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Modern Radar Systems
Lexikon der Elektronik
Doppler Radar Physiological Sensing
Taschenbuch der Hochfrequenztechnik
Radartechnik
Introduction to Ultra-Wideband Radar Systems
Radar Systems

MUHAMMAD SHEPPARD

Synthetic Aperture Radar Imaging Mechanism for Oil Spills Artech House
In diesem Grundlagenwerk werden die Fahrerassistenzsysteme für aktive Sicherheit und Fahrerentlastung in Aufbau und Funktion ausführlich erklärt. Dazu zählen die bekannten und mittlerweile zur Standardausstattung zählenden Systeme wie ABS, ESP oder ACC genauso wie die Systeme zum Kollisionsschutz, für den Fahrspurwechsel oder zum komfortablen Einparken. Die dazu erforderlichen Komponenten wie Sensoren, Aktoren, mechatronische Subsysteme und Betätigungselemente werden dargestellt, ebenso die nutzergerechte Gestaltung der Mensch-Maschine-Schnittstelle zwischen Assistenzsystem und Fahrer. Drei Kapitel über die Besonderheiten von Fahrerassistenzsystemen bei Nutzfahrzeugen und Motorrädern runden den umfassenden Ansatz ab. Gegenüber der ersten Auflage wurden Änderungen bei den Projekten PRORETA2, , sowie zahlreiche Verbesserungen in Text und Bild vorgenommen. Die jeweils aktuelle Literatur wurde ergänzt. Der Schwerpunkt des Buchs liegt auf der Betrachtung des Fahrzeugs als Gesamtsystem.

Handbuch Radar und Radarsignalverarbeitung CRC Press
Den Anstoß zu diesem Buch gab der in der Industriepaxis beobachtete Mangel an solcher Radar-Literatur, die den Systemplaner, den Entwicklungsingenieur und den interessierten Anwender theoretisch

ausreichend tief, aber zugleich praxisorientiert mit der Radarsignalverarbeitung und dem Entwurf des Sendesignals, dem sogenannten "Waveform Design", vertraut macht. Denn diese bestimmen wesentlich die "Intelligenz" des Radars, das heißt seine Fähigkeit, einerseits gesuchte Zielobjekte zu entdecken und zu vermessen und andererseits Falschmeldungen durch andere Objekte zu vermeiden. Die Radarsignalverarbeitung ist - begünstigt durch die rasante Entwicklung der Mikroelektronik und hier besonders der Speicher und der sehr schnellen Rechenwerke - immer komplexer und damit leistungsfähiger geworden. Eine Grenze ist nicht abzusehen. Allerdings finden sich die Beschreibungen neuerer Verfahren oder Algorithmen der Radarsignalverarbeitung oft nur verstreut in Publikationen der Fachzeitschriften und in Tagungsberichten. Auch hat sich der Aufgabenbereich des auf diesem Gebiet tätigen Entwicklungingenieurs erweitert. Er ist erstens stärker als früher am Waveform Design beteiligt. Zweitens muß er neben seiner Hauptaufgabe, der Entwicklung von Hardware und Software für die Subsysteme, in steigendem Maße Monte-Carlo Simulationen zum Entwurf und zur Optimierung von Signalverarbeitungsalgorithmen und zur Ermittlung von Performance-Parametern einsetzen. Alle diese Tätigkeiten erfordern eine theoretisch gut fundierte Kenntnis sowohl der Grundlagen als auch der praktischen Verfahren der Radarsignalverarbeitung. Hier eine gewisse Lücke zu füllen, ist Sinn des

vorliegenden Buches.

Ein System zur automatischen Auswertung von Ultraschall-Messdaten Cuvillier Verlag

The first edition of this ground-breaking and widely used book introduced a comprehensive textbook on radar systems analysis and design providing hands-on experience facilitated by its companion MATLAB® software. The book very quickly turned into a bestseller. Based on feedback provided by several users and drawing from the author's own teaching experience, the 4th edition adopts a new approach. The presentation in this edition takes the reader on a scientific journey whose major landmarks comprise the different radar sub-systems and components. Along the way, the different relevant radar subsystems are analyzed and discussed in great level of detail. Understanding the radar signal types and their associated radar signal processing techniques are key to understating how radar systems function. Each chapter provides the necessary mathematical and analytical coverage required for a sound understanding of radar theory. Additionally, dedicated MATLAB® functions/programs enhance the understanding of the theory and establish a means to perform radar system analysis and design trades. The software provides users with numerous varieties of graphical outputs. Additionally, a complete set of MATLAB® code that generates all plot and graphs found within the pages of this textbook are also available. All companion MATLAB® code can be downloaded from the book's web page. The 4th Edition:

- Takes advantage of the new features offered by MATLAB® 2021 release
- Brings the text to a current state of the

art •Incorporates much of the feedback received from users using this book as a text and from practicing engineers; accordingly, several chapters have been rewritten •Presents unique topics not found in other books •Maintains a comprehensive and exhaustive presentation •Restructures the presentation to be more convenient for course use. •Provides a post-course reference for engineering students as they enter the field •Offers a companion solutions manual for instructors The 4th edition will serve as a valuable tool to students and radar engineers by helping them better analyze and understand the many topics of radar systems. This book is written primarily as a graduate-level textbook, although parts of it can be used as a senior level course. A companion solutions manual has been developed for use by instructors. *Signal Processing in Radar Systems* CRC Press

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.

Radar mit realer und synthetischer Apertur KIT Scientific Publishing

This revised and updated edition offers complete and up-to-date coverage of modern radar systems, including new material on accuracy, resolution, and convolution and correlation. The book features more than 540 illustrations (drawn in Maple V) that offer a greater understanding of various waveforms, and other two- and three-dimensional functions, to help you more accurately analyze radar system performance.

Understanding Radar Systems CRC Press

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.

Principles of Modern Radar Springer-Verlag

Eine Reihe von Gedanken und Feststellungen, die Ziel und Inhalt des zweibandigen Werkes "Pulstechnik" erläutern, sind im Vorwort zum Band I enthalten. Im Interesse des Lesers, die diesen Band nicht besitzen, scheint es zweckmäßig, wesentliche Teile hier erneut wiederzugeben und durch spezifische Hinweise auf den Inhalt von Band II zu ergänzen. Der ursprüngliche Buchtitellautete "Theorie und Technik der Puls modulation". Dieses Buch, 1957 erschienen, fand stetiges Interesse, so daß es seit einer Reihe von Jahren vergriffen ist und der Verlag sich eine zweite, auf den Stand des heutigen.

Radar Principles for the Non-Specialist Springer-Verlag

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.

Praxiswissen Radar und Radarsignalverarbeitung University Science Books

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.

Pulsternik CRC Press

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.

Advances in Bistatic Radar CRC Press
The rapid development of electronics and its engineering applications ensures that new topics are always competing for a place in university and polytechnic courses. But it is often difficult for lecturers to find suitable books for recommendation to students, particularly when a topic is covered by a short lecture module, or as an 'option'. Macmillan New Electronics offers introductions to advanced topics. The level is generally that of second and subsequent years of undergraduate courses in electronic and electrical engineering, computer science and physics. Some of the authors will paint with a broad brush; others will

concentrate on a narrower topic, and cover it in greater detail. But in all cases the titles in the Series will provide a sound basis for further reading of the specialist literature, and an up-to-date appreciation of practical applications and likely trends. The level, scope and approach of the Series should also appeal to practising engineers and scientists encountering an area of electronics for the first time, or needing a rapid and authoritative update. vii
 Preface The basic principles of radar do not change, but the design and technology of practical radar systems have developed rapidly in recent years. Advances in digital electronics and computing are having a major impact, especially in radar signal processing and display. I hope that this book will prove a useful introduction to such developments, as well as to the underlying principles of radar detection.

Small and Short-Range Radar Systems CRC Press

in die Radartechnik Von Dr.-Ing. Erwin Baur Leiter einer Abteilung für Systemtechnik im Geschäftsbereich Hochfrequenztechnik Ulm der AEG-TELEFUNKEN Anlagentechnik AG und Lehrbeauftragter an der Universität Hannover Mit 105 Bildern und 6 Tabellen B. G. Teubner Stuttgart 1985 Dr.-Ing. Erwin Baur 1931 in Ulm (Donau) geboren. 1951 bis 1957 Studium der Physik an der Technischen Hochschule Stuttgart. Ab 1957 beschäftigt bei AEG-TELEFUNKEN in Ulm. 1964 Promotion an der Technischen Hochschule Darmstadt. Leiter einer systemtechnischen Abteilung im Geschäftsbereich Hochfrequenztechnik der AEG-TELEFUNKEN Anlagentechnik Aktiengesellschaft. Seit 1979 Lehrbeauftragter für Radartechnik am Institut für Hochfrequenztechnik der

