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Titolo	Asymptotic Modelling in Fluid Mechanics [[electronic resource]] : Proceedings of a Symposium in Honour of Professor Jean-Pierre Guiraud Held at the Université Pierre et Marie Curie, Paris, France, 20–22 April 1994 / / edited by Pierre-Antoine Bois, Emmanuel Deriat, Renee Gatignol, Alain Rigolot
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Disciplina	532/.05/0151535
Soggetti	Physics Statistical physics Dynamical systems Fluids Geophysics Mathematical Methods in Physics Numerical and Computational Physics, Simulation Complex Systems Fluid- and Aerodynamics Geophysics/Geodesy Statistical Physics and Dynamical Systems
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Nota di contenuto	Growing up with asymptotics -- Instabilities and vortex patterns in circular Couette flow with axial density stratification -- Vortices subjected to non-axisymmetric strain — unsteady asymptotic evolution -- Some contributions to asymptotic theory for turbulent shear flows -- Turbulent entrance flow in a channel: An asymptotic approach -- An efficient wave interaction mechanism within a turbulent boundary layer -- Bifurcations of capillary-gravity interfacial waves -- The effect of a low-frequency modulation on some codimension 2 bifurcations -- Finite amplitude waves in a boundary layer flow over compliant walls --

Recent developments in the theory of the non-linear stability of high Reynolds number flows -- Weakly non linear instability of the laminar boundary layer calculated by a parabolic system of equations -- Applying a condition of observability to constitutive equations of laminar motion -- Hysteresis and interaction of standing waves with Faraday excitation -- About the radiation diagram of an underwater acoustic source in the presence of gravity waves -- Finite-amplitude, pulsed, ultrasonic beams -- Long-waves on thin viscous liquid film derivation of model equations -- On global existence theorems for the initial-boundary value problem for the Boltzmann equation -- Diffusion approximation and Arnold's "Cat Map" -- Second order analysis of the inner shock structure -- Transient behaviour of a gaseous cavity attached to a projectile in a two phase flow -- From the analytical theory to hypersonic aircraft design -- Upstream influence in mixed convection at small Richardson number on triple, double and single deck scales -- Asymptotic modelling for separating boundary layers -- Going on with asymptotics.

Sommario/riassunto

The purpose of this book is to gather contributions from scientists in fluid mechanics who use asymptotic methods to cope with difficult problems. The selected topics are as follows: vorticity and turbulence, hydrodynamic instability, non-linear waves, aerodynamics and rarefied gas flows. The last chapter of the book broadens the perspective with an overview of other issues pertaining to asymptotics, presented in a didactic way.
