

Closed-form Expression for Outage Probability in Relay-Based Cooperative Diversity Systems over Multipath Fading Channels with Interference

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Abstract: Incremental relaying has been recently proposed to overcome the restriction associated with the fixed relaying schemes by restricting the usage of the relay(s) only when the channel conditions are severe regarding the channel impairments. The incremental relaying exploits the feedback from the destination to inform the relay about the necessity to send the source signal, only when the direct path is not usable the destination will combine the two received signals by maximal ratio combiner (MRC) to enhance the reception of the signal. In this paper, the performance analysis in terms of the outage probability (OP) of the incremental relaying over mixed fading channels is provided for the decode-and-forward (DF) protocol and incorporates the effects of the multiple L interferers near the destination which in turn will degrade the overall performance of the system. Numerical results are provided to validate our derivations.