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Performance Analysis of Decode and Forward Relaying over Dual-hop Mixed Fading Channels

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Abstract

In this paper, the end-to-end performance of decode and forward relaying over an independent, asymmetrical and generalized fading channels are analyzed. We consider a dual hop mixed fading channel, one hop is subject to $\eta - \mu$ fading and the other hop is subject to $\kappa - \mu$ fading. We derived an exact expression of symbol error rate (SER) for non-coherent detection, outage probability, outage capacity and an approximate expression of SER for coherent detection. In addition, we compared the SER performance over different $\eta, \mu_1, \kappa, \mu_2$ which corresponds to different fading effects and validated the arrived expressions through Monte-Carlo simulation.

Keywords: Decode and forward, Symbol error rate, Outage probability, $\kappa - \mu$ and $\eta - \mu$ fading, Dual hop mixed fading

1. Introduction

Cooperative communication has achieved great interest in recent technologies such as LTE, macro cellular systems, sensor networks etc., for its better diversity and performance gain like multiple antenna system. It utilizes the fact that relays or nodes in the network listen to the source, during transmission and re-transmit the received signal to the destination. Relay

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