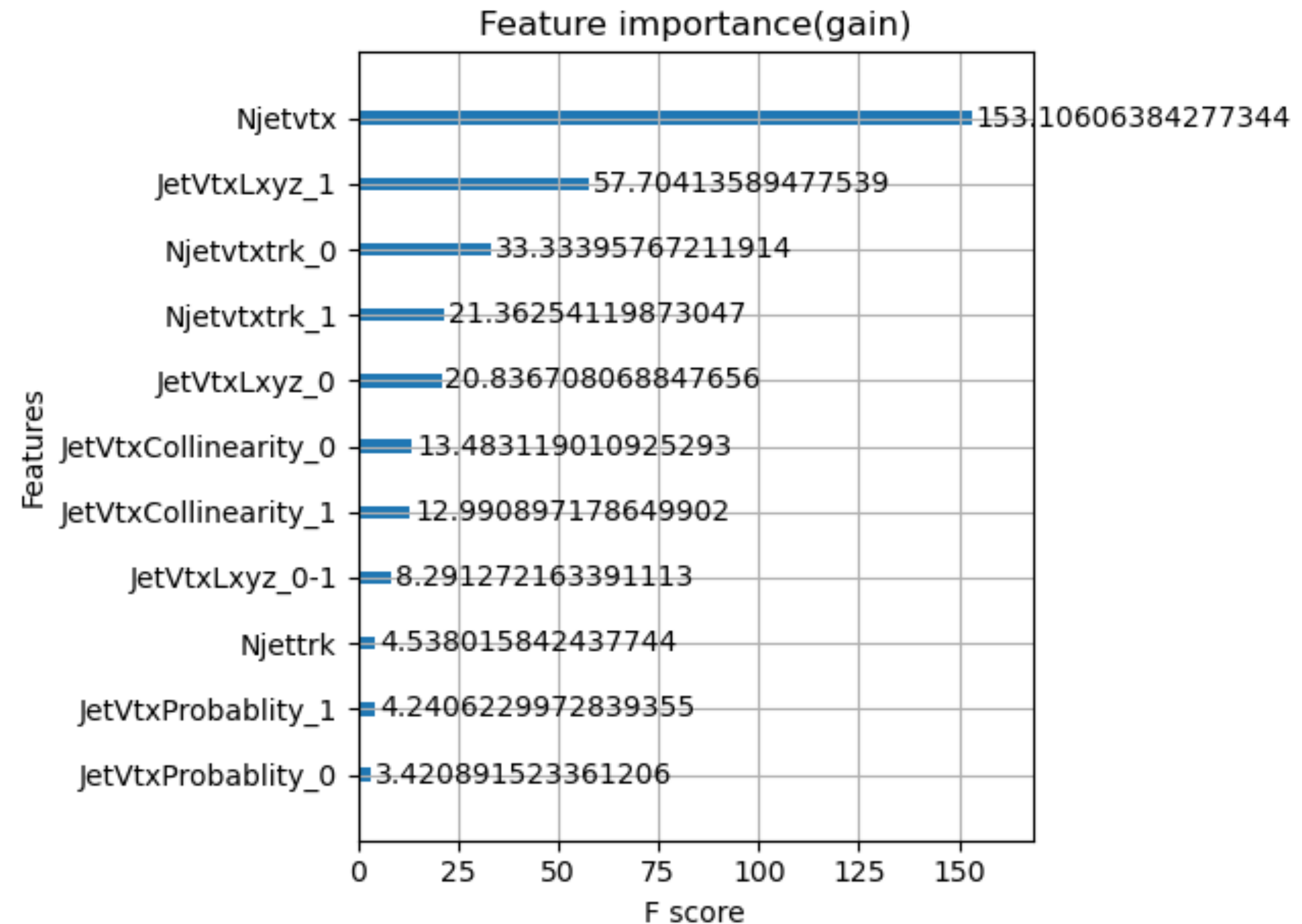


Flavor-tagging using BDT

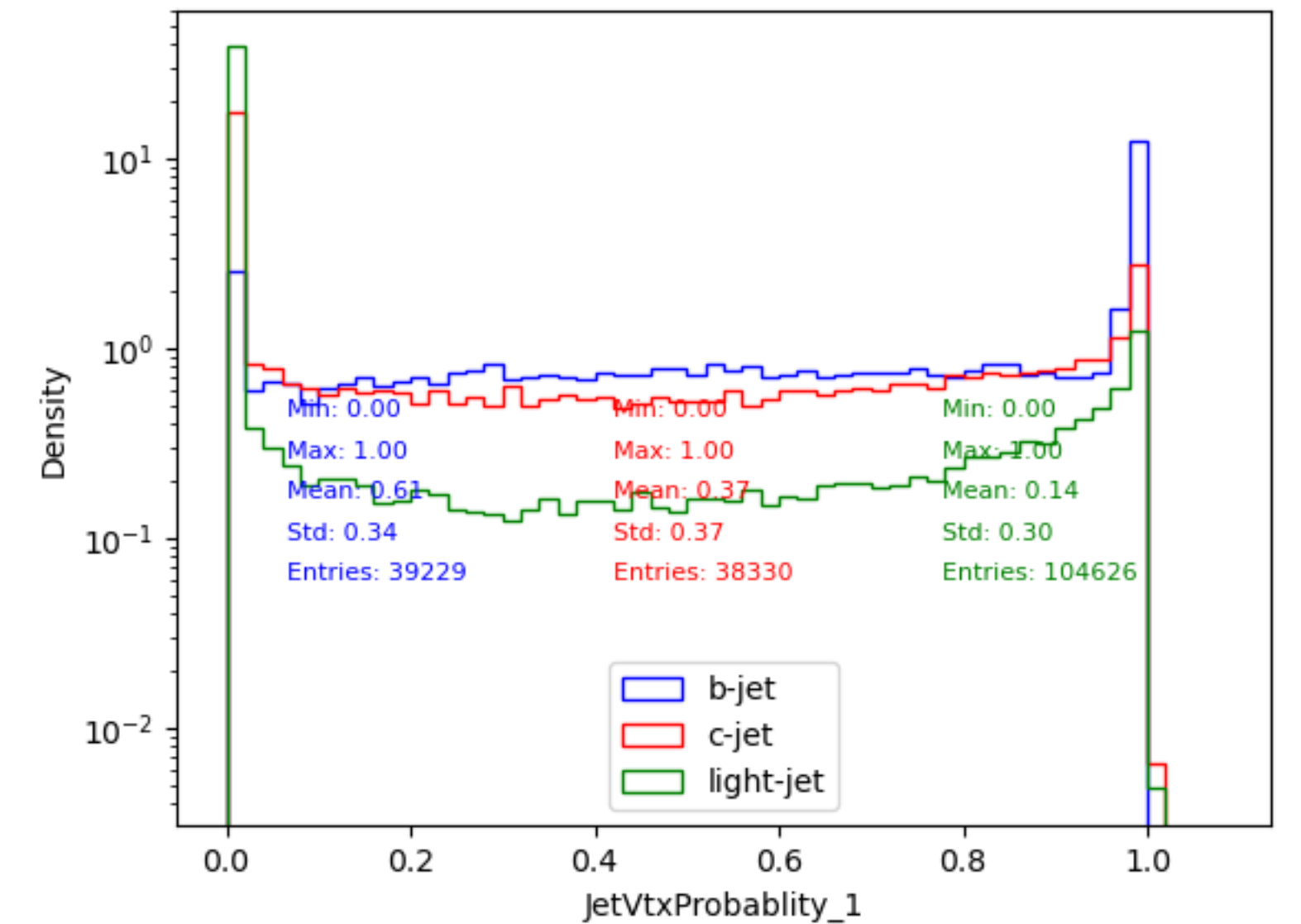
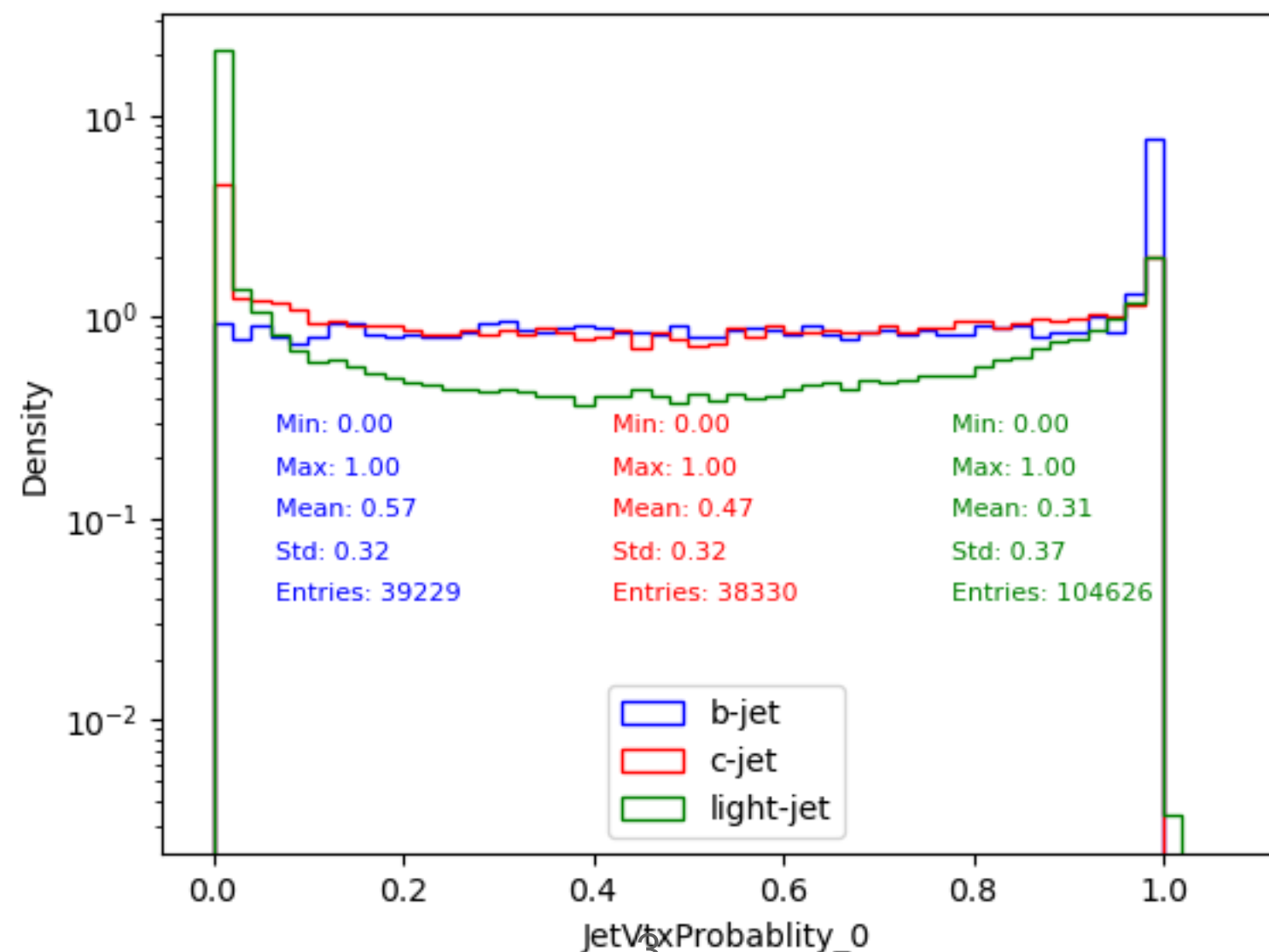
