<<引力>>

图书基本信息

书名：<<引力>>

13位ISBN编号：9787506291781

10位ISBN编号：7506291789

出版时间：2008-9

出版时间：世界图书出版公司

作者：哈蒂（James B. Hartle）

页数：582

前言

~Einstein's relativistic theory of gravitation——general relativity——will shortly be acentury old. At its core is one of the most beautiful and revolutionary conceptionsof modem science——the idea that gravity is the geometry of four-dimensionalcurved spacetime. Together with quantum theory, general relativity is one of thetwo most profound developments of twentieth-century physics.　General relativity has been accurately tested in the solar system. It underliesour understanding of the universe on the largest distance scales, and is centralto the explanation of such frontier astrophysical phenomena as gravitational col-lapse, black holes, X-ray sources, neutron stars, active galactic nuclei, gravita-tional waves, and the big bang. General relativity is the intellectual origin of manyideas in contemporary elementary particle physics and is a necessary prerequisiteto understanding theories of the unification of all forces such as string theory.　An introduction to this subject, so basic, so well established, so central to sev-eral branches of physics, and so interesting to the lay public is naturally a partof the education of every undergraduate physics major. Yet teaching general rel-ativity at an undergraduate level confronts a basic problem. The logical order ofteaching this subject （as for most others） is to assemble the necessary mathemati-cal tools, motivate the basic defining equations, solve the equations, and apply thesolutions to physically interesting circumstances. Developing the tools of differ-ential geometry, introducing the Einstein equation, and solving it is an elegant andsatisfying story. But it can also be a long one, too long in fact to cover both thatand introduce the many con~~temporary applications in the time that is typicallyavailable for an introductory undergraduate course.　Gravity introduces general relativity in a different order. The principles onwhich it is based are discussed at greater length in Appendix D, but essentiallythe strategy is the following: The simplest physically relevant solutions of theEinstein equation are presented first, without derivation, as spacetimes whose ob-servational consequences are to be explored by the study of the motion of testparticles and light rays in them. This brings the student to the physical phenom-ena as quickly as possible. It is the part of the subject most directly connected toclassical mechanics, and requires the minimum of new mathematical ideas. TheEinstein equation is introduced later and solved to show how these geometriesoriginate.　A course for junior or senior level physics students based on these principlesand the first two parts of this book has been part of the undergraduate curriculumat the University of California, Santa Barbara for over twenty-five years. It works.~

内容概要

Einstein的广义相对论是现代物理的基石。
它包括了大量讲述时空的前沿话题，黑洞、重力波以及宇宙学。
随着广义相对论越来越成为同时代物理和天文学的中心，其在本科教育中的地位也显得尤为重要。
这本全新的教材很适合本科生作为了解该课程的基础理论。
物理优先、数学理论尽可能少、大量的应用实例，作者为物理学家和对该学科感兴趣的读者自然顺畅的讲述了这门学科。

读者对象：《引力》适用于物理专业的本科生，研究生以及对该学科感兴趣的广大读者。

目次：（第一部分）牛顿物理和狭义相对论中的时空：引力物理；几何作为物理；牛顿物理中的空间；时间和引力；狭义相对论原理；狭义相对论力学；（第二部分）广义相对论的弯曲时空：引力作为几何；弯曲时空的描述；测地线；球形星体外的几何；广义相对论的太阳系检验；实用相对论引力；引力坍缩和黑洞；天体物理学黑洞；微小转动；旋转黑洞；引力波；宇宙观察；宇宙学模型；什么是宇宙以及为什么；（第三部分）Einstein方程：数学部分；曲率和Einstein方程；曲率源；引力波发射；相对论星体。

作者简介

作者：(美)哈蒂

书籍目录

章节摘录

插图：

编辑推荐

《引力》由世界图书出版公司出版。