# Tracking Performance at the CEPC Baseline Detector

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## Introduction

- CEPC: A precise Higgs program
- Track:
  - Essential object in reconstruction
  - Represent the trajectory of the particle
  - Provide momentum information
  - Provide input to PFA
- Critical requirements for tracking



## Overview of tracking at baseline detector(TPC)



## Clupatra

- Neareast neighbour type clustering
- Designed for ILD
- Work very well for CEPC TPC

## ArborTracking

- Tree configuration clustering
- Designed for CEPC
- Comparable performance as clupatra

## Efficiency study

- Efficiency =  $\frac{N_{\text{Reco}}}{N_{\text{Ref}}}$
- Reference set
  - Tracks that "should" be reconstructed
- Matching
  - Digi-Hit, MCParticle match: Sim-Hit from the MCParticle contributes to the Digi-Hit
  - Track, MCParticle match: #(hits from MCParticle)/#(hits to reconstruct track) > 0.9

## Single-muon efficiency

• Sample: particle gun





#### Single track resolution

• Sample: particle gun



#### PFA performance

• Sample:  $e+e- \rightarrow (H \rightarrow gg)vv$ 



## Conclusion

- Satisfy the requirement of CEPC
- ArborTracking behaves well as Clupatra
- More work to do