

Estimation of Time-Variant Channels and ICI Cancellation in OFDM

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Abstract

OFDM modulation combines the advantages of high achievable rates and relatively easy implementation. However, for proper recovery of the input, the OFDM receiver needs accurate channel information. When the channel exhibits high variation as the case with many recent OFDM applications, channel estimation at the receiver becomes quite challenging for two main reasons 1) the receiver needs to perform this estimation more frequently and 2) time-variation introduces intercarrier interference (ICI) among the OFDM carriers. In this project, we propose an algorithm for the estimation of time variant channels and ICI cancellation for OFDM transmission. As opposed to many channel estimation algorithms that have been suggested in literature, we suggest to perform channel estimation in the frequency domain and to make a collective use of the constraints on the channel (such as frequency and time correlation). We also propose to perform ICI cancellation and use the resulting data (soft or hard) to further improve the channel estimate.