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 \( r^{th} \) 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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