1. Record Nr. UNINA9911020051703321

Autore	Hottinen Ari
Titolo	Multi-antenna transceiver techniques for 3G and beyond / / Ari Hottinen, Olav Tirkkonen, Risto Wichman
Pubbl/distr/stampa	West Sussex, England ; ; Hoboken, NJ, : J. Wiley, c2003
ISBN	9786610268870 9781280268878 1280268875 9780470024805 0470024801 9780470014080 0470014083
Descrizione fisica	1 online resource (344 p.)
Altri autori (Persone)	TirkkonenOlav WichmanRisto
Disciplina	621.3845/6
Soggetti	Radio - Transmitter-receivers - Design and construction Radio circuits Modulation (Electronics) Antennas (Electronics) Signal processing Wireless communication systems - Equipment and supplies - Design and construction
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. [305]-322) and index.
Nota di contenuto	Contents; Preface; Acronyms; Part I: Introduction; 1 Background; 1.1 Modular System Design; 1.2 Diversity Techniques in 3G Systems; 1.3 GSM/EDGE; 1.4 Multi-antenna Modems for 3G and Beyond; 1.5 Summary; 2 Diversity Gain, SNR Gain and Rate Increase; 2.1 Channel Models; 2.2 Performance Limits of Transmit Diversity; 2.3 Theoretical MIMO Channel Capacity; 2.4 MIMO Capacity in Correlated Channels; 2.5 Performance Measures for Closed-loop Transmit Diversity; 2.6 Summary; Part II: Open-loop Methods; 3 Open-loop Concepts: Background; 3.1 Delay Diversity; 3.2 Implicit Diversity via Phase

Modulation

3.3 Code and Time Division Transmit Diversity3.4 Diversity Transform; 3.5 Space-Time Coding; 3.6 Space-Time Block Codes; 3.7 Non-linear Matrix Modulation; 3.8 Summary; 4 Matrix Modulation: Low SNR Aspects; 4.1 Linear Matrix Modulation; 4.2 Examples; 4.3 Heuristic Design Rules at Low SNR; 4.4 Matched Filtering and Maximum Likelihood Metric; 4.5 Mutual Information; 4.6 Expansion around Diagonal Dominance; 4.7 Performance of Examples; 4.8 Summary; 5 Increasing Symbol Rate: Quasi-orthogonal Layers; 5.1 Orthogonal Designs; 5.2 Complexity Issues: Choosing Symbol Rate and Target Tx Diversity

5.3 Multimodulation Schemes5.4 Matrix Modulation with Quasi-orthogonal Layers; 5.5 Summary; 6 Receiver Algorithms; 6.1 Channel Estimation Issues; 6.2 Maximum Likelihood Detection; 6.3 Quasi-orthogonality Assisted Maximum Likelihood Detection; 6.4 Linear Receivers; 6.5 Iterative Receivers; 6.6 Joint Decoding and Detection; 6.7 Example: Linear Detection for ABBA; 6.8 Performance; 6.9 Summary; 7 Matrix Modulation: High SNR Aspects; 7.1 Symmetries of Information and Performance; 7.2 Optimizing Performance with Orthogonal Symbol Rotations; 7.3 Explicit Performance Optima for ABBA

7.4 Improved Performance by Extending Block7.5 Comparison of Layered Schemes for Four Tx Antennas; 7.6 Weighted and Multimodulation Non-orthogonal Matrix Modulation; 7.7 Summary; 8 Robust and Practical Open-loop Designs; 8.1 Randomized Matrix Modulations; 8.2 Space-Time Block Code with Rotated Constellations; 8.3 Performance Evaluation; 8.4 Summary; 9 High-rate Designs for MIMO Systems; 9.1 Sets of Frobenius Orthogonal Unitary Matrices; 9.2 Optimizing Rate 2 MIMO-Modulation for N[sub(t)] = T = 2; 9.3 Four Transmit Antennas, Rate 2; 9.4 Four Transmit Antennas, Rate 3

9.5 Four Transmit Antennas, Rate 49.6 The Information Provided by the Schemes; 9.7 Summary; Part III: Closed-loop Methods; 10 Closed-loop Methods: Selected Multi-antenna Extensions; 10.1 Closed-loop Transmit Diversity in WCDMA; 10.2 More than Two Transmit Antennas; 10.3 Performance; 10.4 Summary; 11 Analysis of Closed-loop Concepts; 11.1 Generalized Feedback Signalling Design; 11.2 Analysis of SNR Gain of the Co-phase Algorithm; 11.3 Analysis of SNR Gain of the Order and Co-phase Algorithm; 11.4 SNR Gain in Multipath Rayleigh Fading Channels; 11.5 Errors in Feedback Signalling

11.6 Feedback Latency

Sommario/riassunto

Multi-antenna techniques are widely considered to be the most promising avenue for significantly increasing the bandwidth efficiency of wireless data transmission systems. In so called MIMO (multiple input multiple output) systems, multiple antennas are deployed both at the transmitter and the receiver. In MISO (multiple input single output) systems, the receiver has only one antenna, and the multiple transmit antennas are used for transmit diversity.The key aspects of multiple antenna transceiver techniques for evolving 3G systems and beyond are presented. MIMO and MISO (transmit dive