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Security Enhancement Using Maximum Ratio Combining (MRC) Diversity over Nakagami-m Fading Channels

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Abstract: This paper presents a method of increasing the secrecy capacity utilizing the channel diversity technique in wireless communication. In general, a relatively higher secrecy capacity can be achieved at the intended receiver by deploying channel diversity to mitigate the effect of low signal to noise ratio. In this analysis, the legitimate receiver and the eavesdropper are assumed to employ maximal ratio combining diversity technique to combine the received signals coming from the transmitter. Considering Nakagami-m wireless fading channels, closed-form expressions for the secrecy outage probability and the probability of secrecy capacity are derived, which can be used as quality of service metrics. The numerical result confirms that the security of any wireless network model or communication system at a common operating system can be improved by using maximal ratio combining diversity technique as expected.