

Active And Passive Microwave Remote Sensing

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Advances in Passive Microwave Remote Sensing of Oceans - Victor Raizer 2017-03-27

This book demonstrates the capabilities of passive microwave technique for enhanced observations of ocean features, including the detection of (sub)surface events and/or disturbances while laying out the benefits and boundaries of these methods. It represents not only an introduction and complete description of the main principles of ocean microwave radiometry and imagery, but also provides guidance for further experimental studies. Furthermore, it expands the analysis of remote sensing methods, models, and techniques and focuses on a high-resolution multiband imaging observation concept. Such an advanced approach provides readers with a new level of geophysical information and data acquisition granting the opportunity to improve their expertise on advanced microwave technology, now an indispensable tool for diagnostics of ocean phenomena and disturbances.

Applications of Remote Sensing to Agrometeorology - F. Toselli 2013-11-11

Within the framework of Ispra Courses, a course on "Applications of Remote Sensing to Agrometeorology" was held from April 6th to 10th, 1987 at the Joint Research Centre of the European Communities, Ispra Italy. The purpose of the course was to familiarize scientists, active in

Agrometeorology and related fields, with remote sensing techniques and their potential applications in their respective disciplines. Conventional ground investigations in various fields of natural sciences such as hydrology, pedology and agrometeorology can be supplemented by a range of instruments carried by airborne or earth orbiting platforms. The last few years, in particular, have seen many developments in this respect and a growing amount of information can now be derived not only from dedicated earth resources satellites such as the LANDSAT and SPOT, but also from other platforms such as METEOSAT and the series of NOAA-TIROS. Future platforms (ERS-1, Space Station, etc.) with their advanced sensors will further broaden the range of applications open to the investigators. The use of these data sources, together with field investigations, can lead, at a reduced cost, to a better characterization of the spatial and temporal properties of natural systems.

Satellite Soil Moisture Retrieval - Prashant K Srivastava 2016-04-29
Satellite Soil Moisture Retrieval: Techniques and Applications offers readers a better understanding of the scientific underpinnings, development, and application of soil moisture retrieval techniques and their applications for environmental modeling and management, bringing together a collection of recent developments and rigorous applications of soil moisture retrieval techniques from optical and infrared datasets,

such as the universal triangle method, vegetation indices based approaches, empirical models, and microwave techniques, particularly by utilizing earth observation datasets such as IRS III, MODIS, Landsat7, Landsat8, SMOS, AMSR-e, AMSR2 and the upcoming SMAP. Through its coverage of a wide variety of soil moisture retrieval applications, including drought, flood, irrigation scheduling, weather forecasting, climate change, precipitation forecasting, and several others, this is the first book to promote synergistic and multidisciplinary activities among scientists and users working in the hydrometeorological sciences. Demystifies soil moisture retrieval and prediction Links soil moisture retrieval techniques with new satellite missions for earth and environmental science oriented problems Written to be accessible to a wider range of professionals with a common interest in geo-spatial techniques, remote sensing, sustainable water resource development, and earth and environmental issues

Field Measurements for Passive Environmental Remote Sensing - Nicholas R. Nalli 2022-09-27

Field Measurements for Environmental Remote Sensing: Instrumentation, Intensive Campaigns, and Satellite Applications is an academic synthesis of invaluable in situ measurements and techniques leveraged by the science of environmental remote sensing. Sections cover in situ datasets and observing methods used for satellite remote sensing applications and validation, synthesizing the various techniques utilized by well-established application areas under a common paradigm. The book serves as both a textbook for students (upper-level undergraduate to graduate level) and a reference book for practitioners and researchers in the atmospheric, oceanic and remote sensing fields. Presents chapters organized according to subdiscipline, with each written by established experts in their relevant field Includes literature reviews, case studies and applications for each subdivision Features a synthesis of the suite of invaluable in situ measurements and techniques leveraged by the science of environmental remote sensing

Microwave Radar and Radiometric Remote Sensing - Fawwaz Tayssir Ulaby 2014

Microwave Indices from Active and Passive Sensors for Remote Sensing Applications - Emanuele Santi 2019-10-21

Past research has comprehensively assessed the capabilities of satellite sensors operating at microwave frequencies, both active (SAR, scatterometers) and passive (radiometers), for the remote sensing of Earth's surface. Besides brightness temperature and backscattering coefficient, microwave indices, defined as a combination of data collected at different frequencies and polarizations, revealed a good sensitivity to hydrological cycle parameters such as surface soil moisture, vegetation water content, and snow depth and its water equivalent. The differences between microwave backscattering and emission at more frequencies and polarizations have been well established in relation to these parameters, enabling operational retrieval algorithms based on microwave indices to be developed. This Special Issue aims at providing an overview of microwave signal capabilities in estimating the main land parameters of the hydrological cycle, e.g., soil moisture, vegetation water content, and snow water equivalent, on both local and global scales, with a particular focus on the applications of microwave indices.

