Second-order statistics of a maximum ratio combiner with unbalanced and unequally distributed Nakagami branches

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References:

Abstract:
In this study, exact closed-form expressions for the second-order statistics of the signal-to-noise ratio at a maximum ratio combiner (MRC) output for a Nakagami fading channel are derived. Using the joint characteristic function for the MRC output and its time derivative, the level crossing rate, average fading duration and autocorrelation function expressions are derived for the case of independent but unbalanced diversity branches, with unequal fading parameters and an arbitrary number of diversity branches. The analytical results are validated by simulations.

Keywords:
maximum ratio combining, average fading duration, Autocorrelation function, unbalanced channels, Nakagami fading, level crossing rate