

Theory Of Hypergeometric Functions Springer Monographs In Mathematics 2011 Edition By Aomoto Kazuhiko Kita Michitake 2011 Hardcover

Journal of Physics A
 Basic Hypergeometric Series
 Analysis in Positive Characteristic
 Change and Variations
 Hypergeometric Summation
 A Volume Dedicated to Mizan Rahman
 Essays and Surveys
 An Algorithmic Approach to Summation and Special Function Identities
 Analytic Number Theory, Modular Forms and q-Hypergeometric Series
 Hypergeometric Orthogonal Polynomials and Their q-Analogues
 Facets of Algebraic Geometry: Volume 2
 Symbolic Computation, Number Theory, Special Functions, Physics and Combinatorics
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 A History of Differential Equations to 1900
 Discriminants, Resultants, and Multidimensional Determinants
 Q-series with Applications to Combinatorics, Number Theory, and Physics
 The Confluent Hypergeometric Function
 Mathematical and general
 Special Functions and Their Classification
 Encyclopedia of Special Functions: The Askey-Bateman Project: Volume 2, Multivariable Special Functions
 Information Sources for Research and Development
 Second Order Differential Equations
 In Honor of Krishna Alladi's 60th Birthday, University of Florida, Gainesville, March 2016
 Encyclopaedia of Mathematics
 On a Class of Incomplete Gamma Functions with Applications
 An International Perspective
 Current Topics in Analytic Function Theory
 with Special Emphasis on its Applications
 A Conference on Q-series with Applications to Combinatorics, Number Theory, and Physics, October 26-28, 2000, University of Illinois
 Harmony of Gröbner Bases and the Modern Industrial Society
 Hypergeometric Functions on Domains of Positivity, Jack Polynomials, and Applications
 Theory of Hypergeometric Functions
 AMS-IMS-SIAM Joint Summer Research Conference on Q-Series, Combinatorics, and Computer Algebra, June 21-25, 1998, Mount Holyoke College, South Hadley, MA

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Journal of Physics A CRC Press

Written to honor the 80th birthday of William Fulton, the articles collected in this volume (the second of a pair) present substantial contributions to algebraic geometry and related fields, with an emphasis on combinatorial algebraic geometry and intersection theory. Featured include commutative algebra, moduli spaces, quantum cohomology, representation theory, Schubert calculus, and toric and tropical geometry. The range of these contributions is a testament to the breadth and depth of Fulton's mathematical influence. The authors are all internationally recognized experts, and include well-established researchers as well as rising stars of a new generation of mathematicians. The text aims to stimulate progress and provide inspiration to graduate students and researchers in the field.

Basic Hypergeometric Series World Scientific

This book is the first set of proceedings to be devoted entirely to the theory of hypergeometric functions defined on domains of positivity. Most of the scientific areas in which these functions are applied include analytic number theory, combinatorics, harmonic analysis, random walks, representation theory, and mathematical physics—are represented here. This volume is based largely on lectures presented at a Special Session at the AMS meeting in Tampa, Florida in March 1991, which was devoted to hypergeometric functions of matrix argument and to fostering communication among representatives of the diverse scientific areas in which these functions are utilized. Accessible to graduate students and others seeking an introduction to the state of the art in this area, this book is a suitable text for advanced graduate seminar courses for it contains many open problems.

Analysis in Positive Characteristic Cambridge University Press

This book provides an exposition of function field arithmetic with emphasis on recent developments concerning Drinfeld modules, the arithmetic of special values of transcendental functions (such as zeta and gamma functions and their interpolations), diophantine approximation and related interesting open problems. While it covers many topics treated in 'Basic Structures of Function Field Arithmetic' by David Goss, it complements that book with the inclusion of recent developments as well as the treatment of new topics such as diophantine approximation, hypergeometric functions, modular forms, transcendence,

