

Power Lognormal Approximation to the Random Weighted Sums of Lognormal Random Variables

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Abstract

Sums of lognormal random variables appear in many wireless communications problems because signal shadowing can be adequately modeled by lognormal distributions. We propose the use of power lognormal distributions as approximations of linear combinations of lognormal random variables (RVs), where the weights are random. Numerical results indicate that the moment matching and minimax approximations are not appropriate for application in linear combinations of lognormal RVs with random weights. In certain situations, the use of power lognormal distributions is recommended. This is a joint work with Tien-Chung Hu.