Introduction to the Physics and Techniques of Remote Sensing - Charles Elachi 2006-05-11

The science and engineering of remote sensing--theory and applications The Second Edition of this authoritative book offers readers the essential science and engineering foundation needed to understand remote sensing and apply it in real-world situations. Thoroughly updated to reflect the tremendous technological leaps made since the publication of the first edition, this book covers the gamut of knowledge and skills needed to work in this dynamic field, including: * Physics involved in wave-matter interaction, the building blocks for interpreting data * Techniques used to collect data * Remote sensing applications The authors have carefully structured and organized the book to introduce readers to the basics, and then move on to more advanced applications. Following an introduction, Chapter 2 sets forth the basic properties of electromagnetic waves and their interactions with matter. Chapters 3 through 7 cover the use of remote sensing in solid surface studies,

including oceans. Each chapter covers one major part of the electromagnetic spectrum (e.g., visible/near infrared, thermal infrared, passive microwave, and active microwave). Chapters 8 through 12 then cover remote sensing in the study of atmospheres and ionospheres. Each chapter first presents the basic interaction mechanism, followed by techniques to acquire, measure, and study the information, or waves, emanating from the medium under investigation. In most cases, a specific advanced sensor is used for illustration. The book is generously illustrated with fifty percent new figures. Numerous illustrations are reproduced in a separate section of color plates. Examples of data acquired from spaceborne sensors are included throughout. Finally, a set of exercises, along with a solutions manual, is provided. This book is based on an upper-level undergraduate and first-year graduate course taught by the authors at the California Institute of Technology. Because of the multidisciplinary nature of the field and its applications, it is appropriate for students in electrical engineering, applied physics, geology, planetary science, astronomy, and aeronautics. It is also recommended for any engineer or scientist interested in working in this exciting field.

Passive Microwave Remote Sensing of Land-Atmosphere Interactions -
2020-05-18

Microwave Remote Sensing of Sea Ice - Frank D. Carsey 1992-04-08
Published by the American Geophysical Union as part of the Geophysical Monograph Series, Volume 68. Human activities in the polar regions have undergone incredible changes in this century. Among these changes is the revolution that satellites have brought about in obtaining information concerning polar geophysical processes. Satellites have flown for about three decades, and the polar regions have been the subject of their routine surveillance for more than half that time. Our observations of polar regions have evolved from happenstance ship sightings and isolated harbor icing records to routine global records obtained by those satellites. Thanks to such abundant data, we now know a great deal about the ice-covered seas, which constitute about 10% of

the Earth's surface. This explosion of information about sea ice has fascinated scientists for some 20 years. We are now at a point of transition in sea ice studies; we are concerned less about ice itself and more about its role in the climate system. This change in emphasis has been the prime stimulus for this book.

Climate Impacts on Sustainable Natural Resource Management -
Pavan Kumar 2021-12-01

CLIMATE IMPACTS ON SUSTAINABLE NATURAL RESOURCE MANAGEMENT Climate change has emerged as one of the predominant global concerns of the 21st century. Statistics show that the average surface temperature of the Earth has increased by about 1.18°C since the late 19th century and the sea levels are rising due to the melting of glaciers. Further rise in the global temperature will have dire consequences for the survival of humans on the planet Earth. There is a need to monitor climatic data and associated drivers of changes to develop sustainable planning. The anthropogenic activities that are linked to climate change need scientific evaluation and must be curtailed before it is too late. This book contributes significantly in the field of sustainable natural resource management linked to climate change. Up to date research findings from developing and developed countries like India, Indonesia, Japan, Malaysia, Sri Lanka and the USA have been presented through selected case studies covering different thematic areas. The book has been organised into six major themes of sustainable natural resource management, determinants of forest productivity, agriculture and climate change, water resource management and riverine health, climate change threat on natural resources, and linkages between natural resources and biotic-abiotic stressors to develop the concept and to present the findings in a way that is useful for a wide range of readers. While the range of applications and innovative techniques is constantly increasing, this book provides a summary of findings to provide the updated information. This book will be of interest to researchers and practitioners in the field of environmental sciences, remote sensing, geographical information system, meteorology, sociology and policy studies related to natural resource management and climate

change.

