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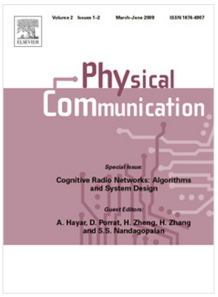

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Outage Probability of Non-Orthogonal Multiple Access with Partial Relay Selection Over Nakagami-m Fading Channels

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Abstract

Non-orthogonal multiple access (NOMA) is considered as one of the candidate techniques to be implemented in 5G communication networks. In this paper, a dual-hop amplify-and-forward NOMA relaying network with partial relay selection protocol over Nakagami-m fading channels is studied. Closed-form expressions for the outage probability are derived, and also lower and upper bounds are obtained under high signal-to-noise ratio approximation. Numerical results are corroborated with Monte Carlo simulations.

Keywords: Amplify-and-forward (AF), Non-orthogonal multiple access (NOMA), Partial Relay Selection (PRS), Successive interference cancellation (SIC), outage probability, asymptotic analysis

1. Introduction

Non-orthogonal multiple access (NOMA) is regarded as one of the potential techniques to be used in 5G networks [1, 2, 3, 4]. Also, multiuser superposition transmission (MUST), which is equivalent to downlink NOMA, has been selected for Third Generation Partnership Project LTE-Advanced (3GPP-LTE-A) [5]. NOMA is divided into two types: Code-domain NOMA and Power-domain

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