



CEPC

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CEPCSW 25.3.2

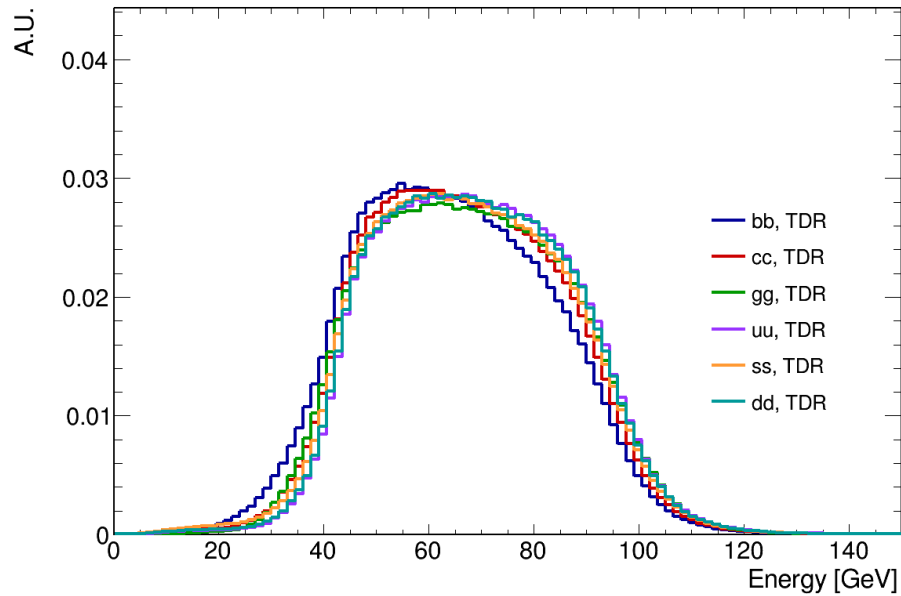
- 25.3.1 allow MCParticle Pointer jump freely
- 25.3.2 store more sub-track MC Particles, either:
 - From decay or photon convention;
 - In r/z zone, $E > 200$ MeV.

• Current sample: `/cefs/higgs/zhangkl/Production/2503`

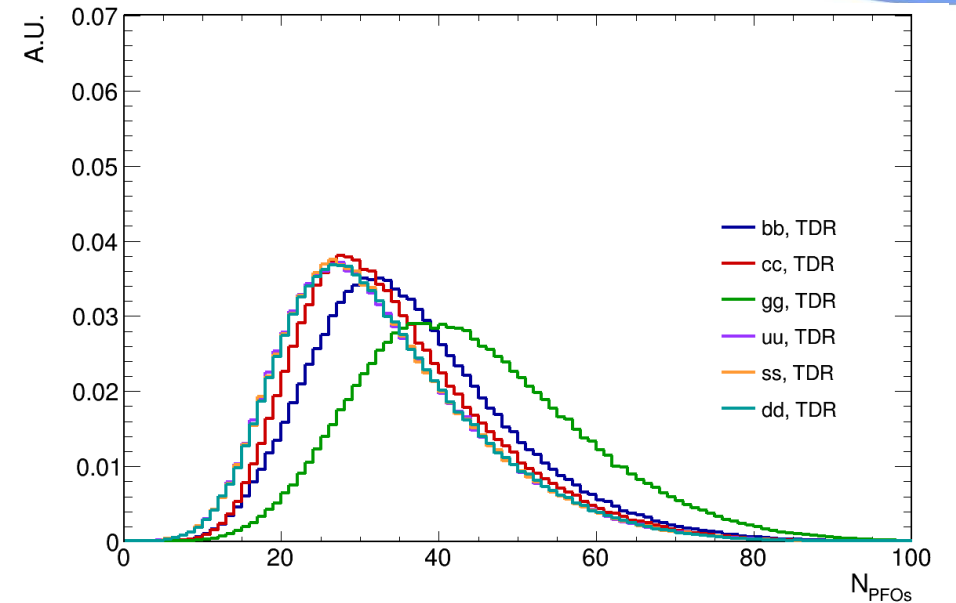
• In specialized node, one $H \rightarrow bb$ event

- | | | |
|---------------------------------------|-----------------------|------------------------|
| • Sim+Digi+Trk | Time: ~24s per event. | Memory: <4GB. |
| • Rec | Time: ~6s per event. | Memory: <6GB. |
| • Fail rate, for file existing: | <0.2%. | (34/24000 for 4 steps) |
| • Fail rate, for event info complete: | <2% | (In JOI) |

