

Calibration of the LHAASO-KM2A electromagnetic particle detectors

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The Large High Altitude Air Shower Observatory (LHAASO) is a multipurpose project focusing on the study of high energy gamma ray astronomy and cosmic ray physics. The one square kilometer array (KM2A) of the observatory will consist of more than 5000 electromagnetic particle detectors (EDs). The large number of detectors demands a robust, automatic self-calibration method. In this paper, the hardware and software-level methods used to calibrate the output charge and relative time-offset of EDs are described. These two independent calibration techniques have been applied in the KM2A prototype array to provide an estimation of uncertainties. As a result of this work, we have achieved a precision which can meet the requirements of KM2A EDs.

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