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Coding Theory A First Course in Coding Theory Introduction to Coding Theory Coding Theory Coding Theory *Concise Encyclopedia of Coding Theory* **Introduction to Coding Theory** Coding and Information Theory **Information and Coding Theory** *Selected Unsolved Problems in Coding Theory* **Introduction to Coding Theory Introduction To Algebraic Coding Theory Coding Theory Introduction to Coding Theory Source Coding Theory** Essays on Coding Theory **Algebraic and Stochastic Coding Theory** Foundations of Coding **Elements of Algebraic Coding Theory Introduction to Coding and Information Theory** *Coding and Information Theory Coding Theory* **Elements of Algebraic Coding Theory** *Algebraic Coding Theory (Revised Edition) Algebraic Coding Theory Over Finite Commutative Rings* **The Theory of Error Correcting Codes** *Coding Theory And Cryptology Coding Theory and Number Theory* **Introduction to Coding Theory and Algebraic Geometry Introduction to Coding Theory A Student's Guide to Coding and Information Theory** Foundations of Coding Theory The Theory of Information and Coding *Information Theory and Coding Coding Theory and Cryptography Algebraic Geometry for Coding Theory and Cryptography* **Coding Theory and Cryptology Selected Topics in Information and Coding Theory** Introduction To Coding Theory, 3E Coding Theory and Design Theory

Coding and Information Theory Sep 25 2022 Focusing on both theory and practical applications, this volume combines in a natural way the two major aspects of information representation--representation for storage (coding theory) and representation for transmission (information theory).

The Theory of Error Correcting Codes Apr 20 2022

Introduction to Coding and Information Theory Oct 27 2022 This book is intended to introduce coding theory and information theory to undergraduate students of mathematics and computer science. It begins with a review of probablity theory as applied to finite sample spaces and a general introduction to the nature and types of codes. The two subsequent chapters discuss information theory: efficiency of codes, the entropy of information sources, and Shannon's Noiseless Coding Theorem. The remaining three chapters deal with coding theory: communication channels, decoding in the presence of errors, the general theory of linear codes, and such specific codes as Hamming codes, the simplex codes, and many others.

Coding Theory Jun 03 2023 This book explores the latest developments, methods, approaches, and applications of coding theory in a wide variety of fields and endeavors. It consists of seven chapters that address such topics as applications of coding theory in networking and cryptography, wireless sensor nodes in wireless body area networks, the construction of linear codes, and more.

Coding Theory and Design Theory Feb 04 2021 This IMA Volume in Mathematics and its Applications Coding Theory and Design Theory Part I: Coding Theory is based on the proceedings of a workshop which was an integral part of the 1987-88 IMA program on APPLIED COMBINATORICS. We are grateful to the Scientific Committee: Victor Klee (Chairman), Daniel Kleitman, Dijen Ray-Chaudhuri and Dennis Stanton for planning and implementing an exciting and stimulating year long program. We especially thank the Workshop Organizer, Dijen Ray-Chaudhuri, for organizing a workshop which brought together many of the major figures in a variety of research fields in which coding theory and design theory are used. A vner Friedman Willard Miller, Jr. PREFACE Coding Theory and Design Theory are areas of Combinatorics which found rich applications of algebraic structures. Combinatorial designs are generalizations of finite geometries. Probably, the history of Design Theory begins with the 1847 pa per of Reverand T. P. Kirkman "On a problem of Combinatorics", Cambridge and Dublin Math. Journal. The great Statistician R. A. Fisher reinvented the concept of combinatorial 2-design in the twentieth century. Extensive application of alge braic structures for construction of 2-designs (balanced incomplete block designs) can be found in R. C. Bose's 1939 Annals of Eugenics paper, "On the construction of balanced incomplete block designs". Coding Theory and Design Theory are closely interconnected. Hamming codes can be found (in disguise) in R. C. Bose's 1947 Sankhya paper "Mathematical theory of the symmetrical factorial designs".

