Update on Lepton ID

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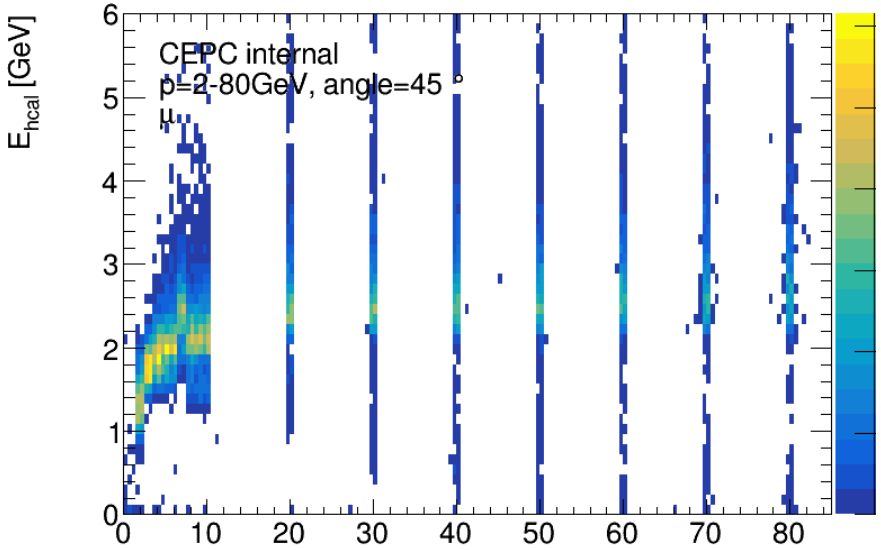
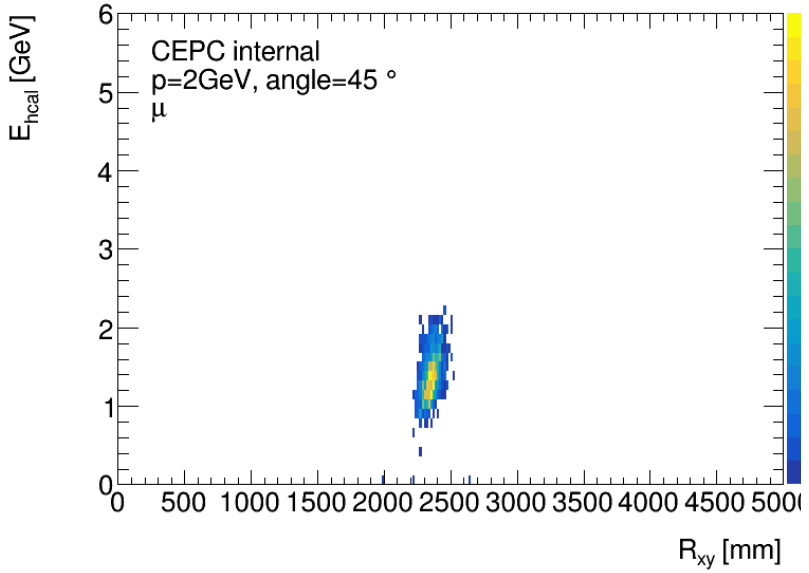
Updates

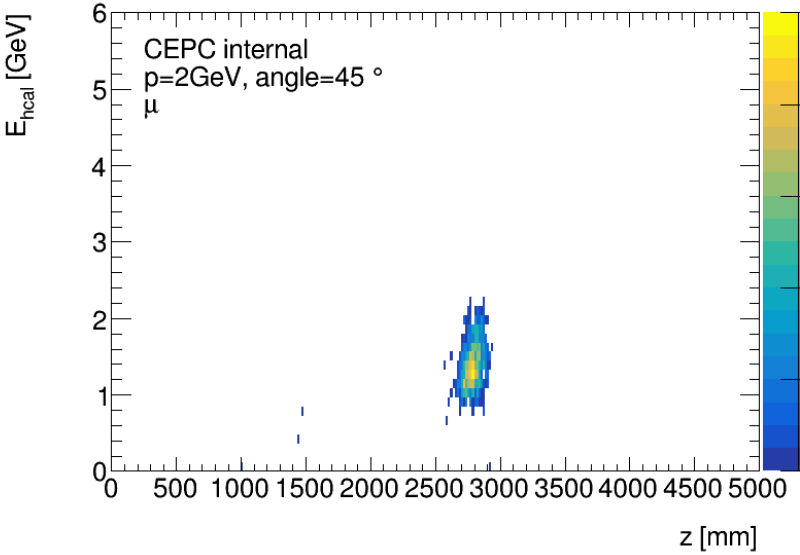
- 1) Hcal energy scale: X4
- 2) More angles: 45, 10 and 90 degrees

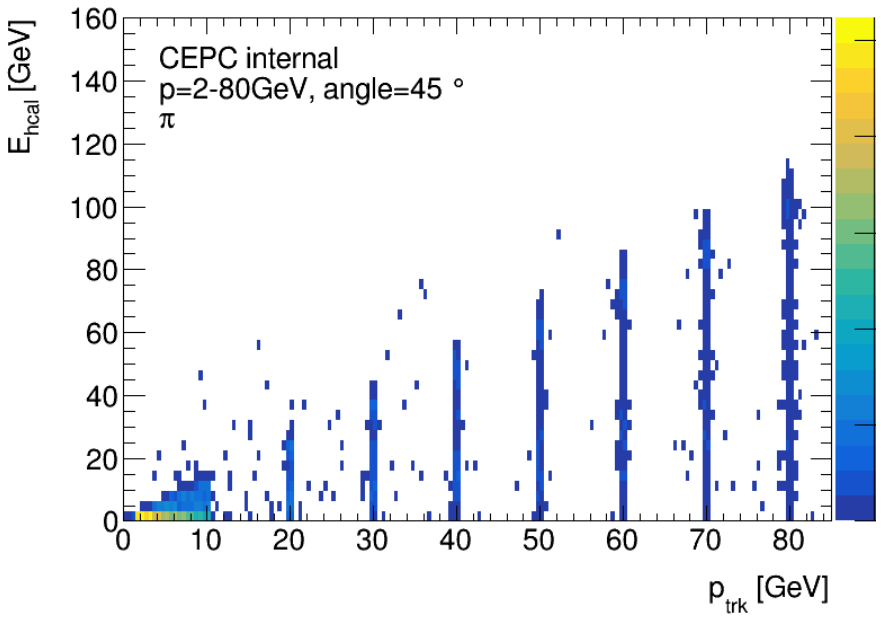
Hcal energy X 4

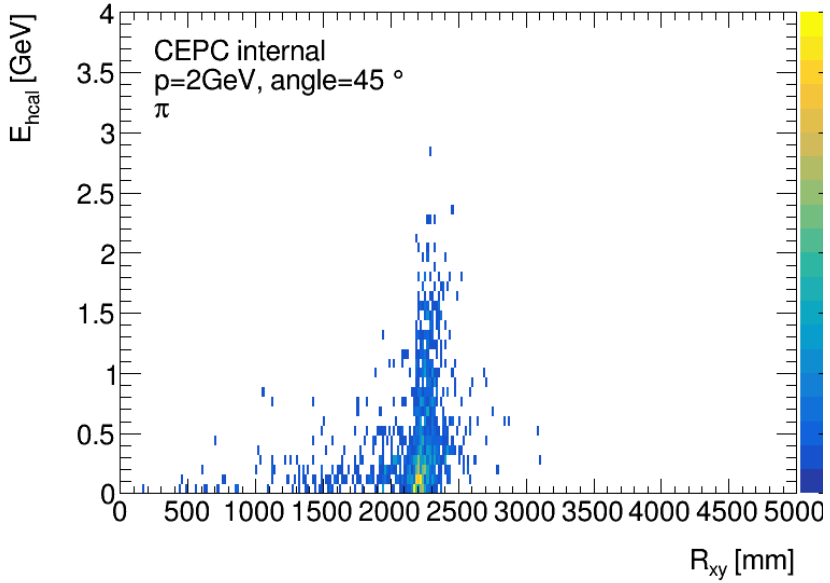
Hcal cluster position is a good discriminant for mu/pi separation.

