Abstract: Performance Analysis of Cognitive Relay Networks over Nakagami-m Fading Channels

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Abstract
In this paper, we present the performance analysis for underlay cognitive selection decode-and-forward relay networks with the interference power constraint and the maximum transmit power limit over independent and identically distributed Nakagami-m fading channels, with integer values of the fading severity parameter $m$. Specifically, closed-form expressions for the exact and asymptotic outage probability are derived. The theoretical derivations are validated by Monte-Carlo simulations. The results show that the outage performance improve with decrease of fading severity of channels while the tolerated interference power is large, but the situation is opposite while the tolerated interference power is small. The results also reveal that the diversity order of such system is $mN$ (where $N$ is the number of relays).