

<<旋度与湍流>>

图书基本信息

书名：<<旋度与湍流>>

13位ISBN编号：9787302102045

10位ISBN编号：730210204X

出版时间：2005-1

出版时间：清华大学出版社

作者：J.Chorin Alexandre

页数：174

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<旋度与湍流>>

内容概要

This book provides an introduction to the theory of turbulence in fluids based on the representation of the flow by means of its vorticity field. It has long been understood that, at least in the case of incompressible flow, the vorticity representation is natural and physically transparent, yet the development of a theory of turbulence in this representation has been slow. The pioneering work of Onsager and of Joyce and Montgomery on the statistical mechanics of two-dimensional vortex systems has only recently been put on a firm mathematical footing, and the three-dimensional theory remains in parts speculative and even controversial. Some practical information about approximation procedures is provided in the book, as well as tools for assessing the plausibility of approximation schemes. The emphasis, however, is on the understanding of turbulence---its origin, mechanics, spectra, organized structures, energy budget, and renormalization. The physical space methodology is natural, and makes the reasoning particularly straightforward. Open questions are indicated as such throughout the book.

<<旋度与湍流>>

书籍目录

Preface Introduction 1. The Equations of Motion 1.1 The Euler and Navier-Stokes Equations 1.2 Vorticity Form of the Equations 1.3 Discrete Vortex Representations 1.4 Magnetization Variables 1.5 Fourier Representation for Periodic Flow 2. Random Flow and Its Spectra 2.1 Introduction to Probability Theory 2.2 Random Fields 2.3 Random Solutions of the Navier-Stokes Equations 2.4 Random Fourier Transform of a Homogeneous Flow Field 2.5 Brownian Motion and Brownian Walks 3. The Kolmogorov Theory 3.1 The Goals of Turbulence Theory: Universal Equilibrium 3.2 Kolmogorov Theory: Dimensional Considerations 3.3 The Kolmogorov Spectrum and an Energy Cascade 3.4 Fractal Dimension 3.5 A First Discussion of Intermittency 4. Equilibrium Flow in Spectral Variables and in Two Space Dimensions 4.1 Statistical Equilibrium 4.2 The “ Absolute ” Statistical Equilibrium in Wave Number Space 4.3 The Combinatorial Method: The Approach to Equilibrium and Negative Temperatures 4.4 The Onsager Theory and the Joyce-Montgomery Equation 4.5 The Continuum Limit and the Role of Invariants 4.6 The Approach to Equilibrium, Viscosity, and Inertial Power Laws 5. Vortex Stretching 6. Polymers, Percolation, Renormalization 7. Vortex Equilibria in Three-Dimensional Space Bibliography Index

<<旋度与湍流>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>