



CEPC

Jets, samples and Wednesday working meeting

Kaili Zhang

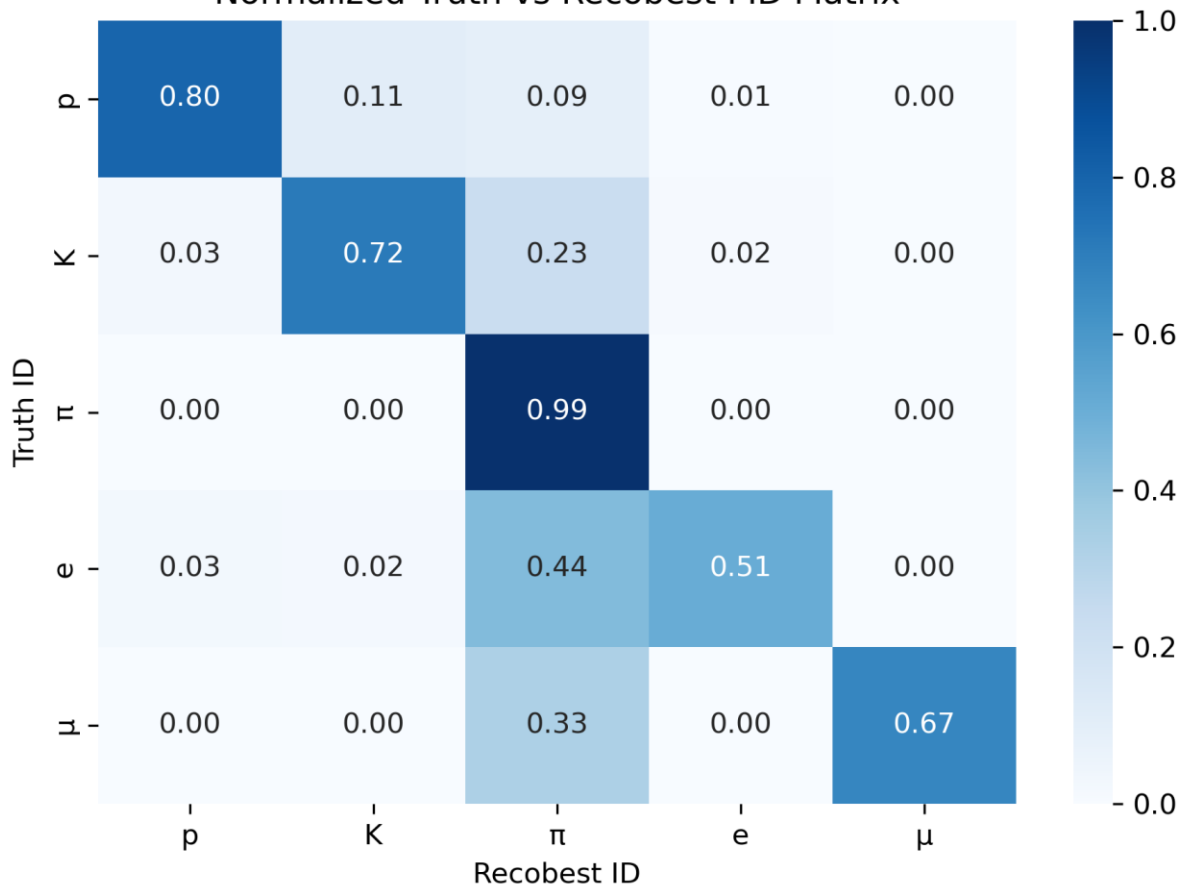
zhangkl@ihep.ac.cn

XGBoost: In Zqq.

