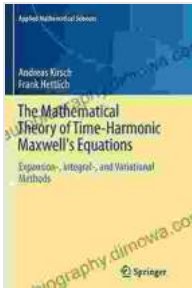


The Mathematical Theory of Time-Harmonic Maxwell Equations: A Comprehensive Guide



The Mathematical Theory of Time-Harmonic Maxwell's Equations: Expansion-, Integral-, and Variational Methods (Applied Mathematical Sciences Book 190)

by Andreas Kirsch

★★★★☆ 4.4 out of 5

Language : English

File size : 6799 KB

Screen Reader : Supported

Print length : 350 pages

X-Ray for textbooks : Enabled



The Mathematical Theory of Time-Harmonic Maxwell Equations unveils the mathematical foundations underlying the behavior of electromagnetic waves in time-varying media. This comprehensive guide explores the fundamental concepts, emerging applications, and cutting-edge research in this captivating field.

Fundamental Concepts

Time-harmonic Maxwell equations are a system of partial differential equations that describe the propagation of electromagnetic waves in materials with time-varying permittivity and permeability. These equations are derived from the fundamental principles of electromagnetism, namely Gauss's law, Faraday's law, Ampere's law, and the constitutive relations.

The solutions to the time-harmonic Maxwell equations provide insights into the behavior of electromagnetic waves in a wide range of applications, including:

- Antenna design
- Microwave engineering
- Optical fibers
- Metamaterials
- Computational electromagnetics

Applications and Research

The Mathematical Theory of Time-Harmonic Maxwell Equations finds practical applications in various fields of science and engineering.

Researchers are actively pursuing groundbreaking research in areas such as:

- **Inverse scattering problems:** Determining the shape and properties of an object from scattered electromagnetic waves.
- **Cloaking and invisibility:** Designing materials that can manipulate electromagnetic waves to achieve invisibility.
- **Metamaterials:** Creating artificial materials with extraordinary electromagnetic properties not found in nature.

- **Computational electromagnetics:** Developing numerical techniques to solve complex electromagnetic problems.

The Book: A Comprehensive Guide

The book "The Mathematical Theory of Time-Harmonic Maxwell Equations" provides a comprehensive overview of this fascinating field. Written by leading experts in the area, this book offers:

- A rigorous mathematical foundation
- In-depth coverage of fundamental concepts
- Real-world applications and case studies
- Cutting-edge research developments
- Exercises and problems for practice

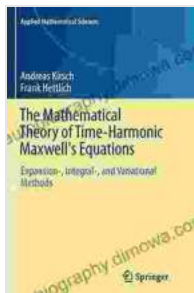
Whether you are a student, researcher, or engineer, this book is an indispensable resource for understanding the mathematical theory behind time-harmonic Maxwell equations and its applications in various fields.

The Mathematical Theory of Time-Harmonic Maxwell Equations provides a deep understanding of the fundamental principles governing the behavior of electromagnetic waves in time-varying media. This comprehensive guide explores the theoretical foundations, practical applications, and cutting-edge research in this captivating field, offering invaluable insights for readers from diverse backgrounds.

Call to Action

Embark on a journey of discovery today! Free Download your copy of "The Mathematical Theory of Time-Harmonic Maxwell Equations" and delve into the fascinating world of electromagnetism.

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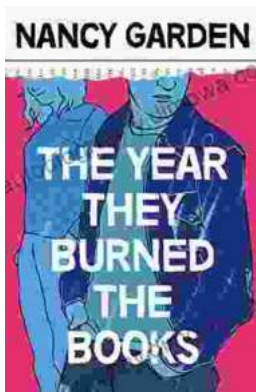
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