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Nota di contenuto	Preface; Contents; 1. Flows; 2. Fluids; 3. Fundamental equations of ideal fluids; 4. Viscous fluids; 5. Flows of ideal fluids; 6. Water waves and sound waves; 7. Vortex motions; 8. Geophysical flows; 9. Instability and chaos; 10. Turbulence; 11. Superfluid and quantized circulation; 12. Gauge theory of ideal fluid flows; Appendix A Vector analysis; Appendix B Velocity potential, stream function; Appendix C Ideal fluid and ideal gas; Appendix D Curvilinear reference frames: Differential operators; Appendix E First three structure functions; Appendix F Lagrangians; Solutions; References; Index
Sommario/riassunto	This textbook describes the fundamental "physical" aspects of fluid flows for beginners of fluid mechanics in physics, mathematics and engineering, from the point of view of modern physics. It also emphasizes the dynamical aspects of fluid motions rather than the static aspects, illustrating vortex motions, waves, geophysical flows, chaos and turbulence. Beginning with the fundamental concepts of the nature of flows and the properties of fluids, the book presents fundamental conservation equations of mass, momentum and energy, and the equations of motion for both inviscid and viscous fluids. I