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