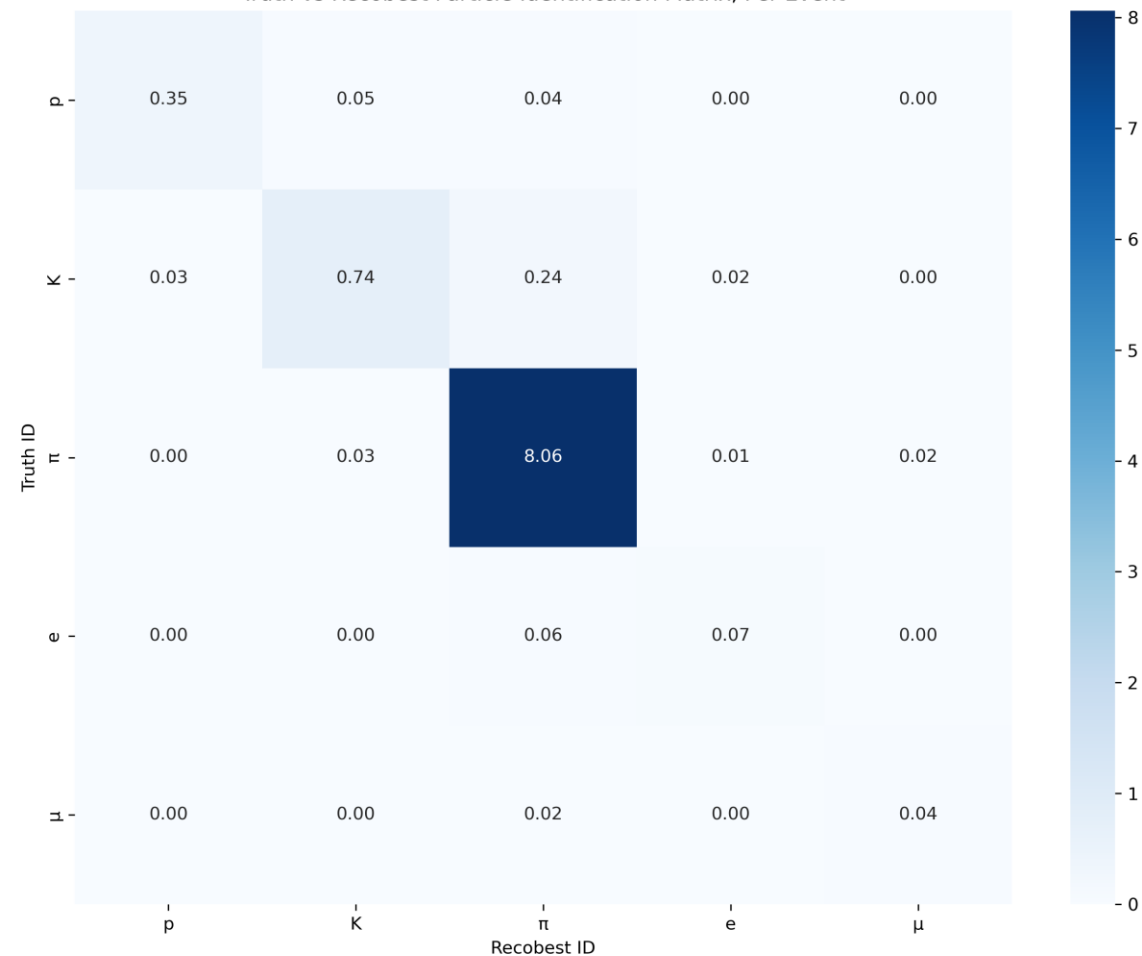
/hpcfs/cepc/higgsgpu/zhangkl/datasets_Zqq/999*.root