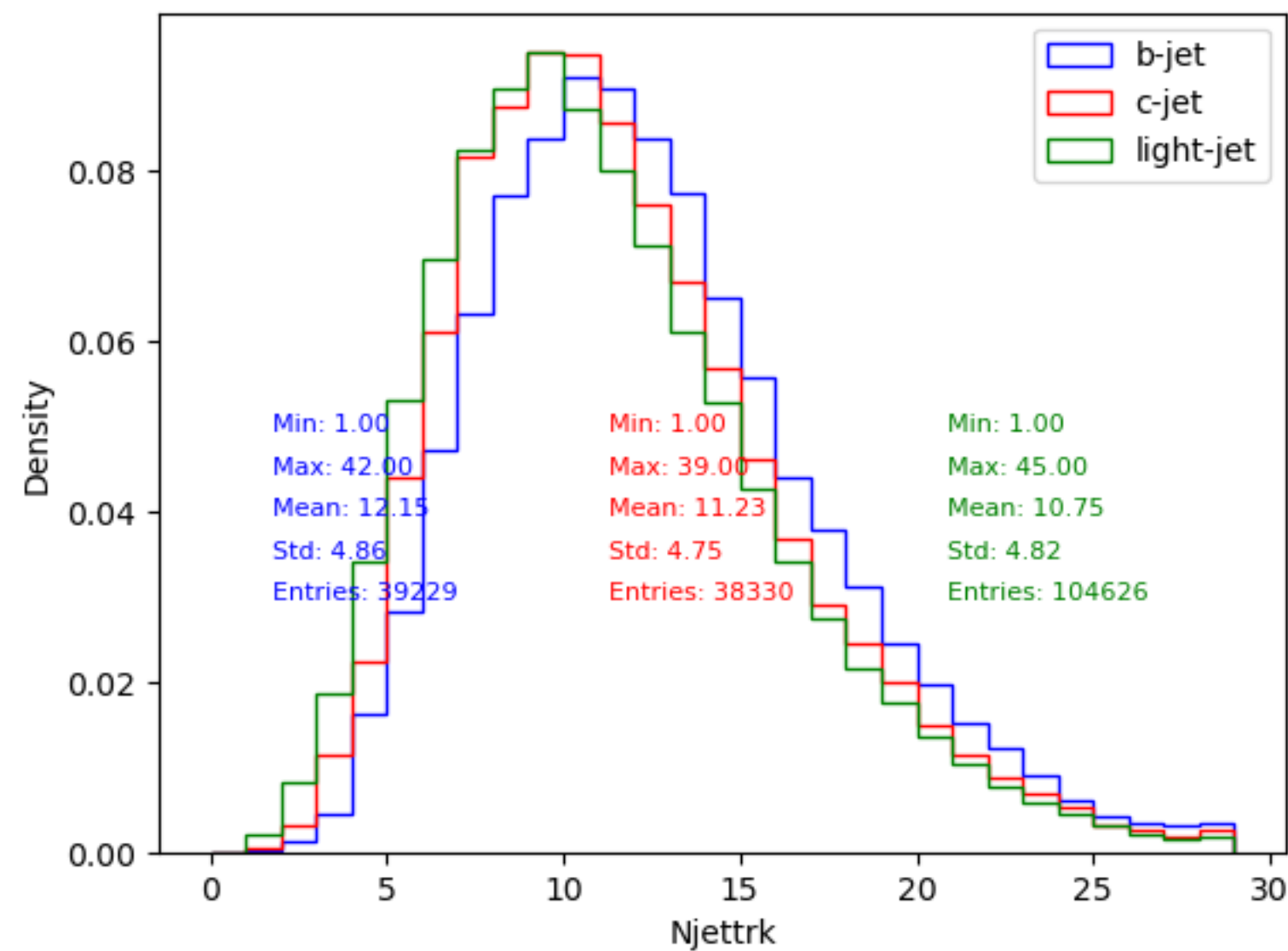
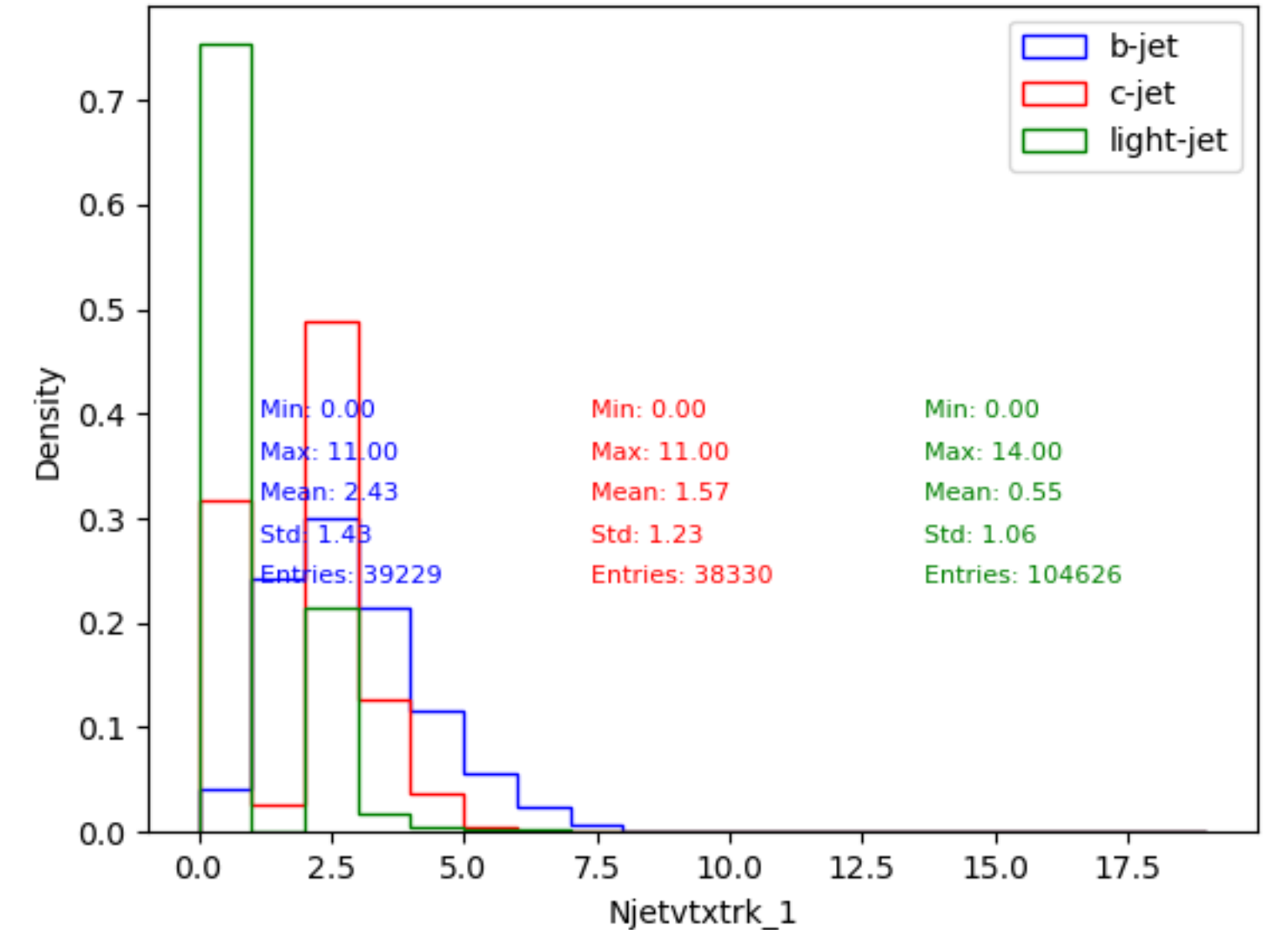
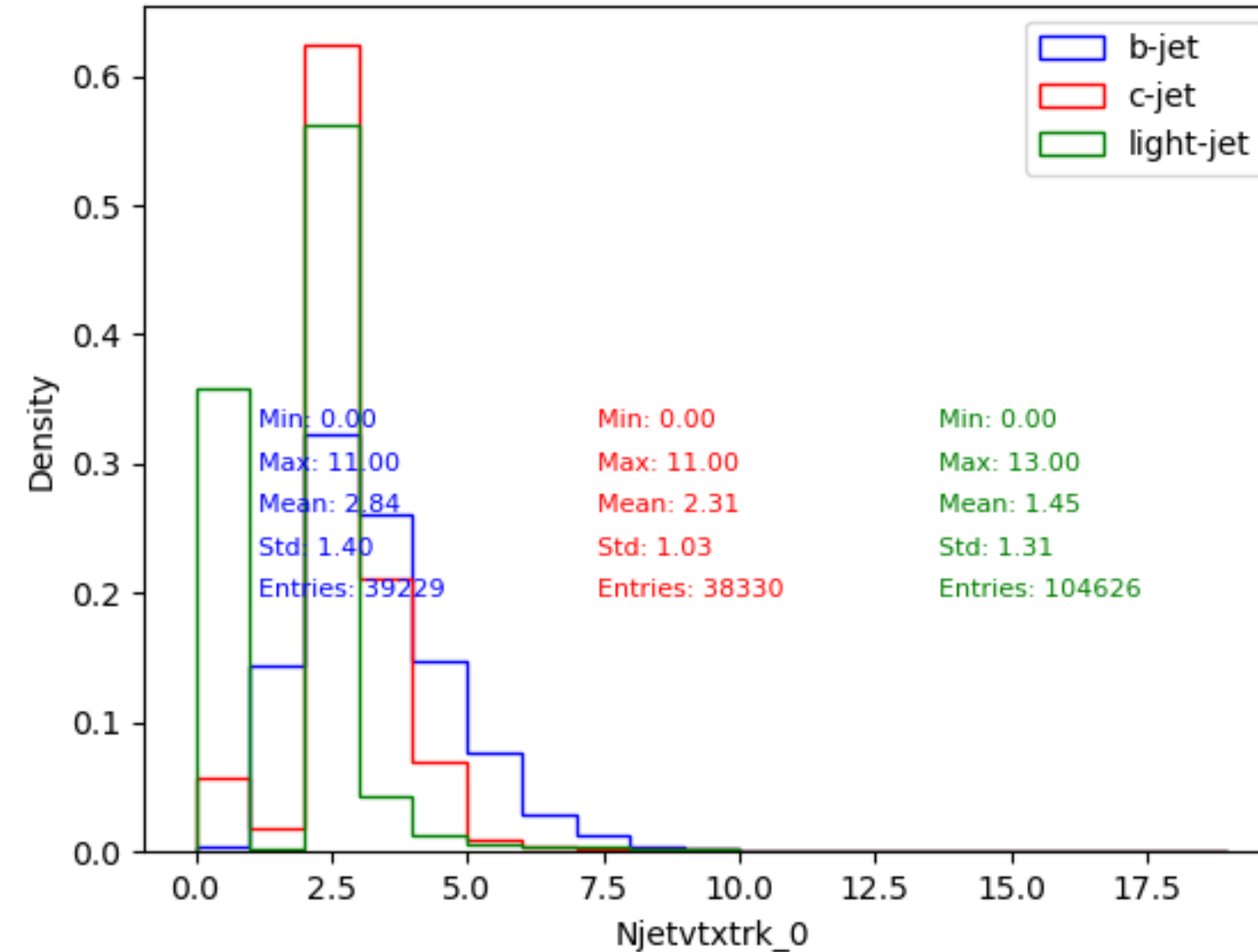
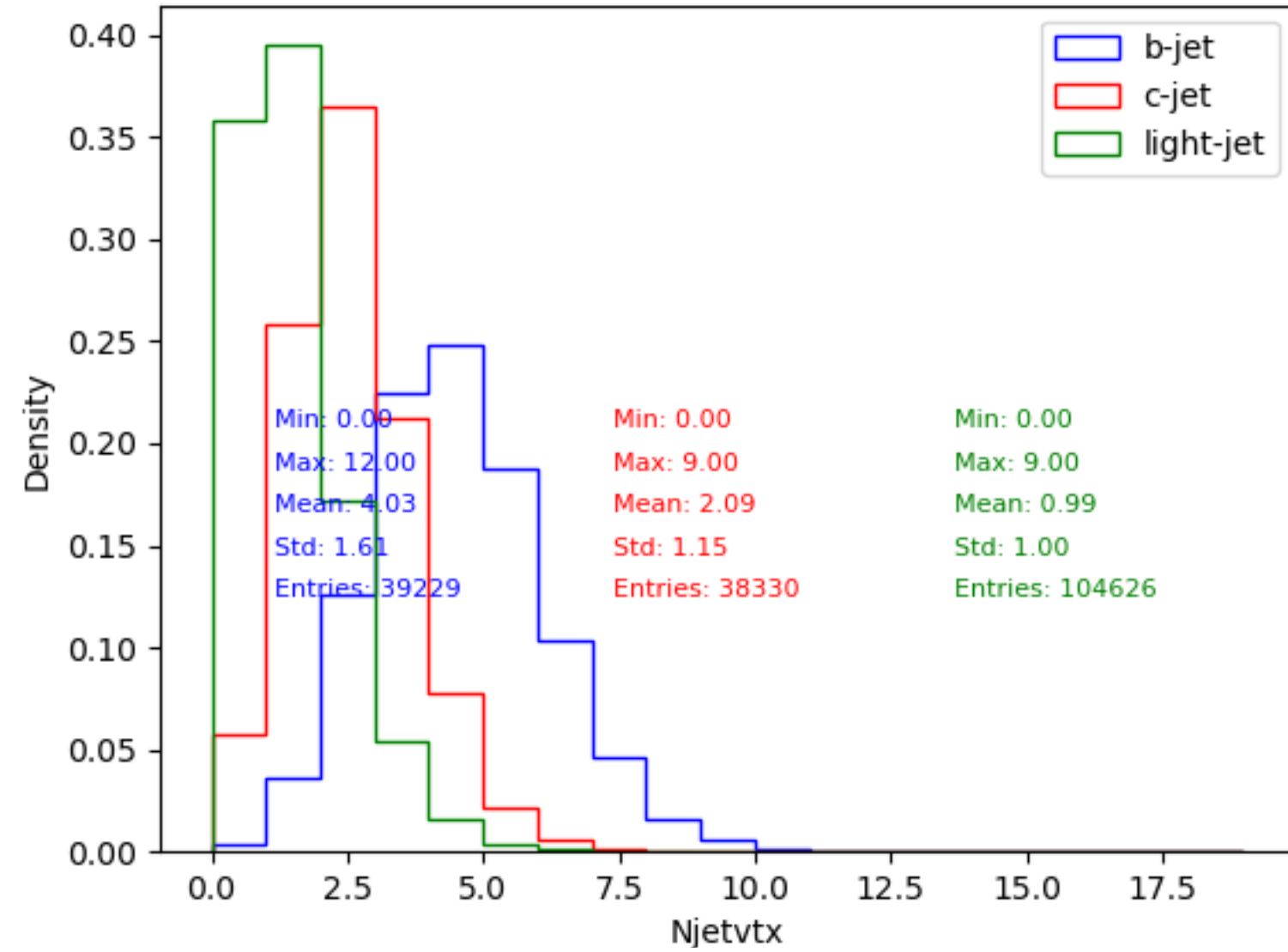
C.Zhang/05Mar2025

