



ECCE TRACKING WITH EP SIMULATION

SEBASTIAN TAPIA, JUL 2, 2021, ISU

Samples

2

Files:

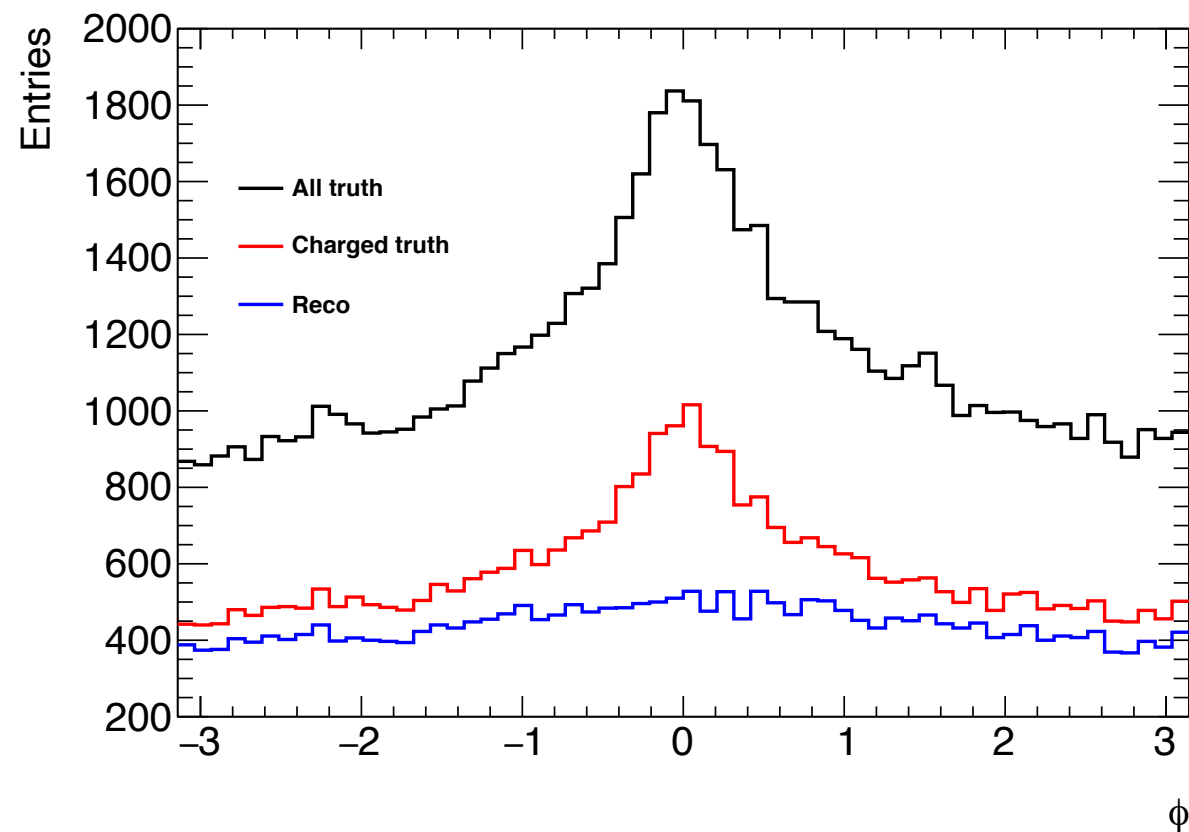
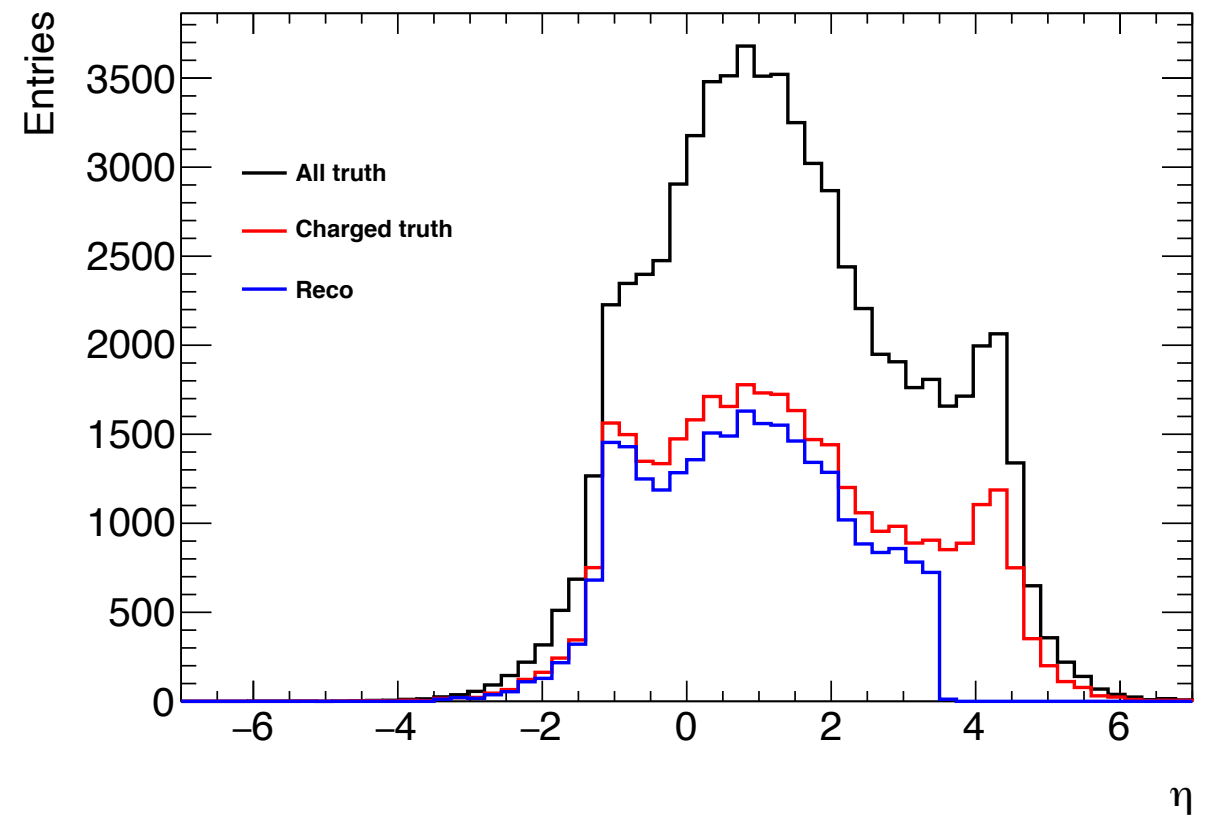
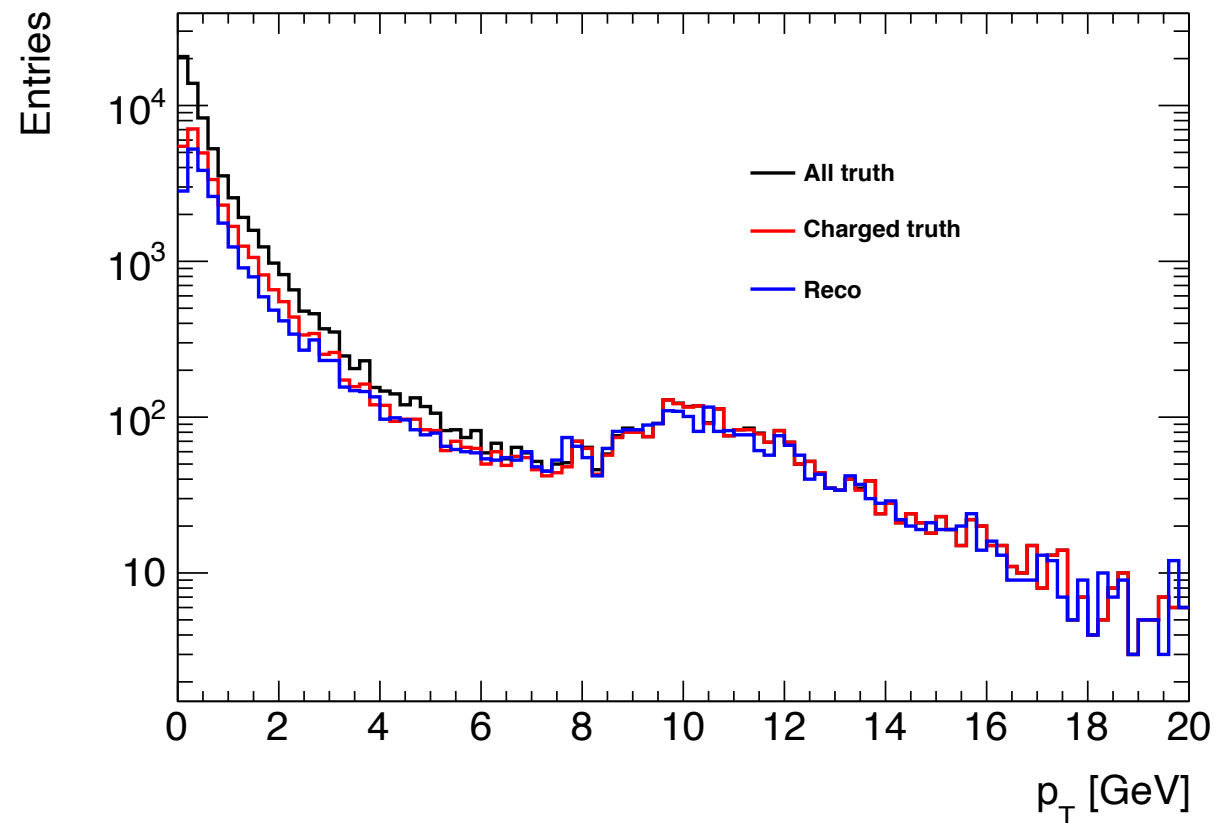
msc3 eicS3/eictest/ECCE/MC/ana.14/5f210c7/SIDIS/pythia6/ep_18x100highq2

```
DST_SIDIS_pythia6_ep_18x100highq2_000_0001000_01000  
DST_SIDIS_pythia6_ep_18x100highq2_039_0093000_01000  
DST_SIDIS_pythia6_ep_18x100highq2_018_0038000_01000
```

