Subject: Re: How to perform the 1-D signal filter?
Posted by Wox on Fri, 01 Feb 2008 13:27:59 GMT
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On Fri, 1 Feb 2008 02:20:52 -0800 (PST), "duxiyu@gmail.com"
<duxiyu@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'
```