The Mathematical Theory of Coding

Ian F. Blake / Ronald C. Mullin

The Mathematical Theory Of Coding By Blake Ian F

David Evans

The Mathematical Theory Of Coding By Blake Ian F:

   The Mathematical Theory of Coding Ian F. Blake,Ronald C. Mullin,2014-05-10 The Mathematical Theory of Coding focuses on the application of algebraic and combinatoric methods to the coding theory including linear transformations vector spaces and combinatorics The publication first offers information on finite fields and coding theory and combinatorial constructions and coding Discussions focus on self dual and quasicyclic codes quadratic residues and codes balanced incomplete block designs and codes bounds on code dictionaries code invariance under permutation groups and linear transformations of vector spaces over finite fields The text then takes a look at coding and combinatorics and the structure of semisimple rings Topics include structure of cyclic codes and semisimple rings group algebra and group characters rings ideals and the minimum condition chains and chain groups dual chain groups and matroids graphs and coding The book ponders on group representations and group codes for the Gaussian channel including distance properties of group codes initial vector problem modules group algebras andrepresentations orthogonality relationships and properties of group characters and representation of groups The manuscript is a valuable source of data for mathematicians and researchers interested in the mathematical theory of coding   *Coding Theory and Quantum Computing* David Evans,2005 A conference Coding Theory and Quantum Computing was held in Charlottesville VA to provide an opportunity for computer scientists mathematicians and physicists to interact about subjects of common interest This proceedings volume grew out of that meeting It is divided into two parts Coding Theory and Quantum Computing In the first part Harold Ward gives an introduction to coding theory Other papers survey recent important work such as coding theory applications of Grobner bases methods of computing parameters of codes corresponding to algebraic curves and problems in the theory of designs The second part of the book covers a wide variety of directions in quantum information with an emphasis on understanding entanglement The material presented is suitable for graduate students and researchers interested in coding theory and in quantum computing   *Book catalog of the Library and Information Services Division* Environmental Science Information Center. Library and Information Services Division,1977   **Book Catalog of the Library and Information Services Division: Shelf List catalog** Environmental Science Information Center. Library and Information Services Division,1977

   Completely Regular Codes in Distance Regular Graphs Minjia Shi,Patrick Solé,2025-03-14 The concept of completely regular codes was introduced by Delsarte in his celebrated 1973 thesis which created the field of Algebraic Combinatorics This notion was extended by several authors from classical codes over finite fields to codes in distance regular graphs Half a century later there was no book dedicated uniquely to this notion Most of Delsarte examples were in the Hamming and Johnson graphs In recent years many examples were constructed in other distance regular graphs including q analogues of the previous and the Doob graph Completely Regular Codes in Distance Regular Graphs provides for the first time a definitive source for the main theoretical notions underpinning this fascinating area of study It also supplies several useful

surveys of constructions using coding theory design theory and finite geometry in the various families of distance regular graphs of large diameters Features Written by pioneering experts in the domain Suitable as a research reference at the master s level Includes extensive tables of completely regular codes in the Hamming graph Features a collection of up to date surveys   Essays on Coding Theory Ian F. Blake,2024-03-14 Critical coding techniques have developed over the past few decades for data storage retrieval and transmission systems significantly mitigating costs for governments and corporations that maintain server systems containing large amounts of data This book surveys the basic ideas of these coding techniques which tend not to be covered in the graduate curricula including pointers to further reading Written in an informal style it avoids detailed coverage of proofs making it an ideal refresher or brief introduction for students and researchers in academia and industry who may not have the time to commit to understanding them deeply Topics covered include fountain codes designed for large file downloads LDPC and polar codes for error correction network rank metric and subspace codes for the transmission of data through networks post quantum computing and quantum error correction Readers are assumed to have taken basic courses on algebraic coding and information theory   Pure and Applied Science Books, 1876-1982 ,1982 Over 220 000 entries representing some 56 000 Library of Congress subject headings Covers all disciplines of science and technology e g engineering agriculture and domestic arts Also contains at least 5000 titles published before 1876 Has many applications in libraries information centers and other organizations concerned with scientific and technological literature Subject index contains main listing of entries Each entry gives cataloging as prepared by the Library of Congress Author title indexes   An Introduction to Algebraic and Combinatorial Coding Theory Ian F. Blake,Ronald C. Mullin,2014-05-10 An Introduction to Algebraic and Combinatorial Coding Theory focuses on the principles operations and approaches involved in the combinatorial coding theory including linear transformations chain groups vector spaces and combinatorial constructions The publication first offers information on finite fields and coding theory and combinatorial constructions and coding Discussions focus on quadratic residues and codes self dual and quasicyclic codes balanced incomplete block designs and codes polynomial approach to coding and linear transformations of vector spaces over finite fields The text then examines coding and combinatorics including chains and chain groups equidistant codes matroids graphs and coding matroids and dual chain groups The manuscript also ponders on M bius inversion formula Lucas s theorem and Mathieu groups The publication is a valuable source of information for mathematicians and researchers interested in the combinatorial coding theory   Book Catalog of the Library and Information Services Division: Author-title-series indexes Environmental Science Information Center. Library and Information Services Division,1977

