Subject: Re: Digital filter question
Posted by sgs on Fri, 04 Nov 1994 20:49:51 GMT
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MEL (larkum@optolab.unibe.ch) wrote:
: I can't understand description of DIGITAL_FILTER in the PV-Wave
: manual. I have some data with an annoying 50Hz mains signal that
: I'd like to try to filter out. The manual talks about the Nyquist
: Frequency as 1/2T, where T is the time elapsed between data samples.

: Well, I have data sampled at 20 kHz, so as far as I can tell,
: the Nyquist frequency for this data is 10 000. Am I right?
: Now what? (besides read a book on digital signal processing).
: What should my low and high frequencies be to set a bandpass
: filter around 50 Hz, expressing them as "fractions of the
: Nyquist frequency" as "numbers between 0 and 1".

For 20khz sample rate, the Nyquist frequency is 10khz, and the fraction of nyquist frequency for 50 Hz is 50./10000. For a notch filter try using:

```
freqlow = 55./10000. ; (note that high and low are reversed for notch)
freqhigh = 45./10000.; (and in order for bandpass)
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Be sure to specify enough filter coefficients. I like to increase N and refilter until the filtered data stops changing. The lower the frequencies kept, the more coefficients needed. If you use an fft to filter, rather than convolution, you can use a huge N with good cpu performance. A good reference is "Numerical Recipies in C".

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