Jet Energy, N_PFO



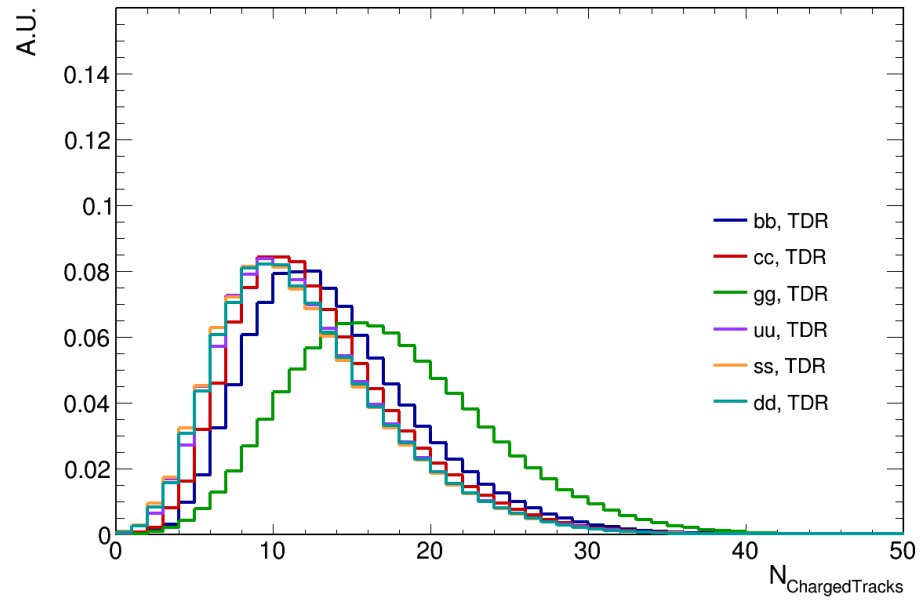
- bbTDR: 32.4158 ± 8.72402
- ccTDR: 30.8885 ± 8.71069
- ggTDR: 36.0269 ± 8.24616
- uuTDR: 29.4302 ± 9.20974
- ssTDR: 29.4496 ± 9.19826
- ddTDR: 29.5197 ± 9.18949



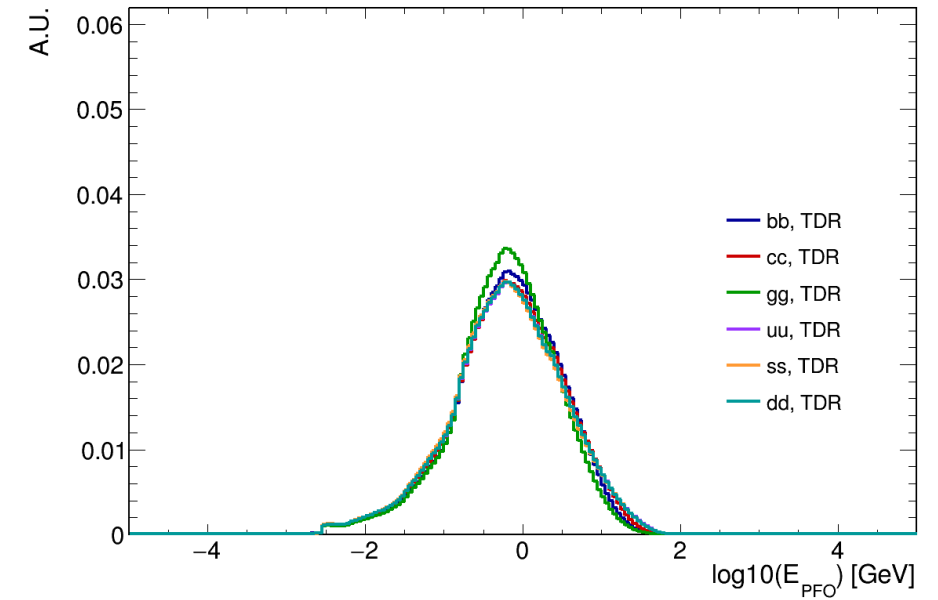
- bbTDR: 36.3616 ± 12.7737
- ccTDR: 34.0945 ± 12.3558
- ggTDR: 43.6959 ± 14.2278
- uuTDR: 32.2533 ± 12.5101
- ssTDR: 32.2801 ± 12.4785
- ddTDR: 32.3965 ± 12.5144

