

1. Record Nr.	UNINA9910831175103321
Titolo	Turbo coding, turbo equalisation and space-time coding : exit-chart aided near-capacity designs for wireless channels / / by L. Hanzo ... [et al.]
Pubbl/distr/stampa	Chichester ; , : Wiley, , 2011 [Piscataway, New Jersey] : , : IEEE Xplore, , [2011]
ISBN	1-283-37392-0 9786613373922 0-470-97849-X 0-470-97848-1
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (678 p.)
Collana	Wiley - IEEE ; ; v.21
Altri autori (Persone)	HanzoLajos <1952->
Disciplina	621.382/2
Soggetti	Coding theory Iterative methods (Mathematics) Signal processing - Mathematics
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 (p. [623]-641) and indexes.
Nota di contenuto	About the Authors -- Other Related Wiley-IEEE Press Books -- Acknowledgements -- 1 Historical Perspective, Motivation and Outline -- 1.1 A Historical Perspective on Channel Coding -- 1.2 Motivation for this Book -- 1.3 Organisation of the Book -- 1.4 NovelContributions of the Book -- 2 Convolutional Channel Coding -- 2.1 Brief Channel Coding History -- 2.2 Convolutional Encoding -- 2.3 State and Trellis Transitions -- 2.4 The Viterbi Algorithm -- 2.5 Summary and Conclusions -- 3 Soft Decoding and Performance of BCH Codes -- 3.1 Introduction -- 3.2 BCH codes -- 3.3 Trellis Decoding -- 3.4 Soft-input Algebraic Decoding -- 3.5 Summary and Conclusions -- Part I Turbo Convolutional and Turbo Block Coding -- 4 Turbo Convolutional Coding (J. P. Woodard and L. Hanzo) -- 4.1 Introduction -- 4.2 Turbo Encoder -- 4.3 Turbo Decoder -- 4.4 Turbo-coded BPSK Performance over Gaussian Channels -- -- 4.5 Turbo Coding Performance over Rayleigh Channels -- 4.6 Summary and Conclusions -- 5 Turbo BCH Coding -- 5.1 Introduction -- 5.2 Turbo Encoder -- 5.3 Turbo Decoder

-- 5.4 Turbo Decoding Example -- 5.5 MAP Algorithm for Extended BCH Codes -- 5.6 Simulation Results -- 5.7 Summary and Conclusions -- Part II Space-time Block and Space-time Trellis Coding -- 6 Space-time Block Codes -- 6.1 Classification of Smart Antennas -- 6.2 Introduction to Space-time Coding -- 6.3 Background -- 6.4 Space-time Block Codes -- 6.5 Channel-coded Space-time Block Codes -- 6.6 Performance Results -- 6.7 Summary and Conclusions -- 7 Space-time Trellis Codes -- 7.1 Introduction -- 7.2 Space-time Trellis Codes -- 7.3 Space-time-coded Transmission over Wideband Channels -- 7.4 Simulation Results -- 7.5 Space-time-coded Adaptive Modulation for OFDM -- 7.6 Summary and Conclusions -- 8 Turbo-coded Adaptive Modulation versus Space-time Trellis Codes for Transmission over Dispersive Channels -- 8.1 Introduction -- 8.2 System Overview -- 8.3 Simulation Parameters -- 8.4 Simulation Results -- 8.5 Summary and Conclusions.