automata and solitons. There is also new work on multizeta values and log-algebraicity. The author has included numerous worked-out examples. Many open problems, which can serve as good thesis problems, are discussed. Contents: Number Fields and Function Fields Drinfeld Modules Explicit Class Field Theory Gauss Sums and Gamma Functions Zeta Functions Higher Rank Theory Higher Dimensions and Geometric Tools Applications to Gauss Sums, Gamma and Zeta Values Diophantine Approximation Transcendence Results Automata and Algebraicity: Applications Readership: Graduate students and researchers in algebra, number theory and geometry. Keywords: Drinfeld Modules; Motives; Gamma; Zeta; Diophantine Approximation; Automata; Transcendence; Multizeta; Solitons; Periods Reviews: "It is dense with mathematics, but there is also motivation and discussion. The overall feeling is that of a very helpful survey of a very interesting field." MAA Online Book Review "Thakur's book is a welcome addition to the collection of books on the arithmetic of Drinfeld modules and objects related to them. Written by an expert in the field, the book's style is generally informal, without compromising rigor. It certainly will be useful to graduate students wishing to pursue research in the area of function fields, and at the same time it can be used as a reference book. Many of the important results on special values and transcendence are due to Thakur himself, so in many places the reader gets the 'insider's look' on the subject, and sees how the ideas which go into the proofs were gradually developed." Mathematical Reviews "Thakur's book is a valuable contribution to the theory of arithmetic function fields ... The author has included several interesting examples and discusses many open problems." Zentralblatt MATH 'Change and Variations' Cambridge University Press These are the proceedings of the conference "Symbolic Computation, Number Theory, Special Functions, Physics and Combinatorics" held at the Department of Mathematics, University of Florida, Gainesville, from November 11 to 13, 1999. The main emphasis of the conference was Computer Algebra (i. e. symbolic computation) and how it related to the fields of Number Theory, Special Functions, Physics and Combinatorics. A subject that is common to all of these fields is q-series. We brought together those who do symbolic computation with q-series and those who need q-series in Physics and Combinatorics. The goal of the conference was to inform mathematicians and physicists who use q-series of the latest developments in the field of q-series and especially how symbolic computation has aided these developments. Over 60 people

were invited to participate in the conference. We ended up having 45 participants at the conference, including six one hour plenary speakers and 28 half hour speakers. There were talks in all the areas we were hoping for. There were three software demonstrations.

Hypergeometric Summation World Scientific

The subjects treated in this book have been especially chosen to represent a bridge connecting the content of a first course on the elementary theory of analytic functions with a rigorous treatment of some of the most important special functions: the Euler gamma function, the Gauss hypergeometric function, and the Kummer confluent hypergeometric function. Such special functions are indispensable tools in "higher calculus" and are frequently encountered in almost all branches of pure and applied mathematics. The only knowledge assumed on the part of the reader is an understanding of basic concepts to the level of an elementary course covering the residue theorem, Cauchy's integral formula, the Taylor and Laurent series expansions, poles and essential singularities, branch points, etc. The book addresses the needs of advanced undergraduate and graduate students in mathematics or physics.

A Volume Dedicated to Mizan Rahman Springer Science & Business Media

"This book revives and vastly expands the classical theory of resultants and discriminants. Most of the main new results of the book have been published earlier in more than a dozen joint papers of the authors. The book nicely complements these original papers with many examples illustrating both old and new results of the theory."—Mathematical Reviews

Essays and Surveys Theory of Hypergeometric Functions Theory of Hypergeometric Functions

With a balanced combination of longer survey articles and shorter, peer-reviewed research-level presentations on the topic of differential and difference equations on the complex domain, this edited volume presents an up-to-date overview of areas such as WKB analysis, summability, resurgence, formal solutions, integrability, and several algebraic aspects of differential and difference equations.

