

Active Radar Cross Section Reduction

Theory and Applications

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Active Radar Cross Section Reduction Theory And Applications

Ying Liu, Yongtao Jia, Shuxi Gong



Active Radar Cross Section Reduction Theory And Applications:

Active Radar Cross Section Reduction Hema Singh, 2015 This book discusses the active and passive radar cross section estimation and techniques to examine the low observable aerospace platforms *Active Radar Cross Section Reduction* Hema Singh, Rakesh Mohan Jha, 2015-03-02 This book discusses the active and passive radar cross section RCS estimation and techniques to examine the low observable aerospace platforms It begins with the fundamentals of RCS followed by the dielectric magnetic and metamaterials parameters of the constituent materials and then explains various methods and the emerging trends followed in this area of study The RCS estimation of phased array including the mutual coupling effect is also presented in detail in the book The active RCS reduction is carefully touched upon through the performance of phased arrays sidelobe cancellers and mitigation of multipath effect Providing information on various adaptive algorithms like least mean square LMS recursive least square RLS and weighted least square algorithms the authors also mention the recent developments in the area of embedded antennas conformal load bearing antenna metamaterials and frequency selective surface FSS based RCS reduction Low Radar Cross Section HIS-Based Phased Array Hema Singh, Avinash Singh, 2020-08-16 The design and development of low radar cross section RCS phased array has been a challenging subject in stealth technology The frequency selective surface elements act as absorbers in specific frequency band and facilitate gain enhancement and reduction of antenna RCS This book presents a comprehensive EM design and analysis of such low profile patch arrays with high impedance surface based ground plane It explains how to determine radiation mode RCS of low profile antenna arrays with arbitrary configurations Detailed descriptions of design workflow of determining radiation and scattering behavior of antenna arrays have been supported with schematics tables and illustrations Aimed at engineers and researchers for RCS antenna engineers and graduate students in electrical engineering and electromagnetics it Discusses both radiation and scattering features of both planar and conformal HIS based low profile antennas Describes the theoretical background design simulations and analysis of low RCS phased array in detail Presents the physics behind the resultant radiation and scattering characteristics of designed antenna array Helps readers understand design and analysis of low RCS antenna array without any degradation in its radiation performance Includes figures schematics and illustrations to provide comprehensive descriptions of both radiation and scattering characteristics of phased arrays of different configurations Electromagnetic Nanomaterials Inamuddin, Tariq Altalhi, 2023-10-17 **ELECTROMAGNETIC METAMATERIALS** The book presents an overview of metamaterials current state of development in several domains of application such as electromagnetics electrical engineering classical optics microwave and antenna engineering solid state physics materials sciences and optoelectronics Metamaterials have become a hot topic in the scientific community in recent years due to their remarkable electromagnetic properties Metamaterials have the ability to alter electromagnetic and acoustic waves in ways that bulk materials cannot Electromagnetic Metamaterials Properties and

Applications discusses a wide range of components to make metamaterial engineered devices It gives an overview of metamaterials current stage of development in a variety of fields such as remote aerospace applications medical appliances sensor detectors and monitoring devices of infrastructure crowd handling smart solar panels radomes high gain antennas lens high frequency communication on the battlefield ultrasonic detectors and structures to shield from earthquakes Audience Researchers and engineers in electromagnetic and electrical engineering classical optics microwave and antenna engineering solid state physics materials sciences and optoelectronics *Introduction to Radar Using Python and MATLAB* Lee Andrew (Andy) Harrison, 2019-10-31 This comprehensive resource provides readers with the tools necessary to perform analysis of various waveforms for use in radar systems It provides information about how to produce synthetic aperture SAR images by giving a tomographic formulation and implementation for SAR imaging Tracking filter fundamentals and each parameter associated with the filter and how each affects tracking performance are also presented Various radar cross section measurement techniques are covered along with waveform selection analysis through the study of the ambiguity function for each particular waveform from simple linear frequency modulation LFM waveforms to more complicated coded waveforms The text includes the Python tool suite which allows the reader to analyze and predict radar performance for various scenarios and applications Also provided are MATLAB scripts corresponding to the Python tools The software includes a user friendly graphical user interface GUI that provides visualizations of the concepts being covered Users have full access to both the Python and MATLAB source code to modify for their application With examples using the tool suite are given at the end of each chapter this text gives readers a clear understanding of how important target scattering is in areas of target detection target tracking pulse integration and target discrimination *Evolution of the USAF Strategic Nuclear Bomber Deterrent* George J. Refuto, 2023-04-28 About the Book In this research study former Defense Department consultant George Refuto traces the technological evolution of USAF long range strategic nuclear bomber aircraft during and after the Cold War as well as the development of their missions and utilization of US nuclear bombers in 21st century regional and global military threat scenarios Five distinct periods are covered in this study World War I 1914 1918 the Interwar Period 1919 1939 World War II 1939 1945 the Cold War 1946 1991 and the Post Cold War Period 1991 present with an emphasis on the latter two In his writing Refuto focuses on developing a model that encompasses bombing and air defense for each period and showing how concepts technologies and implementations of strategic bombing have changed and influenced the current level of development of the USAF strategic nuclear bomber force and doctrine and what is projected for the future About the Author George J Refuto is a former Defense Department consultant who has extensive academic and professional experience in the fields of military history weapon systems technology intelligence surveillance reconnaissance systems and US national security defense policy He has worked in both the defense and intelligence communities and holds a master s degree in International Affairs from Columbia University with specializations in US USSR strategic and theater tactical nuclear forces

