

Exact pairwise error probability of distributed space-time coding in wireless relays networks

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Abstract: In this paper, we analyze the pairwise error probability (PEP) of distributed space-time codes employing Alamouti scheme. We restrict our attention to the space-time code construction for Protocol III in [1]. In particular, we derive two exact closed-form expressions for PEP when the relay is either close to the source or destination. Using the alternative definition of Q-function, we can express these PEPs in terms of finite integral whose integrand is composed of trigonometric functions. We further show that with only one relay assisted source-destination link, system still achieves diversity order of two, assuming single-antenna terminals. We also perform Monte-Carlo simulations to verify the analysis. © 2007 IEEE.

Author Keywords: Distributed space-time codes; Pairwise error probability (PEP); Relay channels

Index Keywords: Antenna accessories; Block codes; Codes (standards); Codes (symbols); Communication channels (information theory); Error analysis; Function evaluation; Information technology; Photoelectric relays; Programming theory; Risk assessment; Trellis codes; Wireless telecommunication systems; Alamouti scheme; Closed-form expressions; Distributed space-time coding; Distributed space-time coding (DSTC); Diversity order; International symposium; Monte Carlo Simulation (MCS); Pair wise error probability (PWEP); Q functions; Single-antenna terminals; Space-time (ST) coding; Trigonometric functions; wireless relays; Probability

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