On Saturday, September 10, 2011 10:18:15 AM UTC-4, MichaelT wrote:

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

1. It would be nice if one could directly use the IDL POLYWARP function, which computes
distortion coefficients.   But as I wrote in a post about a year ago, the order of a solution in
POLYWARP has a different meaning from what one intuitively expects, and different from what is
needed for the SIP distortion parameters.   In POLYWARP, a first order solution is of the form

   xprime =   a + b*x + c*y + d*x*y

and so is actually nonlinear along the line x = y.   In the SIP convention, a first order solution is
the expected linear solution of the form:

  xprime =   a + b*x + c*y

2. I wrote a program a couple of years ago to use mpfit2dfun to find quadratic SIP parameters.   I
can send this to you, though it is not documented and was written for a specific situation.   One
thing to note though is that you don't want to first find a linear solution (e.g. with STARAST) and
then determine the nonlinear SIP coefficients, but rather you want to find all astrometric
parameters at the same time.

3.   You might want to also look at the remarkable http://astrometry.net Web page.   This is a
"Google for the sky" package, which is meant to take any image of the sky (or list of star
positions), and use pattern matching on large astronomical catalogs to find an astrometric
solution.   You don't need to give any additional information such as an approximate plate scale
or pointing direction.   They have the option to include SIP distortion parameters. (Admittedly I
never got these to work, but I didn't try very hard and it was a couple of years ago.) --Wayne