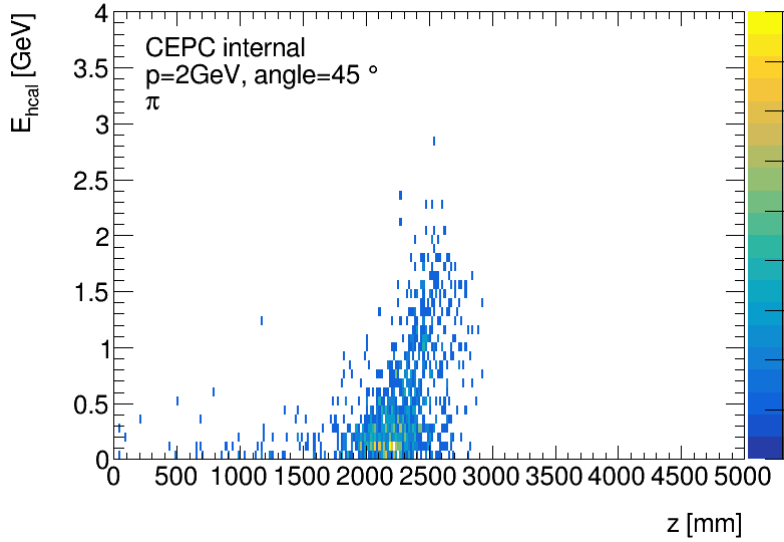




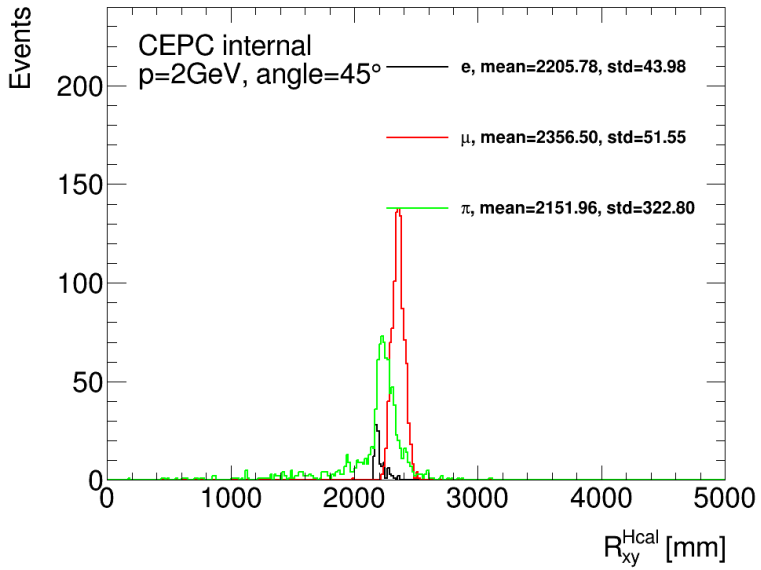


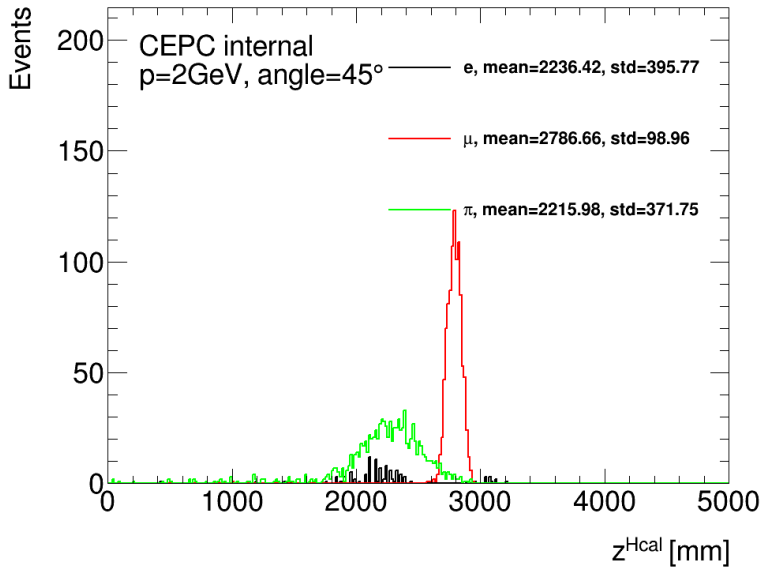


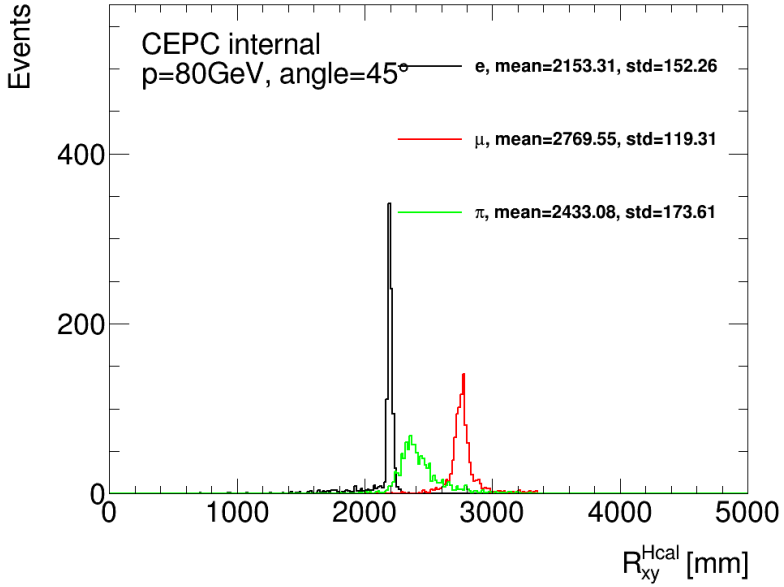


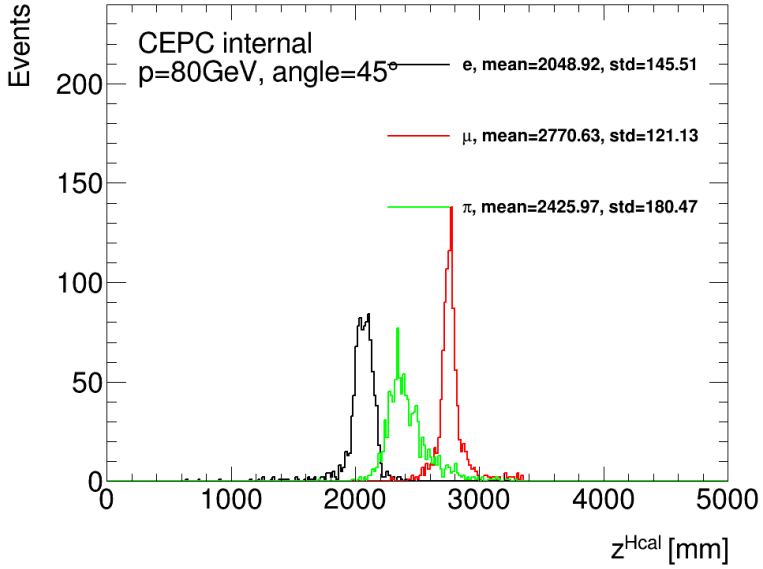


mu/pi separation









- Hcal cluster position should be very powerful to separate mu from pi.
