Comparison of LPC Roots

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 formant frequencies are not far away from each other. Here, we list and plot the roots of prediction filter so that we can compare MATLAB results with objective-C results. The graphical locations of the roots of prediction filter are shown below in Figure 1.

roots_lpc_matlab.emf

Figure . Location of roots of the prediction polynomial

The complete listing of roots is:

0.7842 + 0.5946i 0.7842 - 0.5946i 0.8829 + 0.4436i 0.8829 - 0.4436i 0.9174 + 0.3672i  
0.9174 - 0.3672i 0.9475 + 0.2523i 0.9475 - 0.2523i 0.9723 + 0.1729i 0.9723 - 0.1729i  
0.9881 + 0.0987i 0.9881 - 0.0987i 0.8197 + 0.3061i 0.8197 - 0.3061i 0.6621 + 0.6240i  
0.6621 - 0.6240i 0.6111 + 0.6999i 0.6111 - 0.6999i 0.5329 + 0.7719i 0.5329 - 0.7719i  
0.4452 + 0.8184i 0.4452 - 0.8184i 0.3605 + 0.8642i 0.3605 - 0.8642i 0.2643 + 0.8980i  
0.2643 - 0.8980i 0.1676 + 0.9454i 0.1676 - 0.9454i 0.0585 + 0.9547i 0.0585 - 0.9547i  
-0.0268 + 0.9779i -0.0268 - 0.9779i -0.0980 + 0.9143i -0.0980 - 0.9143i -0.2181 + 0.8825i  
-0.2181 - 0.8825i -0.3591 + 0.8527i -0.3591 - 0.8527i -0.4645 + 0.8202i -0.4645 - 0.8202i  
-0.9212 + 0.0465i -0.9212 - 0.0465i -0.9127 + 0.1376i -0.9127 - 0.1376i -0.8942 + 0.2319i  
-0.8942 - 0.2319i -0.8635 + 0.3189i -0.8635 - 0.3189i -0.8285 + 0.4030i -0.8285 - 0.4030i  
-0.5514 + 0.7508i -0.5514 - 0.7508i -0.7831 + 0.4843i -0.7831 - 0.4843i -0.6479 + 0.6629i  
-0.6479 - 0.6629i -0.7316 + 0.5633i -0.7316 - 0.5633i -0.6189 + 0.6335i -0.6189 - 0.6335i  
-0.2677 + 0.8593i -0.2677 - 0.8593i 0.9511 0.9063