

SOME FAMILIES OF MATHIEU TYPE SERIES AND HURWITZ-LERCH ZETA FUNCTIONS AND ASSOCIATED PROBABILITY DISTRIBUTIONS

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Sažetak:

By making use of the familiar Mathieu series and its generalizations, and the Riemann, Hurwitz (or generalized) and the Hurwitz-Lerch Zeta functions and their multi-parameter extensions, the author presents a systematic study of probability density functions and probability distributions associated with some generalizations of the Mathieu series and the Planck's law. In particular, the characteristic functions and fractional moments related to the probability density functions of the considered probability distributions are derived. Integral representations of trigonometric Mathieu series, and some other particular forms of the Mathieu series are also given. Finally, various interesting results are proved for the Fourier-Mathieu series (which are introduced in this talk) and for their n-th partial sums by applying some known theorems and lemmas for trigonometric series given by (for example) Telyakovskii, Ul'yanov, Sidon and Fomin, Bojanić and Stanojević and others.