Vorticity, Statistical Mechanics, and Monte Carlo Simulation
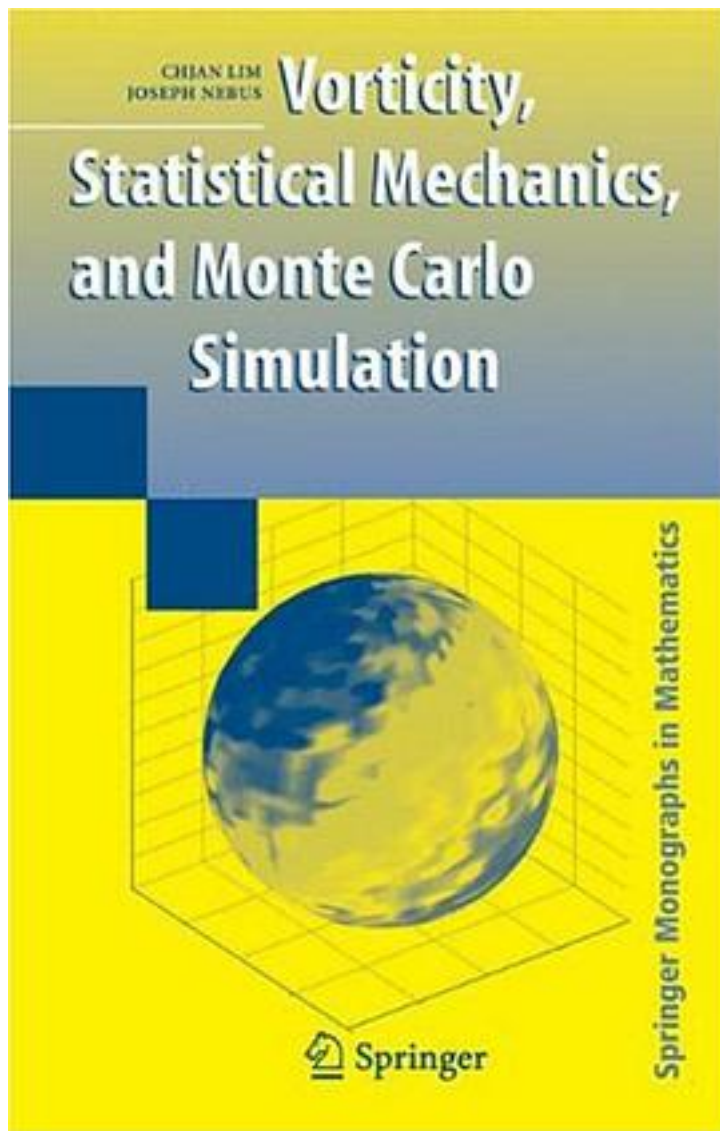

Vorticity, Statistical Mechanics, and Monte Carlo Simulation_下载链接1_

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在线阅读本书

This book is drawn from across many active fields of mathematics and physics, and has connections to atmospheric dynamics, spherical codes, graph theory, constrained optimization problems, Markov Chains, and Monte Carlo methods. It addresses how to access interesting, original, and publishable research in statistical modeling of large-scale flows and several related fields. The authors f this book explicitly reach around the major branches of mathematics and physics, showing how the use of a few straightforward approaches can create a cornucopia of intriguing questions and the tools to answer them. In reading this book, the reader will learn how to research a topic and how to understand statistical mechanics treatments of fluid dynamics. Of particular interest should be the application of Monte Carlo methods to problems like dispersal of points on the sphere, the phase transitions of in viscid fluid flows in models that increasingly approach the conditions of actual planetary atmospheres, and the treatment of negative absolute temperatures and the effects these extremely high-energy states have on fluid flows. Special attention is given to spherical models as well.

This book is intended for the upper-level undergraduate or the beginning graduate level courses of mathematics and physics. It will also be of interest to readers interested in statistical mechanics methods applied to fluid mechanics problems. Readers will gain an understanding of how to synthesize new mathematics by applying familiar tools in new ways, and develop new tools to fit particular applications.

作者介绍:

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