Subject: Re: mpfit of parametric data?
Posted by Craig Markwardt on Wed, 28 Jul 2004 20:05:51 GMT
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"jamiesmyth_uni@yahoo.ca" <jamiesmyth_uni@yahoo.ca> writes:
> I suppose this is really a question for Craig but I figure here is as
> good a place to ask as any... Does anyone know how I can go about
> fitting parametric data using MPFIT? I have done a fair bit of 1d
> fitting with mpfit (MPFITEXPR) but I'm really stumped on this one. I
> want to fit to the following parametric parameterisation:
>
> x = (a0+a1*t) + sin(a2*t+phase)
> y = (b0+b1*t) + cos(b2*t+phase)
>
> where, a0, a1, a3, b0, b1, b2 and phase are all fit parameters.
>
> The intention is to try and fit the motion of a spinning top that
> precesses. I have very long running (but noisy) time series data for
> the x and y values. Alternatively, you can think of me having x(t) and
> y(t) sampled at identical times. I am mainly interested in the phase
> parameter.
>
> This is proving considerably more difficult than I expected it to be!

Greetings,

This is actually really easy.

You are actually trying to fit two functions simultaneously, X and Y.
On the other hand, you could consider this to be one *single* function
which has twice as many elements.

Your independent variable is still T, but your new function would be
the concatenation of X and Y. For example,

U = [X, Y]

You do the same for your error or weight values. Within your
function, you need to perform the same operations to join the model X
and Y values into a single model function.

You may be worried that U and T are not of the same size, but that
doesn't matter! Formally you don't even need an independent variable
at all. It's just there as a convenience.

That's it. Happy fitting!
Craig

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