

# Advanced Mechatronics: Monitoring and Control of Spatially Distributed Systems

By Dan Necsulescu



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This unique book extends mechatronics to spatially distributed systems. Issues regarding remote measurements and indirect monitoring and control of distributed systems is presented in the general framework of the recently developed ill-posed inverse problems. The book starts with an overview of the main results in the inverse problem theory and continues with the presentation of basic results in discrete inverse theory. The second part presents various forward and inverse problems resulting from modeling, monitoring and controlling mechanical, acoustic, fluid and thermal systems. Finally, indirect and remote monitoring and control issues are analyzed as cases of ill-posed inverse problems. Numerous numerical examples illustrate current approaches used for solving practical inverse problems.

Contents: Examples of Direct and Inverse Problems for Mixed Systems; Overview of Integral Equations and Discrete Inverse Problems; Inverse Problems in Dynamic Calibration of Sensors; Active Vibration Control in Flexible Structures; Acousto-Mechatronics; Thermo-Mechatronics; Magneto-Mechatronics; Inverse Problems Issues for Non-Minimum Phase Systems.



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