gg>bb>others

Neutral PFO Issue: Fixed



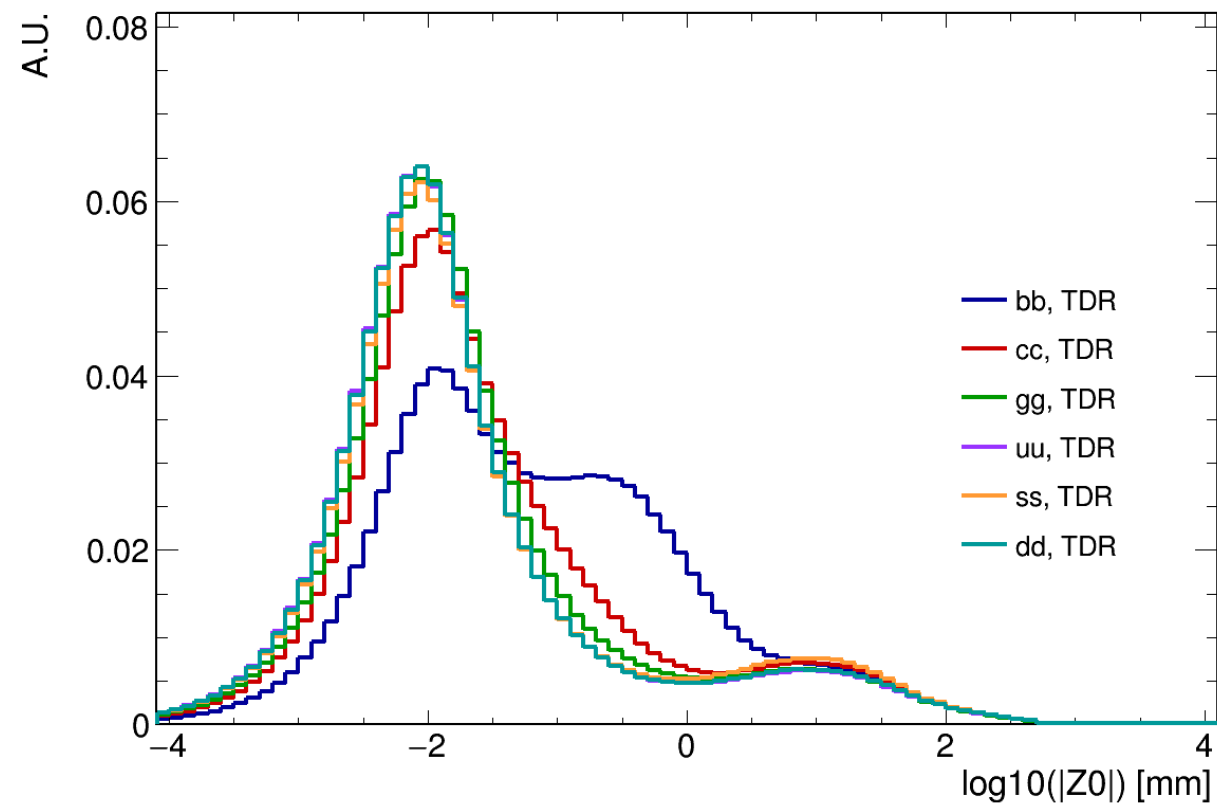
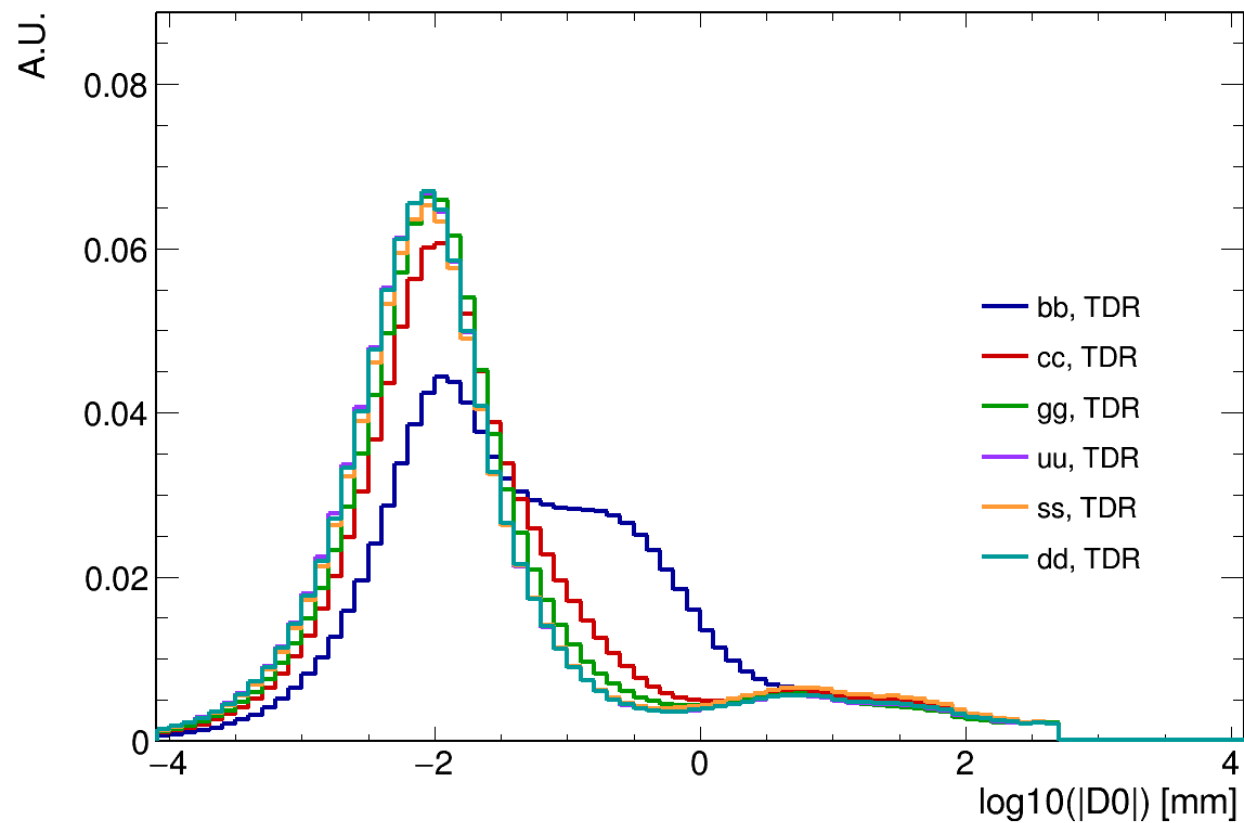
- bbTDR: 13.6093 ± 5.57129
- ccTDR: 12.4619 ± 5.43898
- ggTDR: 16.9754 ± 6.46138
- uuTDR: 11.7313 ± 5.4954
- ssTDR: 11.5422 ± 5.51865
- ddTDR: 11.6648 ± 5.50916



