

## <<电动力学讲义>>

### 图书基本信息

书名：<<电动力学讲义>>

13位ISBN编号：9787312028991

10位ISBN编号：7312028993

出版时间：2011-9

出版时间：中国科学技术大学出版社

作者：钟学富

页数：289

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## <<电动力学讲义>>

### 内容概要

本书精选电动力学的基本内容，以讲义的形式按课堂教学顺序组织成46讲。内容包括矢量分析、静电场、静磁场、麦克斯韦方程、物质中的电磁场、电磁波的传播、辐射理论和相对论力学等。各讲内容均衡、简练，公式推导详细，附思考问题，突出重点，减轻阅读困难。

本书重点解决课堂教学的“程序化”（将科学体系变为讲授的时序）问题，可直接用作教师教案，组织课堂讲授；在适当增加内容之后，本书可作为普通大学本科或师范院校物理系电动力学课程的教材；本书还可作为参考阅读资料，帮助提高科技英语水平。

## <<电动力学讲义>>

### 作者简介

钟学富，1939年生，四川新都人，毕业于四川大学物理系理论物理专门化。曾任中国科学院半导体研究所副研究员，硕士生导师。1987年赴美为访问学者，在密苏里大学堪萨斯城分校物理系从事固体理论研究。现居美国。

单独与合作发表中英文物理论文约30篇。主要成果包括确立半导体中一类光转化杂质模型，经实验证实并获中国科学院科技成果二等奖；首次提出在晶体场计算中考虑传导电子贡献，此概念被用于修改穆斯堡尔效应中的电场梯度公式。另外在《中国社会科学》、《哲学研究》、《光明日报》、《自然辩证法研究》等刊物发表涉及信息论和物理学的哲学问题的论文约10篇。近年来陆续出版《物理社会学》、《社会系统》、《休闲哲学》等专著，尝试将自组织及相关理论应用于社会研究，发展社会科学的演绎理论。

# <<电动力学讲义>>

## 书籍目录

Preface

Lecture 1 Introduction to Electricity and Magnetism, Vector

Analysis ( ) : Gradient

Lecture 2 Vector Analysis ( ) : Divergence

Lecture 3 Vector Analysis ( ) : Curl

Lecture 4 Electrostatic Field ( )

Lecture 5 Electrostatic Field ( )

Lecture 6 Poisson's Equation and Laplace's Equation

Lecture 7 Solving Laplace's Equation

Lecture 8 Example of Boundary Value Problem: Conducting Sphere in a Uniform Field

Lecture 9 Electrostatic Images

Lecture 10 Solving Poisson's Equation

Lecture 11 Electric Field in Dielectric Media

Lecture 12 Gauss's Law in Dielectric Media

Lecture 13 Poisson's and Laplace's Equations, Boundary Conditions in Dielectric Media

Lecture 14 Solving Electrostatic Problems in Dielectric Media

Lecture 15 Microscopic Theory of Dielectrics

Lecture 16 Energy of Electrostatic Field

Lecture 17 Electric Current ( )

Lecture 18 Electric Current ( )

Lecture 19 Magnetic Field of Steady Current

Lecture 20 Vector Potential of Magnetic Field

Lecture 21 Magnetic Field in Matter

Lecture 22 Field Equation and Boundary Conditions

Lecture 23 Magnetic Properties of Matter ( )

Lecture 24 Magnetic Properties of Matter ( )

Lecture 25 Electromagnetic Induction

Lecture 26 Magnetic Energy

Lecture 27 Slowly Varying Currents ( ) : Transient Behavior

Lecture 28 Slowly Varying Currents ( ) : Steady-state Behavior

Lecture 29 Resonance in R-L-C Circuit

Lecture 30 Physics of Plasma

Lecture 31 Electromagnetic Properties of Superconductor

Lecture 32 Maxwell's Equations, Electromagnetic Energy

Lecture 33 Electromagnetic Waves, Boundary Conditions

Lecture 34 The Wave Equation with Sources

Lecture 35 Propagation of Plane Wave in Non-conducting Media

Lecture 36 Propagation of Plane Wave in Conducting Media

Lecture 37 Reflection and Refraction of Monochromatic Wave ( )

Lecture 38 Reflection and Refraction of Monochromatic Wave ( )

Lecture 39 Interference, Waveguide and Cavity Resonator

<<电动力学讲义>>

Lecture 40 Linear Response, Harmonic Oscillator Model  
Lecture 41 Theory of Electromagnetic Radiation  
Lecture 42 Electrodynamics, the Field of Moving Charges  
Lecture 43 Basic Postulates and Concepts of Relativistic  
Theory  
Lecture 44 Covariant Form of Electromagnetic Equations  
Lecture 45 Relativistic Mechanics  
Lecture 46 Lagrangian Formalism of Electromagnetic Field

## &lt;&lt;电动力学讲义&gt;&gt;

## 章节摘录

版权页：插图：The fact that a charge experiences some force from another charge implies that there is "something" surrounding the charge. We call it "electric field". It will be explained later that the electric field (also other physical fields) may store energy, and possess mass, momentum and angular momentum that are characteristic of matter. Thus the electric field should be considered as matter. In fact, modern physics considers field and particle as two aspects of the same entity, although in classic theory, the field is only considered as a continuous medium, which supports and propagates the interaction between two objects in space. However, Einstein went further from the classic concept of field than just to reject an old concept of action at distance. He emphasized that the field is related to the space and time, i.e., if no signal can propagate in "vacuum", or any interaction must propagate in some kind of field (thus the speed of propagation is limited), then we can conclude that if there is no field, there will be no space. In fact, the field is everywhere, or nowhere is absolutely empty. In this case, space (and time) is no longer a simple container of events and processes, but is determined and affected by the processes proceeding in it. The idea is the foundation of modern theory of relativity.

## <<电动力学讲义>>

### 编辑推荐

《电动力学讲义》是理工科核心课程双语规划教材之一。

## <<电动力学讲义>>

### 版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>