Theory of Microwave Remote Sensing - Leung Tsang 1985-07-17

The first single-volume guide to the theoretical underpinnings and practical applications of microwave remote sensing, combining detailed coverage of mathematical derivations relevant to propagation and scattering in physical media with physical examples and practical applications to microwave theory. Covers scattering and emission by layered media, radiative transfer theory, solutions to radiative transfer equations with applications to remote sensing, analytic wave theory for scattering by layered random media, and scattering by random discrete scatterers.

Land Surface Remote Sensing in Continental Hydrology - Nicolas Baghdadi 2016-09-19

The continental hydrological cycle is one of the least understood components of the climate system. The understanding of the different processes involved is important in the fields of hydrology and meteorology. In this volume the main applications for continental hydrology are presented, including the characterization of the states of continental surfaces (water state, snow cover, etc.) using active and passive remote sensing, monitoring the Antarctic ice sheet and land water surface heights using radar altimetry, the characterization of redistributions of water masses using the GRACE mission, the potential of GNSS-R technology in hydrology, and remote sensing data assimilation in hydrological models. This book, part of a set of six volumes, has been produced by scientists who are internationally renowned in their fields. It is addressed to students (engineers, Masters, PhD), engineers and scientists, specialists in remote sensing applied to hydrology. Through this pedagogical work, the authors contribute to breaking down the barriers that hinder the use of Earth observation data. Provides clear and concise descriptions of modern remote sensing methods Explores the most current remote sensing techniques with physical aspects of the measurement (theory) and their applications Provides chapters on physical principles, measurement, and data processing for each technique described Describes optical remote

sensing technology, including a description of acquisition systems and measurement corrections to be made

Statistical Analysis and Combination of Active and Passive Microwave Remote Sensing Methods for Soil Moisture Retrieval - Kathrina Rötzer 2016

Introduction to Microwave Remote Sensing - Iain H. Woodhouse 2017-07-12

Introduction to Microwave Remote Sensing offers an extensive overview of this versatile and extremely precise technology for technically oriented undergraduates and graduate students. This textbook emphasizes an important shift in conceptualization and directs it toward students with prior knowledge of optical remote sensing: the author dispels any linkage between microwave and optical remote sensing. Instead, he constructs the concept of microwave remote sensing by comparing it to the process of audio perception, explaining the workings of the ear as a metaphor for microwave instrumentation. This volume takes an "application-driven" approach. Instead of describing the technology and then its uses, this textbook justifies the need for measurement then explains how microwave technology addresses this need. Following a brief summary of the field and a history of the use of microwaves, the book explores the physical properties of microwaves and the polarimetric properties of electromagnetic waves. It examines the interaction of microwaves with matter, analyzes passive atmospheric and passive surface measurements, and describes the operation of altimeters and scatterometers. The textbook concludes by explaining how high resolution images are created using radars, and how techniques of interferometry can be applied to both passive and active sensors.

Passive Microwave Remote Sensing of the Earth - Eugene A. Sharkov 2003-12-16

The most comprehensive description of the physical foundations of methods and instruments in the fields of passive remote sensing applied to investigations of the Earth, Solar system bodies and space. Emphasis

is placed on the physical aspects necessary to judge the possibilities and limitations of passive remote sensing methods in specific observation cases. Numerous practical applications and illustrations are given referring to airspace up-to-date experiments. Due to the lack in traditional separation on methods and instruments of remote sensing of the Earth and outerterrestrial space this book aims to supply more information in this field.

Remote Sensing of Aerosols, Clouds, and Precipitation - Tanvir Islam
2017-10-31

Remote Sensing of Aerosols, Clouds, and Precipitation compiles recent advances in aerosol, cloud, and precipitation remote sensing from new satellite observations. The book examines a wide range of measurements from microwave (both active and passive), visible, and infrared portions of the spectrum. Contributors are experts conducting state-of-the-art research in atmospheric remote sensing using space, airborne, and ground-based datasets, focusing on supporting earth observation satellite missions for aerosol, cloud, and precipitation studies. A handy reference for scientists working in remote sensing, earth science, electromagnetics, climate physics, and space engineering. Valuable for operational forecasters, meteorologists, geospatial experts, modelers, and policymakers alike. Presents new approaches in the field, along with further research opportunities, based on the latest satellite data Focuses on how remote sensing systems can be designed/developed to solve outstanding problems in earth and atmospheric sciences Edited by a dynamic team of editors with a mixture of highly skilled and qualified authors offering world-leading expertise in the field

