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Nota di contenuto	Transport and Mixing in Laminar Flows: From Micro. uidics to Oceanic Currents; Contents; List of Contributors; Mixing in Laminar Fluid Flows: From Microfluidics to Oceanic Currents; Introduction; 1 Resonances and Mixing in Near-Integrable Volume-Preserving Systems; 1.1 Introduction; 1.2 General Properties of Near-Integrable Flows and Different Types of the Resonance Surfaces; 1.2.1 Metrics of Mixing; 1.2.2 Correlations of Successive Jumps and Ergodicity; 1.3 Separatrix Crossings in Volume-Preserving Systems; 1.3.1 Flow Structure; 1.3.2 Dynamics Near the Separatrix Surface 1.3.3 Finite Perturbations1.4 Passages Through Resonances in Autonomous Flows; 1.4.1 Scattering on Resonance; 1.4.2 Capture Into Resonance; 1.4.3 Improved AI; 1.4.4 Jump of AI Between First- and Second-Layer Boundaries; 1.4.5 Long-Time Dynamics and Adiabatic Diffusion; 1.5 Passages Through Resonances in Nonautonomous Flows; 1.5.1 Unperturbed Flow; 1.5.2 Two Perturbations and Averaging; 1.5.3 Resonant Phenomena; 1.5.4 Volume of the Mixing Domain; References; 2 Fluid Stirring in a Tilted Rotating Tank; 2.1 Introduction and Background Information; 2.2 Tilted-Rotating Tank Analysis 2.2.1 Tilted-Rotating Tank Model Equation2.2.1.1 Asymptotic Analysis:

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5.4 Local Behavior of ARD Systems

Sommario/riassunto

This book provides readers from academia and industry with an up-to-date overview of important advances in the field, dealing with such fundamental fluid mechanics problems as nonlinear transport phenomena and optimal control of mixing at the micro- and nanoscale. The editors provide both in-depth knowledge of the topic as well as vast experience in guiding an expert team of authors. The review style articles offer a coherent view of the micromixing methods, resulting in a much-needed synopsis of the theoretical models needed to direct experimental research and establish engineering princi