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-- 2.4. CIR and CTF Correlation Functions, and Doppler -- 2.5. Uncorrelated Scattering -- 2.6. Wide-Sense Stationarity -- 2.7. Wide-Sense Stationarity, Uncorrelated Scattering -- 2.8. Non-stationary Channels and Correlated Scattering -- 2.9. Remarks on V2V Channel Statistics -- 3. Existing Work on V2V/V2R Channels -- 3.1. Deterministic Models -- 3.2. Theoretical Statistical Models -- 3.3. Empirical Statistical Models -- 4. New Non-stationary V2V Channel Models -- 4.1. Modeling Multipath Component Persistence. 4.2. Modeling Propagation Region Transitions and Time-Varying DopplerSpectra -- 4.3. Representative NS V2V Models -- Conclusion -- Acknowledgments -- References -- Chapter 3SMART ANTENNAS IN INTELLIGENTTRANSPORTATION SYSTEMS -- Abstract -- Background -- Material and Methods -- Results -- Conclusion -- Abbreviations -- 1. Introduction -- 2. Smart Antennas and Their Benefits for IntelligentTransportation Systems -- 2.a. Types of Smart Antennas -- 2.b. Benefits of Smart Antennas for ITS -- 2.b.1. Spatial Filtering for Interference Reduction -- 2.b.2. Space Division Multiple Access (SDMA) -- 2.b.3. Location Positioning of Mobile Units -- 3. Array Data Model and Problem Formulation -- 4. Beamforming Algorithms -- 4.a. Conventional Beamformer -- 4.b. Null-steering Beamformer -- 4.c. Optimal Beamformer -- 4.d. Minimum Mean Square Error (MMSE) Beamformer -- 4.e. Adaptive Beamforming Algorithms -- 4.e.1. Sample Matrix Inversion (SMI) Algorithm -- 4.e.2. Least Mean Square (LMS) Algorithm -- 5. Direction of Arrival Estimation -- 5.a. MVDR Estimator -- 5.b. MUltiple SIgnal Classification (MUSIC) Estimator -- 5.c. Estimation of Signal Parameters via Rotational Invariance Technique (ESPRIT) -- 5.d. Maximum Likelihood (ML) Estimator -- 5.d.1. Conditional Maximum Likelihood (CML) Estimator -- 5.d.2. Unconditional Maximum Likelihood (UML) Estimator -- 5.e. Performance Evaluation and Comparison -- 6. Conclusion -- References -- PART 2.PROTOCOLS -- Chapter 4COGNITIVE ROUTING PROTOCOLFOR SENSOR-BASED INTELLIGENTTRANSPORTATION SYSTEM -- Abstract -- Abbreviations -- 1. Introduction -- 2. Distributed and De-Centralized Based ITS Approach -- 2.a. Sensor Nodes -- 2.b. Network Architecture -- 2.c. Data Communication and Processing -- 2. d. Nondeterministic Polynomial Problem -- 2.e. Optimization -- 3. Classical ITS Routing Approach -- 3.a. Topology Based Protocols. 3.b. Location Based Protocols -- 3.c. Performance Based Protocols -- 4. Background: Ant Colony Optimization -- 4.a. Evolution of ANT System -- 4.b. Characeristics of Ant Colony Optimization -- Pheromone Deposition -- State Transition Probability -- Tabu List -- 5. Proposed Approach: Cognitive Routing Protocol -- 5.a. Wireless Channel Constraint -- 5.b. Quality of Service Constraint -- 5.c. Energy Efficiency -- 5.d. Cross-Layer Approach -- Salient Features -- POSets -- Mathematical Approach -- 5.f. Experimental Simulations and Results -- 6. Conclusion -- References -- Chapter 5TDMA MAC PROTOCOLS FOR DSRC-BASEDINTELLIGENT TRANSPORTATION SYSTEMS -- Abstract -- 1. Introduction -- 1.A. Background and Motivation -- 1.b. Related Work -- 2. Vesomac Protocol Details -- 2.a. Frame and Slot Structures -- 2. B. Synchronous and Asynchronous Operation -- 2.c. Protocol Logic -- 2.c.1. Slot Allocation -- 2.c.2. In-band Header Bitmap -- 2.c.3. Transmission Slot Feasibility -- 2.c.4. Protocol Overview -- 2.c.5. Collision Detection and Resolution -- 2.c.6. Protocol Logic Pseudo Code -- 3. Performance Evaluation -- 3.a. Experimental Parameters -- 3.b. VeSOMAC Protocol Convergence -- 3.c. Inter-vehicle Data Transfer Applications Performance -- 3.c.1. UDP based Applications -- 3.c.2. TCP based Applications -- 3.c.3. Application Level Impacts of VeSOMAC Slot Reorganization -- 4. Conclusion -- References -- Chapter

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1.Introduction.

Sommario/riassunto

Organized into three parts, this book provides readers a thorough technical guide covering various wireless technologies developed in the most recent years for intelligent transportation systems applications.