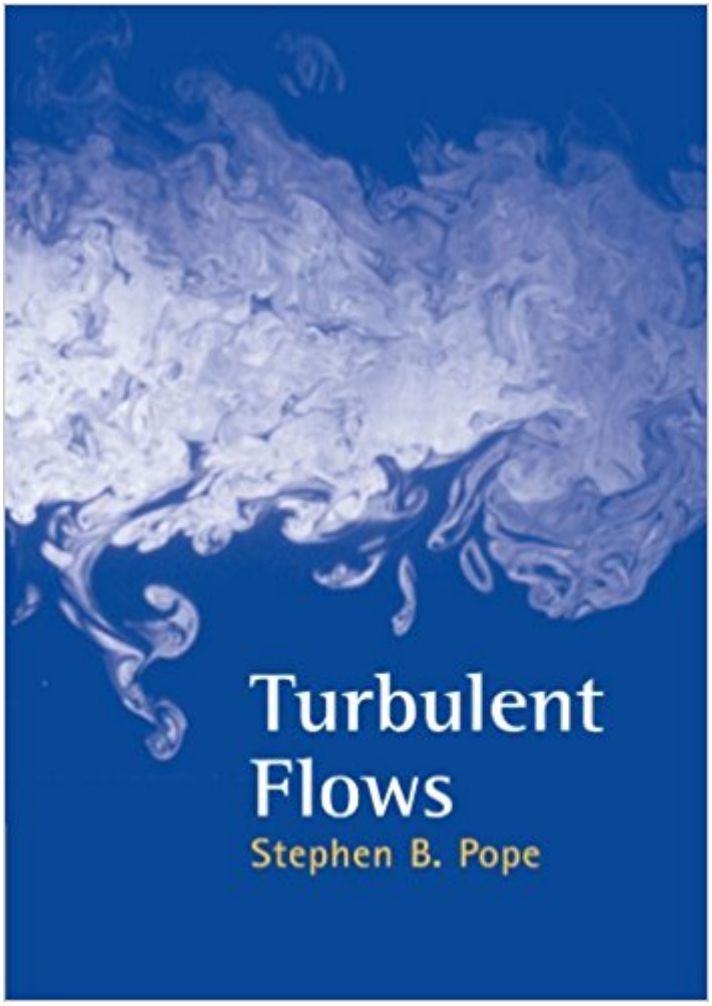
Turbulent Flows



Synopsis

Turbulent Flows is an up-to-date and comprehensive graduate text on this important topic in fluid dynamics. The book consists of two parts: Part I provides a general introduction to turbulent flows, how they behave, how they can be described quantitatively, and their fundamental physical processes. Part II is concerned with different approaches for modeling, or simulating, turbulent flows. Key appendices present the necessary mathematical techniques. While primarily intended for engineering graduate students, this book will also be valuable to students in applied mathematics, physics, oceanography and atmospheric sciences, as well as to researchers and practicing engineers.

Book Information

Paperback: 802 pages

Publisher: Cambridge University Press; 1 edition (October 16, 2000)

Language: English

ISBN-10: 0521598869

ISBN-13: 978-0521598866

Product Dimensions: 6.8 x 1.5 x 9.7 inches

Shipping Weight: 3.6 pounds (View shipping rates and policies)

Average Customer Review: 3.9 out of 5 stars 15 customer reviews

Best Sellers Rank: #69,228 in Books (See Top 100 in Books) #52 inÂ Books > Science & Math > Physics > Mechanics #61 inÂ Books > Science & Math > Physics > Dynamics #83 inÂ Books > Textbooks > Science & Mathematics > Mechanics

Customer Reviews

"This book is a welcome addition to the literature on turbulence. It will serve well as a textbook." Journal of Fluid Mechanics"The author made a strong pedagogical effort in writing this book. The text is supplemented by many exercises that can give a good support for courses on this subject. Moreover, most of what an engineer needs to know about the subject of fluid turbulence is covered in reasonable depth. This text is a welcome addition to the literature on turbulence, since it is the first book dedicated to the modeling of turbulence and, hence, fully dedicated to engineering students." Mathematical Reviews"The book is intended as a graduate text designed for teaching and...it is a complete success. The author managed, in an excellent way, the balance between classical theory, research results, and phenomenological observations... really fills the gap between the excellent (but sometimes dated) old classical books and the recent specific monographs

focused on particular aspects of turbulence. This reviewer strongly recommends the purchase of Turbulent Flows to all students and researchers whose field of interest is in turbulent flows and their numerical modeling. The purchase of this book by libraries should be considered a 'must' since the text can be classified as one of the pearls in the field." Applied Mechanics Reviews"Pope's book represents the outstading contribution to the pedagogy of turbulence since Tennekes and Lumley's book...Not only does it present turbulence fundamentals in a lucid and readable manner, it also utilizes in an optimum manner various tools of learning and teaching turbulence: physical insight, mathematical derivations, scaling arguments, and experimental and DNS data...the book should be well received in both academia and industry. It will be useful to students entering the feild of turbulence as well as to experienced researchers and practicing engineers." AIAA Jrnl

This is a graduate text on turbulent flows, which is an important topic in fluid mechanics. Many university engineering departments (mechanical, aerospace, chemical, civil) offer graduate courses on turbulent flows for which this could be the required or recommended text. The book will also appeal to researchers in atmospheric sciences, oceanography, physics and applied mathematics. This book is up-to-date, comprehensive, designed for teaching and is based on a course taught by the author at Cornell University for many years.

