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response; 2.1.2 Multidimensional correlation functions and stationarity; 2.1.3 Channel fading, K-factor and Doppler spectrum; 2.1.4 Power delay and direction spectra; 2.1.5 From double-directional propagation to MIMO channels; 2.1.6 Statistical properties of the channel matrix; 2.1.7 Discrete channel modeling: sampling theorem revisited; 2.1.8 Physical versus analytical models; 2.2 Electromagnetic models; 2.2.1 Ray-based deterministic methods
2.2.2 Multi-polarized channels2.3 Geometry-based models; 2.3.1 One-ring model; 2.3.2 Two-ring model; 2.3.3 Combined elliptical-ring model; 2.3.4 Elliptical and circular models; 2.3.5 Extension of geometry-based models to dual-polarized channels; 2.4 Empirical models; 2.4.1 Extended Saleh-Valenzuela model; 2.4.2 Stanford University Interim channel models; 2.4.3 COST models; 2.5 Standardized models; 2.5.1 IEEE 802.11 TGn models; 2.5.2 IEEE 802.16 d/e models; 2.5.3 3GPP/3GPP2 spatial channel models; 2.6 Antennas in MIMO systems; 2.6.1 About antenna arrays; 2.6.2 Mutual coupling Chapter 3 Analytical MIMO channel representations for system design3. 1 General representations of correlated MIMO channels; 3.1.1 Rayleigh fading channels; 3.1.2 Ricean fading channels; 3.1.3 Dual-polarized channels; 3.1.4 Double-Rayleigh fading model for keyhole channels; 3.2 Simplified representations of Gaussian MIMO channels; 3.2.1 The Kronecker model; 3.2.2 Virtual channel representation; 3.2.3 The eigenbeam model; 3.3 Propagation-motivated MIMO metrics; 3.3.1 Comparing models and correlation matrices; 3.3.2 Characterizing the multipath richness
3.3.3 Measuring the non-stationarity of MIMO channels

Sommario/riassunto

Uniquely, this book proposes robust space-time code designs for real-world wireless channels. Through a unified framework, it emphasizes how propagation mechanisms such as space-time frequency correlations and coherent components impact the MIMO system performance under realistic power constraints. Combining a solid mathematical analysis with a physical and intuitive approach to space-time coding, the book progressively derives innovative designs, taking into consideration that MIMO channels are often far from ideal.The various chapters of this book provide an essential, complete and r