

《现代宇宙学》

图书基本信息

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前言

The Men of the Great Assembly had three sayings: "Be patient before reaching a decision; Enable many students to stand on their own; Make a fence around your teaching." Ethics of the Fathers 1:1 There are two aspects of cosmology today that make it more alluring than ever. First, there is an enormous amount of data. To give just one example of how rapidly your knowledge of the structure of the universe is advancing, consider galaxy surveys which map the sky. In 1985, the state-of-the-art survey was the one carried out by the Center for Astrophysics; it consisted of the positions of 1100 galaxies. Today, the Sloan Digital Sky Survey and the Two Degree Field between them have recorded the 3D positions of half a million galaxies. The other aspect of modern cosmology which distinguishes it from previous efforts to understand the universe is that we have developed a consistent theoretical framework which agrees quantitatively with the data. These two features are the secret of the excitement in modern cosmology: we have a theory which makes predictions, and these predictions can be tested by observations. Understanding what the theory is and what predictions it makes is not trivial. First, many of the predictions are statistical. We don't predict that there should be a hot spot in the cosmic microwave background (CMB) at $RA = 15h, dec = 27^\circ$. Rather, predictions are about the distribution and magnitude of hot and cold spots. Second, these predictions, and the theory on which they are based, involve lots of steps, many arguments drawn from a broad range of physics. For example, we will see that the distribution of hot and cold spots in the CMB depends on quantum mechanics, general relativity, fluid dynamics, and the interaction of light with matter. So we will indeed follow the first dictum of the Men of the Great Assembly and be patient before coming to judgment. Indeed, the fundamental measures of structure in the universe—the power spectra of matter and radiation—agree extraordinarily well with the current cosmological theory, but we won't have the tools to understand this agreement completely until Chapters 7 and 8. Sober minds have always known that it pays to be patient before pronouncing judgment on ideas as lofty as those necessary to understand our Universe. The modern twist on this "Be patient" theme is that we need to set up the framework (in this case Chapters

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内容概要

《现代宇宙学》系统地介绍了现代宇宙学的最新进展。从平坦均匀的宇宙（可以用弗里德曼—罗伯逊—沃克度规描述）开始，讲解了暗能量的处理过程，宇宙大爆炸的核合成，重组和暗物质，然后介绍了对平坦均匀宇宙的扰动：宇宙的演化和爱因斯坦—玻尔兹曼方程组，原始膨胀和现代宇宙的形成，以及观测结果如宇宙微波背景的各向异性，红移扭曲和弱透镜化现象等。《现代宇宙学》对宇宙微波背景的声学峰结构，以及用来探测原始引力波的偏振的E/B分解都有较详细的讨论，还包含了一个长的章节专门介绍对日益庞大的宇宙观测数据进行现代分析的技术。每章后都附有该章总结和相关文献。通过学习，读者可以获得从事现代宇宙学研究必须的知识和方法。

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作者简介

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Scott Dodelson：美国费米国家实验室理论天体物理研究组负责人和芝加哥大学天文和天体物理学系教授。在哥伦比亚大学获博士学位。进入费米国家实验室和芝加哥大学前在哈佛大学做研究员。在宇宙论方面发表了七十多篇论文，其中大部分是关于宇宙的微波背景和大尺度结构。

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《现代宇宙学》

编辑推荐

《现代宇宙学》的特色：（1）讲解了现代宇宙学的理论基础，处理方法和具体解释，阐明了当前在宇宙学研究中的深刻思想；（2）涵盖了过去十年中在宇宙学研究中的重大进展；（3）包括了上百幅很有特色的教学图片。

《现代宇宙学》

精彩短评

- 1、字太小了，阅读时间稍长，眼睛就感到疲劳。2.从第4章开始，要想读懂本书就要具备较为深厚的统计物理及宇宙学基础，否则到了第6章就几乎看不下去了，因为有些式子你已经看不懂了。
- 2、内容如预期，精炼，实用；受开本限制，字体显得有点小
- 3、作为入门书，还是比较全面的
- 4、数了一下，12页重影的。反正世图就那样，费曼第三卷纸张相当恼火
- 5、我是研究激光等离子体的，在激光天体模拟上能用着
- 6、隔两天收到的书，写的不错，可惜字影印得太小了。曲线图还很清楚，但照片经过影印，几乎无法辨认。不过还是赞一下
- 7、国外的优秀教材，对于天文爱好者是个不容错过的选择。
快递速度很快，服务很好，怕耽误时间，摩托车坏了还是自己推过来送货的。
- 8、这本书非常好了，适合有一些基础的人来看。
过程推导的非常仔细，应该自己仔细跟着算一遍。
就是字比较小，看时间长了眼睛回累。
- 9、一口气买了几本相关的书，刚开始进入这个领域，应该有不少东西要补的吧。fighting..
- 10、发的太慢了！
- 11、这是一本很好的现代宇宙学教材.虽然比国外晚了一些时间,但是还算比较及时.这本书在美国要卖到60-80美元不等,而影印本很便宜,很大程度方便了国内的读者.感谢一切为这本书的影印本顺便发行的人.当当网送书的速度很快.我第一天晚上在网上递交的订单,第二天就送书上门.这样的服务是很优秀的.
- 12、书当然棒啦
- 13、书本排版的字太小了。发货速度可以，赞一下！！！
- 14、物理清晰数学简明.....
- 15、只看了前6章 后面没时间看了。。宇宙学的课外书
- 16、嗯...我很喜欢，大家随意
- 17、很好，计算很详细。
- 18、书挺好，适合科研需要，纸质也很好
- 19、这是想要的那本哇
- 20、表示看起来比较困难。
- 21、印刷纸张有够差，成本估计比不上茅厕纸

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