- Fangyi is concerned that the good separation is due to bad calibration/misalignment in Hcal.
- Use energy only for mu ID for the moment.
- High-energy electrons will also go to Hcal.
- These should be studied further in the future.

Angle=10 degrees

- Particles are moving closer to the beams
- It's more likely to fail reconstructing dN/dx and TOF. Expected?

```
..................working on 0
tpc_chi2s = []
tof_chi2s = [0.009367692666300597, 0.12117647970013272, 0.28633111954138984, 30.327683594966462, 359.28525058422343]
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tpc_chi2s = []
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```
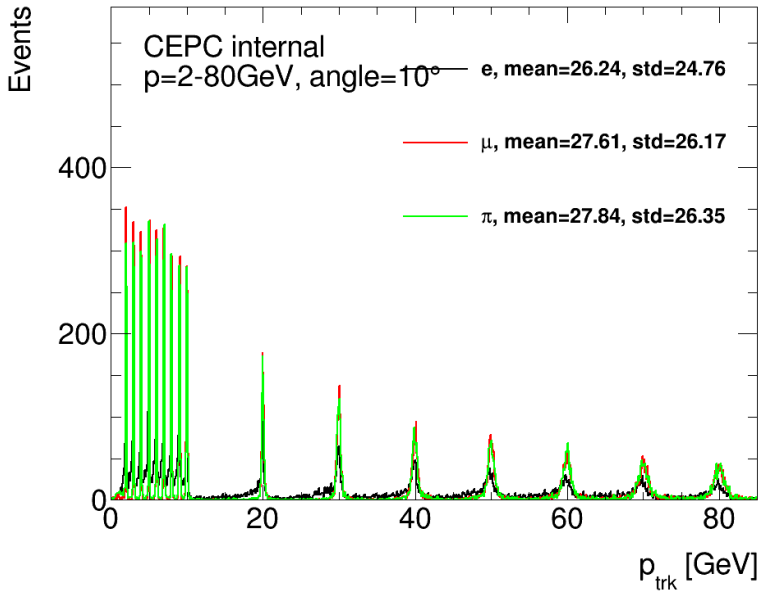

p(trk)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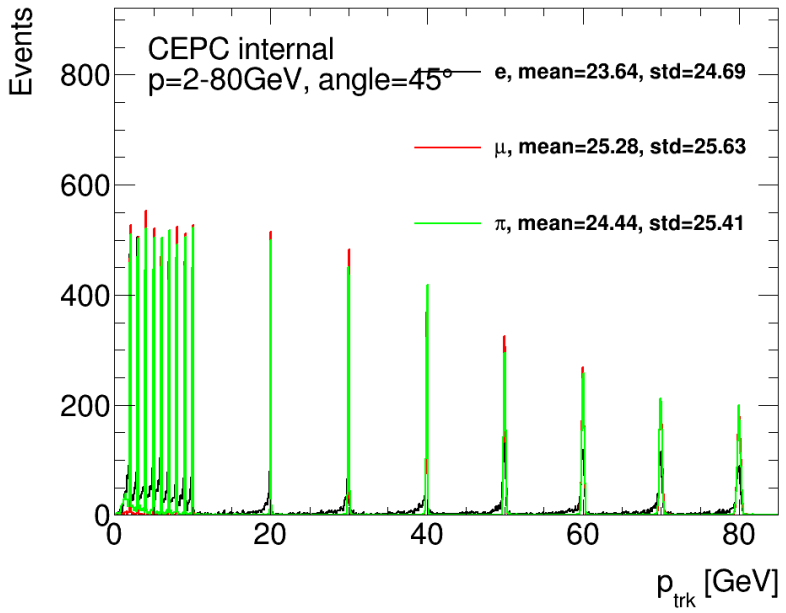
