Minimum Symbol Error Rate Detection in Single-Input Multiple-Output Channels with Markov Noise

Minimum symbol error rate detection in Single-Input Multiple-Output (SIMO) channels with Markov noise is presented. The special case of zero-mean Gauss-Markov noise is examined closer as it only requires knowledge of the second-order moments. In this special case, it is shown that optimal detection can be achieved by a Multiple-Input Multiple-Output (MIMO) whitening filter followed by a traditional BCJR algorithm. The Gauss-Markov noise model provides a reasonable approximation for co-channel interference, making it an interesting single-user detector for many multiuser communication systems where interference from other transmitters has a limiting effect.