An Algorithmic Approach to Summation and Special Function Identities Springer

This volume is a collection of research-and-survey articles by eminent and active workers around the world on the various areas of current research in the theory of analytic functions. Many of these articles emerged essentially from the proceedings of, and various deliberations at, three recent conferences in Japan and

Korea: An International Seminar on Current Topics in Univalent Functions and Their Applications which was held in August 1990, in conjunction with the International Congress of Mathematicians at Kyoto, at Kinki University in Osaka; An International Seminar on Univalent Functions, Fractional Calculus, and Their Applications which was held in October 1990 at Fukuoka University; and also the Japan-Korea Symposium on Univalent Functions which was held in January 1991 at Gyeongsang National University in Chinju. Contents: Univalent Logharmonic Extensions onto the Unit Disk or onto an Annulus (Z Abdulhadi & W Hengartner) Hypergeometric Functions and Elliptic Integrals (G D Anderson et al.) A Certain Class of Carathéodory Functions Defined by Conditions on the Unit Circle (J Fuka & Z J Jakubowski) Recent Advances in the Theory of Zero Sets of the Bergman Spaces (E A LeBlanc) Spherical Linear Invariance and Uniform Local Spherical Convexity (W C Ma & D Minda) A Special Differential Subordination and Its Application to Univalence Conditions (S S Miller & P T Mocanu) On the Bernardi Integral Operator (M Nunokawa & D K Thomas) The Quasi-Hadamard Products of Certain Analytic Functions (S Owa) Analytic Solutions of a Class of Briot-Bouquet Differential Equations (S Owa & H M Srivastava) A Certain Class of Generalized Hypergeometric Functions Associated with the Hardy Space of Analytic Functions (H M Srivastava) On the Coefficients of the Univalent Functions of the Nevanlinna Classes N_1 and N_2 (P G Todorov) and other papers Readership: Pure and applied mathematicians. keywords: Analytic Functions; Univalent Functions; Geometric Function Theory; Meromorphic Functions; Multivalent Functions; Hypergeometric Functions; Fractional Calculus; Integral Operators; Starlike Functions; Convex Functions; Close-to-Convex Functions; Special Functions; Convolution Operators; Bergman Spaces; Elliptic Integrals; Briot-Bouquet Differential Equations; Carathéodory Functions; Nevanlinna Classes; Schwarz Functions; Spiral-Like Functions; Dynamical Systems

Analytic Number Theory, Modular Forms and q-Hypergeometric Series Butterworth-Heinemann

A collection of articles on various aspects of q-series and special functions dedicated to Mizan Rahman. It also includes an article by Askey, Ismail, and Koelink on Rahman's mathematical contributions and how they influenced the recent upsurge in the subject.

Hypergeometric Orthogonal Polynomials and Their q-Analogues Springer Science & Business Media

Second Order Differential Equations presents a classical piece of theory concerning hypergeometric special functions as solutions of second-order linear differential equations. The theory is presented in an entirely self-contained way, starting with an introduction of the solution of the second-order differential equations and then focusing on the systematic treatment and classification of these solutions. Each chapter contains a set of problems which help reinforce the theory. Some of the preliminaries are covered in appendices at the end of the book, one of which provides an introduction to Poincaré-Perron theory, and the appendix also contains a new way of analyzing the asymptotic behavior of solutions of differential equations. This textbook is appropriate for advanced undergraduate and graduate students in Mathematics, Physics, and Engineering interested in Ordinary and Partial Differential Equations. A solutions manual is available online.

Facets of Algebraic Geometry: Volume 2 Springer Nature

This volume contains the proceedings of the International Conference on Vertex Operator Algebras, Number Theory, and Related Topics, held from June 11–15, 2018, at California State University, Sacramento, California. The mathematics of vertex operator algebras, vector-valued modular forms and finite group theory continues to provide a rich and vibrant landscape in mathematics and physics. The resurgence of moonshine related to the Mathieu group and other groups, the increasing role of algebraic geometry and the development of irrational vertex operator algebras are just a few of the exciting and active areas at present. The proceedings center around active research on vertex operator algebras and vector-valued modular forms and offer original contributions to the areas of vertex algebras and number theory, surveys on some of the most important topics relevant to these fields, introductions to new fields related to these and open problems from some of the leaders in these areas.

