

Introduction To Radar Systems Skolnik Mcgraw Hill 2nd Edition

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Radar Systems Analysis and Design Using MATLAB - Bassem R. Mahafza 2016-04-19
Developed from the author's graduate-level courses, the first edition of this book filled the need for a comprehensive, self-contained, and hands-on treatment of radar systems analysis and design. It quickly became a bestseller and

was widely adopted by many professors. The second edition built on this successful format by rearranging and updating [Target Detection by Marine Radar](#) - John N. Briggs 2004-12-03
Radar is a legal necessity for the safe navigation of merchant ships, and within vessel traffic

services is indispensable to the operation of major ports and harbours. Target Detection by Marine Radar concentrates solely on civil marine operations and explains how marine surveillance radars detect their targets. The book is fully illustrated and contains worked examples to help the reader understand the principles underlying radar operation and to quantify the importance of factors such as the technical features of specific equipment, the weather, target reflection properties, and the ability of the operator. The precision with which targets are positioned on the radar screen and with which their progress is tracked or predicted depends on how definitely they have been detected, therefore a whole chapter has been devoted to the issue of accuracy. The various international regulations governing marine radar are examined, a brief historical background is given to modern day practice and the book does with a discussion of the ways in which marine radar may develop to meet future challenges.

Introduction to Airborne Radar - George W. Stimson 1998-01-01

An introduction to the subject for non-specialists: engineers, technicians, pilots, and aerospace industry marketing, public relations, and customer support personnel. Also a reference for specialists in the field. The completely rewritten and revised Second Edition updates the original published by the Hughes Aircraft Company.

Small and Short-Range Radar Systems - Gregory L. Charvat 2014-04-04

Radar Expert, Esteemed Author Gregory L. Charvat on CNN and CBS Author Gregory L. Charvat appeared on CNN on March 17, 2014 to discuss whether Malaysia Airlines Flight 370 might have literally flown below the radar. He appeared again on CNN on March 20, 2014 to explain the basics of radar, and he explored the hope and limitations of the technology in Introduction to Radar Systems - Skolnik 2003

Advances in Adaptive Radar Detection and Range Estimation - Chengpeng Hao 2022

This book provides a comprehensive and systematic framework for the design of adaptive architectures, which take advantage of the available a priori information to enhance the detection performance. Moreover, this framework also provides guidelines to develop decision schemes capable of estimating the target position within the range bin. To this end, the readers are driven step-by-step towards those aspects that have to be accounted for at the design stage, starting from the exploitation of system and/or environment information up to the use of target energy leakage (energy spillover), which allows inferring on the target position within the range cell under test. In addition to design issues, this book presents an extensive number of illustrative examples based upon both simulated and real-recorded data. Moreover, the performance analysis is enriched by considerations about the trade-off between

performances and computational requirements. Finally, this book could be a valuable resource for PhD students, researchers, professors, and, more generally, engineers working on statistical signal processing and its applications to radar systems.

Advanced Ultrawideband Radar - James D. Taylor 2016-12-19

This book presents the latest theory, developments, and applications related to high resolution materials-penetrating sensor systems. An international team of expert researchers explains the problems and solutions for developing new techniques and applications. Subject areas include ultrawideband (UWB) signals propagation and scattering, materials-penetrating radar techniques for small object detection and imaging, biolocation using holographic techniques, tomography, medical applications, nondestructive testing methods, electronic warfare principles, through-the-wall radar propagation effects, and target

identification through measuring the target return signal spectrum changes.

Radar Principles for the Non-Specialist -

John C. Toomay 2012-12-06

What This Book Is This book is about radar. It will teach you the essentials of radar, the underlying principles. It is not like an engineering handbook which provides detailed design equations without explaining either derivation or rationale. It is not like a graduate school textbook which may be abstruse and esoteric to the point of incomprehensibility. And it is not like an anthology of popular magazine articles which may be gaudy but superficial. It is an attempt to distill the very complex, rich technology of radar into its fundamentals, tying them to the laws of nature on one end and to the most modern and complex systems on the other. Who It's For If your work requires you to supervise or meet as coequals with radar systems engineers or designers, this book will allow you to understand them, to question them

intelligently and perhaps to provide them with a perspective (a dispassionate yet competent view) that they lack. If you are trained in another discipline but have been made the manager of a radar project or a system program that has one or more radars as sub-systems, this book will provide you with the tools you need, not only to give your team members confidence, but also to make a substantive technical contribution yourself.