Features

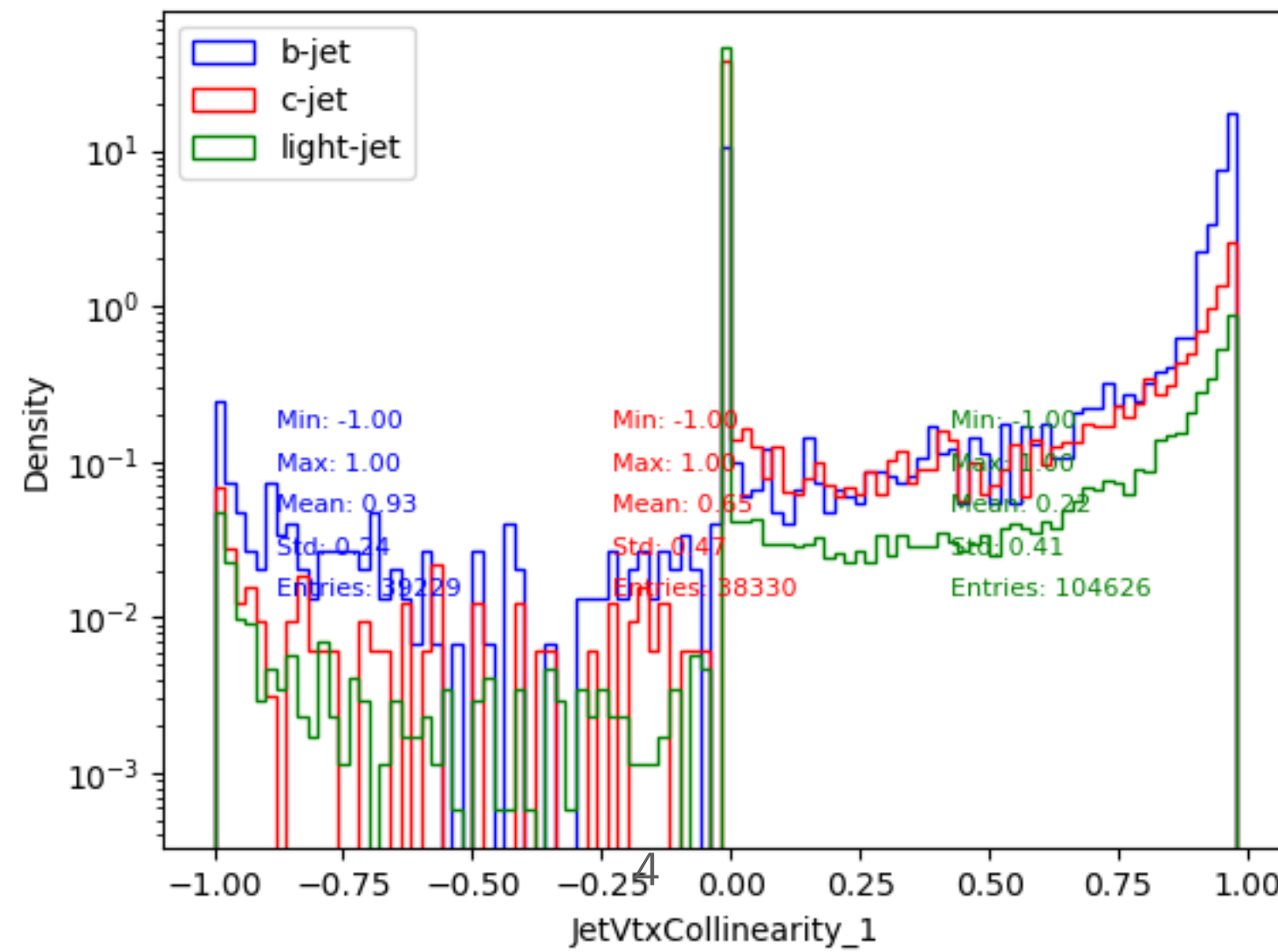
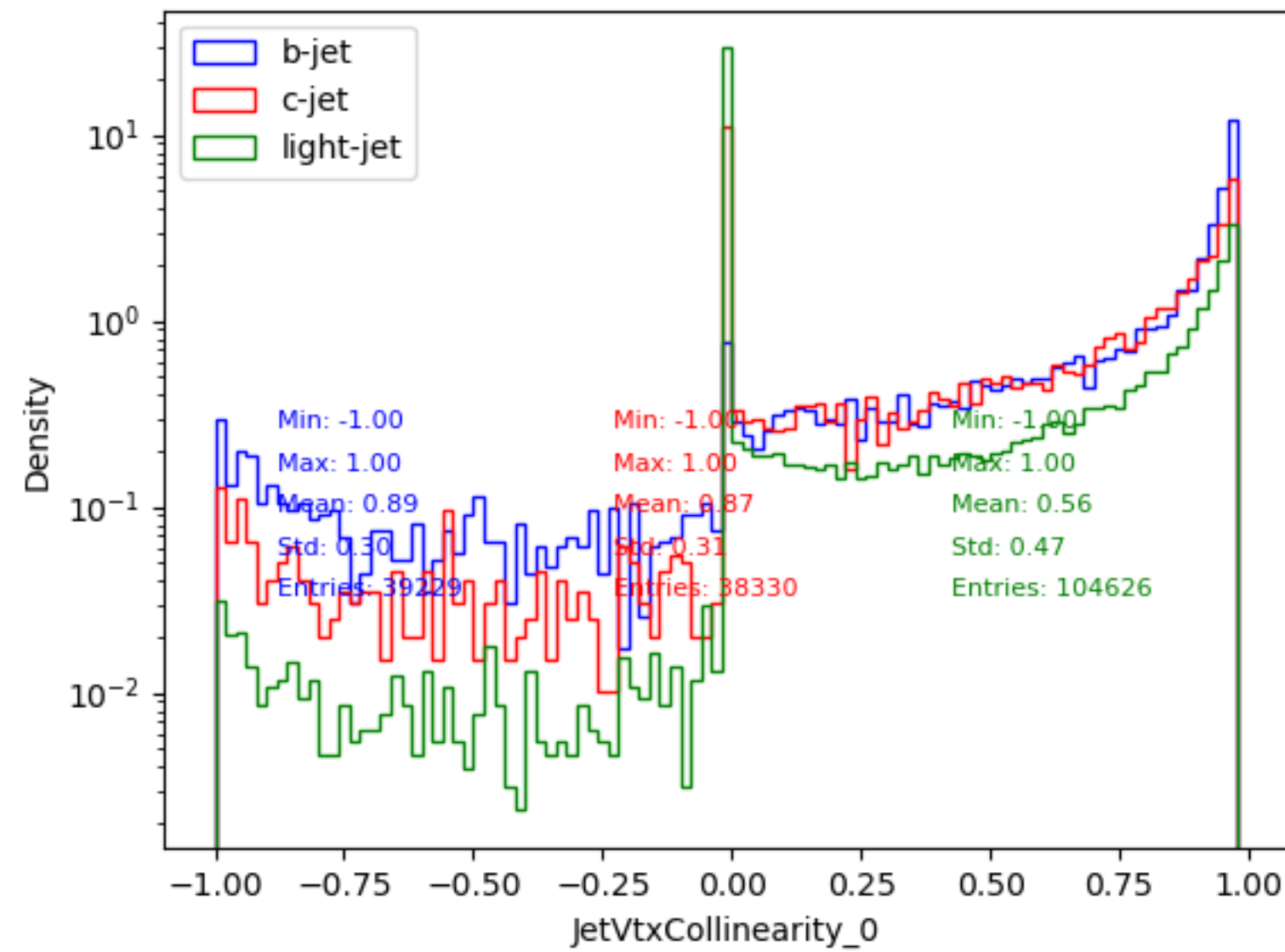
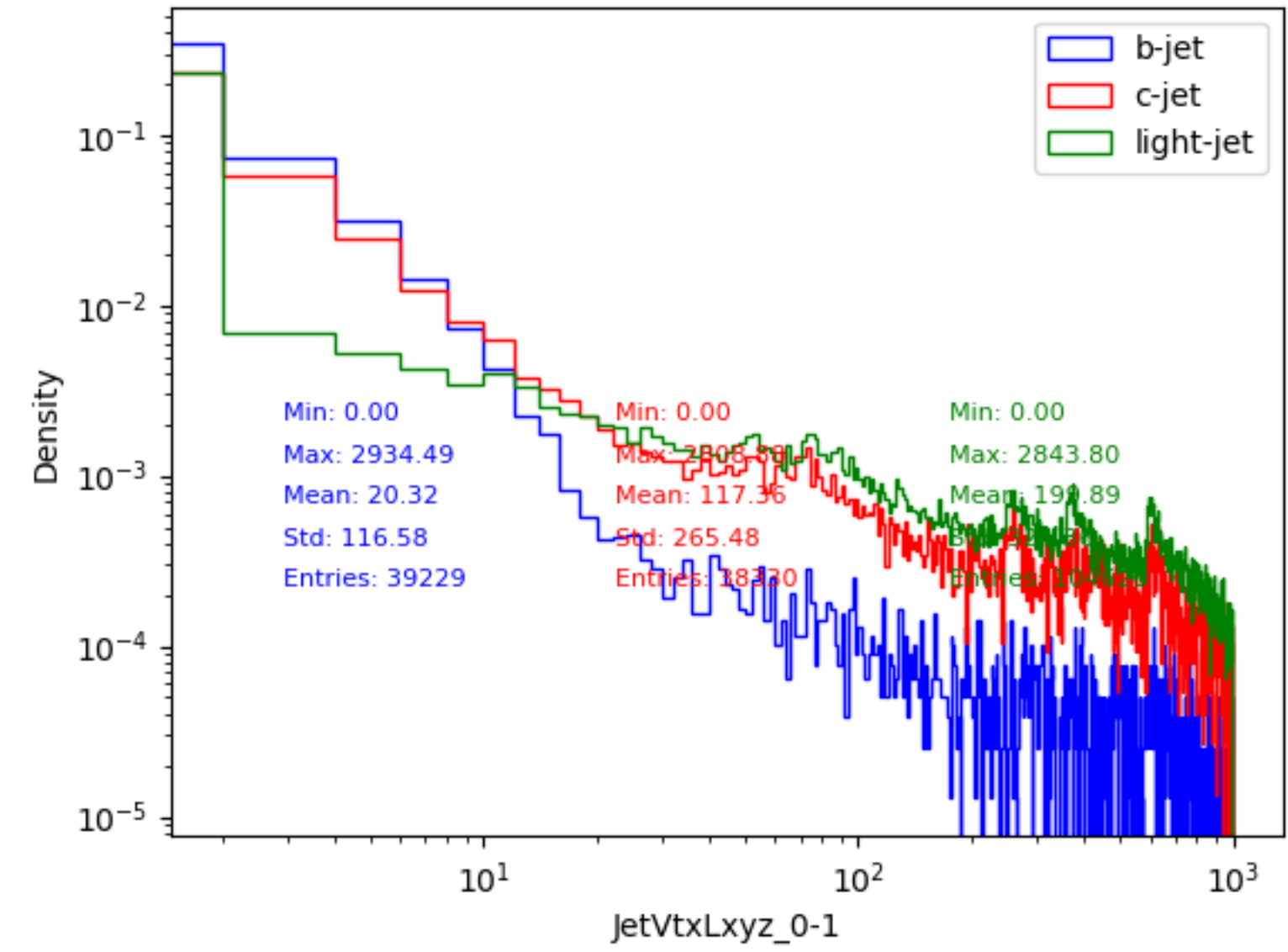
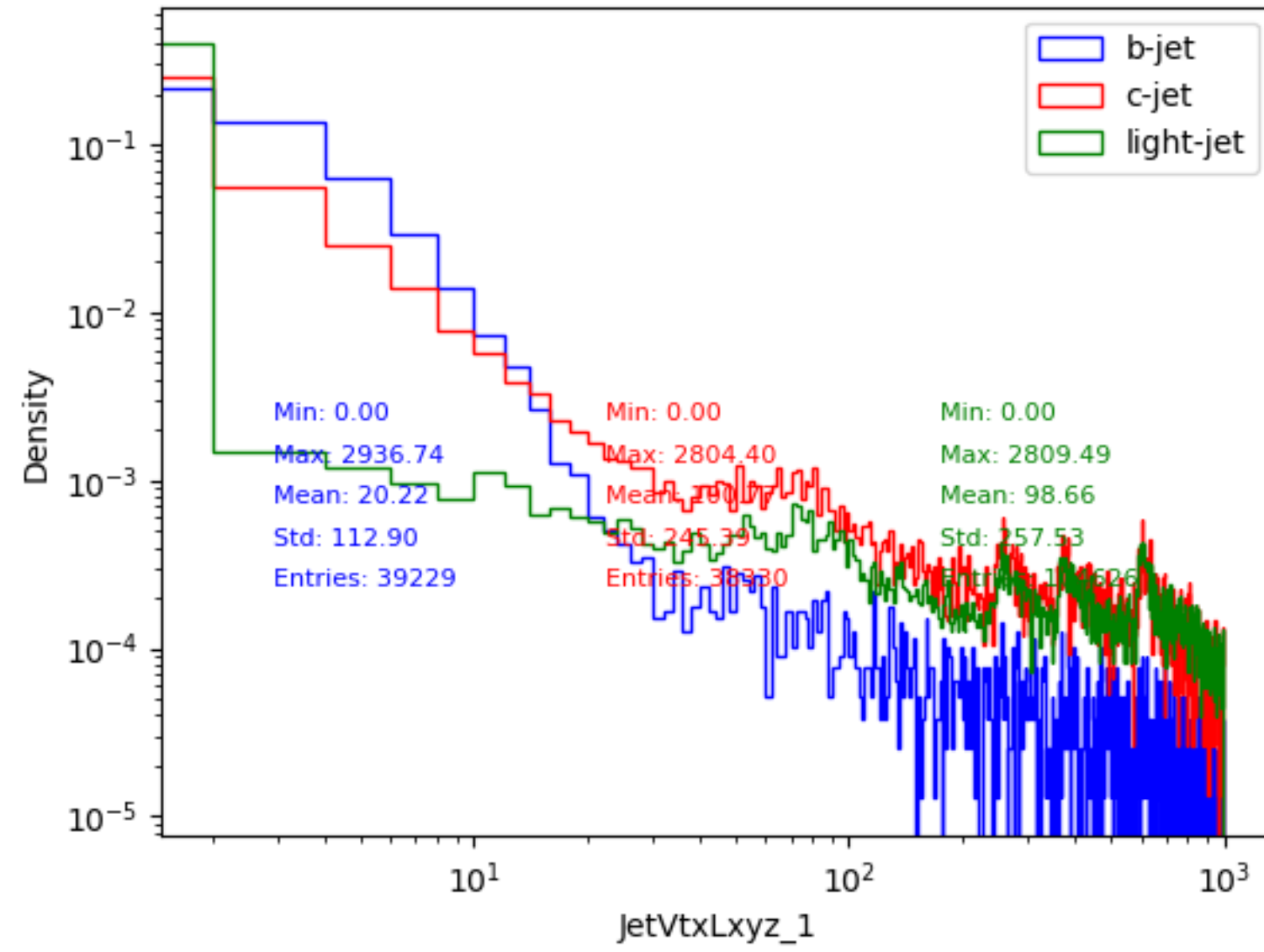
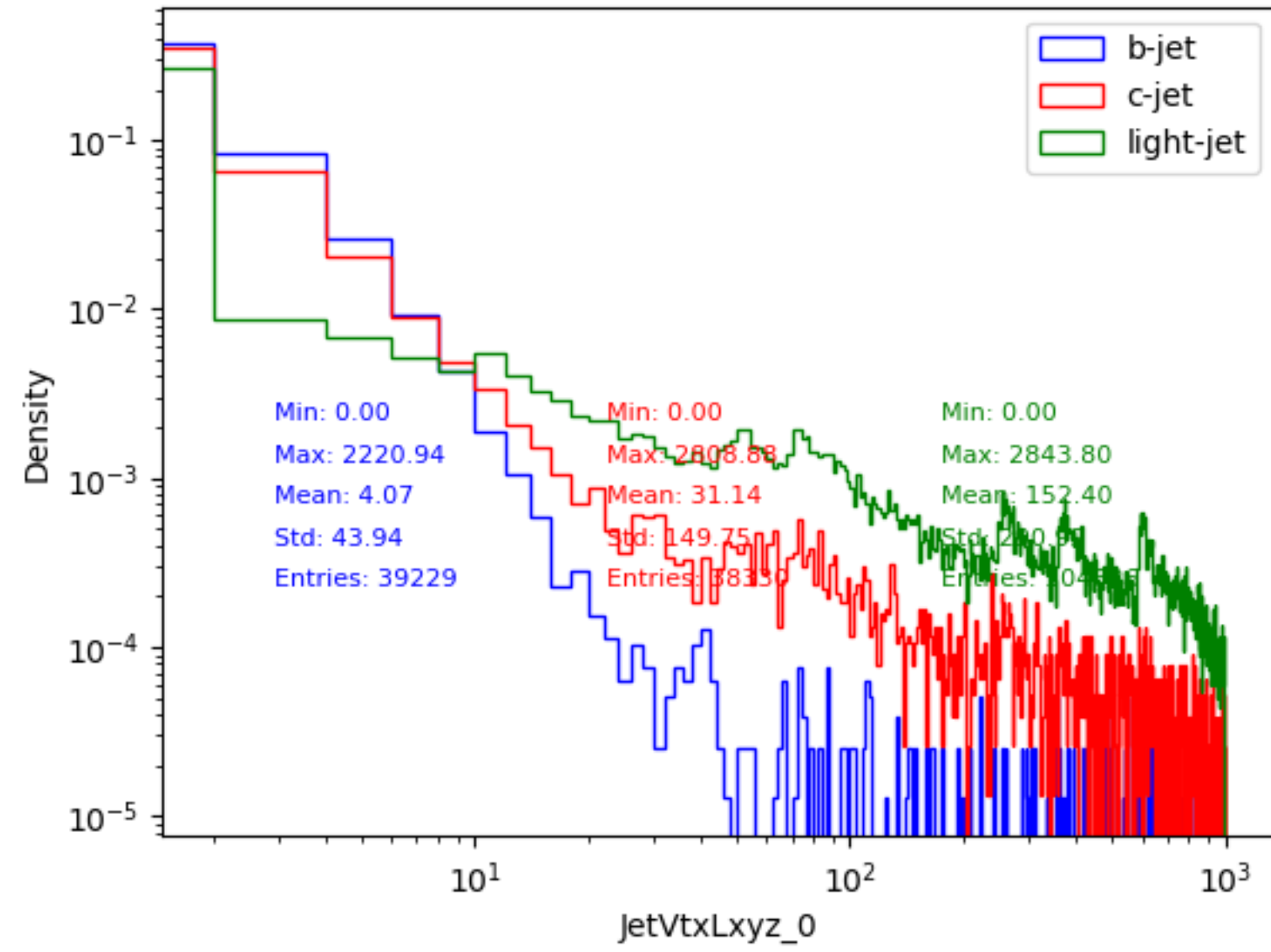
- Only the first two vertices information used (11 features in total)
 - Number of tracks in a jet
 - Number of vertices in a jet
 - Vertex probability (from vertex fitting)
 - Flight of distance of a vertex
 - Number of tracks associated to a vertex
 - Collinearity between vertex position and the sum of momenta of associated tracks
 - **Truth lepton PID used, but reconstructed charged hadron PID**



