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SER Approximation for Orthogonal STBC over Nakagami-m Fading Channels

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Abstract: In this study, approximate symbol probability of error (i.e., symbol error rate) formulas are derived for both of the M-ary phase shift keying and M-ary quadrature amplitude modulation constellations schemes. These formulas are obtained over slow, flat, and independent and identically distributed Nakagami-m fading channels, where the orthogonal space-time block codes is utilized. This approach reduces the complexity and instability of using integrals or hyper-geometric infinite series forms to evaluate exact symbol error rate formulas. Numerical examples are presented to illustrate the new results.