

Development of the readout system for CEPC AHCAL prototype

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As a vital component of the calorimetry of the Circular Electron Positron Collider (CEPC), the analog hadron calorimeter (AHCAL) uses scintillator, silicon photomultiplier (SiPM) and steel as medium to detect the hadrons. Its 70mm × 70mm × 40layer prototype is under construction. The readout system of AHCAL is designed to achieve high accuracy of the energy measurement, providing large channel number and dynamic range. An applied special integrated circuit (ASIC) named SPIROC is applied in the readout system for high integrity and low power consumption. Moreover, the readout system is easily scalable for different sizes of sensitive area.

Summary

The readout system based on SPIROC has been developed for CEPC AHCAL prototype. Electronic calibration is carried out and the electronic part has favorable linearity and large dynamic range. Besides, photonic calibration is conducted by controllable LED light and a clear spectrum is observed. The readout system is working properly with good performance.

Primary author: Mr LIU, Hao (USTC)

Presenter: Mr LIU, Hao (USTC)

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