μ, mean=27.61, std=26.17
π, mean=27.84, std=26.35
Events
p_trk [GeV]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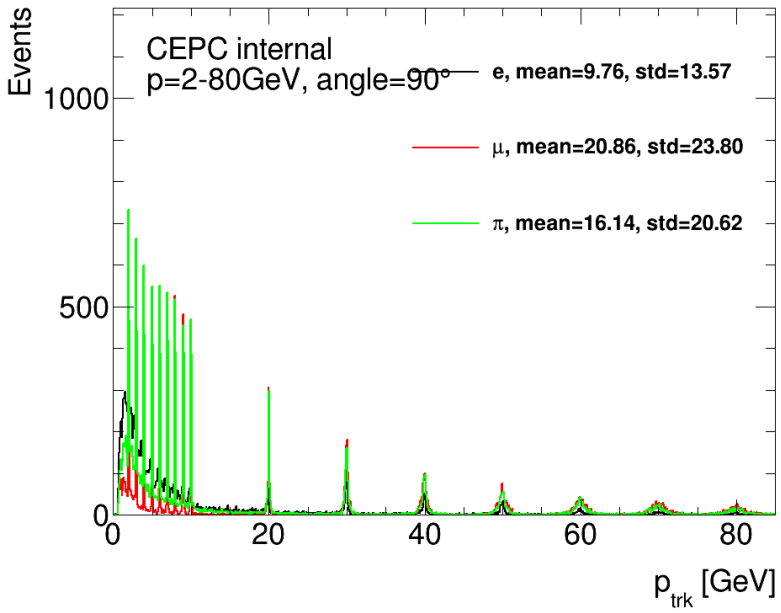
Events
p_trk [GeV]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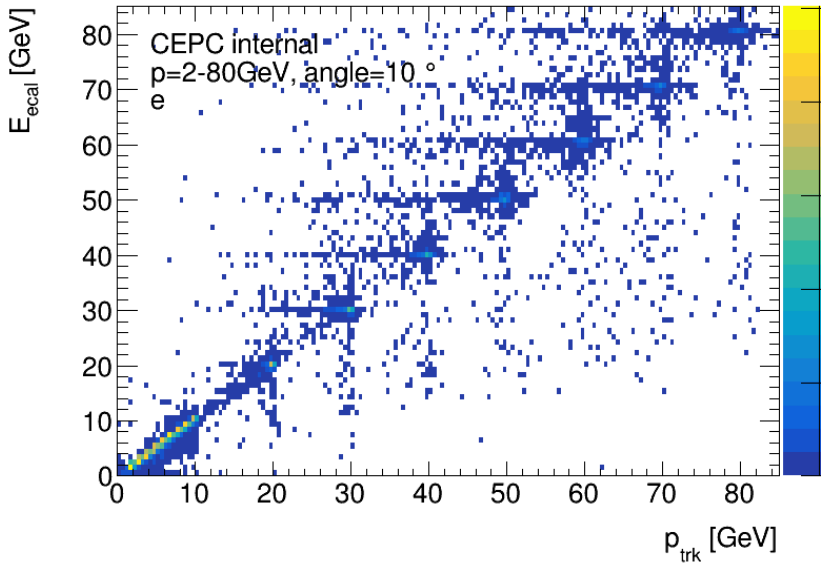
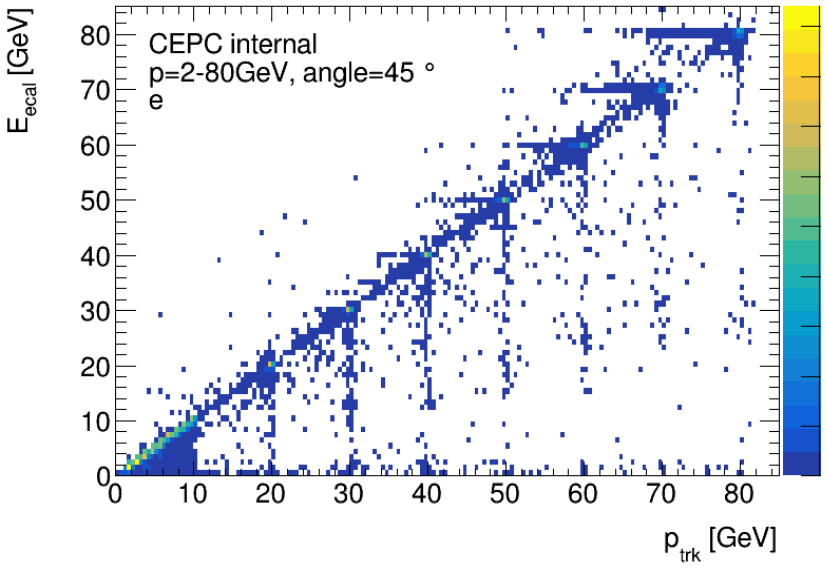
