Subject: Re: How to perform the 1-D signal filter?
Posted by duxiyu@gmail.com on Fri, 01 Feb 2008 14:54:42 GMT
View Forum Message <> Reply to Message

Thank you very much.

But I still have some questions about the parameters in the procedure Digital_Filter.

Result = DIGITAL_FILTER(Flow, Fhigh, A, Nterms [, /DOUBLE])

In the example, you set A=50 and Nterms=40 and I do not know where their values come from and how I get them.

Seondly, I want to know the relation between the filter in time and frequency domain.

if the following command is excuted, I think newfsignal is exactly equal to fft(newsignal), isn't it?

"newsignal=convol(signal,timefilter)

fsignal=fft(signal)

newfsignal=fsignal*freqfilter"

And I also do not knnw why you set steep=20.

Du

```
On Feb 1, 9:27 pm, Wox <nom...@hotmail.com> wrote:
> On Fri, 1 Feb 2008 02:20:52 -0800 (PST), "dux...@gmail.com"
>
>
>
> <dux...@gmail.com> wrote:
>> Dear all.
>
>> Here I give a signal example and hope somone can show me how to
>> perferm the frequency filter on it.
>
>> ;creat a signal data with two peaks in frequency domain at 2 and 3 Hz.
>> t=findgen(1000)/10.
>> data=sin(2*!pi*2*t)+sin(2*!pi*3*t)
>> freq=findgen(501)/100.
>> v=fft(data)
>> plot,freq,abs(v[0:500])^2,xtitle='frequency',ytitle='spectru m'
>> I want to filter the signal with the frequency higher than 2.5 Hz. How
>> do I do this?
```

```
>
>> I have read the help files about Digital_Filter and Convol, but I do
>> not know how to select the parameters for Signal_Filter.
>> Du
> Example below filters in time or frequency domain:
> ; Time domain
> freq1=2.
> freq2=3.
> freq3=4.
> dtime=0.1
> ntime=1000
> time=dtime*findgen(ntime)
   signal=sin(2*!pi*freq1*time)+sin(2*!pi*freq2*time)+sin(2*!pi *freq3*time)
> ; Time domain Filter
> f low = 0
> f high = 2.5
> timefilter = DIGITAL FILTER(f low*2*dtime, f high*2*dtime, 50.,40)
> signal=convol(signal,timefilter)
  ; Frequency domain
> nfreq=ntime/2+1
>
> freq=findgen(nfreq)/(dtime*ntime)
> fsignal=fft(signal)
>
  ; Frequency domain filter (instead of time domain filter)
> if n_elements(timefilter) eq 0 then begin
       steep=20.
>
       freqfilter= 1./(1.+(freq/f_high)^steep)
>
       fsignal*=freqfilter
>
  endif
  plot,freq,abs(fsignal[0:nfreq-1])^2,xtitle='frequency',ytitl e='spectrum'
```