

**Performance Evaluation of Bit Error Rate in Relay-Based Cooperative Diversity Systems over Rayleigh Fading Channels with Interference**

**Authors:** Rami Mohaisen, and Mamoun F. Al-Mistarihi

**Abstract:** Adaptive relaying schemes of the cooperative diversity networks have drawn a considerable attention since they provide an efficient way in allocating the channel resources effectively when needed. The incremental relaying form of the cooperative networks uses a feedback channel from the destination in order to use the relay only when the direct path from the source to the destination is in outage which in turn will combine the two received signal by the maximum ratio combiner (MRC) to proactively improve the signal reception at the destination. This paper derives a closed form expression for the bit error rate (BER) in decode-and-forward incremental relaying systems over Rayleigh fading channels and incorporating the effects of the multiple  $L$  interferers near the destination which will degrade the system performance due to the Co-channel interference. Numerical results are provided to consolidate the assumptions.