Subject: Re: Getting the errors on the fitted parameters using mpfit2dpeak
Posted by Craig Markwardt on Wed, 13 Aug 2003 20:36:04 GMT
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dbarkats@princeton.edu (Denis Barkats) writes:

> Hi everyone,
>
> I have been trying to understand the returned errors on parameters
> using Craig's mpfit2dpeak function. Because things just did not make
> sense, I decided to make some simualtions:
>
...
> -Original distribution of FWHM_X, mean=0.08 and sigma=0.01
> -Mean and sigma of recovered distribution of FWHM_X, mean=0.079 and
> sigma=0.0097 which is fine,
> BUT!!!!!
> - Mean of recovered distribution of error of FWHM_X , mean=0.000103.
> In other words, the recoved error on FWHM_X is 100 times smaller than
> the inputted error. This is exactly why I decided to do some
> simulation in the 1st place. I was getting much too small recovered
> parameter errors.

Greetings Denis--

I examined your simulation. From what I can tell, you are not
assigning the proper uncertainty estimates to the image.

The resulting chi-square value is very low, about 0.0002 per degree of
freedom, when it should be closer to 1. This usually indicates that
you are overestimating the data uncertainties by a factor of about
1/sqrt(0.0002) = 100, and hence underestimating the parameter
uncertainties by the same amount. This is almost exactly the factor
you are talking about.

Your procedure computes a perfectly smooth gaussian function, but then
assigns a much bigger error bar than is warranted. To be realistic,
you should add gaussian noise of a similar magnitude to what you
expect.

Happy fitting,
Craig

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Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response

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