Subject: Re: IDL FFT (spec -> interferogram)
Posted by Paul van Delst on Mon, 08 Apr 2002 14:14:50 GMT
View Forum Message <> Reply to Message

Robert Stockwell wrote:
>
> Randall Skelton wrote:
>
>> Hi all,
>>
>> Having read through all of the FFT posts that google groups keeps, I am no
>> closer to understanding why I am unable to transform a spectrum into an
>> interferogram using IDL. All of the data files, procedures, and pictures
>> of this are at http://tulip.atm.ox.ac.uk/~rhskelto/fft-help/
>>
>> Given two files:
>>
>> 1) 'spec.dat' contains 512 points of complex spectral data
>>
>> 2) 'igm.dat' contains 512 points of complex interferogram data that was
>> derived from 'spec.dat' using a prime factor FFT written in C. This is
>> the correct interferogram as far as I am concerned. The plot
>
> complex-valued interferrogram?
>
> hmmmmm
>
> to shed a little light on it [1], in interferometry, the interferrogram is
> the autocorrelation function of the electric field vector.
> The power spectrum is the fft of the autocorrelation function.
> (this is a well known theorem, and if I only had a brain, I'd remember
> the name of it)
> Note the real value-ed-ness of "autocorrelation" and "power".
> The interferrogram is an even function, the power spectrum is real-valued.

But one doesn't always want the power spectrum. Usually (in my field at least) one wants the complex valued spectrum where the imaginary component is known and happily zero. (Don't know if
Randall wants that tho')

paulv

--
Paul van Delst Religious and cultural
CIMSS @ NOAA/NCEP purity is a fundamentalist
Ph: (301)763-8000 x7274 fantasy
Fax:(301)763-8545 V.S.Naipaul