Subject: Re: Savgol - Differentiation problems
Posted by richard.martin on Fri, 13 Feb 2004 09:01:16 GMT
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Worked it out now - a real IDL gotcha this one;

SAVGOL essentially fits a polynomial around a local group of data points, which can then be differentiated to give numerical derivatives. The SAVGOL function returns a set of filter coefficients based on the leading term of the polynomial.

However, when a higher order derivative is specified, the parameter instructs the routine to return the nth coefficient of the polynomial NOT the leading coefficient of the polynomial differentiated n times. Of course this is the same thing, but different by a factor of n!. Of course IDL completely fail to mention this in their documentation. Along with the need to divide by the stepsize^n.

In other words, nth derivative output from the SAVGOL/CONVOL combination needs to multiplied by n!/((x[1]-x[0])^n), where x is the abscissa. You do sometimes wonder whether the IDL people have read the text in NR at all.

Dave