Symbolic Computation, Number Theory, Special Functions,

Physics and Combinatorics American Mathematical Soc.

This book contains essays on Ramanujan and his work that were written especially for this volume. It also includes important survey articles in areas influenced by Ramanujan's mathematics. Most of the articles in the book are nontechnical, but even those that are more technical contain substantial sections that will engage the general reader.

Complex Differential and Difference Equations Cambridge University Press

Devoted to counterparts of classical structures of mathematical analysis in analysis over local fields of positive characteristic, this book treats positive characteristic phenomena from an analytic viewpoint. Building on the basic objects introduced by L. Carlitz - such as the Carlitz factorials, exponential and logarithm, and the orthonormal system of Carlitz polynomials - the author develops a kind of differential and integral calculi. He also expands on the basics of an analytic theory of (Carlitz's) differential equations, providing a useful foundation for the study of various special functions. The differential calculus is extended to a type of Rota's umbral calculus, and an investigation is made of the corresponding rings of differential operators. A theory of quasi-holonomic modules over these rings, having some common features with holonomic modules in the sense of Bernstein, is also connected to some special functions in the spirit of Zeilberger's theory.

Gröbner Deformations of Hypergeometric Differential Equations Springer Science & Business Media

This is the first Supplementary volume to Kluwer's highly acclaimed Encyclopaedia of Mathematics. This additional volume contains nearly 600 new entries written by experts and covers developments and topics not included in the already published 10-volume set. These entries have been arranged alphabetically throughout. A detailed index is included in the book. This Supplementary volume enhances the existing 10-volume set. Together, these eleven volumes represent the most authoritative, comprehensive up-to-date Encyclopaedia of Mathematics available.

Aspects of Scattering Amplitudes and Moduli Space Localization World Scientific

Use of Mathematical Literature discusses the bibliographic concerns of mathematical literature. The book is comprised of 14 chapters that cover characteristics of mathematical literature and provide reviews of some of the major literature in various mathematical fields. The text first discusses the role of the literature in mathematics, and then proceeds to tackling major organizations, journals, and reference materials. Next, the book provides critical accounts of the major literature in various mathematical fields, such as combinatorics, topology, and mathematical programming. The book will be of great use to students, practitioners, and researchers of mathematics. Other profession handling math literature, such as teachers, librarians, and translators will also find this book invaluable.

Supplement Volume I Springer Science & Business Media

It was with the publication of Norbert Wiener's book "The Fourier Integral and Certain of Its Applications" [165] in 1933 by Cambridge University Press that the mathematical community came to realize that there is an alternative approach to the study of classical Fourier Analysis, namely, through the theory of classical orthogonal polynomials. Little would he know at that time that this little idea of his would help usher in a new and exiting branch of classical analysis called q-Fourier Analysis. Attempts at finding q-analogs of Fourier and other related transforms were made by other authors, but it took the mathematical insight and instincts of none other than Richard Askey, the grand master of Special Functions and Orthogonal Polynomials, to see the natural connection between orthogonal polynomials and a systematic theory of q-Fourier Analysis. The paper that he wrote in 1993 with N. M. Atakishiyev and S. K. Suslov, entitled "An Analog of the Fourier Transform for a q-Harmonic Oscillator" [13], was probably the first significant publication in this area. The Poisson kernel for the continuous q-Hermite polynomials plays a role of the q-exponential function for the analog of the Fourier integral under consideration; see also [14] for an extension of the q-Fourier transform to the general case of Askey-Wilson polynomials. (Another important ingredient of the q-Fourier Analysis, that deserves thorough investigation, is the theory of q-Fourier series.

