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Capacity of SIMO Systems over Non i.i.d. Nakagami-m Channels

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Abstract: The ergodic capacity of single input multiple output (SIMO) wireless communication systems over Nakagami-m fading channels is available in the literature for the case of identically independent distributed (i.i.d.) subchannels. However, the nonidentically independent Nakagami-m case is more practical and has not been considered in the literature. In this paper, we derive an analytical expression for the ergodic capacity of SIMO wireless communication systems over non-identically independent Nakagami-m subchannels. We also derive an expression for the capacity of i.i.d. Nakagami-m case which requires much less computational time as compared to expressions reported in literature. Numerical results are presented and verified via Monte-Carlo simulation.