Only 3 files 3k events

Truth, Track distributions

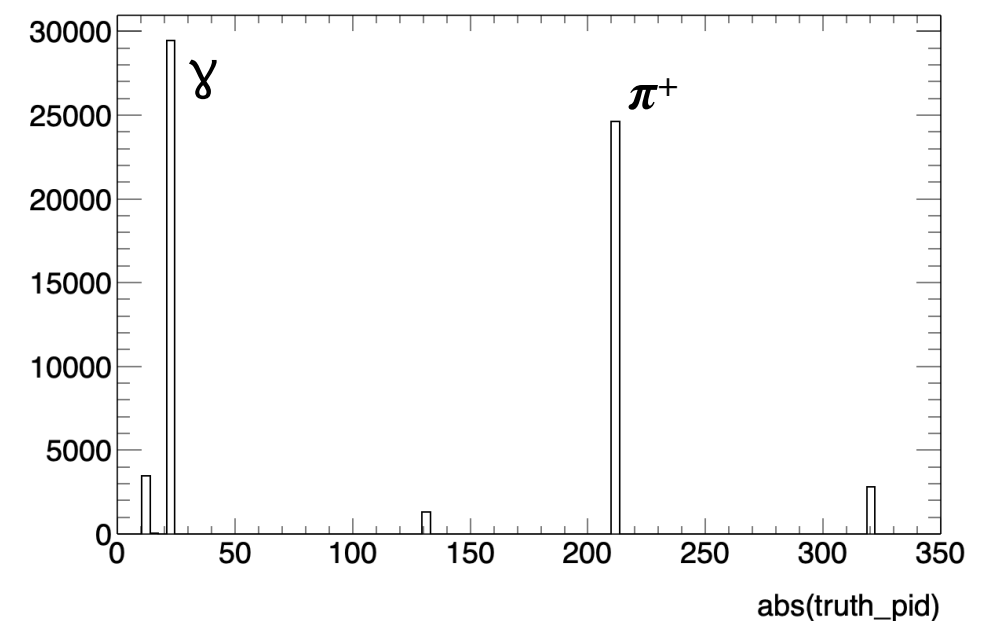
3



All truth: G4TruthInfo