Introduction to Electronic Defense Systems

- Filippo Neri 2006

A comprehensive and accessible introduction to electronic warfare and defense systems. Description of electronic defense systems and weapons systems. Explains vulnerable parts of radar and the limitations of weapons systems. Details effectiveness of defense systems.
Introduction to Radar Systems - Merrill Ivan Skolnik 1972

MATLAB Simulations for Radar Systems Design -

Bassem R. Mahafza 2003-12-17

Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not guarantee success. One must also: Understand radar operations and design philosophy Know how to select the radar parameters to meet the design req

MTI Radar - D. Curtis Schleher 1978

Radar Handbook, Third Edition - Merrill I Skolnik 2008-02-12

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The Industry Standard in Radar Technology_Now Updated with All the Advances and Trends of the Past 17 Years Turn to the Third Edition of Radar Handbook for state-of-the-art coverage of the entire field of radar technology_from

fundamentals to the newest applications. With contributions by 30 world experts, this resource examines methods for predicting radar range and explores radar subsystems such as receivers, transmitters, antennas, data processing, ECCM, and pulse compression. This radar handbook also explains the target cross section...radar echoes from ground and sea...and all radar systems, including MTI, AMTI, pulse doppler, and others. Using SI units, the Third Edition of Radar Handbook features:

Unsurpassed guidance on radar fundamentals, theory, and applications Hundreds of examples and illustrations New to this edition: new chapters on radar digital signal processing, radar in air traffic control, ground penetrating radar, fighter aircraft radar, and civil marine radar; 22 thoroughly revised chapters; 17 new contributors Inside This Cutting-Edge Radar Guide • MTI Radar • Pulse Doppler Radar • Multifunctional Radar Systems for Fighter Aircraft • Radar Receivers • Automatic

Detection, Tracking, and Sensor Integration •
Pulse Compression Radar • Radar Transmitters
• Reflector Antennas • Phased Array Radar
Antennas • Radar Cross Section • Sea Clutter •
Ground Echo • Space-Based Radar •
Meteorological Radar • HF Over-the-Horizon
Radar • Ground Penetrating Radar • Civil
Marine Radar • Bistatic Radar • Radar Digital
Signal Processing • And More!

Introduction to Radar Systems - Merrill Ivan
Skolnik 1962

Since the publication of the second edition of
"Introduction to Radar Systems," there has been
continual development of new radar capabilities
and continual improvements to the technology
and practice of radar. This growth has
necessitated the addition and updating of the
following topics for the third edition: digital
technology, automatic detection and tracking,
doppler technology, airborne radar, and target
recognition. The topic coverage is one of the
great strengths of the text. In addition to a

thorough revision of topics, and deletion of
obsolete material, the author has added end-of-
chapter problems to enhance the "teachability"
of this classic book in the classroom, as well as
for self-study for practicing engineers.

Microwave Tomography - Sima Noghianian
2014-07-08

This book provides a detailed overview on the
use of global optimization and parallel
computing in microwave tomography
techniques. The book focuses on techniques that
are based on global optimization and
electromagnetic numerical methods. The authors
provide parallelization techniques on
homogeneous and heterogeneous computing
architectures on high performance and general
purpose futuristic computers. The book also
discusses the multi-level optimization technique,
hybrid genetic algorithm and its application in
breast cancer imaging.

