1. Record Nr. UNINA9910143745403321

Autore	Casciati Fabio
Titolo	Technology of semiactive devices and applications in vibration mitigation [[electronic resource] /] / Fabio Casciati, Georges Magonette, Francesco Marazzi
Pubbl/distr/stampa	Chichester, England ; ; Hoboken, NJ, : Wiley, c2006
ISBN	1-280-35571-9 9786610355716 0-470-02291-4 0-470-02290-6
Descrizione fisica	1 online resource (269 p.)
Altri autori (Persone)	MagonetteGeorges MarazziFrancesco
Disciplina	624.171 624.176
Soggetti	Vibration Damping (Mechanics) Structural control (Engineering) Electronic books.
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. [225]-241) and index.
Nota di contenuto	Cover; Contents; List of Figures; List of Tables; List of Algorithms; List of Symbols; Introduction; Objectives; Organization of the Book; 1 Reliability, Robustness and Structural Control; 1.1 Preliminary Concepts; 1.2 Definitions; 1.3 System Representation; 1.4 A Comparison of Passive, Active and Semiactive Control Strategies; 2 Collocated and Non-collocated Systems; 2.1 Introduction; 2.2 Definition of Collocated System; 2.3 Centralized and Non-centralized Systems; 2.4 Linear and Non-linear Systems; 2.5 The Problem of Spillover 2.6 Advantages and Disadvantages of Collocated and Non-collocated Systems2.7 A Numerical Comparison; 3 Semiactive Devices; 3.1 The Basic Idea and a Brief History; 3.2 Variable Viscous Devices; 3.3 Variable Stiffness Devices; 3.4 Magnetorheological Devices; 3.5 Friction Devices; 3.6 Tuned Liquid Dampers; 3.7 Electro-inductive Device; 3.8

Air-jet Actuators; 3.9 SMA Actuators; 4 Semiactive Control Laws; 4.1 Control Strategies and Algorithms for Semiactive Damping; 4.2 Implementation Schemes; 5 Implementation of Semiactive Control Strategies; 5.1 Introduction; 5.2 Hardware Control Implementation 5.3 Real-time Software5.4 Non-centralized Control Versus Collocated Systems; 6 Experimental Verification; 6.1 Introduction; 6.2 The Challenges of Performance-based Design in Structural Testing; 6.3 Base-isolated Buildings and Bridges; 6.4 Supplemental Damping Devices; 6.5 Experimental Methods in Structural Dynamics; 6.6 Assessment of Structural Control Devices; 7 Stability and Foreseen Developments; 7.1 Preliminary Concepts; 7.2 Semiactive Features; 7.3 Conclusions; Appendix A Damping; A.1 Types of Damping; A.2 Why Have a Damping Matrix?; A.3 Rayleigh Damping; Bibliography; Index

Sommario/riassunto

Researchers have studied many methods of using active and passive control devices for absorbing vibratory energy. Active devices, while providing significant reductions in structural motion, typically require large (and often multiply-redundant) power sources, and thereby raise concerns about stability. Passive devices are fixed and cannot be modified based on information of excitation or structural response. Semiactive devices on the other hand can provide significant vibration reductions comparable to those of active devices but with substantially reduced power requirements and in a stable m