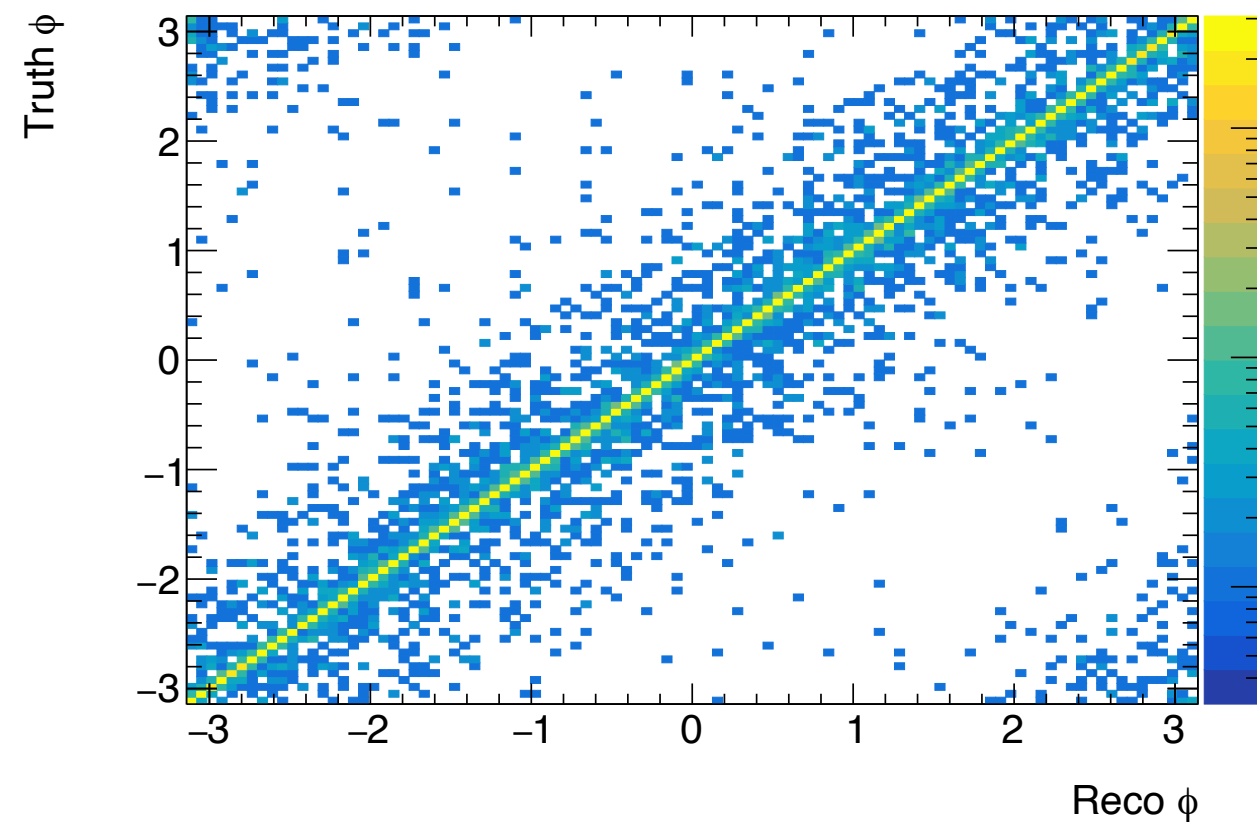
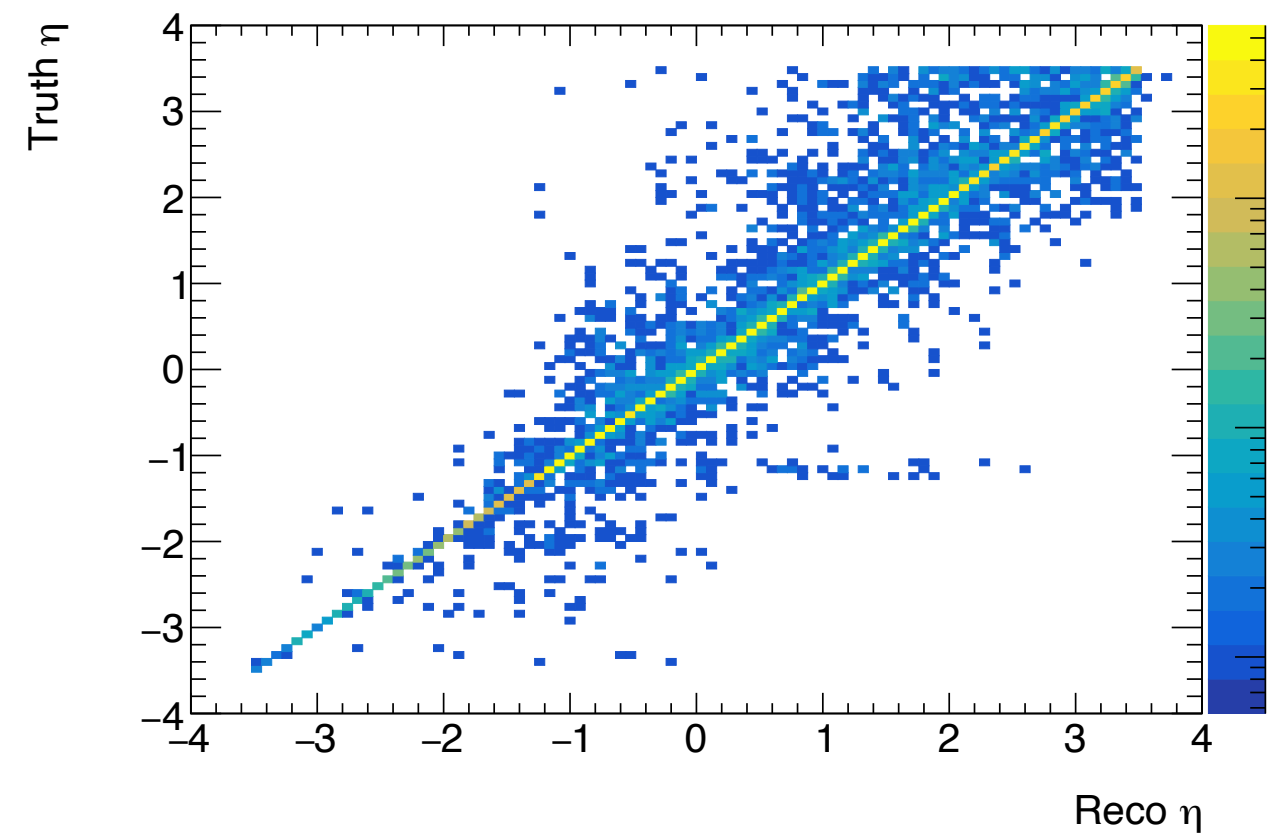
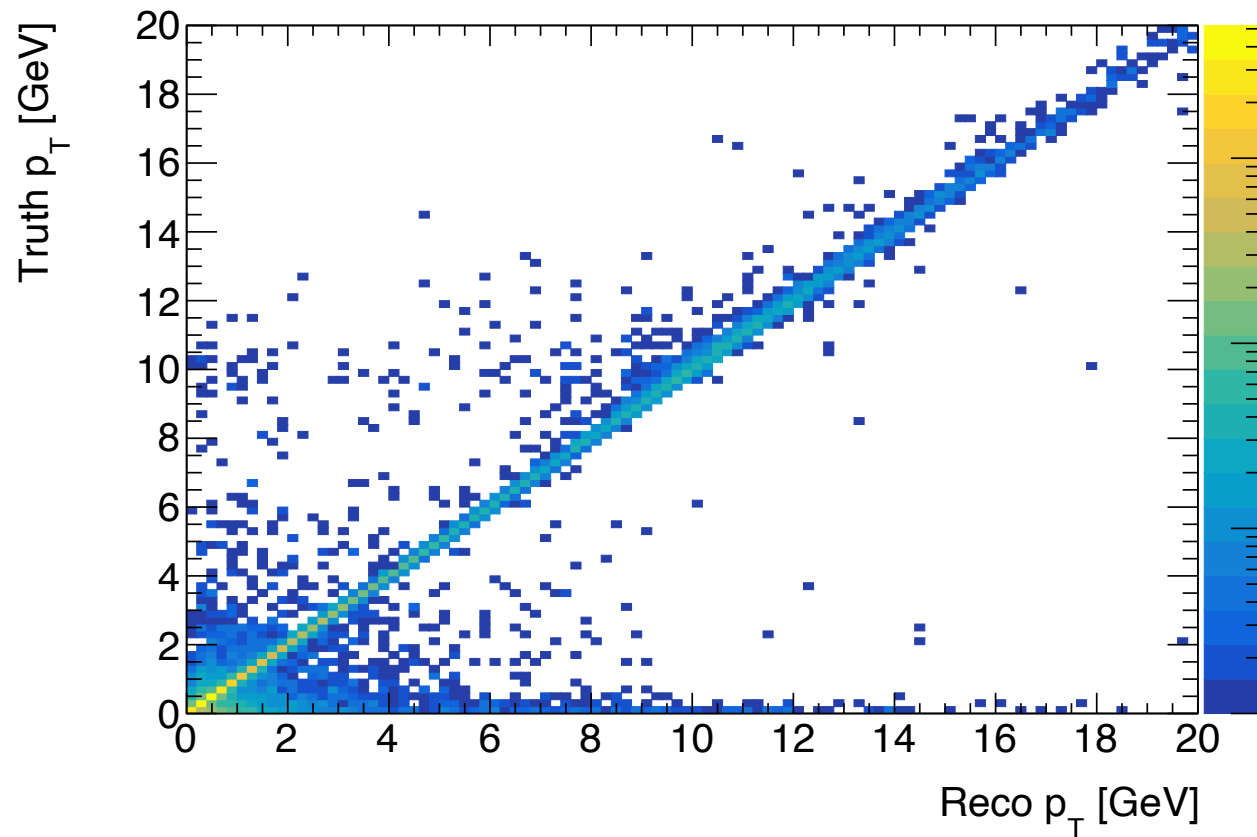
Charged truth: neutrinos, photons, K^0 , and neutrons removed from G4TruthInfo. Larger contribution from photons.

