Comparison of LPC Coefficients

We are implementing LPC based formant plotting on iOS platform. During the development, we are verifying our work by comparing our results with the results of MATLAB routines.

We observed that LPC coefficients obtained from two approaches are not EXACTLY the same but the general trend is similar. In this short report, the frequency responses of two prediction filters are plotted to see if the two sets of LPC coefficients give significantly different formants. Figure 1 below shows the LPC coefficients as well as the frequency response of prediction filter.

lpc_comparison_plots.emf

Figure . Comparison of LPC coefficients and frequency response. Top two subplots are from MATLAB based LPC computation of truncated 'arm' sound. The two lower plots are from objective-C based computation for the same sound.

As can be seen from the output of MATLAB plotting routine, the two set of formant frequencies are:

MATLAB : 698.9 , 1235.5 , 1826.5 , 2508.8 , 2672.4   
Objective-C: 695.9 , 1229.0 , 1866.5 , 2410.9 , 2660.7

Hence, we can see that our computations give quite accurate results and we can go ahead with formant frequency measurement from LPC coefficients obtained from objective-C routines.