Subject: Re: MPfit question
Posted by Craig Markwardt on Tue, 30 Sep 2008 15:49:46 GMT
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Wox <nomail@hotmail.com> writes:

> Hi all,
>
> I'm using the wonderfull mpfit routine from Craig Markwardt. Today I
> was having problems with convergence and I was looking in the code
> what caused it. I was using parameter limits and as far as I can tell,
> the parameter incrementation is done like this:
>
> xnew = x + alpha * dx
>
> where dx are the parameter increments and alpha = 1, except when xnew
> would exceed the limits, in which case alpha < 1. So if one parameter
> is close to the limit, this effects the increments for all other
> parameters. If alpha is too small, the fit stops.
>
> Why isn't dx adapted, so that pegged parameters won't effect the
> convergence for other parameters?

Hello, thanks for your message.

The original MINPACK fortran code did not have parameter limits, so limits are my own bolt-on.

If you look at the code, the value of ALPHA is adjusted so that, at the next iteration, a parameter will exactly touch its boundary, within a small tolerance. At that point, the parameter will be considered fixed, and will no longer enter into the calculation of the value of ALPHA. [*] Thus, the step *is* adaptive, it just doesn't happen in a single iteration.

If your constraints are pathalogical enough that the fitter is ping-ponging between two constraints continuously, I don't have much to say other than to offer my pity. It's not an easy problem to solve.

Craig

[*] - the convergence criteria are also pro-rated because ALPHA is smaller than 1.

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