Reco: TrackMap



Truth-Track 2D distributions

4

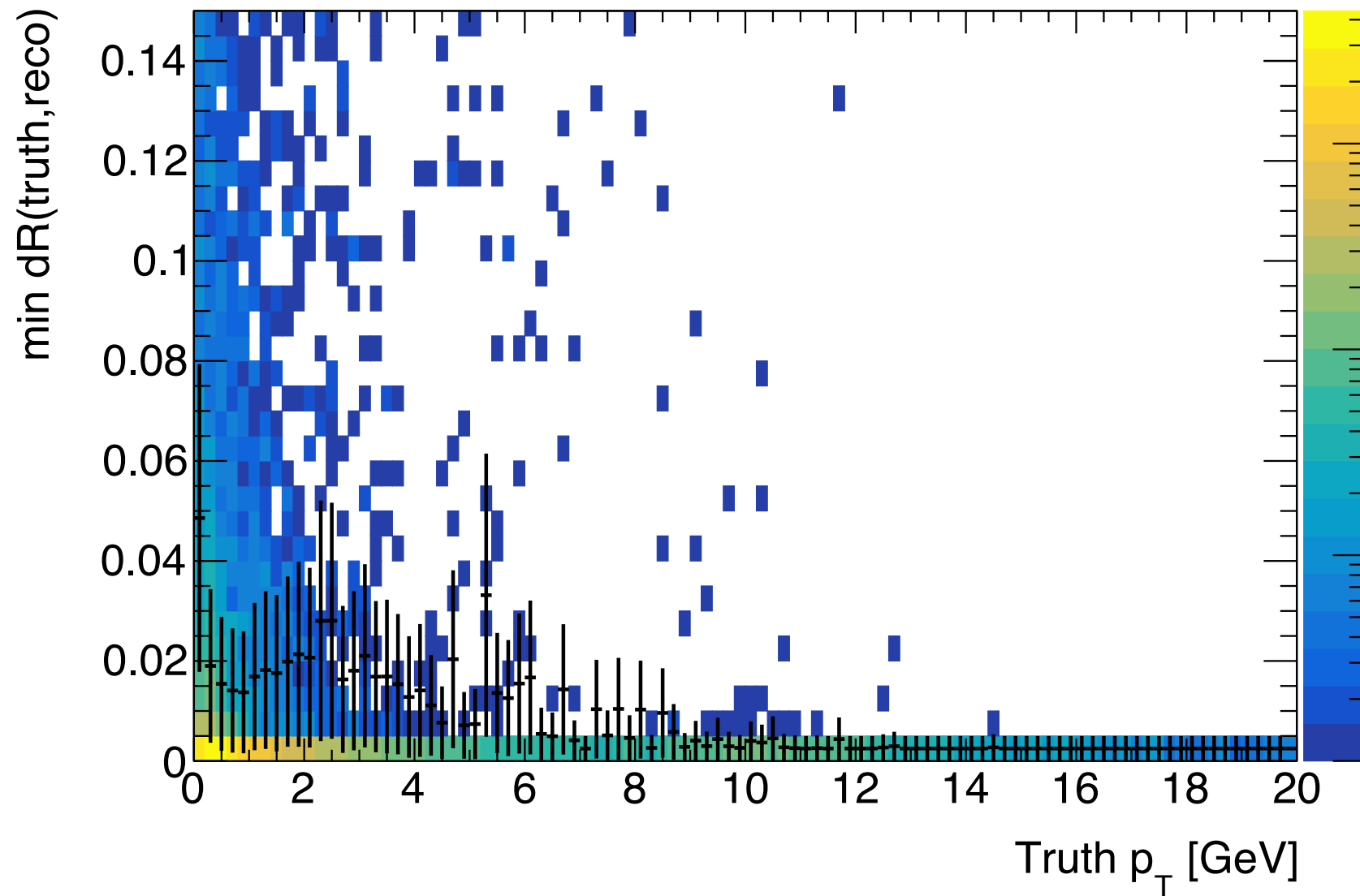


- Truth particle with $|\eta| < 3.5$
- Truth matched to the closest reconstructed track

(Truth, reco) angular closest distance

5

$$\Delta R = \sqrt{(\eta_{truth} - \eta_{reco})^2 + (\phi_{truth} - \phi_{reco})^2}$$



Most tracks matched within dR~0.02, but not clear at low p_T, worst resolution.

