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Time calibration of the LHAASO-WCDA detectors

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The LHAASO (Large High Altitude Air Shower Observatory) is a multi-purpose experiment for measuring the high energy gamma rays and cosmic rays. One of the major detectors is the 78,000 m2 WCDA (Water Cherenkov Detector Array), equipped with 3120 PMTs, which aims to survey the gamma-ray sky continuously in a wide energy range, from 100 GeV to 30 TeV. Precisely calibrating the time offsets of each detector cell is essential to obtain a good angular resolution for observing the gamma ray sources. A dedicated system composed of LED light sources and fibers guided lights to every cell is used for time offset calibration of the whole array. Besides, Cosmic-ray shower events are analyzied for caliculating the time offsets and the charge-time correlations. Finally the observation to the Crab Nebula is visited to fix the pointing error brought by above calibration and calculations. Above calibration procedure and the final calibration results are presented in this talk.

Keywords

LHAASO-WCDA, time calibration, LED calibration system, time offsets

Collaboration

Lhaaso

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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