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Sommario/riassunto

This book aims to bridge the gap between practising mathematicians and the practitioners of turbulence theory. It presents the mathematical theory of turbulence to engineers and physicists, and the physical theory of turbulence to mathematicians. The book is the result of many years of research by the authors to analyse turbulence using Sobolev spaces and functional analysis. In this way the authors have recovered parts of the conventional theory of turbulence, deriving rigorously from the Navier-Stokes equations what had been arrived at earlier by phenomenological arguments. The mathematical technicalities are kept to a minimum within the book, enabling the language to be at a level understood by a broad audience. Each chapter is accompanied by appendices giving full details of the mathematical proofs and subtleties. This unique presentation should ensure a volume of interest to mathematicians, engineers and physicists.