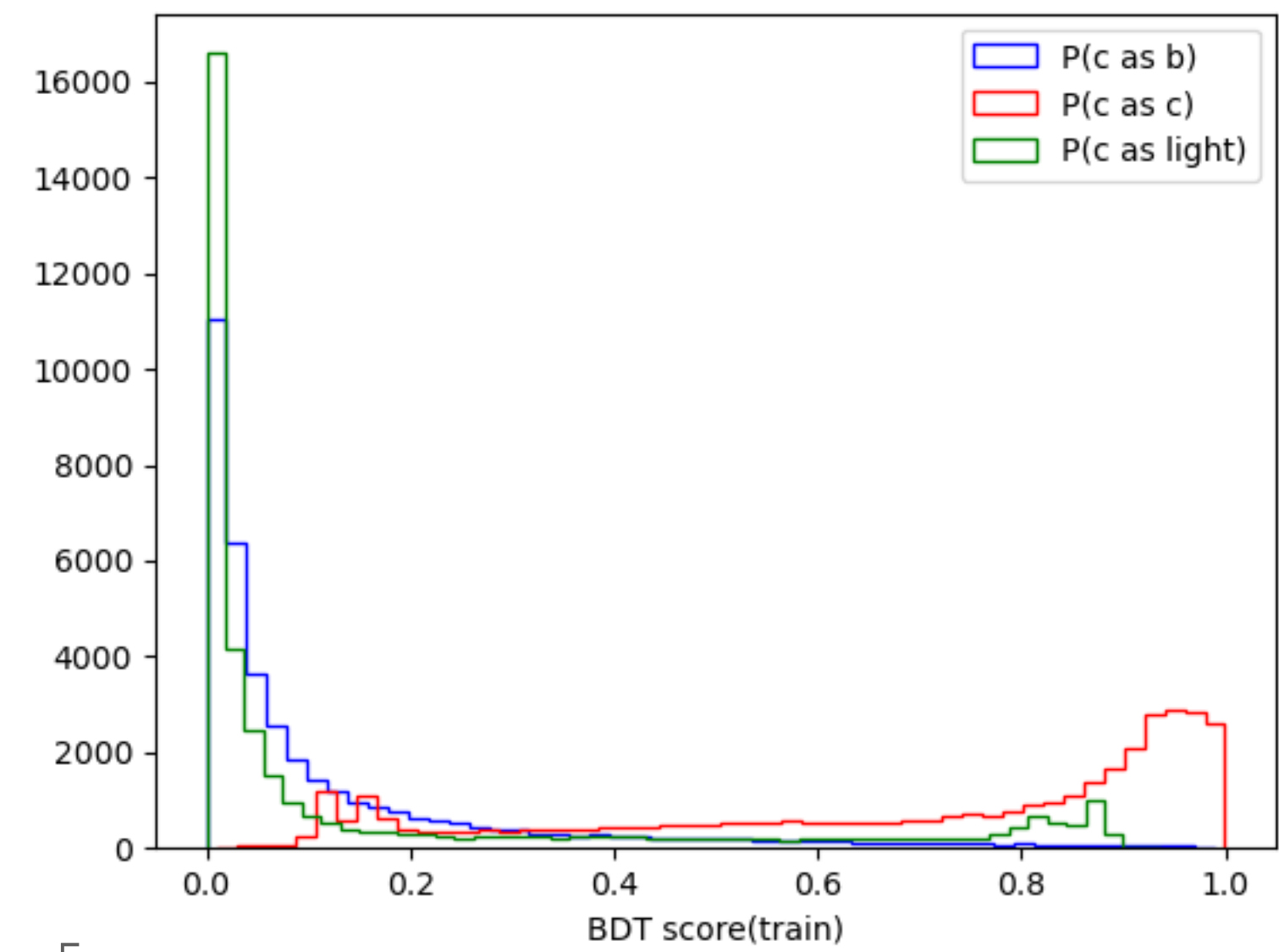
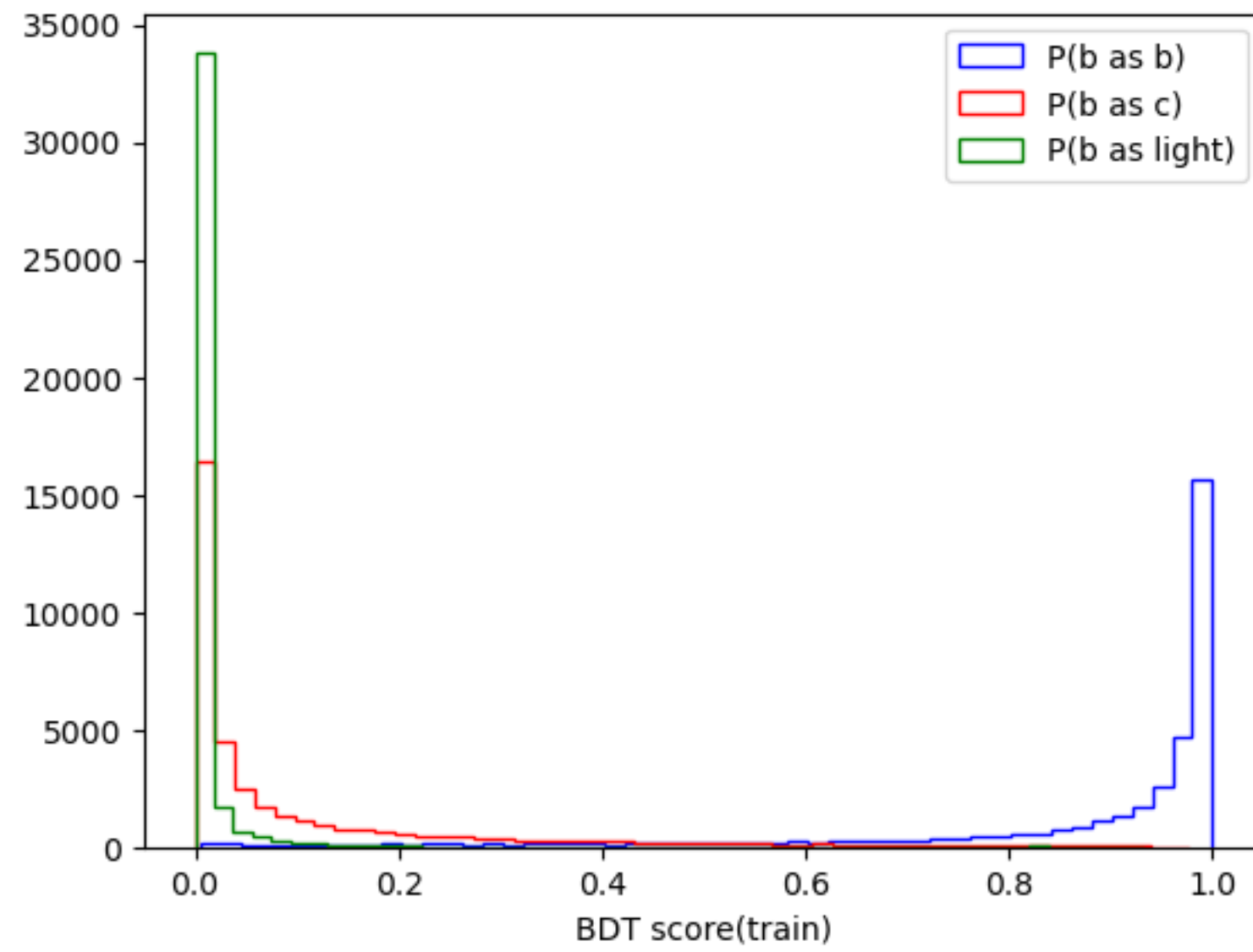
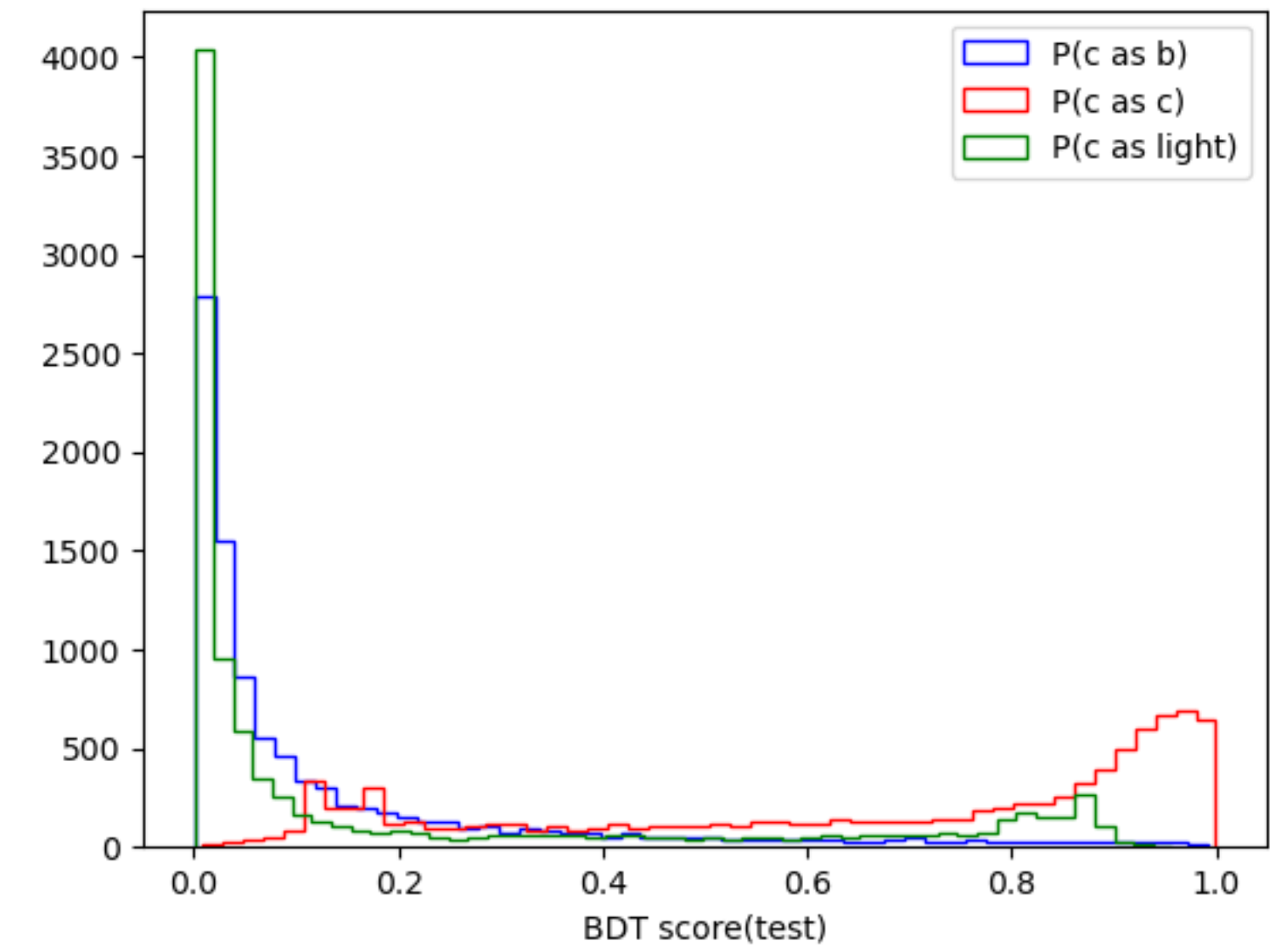
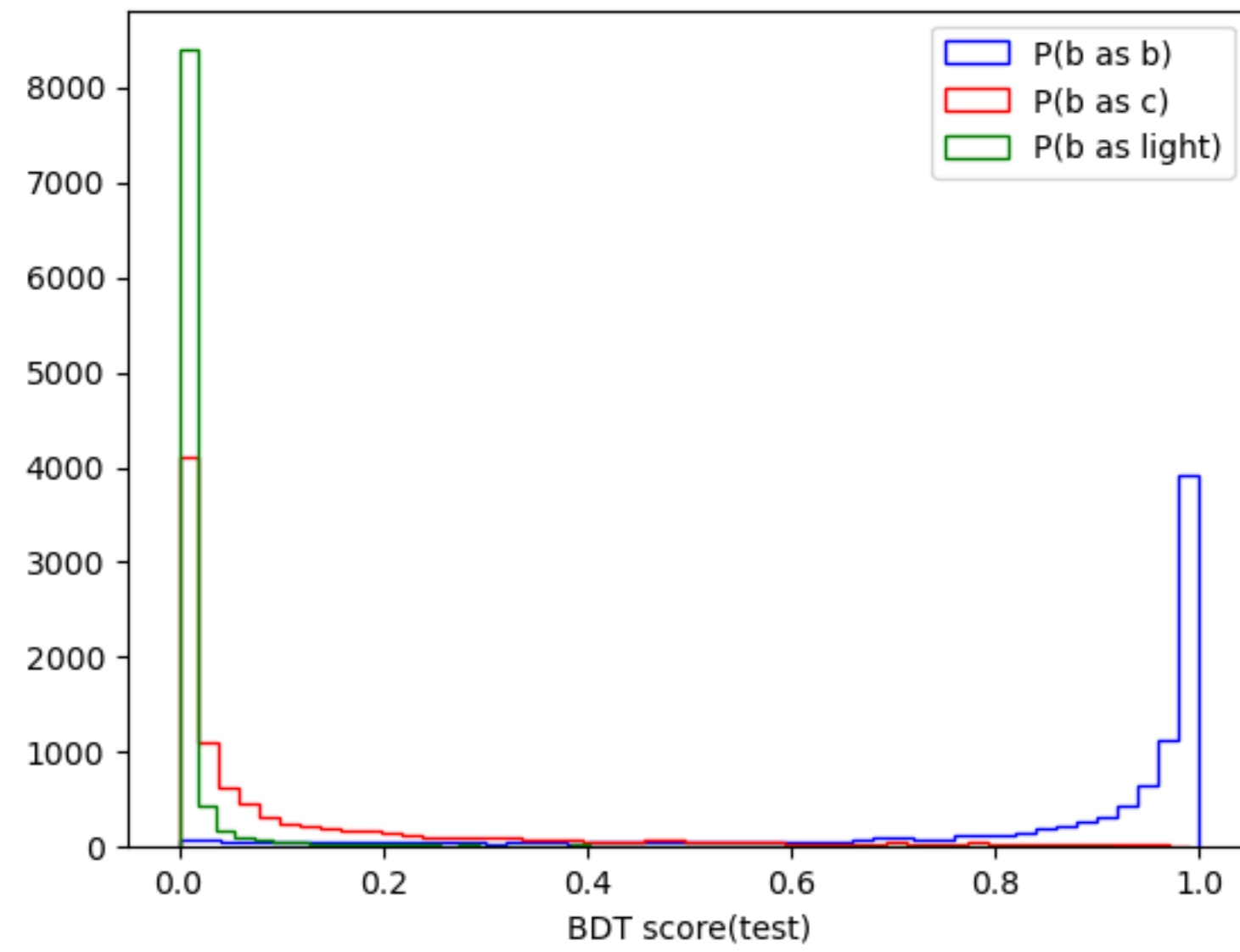
Features



