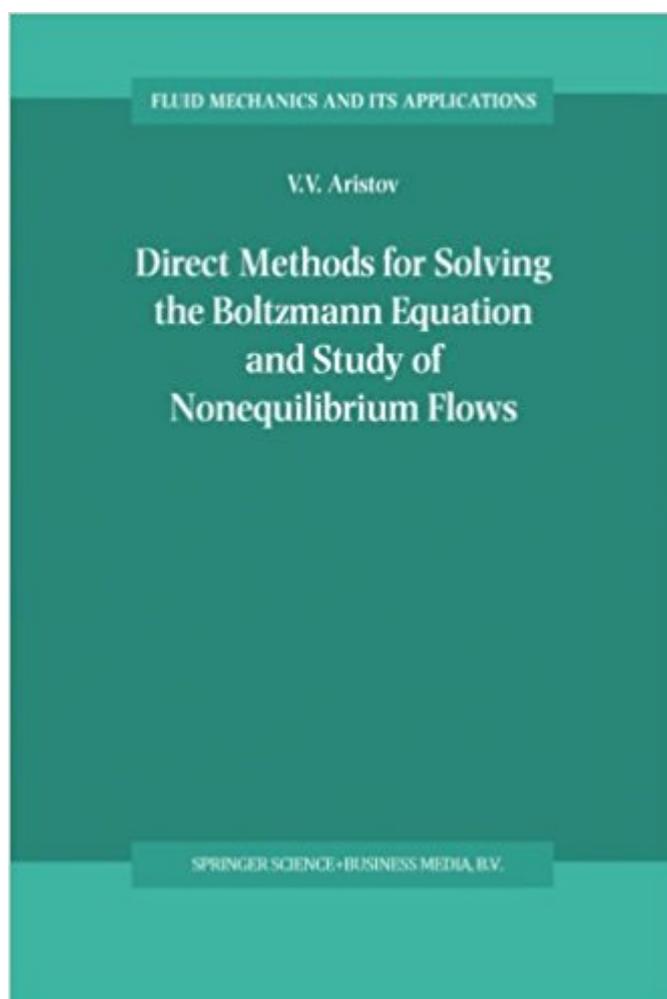The book was found

Direct Methods For Solving The Boltzmann Equation And Study Of Nonequilibrium Flows (Fluid Mechanics And Its Applications)

FLUID MECHANICS AND ITS APPLICATIONS

V.V. Aristov

Direct Methods for Solving
the Boltzmann Equation
and Study of
Nonequilibrium Flows

SPRINGER SCIENCE+BUSINESS MEDIA, B.V.

Synopsis

This book is concerned with the methods of solving the nonlinear Boltz mann equation and of investigating its possibilities for describing some aerodynamic and physical problems. This monograph is a sequel to the book 'Numerical direct solutions of the kinetic Boltzmann equation' (in Russian) which was written with F. G. Tcheremissine and published by the Computing Center of the Russian Academy of Sciences some years ago. The main purposes of these two books are almost similar, namely, the study of nonequilibrium gas flows on the basis of direct integration of the kinetic equations. Nevertheless, there are some new aspects in the way this topic is treated in the present monograph. In particular, attention is paid to the advantages of the Boltzmann equation as a tool for considering nonequi librium, nonlinear processes. New fields of application of the Boltzmann equation are also described. Solutions of some problems are obtained with higher accuracy. Numerical procedures, such as parallel computing, are in vestigated for the first time. The structure and the contents of the present book have some com mon features with the monograph mentioned above, although there are new issues concerning the mathematical apparatus developed so that the Boltzmann equation can be applied for new physical problems. Because of this some chapters have been rewritten and checked again and some new chapters have been added.

Book Information

Series: Fluid Mechanics and Its Applications (Book 60)

Paperback: 302 pages

Publisher: Springer; Softcover reprint of the original 1st ed. 2001 edition (October 4, 2013)

Language: English

ISBN-10: 1402003889

ISBN-13: 978-1402003882

Product Dimensions: 6.1 x 0.7 x 9.2 inches

Shipping Weight: 1.3 pounds (View shipping rates and policies)

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