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Sommario/riassunto

The book offers an overview of the techniques used to solve problems in fluid mechanics on computers and describes in detail those most often used in practice. Included are advanced techniques in computational fluid dynamics, like direct and large-eddy simulation of turbulence, multigrid methods, parallel computing, moving grids, structured, block-structured and unstructured boundary-fitted grids, free surface flows. The book shows common roots and basic principles for many apparently different methods. The issues of numerical accuracy, estimation and reduction of numerical errors are dealt with in detail, with many examples. The book also contains a great deal of practical advice for code developers and users. The book is designed to be equally useful to beginners and experts. All computer codes can be accessed from the publisher's server ftp.springer.de on the internet.