High Frequency Over-the-Horizon Radar -
Dr. Giuseppe Fabrizio 2013-07-12

THE MOST COMPLETE GUIDE TO HIGH FREQUENCY OVER-THE-HORIZON RADAR SYSTEMS Written by a leading global expert on the topic, High Frequency Over-the-Horizon Radar provides in-depth coverage of the signal processing models and techniques that have significantly advanced OTH radar technology. This pioneering work describes the fundamental principles of OTH radar design and operation, and then delves into the mathematical modeling of HF signals received by actual OTH radar systems based on experimental data analysis. Numerous examples illustrate the practical application of modern adaptive signal processing techniques to real and simulated OTH radar data. This authoritative text covers skywave and surface-wave systems and is an invaluable resource for researchers, engineers, and practitioners working with OTH radar systems and technologies. Key Features: Offers a thorough and accurate treatment of essential concepts ranging from system design and

operation, through to signal processing methods, and their practical application. Provides clear explanations of fundamental principles for scientists, engineers, students, practitioners, technicians, managers, and other professionals starting out in this field. Offers a detailed coverage of theoretical and applied signal-processing concepts and techniques that have become a cornerstone for the effective operation of real-world OTH radar systems. Fills a long-standing void in the contemporary OTH radar literature with over 350 illustrations (color figures available for download), and over 500 references.

Doppler Radar Physiological Sensing - Olga Boric-Lubecke 2015-12-15

Presents a comprehensive description of the theory and practical implementation of Doppler radar-based physiological monitoring This book includes an overview of current physiological monitoring techniques and explains the fundamental technology used in remote non-

contact monitoring methods. Basic radio wave propagation and radar principles are introduced along with the fundamentals of physiological motion and measurement. Specific design and implementation considerations for physiological monitoring radar systems are then discussed in detail. The authors address current research and commercial development of Doppler radar based physiological monitoring for healthcare and other applications. Explains pros and cons of different Doppler radar architectures, including CW, FMCW, and pulsed Doppler radar Discusses nonlinear demodulation methods, explaining dc offset, dc information, center tracking, and demodulation enabled by dc cancellation Reviews advanced system architectures that address issues of dc offset, spectrum folding, motion interference, and range resolution Covers Doppler radar physiological measurements demonstrated to date, from basic cardiopulmonary rate extractions to more involved volume assessments Doppler Radar

Physiological Sensing serves as a fundamental reference for radar, biomedical, and microwave engineers as well as healthcare professionals interested in remote physiological monitoring methods.

Introduction to Radar Analysis - Bassem R. Mahafza 1998-05-22

Introduction to Radar Analysis outlines the fundamental principles and applications of radar as well as important mathematical derivations - serving as a reference for engineers, technical managers, and students. This comprehensive book divides into two parts: General analytical treatment of radar signal processing Specific discussion of radar topics and radar types Chapters contain: derivations of the radar equation in many forms for an essential understanding of radar principles examination of radar cross section and receiver noise practical aspects of radar systems, including stretch processing, multipath propagation, and track filters analysis of probability of detection and

radar losses; CW and pulsed radars; and pulse compression investigation of current research and industry trends, including clutter and wave propagation, Moving Target Indicator (MTI), tracking radars, and array antennas a unique approach in presenting Synthetic Aperture Radar (SAR) 756 equations and formulas providing detailed mathematical derivations 165 examples and exercise problems as well as 149 figures and plots Introduction to Radar Analysis acts as an essential stepping stone toward specialized topics - providing a clear, accessible framework of radar fundamentals as well as a thorough study of advanced topics and radar technology issues.

Fundamentals of Radar Signal Processing -

Mark A. Richards 2005-07-15

Advances in DSP (digital signal processing) have radically altered the design and usage of radar systems -- making it essential for both working engineers as well as students to master DSP techniques. This text, which evolved from the

author's own teaching, offers a rigorous, in-depth introduction to today's complex radar DSP technologies. Contents: Introduction to Radar Systems * Signal Models * Sampling and Quantization of Pulsed Radar Signals * Radar Waveforms * Pulse Compression Waveforms * Doppler Processing * Detection Fundamentals * Constant False Alarm Rate (CFAR) Detection * Introduction to Synthetic Aperture Imaging [Radar for Meteorological and Atmospheric Observations](#) - Shoichiro Fukao 2013-08-16 Epoch-making progress in meteorology and atmospheric science has always been hastened by the development of advanced observational technologies, in particular, radar technology. This technology depends on a wide range of sciences involving diverse disciplines, from electrical engineering and electronics to computer sciences and atmospheric physics. Meteorological radar and atmospheric radar each has a different history and has been developed independently. Particular radar

