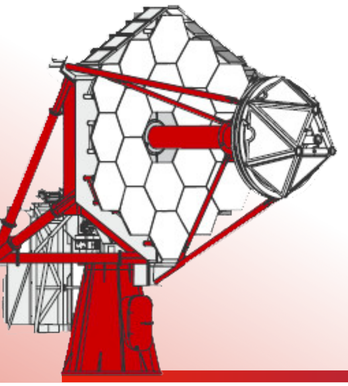

STAR COVERAGE

A simple tool to schedule an observation when FOV rotation matters

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THE ROTATION OF THE FIELD OF VIEW (FOV)

Every alt-azimuthal telescope presents the effect of field-of-view rotation during observation in tracking mode. This is due to the evolution of the **parallactic angle**, i.e. the one between the zenith and the NCP with the vertex in the pointing direction, as represented in figure 1.

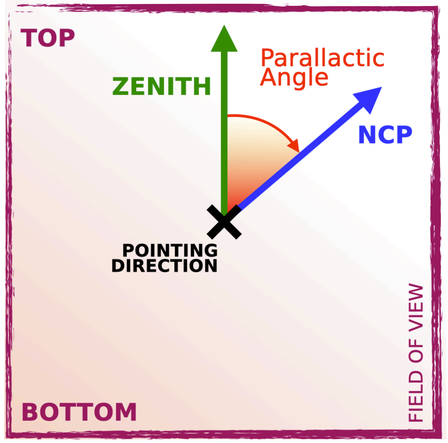


Fig.1: Schematic drawing of the parallactic angle.

REAL LIFE USE CASES

The FOV rotation can be exploited for **different purposes:** astrometric calibration, optical alignment of the camera (figure 2), retrieving of an effective camera efficiency map. These techniques are particularly interesting in Cherenkov astronomy, where detectors are usually not able to image the star field with fine angular resolution, but long exposures (figure 3) can still provide diagnostic images (Poster 826).

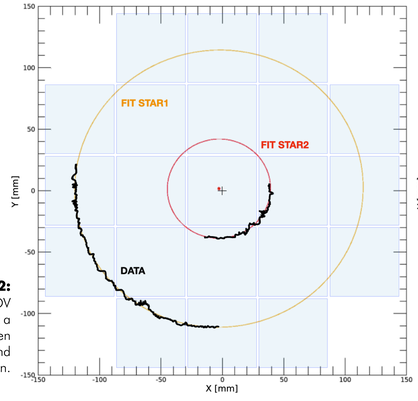


Fig.2: Analysis of the FOV rotation: there is a misalignment between the camera center and the pointing direction.

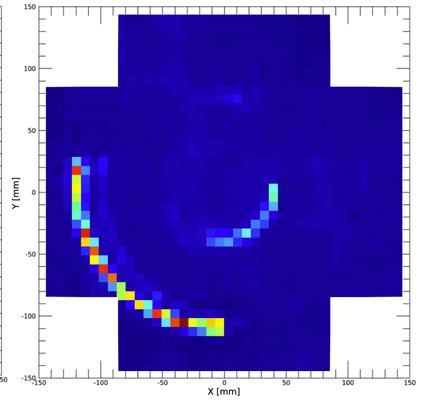
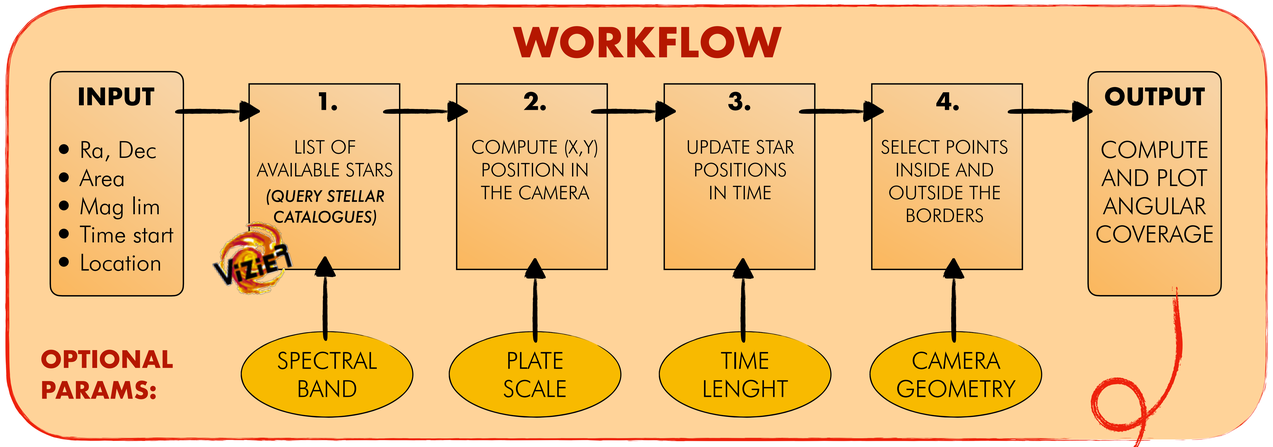


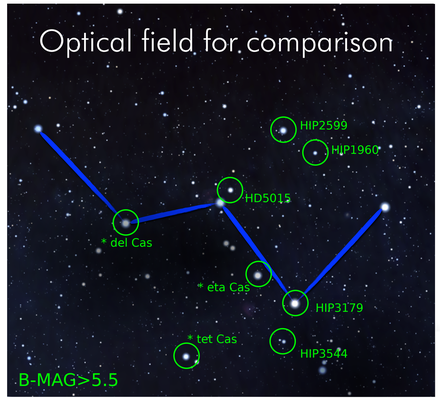
Fig.3: Real data from ASTRI-Horn, taken with the "Variance" method (3h 49m 27s). Star1 : HIP 47908 Star2 : HIP 46750

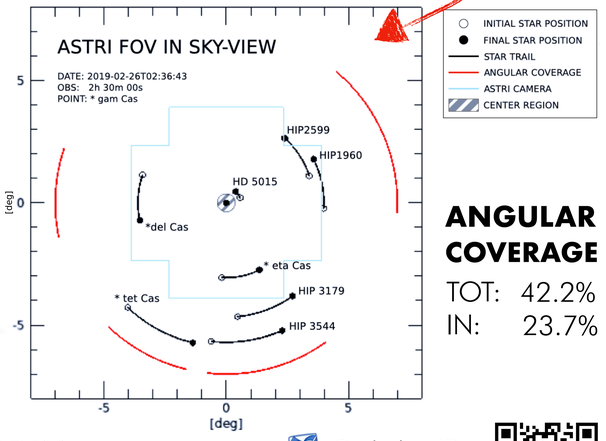
NEED FOR SW TOOL: The evolution of the parallactic angle depends on the pointing coordinates: if the source is not circumpolar then rotation is not even complete! We need a handy software to simulate the FOV.



OPTIONAL CHEKS:

- ✓ field minimum altitude
- ✓ avoid sunset and sunrise
- ✓ distance of Moon, planets and ISS from the field





ANGULAR COVERAGE

TOT: 42.2%
IN: 23.7%

This sw will help the **ASTRI MINIARRAY** in scheduling the observing runs for the calibration: to choose the best duration and pointing strategy.

Coded in IDL
Source on Git-Lab
https://www.ict.inaf.it/gitlab/users/simone.iovenitti/projects