Microwave Remote Sensing: Microwave remote sensing fundamentals and radiometry - Fawwaz Tayssir Ulaby 1981

Land Surface Processes in Hydrology - Soroosh Sorooshian
2013-06-29

General circulation models (GCMs) predict certain changes in the amounts and distribution of precipitation, but the conversion of these predictions of impacts on water resources presents novel problems in

hydrologic modeling, particularly with regard to the scale of the processes involved. Therefore improved, distributed GCMs are required. New remote sensing technologies provide the necessary spatially distributed data. However, there are many attendant problems with the translation of remotely sensed signals into hydrologically relevant information. This book elucidates how to improve the representation of land surface hydrologic processes in GCMs and in regional and global scale climate studies. It is divided into five sections: Models and Data; Precipitation; Soil Moisture; Evapotranspiration; Runoff.

The SAGE Handbook of Remote Sensing - Timothy A Warner
2009-06-18

'A magnificent achievement. A who's who of contemporary remote sensing have produced an engaging, wide-ranging and scholarly review of the field in just one volume' - Professor Paul Curran, Vice-Chancellor, Bournemouth University Remote Sensing acquires and interprets small or large-scale data about the Earth from a distance. Using a wide range of spatial, spectral, temporal, and radiometric scales Remote Sensing is a large and diverse field for which this Handbook will be the key research reference. Organized in four key sections: • Interactions of Electromagnetic Radiation with the Terrestrial Environment: chapters on Visible, Near-IR and Shortwave IR; Middle IR (3-5 micrometers); Thermal IR ; Microwave • Digital sensors and Image Characteristics: chapters on Sensor Technology; Coarse Spatial Resolution Optical Sensors ; Medium Spatial Resolution Optical Sensors; Fine Spatial Resolution Optical Sensors; Video Imaging and Multispectral Digital Photography; Hyperspectral Sensors; Radar and Passive Microwave Sensors; Lidar • Remote Sensing Analysis - Design and Implementation: chapters on Image Pre-Processing; Ground Data Collection; Integration with GIS; Quantitative Models in Remote Sensing; Validation and accuracy assessment; • Remote Sensing Analysis - Applications: LITHOSPHERIC SCIENCES: chapters on Topography; Geology; Soils; PLANT SCIENCES: Vegetation; Agriculture; HYDROSPHERIC and CRYOSPHERIC SCIENCES: Hydrosphere: Fresh and Ocean Water; Cryosphere; GLOBAL CHANGE AND HUMAN ENVIRONMENTS: Earth Systems; Human

Environments & Links to the Social Sciences; Real Time Monitoring Systems and Disaster Management; Land Cover Change Illustrated throughout, an essential resource for the analysis of remotely sensed data, the SAGE Handbook of Remote Sensing provides researchers with a definitive statement of the core concepts and methodologies in the discipline.

Thermal Microwave Radiation - Institution of Engineering and Technology 2006-05-19

Combines theoretical concepts with experimental results on thermal microwave radiation to increase the understanding of the complex nature of terrestrial media. Emphasising on radiative transfer models, this book covers the terrestrial aspects, from clear to cloudy atmosphere, precipitation, ocean and land surfaces, vegetation, snow and ice.

Sea-surface Temperature Estimation - C. J. Van Vliet 1967

An autocorrelation analysis of six temperature records from the North Pacific and North Atlantic up to 40 years in length showed the existence of an oscillatory function with period 1 year for all the stations studied, and of another oscillatory function with period 0.5 year for most of the stations. A regression model containing annual and semiannual oscillatory terms was found to provide a good statistical fit to the observed daily temperatures. No long-term trends were detected in the sequences of annual mean temperatures, but there were significant differences among these temperatures. (Author).

Sea Surface Temperature Estimation Using Active and Passive Microwave Remote Sensing - Nai-Yu Wang 1998

Derivation of Cloud Liquid Water from Groundbased Active and Passive Microwave Remote Sensors - Ulrich Löhnert 2003

Microwave Remote Sensing: Microwave remote sensing fundamentals and radiometry - Fawwaz Tayssir Ulaby 1981

Encyclopedia of Soil Science - Rattan Lal 2006

"Upholding the high standard of quality set by the previous edition, this

two-volume second edition offers a vast array of recent peer-reviewed articles. It showcases research and practices with added sections on ISTIC-World Soil Information, root growth and agricultural management, nitrate leaching management, podzols, paramos soils, water repellent soils, rare earth elements, and more. With hundreds of entries covering tillage, irrigation, erosion control, ground water, and soil degradation, the book offers quick access to all branches of soil science, from mineralogy and physics, to soil management, restoration, and global warming."--Publisher's website.

