

<<物理学>>

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## 前言

Physics is a science to research the basic structure . the basic modus of motion as well as Law of interaction of matters . It is a subject formed in the process that human has been exploring nature . In the first , physics was developed from the research to the law of the motion in mechanics ; later on , it researched to the law of thermo phenomenon , the law of electromagnetic phenomenon , optical phenomenon as well as radiation . Until the end of 19th century , physics had formed already a whole system itself , called classical physics . In the first thirty years of 20th century , physics experienced a great revolution that brought the naissance of theory of relativity and quantum mechanics . Modern physics was founded here from . Physics is the basic of nature sciences . In the progress of exploring the matter structure and basic law of motion , each important discovery and breakthrough brought the development of new fields and new direction , even the foundation of new branch of the subject , the cross subject and the subject of new technology . In the past 100 years , a mass of subject separated out from physics , such as mechanics , calorifics , optics , and acoustics . Therein to , laser , radio , microelectronics , atomic energy are already the independent subjects now . Although physics is an age-old foundational subject the knowledge learned in the time of university are almost all discoveries found one or two hundred years before . even three or four hundred years before——it has important and inseparable relationship with the life of human being and the development of science and technology today and even in the further . Shenzhou airship roaming in the airspace , drilling petroleum underground , exploring the cosmic arcanum in immense out space , making the micro-electronic chips in computer , all these depends on the foundational effect of physics . Even on the field that seems to be looked having no relation with physics in the past , such as economy , finance , stock and police , some people are making research by physical way now and achieved the success getting on people's recognition . In 2000 , 20 greatest items of engineering in 20th century were chosen by American Academy of Engineering , most technologies adopted therein to get relation directly or indirectly with discoveries on the field of physics in the past 300 years . These 20 items engineering are listed firstly with electrization , automobile , airplane , tap water system , micro-electronics , radio and TV , next with mechanization Of farming , computer , telephone , air-conditioning and refrigerator , highway , satellite , internet , photography , then with home electric devices , medical technology , petroleum and petrochemistry , laser and fiber , nuclear technology , high performance material . The year of 2005 is 'International Physics Year' named by UN . This was the first time to name an international year with the name of a single subject in UN history .

## 内容概要

On the base of Physics ( Fourth Edition ) , the revision of this book is made consulting The Basic Requirement of Teaching University Physics Course for Non-physical Major in University of Science & Engineering ( Discussion Draft ) and constituted lastly by sub-committee of physics essential lecture teaching guidance for non-physics specialty , Education Department. What in the book contains all of kernels required in the basic requirement , moreover , a certain amount of extension content is presented as well as for different majors. In the revision , this book keeps a special tie such as logical system , well-situated profundity and extension , proper capacity , wide flexibility comes from the original vision of the book. Meanwhile it adds more content in following aspects : modern physics , the annotation with modern viewpoints for classic physics , and the effects of science and technology from the achievements of modern physics. This book has two volumes. In Volume 1 , it contains mechanics and electromagnetism. And in Volume 2 , it contains oscillation and undulation , optics , theory of molecular dynamics and basic of thermodynamics , theory of relativity , quantum physics. There are books The Applications of Physical Principle in Engineering and Technology ( Third Edition ) , The Analysis and Solution for Exercises In Physics ( Fifth Edition ) , Guidance for Learning Physics ( Fifth Edition ) and the multimedia The Electronic Teaching Plan for Physics ( Fifth Edition ) to form a complete set with this book. This book can be the teaching material of the higher education for non-physical major in university of sciences and engineering. It can also be selected as texts by the relevant fields of social sciences and natural sciences and read by social readers at large.

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## 章节摘录

版权页：插图： The chaos phenomena in nature are ubiquitous, there are many more examples in addition to the above ones given. For example, the pendulum motion for a given length of the swing follows Newton's equations of motion, but its period often oscillates due to some accidental factors. Some even say that the hurricane of the Mexican Gulf is perhaps due to a flap of the wings of a butterfly. Although chaos was brought out in the 60's of the 20th century, the research subjects have grown far beyond those physics, chaos has been shown to exist in biology, cosmology, social sciences and other areas of study. 3. The continuity and quantization of energy Classical mechanics was summarized from the study of mechanical motions of macroscopic objects with  $v$



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