<<应用光学>>

图书基本信息

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内容概要

This book, Applied Optics, is a fundamental technical course for the specialties of optical engineering, optical measurement, control instruments and electronic science and technology. The book mainly includes basictheories and methods of how to solve problems of geometrical optics, typicaloptical instruments, optical measurement, color measurement, optical fibersystems, laser systems and infrared optics. The knowledge mentioned aboveis a must for the opto-electronic students' learning.

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章节摘录

版权页：插图：Chapter lBasic Principles ofGeometrical Optics1.1 Waves and RaysLight is very closely related to the life and well-being of mankind. The growth ofplants relies on light, and human vision relies on light as well. The idiom "seeing isbelieving" reflects people's recognition of the importance of light. People accumulatedabundant perceptual knowledge of light through practical experience, and started tostudy light a long time ago.There are two branches of people's study of light. One is to study the nature of lightin order to explain various optical phenomena, which is called physical optics; the otheriS to study the laws and phenomena of light propagation, which is called geometricaloptics.The study of the nature of light started very early but progressed relatively slowly.In 1666, Newton first postulated that light is a kind of elastic corpuscles, which is thecorpuscular theory. In 1678, Huygens put forward the wave theory, which says thatlight is a kind of elastic wave propagating in "ether". In 1873, according of thecharacteristics of the electromagnetic waves, Maxwell showed that light is in fact anelectromagnetic disturbance. In 1905, in order to explain the photoelectric effect,Einstein proposed the hypothesis of "photon", which was later confirmed by thediscovery of the Compton's effect. Thereafter people began to have a more correct andcomplete understanding of the nature of light. In modern physics, light is considered tobe a kind of matter with wave-particle duality, namely it has the characteristics of boththe waves and the corpuscles. Under certain circumstances, one group of characteristicsis more apparent than the other. Except for the cases to study the interaction betweenlight and substances when the corpuscular characteristics of the light must be taken intoaccount, light can generally be considered as a kind of electromagnetic waves, whichare called light waves.

编辑推荐

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