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<<现代大学物理>>

图书基本信息

书名：<<现代大学物理>>

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内容概要

本书具有浓厚的现代气息，即把最新发展的科学技术纳入其中，注重介绍经典物理知识在高新技术中的应用，并与现实生产、生活紧密联系，同时将现代物理学的观点、概念和方法渗透其中，内容丰富，涉及面广，图文并茂，语言通俗易懂，既能让学生在自然清新、情趣盎然的氛围中开阔眼界，享受物理，又能让学生感受到经典物理在21世纪仍然焕发着勃勃生机，生活中到处都有物理，学习物理知识很有用，从而使物理知识的学习有的放矢。
本书的这些鲜明特色对提高学生学习的积极性和主动性，培养学生科学的思维能力和创新能力具有重要作用。

本书主要内容有力学、圆周运动及转动、碰撞与波、电学、磁学、光学、相对论和量子物理等。本书部分章节（如经典部分的第12章，近代部分的第39章、第40章）与国内外许多教材相比内容偏深。

本书为高校理工科各专业学生的大学物理双语教学教材。
因书中包含有丰富、实用的各类素材，所以也可作为广大物理教师非常好的教学辅助资源或参考书。

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作者简介

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书籍目录

PART 1: MECHANICS OF POINT PARTICLES
PART 2: EXTENDED OBJECTS,MATTER,AND CIRCULAR MOTION
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PART 7: OPTICS
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章节摘录

版权页： 插图： 1.11 In Europe, cars'gas consumption is measured in liters per 100 kilometers. In the United States, the unit used ismiles per gallon. a）How are these units related? b）How many miles per gallon does your car get if it consumes 12.2 liters per 100 kilometers? c）What is your car's gas consumption in liters per 100 kilometers ifit gets 27.4 miles per gallon? d）Can you draw a curve plotting miles per gallon versus liters per 100 kilometers ? Ifyes, draw the curve. 1.12 Ifyou draw a vector on a sheet ofpaper, how many components are required to describe it? How many components does a vector in real space havel How many compo nents would a vector have in a four-dimensional world? 1.13 Since vectors in generalhave more than one component and thus more than one number is used to describe them, they are obviously more difficult to add and subtract than single numbers. Why then work with vectors at all? 1.14 IfA and B are vectors speafiedin magnitude-direction form, and C = A + B is to be found and to be expressed in magnitude-direction form, how is this donel That is, what is the procedure for adding vectors that are given in magnitudedirection form? 1.15 Suppose you solve a problem and your calculator's display reads 0.0000000036. Why not just write this down? Is there any advantage to using the scientific notation? 1.16 Since the British system of units is more familiar to most peoplein the Uruted States, why is the international （SJ） system ofunits used for saentific work in the United States? 1.17 Is it possible to add three equal-length vectors and obtain a vector sum of zero? If so, sketch the arrangement of the three vectors. If not, explain why not. 1.18 Is mass a vector quantityl Why or why not? 1.19 Two flies sit exactly opposite each other on the surface of a spherical balloon. If the balloods volume doubles, by what factor does the distance between the flies change? 1.20 What is the ratio of the volume of a cube of side r to tbat of a sphere of radius r? Does your answer depend on the particular value of r? 1.21 Consider a sphere of radius r. What is the length of a side of a cube that has the same surface area as the sphere? 1.22 The mass ofthe Sun is 2-1030 kg, and the Sun contains more than 99% of all the mass in the solar system. Astronomers estimate there are approximately 100 billion stars in the Milky Way and approximately 100 billion galaxies in the universe. The Sun and other stars are predominantly composed of hydrogen; a hydrogen atom has a mass of approximately 2-10-27 kg. a）Assuming that the Sun is an average star and the Milky Wayis an average galaxy, what is the total mass ofthe universe? b）Since the universe consists mainly of hydrogen, can you estimate the total number of atoms in the universe? 1.23 A futile taskis proverbially said to be “ like trying to empty the ocean with a teaspoon. ” Just how futile is such a task? Estimate the number of teaspoonfuls of water in the Earth's oceans.

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编辑推荐

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