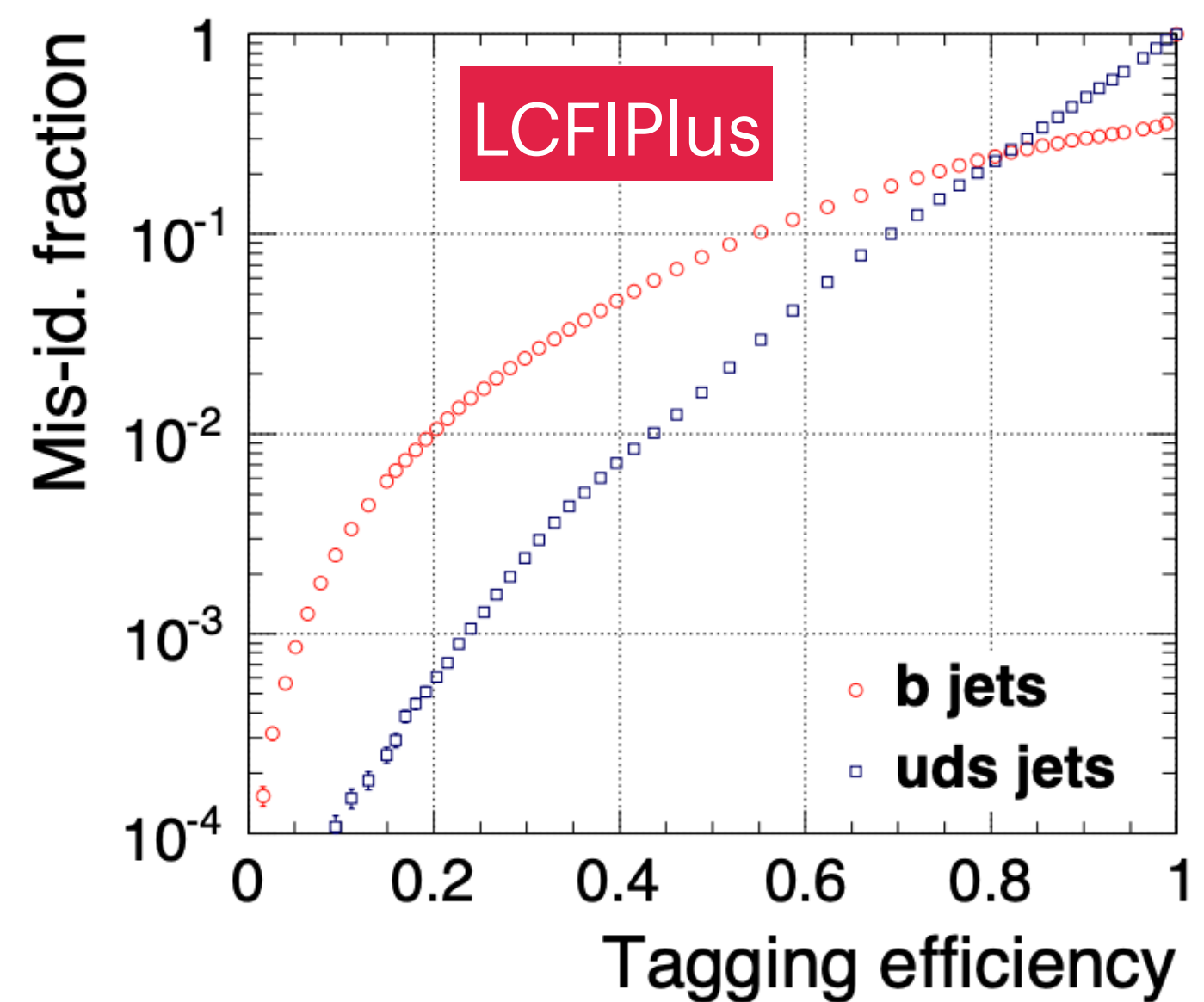
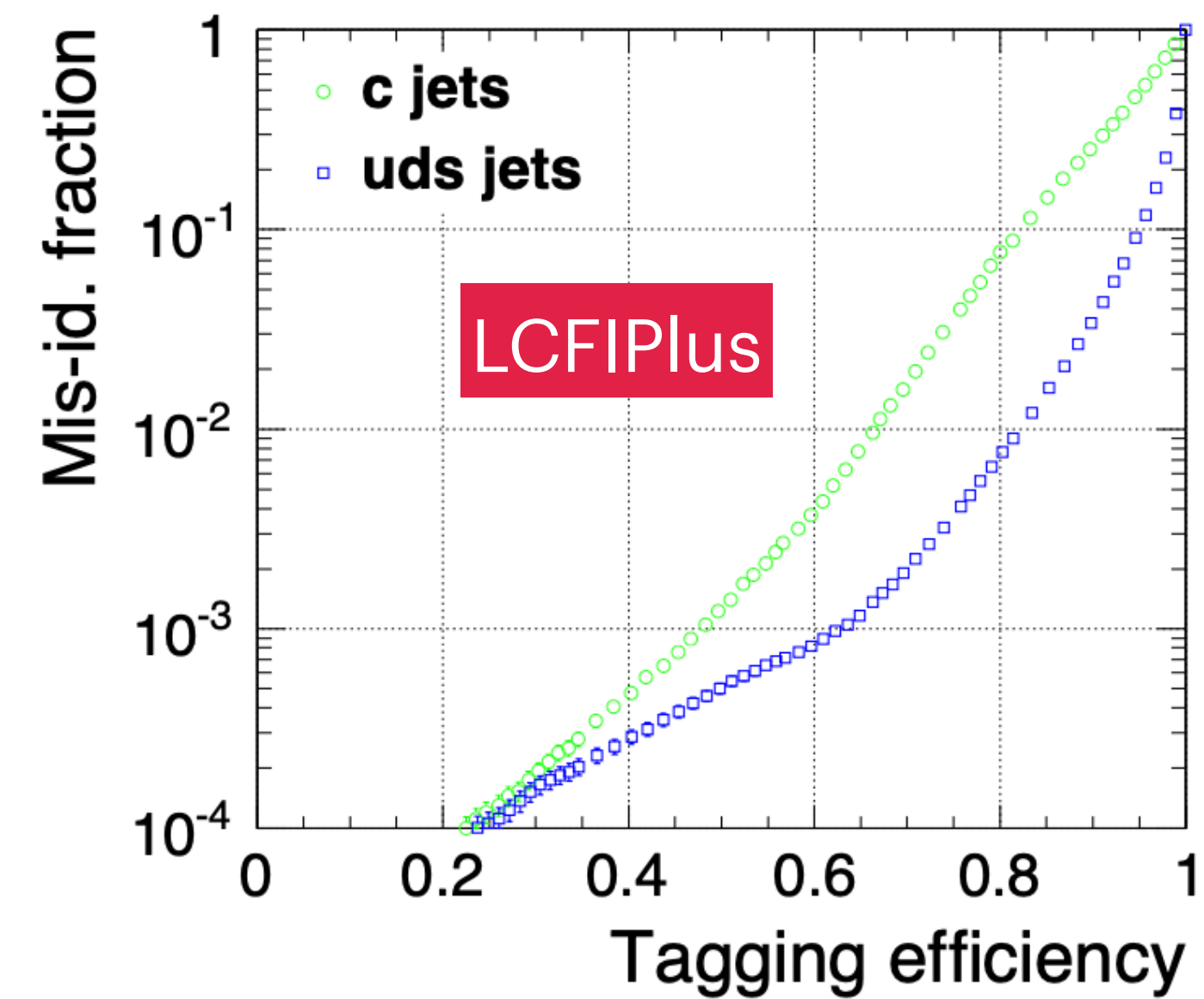
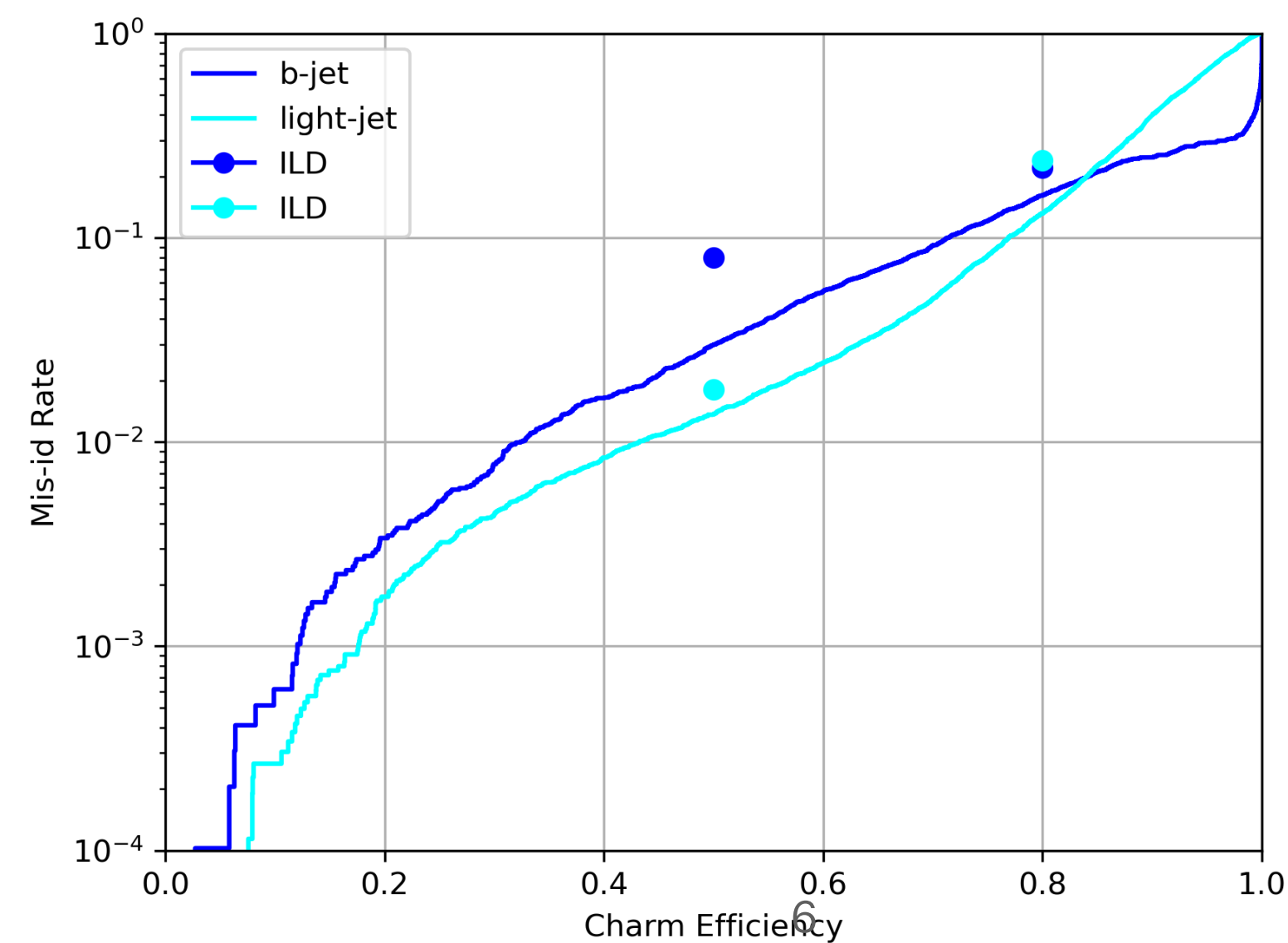
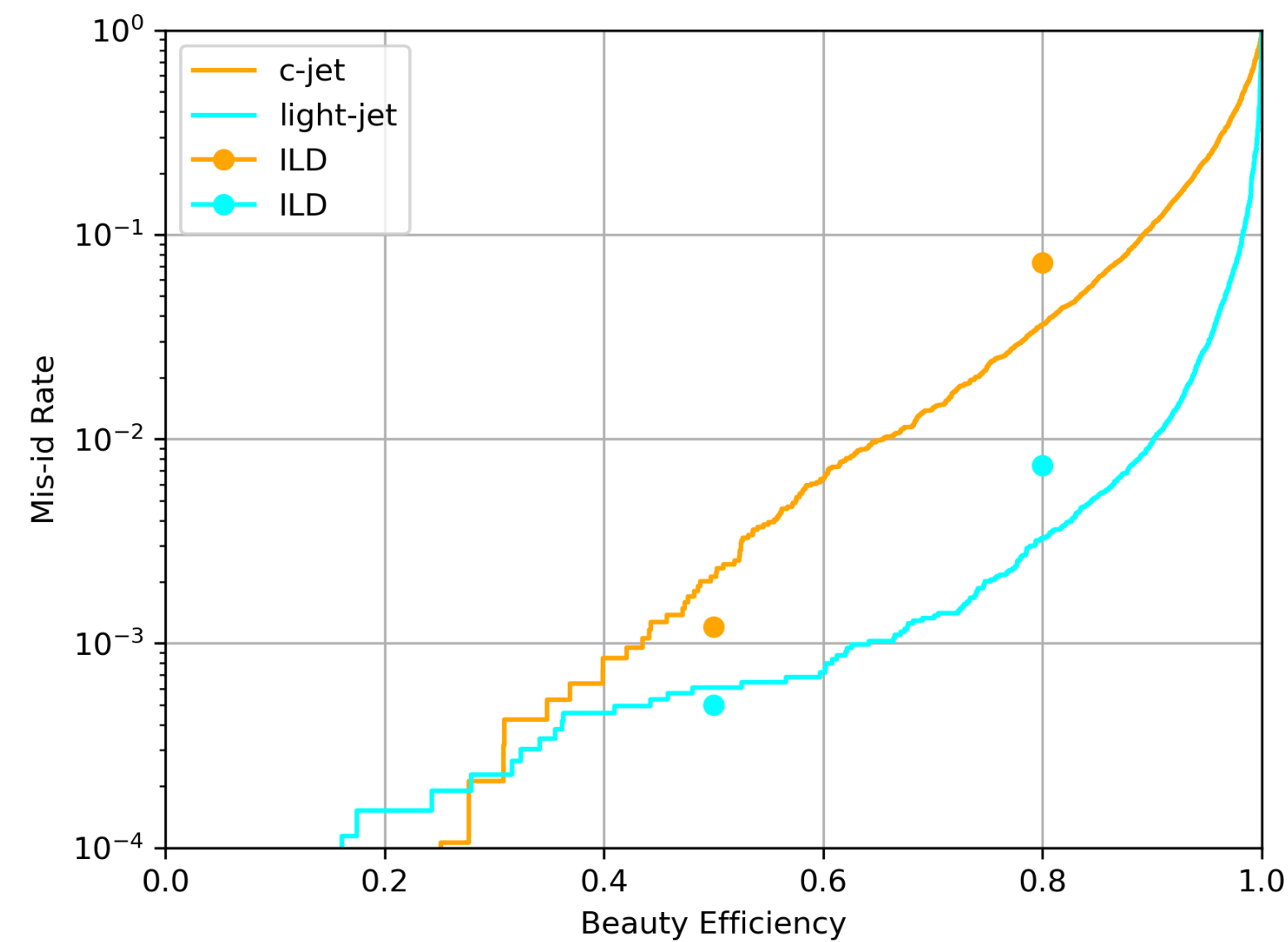
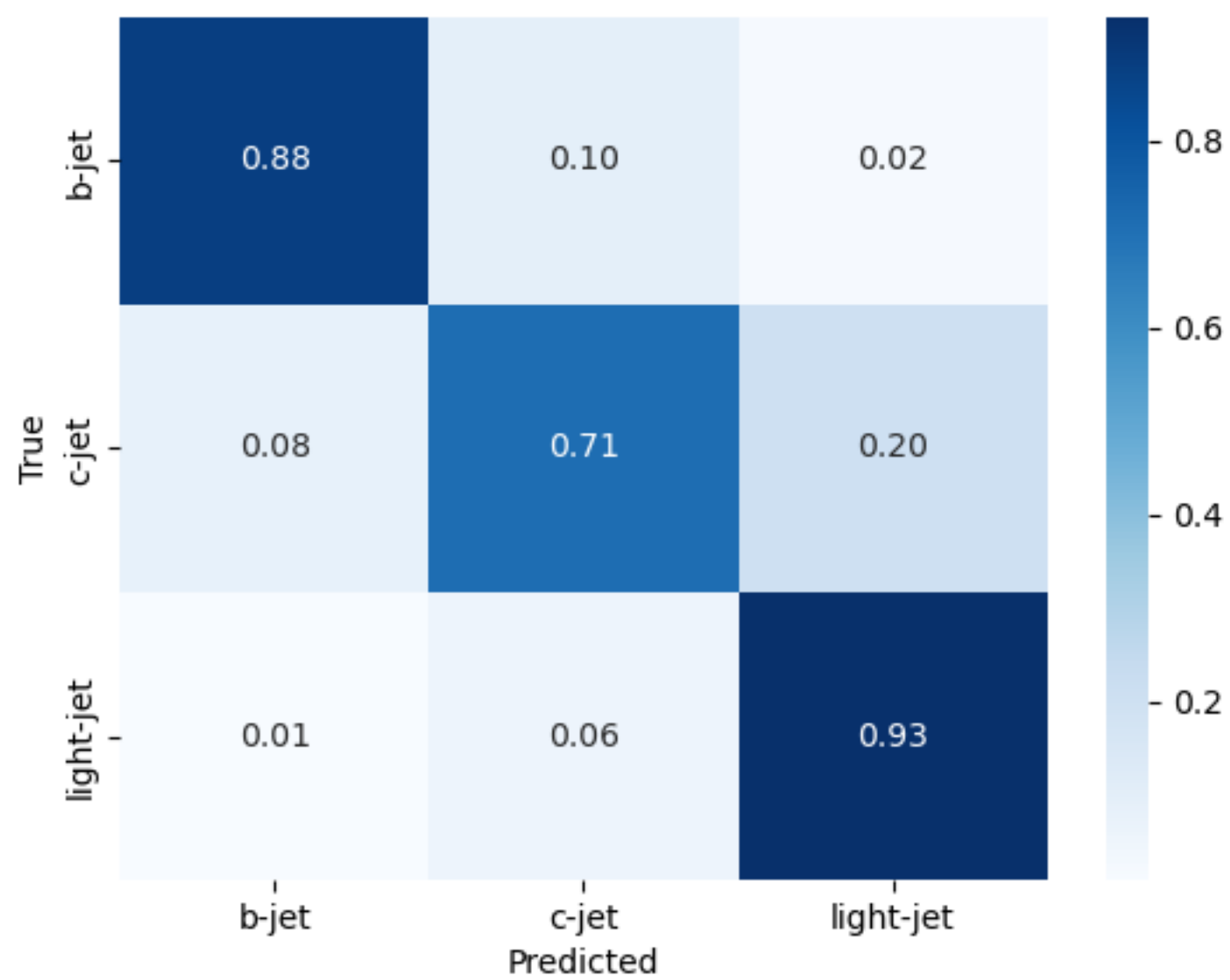
Features



