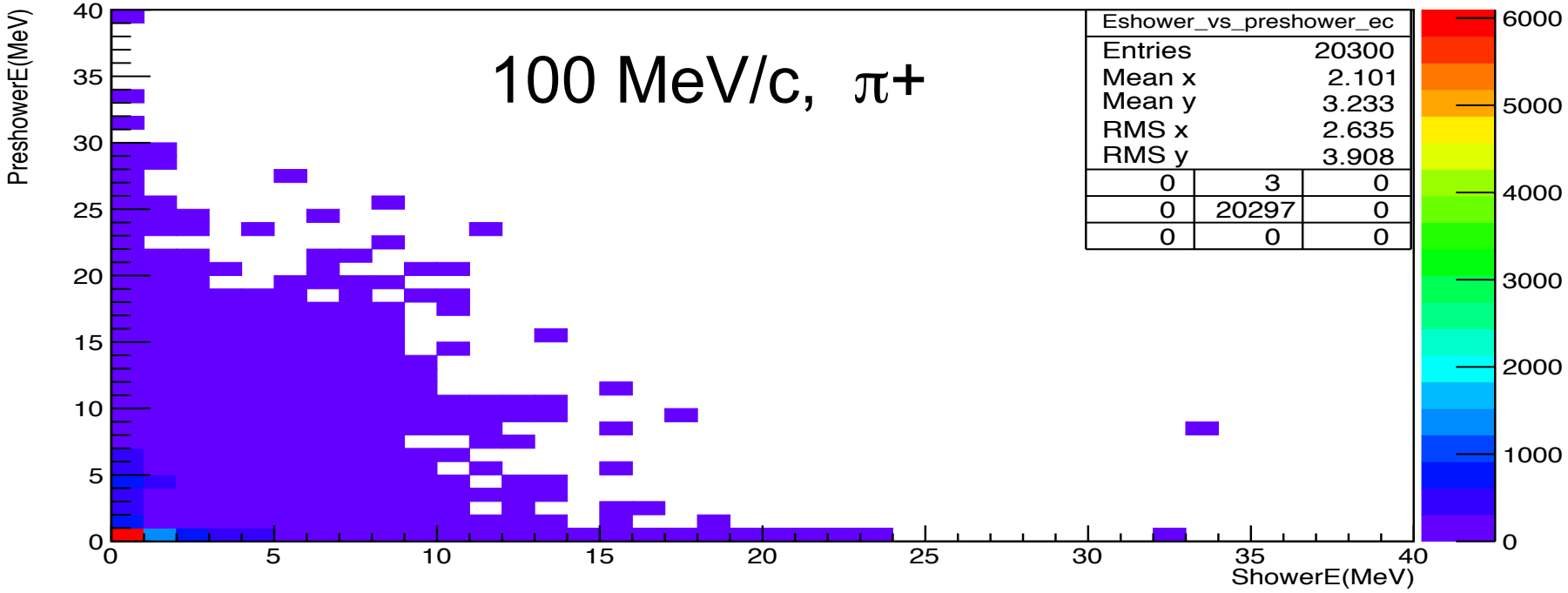


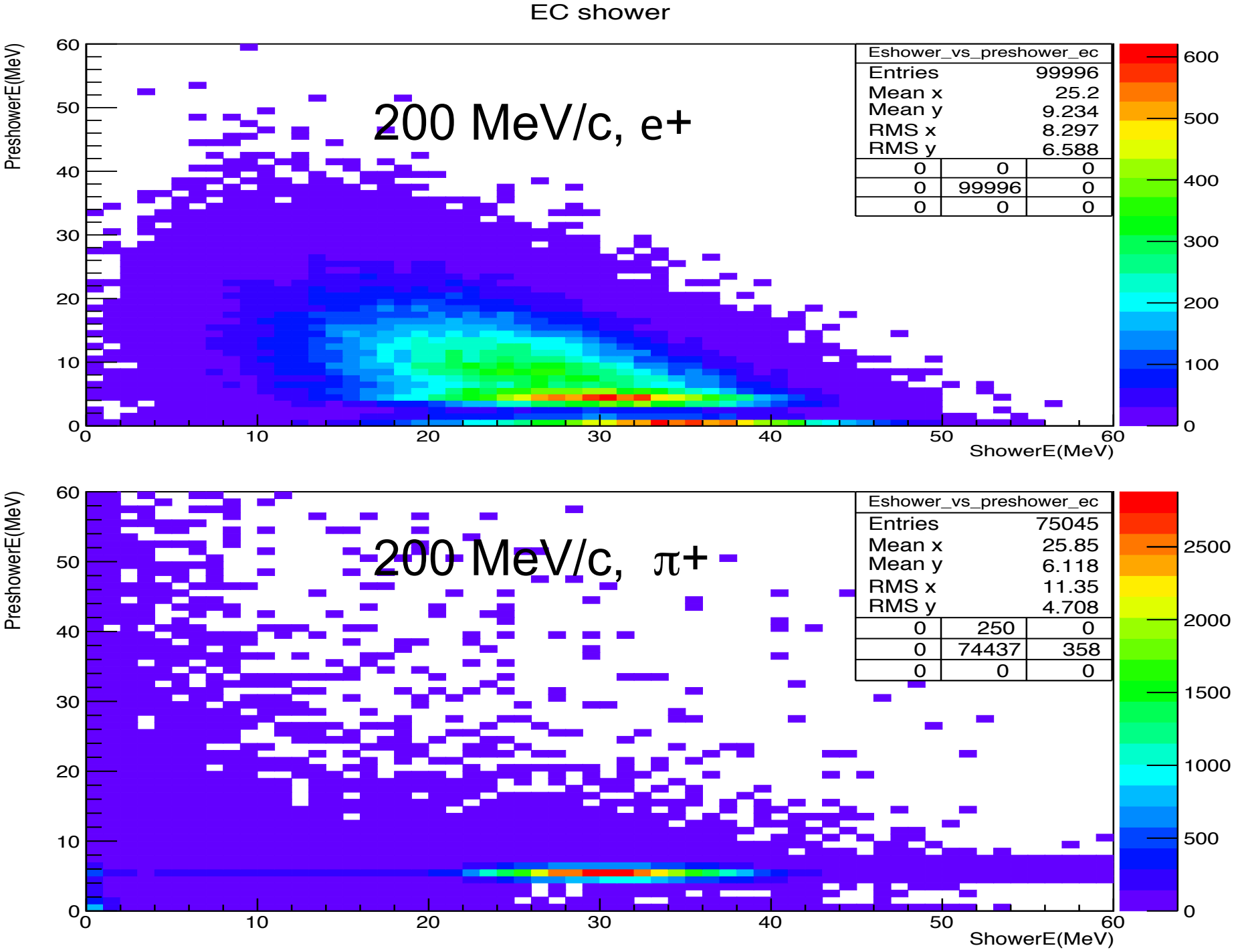
EC preshower



ECAL Full Configuration


100 MeV/c, e+
Eshower_vs_preshower_ec
Entries 99523
Mean x 9.216
Mean y 5.028
RMS x 4.941
RMS y 4.605
PreshowerE(MeV)
ShowerE(MeV)


100 MeV/c, π+
Eshower_vs_preshower_ec
Entries 20300
Mean x 2.101
Mean y 3.233
RMS x 2.635
RMS y 3.908
PreshowerE(MeV)
ShowerE(MeV)


EC shower
200 MeV/c, e+
Eshower_vs_preshower_ec
Entries 99996
Mean x 25.2
Mean y 9.234
RMS x 8.297
RMS y 6.588
0 0 0
0 99996 0
0 0 0
PreshowerE(MeV)
ShowerE(MeV)
200 MeV/c, π+
Eshower_vs_preshower_ec
Entries 75045
Mean x 25.85
Mean y 6.118
RMS x 11.35
RMS y 4.708
0 250 0
0 74437 358
0 0 0
PreshowerE(MeV)
ShowerE(MeV)

Summary and Next steps

- The second peak of the pre-shower energy distribution of 100MeV/c π+ beam with the pre-scintillator only configuration is due to the backward coming events from the shower.

- Based on above simulated energy distributions, it shows that the 200 MeV/c e^+/π^+ beam with ECAL full configuration could be a better choice for the beam test by comparing with 100MeV/c beam.

1. Compare the energy distribution from 1,3, and 7 modules with ECAL full configuration for 200 MeV/c e+ and π+ beam (Do we still need 100 MeV/c case?).
2. Provide the proper energy calibration parameters for this low momentum case.

Any comments and suggestions ?

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