Passive Microwave Remote Sensing of the Earth - Fuzhong Weng 2018-01-23

This book covers the fundamentals of satellite microwave instrument calibration, remote sensing sciences and algorithms, as well as the applications of the satellite microwave observations in weather and climate research.

Introduction to Microwave Remote Sensing - Iain H. Woodhouse 2005-11-02

Introduction to Microwave Remote Sensing offers an extensive overview of this versatile and extremely precise technology for technically oriented undergraduates and graduate students. This textbook emphasizes an important shift in conceptualization and directs it toward students with prior knowledge of optical remote sensing: the author dispels any linkage between microwave and optical remote sensing. Instead, he constructs the concept of microwave remote sensing by comparing it to the process of audio perception, explaining the workings of the ear as a metaphor for microwave instrumentation. This volume takes an "application-driven" approach. Instead of describing the technology and then its uses, this textbook justifies the need for measurement then explains how microwave technology addresses this need. Following a brief summary of the field and a history of the use of microwaves, the book explores the physical properties of microwaves and the polarimetric properties of electromagnetic waves. It examines the interaction of microwaves with matter, analyzes passive atmospheric and passive surface measurements, and describes the operation of

altimeters and scatterometers. The textbook concludes by explaining how high resolution images are created using radars, and how techniques of interferometry can be applied to both passive and active sensors.

Physical Principles of Remote Sensing - W. G. Rees 2013

A quantitative yet accessible introduction to remote sensing techniques, this new edition covers a broad spectrum of Earth science applications.

Advances in Land Remote Sensing - Shunlin Liang 2008-03-11

It collects the review papers of the 9th International Symposium on Physical Measurements and Signatures in Remote Sensing (ISPMSRS). It systematically summarizes the past achievements and identifies the frontier issues as the research agenda for the near future. It covers all aspects of land remote sensing, from sensor systems, physical modeling, inversion algorithms, to various applications.

Remote Sensing of the Terrestrial Water Cycle - Venkataraman Lakshmi 2014-12-08

Remote Sensing of the Terrestrial Water Cycle is an outcome of the AGU Chapman Conference held in February 2012. This is a comprehensive volume that examines the use of available remote sensing satellite data as well as data from future missions that can be used to expand our knowledge in quantifying the spatial and temporal variations in the terrestrial water cycle. Volume highlights include: - An in-depth discussion of the global water cycle - Approaches to various problems in climate, weather, hydrology, and agriculture - Applications of satellite remote sensing in measuring precipitation, surface water, snow, soil moisture, groundwater, modeling, and data assimilation - A description of the use of satellite data for accurately estimating and monitoring the components of the hydrological cycle - Discussion of the measurement of multiple geophysical variables and properties over different landscapes on a temporal and a regional scale Remote Sensing of the Terrestrial Water Cycle is a valuable resource for students and research professionals in the hydrology, ecology, atmospheric sciences, geography, and geological sciences communities.

Radiation and Water in the Climate System - Ehrhard Raschke

2014-03-12

The study of the earth's climate requires reliable global data sets to validate numerical simulation models and to identify regional and global fluctuations and trends. This book presents ways to obtain such data from space-borne and ground-based measurements, both passive and active, over the entire electromagnetic spectrum. It describes the basics of such methods together with the most recent advancements and spans the field from clouds and the planetary radiation budget to surface processes and ocean properties. Each subject is backed by extensive reference lists to enable readers to probe more deeply.

Microwave Remote Sensing of Land Surfaces - Nicolas Baghdadi 2016-11-08

Microwave Remote Sensing of Land Surface: Techniques and Methods brings essential coverage of the space techniques of observation on continental surfaces. The authors explore major applications and provide detailed chapters on physical principles, physics of measurement, and data processing for each technique, bringing readers up-to-date descriptions of techniques used by leading scientists in the field of remote sensing and Earth observation. Presents clear-and-concise descriptions of modern methods Explores current remote sensing techniques that include physical aspects of measurement (theory) and their applications Provides physical principles, measurement, and data processing chapters that are included for each technique described [Microwave Remote Sensing: Radar remote sensing and surface scattering and emission theory](#) - Fawwaz Tayssir Ulaby 1981

