Language: English   Search: [   ]   ZMATH   Contact ✉

Zentralblatt MATH

| World of Mathematics | Database »ZMATH« | MSC 2000 MSC 2010 | Reviewer Service | Subscription »ZMATH« |

ZMATH Database | Advanced Search   Print 🖶

| ZMATH Database | Simple Search | Advanced Search | Command Search |

Advanced Search

Query:

an:1157.93001

Fill in the form and click »Search«…   [Clear]   [Search]

Display: 3 entries per page [Show] check ... matHTML Comp... entries

Zbl 1157.93001
Christofides, Panagiotis D.; Armaou, Antonios; Lou, Yiming; Varshney, Amit

Control and optimization of multiscale process systems. (English)
[B] Control Engineering. Boston, MA: Birkhäuser. xx, 232~p.
EUR~54.90/net; SFR~95.00 (2009). ISBN 978-0-8176-4792-6/hbk

In several industrial processes multiscale modeling is necessary to describe the coupling of macroscopic and microscopic phenomena. Here, methods for feedback control and optimization of processes of this type are considered. Modeling approaches of the following type are studied: Kinetic Monte Carlo simulation of distributed parameter processes, feedback control using kinetic Monte Carlo models, construction of stochastic models and parameter estimation, predictive and covariance control using stochastic partial differential equations, steady-state and dynamic optimization techniques. Applications to industrial processes, especially chemical processes, are given. After the Preface and the Introduction, the contents involves the following chapters: 2. Multiscale process modeling and simulation; 3. Control using kinetic Monte Carlo methods; 4. Construction of stochastic PDEs; 5. Feedback control using stochastic PDEs; 6. Optimization of multiscale process systems; 7. Dynamic optimization of multiscale process systems. The book contains many illustrations and tables with data from concrete processes and a large list of references. A good knowledge in partial differential equations, probability theory and mathematical statistics, simulation methods, control and optimization is required for an efficient reading of this book.
[Kurt Marti (München)]

MSC 2000:
* *93-02 Research monographs (systems and control)
* 93C20 Control systems governed by PDE
* 93C95 Appl. of control theory
* 93E03 General theory of stochastic systems
* 60H15 Stochastic partial differential equations

Keywords: multiscale process systems; partial differential equations; optimal

Highlights
- The Painlevé handbook
- Einstein's mistakes
- Zeta functions of groups and rings

Master Server

Zentralblatt MATH Berlin [Germany]

© FIZ Karlsruhe GmbH

Zentralblatt MATH master server is maintained by the Editorial Office in Berlin, Section Mathematics and Computer Science of FIZ Karlsruhe and is updated daily.

Other Mirror Sites

Login
Username:
Password:
[Login]

control; Monte Carlo simulation

PDF | MathML | XML | ASCII | DVI | PS | BibTeX | Online Ordering

Comment on this Item