activities have been conducted within their own communities. Although the technology of these radars draws upon many common fields, until now the interrelatedness and interdisciplinary nature of the research fields have not been consistently discussed in one volume containing fundamental theories, observational methods, and results. This book is by two authors who, with long careers in the two fields, one in academia and the other in industry, are ideal partners for writing on the comprehensive science and technology of radars for meteorological and atmospheric observations.

Principles of Modern Radar - Mark A. Richards
2010-06-30

Dr. John Milan, radar consultant; formerly 36 years with ITT Gilfillan, IEEE AESS Radar Systems Panel --

Radar Technology - Guy Kouemou 2010-01-01

In this book "Radar Technology", the chapters are divided into four main topic areas: Topic area 1: "Radar Systems" consists of chapters

which treat whole radar systems, environment and target functional chain. Topic area 2: "Radar Applications" shows various applications of radar systems, including meteorological radars, ground penetrating radars and glaciology. Topic area 3: "Radar Functional Chain and Signal Processing" describes several aspects of the radar signal processing. From parameter extraction, target detection over tracking and classification technologies. Topic area 4: "Radar Subsystems and Components" consists of design technology of radar subsystem components like antenna design or waveform design.

Advances in Broadband Communication and Networks - Johnson I. Agbinya 2008

This resource deals with the state-of-the-art and the underlying principles of key technologies which facilitate broadband telecommunications, including millimetre wave gigabit Ethernet, terahertz communication, multiple input multiple output technology, orthogonal frequency division multiplex, and ultra

wideband.

Radar Engineering - Raju 2013-12-30

This book contains the applications of radars, fundamentals and advanced concepts of CW, CW Doppler, FMCW, Pulsed doppler, MTI, MST and phased array radars etc. It also includes effect of different parameters on radar operation, various losses in radar systems, radar transmitters, radar receivers, navigational aids and radar antennas. Key features : Nine chapters exclusively suitable for one semester course in radar engineering. More than 100 solved problems. More than 1000 objective questions with answers. More than 600 multiple choice questions with answers. Five model question papers. Logical and self-understandable system description.

Principles of Modern Radar - Jerry Eaves 2012-12-06

This book, Principles of Modern Radar, has as its genesis a Georgia Tech short course of the same title. This short course has been presented an

nually at Georgia Tech since 1969, and a very comprehensive set of course notes has evolved during that seventeen year period. The 1986 edition of these notes ran to 22 chapters, and all of the authors involved, except Mr. Barrett, were full time members of the Georgia Tech research faculty. After considerable encouragement from various persons at the university and within the radar community, we undertook the task of editing the course notes for formal publication. The contents of the book that ensued tend to be practical in nature, since each contributing author is a practicing engineer or scientist and each was selected to write on a topic embraced by his area(s) of expertise. Prime examples are Chaps. 2, 5, and 10, which were authored by E. F. Knott, G. W. Ewell, and N. C. Currie, respectively. Each of these three researchers is recognized in the radar community as an expert in the technical area that his chapter addresses, and each had already authored and published a major book on his subject. Several other

contributing authors, including Dr. Bodnar, Mr. Bruder, Mr. Corriher, Dr. Reedy, Dr. Trebits, and Mr. Scheer, also have major book publications to their credit.

Radar - Byron Edde 1993

This comprehensive, up-to-date book describes and details the wide range of modern radar systems and methods currently in use today. From system fundamentals to functional descriptions of their subsystems, the reference covers radar principles, radar technology, and successful applications of that technology, and includes solved examples to illustrate critical principles. Appropriate for radar engineers, electrical engineers, flight test engineers, and those in related disciplines.

