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Nota di contenuto	Radar System Analysis, Design, and Simulation; Contents; Preface; Acknowledgments; Introduction; Chapter 1 Matrix, Vector, and Linear Equations; 1.1 Introduction; 1.2 Simultaneous Linear Equation; 1.2.1 Gaussian Elimination with Backsubstitution; 1.2.2 Gaussian Elimination with Forward Substitution; 1.3 Matrix Factorization; 1.3.1 LU Factorization; 1.3.2 LLT Factorization (Cholesky); 1.3.3 LDLT Factorization (Modified Cholesky); 1.3.4 UDUT Factorization; 1.3.5 QR Factorization; 1.4 Matrix Inversion; 1.4.2 Lx-1; 1.4.3 U1-1; 1.4.4 Ux-1; 1.4.5 D-1; 1.4.6 Q-1; 1.5 Vector Operations. 1.6 Matrix Operations1.7 Conclusion; Selected Bibliography; Chapter 2 Pseudorandom Number, Noise, andClutter Generation; 2.1 Introduction; 2.2 Pseudorandom Number and Unit Uniform Variables; 2.2.1 PRN Generation of an Arbitrary Population; 2.3 White Gaussian Noise; 2.4 Rayleigh Noise; 2.5 Rician Random Variables, Signal-to-Noise Ratio; 2.6 Chi-Squared Noise; 2.7 Square-Law Detector; 2.8 Exponential Noise; 2.9 Lognormal Clutter; 2.10 Weibull Clutter; 2.11 Postulate of Probability Density Function from Sampled Data; 2.12 Construction of Gaussian (Normal) Probability Paper; 2.13 Conclusion.

3.3.9 Quantized Noise and the Dynamic Range of A/D ConverterReferences; Chapter 4 Fast Fourier Transform (FFT) and IFFT; 4.1 Introduction; 4.2 Fast Fourier Transform, Decimation-in-Time and Decimation-in-Frequency; 4.3 Demonstration of FFT_DIT and FFT_DIF; 4.4 Spectral Leakage and Window Function; 4.5 Inverse Fast Fourier Transform, Decimation-in-Time, and Decimation-in-Frequency; 4.6 Applications of FFT and IFFT; 4.6.1 Filtering in the Frequency Domain; 4.6.2 Detection of Signal Buried in Noise; 4.6.3 Interpolation of Data; 4.6.4 Pulse Compression.
4.6.5 Amplitude Unbalance and Phase MismatchAppendix 4A; References; Chapter 5 Ambiguity Function; 5.1 Introduction; 5.2 Rectangular Pulse with a Single Constant Frequency; 5.3 Linear Frequency Modulation (LFM); 5.4 Costas-Coded Frequency Hopping Modulation; References; Selected Bibliography; Appendix 5A; Chapter 6 Array Antennas; 6.1 Introduction; 6.2 Linear Array; 6.3 Circular Aperture Array; 6.4 Elliptical Aperture Array; 6.5 Monopulse Array Antenna; 6.6 Conclusion; References; Appendix 6A; Closing Remarks; Chapter 7 Target Detection; 7.1 Introduction.

Sommario/riassunto

This book helps you master critical system analysis and design skills, and shows you how to use digital computer simulation to verify that an analysis is correct and that a design is optimal. This comprehensive resource covers a wide range of essential topics, from matrix, vector and linear equations, noise and clutter generation, Filters (FIR and IIR), and fast Fourier transforms ... to ambiguity functions, antennas, target detection, and the Kalman filter ... to the Monte Carlo method, constant false alarm rate (CFAR) processing, and moving target indicators (MTI).