

1. Record Nr.	UNINA9910822958703321
Autore	Kambe Tsutomu
Titolo	Elementary fluid mechanics // Tsutomu Kambe
Pubbl/distr/stampa	Hackensack, N.J. ; ; London, : World Scientific, c2007
ISBN	1-281-12078-2 9786611120788 981-270-667-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (403 p.)
Disciplina	620.106 532
Soggetti	Fluid mechanics Continuum mechanics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 373-375) and index.
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