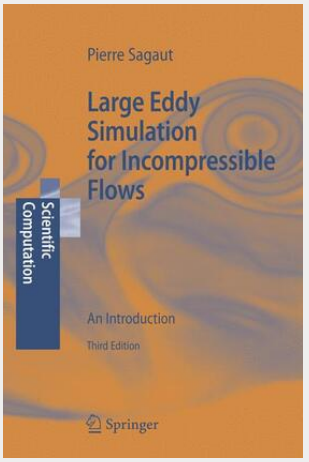
Sagaut

Large Eddy Simulation for Incompressible Flows

An Introduction



First concise textbook on Large-Eddy Simulation, a very important method in scientific computing and engineering From the foreword to the third edition written by Charles Meneveau: ". this meticulously assembled and significantly enlarged description of the many aspects of LES will be a most welcome addition to the bookshelves of scientists and engineers in fluid mechanics, LES practitioners, and students of turbulence in general."

Working on the manuscript of the third edition of this book was a very exciting task, since a lot of new developments have been published since the second edition was printed. The large-eddysimulation (LES) technique is now recognized as a pow- ful tool and real applications in several engineering ?elds are more and more frequently found. This increasing demand for e?cient LES tools also sustains growing theoretical research on many aspects of LES, some of which are - cluded in this book. Among them, it is worth noting the mathematical m- els of LES (the convolution ?lter being only one possiblity), the de?nition of boundary conditions, the coupling with numerical errors, and, of course, the problem of de?ning adequate subgrid models. All these issues are discussed in moredetailin thisnewedition. Somegoodnewsisthat othermonographs, which are good complements to the present book, are now available, showing that LES is a topic with a fastly growing audience. The reader interested in mathematics-oriented discussions will ? nd many details in the monoghaphs by Volker John (Large-Eddy Simulation of Turbulent Incompressible Flows, Springer) and Berselli, Illiescu and Layton (Mathematics of Large-Eddy S- ulation of Turbulent Flows, Springer), while people looking for a subsequent description of numerical methods for LES and direct numerical simulation will enjoy the book by Bernard Geurts (Elements of Direct and Large-Eddy Simulation, Edwards). More monographs devoted to particular features of LES (implicit LES appraoches, mathematical backgrounds,etc.) are to come in the near future.

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