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## On the Channel Capacity of SSC Diversity System in Eta-mu and Kappa-mu Fading Environments

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**Abstract:** This paper deals with the capacity analysis of a dual-branch switch and stay combining (SSC) system operating over Eta-mu and Kappa-mu fading channels. In particular, expressions for the channel capacity of these two generalized fading distributions are derived under three adaptive transmission techniques, namely the optimal rate adaptation with constant power, channel inversion with fixed rate and truncated channel inversion with fixed rate. Some of the final capacity expressions contain infinite series, and thus we truncate those series and derive upper bounds on truncation errors. Closed form expressions for the optimum adaptive switching thresholds are also obtained. Corresponding expressions for Nakagami-m, Rician fading, and Nakagami-q fading are obtained here as special cases of Eta-mu and Kappa-mu fading. Numerical and simulation results are presented here for illustration purposes.