

1. Record Nr.	UNINA9911019544403321
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Titolo	Optimum array processing // Harry L. Van Trees
Pubbl/distr/stampa	New York, : Wiley-Interscience, 2002
ISBN	9786610272716 9781280272714 1280272716 9780470346723 0470346728 9780471221104 0471221104 9780471463832 0471463833 9781601193872 1601193874
Descrizione fisica	1 online resource (1470 p.)
Disciplina	621.381536 621.3822
Soggetti	Signal theory (Telecommunication) Electric interference Signal processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Pt. 4 of Detection, estimation and modulation theory.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Preface; 1 Introduction; 1.1 Array Processing; 1.2 Applications; 1.2.1 Radar; 1.2.2 Radio Astronomy; 1.2.3 Sonar; 1.2.4 Communications; 1.2.5 Direction Finding; 1.2.6 Seismology; 1.2.7 Tomography; 1.2.8 Array Processing Literature; 1.3 Organization of the Book; 1.4 Interactive Study; 2 Arrays and Spatial Filters; 2.1 Introduction; 2.2 Frequency-wavenumber Response and Beam Patterns; 2.3 Uniform Linear Arrays; 2.4 Uniformly Weighted Linear Arrays; 2.4.1 Beam Pattern Parameters; 2.5 Array Steering; 2.6 Array Performance Measures; 2.6.1 Directivity

2.6.2 Array Gain vs. Spatially White Noise ($A_{\text{sub}(w)}$); 2.6.3 Sensitivity and the Tolerance Factor; 2.6.4 Summary; 2.7 Linear Apertures; 2.7.1 Frequency-wavenumber Response; 2.7.2 Aperture Sampling; 2.8 Non-isotropic Element Patterns; 2.9 Summary; 2.10 Problems; 3 Synthesis of Linear Arrays and Apertures; 3.1 Spectral Weighting; 3.2 Array Polynomials and the z-Transform; 3.2.1 z-Transform; 3.2.2 Real Array Weights; 3.2.3 Properties of the Beam Pattern Near a Zero; 3.3 Pattern Sampling in Wavenumber Space; 3.3.1 Continuous Aperture; 3.3.2 Linear Arrays; 3.3.3 Discrete Fourier Transform; 3.3.4 Norms; 3.3.5 Summary; 3.4 Minimum Beamwidth for Specified Sidelobe Level; 3.4.1 Introduction; 3.4.2 Dolph-Chebyshev Arrays; 3.4.3 Taylor Distribution; 3.4.4 Villeneuve Distribution; 3.5 Least Squares Error Pattern Synthesis; 3.6 Minimax Design; 3.6.1 Alternation Theorem; 3.6.2 Parks-McClellan-Rabiner Algorithm; 3.6.3 Summary; 3.7 Null Steering; 3.7.1 Null Constraints; 3.7.2 Least Squares Error Pattern Synthesis with Nulls; 3.8 Asymmetric Beams; 3.9 Spatially Non-uniform Linear Arrays; 3.9.1 Introduction; 3.9.2 Minimum Redundancy Arrays; 3.9.3 Beam Pattern Design Algorithm; 3.10 Beamspace Processing; 3.10.1 Full-dimension Beamspace; 3.10.2 Reduced-dimension Beamspace; 3.10.3 Multiple Beam Antennas; 3.10.4 Summary; 3.11 Broadband Arrays; 3.12 Summary; 3.13 Problems; 4 Planar Arrays and Apertures; 4.1 Rectangular Arrays; 4.1.1 Uniform Rectangular Arrays; 4.1.2 Array Manifold Vector; 4.1.3 Separable Spectral Weightings; 4.1.4 2-D z-Transforms; 4.1.5 Least Squares Synthesis; 4.1.6 Circularly Symmetric Weighting and Windows; 4.1.7 Wavenumber Sampling and 2-D DFT; 4.1.8 Transformations from One Dimension to Two Dimensions; 4.1.9 Null Steering; 4.1.10 Related Topics; 4.2 Circular Arrays; 4.2.1 Continuous Circular Arrays (Ring Apertures); 4.2.2 Circular Arrays; 4.2.3 Phase Mode Excitation Beamformers; 4.3 Circular Apertures; 4.3.1 Separable Weightings; 4.3.2 Taylor Synthesis for Circular Apertures; 4.3.4 Difference Beams; 4.3.5 Summary; 4.4 Hexagonal Arrays; 4.4.1 Introduction; 4.4.2 Beam Pattern Design; 4.4.3 Hexagonal Grid to Rectangular Grid Transformation; 4.4.4 Summary; 4.5 Nonplanar Arrays; 4.5.1 Cylindrical Arrays; 4.5.2 Spherical Arrays; 4.6 Summary; 4.7 Problems; 5 Characterization of Space-time Processes; 5.1 Introduction; 5.2 Snapshot Models; 5.2.1 Frequency-domain Snapshot Models

Sommario/riassunto

Well-known authority, Dr. Van Trees updates array signal processing for today's technology. This is the most up-to-date and thorough treatment of the subject available. Written in the same accessible style as Van Tree's earlier classics, this completely new work covers all modern applications of array signal processing, from biomedicine to wireless communications.