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Titolo	Mathematical Models for Suspension Bridges : Nonlinear Structural Instability // by Filippo Gazzola
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Collana	MS&A, Modeling, Simulation and Applications, , 2037-5255 ; ; 15
Disciplina	003.3
Soggetti	Differential equations Differential equations, Partial Mathematical models Mechanics Mechanics, Applied Applied mathematics Engineering mathematics Ordinary Differential Equations Partial Differential Equations Mathematical Modeling and Industrial Mathematics Solid Mechanics Mathematical and Computational Engineering
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 and indexes.
Nota di contenuto	1 Book overview -- 2 Brief history of suspension bridges -- 3 One dimensional models -- 4 A fish-bone beam model -- 5 Models with interacting oscillators -- 6 Plate models -- 7 Conclusions.
Sommario/riassunto	This work provides a detailed and up-to-the-minute survey of the various stability problems that can affect suspension bridges. In order to deduce some experimental data and rules on the behavior of suspension bridges, a number of historical events are first described, in the course of which several questions concerning their stability naturally arise. The book then surveys conventional mathematical models for suspension bridges and suggests new nonlinear

alternatives, which can potentially supply answers to some stability questions. New explanations are also provided, based on the nonlinear structural behavior of bridges. All the models and responses presented in the book employ the theory of differential equations and dynamical systems in the broader sense, demonstrating that methods from nonlinear analysis can allow us to determine the thresholds of instability.
