Subject: Re: FFT help
Posted by K. Bowman on Fri, 05 Nov 2004 14:43:45 GMT
View Forum Message <> Reply to Message

In article
<26d23fcf09dce26228fc67cf81ec832f@localhost.talkaboutprogramming.com>,
 "IDLmastertobe" <shi_lee@hotmail.com> wrote:

> Hey, I am experiencing problem using fft function. Since FFT function
> provides the fourier transform of a certain input, for example,
> 8*cos(!PI*x/6), I would expect an amplitude of 4 at 2 shifted frequencies,
> namely -!PI/6 and PI/6. However after I recieved data from the FFT, I
> recieved some amplitudes close to 2 at some random locations, can anyone
> explain to me why it happened? Thanks for your time.
>

This function

```
  COS(!PI*x/6.0)
```

is only a small part of a complete cosine wave and has a jump
discontinuity at the ends. (Try plotting it.)

Perhaps you mean

```
IDL> x = findgen(16)/16.0
IDL> xx = fft(8.0*cos(6.0*!pi*x))
IDL> for i = 0, 15  do print, xx[i]
(  1.66889e-07,      0.00000)
(  9.40551e-07,  2.41026e-07)
( -1.35589e-07,  6.01780e-07)
(      4.00000,  6.09532e-07)
( -3.99355e-07,  2.98023e-08)
( -2.53313e-07,  1.34857e-08)
(  1.59439e-07, -5.38710e-08)
( -4.56263e-07, -2.95416e-07)
(  5.84122e-07,     -0.00000)
( -4.56263e-07,  2.95416e-07)
(  1.59439e-07,  5.38710e-08)
( -2.53313e-07, -1.34857e-08)
( -3.99355e-07, -2.98023e-08)
(      4.00000, -6.09532e-07)
( -1.35589e-07, -6.01780e-07)
(  9.40551e-07, -2.41026e-07)
```

Ken Bowman