MATLAB Simulations for Radar Systems Design - Bassem R. Mahafza 2003-12-17

Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not

guarantee success. One must also:
• Understand radar operations and design philosophy
• Know how to select the radar parameters to meet the design requirements
• Be able to perform detailed trade-off analysis in the context of radar sizing, modes of operation, frequency selection, waveforms, and signal processing
• Develop loss and error budgets associated with the design
MATLAB Simulations for Radar Systems Design teaches all of this and provides the M-files and hands-on simulation experience needed to design and analyze radar systems. Part I forms a comprehensive description of radar systems, their analysis, and the design process. The authors' unique approach involves a design case study introduced in Chapter 1 and followed throughout the text. As the treatment progresses, the complexity increases and the case study requirements are adjusted accordingly. Part II presents a series of chapters-some authored by other experts in the field-on specialized radar topics important to a

full understanding of radar systems design and analysis. A comprehensive set of MATLAB programs and functions support both parts of the book and are available for download from the CRC Press Web site.

Radar Handbook - Merrill Ivan Skolnik 1990

This edition is the most comprehensive and informative available on radar systems and technology. Thoroughly revised and updated to reflect the advances made in radar over the past two decades. Charts/graphs.

Introduction to Radar Target Recognition - P. Tait 2005

This book text provides an overview of the radar target recognition process and covers the key techniques being developed for operational systems. It is based on the fundamental scientific principles of high resolution radar, and explains how the underlying techniques can be used in real systems, taking into account the characteristics of practical radar system designs and component limitations. It also addresses

operational aspects, such as how high resolution modes would fit in with other functions such as detection and tracking.

Understanding Radar Systems - Simon Kingsley 1999

What is radar? What systems are currently in use? How do they work? *Understanding Radar Systems* provides engineers and scientists with answers to these critical questions, focusing on actual radar systems in use today. It's the perfect resource for those just entering the field or a quick refresher for experienced practitioners. The book leads readers through the specialized language and calculations that comprise the complex world of modern radar engineering as seen in dozens of state-of-the-art radar systems. The authors stress practical concepts that apply to all radar, keeping math to a minimum. Most of the book is based on real radar systems rather than theoretical studies. The result is a valuable, easy-to-use guide that makes the difficult parts of the field easier and

helps readers do performance calculations quickly and easily.

Introduction to RF Propagation - John S. Seybold 2005-10-03

An introduction to RF propagation that spans all wireless applications This book provides readers with a solid understanding of the concepts involved in the propagation of electromagnetic waves and of the commonly used modeling techniques. While many books cover RF propagation, most are geared to cellular telephone systems and, therefore, are limited in scope. This title is comprehensive-it treats the growing number of wireless applications that range well beyond the mobile telecommunications industry, including radar and satellite communications. The author's straightforward, clear style makes it easy for readers to gain the necessary background in electromagnetics, communication theory, and probability, so they can advance to propagation models for near-earth, indoor, and earth-space

propagation. Critical topics that readers would otherwise have to search a number of resources to find are included: * RF safety chapter provides a concise presentation of FCC recommendations, including application examples, and prepares readers to work with real-world propagating systems * Antenna chapter provides an introduction to a wide variety of antennas and techniques for antenna analysis, including a detailed treatment of antenna polarization and axial ratio; the chapter contains a set of curves that permit readers to estimate polarization loss due to axial ratio mismatch between transmitting and receiving antennas without performing detailed calculations * Atmospheric effects chapter provides curves of typical atmospheric loss, so that expected loss can be determined easily * Rain attenuation chapter features a summary of how to apply the ITU and Crane rain models * Satellite communication chapter provides the details of earth-space

propagation analysis including rain attenuation, atmospheric absorption, path length determination and noise temperature determination. Examples of widely used models provide all the details and information needed to allow readers to apply the models with confidence. References, provided throughout the book, enable readers to explore particular topics in greater depth. Additionally, an accompanying Wiley ftp site provides supporting MathCad files for select figures in the book. With its emphasis on fundamentals, detailed examples, and comprehensive coverage of models and applications, this is an excellent text for upper-level undergraduate or graduate students, or for the practicing engineer who needs to develop an understanding of propagation phenomena.

