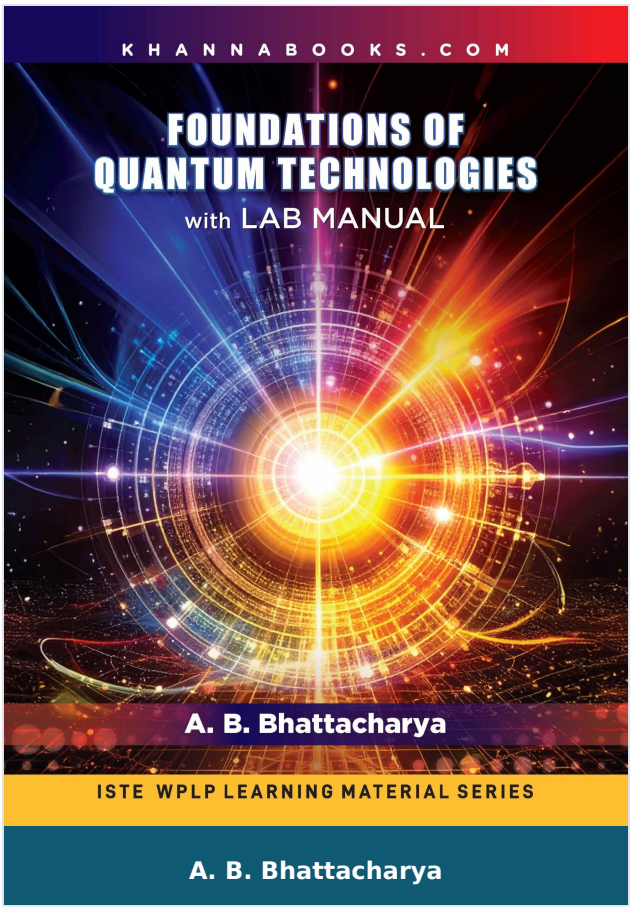


# Foundations of Quantum Technology with Lab Manual

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## Product Description

**Foundations of Quantum Technology with Lab Manual**

**Explore the Future — Learn the Fundamentals — Master the Tools**

Step into the next revolution in science and technology with Foundations of Quantum Technologies (with Lab Manual) — an all-encompassing guide designed for students, educators, and researchers aiming to understand and work with the principles and real-world applications of quantum mechanics.

**WHAT'S INSIDE**

**Part I: Fundamentals of Quantum Mechanics**

Begin your journey with a deep dive into the origin and evolution of quantum theory. Understand wave-particle duality, measurement postulates, and the ground-breaking concept of quantum entanglement. Enrich your learning with multiple-choice questions, solved numerical problems, and project ideas at the end of each chapter.

**Part II: Core Quantum Technologies**

From quantum computing and cryptography to teleportation and metrology, discover how abstract quantum principles power the innovations shaping tomorrow. Learn algorithms like Shor's and Grover's, and explore secure communication via the BB84 Protocol.

**Part III: Experimental and Practical Aspects**

Get hands-on with quantum hardware platforms like superconducting qubits, trapped ions, and photonic systems. Study experimental realizations from IBM Q, Google Sycamore, and more. It includes detailed insights into quantum gate implementation and optical elements in labs.

**Part IV: Lab Manual**

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Bridge theory with practice in your own quantum lab. Conduct real-world experiments on polarization, entanglement, BB84 protocol, and quantum algorithms using cloud platforms. Learn essential tools like QuTiP, Qiskit, and Cirq for simulating and analyzing quantum systems.

**Also Includes**

- Conceptual short Q&A
- MCQs and numerical problems with solutions
- Design-driven project tasks
- Oral questions for viva preparation
- Reference tables for quick access