undersea and airborne naval weapons systems and Russian Soviet politics He has previously published Evolution of the US Sea based Nuclear Missile Deterrent Warfighting Capabilities and is working on a third book on the US ICBM deterrent

International Youth Conference on Electronics, Telecommunications and Information Technologies Elena Velichko, Maksim Vinnichenko, Victoria Kapralova, Yevgeni Koucheryavy, 2020-11-27 This volume presents peer reviewed and selected papers of the International Youth Conference on Electronics Telecommunications and Information Technologies YETI 2020 held in Peter the Great St Petersburg Polytechnic University St Petersburg on July 10 11 2020 It discusses current trends and major advances in electronics telecommunications optical and information technologies focusing in particular on theoretical and practical aspects of developing novel devices and materials improving data processing methods and technologies The conference brings together young researchers and early career scientists participating in a series of lectures and presentations establishing contacts with potential partners sharing new project ideas and starting new collaborations

Antenna Radar Cross Section: Theory and Design Ying Liu, Yongtao Jia, Shuxi Gong, 2025-04-19 This is the first book to focus specifically on antenna RCS reduction theory and design approaches It covers both principles and engineering practice and provides an in depth study of a number of important topics including fundamental theory antenna and array analysis models the rapid numerical computation method and various low RCS antenna design methods The comprehensive and systematic discussion of practical issues in antenna RCS reduction makes it an ideal resource for readers interested in practical solutions to antenna stealth particularly researchers engineers and graduate students in the fields of microwave engineering electrical and electronic engineering and telecommunications engineering

Probe Suppression in Conformal Phased Array Hema Singh, Mausumi Dutta, P. S. Neethu, 2016-08-23 This book considers a cylindrical phased array with microstrip patch antenna elements and half wavelength dipole antenna elements The effect of platform and mutual coupling effect is included in the analysis The non planar geometry is tackled by using Euler s transformation towards the calculation of array manifold Results are presented for both conducting and dielectric cylinder The optimal weights obtained are used to generate adapted pattern according to a given signal scenario It is shown that array along with adaptive algorithm is able to cater to an arbitrary signal environment even when the platform effect and mutual coupling is taken into account This book provides a step by step approach for analyzing the probe suppression in non planar geometry Its detailed illustrations and analysis will be a useful text for graduate and research students scientists and engineers working in the area of phased arrays low observables and stealth technology

Theory, Design, and Applications of Unmanned Aerial Vehicles A. R. Jha, Ph.D., 2016-11-18 This book provides a complete overview of the theory design and applications of unmanned aerial vehicles It covers the basics including definitions attributes manned vs unmanned design considerations life cycle costs architecture components air vehicle payload communications data link and ground control stations Chapters cover types and civilian roles sensors and characteristics alternative power communications and data links conceptual design human machine

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sleep-deprived, poorly nourished, frenzied pace ... Review of The depression cure: The 6-step program to ... by D Webster · 2010 — Reviews the book, The Depression Cure: The 6-Step Program to Beat Depression without Drugs by Stephen S. Ilardi (see record 2009-04238-000). The 6-Step Program to Beat Depression without Drugs The Depression Cure: The 6-Step Program to Beat Depression without Drugs - Kindle edition by Ilardi, Stephen S.. Download it once and read it on your Kindle ... How to beat depression - without drugs | Health & wellbeing Jul 19, 2010 — Dr Steve Ilardi is slim and enthusiastic, with intense eyes. The clinical psychologist is 4,400 miles away, in Kansas, and we are chatting ... 6 Steps to Beating Depression Many people struggling with depression feel stuck, unsure of what to do or how to move forward. Counseling, medication, and mental health programs are not.