

*Special Issue Reprint*

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

[www.mdpi.com/books/reprint/5523](http://www.mdpi.com/books/reprint/5523)

Edited by

Francisco Beltran-Carbajal

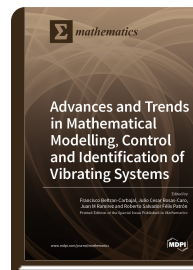
Julio Cesar Rosas-Caro

Juan M Ramirez

Roberto Salvador Félix Patrón

ISBN 978-3-0365-3949-2 (Hardback)

ISBN 978-3-0365-3950-8 (PDF)



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



systems in which undesirable oscillations or vibrations could be presented.

You can order print copies at

[www.mdpi.com/books/reprint/5523](http://www.mdpi.com/books/reprint/5523)

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



## Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



## Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



## High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



## High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



## Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.