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ROC Curves; 2.5 Wireless Channel Models; 2.5.1 Mean Pathloss; 2.5.2 Shadowing; 2.5.3 Small Scale Fading; 2.6 Basic Models for Spectrum Occupancy; 2.6.1 The Poisson-Exponential Model; 2.6.2 The Markov Modulated Poisson Process; 2.6.3 The Poisson-Pareto Burst Process; 2.7 Stochastic Analysis of Radio Signals
2.8 Blind, Partial, and Complete Context Aware Signal Detection
2.8.1 Blind Signal Detection; 2.8.2 Partial-Context Aware Signal Detection; 2.8.3 Fully Context Aware Signal Detection; 2.9 Summary; References; 3 Introduction to Spectrum Sensing Techniques; 3.1 Introduction; 3.2 Spectrum Sensing with Energy Detection; 3.2.1 Energy Detector; 3.2.2 Energy Detector in Gaussian Channel; 3.2.3 Energy Detector in Fading Channels; 3.2.4 Energy Detector in Fading Channels with Shadowing; 3.3 Energy Detection and Noise Power Uncertainty; 3.3.1 ED Threshold Mismatch; 3.3.2 SNR Wall
3.3.3 Existence of the SNR Wall
3.4 Spectrum Sensing with Cyclostationary Feature Detection; 3.4.1 Cyclostationarity Analysis; 3.4.2 Cyclostationary Feature-Based Detector; 3.5 Spectrum Sensing with Matched Filter Detection; 3.6 Other Spectrum Sensing Techniques; 3.6.1 Covariance-Based Method; 3.6.2 Eigenvalue-Based Method; 3.6.3 Wavelet-Based Edge Detection; 3.6.4 Spectral Estimation Methods; 3.7 Summary; References; 4 Temporal Spectrum Sensing and Performance Analysis; 4.1 Introduction; 4.2 Temporal Periodic-Spectrum Sensing; 4.3 Primary User Spectral Occupancy Model with Poisson Arrival

Sommario/riassunto

Providing an in-depth treatment of the core enablers of cognitive radio technology, this unique book places emphasis on critical areas that have not been sufficiently covered in existing literature. You find expert guidance in the key enablers with respect to communications and signal processing. The book presents fundamentals, basic solutions, detailed discussions of important enabler issues, and advanced algorithms to save you time with your projects in the field. For the first time in any book, you find an adequately detailed treatment of spectrum sensing that covers nearly every aspect of the subject. Moreover, this valuable resource provides you with thorough working knowledge of localization and interference mitigation as enablers of cognitive radio technology. The book includes all the necessary mathematics, statistical and probabilistic treatments, and performance analysis to give you a comprehensive understanding of the material.