Introduction To Coding Theory, 3E Mar 08 2021

Algebraic and Stochastic Coding Theory Jan 30 2023 Using a simple yet rigorous approach, Algebraic and Stochastic Coding Theory makes the subject of coding theory easy to understand for readers with a thorough knowledge of digital arithmetic, Boolean and modern algebra, and probability theory. It explains the underlying principles of coding theory and offers a clear, detailed description of each code. More advanced readers will appreciate its coverage of recent developments in coding theory and stochastic processes. After a brief review of coding history and Boolean algebra, the book introduces linear codes, including Hamming and Golay codes. It then examines codes based on the Galois field theory as well as their application in BCH and especially the Reed–Solomon codes that have been used for error correction of data transmissions in space missions. The major outlook in coding theory seems to be geared toward stochastic processes, and this book takes a bold step in this direction. As research focuses on error correction and recovery of erasures, the book discusses belief propagation and distributions. It examines the low-density parity-check and erasure codes that have opened up new approaches to improve wide-area network data transmission. It also describes modern codes, such as the Luby transform and Raptor codes, that are enabling new directions in high-speed transmission of very large data to multiple users. This robust, self-contained text fully explains coding problems, illustrating them with more than 200 examples. Combining theory and computational techniques, it will appeal not only to students but also to industry professionals, researchers, and academics in areas such as coding theory and signal and image processing.

Coding Theory Mar 12 2024 Coding theory is concerned with successfully transmitting data through a noisy channel and correcting errors in corrupted messages. It is of central importance for many applications in computer science or engineering. This book gives a comprehensive introduction to coding theory whilst only assuming basic linear algebra. It contains a detailed and rigorous introduction to the theory of block codes and moves on to more advanced topics like BCH codes, Goppa codes and Sudan's algorithm for list decoding. The issues of bounds and decoding, essential to the design of good codes, features prominently. The authors of this book have, for several years, successfully taught a course on coding theory to students at the National University of Singapore. This book is based on their experiences and provides a thoroughly modern introduction to the subject. There are numerous examples and exercises, some of which introduce students to novel or more advanced material.

Coding Theory And Cryptology Mar 20 2022 The inaugural research program of the Institute for Mathematical Sciences at the National University of Singapore took place from July to December 2001 and was devoted to coding theory and cryptology. As part of the program, tutorials for graduate students and junior researchers were given by world-renowned scholars. These tutorials covered fundamental aspects of coding theory and cryptology and were designed to prepare for original research in these areas. The present volume collects the expanded lecture notes of these tutorials. The topics range from mathematical areas such as computational number theory, exponential sums and algebraic function fields through coding-theory subjects such as extremal problems, quantum error-correcting codes and algebraic-geometry codes to cryptologic subjects such as stream ciphers, public-key infrastructures, key management, authentication schemes and distributed system security.

Coding Theory Feb 11 2024

Elements of Algebraic Coding Theory Nov 27 2022 Coding theory came into existence in the late 1940s and is concerned with devising efficient encoding and decoding procedures. The book is intended as a principal text for first courses in coding and algebraic coding theory, and is aimed at advanced undergraduates and recent graduates as both a course and self-study text. BCH and cyclic, Group codes, Hamming codes, polynomial as well as many other

codes are introduced in this textbook. Incorporating numerous worked examples and complete logical proofs, it is an ideal introduction to the fundamental of algebraic coding.

Introduction to Coding Theory and Algebraic Geometry Jan 18 2022 These notes are based on lectures given in the semmar on "Coding Theory and Algebraic Geometry" held at Schloss Mickeln, Diisseldorf, November 16-21, 1987. In 1982 Tsfasman, Vladut and Zink, using algebraic geometry and ideas of Goppa, constructed a seqeunce of codes that exceed the Gilbert-Varshamov bound. The result was considered sensational. Furthermore, it was surprising to see these unrelated areas of mathematics collaborating. The aim of this course is to give an introduction to coding theory and to sketch the ideas of algebraic geometry that led to the new result. Finally, a number of applications of these methods of algebraic geometry to coding theory are given. Since this is a new area, there are presently no references where one can find a more extensive treatment of all the material. However, both for algebraic geometry and for coding theory excellent textbooks are available. The combination ofthe two subjects can only be found in a number ofsurvey papers. A book by C. Moreno with a complete treatment of this area is in preparation. We hope that these notes will stimulate further research and collaboration of algebraic geometers and coding theorists. G. van der Geer, J.H. van Lint Introduction to CodingTheory and Algebraic Geometry PartI -- CodingTheory Jacobus H. vanLint 11 1. Finite fields In this chapter we collect (without proof) the facts from the theory of finite fields that we shall need in this course

Information Theory and Coding Aug 13 2021

Essays on Coding Theory Feb 28 2023 Brief informal introductions to coding techniques developed for the storage, retrieval, and transmission of large amounts of data.

Introduction To Algebraic Coding Theory Jul 04 2023 In this age of technology where messages are transmitted in sequences of 0's and 1's through space, errors can occur due to noisy channels. Thus, self-correcting code is vital to eradicate these errors when the number of errors is small. It is widely used in industry for a variety of applications including e-mail, telephone, and remote sensing (for example, photographs of Mars).An expert in algebra and algebraic geometry, Tzuong-Tsieng Moh covers many essential aspects of algebraic coding theory in this book, such as elementary algebraic coding theories, the mathematical theory of vector spaces and linear algebras behind them, various rings and associated coding theories, a fast decoding method, useful parts of algebraic geometry and geometric coding theories.This book is accessible to advanced undergraduate students, graduate students, coding theorists and algebraic geometers.

Concise Encyclopedia of Coding Theory Jan 10 2024 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

Foundations of Coding Theory Oct 15 2021 During the sixteenth century, Cardano wrote a fascinating work called The Book on Games of Chance. In it he gives an extremely candid recount ing and personal appraisal of some aspects of his most remarkable life. * One feature of the book is striking for the modern scientist or mathemati cian accustomed to current publishing practices. It is brought out during Cardano's discussion of his investigations of certain special questions of applied probability, namely, the question of how to win at gambling. His technique is simplicity itself: in fine reportorial style he reveals his proposed strategy for a particular gambling game, giving marvelous motivating arguments which induce the reader to feel warm, heartfelt support for the projected strategy. Then with all the drama that only a ringside seat observation can bring, Cardano announces that he tried the strategy at the casino and ended up borrowing his taxi fare. Undaunted by failure, he analyzes his now fire-tested strategy in detail, mounts new and per suasive arguments, and, ablaze with fresh optimism and replenished resources, charges off to the fray determined to now succeed where he had so often failed before. Along the way, Cardano developed a number of valuable insights about games of chance and produced useful research results which presumably would be of interest in our present-day society. However, he could never publish the results today in journals with all the flair, the mistakes, the failures and minor successes which he exhibits in his book.

Introduction to Coding Theory May 02 2023 This 2006 book introduces the theoretical foundations of error-correcting codes for senior-undergraduate to graduate students.

Introduction to Coding Theory Dec 17 2021 This book is designed to be usable as a textbook for an undergraduate course or for an advanced graduate course in coding theory as well as a reference for researchers in discrete mathematics, engineering and theoretical computer science. This second edition has three parts: an elementary introduction to coding, theory and applications of codes, and algebraic curves. The latter part presents a brief introduction to the theory of algebraic curves and its most important applications to coding theory.

Information and Coding Theory Oct 07 2023 This text is an elementary introduction to information and coding theory. The first part focuses on information theory, covering uniquely decodable and instantaneous codes, Huffman coding, entropy, information channels, and Shannon’s Fundamental Theorem. In the second part, linear algebra is used to construct examples of such codes, such as the Hamming, Hadamard, Golay and Reed-Muller codes. Contains proofs, worked examples, and exercises.

Foundations of Coding Dec 29 2022 Although devoted to constructions of good codes for error control, secrecy or data compression, the emphasis is on the first direction. Introduces a number of important classes of error-detecting and error-correcting codes as well as their decoding methods. Background material on modern algebra is presented where required. The role of error-correcting codes in modern cryptography is treated as are data compression and other topics related to information theory. The definition-theorem proof style used in mathematics texts is employed through the book but formalism is avoided wherever possible.

Introduction to Coding Theory Aug 05 2023 This book is designed to be usable as a textbook for an undergraduate course or for an advanced graduate course in coding theory as well as a reference for researchers in discrete mathematics, engineering and theoretical computer science. This second edition has three parts: an elementary introduction to coding, theory and applications of codes, and algebraic curves. The latter part presents a brief introduction to the theory of algebraic curves and its most important applications to coding theory.

Elements of Algebraic Coding Theory Jul 24 2022 Coding theory came into existence in the late 1940's and is concerned with devising efficient encoding and decoding procedures. The book is intended as a principal text for first courses in coding and algebraic coding theory, and is aimed at advanced undergraduates and recent graduates as both a course and self-study text. BCH and cyclic, Group codes, Hamming codes, polynomial as well as many other codes are introduced in this textbook. Incorporating numerous worked examples and complete logical proofs, it is an ideal introduction to the fundamental of algebraic coding.

Coding Theory Jun 15 2024 One of the most important key technologies for digital communication systems as well as storage media is coding theory. It provides a means to transmit information across time and space over noisy and unreliable communication channels. Coding Theory: Algorithms, Architectures and Applications provides a concise overview of channel coding theory and practice, as well as the accompanying signal processing architectures. The book is unique in presenting algorithms, architectures, and applications of coding theory in a unified framework. It covers the basics of coding theory before moving on to discuss algebraic linear block and cyclic codes, turbo codes and low density parity check codes and space-time codes. Coding Theory provides algorithms and architectures used for implementing coding and decoding strategies as well as coding schemes used in practice especially in communication systems. Feature of the book include: Unique presentation-like style for summarising main aspects Practical issues for implementation of coding techniques Sound theoretical approach to practical, relevant coding methodologies Covers standard coding schemes such as block and convolutional codes, coding schemes such as Turbo and LDPC codes, and space time codes currently in research, all covered in a common framework with respect to their applications. This book is ideal for postgraduate and undergraduate students of communication and information engineering, as well as computer science students. It will also be of use to engineers working in the industry who want to know more about the theoretical basics of coding theory and their application in currently relevant communication systems

Coding Theory and Cryptography Jul 12 2021 Containing data on number theory, encryption schemes, and cyclic codes, this highly successful textbook, proven by the authors in a popular two-quarter course, presents coding theory, construction, encoding, and decoding of specific code families in an "easy-to-use" manner appropriate for students with only a basic background in mathematics offerin

Introduction to Coding Theory Apr 13 2024 It is gratifying that this textbook is still sufficiently popular to warrant a third edition. I have used the opportunity to improve and enlarge the book. When the second edition was prepared, only two pages on algebraic geometry codes were added. These have now been removed and replaced by a relatively long chapter on this subject. Although it is still only an introduction, the chapter requires more mathematical background of the reader than the remainder of this book. One of the very interesting recent developments concerns binary codes defined by using codes over the alphabet 7l.4• There is so much interest in this area that a chapter on the essentials was added. Knowledge of this chapter will allow the reader to study recent literature on 7l. -codes. 4 Furthermore, some material has been added that appeared in my Springer Lec ture Notes 201, but was not included in earlier editions of this book, e. g. Generalized Reed-Solomon Codes and Generalized Reed-Muller Codes. In Chapter 2, a section on "Coding Gain" (the engineer's justification for using error-correcting codes) was added. For the author, preparing this third edition was a most welcome return to mathematics after seven years of administration. For valuable discussions on the new material, I thank C.P.l.M.Baggen, I. M.Duursma, H.D.L.Hollmann, H. C. A. van Tilborg, and R. M. Wilson. A special word of thanks to R. A. Pellikaan for his assistance with Chapter 10.

Algebraic Geometry for Coding Theory and Cryptography Jun 10 2021 Covering topics in algebraic geometry, coding theory, and cryptography, this volume presents interdisciplinary group research completed for the February 2016 conference at the Institute for Pure and Applied Mathematics (IPAM) in cooperation with the Association for Women in Mathematics (AWM). The conference gathered research communities across disciplines to share ideas and problems in their fields and formed small research groups made up of graduate students, postdoctoral researchers, junior faculty, and group leaders who designed and led the projects. Peer reviewed and revised, each of this volume's five papers achieves the conference’s goal of using algebraic geometry to address a problem in either coding theory or cryptography. Proposed variants of the McEliece cryptosystem based on different constructions of codes, constructions of locally recoverable codes from algebraic curves and surfaces, and algebraic approaches to the multicast network coding problem are only some of the topics covered in this volume. Researchers and graduate-level students interested in the interactions between algebraic geometry and both coding theory and cryptography will find this volume valuable.

The Theory of Information and Coding Sep 13 2021 Student edition of the classic text in information and coding theory

Coding and Information Theory Nov 08 2023 This book is an introduction to information and coding theory at the graduate or advanced undergraduate level. It assumes a basic knowledge of probability and modern algebra, but is otherwise self- contained. The intent is to describe as clearly as possible the fundamental issues involved in these subjects, rather than covering all aspects in an encyclopedic fashion. The first quarter of the book is devoted to information theory, including a proof of Shannon's famous Noisy Coding Theorem. The remainder of the book is devoted to coding theory and is independent of the information theory portion of the book. After a brief discussion of general families of codes, the author discusses linear codes (including the Hamming, Golary, the Reed-Muller codes), finite fields, and cyclic codes (including the BCH, Reed-Solomon, Justesen, Goppa, and Quadratic Residue codes). An appendix reviews relevant topics from modern algebra.

Algebraic Coding Theory Over Finite Commutative Rings May 22 2022 This book provides a self-contained introduction to algebraic coding theory over finite Frobenius rings. It is the first to offer a comprehensive account on the subject. Coding theory has its origins in the engineering problem of effective electronic communication where the alphabet is generally the binary field. Since its inception, it has grown as a branch of mathematics, and has since been expanded to consider any finite field, and later also Frobenius rings, as its alphabet. This book presents a broad view of the subject as a branch of pure mathematics and relates major results to other fields, including combinatorics, number theory and ring theory. Suitable for graduate students, the book will be of interest to anyone working in the field of coding theory, as well as algebraists and number theorists looking to apply coding theory to their own work.

A Student's Guide to Coding and Information Theory Nov 15 2021 This is a concise, easy-to-read guide, introducing beginners to coding theory and information theory.

Introduction to Coding Theory Dec 09 2023 Coding theory is still a young subject. One can safely say that it was born in 1948. It is not surprising that it has not yet become a fixed topic in the curriculum of most universities. On the other hand, it is obvious that discrete mathematics is rapidly growing in importance. The growing need for mathe maticians and computer scientists in industry will lead to an increase in courses offered in the area of discrete mathematics. One of the most suitable and fascinating is, indeed, coding theory. So, it is not surprising that one more book on this subject now appears. However, a little more justification of the book are necessary. A few years ago it was and a little more history remarked at a meeting on coding theory that there was no book available an introductory course on coding theory (mainly which could be used for for mathematicians but also for students in engineering or computer science). The best known textbooks were either too old, too big, too technical, too much for specialists, etc. The final remark was that my Springer Lecture Notes (# 201) were slightly obsolete and out of print. Without realizing what I was getting into I announced that the statement was not true and proved this by showing several participants the book Inleiding in de Coderingstheorie, a little book based on the syllabus of a course given at the Mathematical Centre in Amsterdam in 1975 (M. C. Syllabus 31).

Coding Theory Aug 25 2022 A textbook for a two-quarter college course in coding theory for students of engineering, computer science, and mathematics, assuming only a good grounding in linear algebra. Unlike texts designed for mathematics majors, omits the general mathematic theories, and introduces the necessary mathematics

Coding Theory and Number Theory Feb 16 2022 This book grew out of our lectures given in the Oberseminar on 'Cod ing Theory and Number Theory' at the Mathematics Institute of the Wiirzburg University in the Summer Semester, 2001. The coding the ory combines mathematical elegance and some engineering problems to an unusual degree. The major advantage of studying coding theory is the beauty of this particular combination of mathematics and engineering. In this book we wish to introduce some practical problems to the math ematician and to address these as an essential part of the development of modern number theory. The book consists of five chapters and an appendix. Chapter 1 may mostly be dropped from an introductory course of linear codes. In Chap ter 2 we discuss some relations between the number of solutions of a diagonal equation over finite fields and the weight distribution of cyclic codes. Chapter 3 begins by reviewing some basic facts from elliptic curves over finite fields and modular forms, and shows that the weight distribution of the Melas codes is represented by means of the trace of the Hecke operators acting on the space of cusp forms. Chapter 4 is a systematic study of the algebraic-geometric codes. For a long time, the study of algebraic curves over finite fields was the province of pure mathematicians. In the period 1977 - 1982, V. D. Goppa discovered an amazing connection between the theory of algebraic curves over fi nite fields and the theory of q-ary codes.

Coding Theory and Cryptology May 10 2021 The inaugural research program of the Institute for Mathematical Sciences at the National University of Singapore took place from July to December 2001 and was devoted to coding theory and cryptology. As part of the program, tutorials for graduate students and junior researchers were given by world-renowned scholars. These tutorials covered fundamental aspects of coding theory and cryptology and were designed to prepare for original research in these areas. The present volume collects the expanded lecture notes of these tutorials. The topics range from mathematical areas such as computational number theory, exponential sums and algebraic function fields through coding-theory subjects such as extremal problems, quantum error-correcting codes and algebraic-geometry codes to cryptologic subjects such as stream ciphers, public-key infrastructures, key management, authentication schemes and distributed system security.

A First Course in Coding Theory May 14 2024 Algebraic coding theory is a new and rapidly developing subject, popular for its many practical applications and for its fascinatingly rich mathematical structure. This book provides an elementary yet rigorous introduction to the theory of error-correcting codes. Based on courses given by the author over several years to advanced undergraduates and first-year graduated students, this guide includes a large number of exercises, all with solutions, making the book highly suitable for individual study.

Algebraic Coding Theory (Revised Edition) Jun 22 2022 This is the revised edition of Berlekamp's famous book, 'Algebraic Coding Theory', originally published in 1968, wherein he introduced several algorithms which have subsequently dominated engineering practice in this field. One of these is an algorithm for decoding Reed-Solomon and Bose-Chaudhuri-Hocquenghem codes that subsequently became known as the Berlekamp-Massey Algorithm. Another is the Berlekamp algorithm for factoring polynomials over finite fields, whose later extensions and embellishments became widely used in symbolic manipulation systems. Other novel algorithms improved the basic methods

for doing various arithmetic operations in finite fields of characteristic two. Other major research contributions in this book included a new class of Lee metric codes, and precise asymptotic results on the number of information symbols in long binary BCH codes.Selected chapters of the book became a standard graduate textbook.Both practicing engineers and scholars will find this book to be of great value.

Selected Unsolved Problems in Coding Theory Sep 06 2023 Using an original mode of presentation, and emphasizing the computational nature of the subject, this book explores a number of the unsolved problems that still exist in coding theory. A well-established and highly relevant branch of mathematics, the theory of error-correcting codes is concerned with reliably transmitting data over a ‘noisy’ channel. Despite frequent use in a range of contexts, the subject still contains interesting unsolved problems that have resisted solution by some of the most prominent mathematicians of recent decades. Employing Sage—a free open-source mathematics software system—to illustrate ideas, this book is intended for graduate students and researchers in algebraic coding theory. The work may be used as supplementary reading material in a graduate course on coding theory or for self-study.

Source Coding Theory Apr 01 2023 Source coding theory has as its goal the characterization of the optimal performance achievable in idealized communication systems which must code an information source for transmission over a digital communication or storage channel for transmission to a user. The user must decode the information into a form that is a good approximation to the original. A code is optimal within some class if it achieves the best possible fidelity given whatever constraints are imposed on the code by the available channel. In theory, the primary constraint imposed on a code by the channel is its rate or resolution, the number of bits per second or per input symbol that it can transmit from sender to receiver. In the real world, complexity may be as important as rate. The origins and the basic form of much of the theory date from Shan non's classical development of noiseless source coding and source coding subject to a fidelity criterion (also called rate-distortion theory) [73] [74]. Shannon combined a probabilistic notion of information with limit theo rems from ergodic theory and a random coding technique to describe the optimal performance of systems with a constrained rate but with uncon strained complexity and delay. An alternative approach called asymptotic or high rate quantization theory based on different techniques and approx imations was introduced by Bennett at approximately the same time [4]. This approach constrained the delay but allowed the rate to grow large.

Selected Topics in Information and Coding Theory Apr 08 2021 Pt. 1. Applications of coding theory to computational complexity. ch. 1. Linear complexity and related complexity measures / Arne Winterhof. ch. 2. Lattice and construction of high coding gain lattices from codes / Mohammd-Reza Sadeghi. ch. 3. Distributed space-time codes with low ML decoding complexity / G. Susinder Rajan and B. Sundar Rajan -- pt. 2. Methods of algebraic combinatorics in coding theory/codes construction and existence. ch. 4. Coding theory and algebraic combinatorics / Michael Huber. ch. 5. Block codes from matrix and group rings / Paul Hurley and Ted Hurley. ch. 6. LDPC and convolutional codes from matrix and group rings / Paul Hurley and Ted Hurley. ch. 7. Search for good linear codes in the class of quasi-cyclic and related codes / Nuh Aydin and Tsvetan Asamov -- pt. 3. Source coding/channel capacity/network coding. ch. 8. Applications of universal source coding to statistical analysis of time series / Boris Ryabko. ch. 9. Introduction to network coding for acyclic and cyclic networks / Ángela I. Barbero and Øyvind Ytrehus. ch. 10. Distributed joint source-channel coding on a multiple access channel / Vinod Sharma and R. Rajesh -- pt. 4. Other selected topics in information and coding theory. ch. 11. Low-density parity-check codes and the related performance analysis methods / Xudong Ma. ch. 12. Variable length codes and finite automata / Marie-Pierre Béal [und weitere]. ch. 13. Decoding and finding the minimum distance with Gröbner Bases : history and new insights / Stanislav Bulygin and Ruud Pellikaan. ch. 14. Cooperative diversity systems for wireless communication / Murat Uysal and Muhammad Mehboob Fareed. ch. 15. Public key cryptography and coding theory / Pascal Véron