

1. Record Nr.	UNINA9910438145803321
Titolo	Model based parameter estimation : theory and applications // edited by Hans Georg Bock, Thomas Carraro, Willi Jäger, Stefan Körkel, Rolf Rannacher, Johannes P. Schlöder
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2013
ISBN	1-299-33664-7 3-642-30367-6
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (339 p.)
Collana	Contributions in Mathematical and Computational Sciences, , 2191-303X ; ; 4
Disciplina	515.3
Soggetti	Differential equations Partial differential equations Numerical analysis Computer mathematics Mathematical models Calculus of variations Ordinary Differential Equations Partial Differential Equations Numerical Analysis Computational Science and Engineering Mathematical Modeling and Industrial Mathematics Calculus of Variations and Optimal Control; Optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Parameter Estimation and Optimum Experimental Design for Differential Equation Models: H.G. Bock, St. Körkel, J.P. Schlöder -- Adaptive Finite Element Methods for Parameter Identification Problems: B. Vexler -- Gauss-Newton Methods for Robust Parameter Estimation: T. Binder, E. Kostina -- An Optimal Scanning Sensor Activation Policy for Parameter Estimation of Distributed Systems: D. Ucínski -- Interaction between Experiment, Modeling and Simulation of Spatial

Aspects in the JAK2/STAT5 Signaling Pathway: E. Friedmann, A. C. Pfeifer, R. Neumann, U. Klingmüller, R. Rannacher -- The Importance and Challenges of Bayesian Parameter Learning in Systems Biology: J. Mazur, L. Kaderali -- Experiment Setups and Parameter Estimation in Fluorescence Recovery After Photobleaching Experiments: A Review of Current Practice: J. Beaudouin, M. S. Mommer, H. G. Bock, R. Eils -- Drug Resistance in Infectious Diseases: Modeling, Parameter Estimation and Numerical Simulation: Le Thi Thanh An, W. Jäger -- Mathematical Models of Hematopoietic Reconstitution after Stem Cell Transplantation: A. Marciniak-Czochra, Th. Stiehl -- Combustion Chemistry and Parameter Estimation: M. Fischer, U. Riedel -- Numerical Simulation of Catalytic Reactors by Molecular-Based Models: O. Deutschmann, St. Tischer -- Model-Based Design of Experiments for Estimating Heat-Transport Parameters in Tubular Reactors: A. Badinski, D. Corbett -- Parameter Estimation for a Reconstructed SOFC Mixed-Conducting LSCF-Cathode: Th. Carraro, J. Joos -- An Application of Robust Parameter Estimation in Environmental Physics: G. Herzog, F. R. Vogel -- Parameter Estimation in Image Processing and Computer Vision: Ch. S. Garbe, B. Ommer.

Sommario/riassunto

This judicious selection of articles combines mathematical and numerical methods to apply parameter estimation and optimum experimental design in a range of contexts. These include fields as diverse as biology, medicine, chemistry, environmental physics, image processing and computer vision. The material chosen was presented at a multidisciplinary workshop on parameter estimation held in 2009 in Heidelberg. The contributions show how indispensable efficient methods of applied mathematics and computer-based modeling can be to enhancing the quality of interdisciplinary research. The use of scientific computing to model, simulate, and optimize complex processes has become a standard methodology in many scientific fields, as well as in industry. Demonstrating that the use of state-of-the-art optimization techniques in a number of research areas has much potential for improvement, this book provides advanced numerical methods and the very latest results for the applications under consideration.