Reviews in Number Theory 1973-83 Richard K. Guy,1984   Algebraic Coding Theory and Information Theory Alexei Ashikhmin,Alexander Barg,2005 In these papers associated with the workshop of December 2003 contributors describe their work in fountain codes for lossless data compression an application of coding theory to universal lossless source coding

performance bounds expander graphs and codes multilevel expander codes low parity check lattices sparse factor graph representations of Reed Solomon and related codes Interpolation multiplicity assignment algorithms for algebraic soft decision decoding of Reed Solomon codes the capacity of two dimensional weight constrained memories networks of two way channels and a new approach to the design of digital communication systems Annotation 2005 Book News Inc Portland OR booknews com 情報通信事典 ,1976 **Catalog of Copyright Entries. Third Series** Library of Congress. Copyright Office,1976 **Bulletin - Institute of Mathematical Statistics** Institute of Mathematical Statistics,1975 *Information Security, Coding Theory and Related Combinatorics* Dean Crnković,Vladimir Tonchev,2011 Published in cooperation with NATO Emerging Security Challenges Division T p **National Union Catalog** ,1982 **Concise Encyclopedia of Coding Theory** W. Cary Huffman,Jon-Lark Kim,Patrick Solé,2021-03-25 Most coding theory experts date the origin of the subject with the 1948 publication of A Mathematical Theory of Communication by Claude Shannon Since then coding theory has grown into a discipline with many practical applications antennas networks memories requiring various mathematical techniques from commutative algebra to semi definite programming to algebraic geometry Most topics covered in the Concise Encyclopedia of Coding Theory are presented in short sections at an introductory level and progress from basic to advanced level with definitions examples and many references The book is divided into three parts Part I fundamentals cyclic codes skew cyclic codes quasi cyclic codes self dual codes codes and designs codes over rings convolutional codes performance bounds Part II families AG codes group algebra codes few weight codes Boolean function codes codes over graphs Part III applications alternative metrics algorithmic techniques interpolation decoding pseudo random sequences lattices quantum coding space time codes network coding distributed storage secret sharing and code based cryptography Features Suitable for students and researchers in a wide range of mathematical disciplines Contains many examples and references Most topics take the reader to the frontiers of research **Publishers' Trade List Annual, 1980** Bobbs-Merrill Educational Co,1980 **Combinatorial Mathematics** D. A. Holton,J. Seberry,2006-11-15 **New Technical Books** New York Public Library,1980

Whispering the Strategies of Language: An Mental Journey through **The Mathematical Theory Of Coding By Blake Ian F**

In a digitally-driven earth where monitors reign supreme and immediate conversation drowns out the subtleties of language, the profound strategies and mental nuances concealed within words frequently move unheard. However, located within the pages of **The Mathematical Theory Of Coding By Blake Ian F** a charming literary prize pulsing with natural feelings, lies a fantastic journey waiting to be undertaken. Published by a talented wordsmith, that wonderful opus attracts readers on an introspective trip, softly unraveling the veiled truths and profound impact resonating within the very cloth of each word. Within the emotional depths of the emotional review, we can embark upon a genuine exploration of the book is primary subjects, dissect its interesting publishing fashion, and fail to the strong resonance it evokes strong within the recesses of readers hearts.

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