

All-sky images manipulation: star registration, photometry and archive query

Context:

APICAM is an all-sky camera in Paranal, raw fits images are saved in the ESO archive and have the potential to help the weather officer by providing a map of the sky transparency.

Goals of the project:

The goal is to make the first steps in converting a raw APICAM image in a transparency map. This requires, reading a fits file, detecting automatically stars using some rejection criterias, querying Simbad to get a list of the brightest stars visible at the date of observation, and doing aperture photometry,

Steps:

1. Download and read APICAM images, use a mask to select a region of interest.
2. Detect stars in this region, reject unsuitable objects, record the position and flux.
3. Given a date and time, locate all stars brighter than magnitude V suitable for photometry.
4. If time allows, associate the stars detected on the image to the brightest stars detected from the catalogue.
5. If time allows, query the positions of the bright planets in our solar system.

