

Principles Of Modern Radar Basic Principles

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Principles of Modern Radar: Basic Principles is a comprehensive and modern textbook for courses in radar systems and technology at the college senior and graduate student level; a professional training textbook for formal in-house courses for new hires; a reference for ongoing study following a radar short course; and a self-study and professional reference book.

Principles of Modern Radar: Basic Principles v. 1 (Radar...
Principles of Modern Radar focuses on four key areas: Basic concepts, such as the the radar range equation and threshold detection; radar signal phenomenology, such as radar cross section models, clutter, atmospheric effects, and Doppler effects; descriptions of all major subsystems of modern radars, such as the antenna, transmitter, receiver, including modern architectural elements such as exciters, and advanced signal processors; and signal and data processing basics, from digital signal ...

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The IET Shop – Principles of Modern Radar
Principles of Modern Radar: Radar Applications is the third of the three-volume series of what was originally designed to be accomplished in one volume. As the final volume of the set, it finishes the original vision of a complete yet bounded reference for radar technology. This volume describes fifteen different system applications or class of

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"Principles of Modern Radar" ("POMR"), co-edited by Dr. Mark Richards, Dr. Bill Holm and Mr. Jim Scheer, is a two-volume set providing comprehensive coverage of the fundamentals of modern radar technology. The first volume, "Basic Principles", provides a highly accessible introduction to the physical principles, hardware building blocks, and core processing techniques applicable to a broad spectrum of radars.

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Principles of modern radar (Part 3 of 3) By Janine Love 11.08.2010 0. Share Post. Share on Facebook. Share on Twitter. If you are a professor, this looks like a must-have text for your class: Principles of Modern Radar: Basic Principles The New Face of Radar 101 – Modern and Comprehensive. If you are an engineer, it strikes me as a very ...

Principles of modern radar (Part 3 of 3) | EE Times
Modern radar systems are highly complex, leveraging the latest advances in technology and relying on sophisticated algorithms and processing techniques to yield exceptional products. Principals of Modern Radar is the first in a series, covering basic radar concepts, radar signal characteristics, radar subsystems, and basic radar signal processing.

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 anually 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.

This series will appeal to radar practitioners within military or government. The first volume was written as a textbook for courses in radar systems and technology and the second volume is aimed at practicing radar engineers and graduate level students. The third volume is designed to serve as a self-contained reference for those aiming to become experts in an advanced technology or application area. POMR: Radar Applications Volume 3 includes concise descriptions of the purposes, principal issues and radar methods found in a wide variety of current radar types. POMR: Advanced Techniques Volume 2 is a professional reference for practicing engineers that provides a stepping stone to advanced practice. POMR: Basic Principles Volume 1 focuses on 4 keys areas; basic concepts, radar signal phenomenology, major subsystems of modern radars and signal and data processing basics.

This second of three volumes in the Principles of Modern Radar series offers a much-needed professional reference for practicing radar engineers. It provides the stepping stones under one cover to advanced practice with overview discussions of the most commonly used techniques for radar design, thereby bridging readers to single-topic advanced books, papers, and presentations. It spans a gamut of exciting radar capabilities from exotic waveforms to ultra-high resolution 2D and 3D imaging methods, complex adaptive interference cancellation, multi-target tracking in dense scenarios, multiple-input, multiple-output (MIMO) and much more. All of this material is presented with the same careful balance of quantitative rigor and qualitative insight of Principles of Modern Radar: Basic Principles. Each chapter is likewise authored by recognized subject experts, with the rigorous editing for consistency and suggestions of numerous volunteer reviewers from the radar community applied throughout. Advanced academic and training courses will appreciate the sets of chapter-end problems for students, as well as worked solutions for instructors. Extensive reference lists show the way for further study.

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The important and fascinating topics of radar enjoy an extensive audience in industry and government but deserve more attention in undergraduate education to better prepare graduating engineers to meet the demands of modern mankind. Radar is not only one of the major applications of electronics and electromagnetic communications, but it is also a mature scientific discipline with significant theoretical and mathematical foundations that warrant an intellectual and educational challenge. Fundamental Principles of Radar is a textbook providing a first exposure to radar principles. It provides a broad concept underlying the basic principle of operations of most existing radar systems and maintains a good balance of mathematical rigor to convince readers without losing interest. The book provides an extensive exposition of the techniques currently being used for radar system design, analysis, and evaluation. It presents a comprehensive set of radar principles, including all features of modern radar applications, with their underlying derivations using simple mathematics. Coverage is limited to the main concepts of radar in order to present them in a systematic and organized fashion. Topics are treated not as abstruse and esoteric to the point of incomprehensibility, but the very complex and rich technology of radar is distilled into its fundamentals. The author's emphasis is on clarity without sacrificing rigor and completeness, thus making the book broad enough to satisfy a variety of backgrounds and interests. Thorough documentation provides an unusual degree of completeness for a textbook at this level, with interesting and sometimes thought-provoking content to make the subject even more appealing. Key Features: Covers a wide range of topics in radar systems Includes examples and exercises to reinforce the concepts presented and explain their applications Provides self-contained chapters useful for readers seeking selective topics Provides broad concepts underlying the basic principles of operations of most types of radars in use today Includes documentation to lead to further reading of interesting concepts and applications

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

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Signal and data processing basics, from digital signal processing (DSP) fundamentals, through detection, Doppler processing, waveforms and pulse compression, basic imaging concepts, and tracking fundamentals. While several established books address introductory radar systems, Principles of Modern Radar differs from these in its breadth of coverage, its emphasis on current methods (without losing sight of bedrock principles), and its adoption of an appropriate level of quantitative rigor for the intended audience of students and new professional hires. The manuscript for this book was reviewed by over 50 professionals in academia, military, and commercial enterprises. These reviewers were among thousands of potential users approached by the publisher and asked to share their expertise and experience in radar training and instruction. Their extensive comments, corrections, and insights ensure that Principles of Modern Radar will meet the needs of modern radar educators and students around the world. Written and edited by world-renowned radar instructors and critically reviewed by users before publication, this is truly a radar community-driven book.

A text and general reference on the design and analysis of radarsignals As radar technology evolves to encompass a growing spectrum ofapplications in military, aerospace, automotive, and other sectors,innovations in digital signal processing have risen to meet thememand. Presenting a long overdue, up-to-date, dedicated resourceon radar signals, the authors fill a critical gap in radartechnology literature. Radar Signals features in-depth coverage of the most prevalentclassical and modern radar signals used today, as well as newsignal concepts developed in recent years. Inclusion of key MATLABsoftware codes throughout the book demonstrates how theydramatically simplify the process of describing and analyzingcomplex signals. Topics covered include: * Matched filter and ambiguity function concepts * Basic radar signals, with both analytical and numericalanalysis * Frequency modulated and phase-coded pulses * Complete discussion of band-limiting schemes * Coherent LFM pulse trains-the most popular radar signal * Diversity in pulse trains, including stepped frequencypulses * Continuous-wave signals * Multicarrier phase-coded signals Combining lucid explanation, preferred signal tables, MATLAB codes, and problem sets in each chapter, Radar Signals is an essentialreference for professionals-and a systematic tutorial for anyone seeking to broaden their knowledge base in this dynamic field.

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