

The particle identification study based on neural networks for CEPC AHCAL prototype test beam data

Thursday, 11 July 2024 17:20 (25 minutes)

Particle Identification (PID) plays a central role in associating the energy depositions in calorimeter cells with the type of primary particle in a particle flow oriented detector system. In this talk, we hope to demonstrate novel PID methods based on the Residual Network (ResNet) architecture to classify experiment data collected at CERN in 2022 and 2023 for the CEPC AHCAL prototype Beam Test. Based on the Geant4 simulation samples with energy ranging from 5 GeV to 120 GeV, the performance of our model is compared with Boosted Decision Trees (BDT) and other pioneering machine learning approaches. In the end, the preliminary application results of our machine learning approach with the CEPC AHCAL Test Beam data will be presented.

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Session Classification: 人工智能和机器学习的应用

Track Classification: 人工智能和机器学习的应用