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1.7.3 Smart Polyelectrolyte Gels1.8 Active Fibre Composites; 1.9 Optical Fibres; 1.10 Smart Structures and Their Applications; 1.10.1 Medical Devices; 1.10.2 Aerospace Applications; 1.10.3 Structural Health Monitoring; 2 Transducers for Smart Structures; 2.1 Introduction; 2.2 Transducers for Structural Control; 2.2.1 Resistive Transducers; 2.2.2 Inductive Transducers; 2.2.3 Capacitive Transducers; 2.2.4 Cantilever-type Mechanical Resonator Transducers; 2.2.5 Eddy Current Transducer; 2.2.6 Balancing Instruments; 2.2.7 Transduction Mechanisms in Materials
2.2.8 Hydrodynamic and Acoustic Transduction Mechanisms2.2.9 Transducer Sensitivities, Scaling Laws for Example Devices; 2.2.10 Modelling and Analysis of a Piezoelectric Transducer; 2.3 Actuation of Flexible Structures; 2.3.1 Pre-stressed Piezoelectric Actuators; 2.3.2 Shape Memory Material-based Actuators; 2.4 Sensors for Flexible and Smart Structures; 2.4.1 Resonant Sensors; 2.4.2 Analysis of a Typical Resonant Sensor; 2.4.3 Piezoelectric Accelerometers; 2.4.4 The Sensing of Rotational Motion; 2.4.5 The Coriolis Angular Rate Sensor; 2.5 Fibre-optic Sensors
2.5.1 Fibre Optics: Basic Concepts2.5.2 Physical Principles of Fibre-optic Transducers; 2.5.3 Optical Fibres; 2.5.4 Principles of Optical Measurements; 2.5.5 Fibre-optic Transducers for Structural Control; 3 Fundamentals of Structural Control; 3.1 Introduction; 3.2 Analysis of Control Systems in the Time Domain; 3.2.1 Introduction to Time Domain Methods; 3.2.2 Transformations of State Variables; 3.2.3 Solution of the State Equations; 3.2.4 State Space and Transfer Function Equivalence; 3.2.5 State Space Realizations of Transfer Functions; 3.3 Properties of Linear Systems
3.3.1 Stability, Eigenvalues and Eigenvectors

Sommario/riassunto

Dynamics of Smart Structures is a practical, concise and integrated text that provides an introduction to the fundamental principles of a field that has evolved over the recent years into an independent and identifiable subject area. Bringing together the concepts, techniques and systems associated with the dynamics and control of smart structures, it comprehensively reviews the differing smart materials that are employed in the development of the smart structures and covers several recent developments in the field of structural dynamics. Dynamics of Smart Structures has been d