Subject: Re: Complications with variance using FFTs
Posted by Craig Markwardt on Fri, 16 Jul 2004 21:21:41 GMT
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olde_english33@hotmail.com (Eric) writes:

> First I computed the FFT of a recorded time series. I then computed
> the spectrum of this time series to keep the amplitudes of the
> original data. I then wanted to tie in a random phase because I want
> to give variables the same kind of shape when I inverse transform.
> Here is a sample of my code:
...
> My dilemma is that the average sample variances of the generated time
> series ddd1 and ddd2 are nowhere close to the average sample variance
> of the orginal time series xf1 and xf2. A colleague and I have
> narrowed it down to the fact that we are multiplying the spectrum by a
> random phase which is throwing off the variance but I don't know how
> to counteract this problem. Can anyone help???

Greetings, it's hard to comment, since your code snippets don't
actually connect to each other, but I can ask some probing questions.

Have you considered that for a pure real signal, the negative
frequency components should actually be multiplied by exp(-phi)?

Did you check that the magnitude of the Fourier components was
preserved? And the corrolary, are you sure that IMAG is purely
imaginary and doesn't have a real component?

Good luck,
Craig

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