

Table4:coefsIIRPZ.Id					
R0 Label		(z-z0)/(z-p0)			
Row	coefsIIRPZ.l	coefsIIRPZ[[0].d.r	coefsIIRPZ[[0].d.ir	coefsIIRPZ[[1].d.r	coefsIIRPZ[[1].d.ir
	x	y	zeros	zeros	poles
0	(z-z0)/(z-p0)		-1	0	0.549449
1	(z-z1)/(z-p1)		-1	0	0.549449
2	(z-z2)/(z-p2)		-1	0	0.685687
3	(z-z3)/(z-p3)		-1	0	0.685687
4					

Filter Design and Application Dialog

The Filter Design and Application dialog provides a simple user-interface for designing and applying a digital filter. Choose Analysis→Filter to display it:

Filter Design and Application

Design FIR Filter | Design IIR Filter | Select Filter Coefficients Wave

☒ Low Pass | ☐ High Pass | ☐ Notch

End of Pass Band: 0.2 | End of Reject Band: 0.2 | Notch Frequency: 0.4

Start of Reject Band: 0.3 | Start of Pass Band: 0.3 | Notch Width: 0.05

Number of Coefficients: 101 | Number of Coefficients: 101 | Improve Notch Accuracy by: 2

Window: Hanning | ☒ Create Coefs: coefs | Omit Coefs smaller than: 9.09495e-13

☐ From target | Sort By: | Design using this Sampling Frequency (Hz): 1

Response | Apply Filter

☒ Show Magnitude | dB | ☐ Show Phase | ☒ Unwrap | ☒ degrees | ☐ radians

Make/O/D/N=0 coefs; DelayUpdate
FilterFIR/LO={0.2,0.3,101}/COEF coefs

Do It | To Cmd Line | To Clip | Help | Cancel

This dialog allows you to design a subset of the Igor Filter Design Laboratory's filters. It is simpler and the filters are sufficient for most purposes.

Initially the Design FIR Filter tab is shown with a simple Low Pass filter pre-selected. "Design using this Sampling Frequency (Hz)" is set to 1 and the frequencies shown are in the default range of 0 to 0.5 Hz because the default design sampling frequency is 1 Hz.

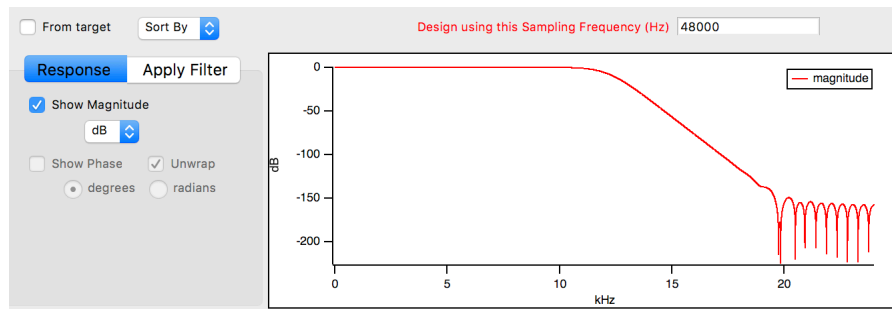
To start the filter design, either:

- Manually enter the sampling frequency or
- Click Apply Filter and select a wave to be filtered whose sampling frequency is properly set as described above

This fieldRecording wave was sampled at 48000 Hz:



Switch back to the Response tab to show the default Low Pass filter using the entered sampling frequency. The frequency range is now 0-24000 Hz:



You can use any combination of one low pass band, one high pass band, and one notch to pass or reject frequency components of the sampled data wave. By using both low pass and high pass bands you can create **Band Pass and Band Stop Filters**.

Before we apply a filter to fieldRecording, let's graph the original waveform:

