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Titolo	Channel Coding Techniques for Wireless Communications [[electronic resource] /] / by K. Deergha Rao
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ISBN	81-322-2292-X
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (407 p.)
Disciplina	510
Soggetti	Information theory Computer science—Mathematics Computer mathematics Coding theory Signal processing Image processing Speech processing systems Computers Information and Communication, Circuits Mathematical Applications in Computer Science Computational Science and Engineering Coding and Information Theory Signal, Image and Speech Processing Information Systems and Communication Service
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Performance of Digital Communication Over Fading Channels -- Chapter 3. Galois Field Theory -- Chapter 4. Linear Block Codes -- Chapter 5. Convolutional Codes -- Chapter 6. Turbo Codes -- Chapter 7. Bandwidth Efficient Coded Modulation -- Chapter 8. Low Density Parity Check codes -- Chapter 9. LT and Raptor Codes -- Chapter 10. MIMO System -- Chapter 11. Space-Time Coding.
Sommario/riassunto	The book discusses modern channel coding techniques for wireless communications such as turbo codes, low-density parity check (LDPC)

codes, space–time (ST) coding, RS (or Reed–Solomon) codes and convolutional codes. Many illustrative examples are included in each chapter for easy understanding of the coding techniques. The text is integrated with MATLAB-based programs to enhance the understanding of the subject's underlying theories. It includes current topics of increasing importance such as turbo codes, LDPC codes, Luby transform (LT) codes, Raptor codes, and ST coding in detail, in addition to the traditional codes such as cyclic codes, BCH (or Bose–Chaudhuri–Hocquenghem) and RS codes and convolutional codes. Multiple-input and multiple-output (MIMO) communications is a multiple antenna technology, which is an effective method for high-speed or high-reliability wireless communications. PC-based MATLAB m-files for the illustrative examples are provided on the book page on Springer.com for free download, which will help students and researchers involved in advanced and current concepts in coding theory. Channel coding, the core of digital communication and data storage, has undergone a major revolution as a result of the rapid growth of mobile and wireless communications. The book is divided into 11 chapters. Assuming no prior knowledge in the field of channel coding, the opening chapters (1–2) begin with basic theory and discuss how to improve the performance of wireless communication channels by using channel coding. Chapters 3–4 introduce Galois fields and present detailed coverage of BCH codes and RS codes. Chapters 5–7 introduce the family of convolutional codes, hard and soft-decision Viterbi algorithms, turbo codes, BCJR (or Bahl–Cocke–Jelinek–Raviv) algorithm for turbo decoding and studies trellis coded modulation (TCM), turbo TCM (TTCM), bit-interleaved coded modulation (BICM) as well as iterative BICM (BICM-ID) and compares them under various channel conditions. Chapters 8–9 focus on LDPC codes, LT codes and Raptor codes. Chapters 10–11 discuss MIMO systems and ST coding. .