A Class of Selection Criteria Achieving Full Diversity in AF Opportunistic Relaying

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Abstract

The way to select the “best” relay for forwarding the received signal to the destination is critical in opportunistic relaying. In this paper, we analyze the asymptotic outage probability of the amplify-and-forward opportunistic relaying (AF-OR) under a generalized selection criterion termed as the max-generalized-mean (MGM) selection criterion. We show that this generalized selection framework can be regarded as a class of selection criteria achieving full diversity in the AF-OR, encompassing the conventional selection criteria as special cases. The asymptotic outage probability can be further minimized by optimizing the parameters associated with the MGM selection criterion. It is shown that under this generalized selection framework, the conventional max-min selection criterion is optimal for the AF-OR in the sense that it achieves the minimum outage probability.

Index Terms

Outage Probability, opportunistic relaying, selective decode-and-forward, harmonic mean

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