Without Energy cut, Eff*Purity: 0.718, 0.650, 0.950, 0.369, 0.413

Normalized Truth vs Recobest PID Matrix



Truth vs Recobest Particle Identification Matrix, Per Event

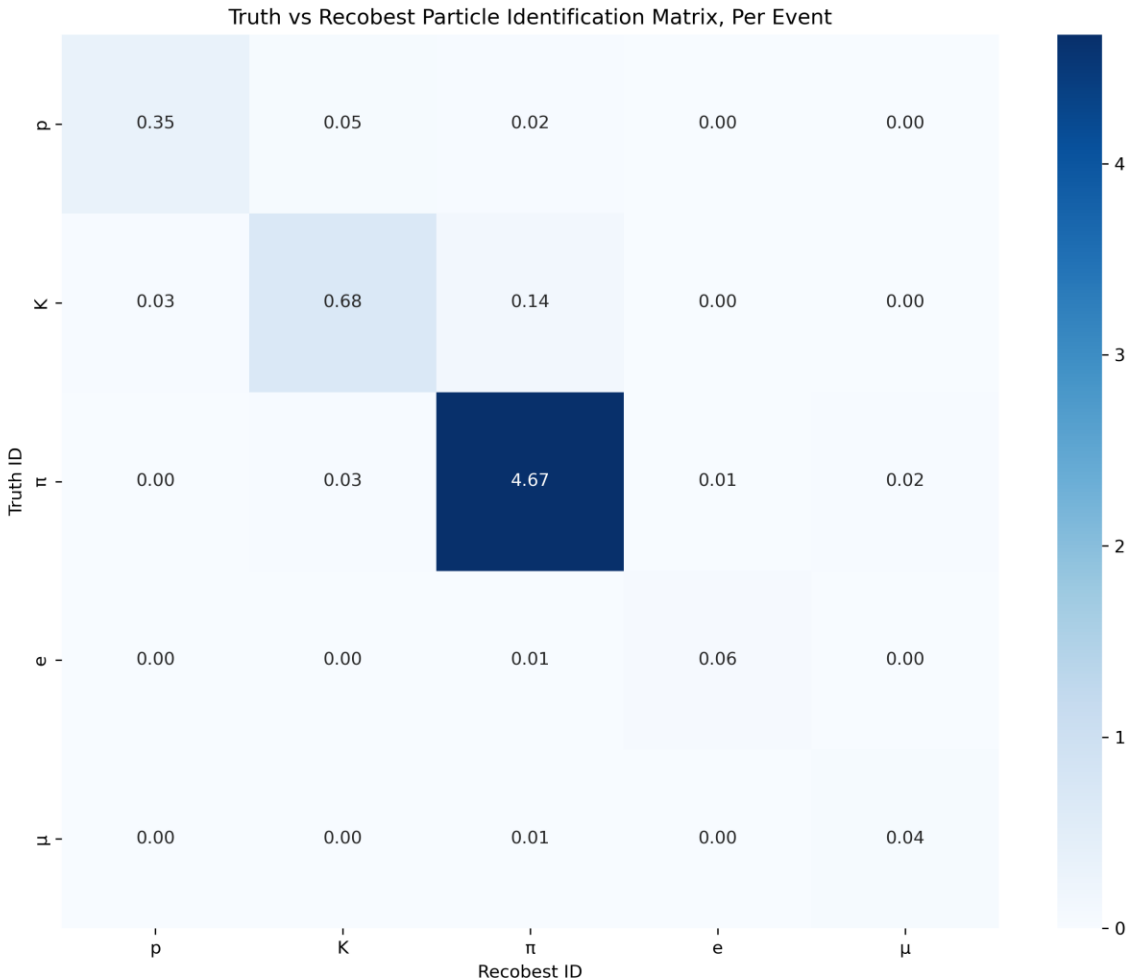
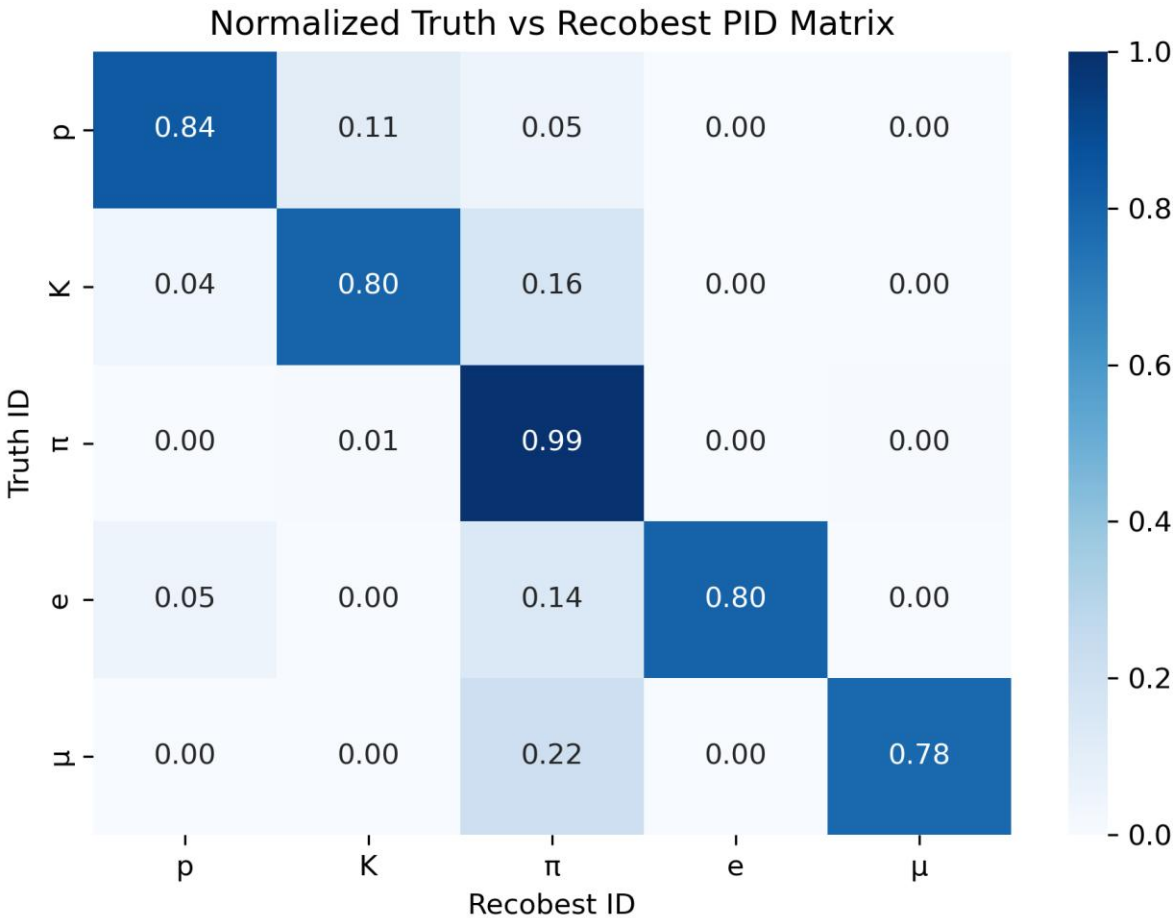


