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Performance of multihop CDMA ad hoc networks with diversity combining techniques over fading environments

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Abstract: This study investigates the impact of the diversity combining techniques on the performance of wireless code division multiple access (CDMA) ad hoc networks operating over α - β fading channels, where the performance criterion in this study is in terms of the expected progress per hop. The probability density function (PDF) and the cumulative density function (CDF) of the interference power are obtained in α - β fading conditions. Furthermore, expression for the unconditional CDF of the signal-to-noise-and-interference ratio (SNIR) is derived, which is utilized to derive expressions for the expected progress per hop with selecting combining (SC) and maximal ratio combining (MRC) diversity. Corresponding expressions for Nakagami-m and Rician fading are presented in this paper as special cases of α - β fading. Numerical results are presented for illustration purposes.