<<熵大偏差和统计力学>>

图书基本信息

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内容概要

《熵、大偏差和统计力学》是一部教程，内容上相对独立，自成体系。
书中大偏差的讲述除了为这科目做出了巨大贡献，也将统计力学的好多方面完美结合，并且很具有数学吸引力。
而且作者在没有假设读者具有丰富的物理知识背景下讲述，使得本书能够让更多的读者学习理解。
每章末都附有一节注解和一节问题，这100来道练习题，附有许多提示，使得本书更加易于学习理解。
目次：（第一部分）大偏差和统计力学：大偏差导论；大偏差性质和积分渐近；大偏差和离散理想气体；z上的铁磁模型；zd和圆周上的磁模型
；（第二部分）大偏差定理上的复杂度和证明：复函数和legendre-fenchel变换；大偏差的随机向量；i. i. d.
随机变量的2级大偏差；i. i. d.
随机变量的3级大偏差；附录：概率论；ii.7中两个定理的证明；自旋系统中无限体积测度的等价观点；特殊gibbs自由能量的存在性。

读者对象：数学专业的研究生，教师和相关专业的科研人员。

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作者简介

作者：(美国)艾里斯 (Richard S.Ellis)艾里斯，Richard S.Ellis，received his B.A. degree in mathematics and German literature from Harvard University in 1969 and his Ph.D. degree in mathematics from New York University in 1972. After spending three years at Northwestern University, he moved to the University of Massachusetts, Amherst, where he is a Professor in the Department of Mathematics and Statistics and Adjunct Professor in the Depart-ment of Judaic and Near Eastern Studies. His research interests in mathematics focus on the theory of large deviations and on applica-tions to statistical mechanics and other areas.

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章节摘录

插图：In the next three chapters we apply the theory of large deviations to analyze some basic models in equilibrium statistical mechanics.' This branch of physics applies probability theory to study equilibrium properties of systems consisting of a large number of particles. The systems fall into two groups:continuous systems, which include the solids, liquids, and gases common to everyday experience; and lattice systems, of which ferromagnets are the main example. This chapter introduces the continuous theory by treating a simple model called a discrete ideal gas. This model, which has no interactions, is a physical analog of i.i.d, random variables.The macroscopic description of a physical system such as an ideal gas isgiven by thermodynamics. Thermodynamics summarizes the properties ofthe gas in terms of macroscopic variables such as pressure, volume, tempera- ture, and internal energy. But this theory takes no account of the fact that the gas is composed ofrnolecules. The main aim of statistical mechanics is to derive properties of the gas from a probability distribution which describes its microscopic （i.e., molecular） behavior. This distribution is called an ensemble.

编辑推荐

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