

ANTENNAS AND WAVE PROPAGATION

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P R E F A C E

Antenna and wave propagation are the two key subjects in the applications of radar, wireless communication, TV, astronomic research, mobile communication and others. The book's main objective is to introduce the fundamental principles of antenna theory and to apply them to the analysis, design and measurements of antennae. Applications are made to some of the most basic and practical configuration, such as linear dipoles, loops, arrays, broadband, and frequency-independent antennae, aperture, horn antennae, microstrip antennae, and reflectors antennae.

The primary purpose is to emphasize the understanding of principles and the development of techniques for examining and designing antenna systems for use by practicing engineers as well as students. Antenna theory and design covers antennae from four perspectives: antenna fundamentals, analysis, design and measurement techniques and of popular antennae. The emergence of antenna theory from Maxwell's equations is developed, along with a physical explanation of how antennae radiate. The five types of antenna, viz. electrically small, resonant, broadband, aperture and array antennae are introduced in the book.

This book is designed to meet the needs of electronics and electrical communication engineering students at the senior undergraduate, beginning graduate levels, AMIE, and those of practising engineers.

Salient Features

- Topic of antennae discussed with a background of electromagnetic

- Coverage of wave propagation in great detail
- Updated coverage of technological trends taking place in the field of antennae
- Focus on application aspects with dedicated coverage on *Special Antenna and Applications & Numerical Techniques for Antenna Analysis*
- Rich pedagogy with real life photographs of modern antennae
- MATLAB examples

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We wish to record our sincere gratitude to the Managing Director **Er. B. Maha Ajay Prasath**, Mahendra College of Engineering, for his constant encouragement and kind support in all our endeavors.

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 *Mr. D. Balaji*

 *Mrs. S. Meera*

 *Mrs. K. Jayanthi*



Thirumigu. M.G.BHARATHKUMAR

Founder & Chairman, Mahendra Educational Trust

Forward

"Computing in their capacity as a tool, computers will be but a ripple on the surface of our culture. In their capacity as intellectual challenge, they are without precedent in the cultural history of mankind".

-Edsger Dijkstra, 1972 Turing Award Lecture

The ECE Department seeks to educate engineers who will possess the basic concepts, tools, skills, and vision necessary to enhance the technological and economic competitiveness of society. This fact, combined with the undeniable impact of Electronics and Communication Engineering on the modern world, demands an introductory college text book comparable with commonly-used textbooks in physics, chemistry, or biology. Accordingly, this book is intended to meet the need for an introductory college text in ECE. The distinctive feature of the book is that it has broader coverage of the field than is found in many texts that are currently in use.

I am delighted to note that the Faculties of Electronics and Communication Engineering of Mahendra College of Engineering Mr. D.Balaji along with Mrs.S.Meera And Mrs.K.Jayanthi have written this book on "ANTENNA WAVE AND PROPAGATION" nicely, for the benefit of student community. They have accomplished this goal, and I trust their work will encourage and enlighten all who have an interest in Antenna Theory, Wave Propagation and the growing role on Telecommunication sector in the modern world.

M.G.BHARATHKUMAR

Founder & Chairman, Mahendra Educational Trust

Dedicated
to
Our Family, Friends & Students

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