Subject: MPFIT parameter errors -0.00000
Posted by Eoj on Mon, 09 May 2011 20:35:19 GMT
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Hello,

I was wondering about something strange that seems to be going on with MPFIT in IDL. MPFIT seems to be working and producing a fine looking fit, but the errors on some of the parameters are identically -0.00000. These parameters are not limited or tied to anything at the moment, so they should be producing some parameter error. Output is attached below, MPFIT is ending with a "2" status. Any idea what is going on here? This only seems to happen for a specific data file, for other fits it seems to be working fine.

Cheers,
Joe

```
IDL>
% MPFIT: WARNING: data is DOUBLE but parameters are FLOAT
% MPFIT:         (converting parameters to DOUBLE)
Iter      1   CHI-SQUARE =       148.65044         DOF = 99
    P(0) =        2.70126E+16
    P(1) =        2.02481E+16
    P(2) =             32.2569
    P(3) =             37.7481
    P(4) =        0.000100000
    P(5) =             71.0903
    P(6) =            0.273900
    P(7) =            0.273900
    P(8) =             930.748
    P(9) =             930.748
Iter      1   CHI-SQUARE =       148.65044         DOF = 99
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     STATUS
     2
```

PERROR
-0.00000 -0.00000 0.492911 1.38439 0.00000
0.930223 0.00000
0.00000 0.00000 0.00000

Subject: Re: MPFIT parameter errors -0.00000
Posted by Craig Markwardt on Thu, 12 May 2011 14:31:40 GMT
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On May 9, 4:35 pm, JoeM <josephmeir...@gmail.com> wrote:
> Hello,
>
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> with MPFIT in IDL. MPFIT seems to be working and producing a fine
> looking fit, but the errors on some of the parameters are identically
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You might find helpful information in the FAQ, in particular...
http://www.physics.wisc.edu/~craigm/idl/fitqa.html#parstep

It looks like you have a dynamic range problem, given that they cover a range of 1e20!!! Consider re-writing your user function so that the parameter values are roughly the same magnitude, and also vary by about the same magnitude. (Which may mean in your case to fit an offset to a large value instead of the large value itself.)

Also, this error message,
> % MPFIT: WARNING: data is DOUBLE but parameters are FLOAT
> % MPFIT: (converting parameters to DOUBLE)
is ominous. You should strive to maintain consistent numerical system, either all single precision or all double precision.

These suggestions will be true, no matter which fitting software you use.

Happy fitting,
Craig Markwardt

Subject: Re: MPFIT parameter errors -0.00000
Posted by Eoj on Thu, 12 May 2011 17:14:16 GMT
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On May 12, 10:31 am, Craig Markwardt <craig.markwa...@gmail.com>
wrote:
> On May 9, 4:35 pm, JoeM <josephmeir...@gmail.com> wrote:
>
>
>
>
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> system, either all single precision or all double precision.
>
> These suggestions will be true, no matter which fitting software you
> use.
>
> Happy fitting,
> Craig Markwardt

Thanks Mark, I'm just puzzled by the fact that the same code seems to work beautifully on another data set, and just not this one in particular. MPFIT does converge on the solution, which I can check in various ways, so it is running correctly.

Will change my floats to doubles though, and convert those huge numbers to logs to decrease the dynamic range and see if that does something.

Joe

Subject: Re: MPFIT parameter errors -0.00000
Posted by Eoj on Thu, 12 May 2011 17:32:29 GMT
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Yup, you were right, it was a range issue. By passing through log values of those huge parameters the errors are now non-zero. Thanks!

Joe

Subject: Re: MPFIT parameter errors -0.00000
Posted by Craig Markwardt on Fri, 13 May 2011 03:45:24 GMT
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On May 12, 1:32 pm, JoeM <josephmeir...@gmail.com> wrote:
> Yup, you were right, it was a range issue. By passing through log
> values of those huge parameters the errors are now non-zero. Thanks!

OK, good.

But the second part of advice still holds true, that the *variations*
of each parameter should be comparable as well.

Craig
