
Subject: digital_filter

Posted by [claire.maraldi](#) on Mon, 28 Jan 2008 14:46:07 GMT

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Hi,

I have a problem of comprehension with the digital filter tool.

I have an array "X" of n elements, the delta between two elements is "1unit"

I would like to creat a pass band filter between 1unit and 60 units

In IDL I write

```
; Filtre : 1unit<T<60unit ;
delta=1.          ;
f_low=1./(60.*1.)
f_high=1./(1.*1.)
a_ripple=50. & nterms=40.
coeff=DIGITAL_FILTER(f_low*2*delta, f_high*2*delta, a_ripple, nterms)
```

```
X_filter=convol(REFORM(X),coeff,/EDGE_TRUNCATE)
```

Then when I compute FFT(X_filter), I see than my signal has been cut between 1 unit and more than 60units (about 100 units). Are my definitions of f_low and f_high wrong, or is this a problem related to the digital_filter function ?

Thanks
Claire

Subject: Re: digital_filter

Posted by [Wox](#) on Tue, 29 Jan 2008 13:13:21 GMT

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On Mon, 28 Jan 2008 06:46:07 -0800 (PST), claire.maraldi@gmail.com wrote:

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> definitions of f_low and f_high wrong, or is this a problem related to
> the digital_filter function ?
>
> Thanks
> Claire

```

If you plot the filter in the fequency domain, do you get what you expect?

```

nfilt = N_ELEMENTS(coeff)
filter_fourier = FFT(coeff)*nfilt
f_filt = FINDGEN(nfilt/2+1) / (nfilt*delta)
mag = ABS(filter_fourier[0:nfilt/2])
plot,f_filt,alog(mag)

```

You can off course do the filtering in the fequency domain instead:

```
x_filtered = fft(fft(x,1)*filter,-1)
```

For the filter see e.g.

<http://msi.umn.edu/software/idl/tutorial/idl-signal.html>