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The optical calibration system for the CTAO-South Large-Sized Telescope camera

The Cherenkov Telescope Array Observatory (CTAO) is the next-generation gamma-ray observatory. CTAO foresees two observation sites, one located in the Northern Hemisphere (Canary Island of La Palma) and the other in the Southern Hemisphere (Atacama Desert in Chile), for observing gamma-ray events coming from all over the celestial vault.

Thanks to the CTA+ program, two Large-Sized Telescopes will be added to the baseline configuration of the CTAO southern array of telescopes.

The Cherenkov-imaging cameras of the LSTs, deployed at the southern CTAO site, are compounded of 1855 photomultiplier tubes (PMTs) covering a hexagonal area of around 4.5 m^2 . Each camera is calibrated by a system, dubbed Camera Calibration Box (CCB) and placed at the center of the telescope mirror's dish surface, that illuminates the PMTs also during the observation time (100 Hz, interleaved flat-field events) with a uniform, intensity-selectable, and diffuse UV (355 nm) light.

The CCB is especially designed to withstand the extremely harsh environmental conditions of the CTAO southern site and to provide high accessibility and maintainability.

This contribution presents the optical, mechanical and hardware CCB design choices including the internal stable and high sensitivity photon flux monitoring system.

Collaboration(s)

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