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- : Lab Manual


## Author

**A. B. Bhattacharya**

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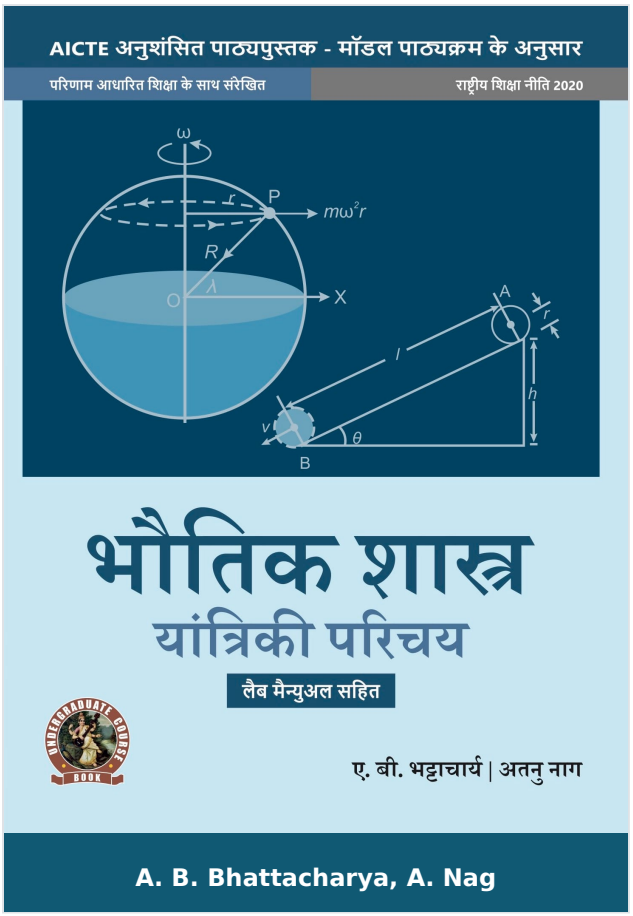


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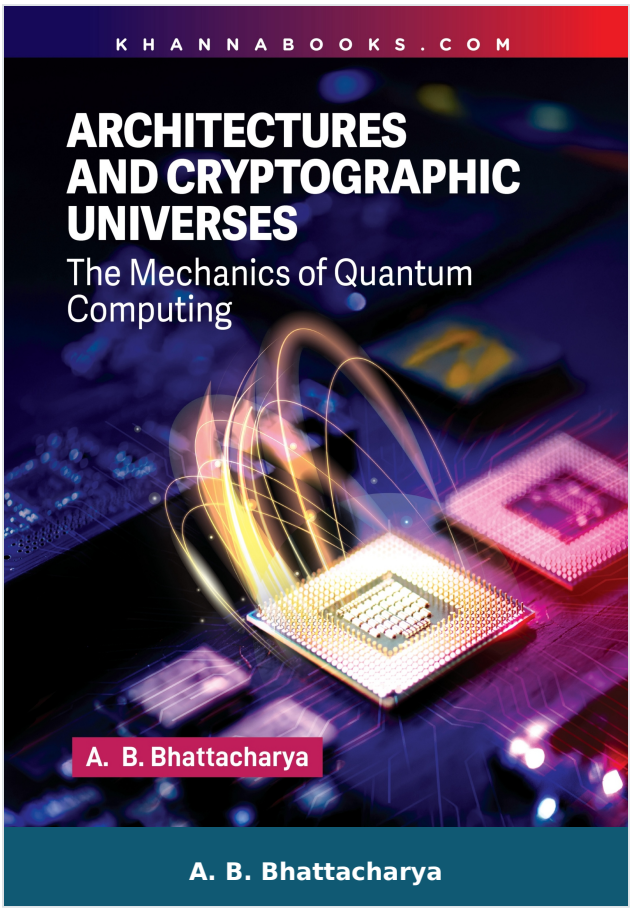


# Architectures And Cryptographic Universes (The Mechanics of Quantum Computing)

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**Architectures And Cryptographic Universes (The Mechanics of Quantum Computing)**

From the basic designs of quantum computers to the latest advances in quantum security. “Architectures and Cryptographic Universes: The Mechanics of Quantum Computing” takes you on a complete journey through the world of quantum technology.

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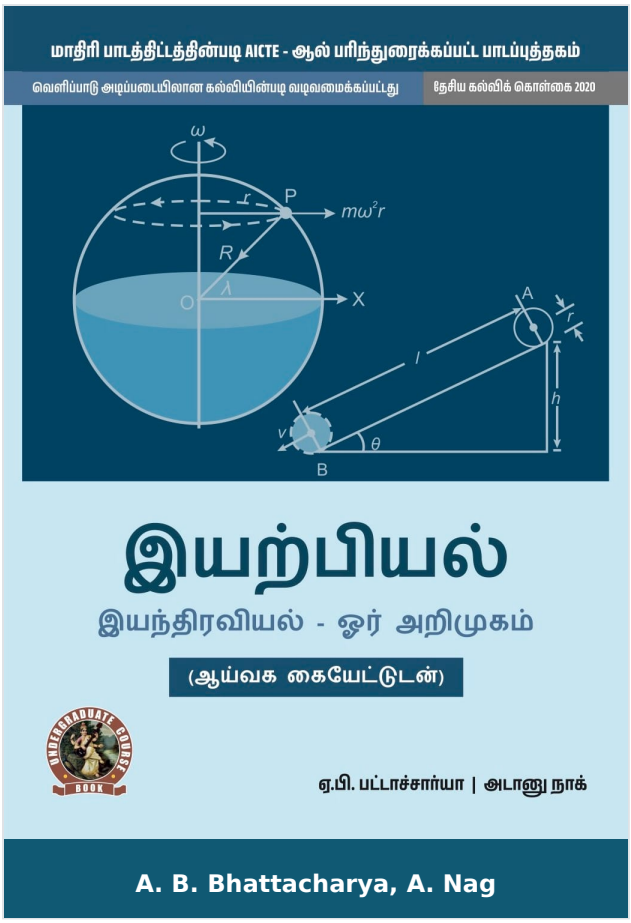


