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Report#5

In this lab, we implemented Kaiser and Parks-Mclellan windows with given parameters. We set pass-band edge to be 2000 Hz, stop-band edge 2500 Hz, tolerances(deltas) 0.05. In order to create Kaiser window, we used "kaiserord" function to find order of the filter. And we find that, kaiser window is 21st order filter.

n_kaiser   21

Figure 1.

Then, with parameters we find from kaiserord, we created kaiser window with using function "fir1". After that, we plotted phase and frequency response of the kaiser window and plot is as follow,
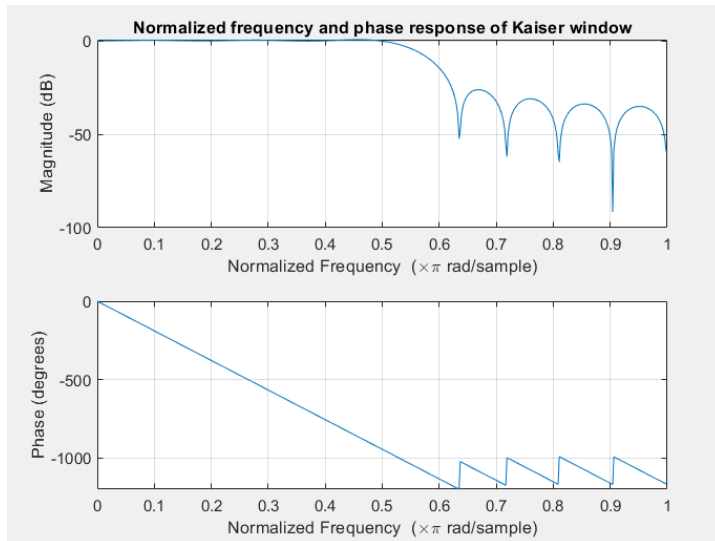

Figure 2.

Using similiar method, we found the order of the Parks-McClellan filter.

Figure 3.

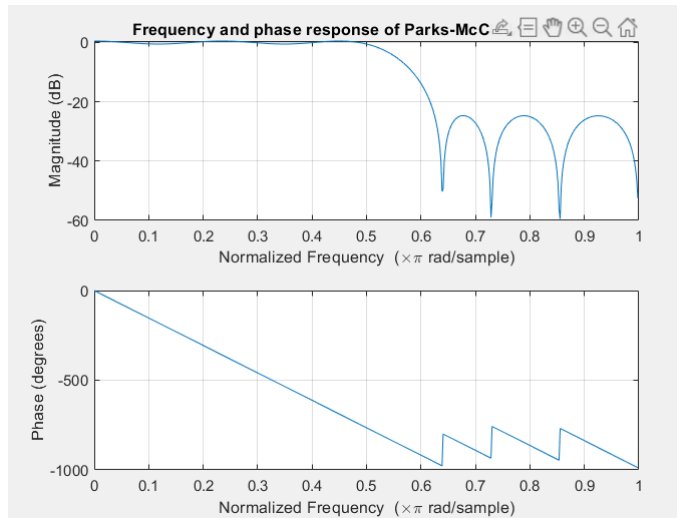Again, we plotted Parks McCleallan filter using firmord, firpm functions, freqz.

Figure 4.

So, if we compare order of Kaiser window and Parks-McClellan windows, we see that Kaiser window is order 21(length 22) and Parks-McClellan is order 17(length 18). We know that low order filters are beneficial because they require less computation. We saw that, Kaiser and Parks-McClellan filters gave exactly the same results, however, in terms of order Parks-Mclellan window 5 less order that Kaiser window. As a result, we can say that usage of Parks-Mclellan window filter is beneficial.