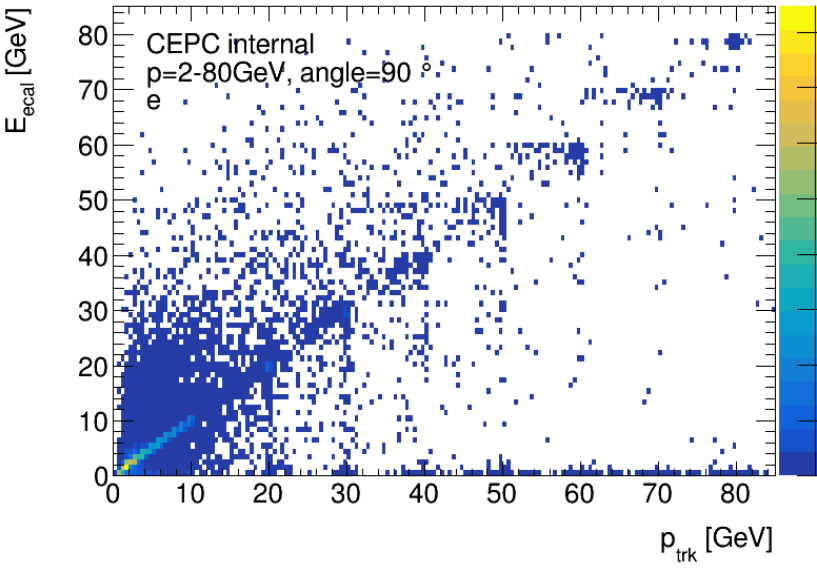
Events
p_trk [GeV]

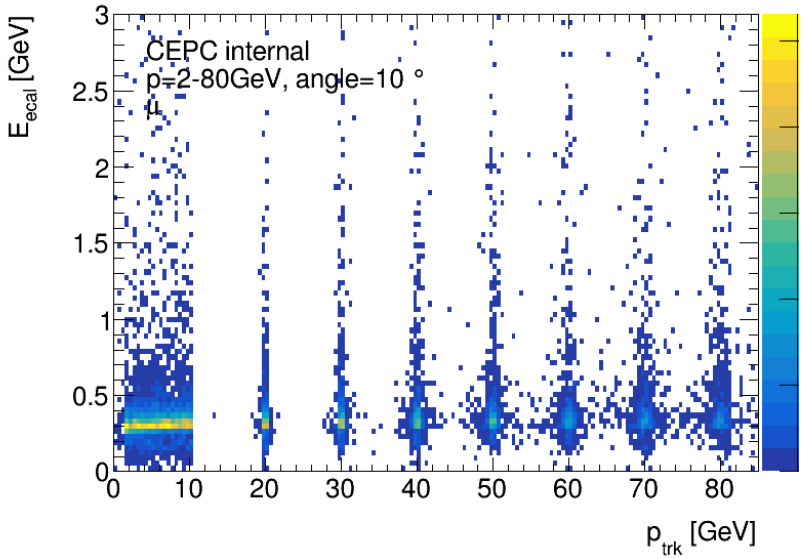
electron: E(ecal) v.s. p(trk)

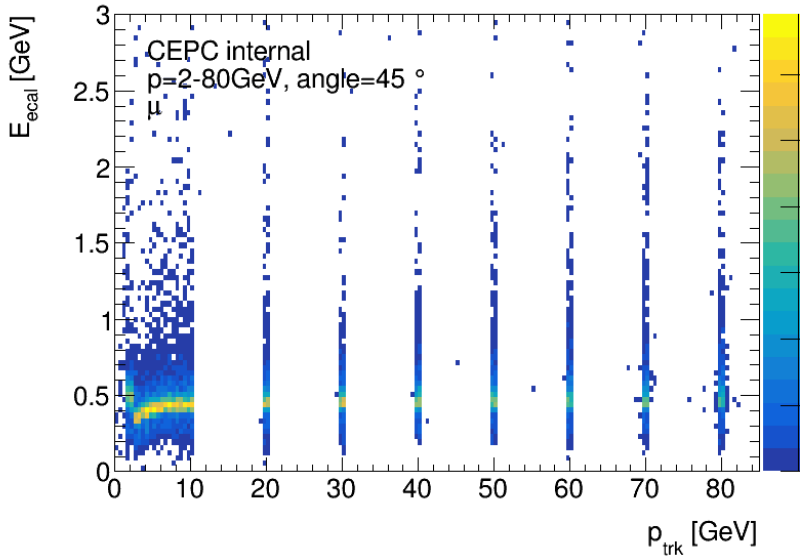


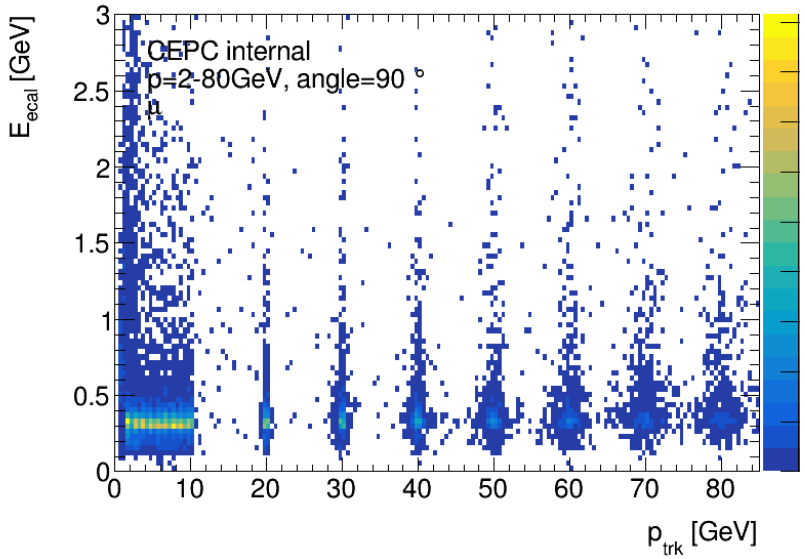


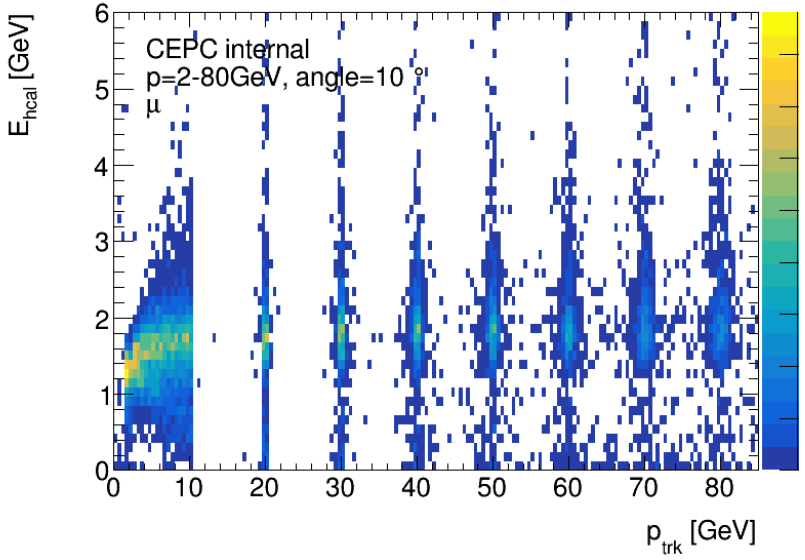


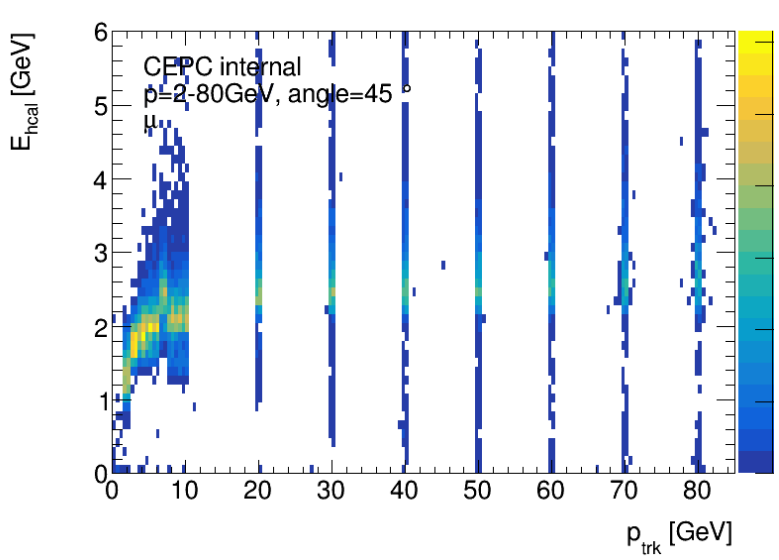
muon: E(ecal/hcal) v.s. p(trk)

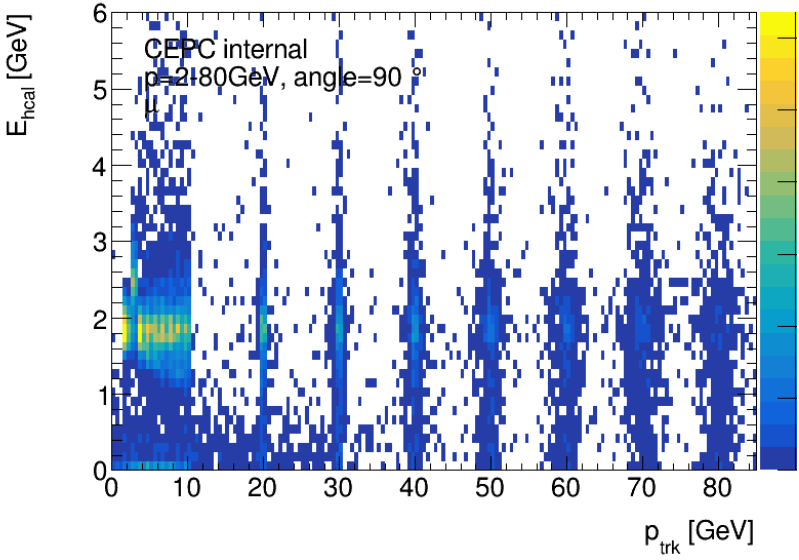




