Contribution ID: **826** Type: **Poster**

Effective pointing of the ASTRI-Horn telescope using the Cherenkov camera with the Variance method

Friday, 16 July 2021 19:18 (12 minutes)

Cherenkov telescope cameras are not suitable to perform astrometrical pointing calibration since they are not designed to produce images of the sky, but rather to detect nanosecond atmospheric flashes due to very high-energy cosmic radiation. Indeed, these instruments show only a moderate angular resolution (fractions of degrees) and are almost blind to the steady or slow-varying optical signal of starlight. For this reason, auxiliary optical instruments are typically adopted to calibrate the telescope pointing. However, secondary instruments are possible sources of systematic errors. Furthermore, the Cherenkov camera is the only one framing exactly the portion of the sky under study, and hence its exploitation for pointing calibration purposes would be desirable.

In this work, we present a procedure to assess the pointing accuracy of the ASTRI-Horn telescope by means of its innovative Cherenkov camera. This instrument is endowed with a statistical method, the so-called Variance method, implemented in the logic board and able to provide images of the night sky background light as ancillary output.

Taking into account the convolution between the optical point spread function and the pixel distribution, Variance images can be used to evaluate the position of stars with sub-pixel precision. In addition, the rotation of the field of view during observations can be exploited to verify the alignment of the Cherenkov camera with the optical axis of the telescope, with a precision of ~1 arcsec. This information is essential to evaluate the effective pointing of the telescope, enhancing the scientific accuracy of the system.

Keywords

pointing; assessment; FOV rotation; variance; ASTRI; runtime; alignment; tracking;

Collaboration

other (fill field below)

other Collaboration

ASTRI

Subcategory

Experimental Results

Primary author: Mr IOVENITTI, Simone (Università degli Studi di Milano / INAF)

Co-authors: Dr SIRONI, Giorgia (INAF - Osservatorio Astronomico di Brera); Mr CATALANO, Osvaldo (Istituto Nazionale di Astrofisica (INAF)); Dr SEGRETO, Alberto (INAF - Istituto Nazionale di Astrofisica); Dr MINEO, Teresa (INAF/IASF Palermo); FOR THE ASTRI PROJECT

Presenter: Mr IOVENITTI, Simone (Università degli Studi di Milano / INAF)

Session Classification: Discussion

Track Classification: Scientific Field: GAI | Gamma Ray Indirect