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The optical calibration system for the CTA-North Large Sized Telescope camera

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The first Large-Sized Telescope (LST-1) for the Northern Site of the Cherenkov Telescope Array Observatory (CTAO) was inaugurated in October 2018 at the Observatorio del Roque de Los Muchachos (ORM) on La Palma (Canary Island). LST-1 has been regularly taking scientific data since November 2019.

Currently, the CTAO-LST project is in the last steps to complete the construction of the three remaining LSTs at the ORM: LST 2-4.

The LST camera requires a precise and regular calibration. The camera calibration system (CaliBox) is equipped with a UV laser at 350 nm wavelength, where the camera PMTs have their peak quantum efficiency. The Cali-Box is designed to fulfill the requirements for the camera calibration: monitoring the photon flux to guarantee the laser stability, uniform illumination, and intensity range.

At INFN Roma1 Laboratory, we are finalizing the calibration systems for the cameras including an upgrade to the prototype installed in LST-1, particularly the photon monitor system and software.

We present, in detail, the design and performance of the optical system, photon flux monitor, related electronics, and evaluations and tests of the photon flux at the camera plane carried out at the INFN Rome1 Laboratory.

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