BDT results

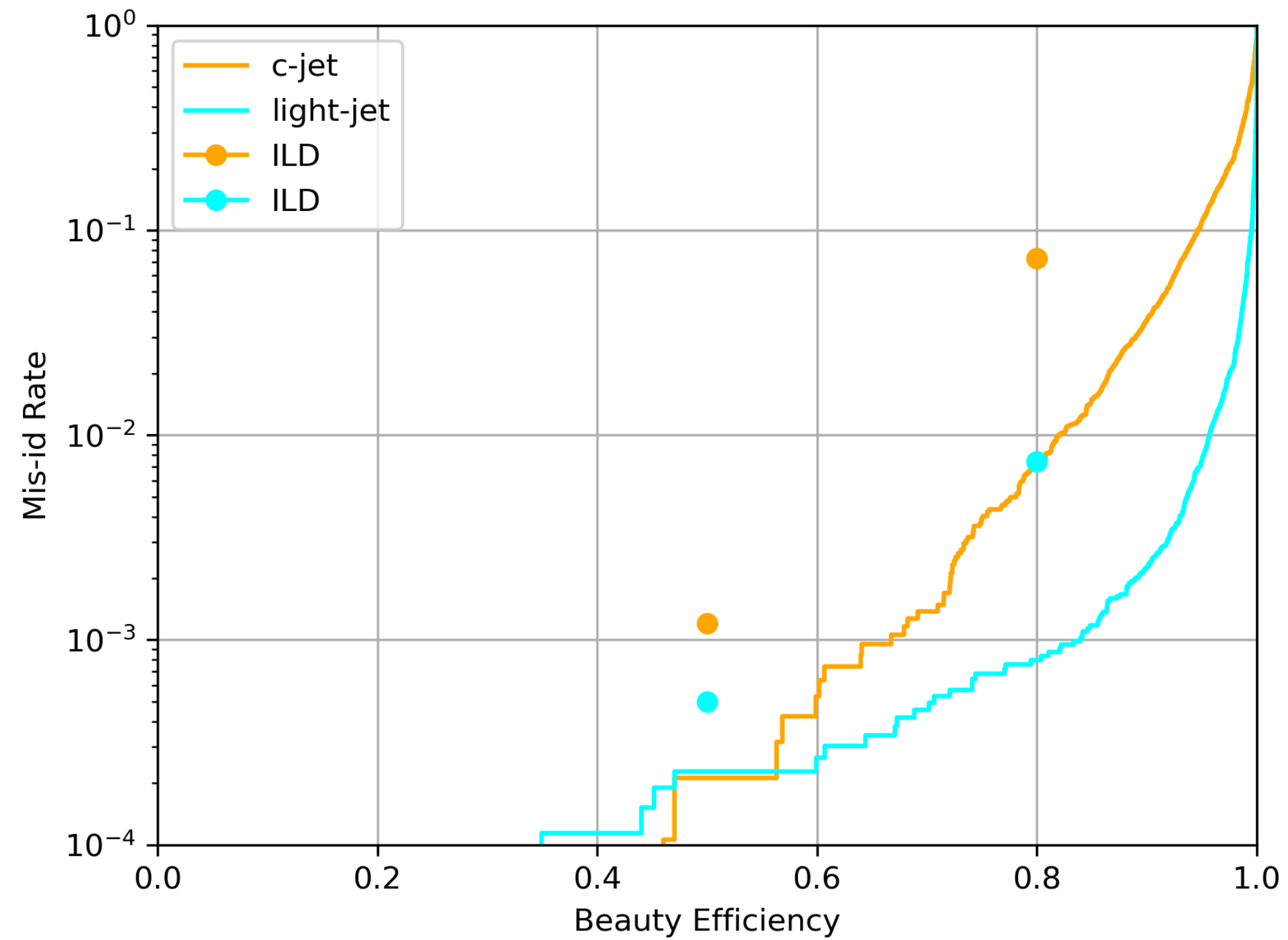


BDT results



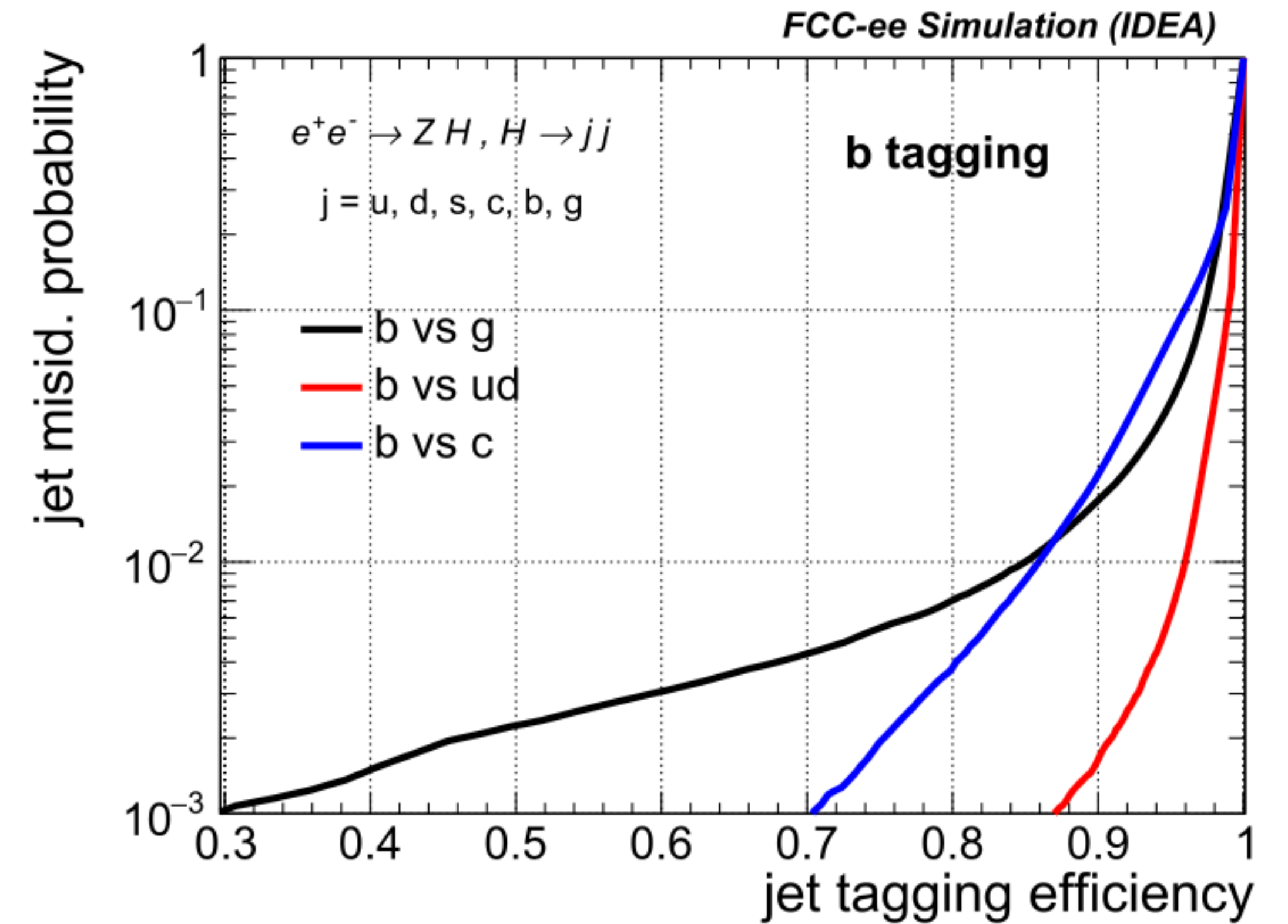
Add all features in hand

eeqq events



EPJC(2022)82-646

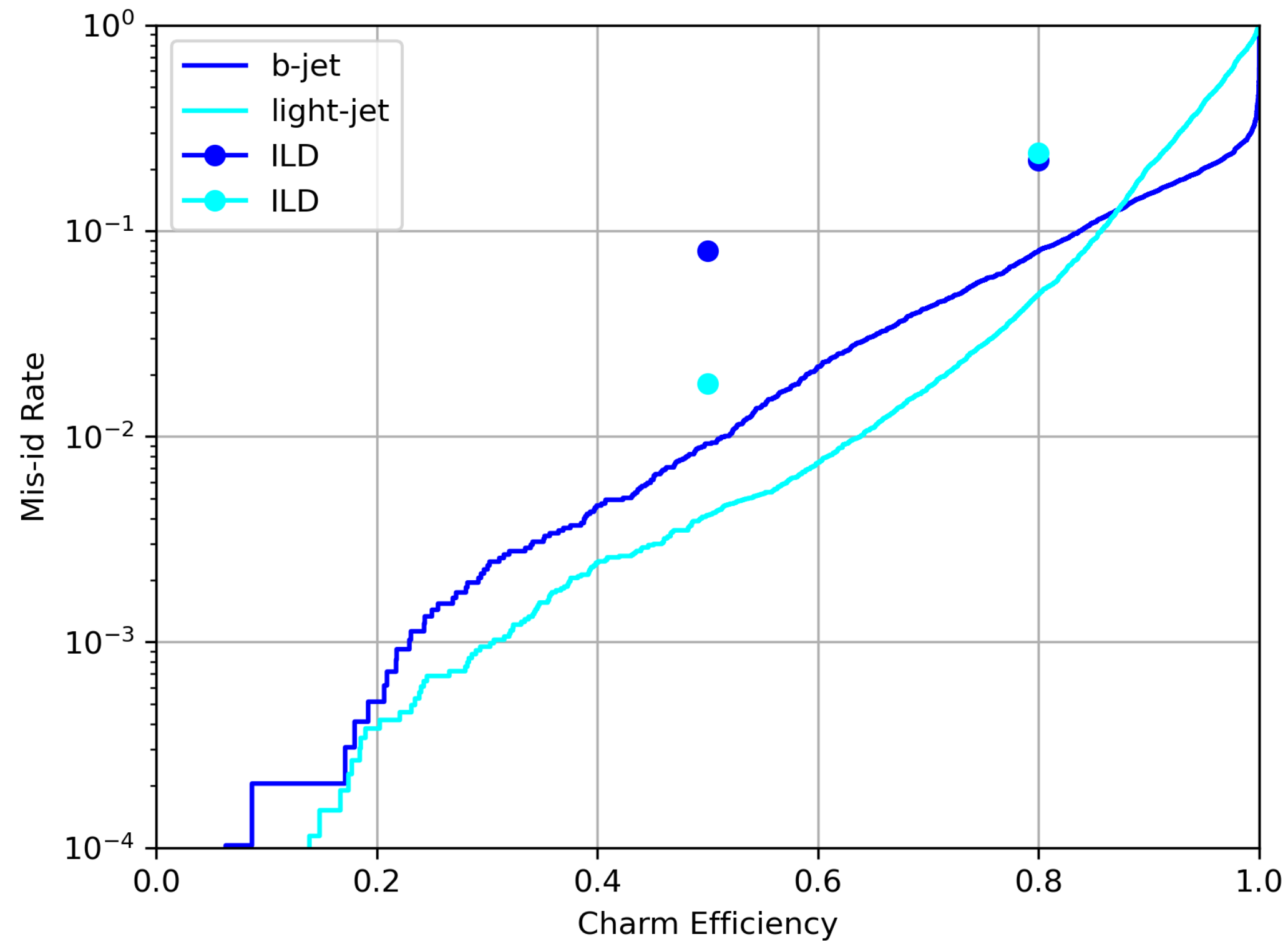
ParticleNet



Worse than ParticleNet
Much better than ILD

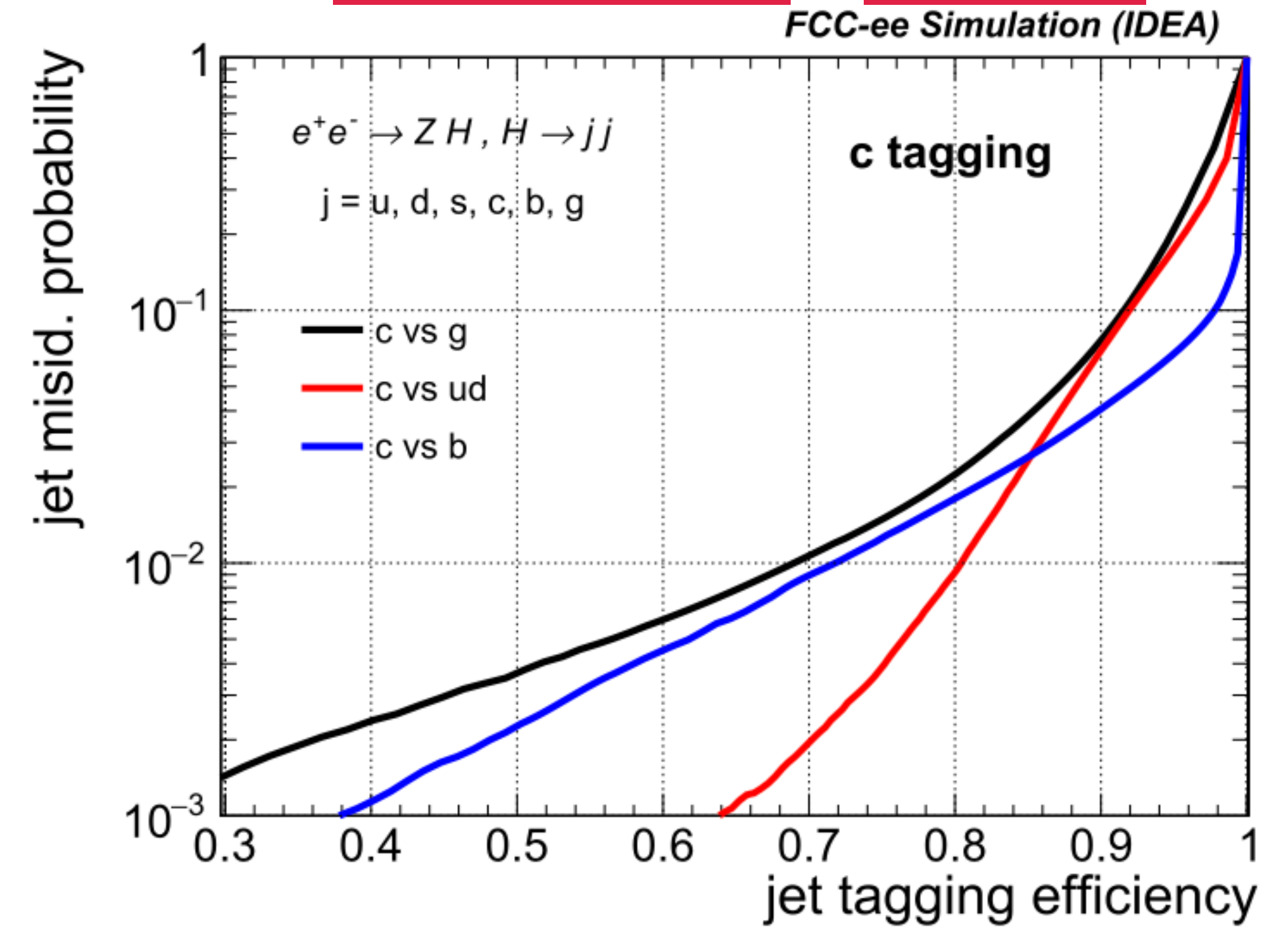
