

Creating a Bias Calibration Image



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Introduction

Detectors often show signals which show up even when there is no light falling on the detector at all and that are the same no matter how long one exposes: the so-called BIAS signal. The bias correction is very simple: **you need an image with zero exposure time and no light.** Every raw image then needs to have the averaged bias image subtracted from it.

Some cameras make the job of measuring the bias easier by creating an additional fake portion of the detector image - "fake" in the sense of not corresponding to any part of the actual detector but only produced by the read-out electronics alone - containing the true constant bias level.

What observations and preparations does one need?

Take many images of (effectively) zero exposure time and with no light. Typically, it is good to take about 10 or more images, since there is usually not only a bias level (which could be handled as a constant number) but also a bias pattern which can only be measured accurately by combining many bias images.

Creating the Average Dark-Current Image

It is very easy to create a median bias image:

1. Load the raw bias images into a stack using the command: `File > Import > Image Sequence ...` (you may need to specify the names more precisely and not just the directory).
2. Average the bias images using the `Image > Stacks > Z Project ...` command, selecting the `Median` option (see the discussion of what a "median" is in the chapter [Image Processing with ImageJ](#)).
3. Save the result in a TIFF file for later use (e.g. `MedianBias.tif`).

Other Activities:

- *Creating a dark-current calibration image*
- *Creating a flatfield calibration image*
- *Creating a flatfield calibration image from sky-flats*