Mathematical Software - ICMS 2020 Springer Science &

Business Media

This volume contains research and review papers on different branches of mathematics and mathematical physics, written by the leading specialists. Among the contributed papers are articles on: (i) multiple basic hypergeometric functions with applications to the number theory, (ii) birational representations of affine Weyl groups with applications to discrete integrable systems, (iii) algebraic geometry and Painlevé VI, and (iv) combinatorics of Kostka-Foulkes polynomials. Contents: Monodromy Problem Related to Wu-Sutherland Equations (K Aomoto) Quantum Integrable Lattice Field Theory and Quantum Dilogarithm Function (K Hikami) Symmetric Spaces over Finite Fields, Frobenius-Schur Indices, and Symmetric Function Identities (N Kawanaka) Ubiquity of Kostka Polynomials (A N Kirillov) Transformations of $U(n+1)$ Multiple Basic Hypergeometric Series (S C Milne) Kashaev's Invariant and the Volume of a Hyperbolic Knot after Y Yokota (H Murakami) Birational Weyl Group Action Arising from a Nilpotent Poisson Algebra (M Noumi & Y Yamada) Two Relations That Generalize the q-Serre Relations and the Dolan-Grady Relations (P Terwilliger) and other papers Readership: Researchers and graduate students in mathematics, mathematical physics and combinatorics.

Keywords: Quantum; Combinatorics; Hypergeometric; Algebraic Geometry; Number Theory; Affine Lie Algebra

The Confluent Hypergeometric Function American Mathematical Soc.

Novel Electronic Structure Theory: General Innovations and Strongly Correlated Systems, Volume 76, the latest release in the Advances in Quantum Chemistry series presents work and reviews of current work in quantum chemistry (molecules), but also includes scattering from atoms and solid state work of interest in physics. Topics covered in this release include the Present Status of Selected Configuration Interaction with Truncation Energy Error, Recent Developments in Asymptotic Expansions from Numerical Analysis and Approximation Theory, The kinetic energy Pauli enhancement factor and its role in determining the shell structure of atoms and molecules, Numerical Hartree-Fock and Many-Body Calculations for Diatomic Molecules, and more. Provides reports on current work in molecular and atomic quantum mechanics Contains work reported by many of the best scientists in the field Presents the latest release in the Advances in Quantum Chemistry series

Physics and Combinatorics American Mathematical Soc.

Gathered from the 2016 Gainesville Number Theory Conference honoring Krishna Alladi on his 60th birthday, these proceedings present recent research in number theory. Extensive and detailed, this volume features 40 articles by leading researchers on topics in analytic number theory, probabilistic number theory, irrationality and transcendence, Diophantine analysis, partitions, basic hypergeometric series, and modular forms. Readers will also find detailed discussions of several aspects of the path-breaking work of Srinivasa Ramanujan and its influence on current research. Many of the papers were motivated by Alladi's own research on partitions and q-series as well as his earlier work in number theory. Alladi is well known for his contributions in number theory and mathematics. His research interests include combinatorics, discrete mathematics, sieve methods, probabilistic and analytic number theory, Diophantine approximations, partitions and q-series identities. Graduate students and researchers will find this volume a valuable resource on new developments in various aspects of number theory.

Complex Variables Academic Press

Modern algorithmic techniques for summation, most of which were introduced in the 1990s, are developed here and carefully implemented in the computer algebra system Maple™. The algorithms of Fasenmyer, Gosper, Zeilberger, Petkovšek and van Hoeij for hypergeometric summation and recurrence equations, efficient multivariate summation as well as q-analogues of the above algorithms are covered. Similar algorithms concerning differential equations are considered. An equivalent theory of hyperexponential integration due to Almkvist and Zeilberger completes the book. The combination of these results gives orthogonal polynomials and (hypergeometric and q-hypergeometric) special functions a solid algorithmic foundation. Hence, many examples from this very active field are given. The materials covered are suitable for an introductory course on algorithmic summation and will appeal to students and researchers alike.