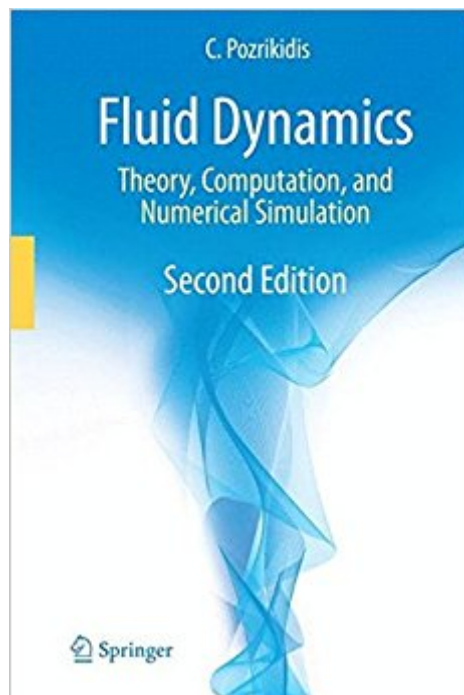## The book was found

Fluid Dynamics: Theory, Computation, And Numerical Simulation

Synopsis

Ready access to computers has de?ned a new era in teaching and learning. The opportunity to extend the subject matter of traditional science and engineering curricula into the realm of scienti?c computing has become not only desirable, but also necessary. Thanks to portability and low overhead and operating cost, experimentation by numerical simulation has become a viable substitute, and occasionally the only alternative, to physical experimentation. The new framework has necessitated the writing of texts and monographs from a modern perspective that incorporates numerical and computer progr- ming aspects as an integral part of the discourse. Under this modern directive, methods, concepts, and ideas are presented in a uni?ed fashion that motivates and underlines the urgency of the new elements, but neither compromises nor oversimpli?es the rigor of the classical approach. Interfacing fundamental concepts and practical methods of scienti?c c-puting can be implemented on di?erent levels. In one approach, theory and implementation are kept complementary and presented in a sequential fashion. In another approach, the coupling involves deriving computational methods and simulation algorithms, and translating equations into computer code - structions immediately following problem formulations. Seamlessly interjecting methods of scienti?c computing in the traditional discourse o?ers a powerful venue for developing analytical skills and obtaining physical insight.

Book Information

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Customer Reviews

From the reviews of the second edition: Ã¢â ¬Å"The book unites the traditional fluid dynamics with

computer programming and numerical solutions using MATLAB programs and CFD methods. Ã¢â ¬Â| The combination of introduction into theoretical and numerical fluid dynamics by the combined treatment immediately after formulation of many problems is interesting and very useful. Ã¢â ¬Â| highly recommended for students, researchers, and engineers.Ã¢â ¬Â• (Bernd Platzer, Zeitschrift fÃƒÂ r Angewandte Mathematik und Mechanik, Vol. 90 (6), 2010)

Fluid Dynamics: Theory, Computation, and Numerical Simulation is the only available book that extends the classical field of fluid dynamics into the realm of scientific computing in a way that is both comprehensive and accessible to the beginner. The theory of fluid dynamics, and the implementation of solution procedures into numerical algorithms, are discussed hand-in-hand and with reference to computer programming. This book is an accessible introduction to theoretical and computational fluid dynamics (CFD), written from a modern perspective that unifies theory and numerical practice. There are several additions and subject expansions in the Second Edition of Fluid Dynamics, including new Matlab and FORTRAN codes. Two distinguishing features of the discourse are: solution procedures and algorithms are developed immediately after problem formulations are presented, and numerical methods are introduced on a need-to-know basis and in increasing order of difficulty. Matlab codes are presented and discussed for a broad range of topics; from interfacial shapes in hydrostatics, to vortex dynamics, to Stokes flow, to turbulent flow. A supplement to this book is the FORTRAN software library FDLIB, freely available through the Internet, whose programs explicitly illustrate how computational algorithms translate into computer code instructions. The codes of FDLIB range from introductory to advanced, and the problems considered span a broad range of applications; from laminar channel flows, to vortex flows, to flows in aerodynamics. Selected computer problems at the end of each section ask the student to run the programs for various flow conditions, and thereby study the effect of the various parameters determining each flow. This text is a must for practitioners and students in all fields of engineering, computational physics, scientific computing, and applied mathematics. It can be used as a text in both undergraduate and graduate courses in fluid mechanics, aerodynamics, and computational fluid dynamics. The audience includes not only advanced undergraduate and entry-level graduate students, but also a broad class of scientists and engineers with a general interest in scientific computing.

Really good, but most of the material is in Introduction to Theoretical and Computational Fluid Dynamics, Not all the same, It's better , but Pozrikidis must write only one book, you do not need

two

good product

Very good programs are included. Its subject also are good but need more details especially for graduate students.thank you

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