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<<稀薄气体的数学理论（影印版）>>

图书基本信息

书名：<<稀薄气体的数学理论（影印版）>>

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前言

为了更好地借鉴国外数学教育与研究的成功经验，促进我国数学教育与研究事业的发展，提高高等学校数学教育教学质量，本着“为我国热爱数学的青年创造一个较好的学习数学的环境”这一宗旨，天元基金赞助出版“天元基金影印数学丛书”。
该丛书主要包含国外反映近代数学发展的纯数学与应用数学方面的优秀书籍，天元基金邀请国内各个方向的知名数学家参与选题的工作，经专家遴选、推荐，由高等教育出版社影印出版。
为了提高我国数学研究生教学的水平，暂把选书的目标确定在研究生教材上。
当然，有的书也可作为高年级本科生教材或参考书，有的书则介于研究生教材与专著之间。
欢迎各方专家、读者对本丛书的选题、印刷、销售等工作提出批评和建议。

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内容概要

本书讲述了稀薄气体的数学理论（Boltzmann方程的数学理论）中的三个主要问题直到1994年的理论发展，包括Boltzmann方程是怎样从经典力学推出来的，即Boltzmann方程是怎样从Liouville方程推出来的；Boltzmann方程解的存在性和唯一性问题；Boltzmann方程与流体力学的关系，即Euler方程和Navier-Stokes方程是怎样从Liouvi Lle方程推出来的。
另外，本书还介绍了O.Lanford III，DiPerna，P.L.Lions等的出色工作，可作为Boltzmann方程的数学理论的优秀的教材和参考书。

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章节摘录

插图：As early as 1738 Daniel Bernoulli advanced the idea that gases are formedof elastic molecules rushing hither and thither at large speeds, colliding andrebounding according to the laws of elementary mechanics. Of course, thiswas not a completely new idea, because several Greek philosophers assertedthat the molecules of all bodies are in motion even when the body itselfappears to be at rest. The new idea was that the mechanical effect of theimpact of these moving molecules when they strike against a solid is whatis commonly called the pressure of the gas. In fact if we were guided solelyby the atomic hypothesis, we might suppose that the pressure would beproduced by the repulsions of the molecules. Although Bernoulli's schemewas able to account for the elementary properties of gases （compressibility,tendency to expand, rise of temperature in a compression and fall in anexpansion, trend toward uniformity）, no definite opinion could be passedon it until it was investigated quantitatively. The actual development of thekinetic theory of gases was, accordingly, accomplished much later, in thenineteenth century.

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