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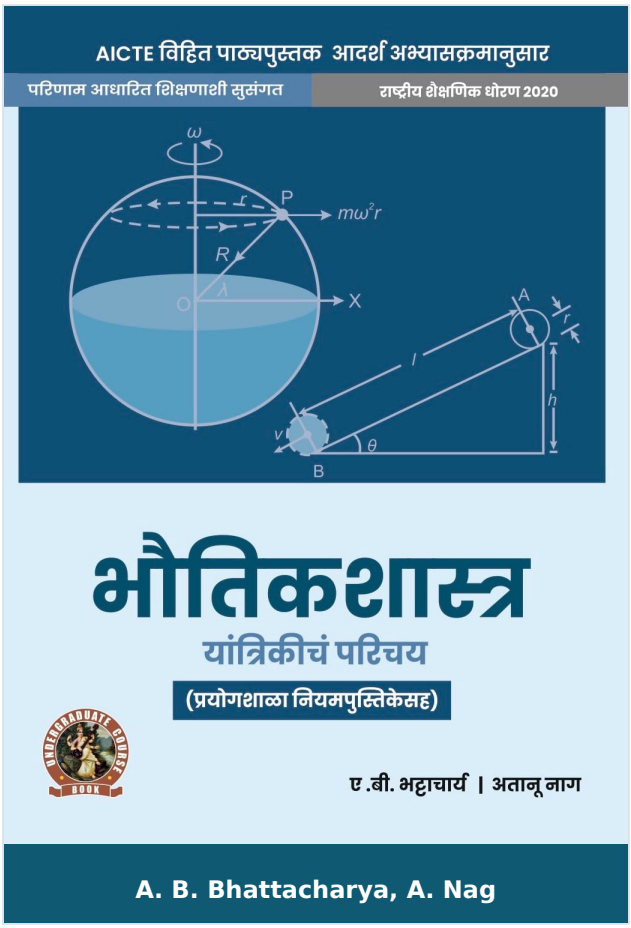


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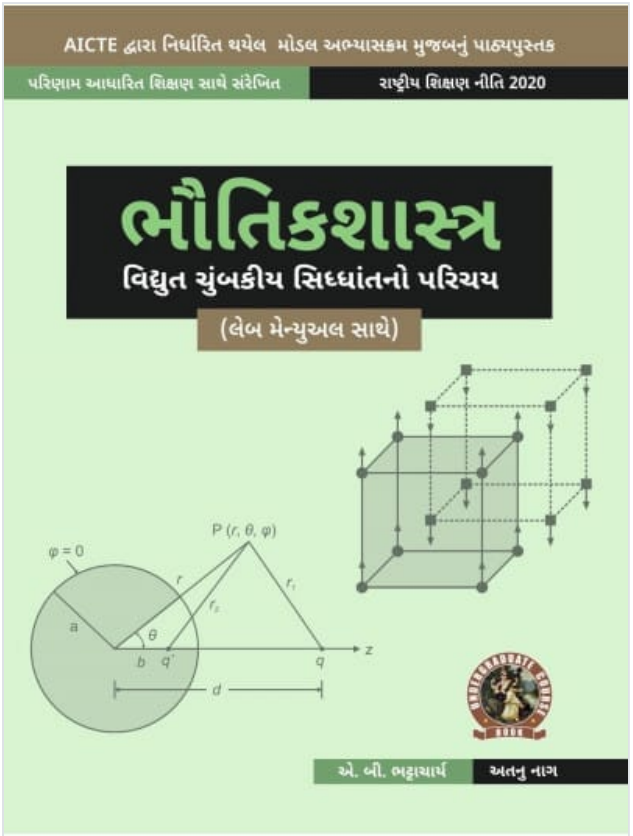


