Statistical analysis of the ratio of product of two independent stable Weibull random variables and Gamma random variables

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In the present paper, the exact probability density function and cumulative distribution function of the ratio of product of two independent stable Weibull random variables and Gamma random variables are derived in terms of the Meier-G function. Those type of the products and ratios of distributions appears naturally for solution of problems in engineering, economics, telecommunications etc. Especially important value for the systems modeled by those products is cumulative distribution function which can calculate cases of system failure. For practical applications routine in the Mathematica software has been developed for the evaluation of the Meier-G function. Finally, numerical experiments are carried out to show the accuracy and correctness of the expressions hereby deduced.

References

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