



mathematics



Special Issue Reprint

Advances and Trends in Mathematical Modelling, Control and Identification of Vibrating Systems

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This book introduces novel results on mathematical modelling, parameter identification, and automatic control for a wide range of applications of mechanical, electric, and mechatronic systems, where undesirable oscillations or vibrations are manifested. The six chapters of the book written by experts from international scientific community cover a wide range of interesting research topics related to: algebraic identification of rotordynamic parameters in rotor-bearing system using finite element models; model predictive control for active automotive suspension systems by means of hydraulic actuators; model-free data-driven-based control for a Voltage Source Converter-based Static Synchronous Compensator to improve the dynamic power grid performance under transient scenarios; an exact elastodynamics theory for bending vibrations for a class of flexible structures; motion profile tracking control and vibrating disturbance suppression for quadrotor aerial vehicles using artificial neural networks and particle swarm optimization; and multiple adaptive controllers based on B-Spline artificial neural networks for regulation and attenuation of low frequency oscillations for large-scale power systems. The book is addressed for both academic and industrial researchers and practitioners, as well as for postgraduate and undergraduate engineering students and other experts in a wide variety of disciplines seeking to know more about the advances and trends in mathematical modelling, control and identification of



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