A. B. Bhattacharya, A. Nag

# Physics (Introduction to Electromagnetic Theory) (with Lab Manual)

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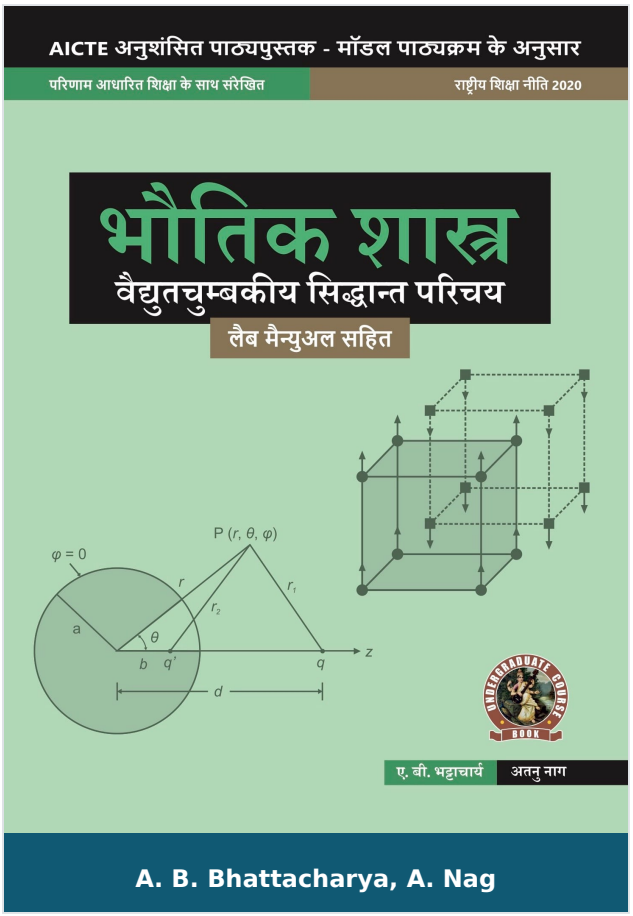


# Physics (Introduction to Electromagnetic Theory) (with Lab Manual)

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## Product Description

Engineering Physics: Introduction to Electromagnetic Theory has been written for the first year students of B. Tech Engineering Degree Courses of all Indian Universities following the guideline and syllabus as recommended by AICTE. The book, written in a very simple and lucid way, will be very much helpful to reinforce understanding of different aspects to meet the engineering student’s needs Writing a text-cum manual of this category poses several challenges providing enough content without sacrificing the essentials, highlighting the key features, presenting in a novel format and building informative assessment. This book on engineering physics will prepare students to apply the knowledge of Electromagnetic Theory to tackle 21st century and onward engineering challenges and address the related questions.

Some Salient Features of the Book:

· Expose basic science to the engineering students to the fundamentals of physics and to enable them to get an insight of the subject.

· To develop knowledge on critical questions, solved and supplementary problems covering all types of medium and advanced level problems in a very logical and systematic manner.

· Some essential information for the users under the heading “know More” for clarifying some basic

· Information as well as comprehensive synopsis of formulae for a quick revision of the basic principles.

· Constructive manner of presentation so that an Engineering degree students can prepare to work in different sector or in national laboratories at the very forefront of technology.

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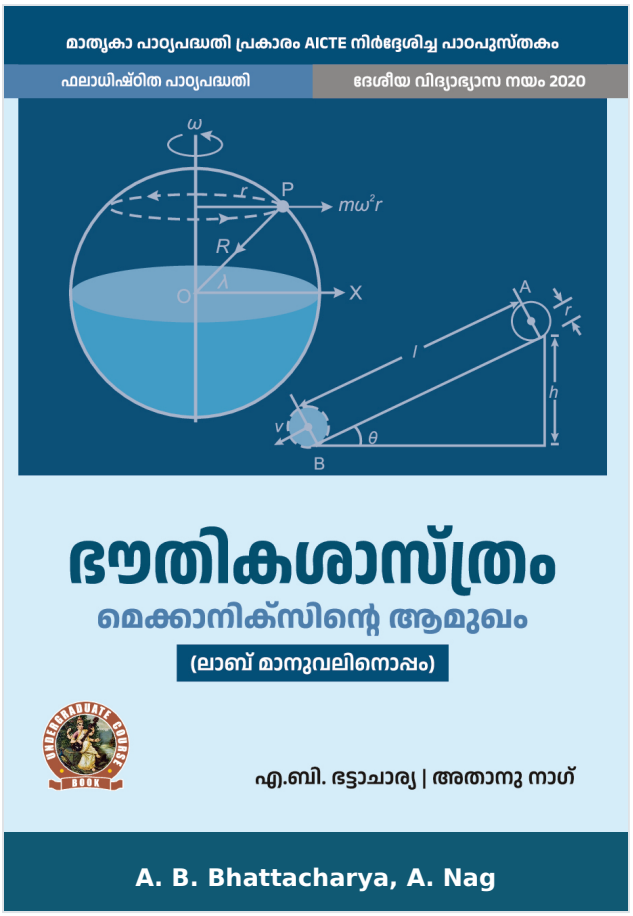


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