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Nota di contenuto	Preface to the third edition.- Preface to the second edition.- Preface to the first edition.- 1 Introduction.- 1.1 Active versus passive. - 1.2 Vibration suppression.- 1.3 Smart materials and structures. - 1.4 Control strategies.- 1.4.1 Feedback.- 1.4.2 Feedforward. - 1.5 The various steps of the design.- 1.6 Plant description, error and control budget.- 1.7 Readership and Organization of the book. - 1.8 References.- 1.9 Problems.- 2 Some concepts in structural dynamics.- 2.1 Introduction.- 2.2 Equation of motion of a discrete system.- 2.3 Vibration modes.- 2.4 Modal decomposition.- 2.4.1 Structure without rigid body modes.- 2.4.2 Dynamic °exibility matrix. - 2.4.3 Structure with rigid body modes.- 2.4.4 Example.- 2.5 Collocated control system.- 2.5.1 Transmission zeros and constrained system.- 2.6 Continuous structures.- 2.7 Guyan reduction.- 2.8

Sommario/riassunto

This textbook is an introduction to the dynamics of active structures and to the feedback control of lightly damped flexible structures; the emphasis is placed on basic issues and simple control strategies that work. Now in its fourth edition, more chapters have been added, and comments and feedback from readers have been taken into account, while at the same time the unique premise of bridging the gap between structure and control has remained. Many examples, covering a broad field of applications from bridges to satellites and telescopes, and problems bring the subject to life and take the audience from theory to practice. The book has 19 chapters dealing with some concepts in structural dynamics; electromagnetic and piezoelectric transducers; piezoelectric beam, plate and truss; passive damping with piezoelectric transducers; collocated versus non-collocated control; active damping with collocated systems; vibration isolation; state space approach; analysis and synthesis in the frequency domain; optimal control; controllability and observability; stability; applications; tendon control of cable structures; active control of deformable mirrors for Adaptive Optics and large earth-based and space telescopes; and semi-active control. The book concludes with an exhaustive bibliography and index. This book is intended for structural engineers who want to acquire some background in vibration control, and for control engineers who are dealing with flexible structures. It can be used as a textbook for a graduate course on vibration control or active structures. A solutions manual is available through the publisher to teachers using this book as a textbook.