Subject: Re: FFT phase?
Posted by Craig Markwardt on Fri, 25 Jan 2013 02:11:30 GMT
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On Thursday, January 24, 2013 12:28:02 PM UTC-5, xqin...@gmail.com wrote:
> Hi,
>
>
>
> just use FFT(y). For example, y=A*cos(x+B), C=fft(y). I think atan(C,/phase) should equal to B, but the return reslut is not. How to obtain A and B from complex C?

It is correct. Example:
```
x = 2*!dpi*2*dindgen(16)/16  ;; Angle in radians
y = 0.7*cos(x + 1.6000)
c = fft(y,-1)
print, atan(c[2],/phase)
  ==> 1.6000
```

Craig

Subject: Re: FFT phase?
Posted by xqinshan on Fri, 25 Jan 2013 06:49:00 GMT
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Thanks. I have known the reason. What I use is like x= 2*!dpi*2*dindgen(25)/16, so the amplitude and phase are not so accurate.

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>
> Craig

Subject: Re: FFT phase?
Posted by Yngvar Larsen on Fri, 25 Jan 2013 13:18:28 GMT
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On Friday, 25 January 2013 07:49:00 UTC+1, xqin...@gmail.com wrote:
> Thanks. I have known the reason. What I use is like x= 2*!dpi*2*dindgen(25)/16, so the amplitude and phase are not so accurate.

As a rule of thumb for harmonic analysis, you need at least 10 cycles in your data to get a reliable phase/magnitude estimate. Your example using around 1.5 cycles is probably the worst case scenario.

OR, if you know the frequency of your signal exactly a priori, you have to truncate your data to a periodic signal, i.e. an integer number of cycles, in order to extract A and B reliably. This is what Craig did in his reply, using only a single cycle.

--
Yngvar

Subject: Re: FFT phase?
Posted by Craig Markwardt on Fri, 25 Jan 2013 21:48:24 GMT
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On Friday, January 25, 2013 8:18:28 AM UTC-5, Yngvar Larsen wrote:
> On Friday, 25 January 2013 07:49:00 UTC+1, xqin...@gmail.com wrote:
> OR, if you know the frequency of your signal exactly a priori, you have to truncate your data to a periodic signal, i.e. an integer number of cycles, in order to extract A and B reliably. This is what Craig did in his reply, using only a single cycle.

Well, 2 cycles, but yes. :-)
Craig
