Description: 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

Contents:

About the Authors.


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.
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.

Order by Fax - using the form below
Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Web Address: http://www.researchandmarkets.com/reports/2174379/
Office Code: SCAYPEFI

Product Format
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>USD 169 + USD 28 Shipping/Handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Copy (Hard Back):</td>
<td></td>
</tr>
</tbody>
</table>

* Shipping/Handling is only charged once per order.

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: Mr [ ] Mrs [ ] Dr [ ] Miss [ ] Ms [ ] Prof [ ]
First Name: ___________________________ Last Name: ___________________________
Email Address: * ___________________________
Job Title: ___________________________
Organisation: ___________________________
Address: ___________________________
City: ___________________________
Postal / Zip Code: ___________________________
Country: ___________________________
Phone Number: ___________________________
Fax Number: ___________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer:

Please transfer funds to:

<table>
<thead>
<tr>
<th>Account number</th>
<th>833 130 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sort code</td>
<td>98-53-30</td>
</tr>
<tr>
<td>Swift code</td>
<td>ULSBIE2D</td>
</tr>
<tr>
<td>IBAN number</td>
<td>IE78ULSB98533083313083</td>
</tr>
<tr>
<td>Bank Address</td>
<td>Ulster Bank, 27-35 Main Street, Blackrock, Co. Dublin, Ireland.</td>
</tr>
</tbody>
</table>

If you have a Marketing Code please enter it below:

Marketing Code: __________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World