Subject: Spline Fitting and FWHM
Posted by Peter den Hartog on Tue, 21 Nov 2000 08:00:00 GMT
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Hi,
I have some data tabulated in two arrays (pixels versus intensities) .
The idea is to fit a cubic spline to the data with the function SPLINE
but I am struggling with the following problem: I would like to be able
to extract a full width at half maximum and at quarter maximum out of
the fit. How can I accomplish this, as the function SPLINE only reads
x-values and returns corresponding, fitted y-values as result, while I
am interested in the reverse.

Thanks!

Omar Noor
student astronomy
Utrecht University Netherlands
o.f.d.noor@phys.uu.nl

Subject: Re: Spline Fitting and FWHM
Posted by Craig Markwardt on Tue, 21 Nov 2000 08:00:00 GMT
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Martin Schultz <martin.schultz@dkrz.de> writes:
...
> the data. For this you should probably use CM_FIT by Craig Markwardt.
...

I agree with everything Martin said, *except* that it's named MPFIT,
and it's located here :-)

http://cow.physics.wisc.edu/~craigm/idl/idl.html

There are some specialized peak-fitting procedures ready to use there.

Also, if you still insist on using splines, then I suggest you use the
SPL_INIT and SPL_INTERP (sp?) functions. They seem to be much faster
and more robust.

Good luck,
Craig

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response

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Subject: Re: Spline Fitting and FWHM
Posted by Martin Schultz on Tue, 21 Nov 2000 08:00:00 GMT
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Peter den Hartog wrote:
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>
> Thanks!
>
> Omar Noor
> student astronomy
> Utrecht University Netherlands
> o.f.d.noor@phys.uu.nl

If you want to extract meaningful information from a fit, you must use a function that gives you meaningful information. A spline is designed to make data smoother, but it does not give you any analytical information. The normal thing to do is to define an analytical function that resembles your data and fit that function to the data. For this you should probably use CM_FIT by Craig Markwardt. Typical functions used in spectral analysis (and, here please excuse my ignorance) are gauss, or lorentz functions.

... then again, if you insist on splines and extracting a rather ill-defined quantity ;-), you could do it with an iterative search algorithm:
(1) find the maximum
(2) for the left and right side move away from the maximum until you are below 1/2 max value
(3) decrease step size and move back up
(4) decrease step size and move back down
(...) and so on until you are satisfied with the precision

Regards,
Martin

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[[[[[[[[[[
[[Dr. Martin Schultz   Max-Planck-Institut fuer Meteorologie   [[
[[Bundesstr. 55, 20146 Hamburg   [[
[[phone: +49 40 41173-308   [[
[[fax: +49 40 41173-298   [[
[[martin.schultz@dkrz.de   [[
[[[[[[[[[[