Zqq with E>1 GeV:



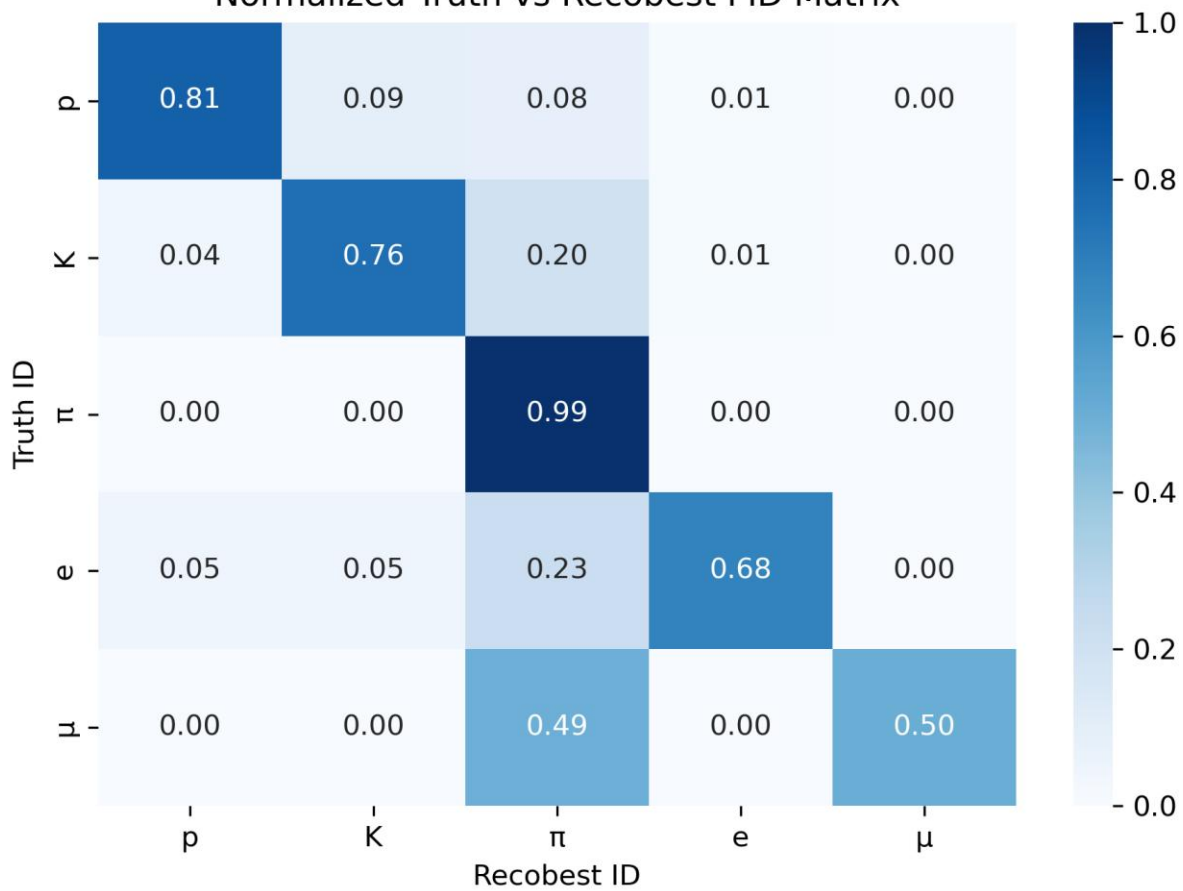
Reco_best	Efficiency	Purity	Eff*Purity
p	0.837	0.901	0.754
K	0.798	0.905	0.722
π	0.988	0.963	0.951
e	0.802	0.885	0.709
μ	0.784	0.636	0.499

