
Subject: I need a bit of help....Convol and functions

Posted by D.Kochman@gmail.com on Sun, 01 Oct 2006 10:42:34 GMT

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So, I'm fairly new to IDL (and an organic chemist so programming is not my forte), but I'm chunking my way through it. I'm currently in the process of modifying a program that fits exponential decays given the impulse response function and the decay curve.

I have to remodel it to fit another much more complex function than an exponential decay, however with a similar number of parameters. I've already fixed the GUI, and changed all the references to the widgets, along with adjusting the appropriate arrays. It now compiles after many hours of debugging and displays itself appropriately with a dummy function with the appropriate amount of parameters.

I'm stuck with now implementing the function itself, any help on the implementation will be **highly** appreciated.

The function is an infinite sum convolved with an exponential decay. I've done modeling with the sum, and it converges fairly rapidly, and I can limit it to 10 terms or so and still get accuracy to 6 decimal places.

Approximately it is:

$$\text{Sum}[(-1)^n \cos(n \cdot P(1) \cdot X) \cdot \exp(-(2n)^2 \cdot P(2) \cdot X), n \rightarrow 0 \text{ to } 10] \text{ convol} \\ \exp[-X/P(4)]$$

whew

anyways, I've been working through the documentation on convol, and I find it a bit cryptic. I have very few clues how to implement this function in code. I'm guessing the first portion (the sum portion) needs to be recursively defined in a for loop. Is this the case, or is there a shortcut with a sigma type function built in?

However, how do I easily convolve the two functions if they are functions and not arrays? Should I just go to fourier space?

Thanks for any help. I don't expect anyone to code this for me, just a gentle (or violent) shove in the appropriate direction will be infinitely helpful.
