

ASTRI-Horn correlation between the Sky Quality Meter and the variance data.

Wednesday 4 September 2024 08:37 (1 minute)

Authors: T. Mineo, D. Mollica, A. Compagnino, G. Leto, P. Bruno, G. Contino, S. Crestan, S. Iovenitti

The ASTRI Mini-Array is an INAF project devoted to study gamma-ray sources emitting at very high-energy in the TeV spectral band. It consists of an array of nine innovative Imaging Atmospheric Cherenkov Telescopes, that are an evolution of the double-mirror ASTRI-Horn telescope operating at the INAF “M.C. Fracastoro” observing station (Serra La Nave, Mount Etna, Italy). The ASTRI Mini-Array is under installation at the Teide Astronomical Observatory, Instituto de Astrofísica de Canarias, on Mount Teide in Tenerife (Canary Islands, Spain).

Each telescope camera develops the variance method based on the statistical analysis of the signal detected by the front-end electronics whose variance is proportional to the flux impinging on the camera pixel. The variance allows us to indirectly measure the sky flux and to monitor the presence of clouds and stars in the telescope field of view.

The ASTRI Mini-Array is equipped with several auxiliary devices among which the Sky Quality Meter. This device provides during observations, a quick evaluation of the sky quality in the optical band measuring the brightness of the night sky. It is coaxial with the telescope where it is mounted pointing in the same direction, and it returns integral information about the night sky brightness inside its fields of view (about 20 \circ) in units of mag/arcsec.

In this work we present the correlation between the Sky Quality Meter values of the sky brightness and the variance using data from ASTRI-Horn prototype. This correlation can be used to convert the variance to sky absolute flux, helping in identifying high level background periods and in defining the good time intervals in each observation. Moreover, the results obtained with ASTRI-Horn could be a good testbench for the ASTRI Mini-Array telescopes.

Primary author: MINEO, Teresa (Istituto Nazionale di Astrofisica (INAF))

Co-authors: COMPAGNINO, Antonio Alessio (Istituto Nazionale di Astrofisica (INAF)); MOLLICA, Davide (Istituto Nazionale di Astrofisica (INAF)); CONTINO, Giovanni (Istituto Nazionale di Astrofisica (INAF)); LETO, Giuseppe (Istituto Nazionale di Astrofisica (INAF)); BRUNO, Pietro Giuseppe (Istituto Nazionale di Astrofisica (INAF)); CRESTAN, Silvia (Istituto Nazionale di Astrofisica (INAF)); IOVENITTI, Simone (Istituto Nazionale di Astrofisica (INAF))

Presenter: MINEO, Teresa (Istituto Nazionale di Astrofisica (INAF))

Session Classification: Poster hang