Universal ratio for bcuds jets.

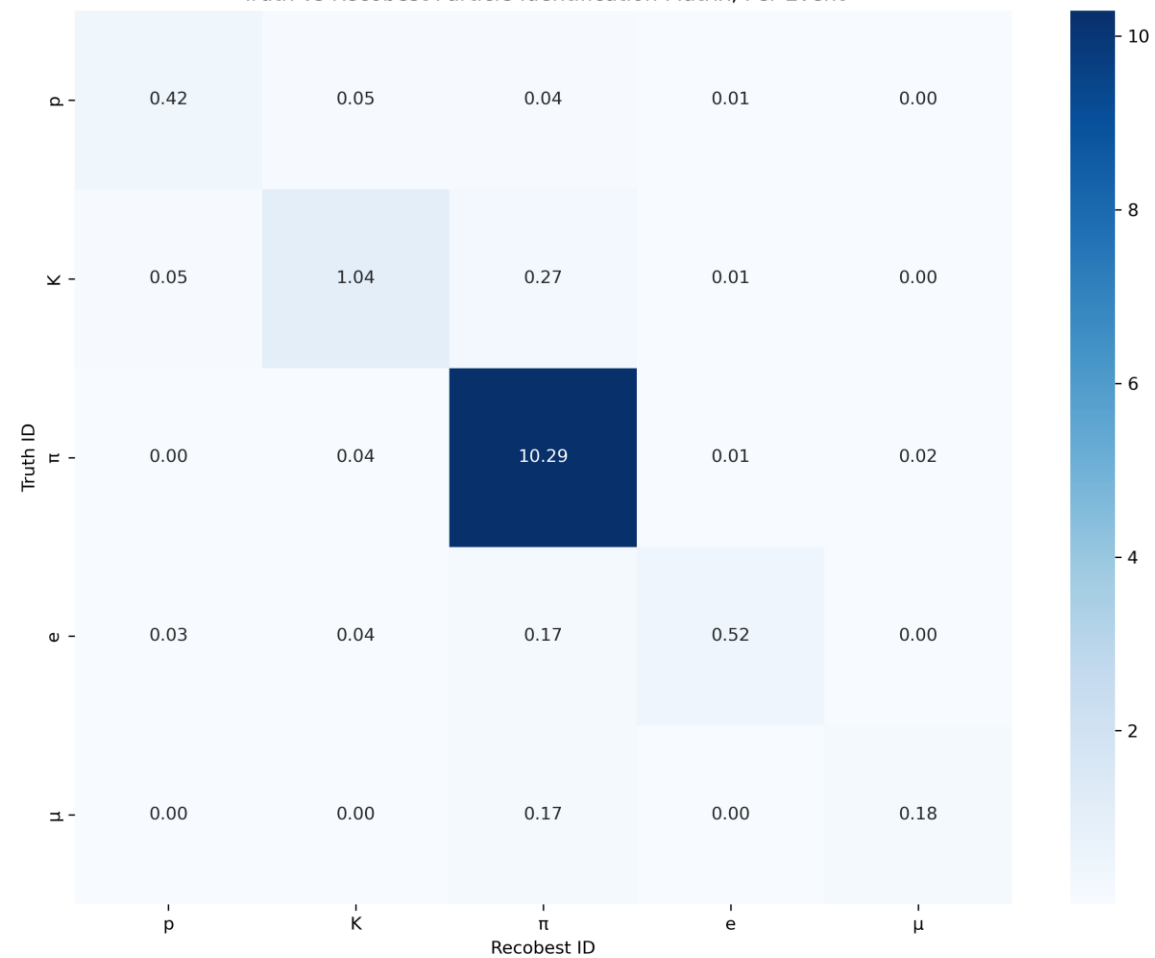


b jets with more leptons.

