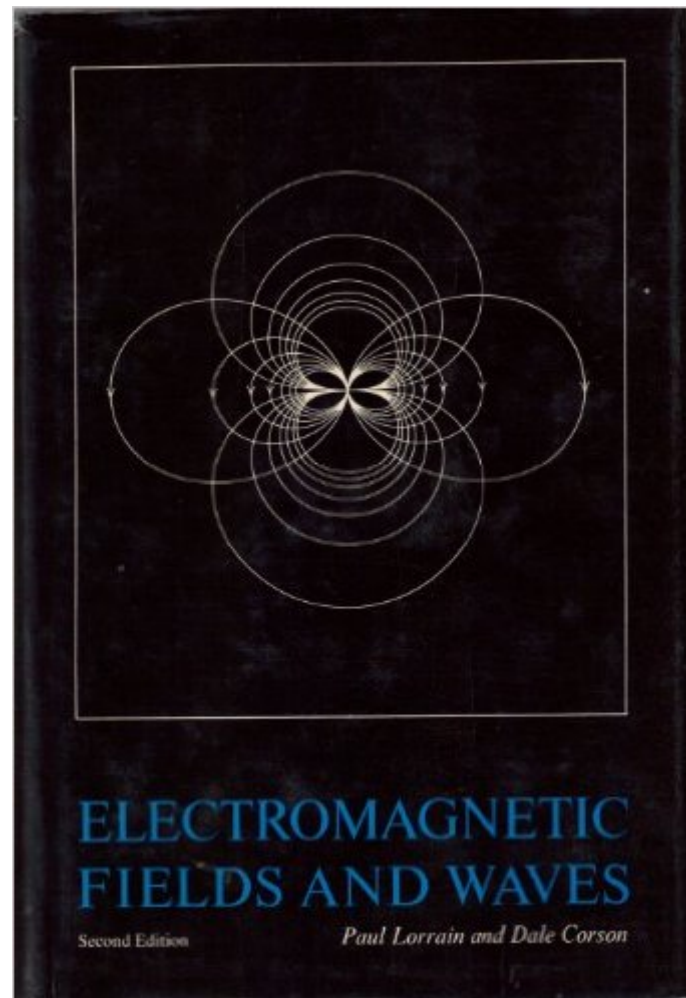


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Electromagnetic Fields And Waves



Synopsis

Book by Paul Lorrain, Dale Corson

Book Information

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This book is intended primarily for students of Physics or Electrical Engineering at the junior or senior levels, although some schools will prefer to use it with first-year graduate students. The book should also be useful for scientists and engineers who wish to review the subject. The aim of this book is to give the reader a working knowledge of the basic concepts of electromagnetism. Indeed, as Alfred North Whitehead stated, half a century ago, "Education is the acquisition of the art of the utilization of knowledge." This explains the relatively large number of examples and problems. It also explains why we have covered fewer subjects more thoroughly. For instance, Laplace's equation is solved in rectangular and in spherical coordinates, but not in cylindrical coordinates. CONTENTS A chapter on vectors (Chapter 1), a discussion of Legendre's differential equation (Section 4.5), an appendix on the technique that involves replacing $\cos wt$ by $\exp j\omega t$, and an appendix on wave propagation. After the introductory chapter on vectors, Chapters 2, 3, and 4 describe electrostatic fields, both in a vacuum and in dielectrics. All of Chapter 4 is devoted to the solution of Laplace's and of Poisson's equations. Chapter 5 is a short exposition of the basic concepts of special relativity, with little reference to electric charges. It requires nothing more, in the way of mathematics, than elementary differential calculus and the vector analysis of Chapter 1. Chapter 6 contains a demonstration of Maxwell's equations that is based on Coulomb's law and on the Lorentz transformation and which is valid only for the case where the charges move at constant

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