Req 5.5.1

Title:

Position of Camera/Chips in the focal plane

Objective:

Determine the position of the chips with respect to the optical axis of the telescope. This is part of the static astrometric calibration of the camera. It involves the determination of the chip position, scale, and orientation with respect to a perfect pixel plane. This has to be done with the ADC in and out.

This procedure produces the astrometric pre-solution, allowing for a determination of an approximate pixel scale, distance of the reference pixel with respect to the optical axis and location and rotation of each CCD on the detector plate. In fact, the expected pointing error and other a-priori positional offsets are expected to be small; hence the standard astrometric solution can already be obtained without a pre-solution. However, a first inspection and verification of the pre-solution is a task to initialize the system.

The parameters to be derived are obtained in the standard image pipeline astrometric calibration procedure. These are in turn communicated to the Instrument Software, which writes these values as Fits headers (e.g. CDELT(2x), CRPIX (2x), CDMATRIX (4x). These FITS header keywords are used in the image pipeline as pre-solution/input parameters for the automated astrometric calibration (**seq.– 634**).

In fact, there are two important axes, and they must agree. If there is field distortion in a symmetric pattern about a point that is not the mechanical rotator axis then the instrument rotator will introduce image distortions in the outskirts of the field. The instrument rotator is verified in **req. 566** *Dependency on angle - ADC/rotator reproducability.*

The axes determined from this req and that of req 566 will be compared.

Fulfilling or fulfilled by:

Selfstanding

When performed/frequency:

Each mechanical change of the camera. Each user supplied filter, once a year. Commissioning.

Sources, observations, instrument configurations:

High object density (but unconfused) areas such as open clusters. Standard areas, possibly overlapping with standard star fields. All filters and the two optical configurations ADC in and out should be exercised.

Inputs:

CalFile– in1 *Astrometrical reference catalogue*, e.g. US Naval, or GSC2

Outputs:

seq.– 634 Communicate relevant parameter values of FITS keywords to Instrument software.

Required accuracy, constraints:

Internal precision: 0.3 pixel. External precision limited by reference catalog

Estimated time needed:

Observation: 2 hours

Priority:

Desirable

TSF:

Mode– dither N=5

TSF– OCAM_img_obs_dither, each filter, ADC In/Out

CA:

Run standard image pipeline. Run standard image pipeline, but co-addition is not required. **SeqFile– 634C** *Astrometrically calibrated catalogue* produced by the standard pipeline contains the relative positions of all the chips. Print offsets etc in **SeqFile– 634C** *Astrometrically calibrated catalogue* and compare with focal plane design values (previous versions of 634C).