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Development of Slow Control Boards for the Large Size Telescopes of the Cherenkov Telescope Array

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Development of Slow Control Boards for the Large Size Telescopes of the Cherenkov Telescope Array

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Abstract:

The camera of the Large Size Telescopes (LSTs) of the Cherenkov Telescope Array (CTA) consists of 265 photosensor modules, each of them containing 7 photomultiplier tubes (PMTs), a slow control board (SCB), a readout board, and a trigger logic. We have developed the SCB, which is installed between the 7 PMTs and the readout board. The main functions of SCBs consist of controlling the high voltages for the PMTs and monitoring their anode current. In addition, the SCB has a functionality to create test pulses that can be injected at the input of the PMT preamplifier in order to emulate a PMT signal without the need of setting high voltage, or even without the PMT itself. The test pulses have a very similar width as the PMT pulses (less than 3ns FWHM) and their amplitude can be adjusted in a wide dynamic range. These features allow us not only to test the functionality of the camera modules but also to fully characterize these. We report on the design and the functions of the SCB together with the results of test measurements.

Collaboration

CTA

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