1.	Record Nr.	UNINA9910349348603321
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	Titolo	Mathematical Modeling of Unsteady Inviscid Flows / / by Jeff D. Eldredge
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
	ISBN	3-030-18319-X
	Edizione	[1st ed. 2019.]
	Descrizione fisica	1 online resource (473 pages)
	Collana	Interdisciplinary Applied Mathematics, , 0939-6047 ; ; 50
	Disciplina	620.1064 620.106
	Soggetti	Mathematical physics Fluids Fluid mechanics Mathematical models Mathematical Applications in the Physical Sciences Fluid- and Aerodynamics Engineering Fluid Dynamics Mathematical Modeling and Industrial Mathematics Mathematical Physics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Reference Frames, Body Motion and Notation -- Foundational Concepts -- General Results of Incompressible Flow about a Body -- Force and Moment on a Body -- Transport of Vortex Elements -- Flow about a Two-Dimensional Flat Plate -- Flow About Three-Dimensional Bodies -- Multiple Bodies -- A. Mathematical Tools.
	Sommario/riassunto	This book builds inviscid flow analysis from an undergraduate-level treatment of potential flow to the level required for research. The tools covered in this book allow the reader to develop physics-based mathematical models for a variety of flows, including attached and separated flows past wings, fins, and blades of various shapes undergoing arbitrary motions. The book covers all of the ingredients of these models: the solution of potential flows about arbitrary body shapes in two- and three-dimensional contexts, with a particular focus

on conformal mapping in the plane; the decomposition of the flow into contributions from ambient vorticity and body motion; generalized edge conditions, of which the Kutta condition is a special case; and the calculation of force and moment, with extensive treatments of added mass and the influence of fluid vorticity. The book also contains an extensive primer with all of the necessary mathematical tools. The concepts are demonstrated on several example problems, both classical and modern.