Universität Hannover. CIP-Kurztitelaufnahme der Deutschen Bibliothek Baur, Erwin: Einführung in die Radartechnik / von Erwin Baur. - Stuttgart : Teubner, 1985. (Teubner-Studienskripten ; 106 : Elektro=technik) ISBN 978-3-519-00106-5 ISBN 978-3-663-01400-3 (eBook) DOI 10.1007/978-3-663-01400-3 NE: GT Das Werk ist urheberrechtlich geschützt. Die dadurch begründeten Rechte, besonders die der Übersetzung, des Nachdrucks, der Bildentnahme, der Funkendung, der Wiedergabe auf photomechanischem oder ähnlichem Wege, der Speicherung und Auswertung in Datenverarbeitungsanlagen, bleiben, auch bei Verwertung von Teilen des Werkes, dem Verlag vorbehalten. Bei gewerblichen Zwecken dienender Vervielfältigung ist an den Verlag gemäß § 54 UrhG eine Vergütung zu zahlen, deren Höhe mit dem Verlag zu vereinbaren ist. © B. G. Teubner Stuttgart 1985 Gesamtherstellung: Beltz Offsetdruck, Hemsbach/Bergstr.
Introduction to Airborne Radar McGraw-Hill Companies

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: Ö Understand radar operations and design philosophy Ö Know how to select the radar parameters to meet the design requirements Ö Be able to perform detailed trade-off analysis in the context of radar sizing, modes of operation, frequency selection, waveforms, and signal processing Ö 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.

Postprocessing Architecture for an Automotive Radar Network SciTech Publishing

Einleitend werden die Radargleichung als ein Werkzeug zum Radarentwurf und wichtige Begriffe der Radartechnik erklärt. Grundlagen und moderne Verfahren der Radarsignalverarbeitung und des Sendesignalentwurfs werden am Beispiel der großen Klasse der MTI- und Pulsdoppler- oder MTD-Radare behandelt, ergänzt jeweils durch praktische Beispiele. Der Anhang enthält eine Zusammenfassung der Theorie determinierter Signale und linearer Systeme. In der 3. Auflage wurde das Kapitel Pulskompression überarbeitet, das Kapitel CFAR-Methoden wurde überarbeitet und erweitert.

Radar for Meteorological and Atmospheric Observations SciTech Publishing

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.

Target Detection by Marine Radar Springer-Verlag

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.

Handbuch Fahrerassistenzsysteme Tata McGraw-Hill Education

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.

Advances in Broadband Communication and Networks

SciTech Publishing

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 annually 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. [FMCW-Radarsignalverarbeitung zur Entfernungsmessung mit hoher Genauigkeit](#) Springer Science & Business Media

Synthetic Aperture Radar Imaging Mechanism for Oil Spills delivers the critical tool needed to understand the latest technology in radar imaging of oil spills, particularly microwave radar as a main source to understand analysis and applications in the field of marine pollution. Filling the gap between modern physics quantum theory and applications of radar imaging of oil spills, this reference is packed with technical details associated with the potentiality of synthetic aperture radar (SAR) and the key methods used to extract the value-

added information necessary, such as location, size, perimeter and chemical details of the oil slick from SAR measurements. Rounding out with practical simulation trajectory movements of oil spills using radar images, this book brings an effective new source of technology and applications for today's oil and marine pollution engineers. Bridges the gap between theory and application of the techniques involving oil spill monitoring. Helps readers understand a new approach to four-dimensional automatic detection. Provides advanced knowledge on image processing based on intelligent learning machine algorithms and new techniques for detection, such as quantum and multi-objective algorithms.

Radar Systems Analysis and Design

Using MATLAB Second Edition

SciTech Publishing

In diesem Buch werden die Grundlagen und die wesentlichen Verfahren der heutigen Radartechnik dargestellt. Über diese Aufgabe hinaus werden auch Problemstellungen behandelt, die der Verfasser für die Entwicklung der Radartechnik in der Zukunft als wesentlich betrachtet. Das gilt vor allem für die Anwendung von Radarverfahren im Bereich der Fernerkundung, wo bereits heute abbildende Verfahren eine große Rolle spielen, die sich zu einem wichtigen Anwendungsgebiet entwickeln werden. In diesem Zusammenhang wird das Seitensicht radar mit synthetischer Apertur (SAR) behandelt und ein Kapitel liefert wichtige theoretische Grundlagen der Mikrowellenabbildung.