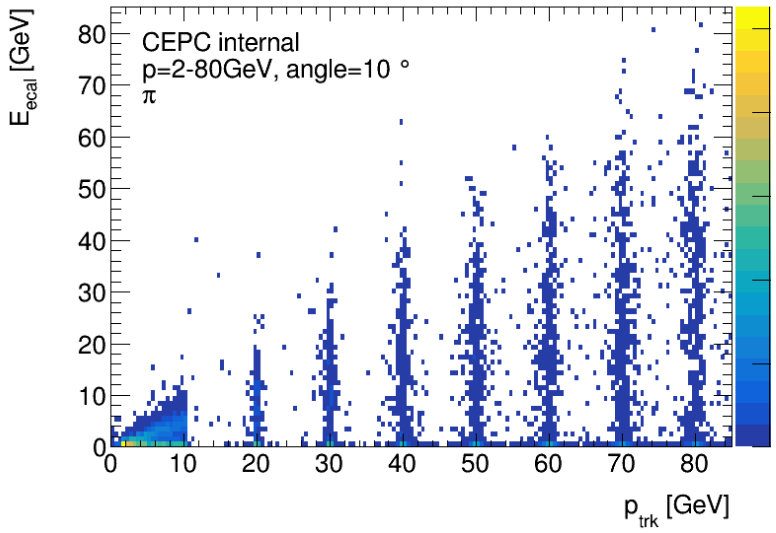


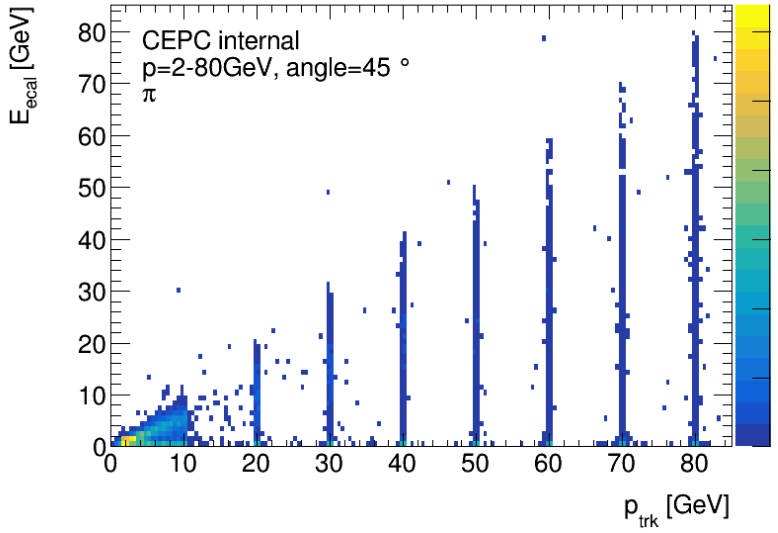


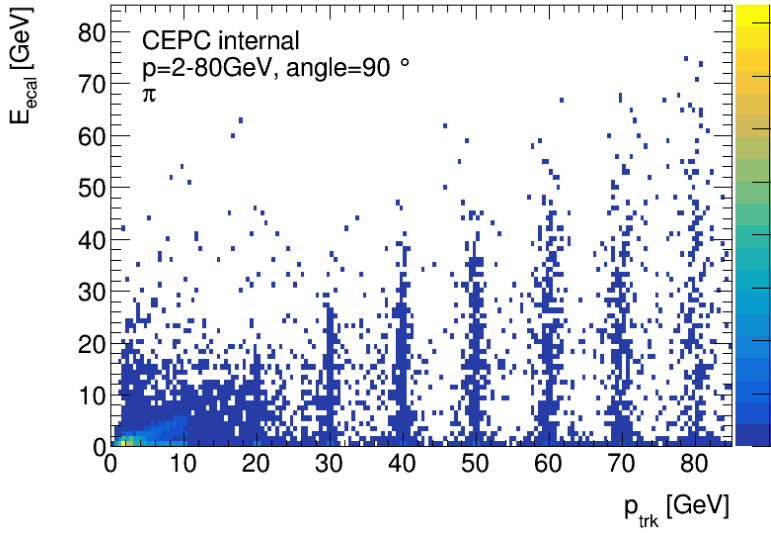


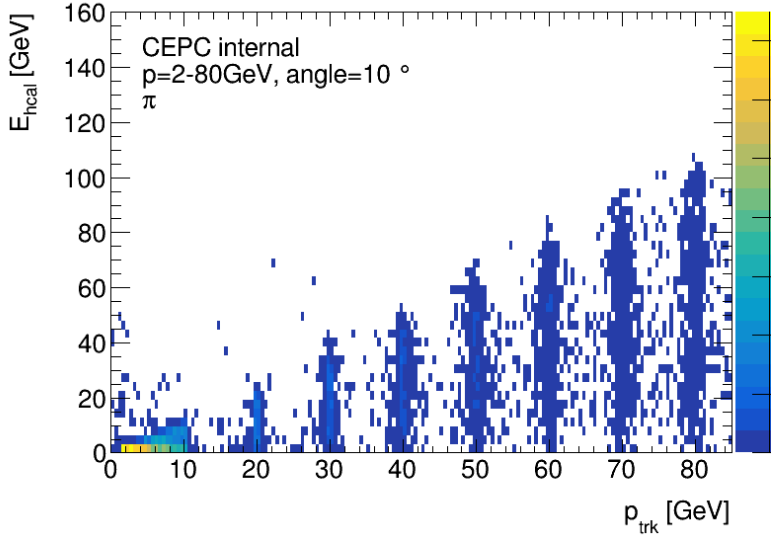


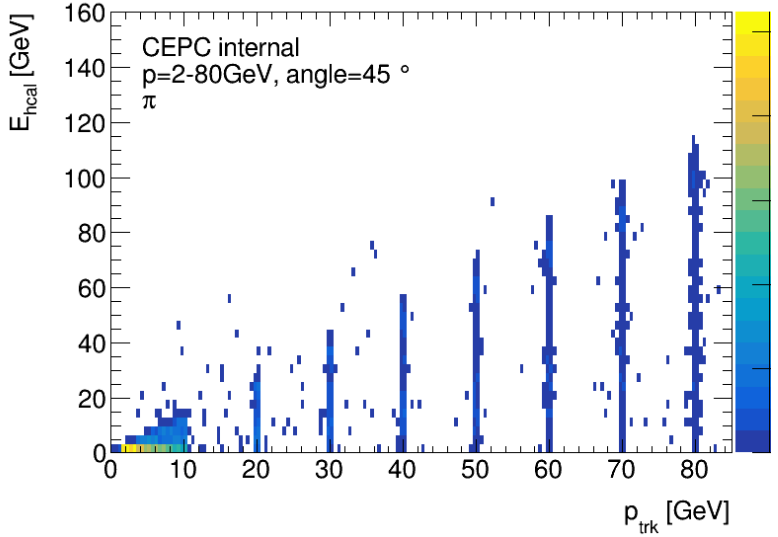
pion: E(ecal/hcal) v.s. p(trk)

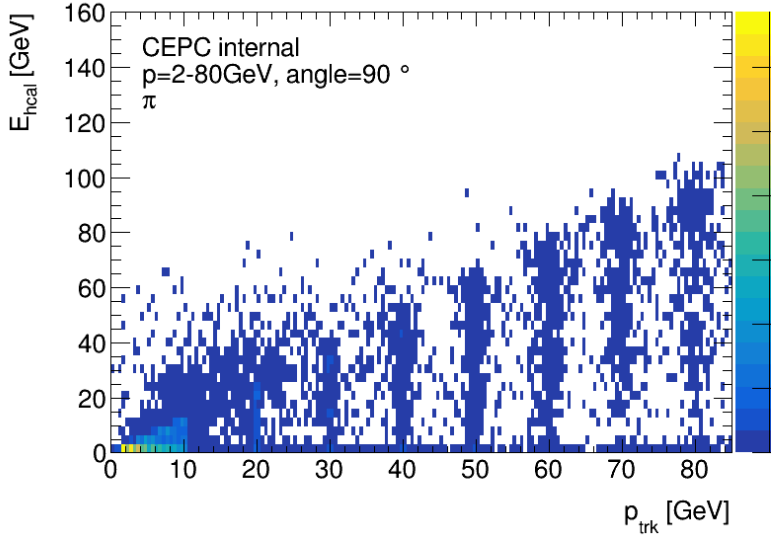




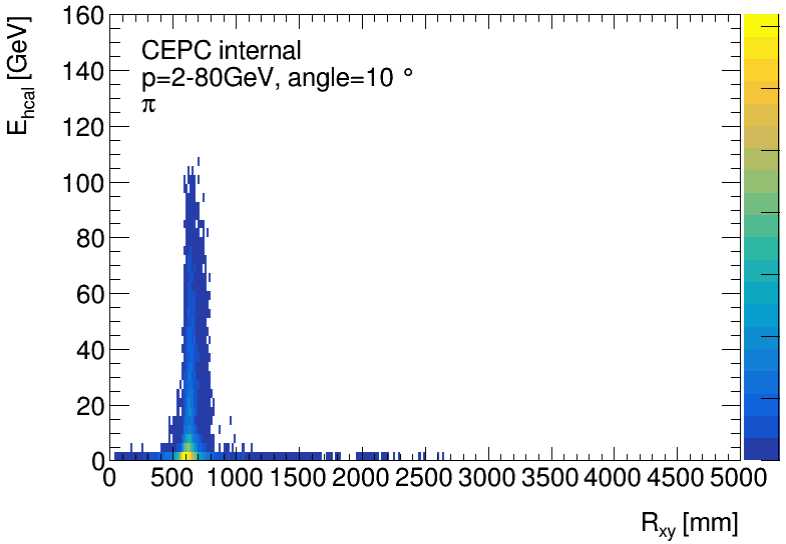


