



MONOGRAPHS

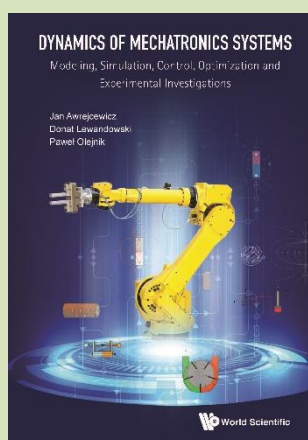
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Dynamics of Mechatronics Systems

(with D. Lewandowski, P. Olejnik)

World Scientific Publishing, Singapore 2017
monograph, 342 pages, ISBN 978-981-3146-54-9

SUMMARY



This book describes the interplay of mechanics, electronics, electrotechnics, automation and biomechanics. It provides a broad overview of mechatronics systems ranging from modeling and dimensional analysis, and an overview of magnetic, electromagnetic and piezo-electric phenomena. It also includes the investigation of the pneumo-fluid-mechanical, as well as electrohydraulic servo systems, modeling of dynamics of an atom/particle embedded in the magnetic field, integrity aspects of the Maxwell's equations, the selected optimization problems of angular velocity control of a DC motor subjected to chaotic disturbances with and without stick-slip dynamics, and the analysis of a human chest adjacent to the elastic backrest aimed at controlling force to minimize relative compression of the chest employing the LQR.

This book provides a theoretical background on the analysis of various kinds of mechatronics systems, along with their computational analysis, control, optimization as well as laboratory investigations.

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