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Titolo	A Modern Course in Aeroelasticity [[electronic resource]] : Fifth Revised and Enlarged Edition / / by Earl H. Dowell
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ISBN	3-319-09453-X
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Descrizione fisica	1 online resource (720 p.)
Collana	Solid Mechanics and Its Applications, , 0925-0042 ; ; 217
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Soggetti	Aerospace engineering Astronautics Mathematical models Fluid mechanics Fluids Aerospace Technology and Astronautics Mathematical Modeling and Industrial Mathematics Engineering Fluid Dynamics Fluid- and Aerodynamics
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	1 Introduction -- 2 Static Aeroelasticity -- 3 Dynamic Aeroelasticity -- 4 Nonsteady Aerodynamics of Lifting and Non-lifting Surfaces -- 5 Stall Flutter -- 6 Aeroelasticity in Civil Engineering -- 7 Aeroelastic Response of Rotorcraft -- 8 Aeroelasticity in Turbomachines -- 9 Modeling of Fluid-Structure Interaction -- 10 Experimental Aeroelasticity -- 11 Nonlinear Aeroelasticity -- 12 Aeroelastic Control -- 13 Modern Analysis for Complex and Nonlinear Unsteady Flows in Turbomachinery -- 14 Some Recent Advances in Nonlinear Aeroelasticity -- Appendix A: A Primer For Structural Response To Random Pressure Fluctuations -- Appendix B: Some Example Problems -- Index.
Sommario/riassunto	This book cover the basics of aeroelasticity or the dynamics of fluid-structure interaction. While the field began in response to the rapid

development of aviation, it has now expanded into many branches of engineering and scientific disciplines and treat physical phenomena from aerospace engineering, bioengineering, civil engineering, and mechanical engineering in addition to drawing the attention of mathematicians and physicists. The basic questions addressed are dynamic stability and response of fluid structural systems as revealed by both linear and nonlinear mathematical models and correlation with experiment. The use of scaled models and full scale experiments and tests play a key role where theory is not considered sufficiently reliable. In this new edition the more recent literature on nonlinear aeroelasticity has been brought up to date and the opportunity has been taken to correct the inevitable typographical errors that the authors and our readers have found to date. The early chapters of this book may be used for a first course in aeroelasticity taught at the senior undergraduate or early graduate level and the later chapters may serve as the basis for a more advanced course, a graduate research seminar or as reference to provide an entree to the current research literature.