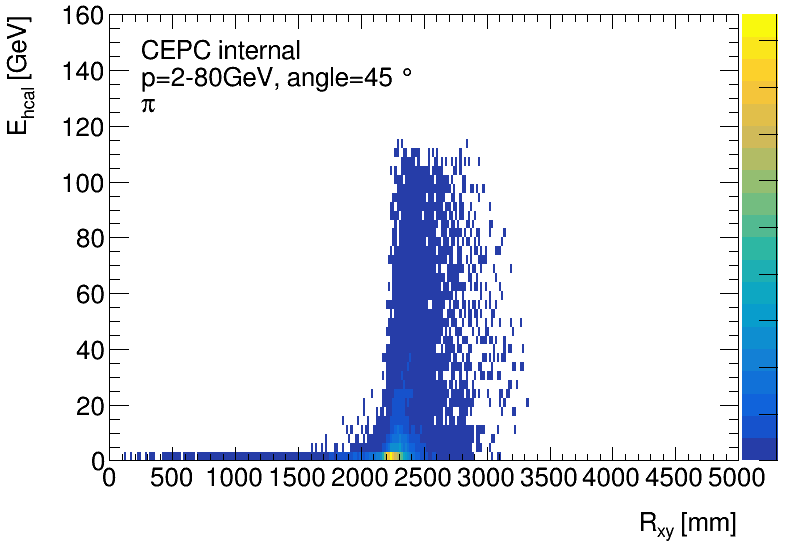


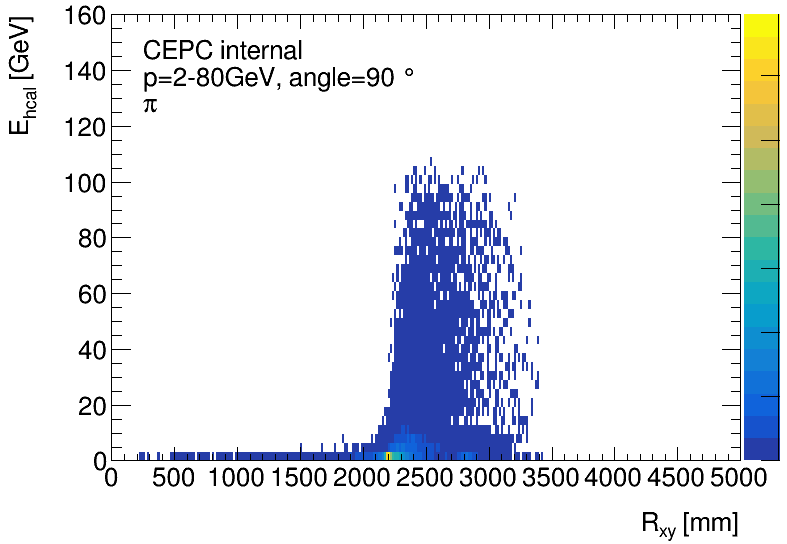


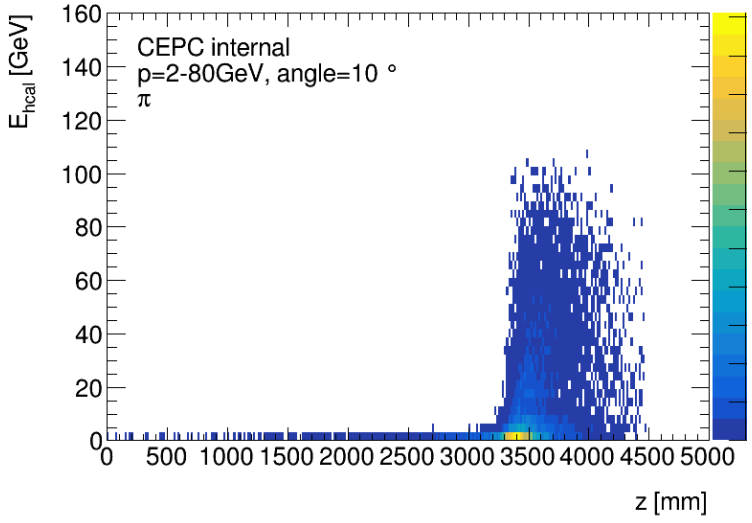


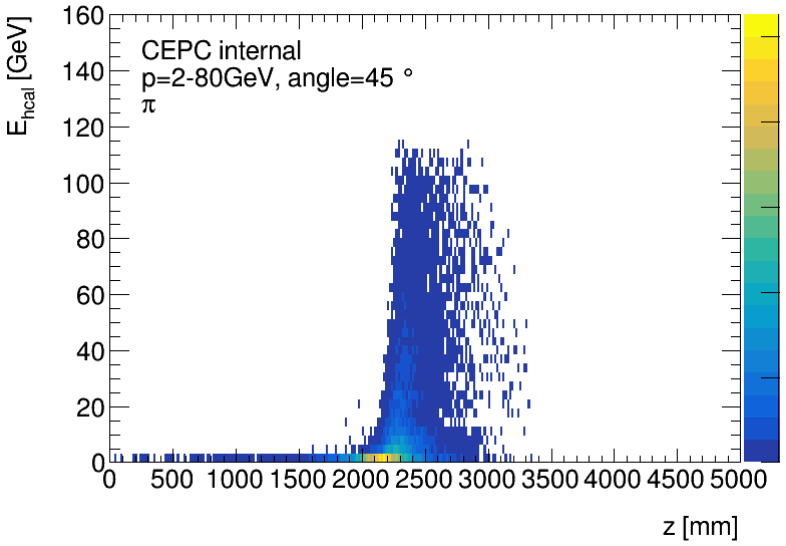
pion Hcal cluster position: Rxy and z

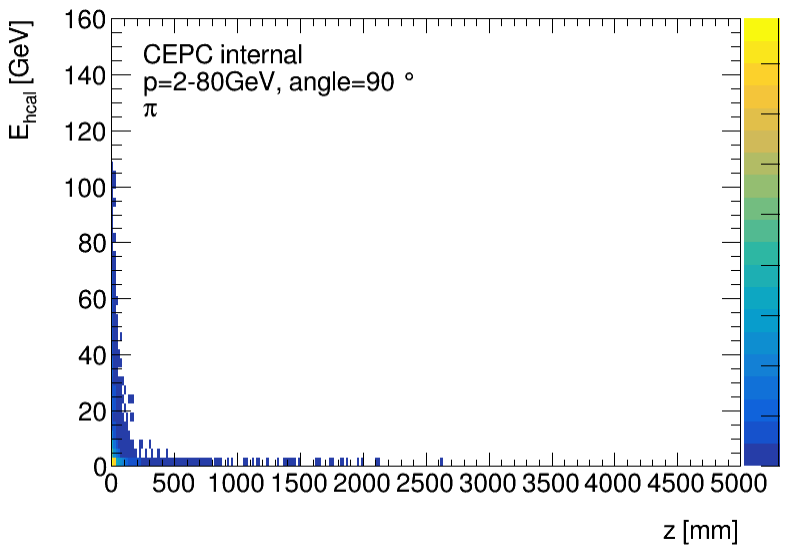












Summary

- First look at lepton ID at angle=10 and 90 degrees.
- They would be available soon this afternoon.