

Study of Longitudinal Development of Cosmic-Ray Induced Air Showers with LHAASO-WFCTA

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The Wide Field of View Cherenkov Telescope Array (WFCTA) is an important component of Large High Altitude Air Shower Observatory (LHAASO), which aims to measure the individual energy spectra of cosmic rays from ~ 30 TeV to a couple of EeV. WFCTA consisting of 18 imaging air Cherenkov telescopes, each have 32×32 pixels, covering a field of view $160^\circ \times 160^\circ$ (each pixel corresponding to $0.5^\circ \times 0.5^\circ$). The first telescope started in operation since February 2019, up to now, there are 16 telescopes in operation. Since the Cherenkov photon detected by different pixels were generated at different height (or different traversed material), we reconstruct a function from the image of WFCTA, which describe the air shower longitudinal development along the shower axis (similar to the longitudinal distribution function of air shower). In this paper, the energy reconstruction and particle identification will be studied based on this function with MC simulated events. Comparison of the development function between data and MC will also be shown.

Keywords

longitudinal development; Cherenkov telescope; energy reconstruction; particle identification

Collaboration

Lhaaso

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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