- bbTDR: -0.19909 ± 0.69806
- ccTDR: -0.198217 ± 0.722043
- ggTDR: -0.228712 ± 0.66348
- uuTDR: -0.19826 ± 0.736191
- ssTDR: -0.208947 ± 0.734507
- ddTDR: -0.198301 ± 0.732968

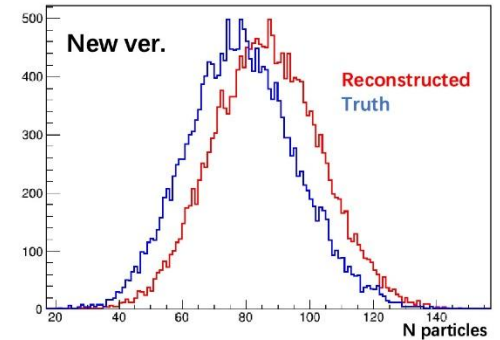
D0, Z0 Vertex

3 Pattern: Primary vertex, secondary vertex, long-live particles(Like Klong)



PFO matching in 25.3

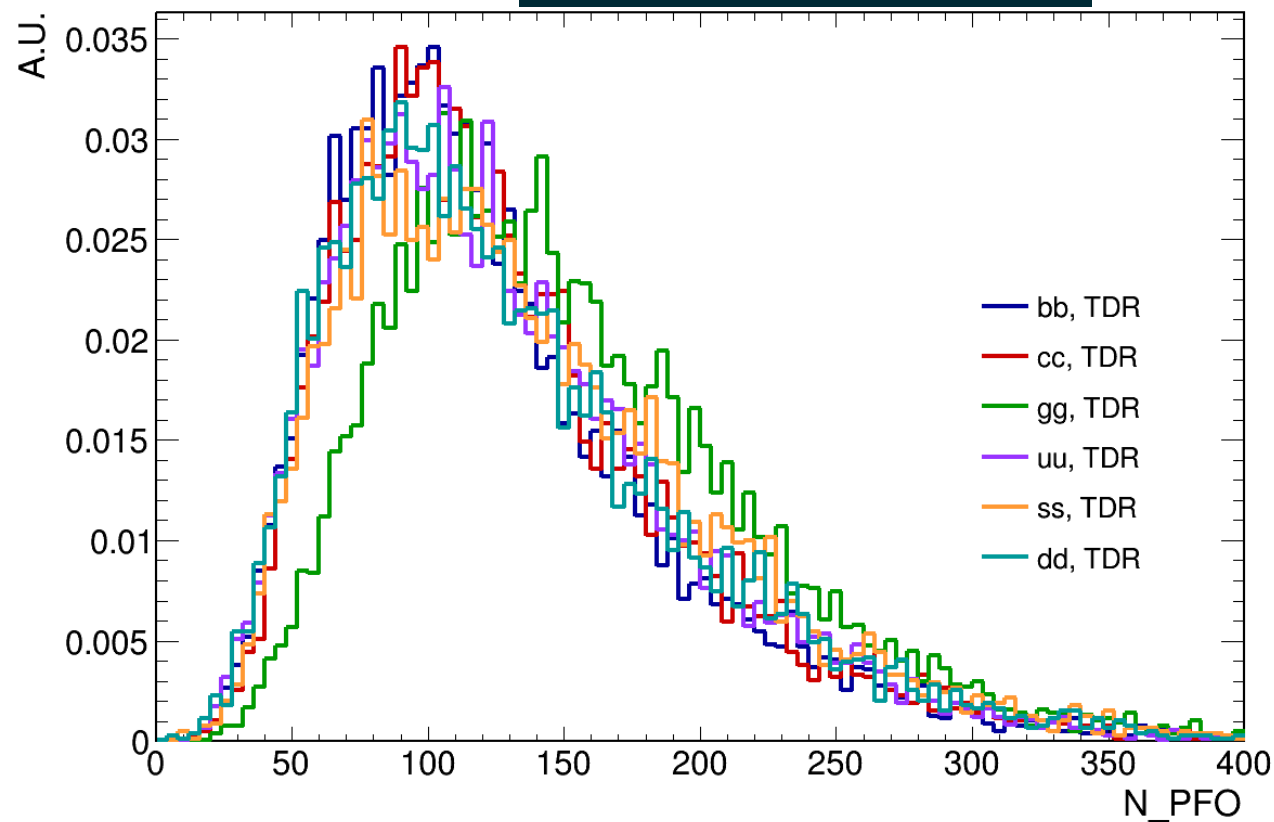
- Typically, one bb jet with 36 PFOs, 14 tracks, 32 truth particles.
 - Consistent with @Fangyi $N_{\text{PFO}}=1.1 N_{\text{truth}}$ conclusion.
 - Possible for 1-1 correspondence.
 - In truth level, photon/Klong matching possible. Ability to match 43 GeV photon.



