Subject: Re: Is zero-degree fitting possible?
Posted by korpela on Wed, 10 Apr 1996 07:00:00 GMT
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In article <4kgkvb$kpj@lastactionhero.rs.itd.umich.edu>,
Khai Trinh Pham <kpham@umich.edu> wrote:
>
> I am having problems doing a very simple zero-degree fit, i.e. fitting
> only one parameter. I've tried POLY_FIT, CURVEFIT, and SVDFIT.
> They each return the following error:
>
> IDL> F = POLY_FIT(Ycalculated, Yexperiment, 0)
> % INVERT: Input must be a square matrix: A.
> % Error occurred at: POLY_FIT   79 @IDL_DIR:[LIB]LIB.TLB(POLY_FIT)

The internal invert function cannot invert a 1x1 array. Kind of silly.

> I just want to find F such that (F * Ycalculated) gives the best fit
> to (Yexperiment).
>
> Am I missing something really simple here?

It looks to me that what you want is....

f=total(Yexperiment)/total(Ycalculated)

Which is the solution to

$$\sum_{0}^{n} (f y_c - y_e) = 0$$

or better yet, minimize the rms of (f*y_c-y_e) which would
give you.....

f=total(Yexperiment*Ycalculated)/total(Ycalculated*Ycalculat ed)

Eric

--
Eric Korpela | An object at rest can never be
korpela@ssl.berkeley.edu | stopped.

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Subject: Re: Is zero-degree fitting possible?
Posted by thompson on Thu, 11 Apr 1996 07:00:00 GMT
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korpela@islay.ssl.berkeley.edu (Eric J. Korpela) writes:

> In article <4kgkvb$kpj@lastactionhero.rs.itd.umich.edu>,
> Khai Trinh Pham <kpham@umich.edu> wrote:
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> n
> ---
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> ---
> 0

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> give you.....

> f=total(Yexperiment*Ycalculated)/total(Ycalculated*Ycalculat ed)

Or more generally, if you know the errors in each of the measured data points,
then the best fit value for F would be

f = total((Yexperiment*Ycalculated)/Yerror^2) / total(Ycalculated^2/Yerror^2)

What you're really asking for is not a fit to a zero-degree polynomial, but a

fit to a first-degree polynomial with the zero-order term forced equal to 0.
Thus, even if you were able to pass the parameter 0 into POLY_FIT or any of the other routines, then it wouldn't have given you the right answer anyway.

Bill Thompson