Canada Centre for Remote Sensing - 1974

Microwave Remote Sensing - Fawwaz Tayssir Ulaby 1981

Monumental as a compilation of the present engineering state of the art of microwave remote sensing. -- International Journal of Remote Sensing **A Strategy for Active Remote Sensing Amid Increased Demand for Radio Spectrum** - National Academies of Sciences, Engineering, and Medicine 2015-09-21

Active remote sensing is the principal tool used to study and to predict short- and long-term changes in the environment of Earth - the atmosphere, the oceans and the land surfaces - as well as the near space environment of Earth. All of these measurements are essential to understanding terrestrial weather, climate change, space weather hazards, and threats from asteroids. Active remote sensing measurements are of inestimable benefit to society, as we pursue the development of a technological civilization that is economically viable, and seek to maintain the quality of our life. A Strategy for Active Remote Sensing Amid Increased Demand for Spectrum describes the threats, both current and future, to the effective use of the electromagnetic spectrum required for active remote sensing. This report offers specific recommendations for protecting and making effective use of the spectrum required for active remote sensing.

Radar Remote Sensing - Prashant K. K. Srivastava 2022-08-27

Radar Remote Sensing: Applications and Challenges advances the scientific understanding, development, and application of radar remote sensing using monostatic, bistatic and multi-static radar geometry. This multidisciplinary reference pulls together a collection of the recent developments and applications of radar remote sensing using different radar geometry and platforms at local, regional and global levels. Radar Remote Sensing is for researchers and practitioners with earth and environmental and meteorological sciences, who are interested in radar remote sensing in ground based scatterometer and SAR systems; air borne scatterometer and SAR systems; space borne scatterometer and SAR systems. Covers monostatic, bistatic and multi-static radar geometry. Features case studies, including experimental investigations, for practical application. Includes geophysical, oceanographical, and meteorological Synthetic Aperture Radar data.

Spectrum Management for Science in the 21st Century - National Research Council 2010-02-25

Radio observations of the cosmos are gathered by geoscientists using complex earth-orbiting satellites and ground-based equipment, and by radio astronomers using large ground-based radio telescopes. Signals

from natural radio emissions are extremely weak, and the equipment used to measure them is becoming ever-more sophisticated and sensitive. The radio spectrum is also being used by radiating, or "active," services, ranging from aircraft radars to rapidly expanding consumer services such as cellular telephones and wireless internet. These valuable active services transmit radio waves and thereby potentially interfere with the receive-only, or "passive," scientific services. Transmitters for the active services create an artificial "electronic fog" which can cause confusion, and, in severe cases, totally blinds the passive receivers. Both the active and the passive services are increasing their use of the spectrum, and so the potential for interference, already strong, is also increasing. This book addresses the tension between the active services' demand for greater spectrum use and the passive users' need for quiet spectrum. The included recommendations provide a pathway for putting in place the regulatory mechanisms and associated supporting research activities necessary to meet the demands of both users.

Non-Imaging Microwave and Millimetre-Wave Sensors for Concealed Object Detection - Boris Y. Kapilevich 2017-12-19

In response to the ever-increasing global threat of terrorist attacks, the personal screening industry has been growing at a rapid rate. Many methods have been developed for detecting concealed weapons and explosives on the human body. In this important new book, the authors discuss their experiences over the last decade designing and testing microwave and millimetre wave detection and screening systems. It includes examples of actual devices that they have built and tested, along with test results that were obtained in realistic scenarios. The book focuses on the development of non-imaging detection systems, which are similar to radar. These systems do not form a conventional image of the scene and the person(s) being screened. Instead, the sensors detect and analyze the effect that the body, and any concealed objects, has on a transmitted waveform. These systems allow remote detection of both metallic and dielectric devices concealed on the human body in both indoor and outdoor environments. The book discusses a number of

sensor types, including active millimetre wave sensors using the direct detection and the heterodyne approach, active microwave sensors for CNR-based object detection, passive millimetre wave sensors, and the role of shielding effects in operating non-imaging MM-wave sensors. The goal of this book is to systemize the test results obtained by the authors, helping specialists to develop improved screening systems in the future. Another goal is to show how the use of non-imaging systems can reduce the cost of the screening process.

Introduction to Microwave Remote Sensing - Iain H. Woodhouse
2005-11-02

Introduction to Microwave Remote Sensing offers an extensive overview of this versatile and extremely precise technology for technically oriented undergraduates and graduate students. This textbook emphasizes an important shift in conceptualization and directs it toward students with prior knowledge of optical remote sensing: the author

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