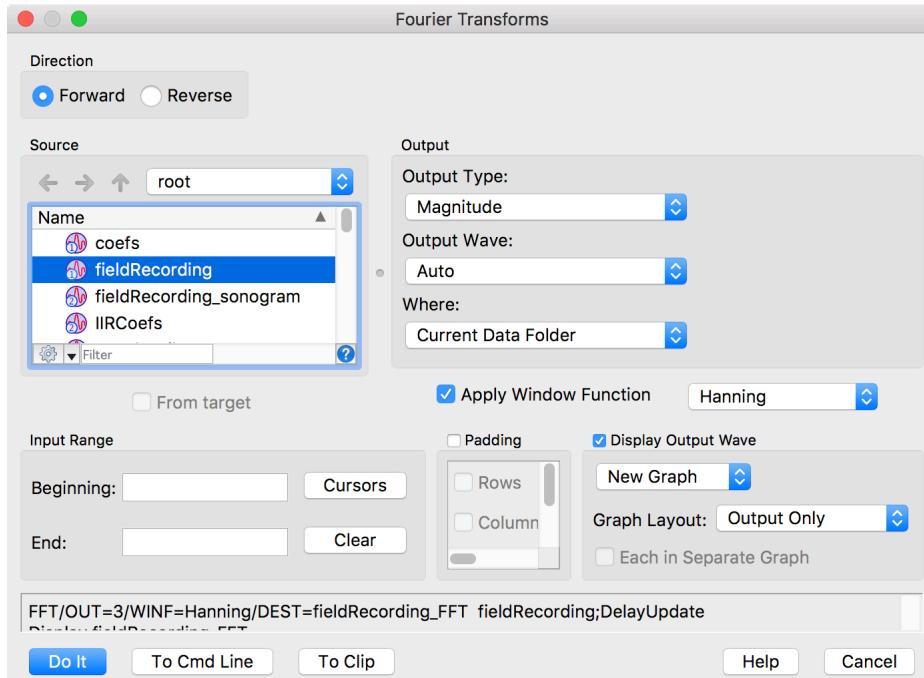
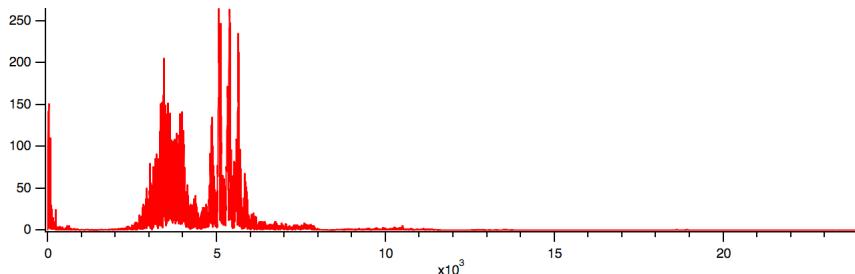


Chapter III-9 — Signal Processing

It is also helpful if you know the frequency content of the input wave before filtering. Use the Analysis→Transforms→Fourier dialog:



This signal has two interesting bands of frequencies: 0 to 4.5KHz and 4.5 to about 10Khz.



For illustrative purposes, let's walk through designing two filters that isolate each band, a low pass filter and a high pass filter.

Example: Low Pass FIR Filter

A low pass filter can be designed to keep the signal frequencies below 4.5Khz and reject higher frequencies.

An infinitely sharp cutoff between those frequencies isn't practical – it takes an infinite number of coefficients – so we specify two frequencies over which the transition from pass band to reject band happens. The smaller this transition band is, the more coefficients are needed to get a useful rejection of the higher frequencies.

Let's choose a 200 Hz transition width (4400 to 4600 Hz) and look at the frequency response with a reasonable number of coefficients (the default of 101):