Sine Square Distribution:

A New Statistical Model Based on the Sine Function

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Abstract

This paper introduces a new continuous distribution based on the sine function. The proposed Sine Square distribution has one parameter and its domain depends on this parameter. The probability density function $f(x)$ of a Sine Square variable X as well as its cumulative distribution function $F(x)$ are defined. The formulas for the rth raw moment and central moments, moments generating function $(m.g.f.)$, characteristic function $(c.f.)$ and some other properties of the new distribution are provided. A method to generate random variables from the Sine Square distribution is analyzed and applied.

Keywords: Sine function, probability and distribution functions, generating functions, simulation of random variables.

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