Subject: Re: curvefit Q
Posted by Craig Markwardt on Mon, 19 Mar 2001 19:20:49 GMT
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Stuart Colley <src@zupcx6.star.ucl.ac.uk> writes:

> I notice that Curvefit can return a variable, 'sigma'. I'm not quite
> clear on what this is, the help page says it's the standard deviation for
> each of the fit parameters, fine, but one might more commonly come across
> a standard deviation as in the standard deviation of a mean of some
> values. It probably doesn't make much sense to me since there's no mean
> being done here, just a non-linear least squares fit. Is there anyway of
> translating these standard deviations into an error so you can quote:
>
> parameter_value +/- error?

The choice of words "standard deviation" in the documentation for CURVEFIT is unfortunate. The values returned in the SIGMA keyword are in fact the parameter uncertainties you desire. The "standard deviation"-ness could derive from the interpretation that these are the 68% confidence bounds.

However, you should really take these values with a grain of salt, because:
 * it assumes you treated your measurement errors appropriately;
 * it assumes your model is a good fit;
 * it assumes that each parameter is statistically uncorrelated with the other;

This later assumption can be a biggy. If you really want well-defined parameter uncertainties, your best bet is to read the section on confidence regions in Numerical Recipes, and then proceed to make a confidence grid.

Craig

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