ee->mumu forward-backward asymmetry at CEPC

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PFO CUTFLOW

- Reco-level selection for a pair of opposite charge muon from Z with muon ID
- Selection in a ±10 GeV Z mass window
- Count for muon- costheta > 0 or < 0

CEPCSW 25.3.6	Z ->mumu wp:90%(without muon hit)	Z ->mumu wp:90%	Z ->mumu wp:98%
Total	984488	984396	984396
PID selection	879097	736694	907804
Z mass window	826779	693187	854634
|costheta|>0.05	795241	661602	827597
Wrong selection	1	1	2
costheta > 0	420746	335740	421049
costheta < 0	405649	325862	406548
AFB	0.0190169	0.0149304	0.0175218

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CEPCSW 25.3.6	Z->bb wp:90%(without muon hit)	Z->bb wp:90%	Z->bb wp:98%
Total	44550	89100	88200
PID selection	3222	9685	9715
Z mass window	0	0	0
|costheta|>0.05	0	0	0
Wrong selection			
costheta > 0	0	0	0
costheta < 0	0	0	0
AFB			

PFO CUTFLOW

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CEPCSW 25.3.6	Z->tautau wp:90%(without muon hit)	Z->tautau wp:90%	Z->tautau wp:98%
Total	197845	189852	187855
PID selection	9799	5725	6691
Z mass window	9	5	7
|costheta|>0.05	5	5	7
Wrong selection			
costheta > 0	1	1	1
costheta < 0	4	4	6
AFB			

Summary

- We have updated the MissingET package to address the previous issue of not storing muon hit information.
- The overall selection efficiency has decreased after the changes.
- After adjusting the working point to 98%,the selection efficiency has improved while mis-ID rates have not shown a significant increase.
- Uncertainty we have considered:

- PID purity: results with / wo mis-identified muons
- Background: results with / wo backgrounds
- Angular resolution: results with PFO vs with the matched MCP
- Energy spread: results with / wo gaussian distribution of Ecm

- To do list

- Background contamination from Z -> ee
- Impact from the interference between Z/y* : results from counting vs from fitting m(ll)
- Acceptance: results with PFO pT/theta selections vs with MCP pT/theta selections