Before 25.3:

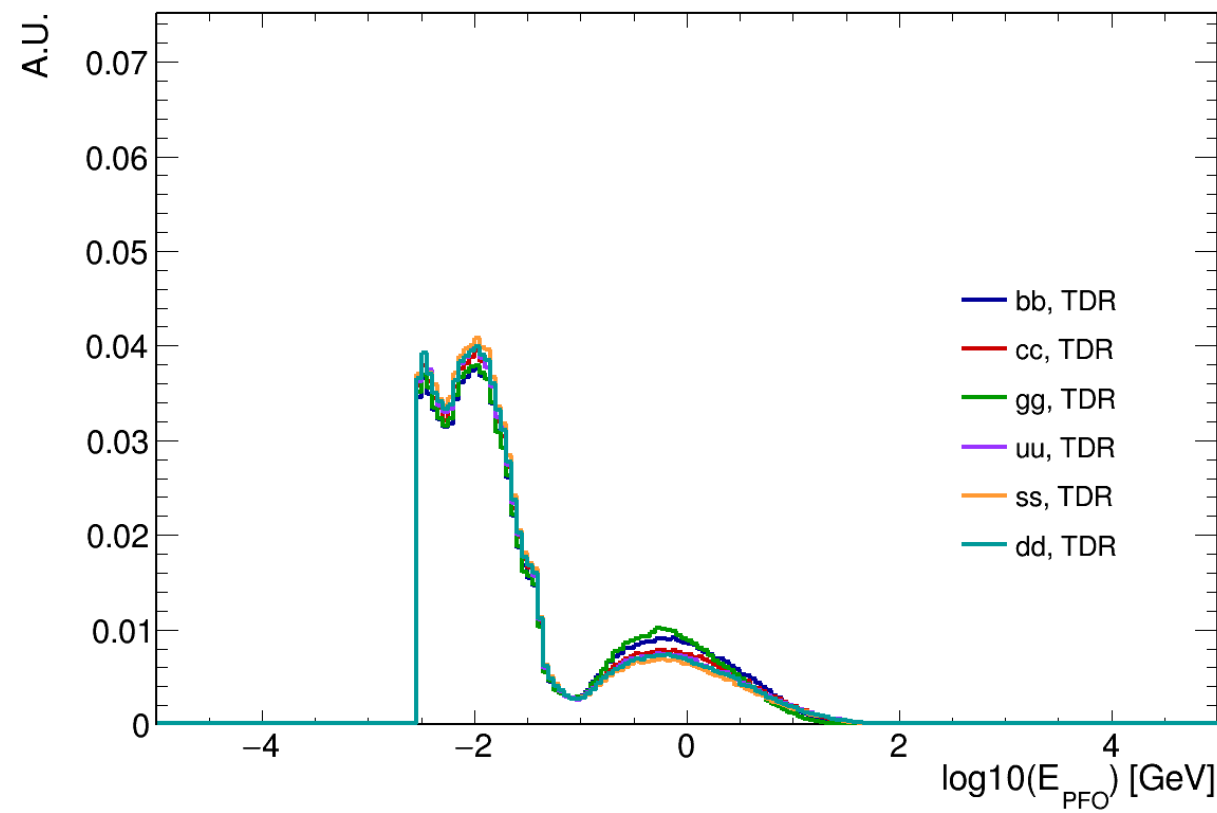
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bbTDR: 123.738 ±60.9093
ccTDR: 128.538 ±61.7292
ggTDR: 150.318 ±64.4921
uuTDR: 127.983 ±62.172
ssTDR: 135.518 ±65.9203
ddTDR: 129.322 ±65.0416
    