Part III Turbo Equalisation -- 9 Turbo-coded Partial-response Modulation -- 9.1 Motivation -- 9.2 The Mobile Radio Channel -- 9.3 Continuous Phase Modulation Theory -- 9.4 Digital Frequency Modulation Systems -- 9.5 State Representation -- 9.6 Spectral Performance -- 9.7 Construction of Trellis-based Equaliser States -- 9.8 Soft-output GMSK Equaliser and Turbo Coding -- 9.9 Summary and Conclusions -- 10 Turbo Equalisation for Partial-response Systems -- 10.1 Motivation -- 10.2 Principle of Turbo Equalisation Using Single/Multiple Decoder(s) -- 10.3 Soft-in/Soft-out Equaliser for Turbo Equalisation -- 10.4 Soft-in/Soft-out Decoder for Turbo Equalisation -- 10.5 Turbo Equalisation Example -- 10.6 Summary of Turbo Equalisation -- 10.7 Performance of Coded GMSK Systems Using Turbo Equalisation -- 10.8 Discussion of Results -- 10.9 Summary and Conclusions -- 11 Comparative Study of Turbo Equalisers -- 11.1 Motivation -- 11.2 System Overview -- 11.3 Simulation Parameters -- 11.4 Results and Discussion -- 11.5 Non-iterative Joint Channel Equalisation and Decoding -- 11.6 Summary and Conclusions -- 12 Reduced-complexity Turbo Equaliser -- 12.1 Motivation -- 12.2 Complexity of the Multilevel Full-response Turbo Equaliser -- 12.3 System Model -- 12.4 In-phase/Quadrature-phase Equaliser Principle -- 12.5 Overview of the Reduced-complexity Turbo Equaliser -- 12.6 Complexity of the In-phase/Quadrature-phase Turbo Equaliser -- 12.7 System Parameters -- 12.8 System Performance -- 12.9 Summary and Conclusions -- 13 Turbo Equalisation for Space-time Trellis-coded Systems -- 13.1 Introduction -- 13.2 System Overview -- 13.3 Principle of In-phase/Quadrature-phase Turbo Equalisation -- 13.4 Complexity Analysis -- 13.5 Results and Discussion -- 13.6 Summary and Conclusions -- Part IV Coded and Space-time-Coded Adaptive Modulation: TCM, TTCM, BICM, BICM-ID and MLC -- 14 Coded Modulation Theory and Performance -- 14.1 Introduction -- 14.2 Trellis-coded Modulation -- 14.3 The Symbol-based MAP Algorithm. -- 14.4 Turbo Trellis-coded Modulation -- 14.5 Bit-interleaved Coded Modulation -- 14.6 Bit-interleaved Coded Modulation Using Iterative Decoding -- 14.7 Coded Modulation Performance -- 14.8 Near-capacity Turbo Trellis-coded Modulation Design Based on EXIT Charts and Union Bounds -- 14.9 Summary and Conclusions -- 15 Multilevel Coding Theory -- 15.1 Introduction -- 15.2 Multilevel Coding -- 15.3 Bit-interleaved Coded Modulation -- 15.4 Bit-interleaved Coded Modulation Using Iterative Decoding -- 15.5 Conclusion -- 16 MLC Design Using EXIT Analysis -- 16.1 Introduction -- 16.2 Comparative Study of Coded Modulation Schemes -- 16.3 EXIT-chart Analysis -- 16.4 Precoder-aided MLC -- 16.5 Chapter Conclusions -- 17 Sphere Packing-aided Space-time MLC/BICM Design -- 17.1 Introduction --

17.2 Space-time Block Code -- 17.3 Orthogonal G2 Design Using Sphere Packing -- 17.4 Iterative Demapping for Sphere Packing -- 17.5 STBC-SP-MLC -- 17.6 STBC-SP-BICM -- 17.7 Chapter Conclusions -- 18 MLC/BICM Schemes for the Wireless Internet -- 18.1 Introduction -- 18.2 Multilevel Generalised Low-density Parity-check Codes -- 18.3 An Iterative Stopping Criterion for MLC-GLDPCs -- 18.4 Coding for the Wireless Internet -- 18.5 LT-BICM-ID Using LLR Packet Reliability Estimation -- 18.6 Chapter Conclusions -- 19 Near-capacity Irregular BICM-ID Design -- 19.1 Introduction -- 19.2 Irregular Bit-interleaved Coded Modulation Schemes -- 19.3 EXIT-chart Analysis -- 19.4 Irregular Components -- 19.5 Simulation Results -- 19.6 Chapter Conclusions -- 20 Summary and Conclusions -- 20.1 Summary of the Book -- 20.2 Future Work -- 20.3 Concluding Remarks -- Bibliography -- Subject Index -- Author Index.

Sommario/riassunto

Covering the full range of channel codes from the most conventional through to the most advanced, the second edition of Turbo Coding, Turbo Equalisation and Space-Time Coding is a self-contained reference on channel coding for wireless channels. The book commences with a historical perspective on the topic, which leads to two basic component codes, convolutional and block codes. It then moves on to turbo codes which exploit iterative decoding by using algorithms, such as the Maximum-A-Posteriori (MAP), Log-MAP and Soft Output Viterbi Algorithm (SOVA), comparing their performance. It also compares Trellis Coded Modulation (TCM), Turbo Trellis Coded Modulation (TTCM), Bit-Interleaved Coded Modulation (BICM) and Iterative BICM (BICM-ID) under various channel conditions. The horizon of the content is then extended to incorporate topics which have found their way into diverse standard systems. These include space-time block and trellis codes, as well as other Multiple-Input Multiple-Output (MIMO) schemes and near-instantaneously Adaptive Quadrature Amplitude Modulation (AQAM). The book also elaborates on turbo equalisation by providing a detailed portrayal of recent advances in partial response modulation schemes using diverse channel codes. A radically new aspect for this second edition is the discussion of multi-level coding and sphere-packing schemes, Extrinsic Information Transfer (EXIT) charts, as well as an introduction to the family of Generalized Low Density Parity Check codes. This new edition includes recent advances in near-capacity turbo-transceivers as well as new sections on multi-level coding schemes and of Generalized Low Density Parity Check codes. Comparatively studies diverse channel coded and turbo detected systems to give all-inclusive information for researchers, engineers and students. Details EXIT-chart based irregular transceiver designs. Uses rich performance comparisons as well as diverse near-capacity design examples.
