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On the Secrecy Outage Probability of a Physical Layer with MRC over Mixed Fading Channels

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Abstract: The diversity scheme has been used recently to improve the reliability of the message signal by using two or more communication channels depending on many characteristics. Maximum Ratio Combining (MRC) is one of the diversity combining methods by which the signals from each channel are added together and the gain of each channel is made to proportionate to the root mean square signal level. In this paper a diversity technique is proposed to increase the secure capacity over wireless fading channels. The legitimate user (Bob) takes on MRC to maximize the probability of secure transmission, whereas eavesdropper takes on MRC to maximize the probability of successful eavesdropping. We assume that Bob and Eve follow different fading channels, Rayleigh and Nakagami-m, respectively. Depending on these assumptions, closed-form expression for secrecy outage probability is derived.