

# Contents

## Part I Fundamentals

<b>Linear Systems in Discrete Time</b> .....	3
Jan C. Willems	
<b>Robust Controller Synthesis is Convex for Systems without Control Channel Uncertainties</b> .....	13
Carsten W. Scherer	
<b>Conservation Laws and Lumped System Dynamics</b> .....	31
Arjan van der Schaft, Bernhard Maschke	
<b>Polynomial Optimization Problems are Eigenvalue Problems</b> .....	49
Philippe Dreesen and Bart De Moor	

## Part II Bridging Theory and Applied Technology

<b>Designing Instrumentation for Control</b> .....	71
Faming Li, Maurício C. de Oliveira and Robert E. Skelton	
<b>Uncertain Model Set Calculation from Frequency Domain Data</b> .....	89
Gary J. Balas, Andrew K. Packard and Peter J. Seiler	
<b>Robust Estimation for Automatic Controller Tuning with Application to Active Noise Control</b> .....	107
Charles E. Kinney and Raymond A. de Callafon	
<b>Identification of Parameters in Large Scale Physical Model Structures, for the Purpose of Model-Based Operations</b> .....	125
Paul M.J. Van den Hof, Jorn F.M. Van Doren and Sippe G. Douma	

### **Part III Applications in Motion Control Systems and Industrial Process Control**

#### **Recovering Data from Cracked Optical Discs using Hankel Iterative Learning Control . . . . . 147**

Maarten Steinbuch, Jeroen van de Wijdeven, Tom Oomen, Koos van Berkel, and George Leenknecht

#### **Advances in Data-driven Optimization of Parametric and Non-parametric Feedforward Control Designs with Industrial Applications . . . 167**

Rob Tousain and Stan van der Meulen

#### **Incremental Identification of Hybrid Models of Dynamic Process Systems . . . . . 185**

Olaf Kahrs, Marc Brendel, Claas Michalik and Wolfgang Marquardt

#### **Front Controllability in Two-Phase Porous Media Flow . . . . . 203**

Jan Dirk Jansen, Jorn F.M. Van Doren, Mohsen Heidary-Fyrozjaee and Yannis C. Yortsos

### **Part IV Appendix**

#### **PhD Supervision by Okko H. Bosgra . . . . . 223**

#### **Okko H. Bosgra, Bibliographic Record . . . . . 227**

#### **Index . . . . . 237**

Model-Based Control:

Bridging Rigorous Theory and Advanced Technology

van den Hof, P.M.J.; Scherer, C.; Heuberger, P.S.C.

(Eds.)

2009, XV, 239 p., Hardcover

ISBN: 978-1-4419-0894-0