

Contents

Part I Fundamentals

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

Part II Bridging Theory and Applied Technology

Designing Instrumentation for Control	71
Faming Li, Maurício C. de Oliveira and Robert E. Skelton	
Uncertain Model Set Calculation from Frequency Domain Data	89
Gary J. Balas, Andrew K. Packard and Peter J. Seiler	
Robust Estimation for Automatic Controller Tuning with Application to Active Noise Control	107
Charles E. Kinney and Raymond A. de Callafon	
Identification of Parameters in Large Scale Physical Model Structures, for the Purpose of Model-Based Operations	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



<http://www.springer.com/978-1-4419-0894-0>

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