Add all features in hand

eeqq events



EPJC(2022)82-646

ParticleNet



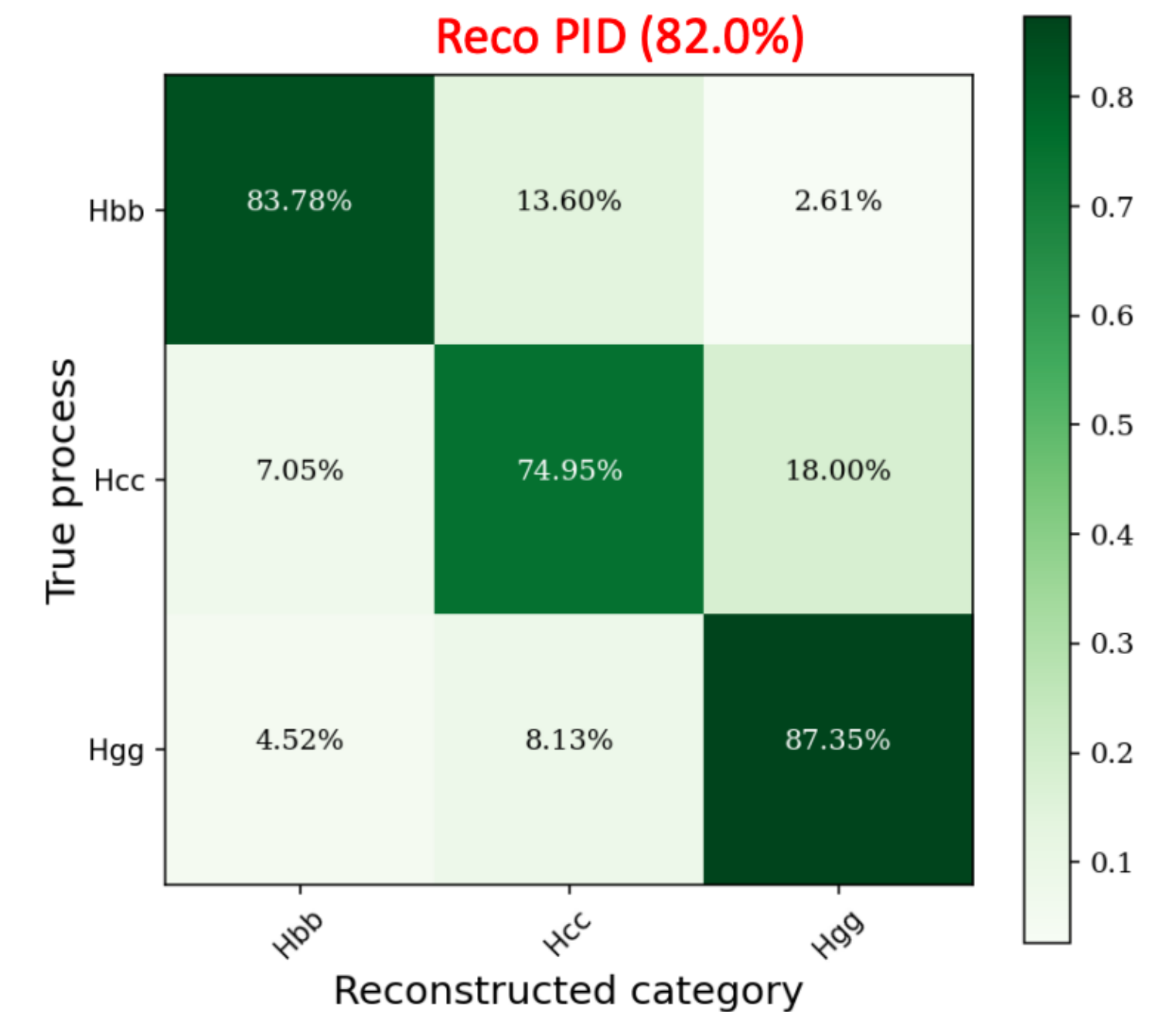
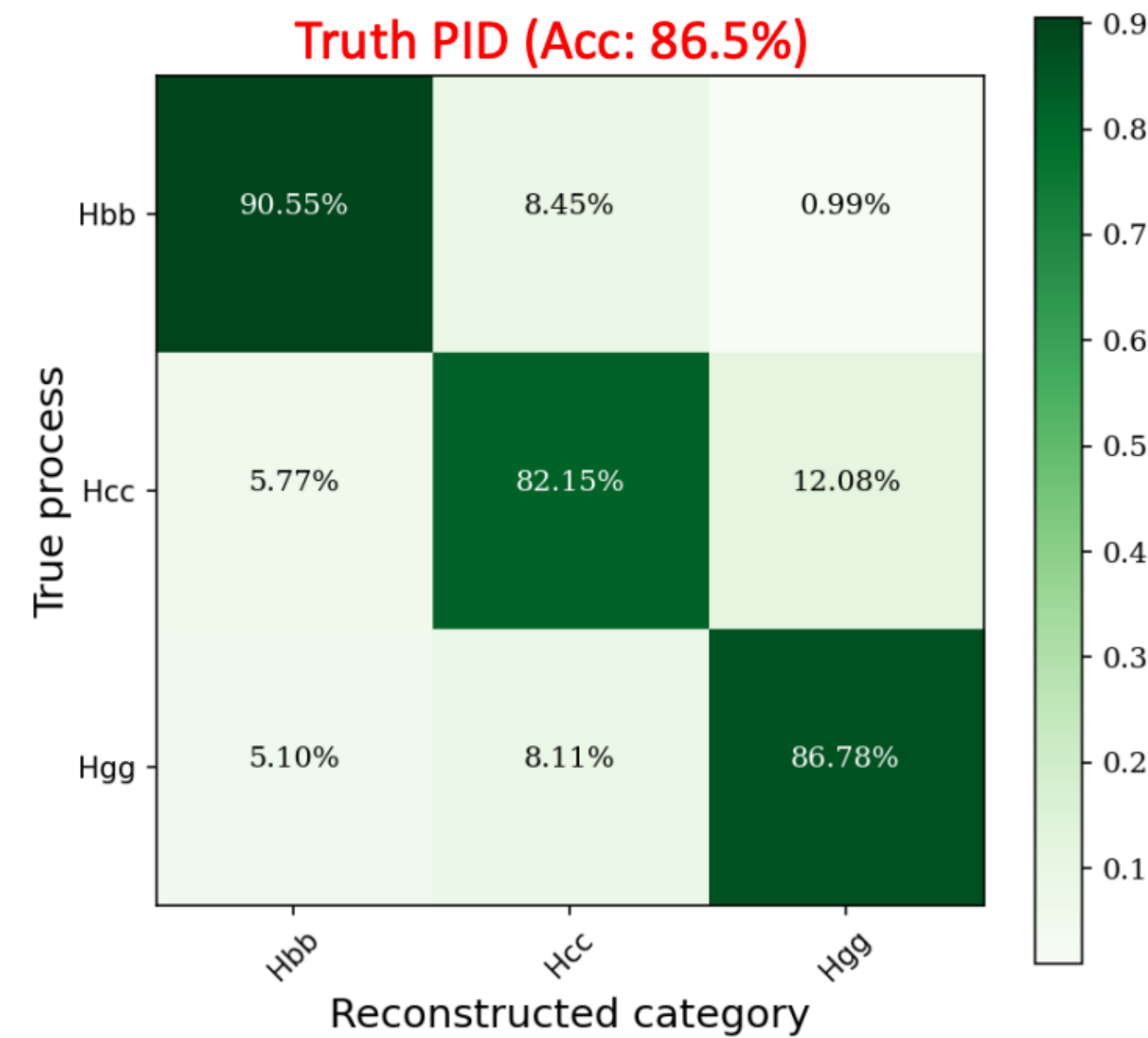
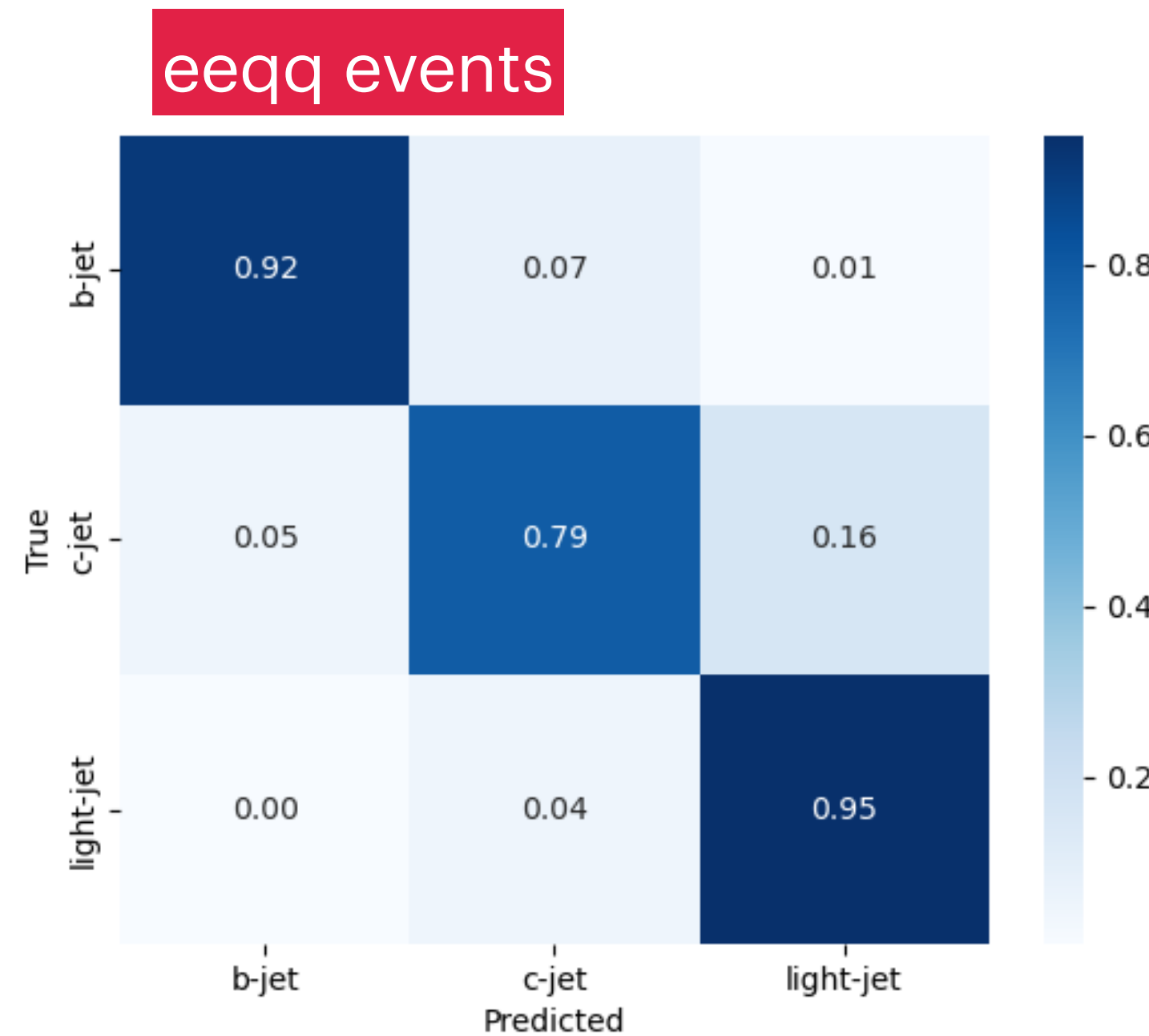
Worse than ParticleNet
Much better than ILD

Add all features in hand

➤ Event level classification (PFN):

