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Cooperative-Networks using Incremental-Relaying Techniques with Dual Transmit Diversity

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Abstract: In this paper, the performance of wireless cooperative networks with incremental-relaying and using dual transmit diversity with the simple orthogonal space time block coding (OSTBC) scheme is studied. Here, the proposed model is studied by utilizing different relaying schemes such as decode and forward (DF), amplify and forward (AF), and the adaptive incremental-relaying (i.e., best relay selection) with DF relaying scheme. In particular, closed-form expressions for the average bit error rate (BER), signal to noise ratio (SNR) outage probability, the average achievable rate, and finally the normalized throughput are derived. Numerical results show that the overall performance of the incremental-relaying cooperative diversity with a simple OSTBC scheme outperforms the regular incremental relaying cooperative diversity in terms of transmission power and channel efficiency using the same transmit power. Moreover, the best relay selection with L relaying nodes outperforms the fixed incremental DF relaying schemes, especially for low values of the transmitted SNR.