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Calibration of the ASTRI-1 Cherenkov camera

The ASTRI project, led by the Italian National Institute for Astrophysics (INAF), aims to deploy an array of nine small-sized (4-m diameter) Imaging Atmospheric Cherenkov Telescopes at the Teide Observatory in Tenerife. The system will study astronomical sources emitting in the very high-energy range above 1 TeV up to 200 TeV. Each telescope is equipped with a Cherenkov camera based upon Silicon Photo-Multiplier (SiPM) sensors. The focal plane is composed of 2368 pixels arranged in 37 Photon Detection Modules (PDMs) of 8x8 pixels covering a field of view of about 10.5 degree. The camera electronics is based on a peak detection circuit and is designed to perform self-trigger of the whole focal plane in order to detect and digitize Cherenkov signals while minimizing the data transfer volume. The first of the nine telescopes (ASTRI-1) is already operative since September 2024, when the first industrial version of the ASTRI Cherenkov camera was mounted on the telescope. In this contribution we report on the camera calibration carried out during the commissioning phase of the telescope and on the system stability monitoring through on-site daily calibration runs. All the calibrations have been performed by means of the camera internal calibration system, which allows the onsite extraction of the optimal camera configuration parameters and of the calibration coefficients needed for the data analysis.

Collaboration(s)

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