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Performance study for the CEPC ScW Ecal

Electromagnetic calorimeter of the CEPC detector is employed for precise energy measurement of electron,photon,tau and hadronic jets. To fully exploit the physics potential about Higgs,W,Z and related SM processes, the jet energy resolution σE/ E is required to reach 3%-4%, or 30%/√E at energies below about 100GeV. This resolution is about a factor of two smaller than the calorimeters used for the LEP detectors and currently operating calorimeters at the LHC.The Particle Flow Algorithm(PFA) is a promising way to achieve the required jet energy resolution. The particle flow paradigm has tremendous impact on the design of the electromagnetic calorimeter detector. A scintillator-tungsten sandwich sampling calorimeter(ScW ECAL) is proposed to build a fine-segmented calorimeter in a stable,robust and cost effective way. The ScW ECAL is a sampling calorimeter consists of absorber and sensitive layers.The material of absorber is tungsten and the sensitive layer is scintillator.

The ScW ECAL consists of a cylindrical barrel system and two large end caps. The performance of the ScW ECAL has been studied with PFA package.The performance of different SiPMs has been investigated in our laboratory.The scintillator strip is the sensitive material of the CEPC ScW ECAL. In the baseline design, the SiPM is attached to the end of the scintillator strip directly. The scintillator strip response has been test by radioactive source Sr90.

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