
Subject: Re: bandpass filter

Posted by [David Fanning](#) on Mon, 20 Jan 2003 03:06:13 GMT

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tom (tom2959@21cn.com) writes:

> Hi, where can I find bandpass filter (for example, Butterworth) written in
> IDL?

```
IDL> filename = Filepath(['examples','demo','demosrc'], 'd_filter.pro')
IDL> Print, filename
```

Look on lines 545-564 of this file. You will find this:

```
case filtertype of
    ; Define Butterworth filter types.
    ;
0: BEGIN
    if (bandtype EQ 0) then begin ; Compute lowpass filter.
        filter = 1.0d / (1.0d + (distfun / cutoff)^(2 * order))
    endif else if (bandtype EQ 1) then begin ; Compute highpass filter.
        filter = 1.0d / (1.0d + (cutoff / distfun)^(2 * order))
    endif else begin ; Bandpass or bandreject
        filter = distfun^2 - cutoff^2 ; Dist squared
        zeroes = WHERE(abs(filter) EQ 0.0, count)
        if (count NE 0) then filter[zeroes] = 1d-4 ; Avoid divide by 0
        filter = 1.0d / (1.0d + $ ; Compute bandreject filter.
            ((distfun * bandwidth) / filter) ^ (2 * order))

        if (bandtype EQ 2) then $ ; Compute bandpass filter.
            filter = 1.0 - filter
    endelse
end ; of 0
```

If you want to see this code in operation, type "demo" at the IDL prompt. Then select "Signal Processing". You can play around all you like.

Cheers,

David

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