```



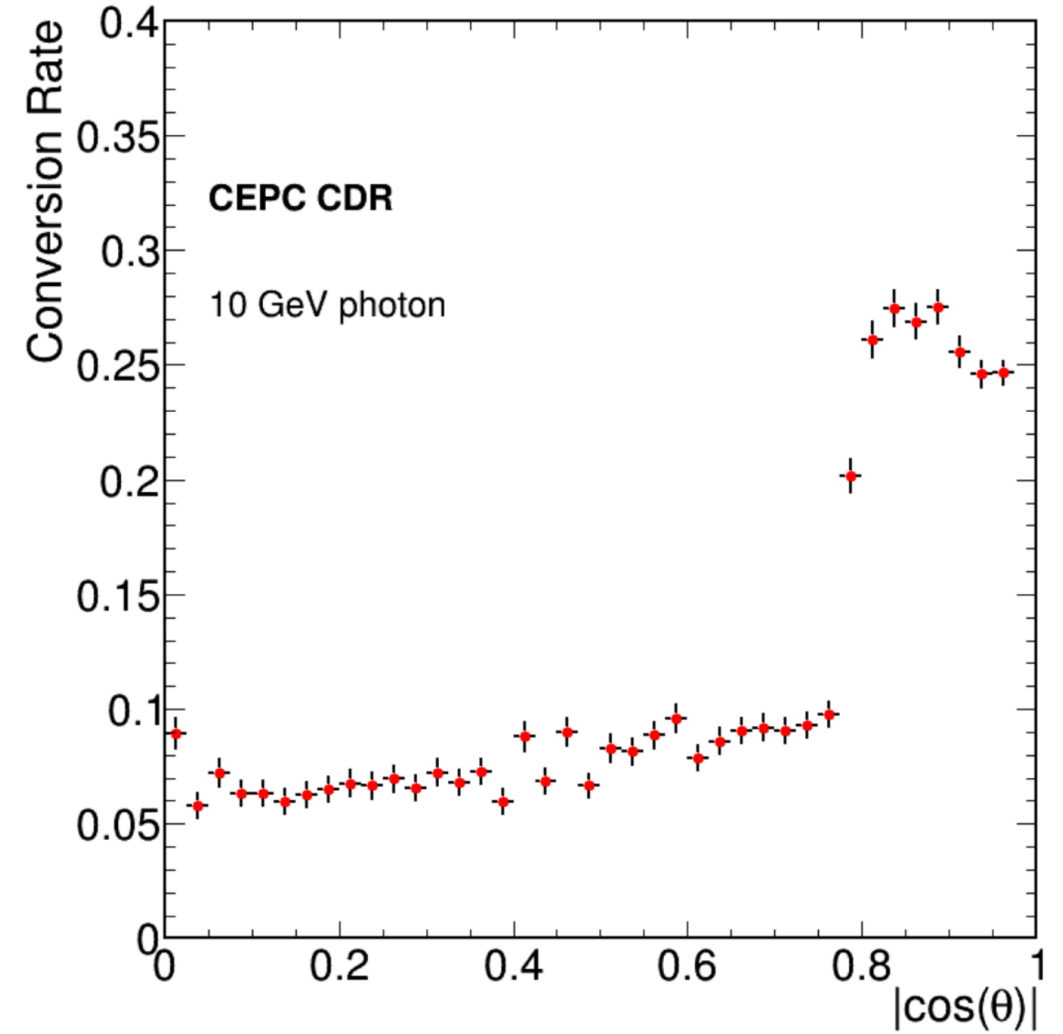
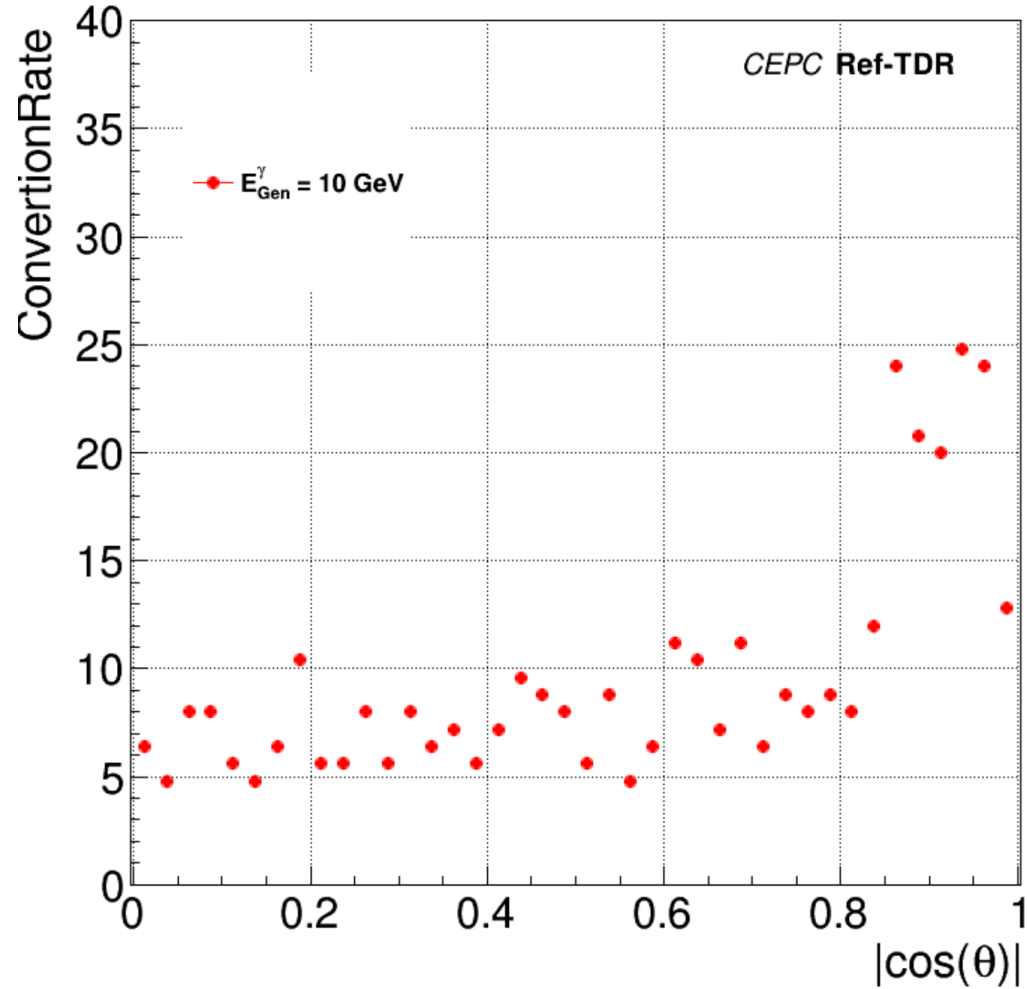
```

