## Contents

### Part I Basic Concepts

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Model Order Reduction</td>
<td>Wil Schilders</td>
<td>3</td>
</tr>
<tr>
<td>Linear Systems, Eigenvalues, and Projection</td>
<td>Henk van der Vorst</td>
<td>33</td>
</tr>
</tbody>
</table>

### Part II Theory

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure-Preserving Model Order Reduction of RCL Circuit Equations</td>
<td>Roland W. Freund</td>
<td>49</td>
</tr>
<tr>
<td>A Unified Krylov Projection Framework for Structure-Preserving Model Reduction</td>
<td>Zhaojun Bai, Ren-cang Li, and Yangfeng Su</td>
<td>75</td>
</tr>
<tr>
<td>Model Reduction via Proper Orthogonal Decomposition</td>
<td>René Pinnau</td>
<td>95</td>
</tr>
<tr>
<td>A Survey on Model Reduction of Coupled Systems</td>
<td>Timo Reis and Tatjana Stykel</td>
<td>133</td>
</tr>
<tr>
<td>Space Mapping and Defect Correction</td>
<td>David Echeverría, Domenico Lahaye, and Piet W. Hemker</td>
<td>157</td>
</tr>
<tr>
<td>Modal Approximation and Computation of Dominant Poles</td>
<td>Joost Rommes</td>
<td>177</td>
</tr>
</tbody>
</table>
Some Preconditioning Techniques for Saddle Point Problems  
Michele Benzi and Andrew J. Wathen .......................... 195

Time Variant Balancing and Nonlinear Balanced Realizations  
E.I. Verriest ................................................. 213

Singular Value Analysis and Balanced Realizations for Nonlinear Systems  
Kenji Fujimoto and Jacquelin M.A. Scherpen .................. 251

Part III Research Aspects and Applications

Matrix Functions  
Andreas Frommer and Valeria Simoncini ....................... 275

Model Reduction of Interconnected Systems  
Antoine Vandendorpe and Paul Van Dooren .................... 305

Quadratic Inverse Eigenvalue Problem and Its Applications to Model Updating — An Overview  
Moody T. Chu* ............................................. 323

Data-Driven Model Order Reduction Using Orthonormal Vector Fitting  
Dirk Deschrijver and Tom Dhaene .............................. 341

Model-Order Reduction of High-Speed Interconnects Using Integrated Congruence Transform  
Emad Gad, Michel Nakhla, and Ram Achar ....................... 361

Model Order Reduction for MEMS: Methodology and Computational Environment for Electro-Thermal Models  
Tamara Bechtold, Evgenii B. Rudnyi, and Jan G. Korvink ................ 403

Model Order Reduction of Large RC Circuits  
Nick P. van der Meij ........................................ 421

Reduced Order Models of On-Chip Passive Components and Interconnects, Workbench and Test Structures  
Daniel Ioan and Gabriela Ciuprina ............................ 447

Index ............................................................. 469
Model Order Reduction: Theory, Research Aspects and Applications
Schilders, W.H.; van der Vorst, H.A.; Rommes, J. (Eds.)
2008, XI, 471 p., Hardcover
ISBN: 978-3-540-78840-9