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Blind Time-Domain Equalizer for Doubly-Selective Channel with Reduced Time Averaging and Computational Complexity

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Abstract

This study presents a blind time-domain equalizer for a CP-free multiuser /MIMO-OFDM system over a doubly selective fast-fading channel, which enables a pertinent trade-off in error performance and complexity. A high-velocity outdoor system is considered, such as a vehicular user in which the channel varies too rapidly to be tracked. The proposed method applies the computationally efficient modified recursive Cholesky (RChol) algorithm incorporating a linear predictor and the LMMSE criteria, which scales down the correlation matrix time averaging and hence results in a significantly computationally efficient algorithm for the multiuser/MIMO-OFDM time-domain equalizer. The method reduces the effect of any perturbation introduced by the linear prediction, noise, and multipath. The performance of the proposed method is analyzed and compared with those of the exist-

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