Outage probability of selection relaying networks with distributed switch and stay combining over Rayleigh fading channels

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Abstract: We propose and analyze a distributed switch and stay combining network with selection relaying with an aim to reduce the complexity at the destination as well as to make efficient use of the degrees of freedom of the channels by exploiting a limited feedback signal from the destination. In particular, whenever the currently connected link (either from the source or from the best relay) to the destination is not favorable to decoding, the destination will switch to the alternative link as per the rule of switch and stay combining. The performance of the proposed system is derived in terms of outage probability and achievable spectral efficiency. The analytic results show that the proposed system assisted by the selection relaying exhibits a higher spectral efficiency than incremental relaying with selection relaying at low SNR regime. Monte-Carlo simulations are performed to verify the analysis. ©2010 IEEE.

Author Keywords: Decode-and-forward; Incremental relaying; Outage probability; Rayleigh fading; Selection relaying; Switch and stay combining

Index Keywords: Decode-and-forward; Incremental relaying; Outage probability; Rayleigh; Selection relaying; Switch and stay combining; Fading channels; Outages; Probability; Spectrum analyzers; Switching circuits; Rayleigh fading

Year: 2010
Source title: ICCE 2010 - 3rd International Conference on Communications and Electronics
Art. No.: 5670682
Page : 61-64
Link: Scopus Link
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Sponsors: IEICE ES and CS;IEEE MTT-S;AP-S;Photonics Society;IEEE Com Soc Vietnam and Japan Chapter
Conference name: 3rd International Conference on Communications and Electronics, ICCE 2010
Conference date: 11 August 2010 through 13 August 2010
Conference location: Nha Trang
Conference code: 83477
DOI: 10.1109/ICCE.2010.5670682
Language of Original Document: English
Abbreviated Source Title: ICCE 2010 - 3rd International Conference on Communications and Electronics
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