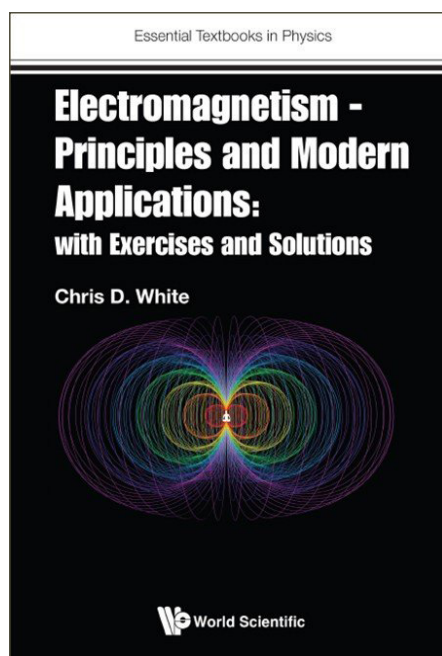


## Electromagnetism – Principles and Modern Applications

With Exercises and Solutions



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### ABOUT THE BOOK

Electromagnetism is one of the four fundamental forces in nature, and underlies almost everything we experience in our daily lives, whether we realise it or not. The complete theory was first written down in the late 19th century, and remains an essential part of a scientific education. The mathematics behind the theory, however, can be intimidatingly complex. Furthermore, it is not always clear to beginners why the theory is either useful or interesting, nor how it relates to modern research in theoretical physics.

The aim of this book is to guide students towards a detailed understanding of the full theory of electromagnetism, including its practical applications. Later chapters introduce more modern formulations of the theory than are found in traditional undergraduate courses, thus bridging the gap between a first course in electromagnetism, and the advanced concepts needed for further study in physics. The final chapter reviews exciting current research stating that possible theories of (quantum) gravity may be much more closely related to electromagnetism than previously thought.

Throughout the book, an informal conversational style is used to demystify intimidating concepts. Relevant mathematical ideas are introduced in a self-contained manner, and exercises are provided with full solutions to aid understanding. This book is essential reading for anyone undertaking a physics degree, but will also be of interest to engineers and chemists.

### READERSHIP

Beginning and advanced undergraduates in Physics. It will also be useful for graduate students in theoretical physics, and to researchers in theoretical or applied physics.

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