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Transmissibility; 2.6 Vehicle Active Suspension; 2.6.1 Quarter-Car Model; 2.7 Semi-Active Suspension; 2.7.1 Semi-Active Devices; 2.7.2 Narrow-Band Disturbance; 2.7.3 Quarter-Car Semi-Active Suspension; References; 3 A Comparison of Passive, Active and Hybrid Control; 3.1 Introduction; 3.2 System Description; 3.3 The Dynamic Vibration Absorber; 3.3.1 Single-d.o.f. Oscillator; 3.3.2 Multiple-d.o.f. System; 3.3.3 Shear Frame Example; 3.4 Active Mass Damper; 3.5 Hybrid Control; 3.6 Shear Control; 3.7 Force Actuator, Displacement Sensor 3.7.1 Direct Velocity Feedback 3.7.2 First-Order Positive Position Feedback; 3.7.3 Comparison of the DVF and the PPF; 3.8 Displacement Actuator, Force Sensor; 3.8.1 Comparison of the IFF and the DVF; References; 4 Vibration Control Methods and Devices; 4.1 Introduction; 4.2 Classification of Vibration Control Methods; 4.3 Construction of Active Dynamic Absorber; 4.4 Control Devices for Wind Excitation Control in Civil Structures; 4.5 Real Towers Using the Connected Control Method; 4.6 Application of Active Dynamic Absorber for Controlling Vibration of Single-d.o.f. Systems 4.6.1 Equations of Motion and State Equation 4.6.2 Representation of a Non-Dimensional State Equation; 4.6.3 Control System Design; 4.6.4 Similarity Law between Dimensional and Non-dimensional System; 4.6.5 Analysis of Vibration Control Effect; 4.6.6 Experiment; 4.7 Remarks; References; 5 Reduced-Order Model for Structural Control; 5.1 Introduction; 5.2 Modeling of Distributed Structures; 5.2.1 Equation of Motion for Distributed Structures; 5.2.2 Conventional Modeling of Structures; 5.3 Spillover; 5.4 The Lumped Modeling Method; 5.4.1 A Key Idea for Deriving a Reduced-Order Model 5.4.2 Relationship Between Physical and Modal Coordinate Systems

Sommario/riassunto

With Active Control of Structures, two global pioneers present the state-of-the-art in the theory, design and application of active vibration control. As the demand for high performance structural systems increases, so will the demand for information and innovation in structural vibration control; this book provides an effective treatise of the subject that will meet this requirement. The authors introduce active vibration control through the use of smart materials and structures, semi-active control devices and a variety of feedback options; they then discuss topics including methods a