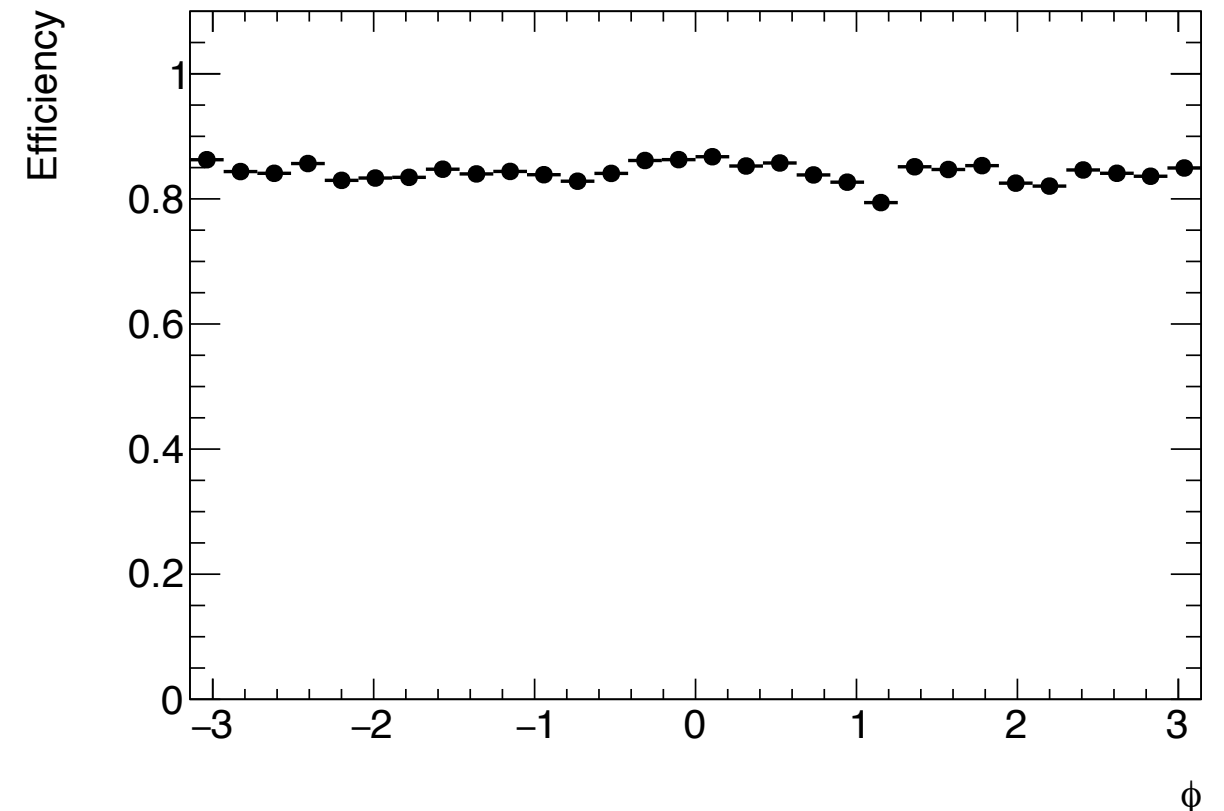
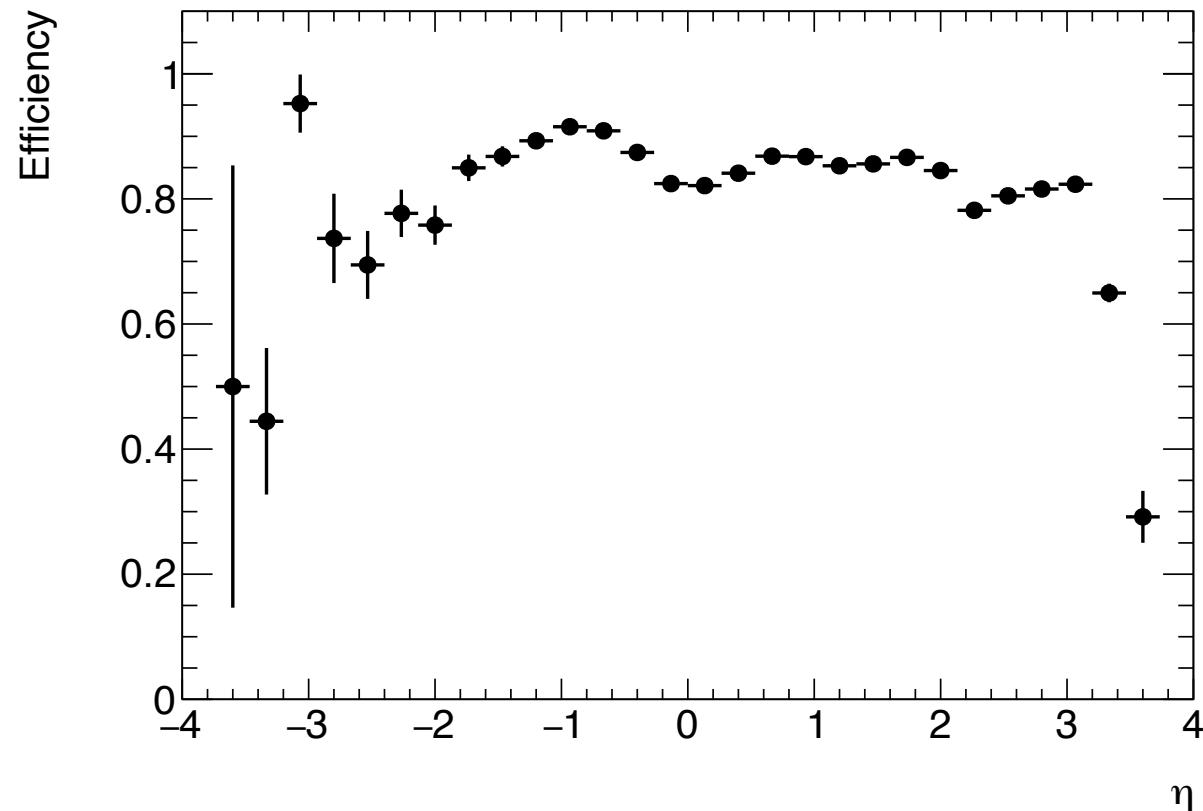
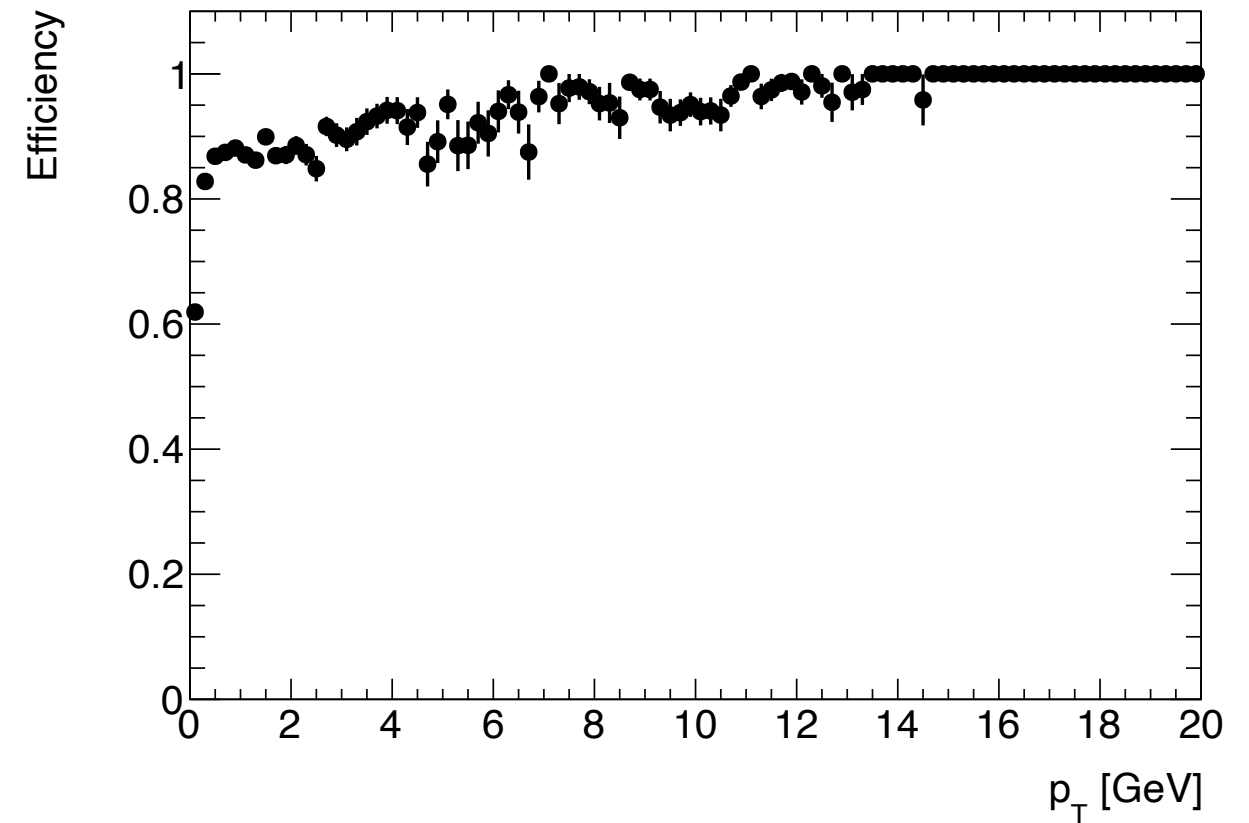
Efficiency

Selection:

- Truth particle $|\eta| < 3.5$

$$\epsilon = \frac{\text{truth}(\text{match to reco})}{\text{all truth}}$$

- min ΔR from (min ΔR - p_T) profile



Needs from tracking:

- Angular resolution: η , ϕ
- Track position (x,y,z) at sub-detector entrance.
 - Projection to mRICH, DIRC, dRICH
- Momentum