Subject: Re: Least square fitting
Posted by MichaelT on Tue, 20 May 2008 18:44:40 GMT
View Forum Message <> Reply to Message

> I have performed a lot of this type of astrometry, and your problem
> seems very strange to me.
The way I proceed is described here:
http://home.arcor-online.de/axel.mellinger/mwpan_web/mwpan_w eb.html
It uses the true functional form of the conversion (ra, dec) -> (x,y).
So I am not so sure if we are both talking about the same thing here.
I am not after the distortions, yet (These seem to be small. The
calculated x',y' positions deviate by only 0.5 pixels, on average,
from the real ones - when the algorithm converges).

> you really care about them? All you want is a function that maps
> the known coordinates to the calculated ones. Often what one does

What I want is a function that converts (ra, dec) into pixel
coordinates (x, y). So I am not so sure if that is what you describe
in the following. What you describe looks more like (x', y') -> (x, y)
to me.

> is to find a quadratic or cubic function that will linearize the x,y
> coordinates (i.e. so that they line up with RA, Dec)
>
> xp = x + axy + by^2 + c*x^2 + ..
> yp = y + dxy + ey^2 + f*x^2
>
> You then use least squares to determine the a,b,c.. coefficients.
> This is the 'SIP' convention discussed
inhttp://ssc.spitzer.caltech.edu/postbcd/doc/shupeADASS.pdfa nd used
> e.g. by the astrometry.net software for handling distortions.

The webpage I posted above also discusses the elimination of the
distortions and uses a cubic function of the form given by you above
and as discussed in the paper.

Can I also use the cubic/quadratic function to map (ra, dec) to (x, y)
or vice versa?

This is my first attempt as an amateur astronomer to deal with these
things :-)
Many thanks for your help.

Michael