Normalized Truth vs Recobest PID Matrix



Truth vs Recobest Particle Identification Matrix, Per Event

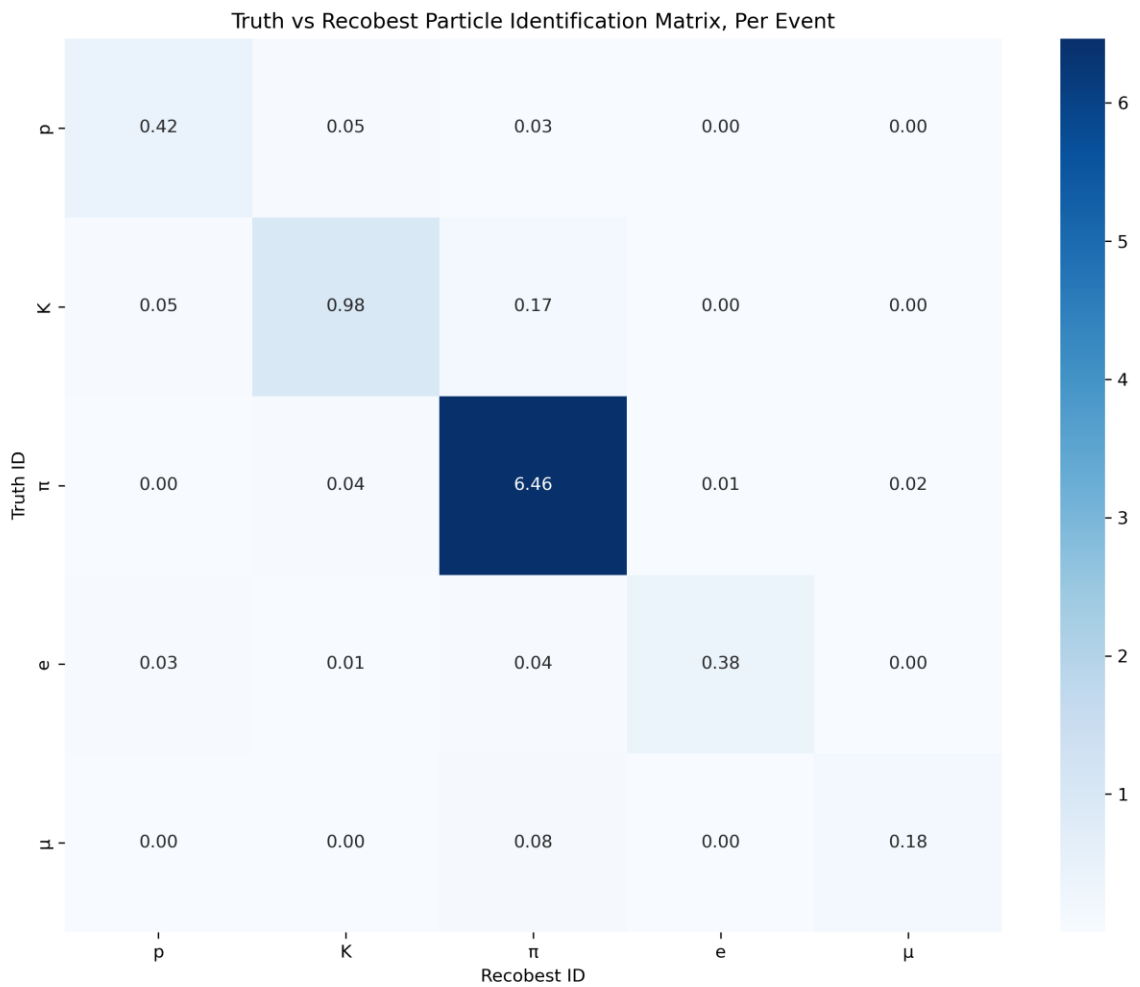
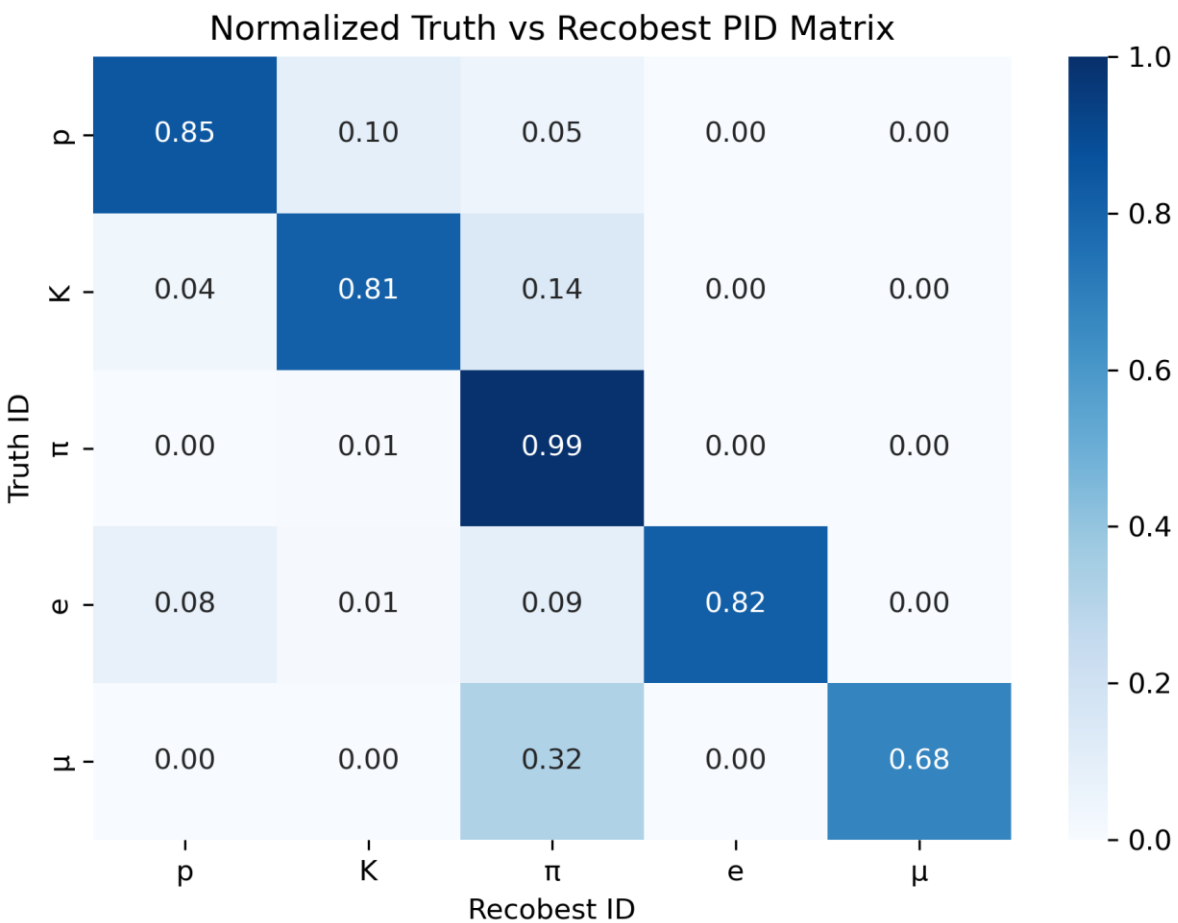


Hbb, with $E > 1$ GeV:



Reco_best	Efficiency	Purity	Eff*Purity
p	0.851	0.827	0.704
K	0.813	0.914	0.744
π	0.99	0.952	0.943
e	0.818	0.975	0.798
μ	0.677	0.906	0.613

Lepton enhanced performance.



Using current PID in training:



- Chi2 Reco70: 0.5510
- XGBest: 0.55264 (Epoch 24/30, not finished yet), final should be <0.555 .
- Expect XGBest has the current best reco ID performance, but improvement marginal.
- For VTX, also U5um, V5um has limited space to improve
- In current conditions, JOI performance is close to the best result.