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Time calibration for the LHAASO-WCDA project

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As a major component of the LHAASO project, the main physical goal of the Water Cherenkov Detector Array (WCDA) is to survey the northern sky for VHE gamma ray sources. One of the key issues to fulfill this goal is the angular resolution and the pointing precision of the detector, which depends much on the time calibration of the whole array. In this paper, a new time calibration technique based on LED and plastic fibers is introduced. The test results of a prototype system of one cluster consisting of 40 fibers show that a precision of 0.1 ns, which meets the requirement of the experiment, can be achieved. This technique has some advantages such as robustness, scalability and cost effectiveness, so that having a great application potential to some other large area air shower experiments.

Collaboration

LHAASO

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