

1. Record Nr.	UNINA9910829955603321
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Titolo	Time-Domain Electromagnetic Reciprocity in Antenna Modeling // Martin Stumpf
Pubbl/distr/stampa	Hoboken : , : Wiley, , c2020 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2019]
ISBN	1-119-61237-3 1-119-61230-6
Descrizione fisica	1 online resource (249 pages)
Collana	IEEE Press Series on Electromagnetic Wave Theory
Disciplina	621.3824
Soggetti	Antennas (Electronics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	14.5 EXTENSION TO A WIDE-STRIP ANTENNA
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro; TITLE PAGE; COPYRIGHT PAGE; CONTENTS; PREFACE; ACRONYMS; CHAPTER 1 INTRODUCTION; 1.1 SYNOPSIS; 1.2 PREREQUISITES; 1.2.1 One-Sided Laplace Transformation; 1.2.2 Lorentz's Reciprocity Theorem; CHAPTER 2 CAGNIARD-DEHOOP METHOD OF MOMENTS FOR THIN-WIRE ANTENNAS; 2.1 PROBLEM DESCRIPTION; 2.2 PROBLEM FORMULATION; 2.3 PROBLEM SOLUTION; 2.4 ANTENNA EXCITATION; 2.4.1 Plane-Wave Excitation; 2.4.2 Delta-Gap Excitation; ILLUSTRATIVE EXAMPLE; CHAPTER 3 PULSED EM MUTUAL COUPLING BETWEEN PARALLEL WIRE ANTENNAS; 3.1 PROBLEM DESCRIPTION; 3.2 PROBLEM FORMULATION; 3.3 PROBLEM SOLUTION CHAPTER 4 INCORPORATING WIRE-ANTENNA LOSSES4.1 MODIFICATION OF THE IMPEDANCE MATRIX; CHAPTER 5 CONNECTING A LUMPED ELEMENT TO THE WIRE ANTENNA; 5.1 MODIFICATION OF THE IMPEDANCE MATRIX; CHAPTER 6 PULSED EM RADIATION FROM A STRAIGHT WIRE ANTENNA; 6.1 PROBLEM DESCRIPTION; 6.2 SOURCE-TYPE REPRESENTATIONS FOR THE TD RADIATED EM FIELDS; 6.3 FAR-FIELD TD RADIATION CHARACTERISTICS; CHAPTER 7 EM RECIPROCITY BASED CALCULATION OF TD RADIATION CHARACTERISTICS; 7.1 PROBLEM DESCRIPTION; 7.2 PROBLEM SOLUTION; ILLUSTRATIVE NUMERICAL EXAMPLE CHAPTER 8 INFLUENCE OF A WIRE SCATTERER ON A TRANSMITTING WIRE ANTENNA8.1 PROBLEM DESCRIPTION; 8.2 PROBLEM SOLUTION;

ILLUSTRATIVE NUMERICAL EXAMPLE; CHAPTER 9 INFLUENCE OF A LUMPED LOAD ON EM SCATTERING OF A RECEIVING WIRE ANTENNA; 9.1 PROBLEM DESCRIPTION; 9.2 PROBLEM SOLUTION; ILLUSTRATIVE NUMERICAL EXAMPLE; CHAPTER 10 INFLUENCE OF A WIRE SCATTERER ON A RECEIVING WIRE ANTENNA; 10.1 PROBLEM DESCRIPTION; 10.2 PROBLEM SOLUTION; ILLUSTRATIVE NUMERICAL EXAMPLE; CHAPTER 11 EM-FIELD COUPLING TO TRANSMISSION LINES; 11.1 INTRODUCTION; 11.2 PROBLEM DESCRIPTION; 11.3 EM-FIELD-TO-LINE INTERACTION 11.4 RELATION TO AGRAWAL COUPLING MODEL11.5 ALTERNATIVE COUPLING MODELS BASED ON EM RECIPROCITY; 11.5.1 EM Plane-Wave Incidence; 11.5.2 Known EM Source Distribution; CHAPTER 12 EM PLANE-WAVE INDUCED THEVENIN'S VOLTAGE ON TRANSMISSION LINES; 12.1 TRANSMISSION LINE ABOVE THE PERFECT GROUND; 12.1.1 Thevenin's Voltage at  $x = x_1$ ; 12.1.2 Thevenin's Voltage at  $x = x_2$ ; 12.2 NARROW TRACE ON A GROUNDED SLAB; 12.2.1 Thevenin's Voltage at  $x = x_1$ ; 12.2.2 Thevenin's Voltage at  $x = x_2$ ; ILLUSTRATIVE NUMERICAL EXAMPLE; CHAPTER 13 VED-INDUCED THEVENIN'S VOLTAGE ON TRANSMISSION LINES 13.1 TRANSMISSION LINE ABOVE THE PERFECT GROUND13.1.1 Excitation EM Fields; 13.1.2 Thevenin's Voltage at  $x = x_1$ ; 13.1.3 Thevenin's Voltage at  $x = x_2$ ; 13.2 INFLUENCE OF FINITE GROUND CONDUCTIVITY; 13.2.1 Excitation EM Fields; 13.2.2 Correction to Thevenin's Voltage at  $x = x_1$ ; 13.2.3 Correction to Thevenin's Voltage at  $x = x_2$ ; ILLUSTRATIVE NUMERICAL EXAMPLE; CHAPTER 14 CAGNIARD-DEHOOP METHOD OF MOMENTS FOR PLANAR-STRIP ANTENNAS; 14.1 PROBLEM DESCRIPTION; 14.2 PROBLEM FORMULATION; 14.3 PROBLEM SOLUTION; 14.4 ANTENNA EXCITATION; 14.4.1 Plane-Wave Excitation; 14.4.2 Delta-Gap Excitation

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## Sommario/riassunto

Describes applications of time-domain EM reciprocity and the Cagniard-deHoop technique to achieve solutions to fundamental antenna radiation and scattering problems. This book offers an account of applications of the time-domain electromagnetic "TD EM" reciprocity theorem for solving selected problems of antenna theory. It focuses on the development of both TD numerical schemes and analytical methodologies suitable for analyzing TD EM wave fields associated with fundamental antenna topologies. Time-Domain Electromagnetic Reciprocity in Antenna Modeling begins by applying the reciprocity theorem to formulate a fundamentally new TD integral equation technique—the Cagniard-deHoop method of moments "CdH-MoM"—regarding the pulsed EM scattering and radiation from a thin-wire antenna. Subsequent chapters explore the use of TD EM reciprocity to evaluate the impact of a scatterer and a lumped load on the performance of wire antennas and propose a straightforward methodology for incorporating ohmic loss in the introduced solution methodology. Other topics covered in the book include the pulsed EM field coupling to transmission lines, formulation of the CdH-MoM concerning planar antennas, and more. In addition, the book is supplemented with simple MATLAB code implementations, so that readers can test EM reciprocity by conducting "numerical" experiments. In addition, this text: . Applies the thin-sheet boundary conditions to incorporate dielectric, conductive and plasmonic properties of planar antennas. Provides illustrative numerical examples that validate the described methodologies. Presents analyzed problems at a fundamental level so that readers can fully grasp the underlying principles of solution methodologies. Includes appendices to supplement material in the book. Time-Domain Electromagnetic Reciprocity in Antenna Modeling is an excellent book for researchers and professors in EM modeling and for applied researchers in the

industry.

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