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Nota di contenuto	Cover -- Introduction to Multiple Antenna Communications and Reconfigurable Surfaces -- Copyright -- Contents -- Preface -- How to Use This Book -- Acknowledgments -- Chapter 1: Introduction and Motivation -- Transmitted and Received Signal Power -- Signal-to-Noise Ratio -- Fraunhofer Distance -- Antenna Directivity Gains -- Revisiting the Signal-to-Noise Ratio -- Three Main Benefits of Having Multiple Antennas -- Beamforming Gain -- Spatial Multiplexing -- Spatial Diversity -- Exercises -- Chapter 2: Theoretical Foundations -- Complex Numbers and Algebra -- Vector Analysis -- Matrix Analysis -- Probability Theory -- Gaussian Distribution -- Complex Gaussian Distribution -- Covariance and Conditional Distribution -- Multivariate Complex Gaussian Distribution -- Rayleigh, Exponential, and 2 Distribution -- Cumulative Distribution Function -- Random Process -- Signal Modeling -- Complex Baseband Representation -- From Continuous Time to Discrete Time -- Basic Wireless Channel Modeling -- Discrete Memoryless Channel Model -- Performance Metrics -- Basic Capacity Results -- Estimation Theory -- MMSE Estimation of Complex Gaussian Variables -- LMMSE Estimation of Arbitrarily Distributed Variables -- Monte Carlo Methods for Statistical Inference -- Estimating the Mean Value -- Estimating the Error Probability -- Empirical Cumulative Distribution Function -- Detection Theory -- Bayesian Detection -- Neyman-Pearson Detection -- Frequency Domain and

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Sommario/riassunto

This textbook gives a gentle introduction to multiple antenna communications with a focus on system modeling, channel capacity theory, algorithms, and practical implications.