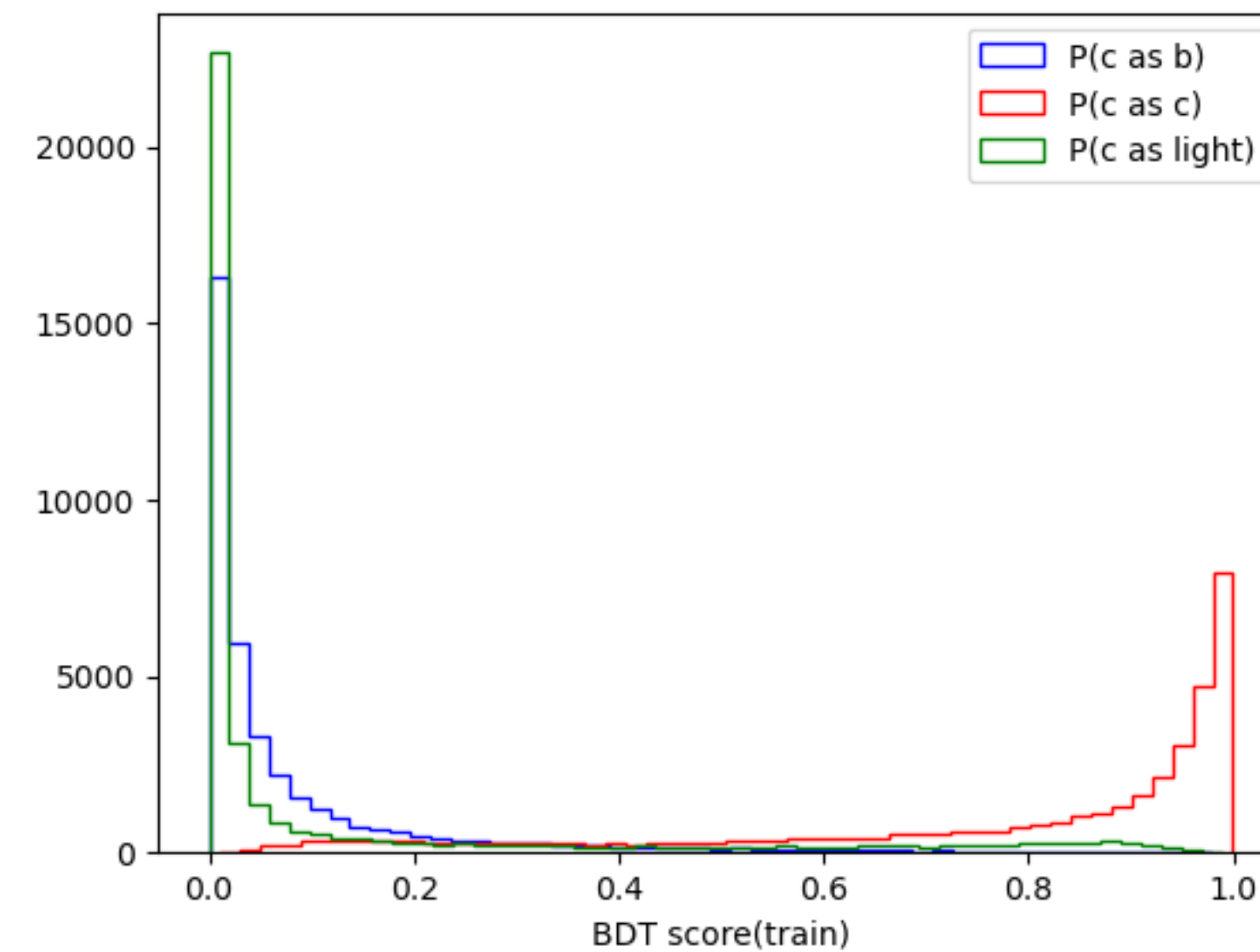
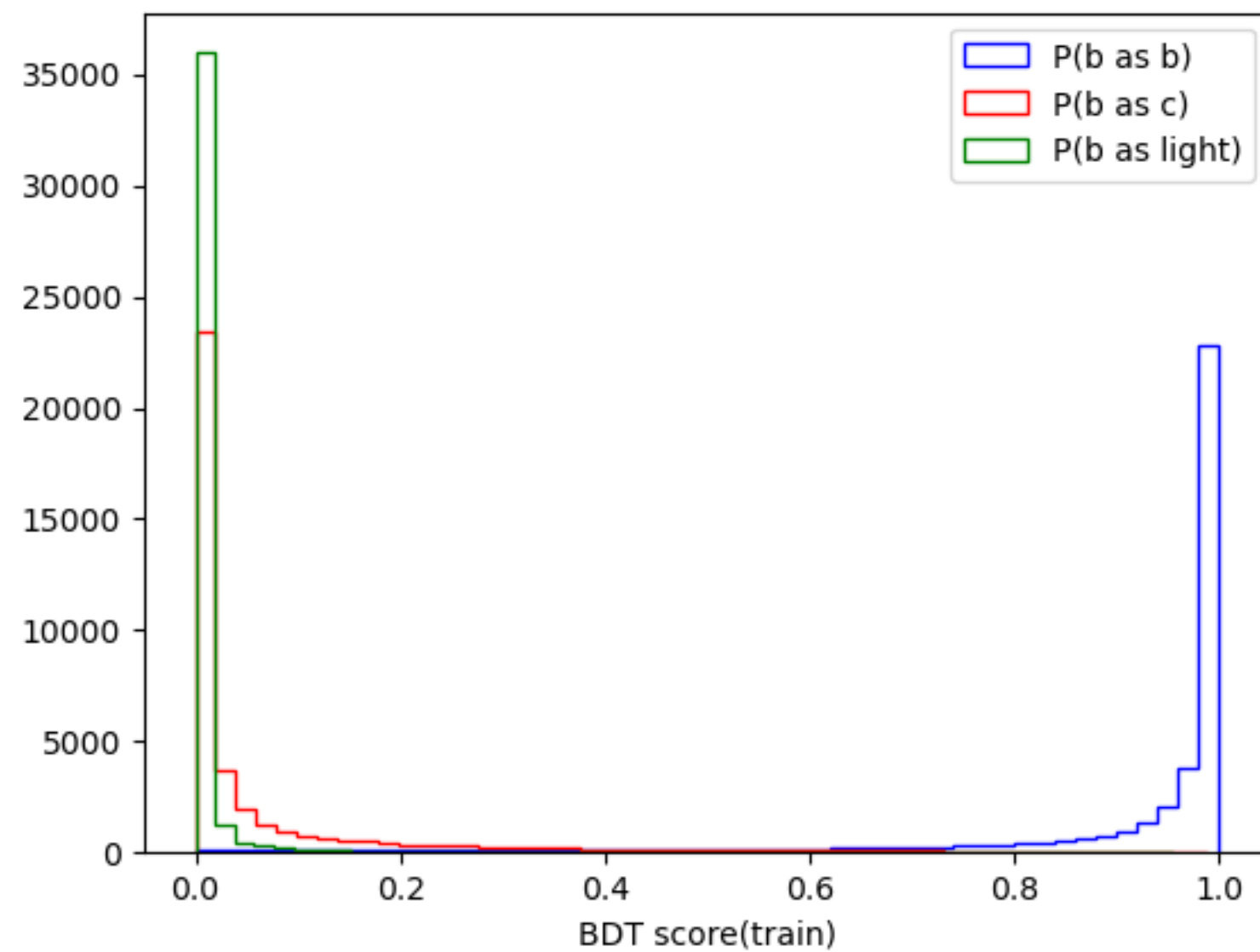
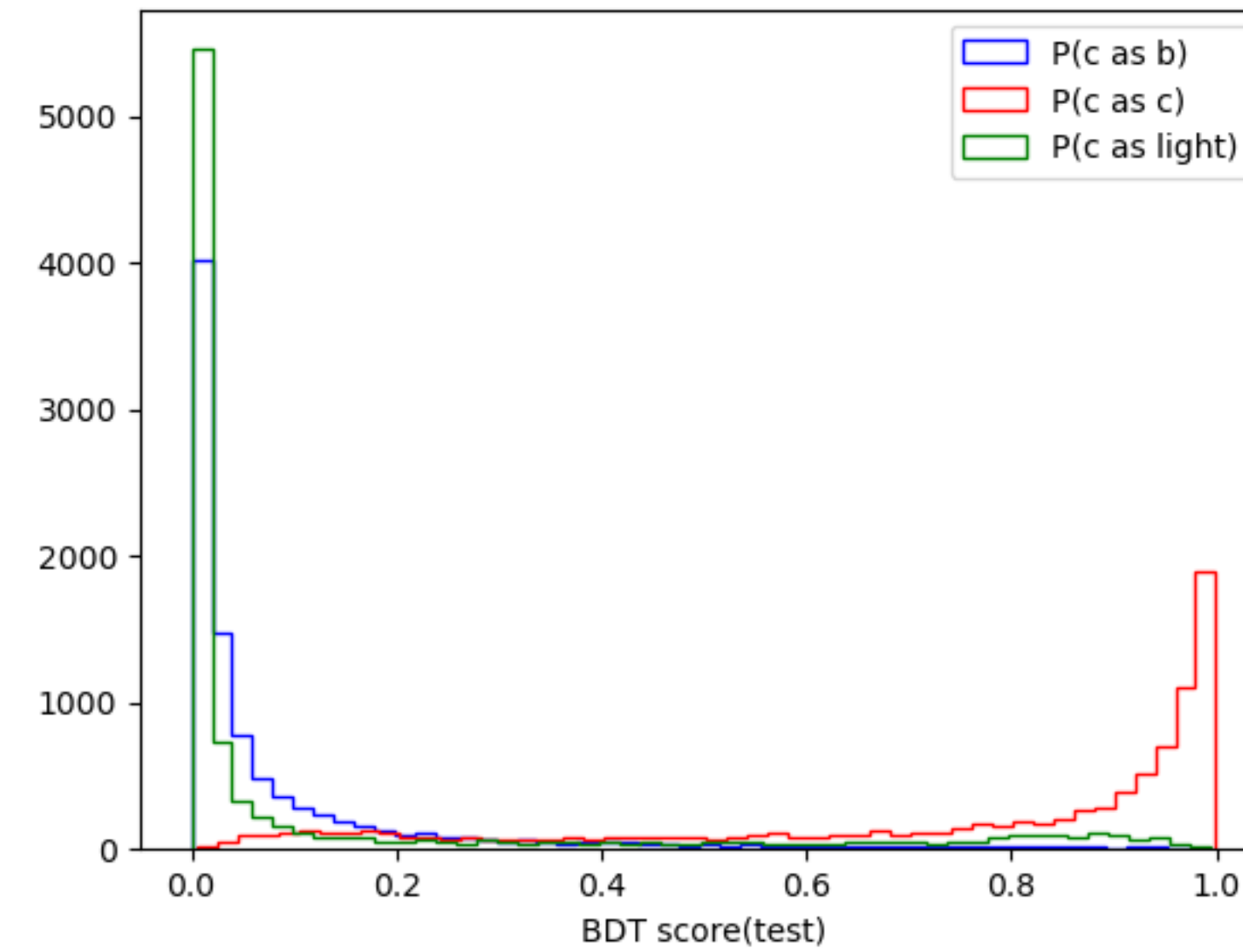
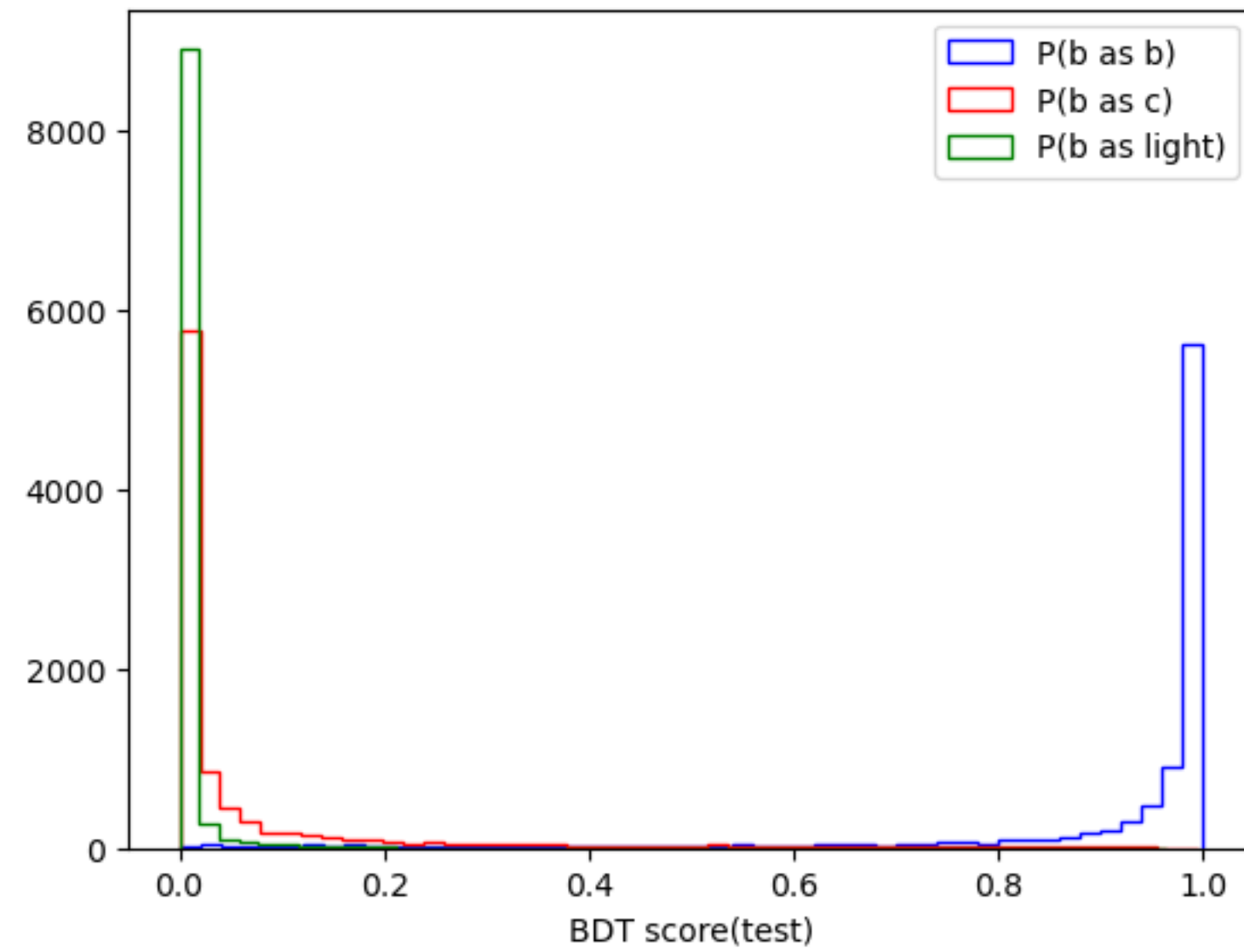
- Results comparison between **truth** and **reco** PID.
- Truth PID's performance is better (4.5%).

from Zuofei and Xiaotian



Squared diagonal line values by eyes
for a very coarse comparison

Add all features in hand



Summary

- Todo
 - An independent cross check
 - Check all features carefully
 - Update the results with new release and remove the truth lepton PID
 -