bbTDR: -1.48234 ±0.949577
ccTDR: -1.53376 ±0.926584
ggTDR: -1.50001 ±0.923936
uuTDR: -1.55966 ±0.91385
ssTDR: -1.58785 ±0.891898
ddTDR: -1.56168 ±0.910634
    
```



Photon Conversion rate

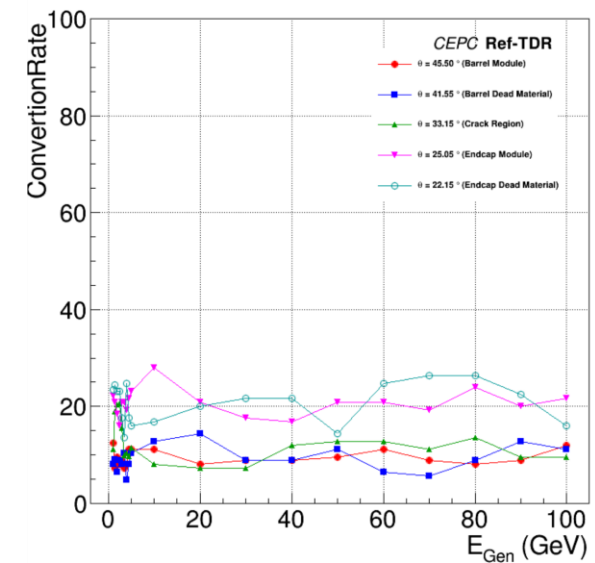
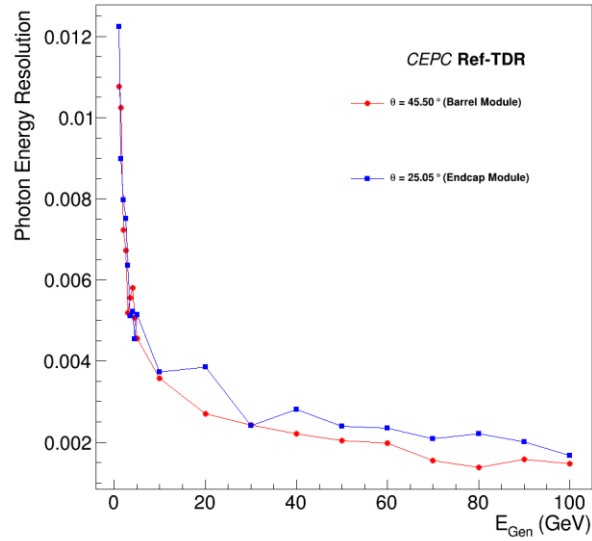
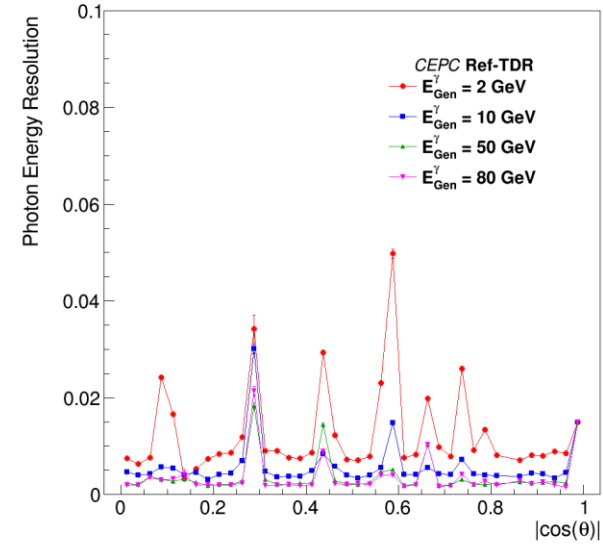
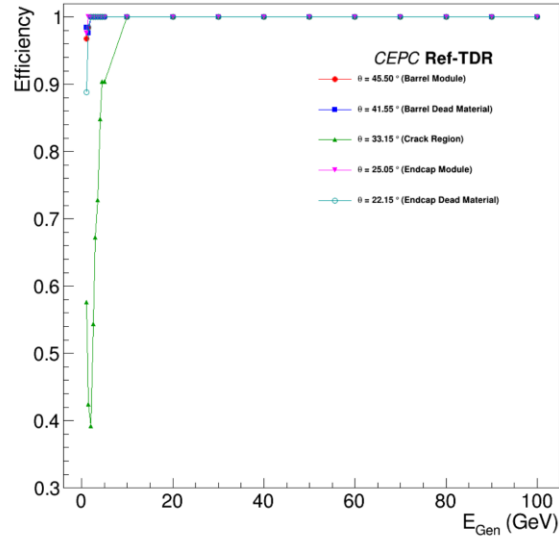
Barrel 6-8%, Endcap ~25%.



