

Analysis of Cooperative Hybrid ARQ with Adaptive Modulation and Coding on a Correlated Fading Channel Environment

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Abstract : In this study, a cross-layer design which combines adaptive modulation and coding (AMC) and hybrid automatic repeat request (HARQ) techniques for a cooperative wireless network is investigated analytically. Previous analyses of such systems in the literature are confined to the case where the fading channel is independent at each retransmission, which can be unrealistic unless the channel is varying very fast. On the other hand, temporal channel correlation can have a significant impact on the performance of HARQ systems. In this study, utilizing a Markov channel model which accounts for the temporal correlation, the performance of non-cooperative and cooperative networks are investigated in terms of packet loss rate and throughput metrics for Chase combining HARQ strategy.

Keywords : cooperative network, adaptive modulation and coding, hybrid ARQ, correlated fading

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