Subject: Re: FFT of gaussian
Posted by Kenneth P. Bowman on Wed, 12 Jan 2011 14:28:31 GMT
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In article
<e8f1db77-67a5-491f-9671-fbd85c50a7b6@a10g2000vby.googlegroups.com>,
 Gray <graylikethecolor@gmail.com> wrote:

> Hi all,
>
> Here's something I don't really understand. The Fourier transform of
> a Gaussian function is another Gaussian... so why if I create a
> Gaussian and run FFT do I not get a Gaussian? Is it because my
> Gaussian vector is discrete? How can I fix this?

You get the discrete transform of a discrete approximation to
a Gaussian, which is also a discrete approximation to a Gaussian.

Try this:

```
IDL> x = -5.0d0 + 0.1d0*dindgen(101)
IDL> y = exp(-(x^2))
IDL> plot, x, y
IDL> yt = fft(y)
IDL> plot, shift(abs(yt),50)
```

Don't forget, the IDL always does a full complex FFT.

Ken Bowman

Subject: Re: FFT of gaussian
Posted by Gray on Wed, 12 Jan 2011 17:42:03 GMT
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On Jan 12, 9:28 am, "Kenneth P. Bowman" <k-bow...@null.edu> wrote:
> In article
> < e8f1db77-67a5-491f-9671-fbd85c50a...@a10g2000vby.googlegroup s.com >,
>
> Gray <grayliketheco...@gmail.com> wrote:
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> IDL> plot, shift(abs(yt),50)
>
> Don't forget, the IDL always does a full complex FFT.
>
> Ken Bowman

Ah, the shift(abs()) helped very much! Thanks :)

Subject: Re: FFT of gaussian
Posted by Mark Piper on Wed, 12 Jan 2011 20:20:04 GMT
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On Jan 12, 10:42 am, Gray <graylikethec...@gmail.com> wrote:
>
> Ah, the shift(abs()) helped very much! Thanks :)

A small aside: the CENTER keyword was added to FFT in IDL 7.1. With
it, the last two lines of Ken's example become:

IDL> yt = fft(y, /center)
IDL> plot, abs(yt)

I always disliked having to shift the Fourier coefficients.