Stimson's Introduction to Airborne Radar -

George W. Stimson 2013-06-30

This text has fully modernized coverage and maintained the unique original look and feel.

Even the timeless principles and core fundamentals of general radar have been updated in wording and new graphics, while the more advanced concepts and applications in airborne radar have been brought into the digital age of radar signal processing and solid state electronics. This text is written specifically as an overview without going overboard on the math. Virtually anybody with a knowledge of high school algebra, trigonometry, and physics will be able to read and absorb the vast majority of the material. Living up to its moniker of Introduction, this book contains extensive fundamental materials and practical applications, using visual system exemplars to aid explanations. The full colour layout is enhanced with an immense number of illustrations, figures, tables, and photographs.

Radar Principles for the Non-Specialist - J.C.

Toomay 2004-06-30
This updated edition provides a solid understanding of radar fundamentals and

applications with far less of the mathematical rigor and technical data presented in engineering books for specialists.

Signal Processing in Radar Systems -

Vyacheslav Tuzlukov 2017-12-19

An essential task in radar systems is to find an appropriate solution to the problems related to robust signal processing and the definition of signal parameters. Signal Processing in Radar Systems addresses robust signal processing problems in complex radar systems and digital signal processing subsystems. It also tackles the important issue of defining signal parameters. The book presents problems related to traditional methods of synthesis and analysis of the main digital signal processing operations. It also examines problems related to modern methods of robust signal processing in noise, with a focus on the generalized approach to signal processing in noise under coherent filtering. In addition, the book puts forth a new problem statement and new methods to solve

problems of adaptation and control by functioning processes. Taking a systems approach to designing complex radar systems, it offers readers guidance in solving optimization problems. Organized into three parts, the book first discusses the main design principles of the modern robust digital signal processing algorithms used in complex radar systems. The second part covers the main principles of computer system design for these algorithms and provides real-world examples of systems. The third part deals with experimental measurements of the main statistical parameters of stochastic processes. It also defines their estimations for robust signal processing in complex radar systems. Written by an internationally recognized professor and expert in signal processing, this book summarizes investigations carried out over the past 30 years. It supplies practitioners, researchers, and students with general principles for designing the robust digital signal processing algorithms

employed by complex radar systems.

Introduction to Ultra-Wideband Radar

Systems - James D. Taylor 2020-09-24

This introductory reference covers the technology and concepts of ultra-wideband (UWB) radar systems. It provides up-to-date information for those who design, evaluate, analyze, or use UWB technology for any application. Since UWB technology is a developing field, the authors have stressed theory and hardware and have presented basic principles and concepts to help guide the design of UWB systems. Introduction to Ultra-Wideband Radar Systems is a comprehensive guide to the general features of UWB technology as well as a source for more detailed information.

Basic Radar Analysis, Second Edition

- Mervin C. Budge 2020-04-30

This highly-anticipated second edition of an Artech House classic covers several key radar analysis areas: the radar range equation, detection theory, ambiguity functions,

waveforms, antennas, active arrays, receivers and signal processors, CFAR and chaff analysis. Readers will be able to predict the detection performance of a radar system using the radar range equation, its various parameters, matched filter theory, and Swerling target models. The performance of various signal processors, single pulse, pulsed Doppler, LFM, NLFM, and BPSK, are discussed, taking into account factors including MTI processing, integration gain, weighting loss and straddling loss. The details of radar analysis are covered from a mathematical perspective, with in-depth breakdowns of radar performance in the presence of clutter. Readers will be able to determine the noise temperature of a multi-channel receiver as it is used in active arrays. With the addition of three new chapters on moving target detectors, inverse synthetic aperture radar (ISAR) and constant false alarm rate (CFAR) and new MATLAB codes, this expanded second edition will appeal to the novice as well as the experienced practitioner.