Single Photon Performance

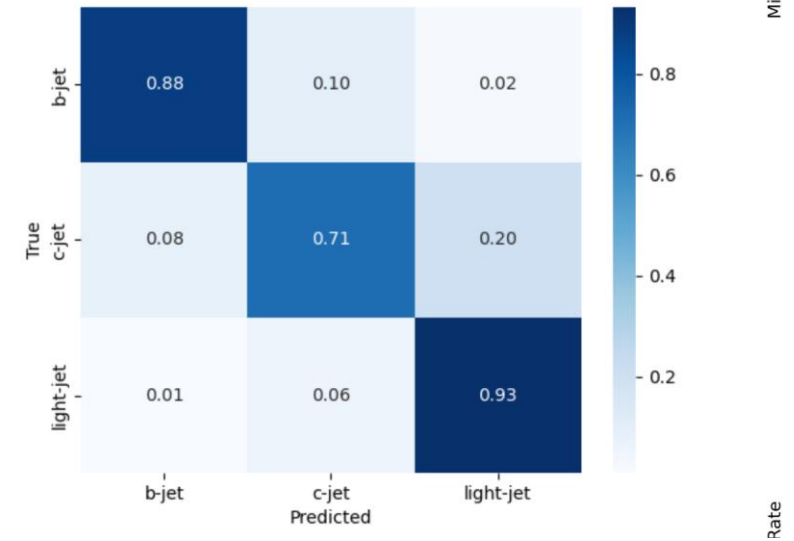
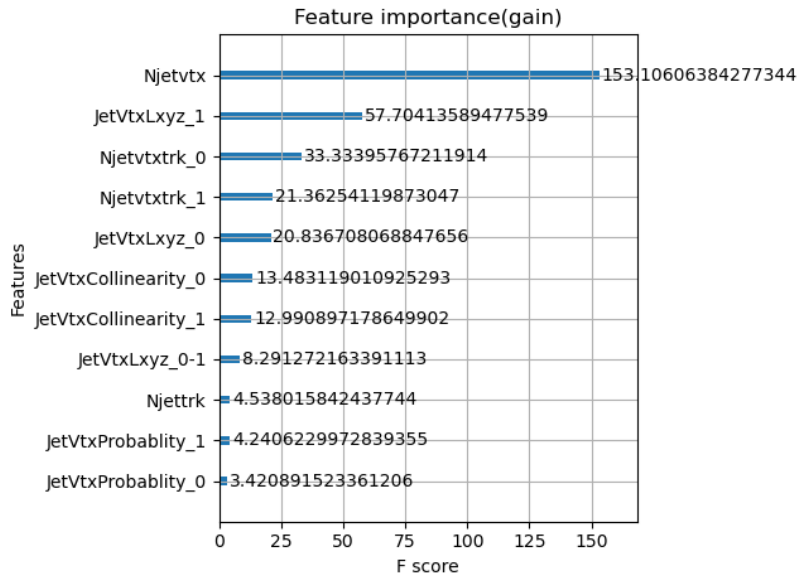


@Reda

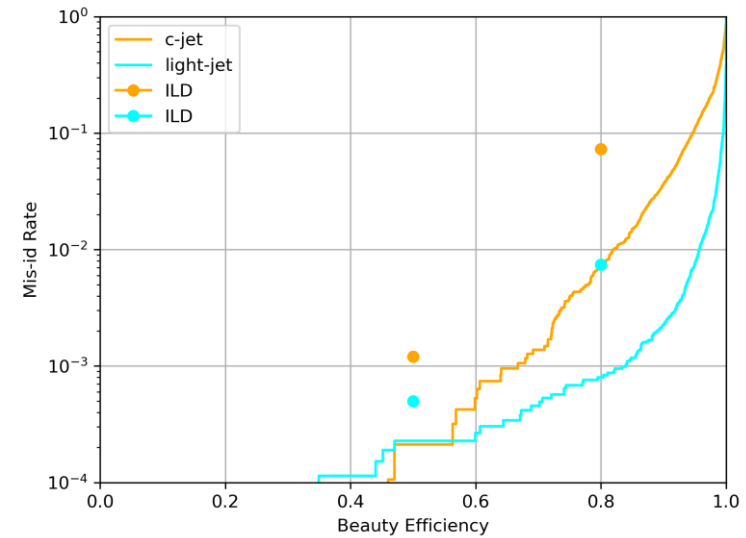


LCFI Plus tagging

@Chenguang



- Traditional flavor tagging algo ready.
- PN>LCFIplus>ILD.



Zpole dimuon

@Han Shuo



- forward-backward asymmetry
- stat error $\sim 3e-6$ with 10^{11} pairs
- Known bug for endcap PFO energy.
- (Details)

