III. MULTICHANNEL MAXIMUM ENTROPY SPECTRAL ANALYSIS FROM

AUTOCORRELATION MEASUREMENTS

Once the entropy of a multichannel stationary time series has been defined as the integral of the logarithm of the determinant of the power spectral matrix, development of the maximum entropy variational principle under the constraints imposed by knowledge of all auto and cross-correlation values out to a maximum lag of N is a fairly straightforward problem of properly converting the single channel scalar equations to the multichannel matrix equations. However, complications begin to appear when the Levinson algorithm is used to solve the block Toeplitz multichannel prediction error filter equation. It is seen that the forward and backward multichannel prediction error filters are not simply related as they are in the single channel case. As will be seen, this basic difference prevents the multichannel problem from having many of the elegant features of the single channel problem.