Subject: FFT confusion
Posted by jefield on Thu, 15 May 2003 14:15:03 GMT
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Hi,

I'd be enormously grateful if anyone could help me with this.

I'm looking at the power spectra of "chirp" radio signals and am having problems getting sensible plots. The following code should generate a complex sinusoidal chirp whose frequency runs from 100 to 150 Hz and then plot its power spectrum:

```
pro spec
 time = (2.0/1000)*findgen(1001) ; time (s). NB 1001 samples in 2s
                ; so sampling freq is 500 Hz thus
                                ; Nyquist freq is 250 Hz

 freq = 100.0 + (50.0/1000)*findgen(1001) ; chirp frequency array

 theta = 2*!pi*freq*time ; chirp phase angle

 i = complex(0,1)

 signal = exp(i*theta)

 neg_freq_axis = reverse(-((250.0/500)*findgen(501)))
 pos_freq_axis = ((250.0/499)*findgen(500)) + 1.0
 freq_axis = [neg_freq_axis,pos_freq_axis]        ; x-axis for plot

 window,2,xsize=500,ysize=250
 plot,freq_axis,alog10(shift(((abs(fft(signal)))^2),500)),$
 xrange=[0,260],$
 /xstyle,$
 xticklen=1,$
 xgridstyle=1,$
 yticklen=1,$
 ygridstyle=1

end
```

However I'm getting a frequency spectrum running from 100 to *200* Hz and I'm really confused. This problem has been bugging me for ages and I'd be very grateful if anyone could point out my mistake(s).

Thanks very much!

Julian