

The study of photon reconstruction performance at CEPC baseline detector

Thursday 28 November 2019 17:40 (20 minutes)

The Circular Electron Positron Collider (CEPC) is a proposed Higgs/Z factory. The photon reconstruction is critical to its physics program. We study the photon reconstruction at the CEPC baseline detector, a Particle Flow oriented detector. We characterized the objective performance at both single-photon and di-photon samples. At the single-photon sample, we quantify the photon conversion rate, the differential reconstruction efficiency and energy resolution, and the identification performance. Using di-photon samples, our analysis shows that the CEPC baseline detector reaches a relative mass resolution of 1.7 - 2.2\% of the Higgs boson at the $H \rightarrow \gamma\gamma$ sample, and can reconstruct the π^0 with energy as high as 20 - 30 GeV. We also investigate the impact of geometry defects on photon energy resolution and discuss the possible corrections according to the reconstructed photon position.

Author: SHEN, Yuqiao

Co-author: RUAN, Manqi (Chinese Academy of Sciences (CN))

Presenter: SHEN, Yuqiao

Session Classification: Simulation, Geant4, PFA