
Subject: How to compute SIP distortion parameters?
Posted by [MichaelT](#) on Sat, 10 Sep 2011 14:18:15 GMT
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Hi,

First some background info:

I am currently writing a program to automatically stack deep sky images (amateur astronomy) using fits header astrometry. The first step is to reference each image. This is done automatically, using the known parameters of the scope, sensor and the imaged object, to roughly determine the location and size of the field of view. For that approximate field of view, the coordinates of stars (from the Tycho2 catalog) are matched with stars in the image (star triangle matching). Then I use the coordinates of three stars to create the fits header (starast.pro from NASA's IDL astronomy library). So I can then already compute for each pixel the celestial coordinates and reverse.

However, comparing the computed pixel locations with the actual locations of the stars in the image, there are some differences due to lens distortion. So I'd now like to compute the SIP distortion parameters and add them to the fits header.

I guess I have all the necessary data: actual and computed locations of stars (pixel and celestial coordinates).

Now my question: Is there some code available that computes the SIP distortion parameters from those data (using a selected order of the polynomial)?

If not, I'd probably be able to come up with some code myself with some help.

I read this document (The SIP Convention for Representing Distortion in FITS Image

Headers) which probably already describes all I need to know:
http://tdc-www.harvard.edu/wcstools/SIP_distortion_v1_0.pdf

Cheers, Michael
