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Sommario/riassunto	The Mathieu series is a functional series introduced by Émile Léonard Mathieu for the purposes of his research on the elasticity of solid bodies. Bounds for this series are needed for solving biharmonic

equations in a rectangular domain. In addition to Tomovski and his coauthors, Pogany, Cerone, H. M. Srivastava, J. Choi, etc. are some of the known authors who published results concerning the Mathieu series, its generalizations and their alternating variants. Applications of these results are given in classical, harmonic and numerical analysis, analytical number theory, special functions, mathematical physics, probability, quantum field theory, quantum physics, etc. Integral representations, analytical inequalities, asymptotic expansions and behaviors of some classes of Mathieu series are presented in this book. A systematic study of probability density functions and probability distributions associated with the Mathieu series, its generalizations and Planck's distributionis also presented. The book is addressed at graduate and PhD students and researchers in mathematics and physics who are interested in special functions, inequalities and probability distributions.