

Recoil Higgs at CEPC

Nazima Bi, Mingshui Chen, Ye Chen

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Institute of High Energy Physics, Chinese Academy of Sciences

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CEPCSW Release

CEPCSW, tag: tdr 25.3.2

Defination

- Luminosity: 21.6 ab^{-1} (*Table 3.2, CEPC TDR Accelerator*)
- Center of mass energy: 240 GeV.

MC Samples

ZH; $Z \rightarrow ll$, $H \rightarrow \text{inclusive}$. $l = e, \mu$

- full production chain. SIM+DIGI+TRACKING+REC
- 49,932 + 49,800 with scale factor ~ 3.1 .

Selection

Collections

CyberPFO in Rec Event Contents.

- Momentum $|p| > 20 \text{ GeV}$
- $|\cos\theta| < 0.85$.

Two leptons

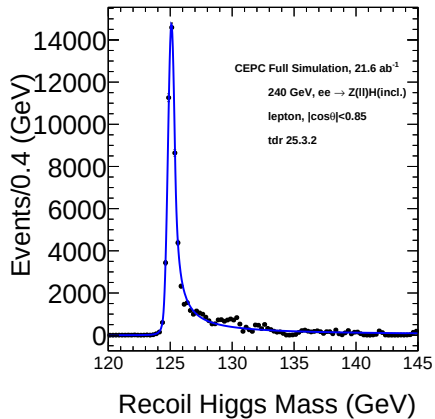
- Two opposite **charged** PFO with invariant mass closest to Z mass
- within Z and recoil Higgs mass window.

Recoil Higgs

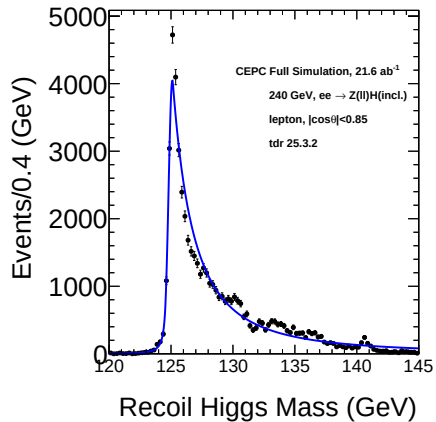
- Z mass window: $|M(ll) - 91.19| < 20 \text{ GeV}$.
- $Z(p_T) > 30 \text{ GeV}$.

Recoil Higgs

$Z(\mu\mu)H$



$Z(ee)H$



Summary and Outlook

Summary

- Updated version of Recoil Higgs study for CEPC Ref-TDR, version 25.3.2
- Improved signal shape respecting to tdr25.1.2

Outlook

- Fitting study.

Thanks for your attention!