Radar Cross Section Measurements - Eugene F. Knott 2006

This guide explains how radar cross section (RCS) is measured and tested with good measurement practice including assuring that the electromagnetic test environment is optimized for the particular object being measured. It also provides basic and advanced information on instrumentation systems, test range design, and measurement technology.

Introduction to Modern EW Systems, Second Edition - Andrea De Martino 2018-06-30

In answer to great demand, Artech House is proud to bring professionals a newly revised and updated edition of the bestselling book *Introduction to Modern EW Systems*. The Second Edition has been greatly expanded to include a wealth of new material, from remote piloted airborne systems, directed energy weapons, and non-cooperative air surveillance...to EW radar band sensor next generation architectures, real-time data links,

and smart jamming. This authoritative resource provides engineers and students with the latest electronic warfare (EW) techniques and technologies related to on-board military platforms. Practitioners gain expert design guidance on technologies and equipment used to detect and identify emitter threats, offering an advantage in the never-ending chess game between sensor guided weapons and EW systems. This unique book provides deeper insight into EW systems principles of operation and their mathematical descriptions, arming professionals with better knowledge for their specific design applications. Moreover, readers get practical information on how to counter modern communications data links which provide connectivity and command flow among the armed forces in the battlefield. Taking a sufficiently broad perspective, this comprehensive volume offers a panoramic view of the various physical domains RF, Infrared, and electronics that are present in modern

electronic warfare systems. This in-depth book is supported with over 340 illustrations and more than 450 equations.

Radar Systems Analysis and Design Using MATLAB Second Edition - Bassem R. Mahafza
2005-03-09

An introduction to radar systems should ideally be self-contained and hands-on, a combination lacking in most radar texts. The first edition of Radar Systems Analysis and Design Using MATLAB® provided such an approach, and the second edition continues in the same vein. This edition has been updated, expanded, and reorganized to include advances in the field and to be more logical in sequence. Ideal for anyone encountering the topic for the first time or for professionals in need of on-the-job reference, this book features an abundance of MATLAB programs and code. Radar Systems Analysis and Design Using MATLAB®, Second Edition presents the fundamentals and principles of radar along with enough rigorous mathematical

derivations to ensure that you gain a deep understanding. The author has extensively revised chapters on radar cross-section and polarization, matched filter and radar ambiguity function, and radar wave propagation. He also added information on topics such as PRN codes, multipath and refraction, clutter and MTI processing, and high range resolution. With all MATLAB functions updated to reflect version 7.0 and an expanded set of self-test problems, you will find this up-to-date text to be the most complete treatment of radar available, providing the hands-on tools that will enrich your learning.

Principles of Synthetic Aperture Radar Imaging - Kun-Shan Chen 2016-01-05

Principles of Synthetic Aperture Radar Imaging: A System Simulation Approach demonstrates the use of image simulation for SAR. It covers the various applications of SAR (including feature extraction, target classification, and change detection), provides a complete understanding of SAR principles, and illustrates the complete

chain of a SAR operation. The book places special emphasis on a ground-based SAR, but also explains space and air-borne systems. It contains chapters on signal speckle, radar-signal models, sensor-trajectory models, SAR-image focusing, platform-motion compensation, and microwave-scattering from random media. While discussing SAR image focusing and motion compensation, it presents processing algorithms and applications that feature extraction, target classification, and change detection. It also provides samples of simulation on various scenarios, and includes simulation flowcharts and results that are detailed throughout the book. Introducing SAR imaging from a systems point of view, the author: Considers the recent development of MIMO SAR technology Includes

selected GPU implementation Provides a numerical analysis of system parameters (including platforms, sensor, and image focusing, and their influence) Explores wave-target interactions, signal transmission and reception, image formation, motion compensation Covers all platform motion compensation and error analysis, and their impact on final image radiometric and geometric quality Describes a ground-based SFMCW system Principles of Synthetic Aperture Radar Imaging: A System Simulation Approach is dedicated to the use, study, and development of SAR systems. The book focuses on image formation or focusing, treats platform motion and image focusing, and is suitable for students, radar engineers, and microwave remote sensing researchers.