I'm a graduate student doing research on large eddy simulation, and this is the turbulence book I always keep within arm's reach. This book is a great reference for basic concepts regarding turbulent flows as well as numerical simulations of turbulence, i.e. Reynolds-Averaged Navier-Stokes (RANS) modeling, Large Eddy Simulation (LES), and Direct Numerical Simulation (DNS). Part I of the book deals with some of the fundamentals of turbulence: the statistical approach to turbulence, free-shear and wall-bounded flows, and Kolmogorov theory. Part II deals with turbulence simulation and modeling. He discusses RANS (both eddy viscosity and Reynolds stress modeling), PDF methods, DNS, and LES. While the material in Part I is covered in greater detail by other authors (i.e. Tennekes & Lumley, Hinze, etc.), it still is very useful for someone becoming acquainted with turbulent flows for the first time. The material in Part II is perhaps the most valuable part of the book. It contains a great introduction to turbulent simulation and modeling without being overly technical.

When you start working with turbulence modeling everyone recommends this book. However, I would start reading something more simple and short, because I found this book to be very tedious

and hard to read at first, although after a while you can appreciate how complete and detailed it is.

There are many text books in this field. this is one of the most comprehensive and well explained turbulence text books.The author does a very good job covering so many topics in this growing field, and many of the more minor concepts are explained in the exercises which is one of the advantages of this bookIf you want to only buy one book in this subject then it has to be this one!!

This book was a requirement for a PhD level turbulence course. Upon working with it and from it for four months, I am able to draw the following conclusions: 1.) any time that you wanted more understanding of a particular matter, say the method (not an explicit solution) upon which a certain equation was derived, it is left up to the reader as an exercise; 2.) there is no explanation of the physical significance of any proposed equation or model, rather, it is a mere consequence of mathematics; 3.) hand waving! When in doubt, just hand wave or omit and present a solution!; 4.) there is no explanation of what a particular variable may be, rather, it magically appears at some point within a chapter to help move the material along; 5.) the explanation of models (i.e. Reynolds-stress, k-omega, etc.) are as in-depth as the CFX or Fluent user manual (i.e. there is no depth), lacking any technicality. It is quite a shame that this text does not compare to those of Gleck, Wilcox or Piersol. It is also a shame that this text lacks any depth of understanding by presenting only a cursory overview of stochastic tools applicable to turbulent flow.

Great book to have on the shelve for anyone studying fluid mechanics.

The great book by the great author!!

Must have if you study turbulence

This is an excellent addition to the turbulence textbooks. The physical meanings of equations are well explained and cast in a way that helps the understanding of the subject tremendously. In contrast to earlier textbook by Lumley and Tenneky, this book is much cleaner in explaining the conncetions between the physical phenomenon and the mathematical treatment. However, it lacks the experimental side of the subject, which, however, can be found in other classic textbooks, such as Hinze’s Turbulence. This book also has lots of updates on modern modeling techniques, including PDF, DNS and LES. The exercise problems are well organized and complement the

context very well. Highly recommended.

Turbulent Flows Along the River that Flows Uphill - from the Orinoco to the Along the River that Flows Uphill: From the Orinoco to the (Armchair Traveller) Contracts and Deals in Islamic Finance: A UserÃ s Guide to Cash Flows, Balance Sheets, and Capital Structures (Wiley Finance) Contracts and Deals in Islamic Finance: A User's Guide to Cash Flows, Balance Sheets, and Capital Structures (Wiley Finance) Ganga: The River that Flows from Heaven to Earth Managing Business Process Flows (3rd Edition) Passive Solar Architecture: Heating, Cooling, Ventilation, Daylighting and More Using Natural Flows The Rhine Flows into the Tiber: A History of Vatican II River Flows in You and Other Eloquent Songs for Solo Piano Molecular Gas Dynamics and the Direct Simulation of Gas Flows (Oxford Engineering Science Series) Numerical Computation of Internal and External Flows: The Fundamentals of Computational Fluid Dynamics, Second Edition Fields, Forces, and Flows in Biological Systems Transport Phenomena in Multiphase Flows (Fluid Mechanics and Its Applications) Heat, Bearings, and Lubrication: Engineering Analysis of Thermally Coupled Shear Flows and Elastic Solid Boundaries Where the River Flows: Scientific Reflections on Earth's Waterways Linear Programming and Network Flows All Love Flows to the Self: Eternal Stories from the Upanishads HÃ¶lder Continuous Euler Flows in Three Dimensions with Compact Support in Time (Annals of Mathematics Studies) The Great Tamasha: Cricket, Corruption, and the Turbulent Rise of Modern India