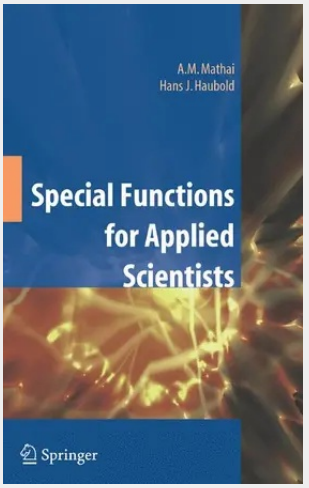
Mathai / Haubold

Special Functions for Applied Scientists

Chapter 1 introduces elementary classical special functions. Gamma, beta, psi, zeta functions, hypergeometric functions and the associated special functions, generalizations to Meijer's G and Fox's H-functions are examined here. Discussion is confined to basic properties and selected applications. Introduction to statistical distribution theory is provided. Some recent extensions of Dirichlet integrals and Dirichlet densities are discussed. A glimpse into multivariable special functions such as Appell's functions and Lauricella functions is part of Chapter 1. Special functions as solutions of differential equations are examined. Chapter 2 is devoted to fractional calculus. Fractional integrals and fractional derivatives are discussed. Their applications to reaction-diffusion problems in physics, input-output analysis, and Mittag-Leffler stochastic processes are developed. Chapter 3 deals with q-hyper-geometric or basic hypergeometric functions. Chapter 4 covers basic hypergeometric functions and Ramanujan's work on elliptic and theta functions. Chapter 5 examines the topic of special functions and Lie groups. Chapters 6 to 9 are devoted to applications of special functions. Applications to stochastic processes, geometric infinite divisibility of random variables, Mittag-Leffler processes, alpha-Laplace processes, density estimation, order statistics and astrophysics problems, are dealt with in Chapters 6 to 9. Chapter 10 is devoted to wavelet analysis. An introduction to wavelet analysis is given. Chapter 11 deals with the Jacobians of matrix transformations. Various types of matrix transformations and the associated Jacobians are provided. Chapter 12 is devoted to the discussion of functions of matrix argument in the real case. Functions of matrix argument and the pathway models along with their applications are discussed.

Chapter 1 introduces elementary classical special functions. Gamma, beta, psi, zeta functions, hypergeometric functions and the associated special functions, generalizations to Meijer's G and Fox's H-functions are examined here. Discussion is confined to basic properties and selected applications. Introduction to statistical distribution theory is provided. Some recent extensions of Dirichlet integrals and Dirichlet densities are discussed. A glimpse into multivariable special functions such as Appell's functions and Lauricella functions is part of Chapter 1. Special functions as solutions of differential equations are examined. Chapter 2 is devoted to fractional calculus. Fractional integrals and fractional derivatives are discussed. Their applications to reaction-diffusion problems in physics, input-output analysis, and Mittag-Leffler stochastic processes are developed. Chapter 3 deals with q-hyper-geometric or basic hypergeometric functions. Chapter 4 covers basic hypergeometric functions and Ramanujan's work on elliptic and theta functions. Chapter 5 examines the topic of special functions and Lie groups. Chapters 6 to 9 are devoted to applications of special functions. Applications to stochastic processes, geometric infinite divisibility of random variables, Mittag-Leffler processes, alpha-Laplace processes, density estimation, order statistics and astrophysics problems, are dealt with in Chapters 6 to 9. Chapter 10 is devoted to wavelet analysis. An introduction to wavelet analysis is given. Chapter 11 deals with the Jacobians of matrix transformations. Various types of matrix transformations and the associated Jacobians are provided. Chapter 12 is devoted to the discussion of functions of matrix argument in the real case. Functions of matrix argument and the pathway models along with their applications are discussed.



106,99 €
99,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780387758930
Medium: Buch
ISBN: 978-0-387-75893-0
Verlag: Springer
Erscheinungstermin: 19.03.2008
Sprache(n): Englisch
Auflage: 2008
Produktform: Gebunden
Gewicht: 898 g
Seiten: 470
Format (B x H): 160 x 241 mm

Kundenservice Verlag Dr. Otto Schmidt KG
Neumannstraße 10, 40235 Düsseldorf | kundenservice@otto-schmidt.de | 0221-93738-997 (Inland)