

# Contents

<b>1</b>	<b>Two Ways to Treat Time in Reduced Basis Methods</b> .....	<b>1</b>
	Silke Glas, Antonia Mayerhofer, and Karsten Urban	
<b>2</b>	<b>Simultaneous Empirical Interpolation and Reduced Basis Method: Application to Non-linear Multi-Physics Problem</b> .....	<b>17</b>
	Cécile Daversin and Christophe Prud'homme	
<b>3</b>	<b>A Certified Reduced Basis Approach for Parametrized Optimal Control Problems with Two-Sided Control Constraints</b> .....	<b>37</b>
	Eduard Bader, Martin A. Grepl, and Karen Veroy	
<b>4</b>	<b>A Reduced Basis Method with an Exact Solution Certificate and Spatio-Parameter Adaptivity: Application to Linear Elasticity</b> .....	<b>55</b>
	Masayuki Yano	
<b>5</b>	<b>A Reduced Basis Method for Parameter Functions Using Wavelet Approximations</b> .....	<b>77</b>
	Antonia Mayerhofer and Karsten Urban	
<b>6</b>	<b>Reduced Basis Isogeometric Mortar Approximations for Eigenvalue Problems in Vibroacoustics</b> .....	<b>91</b>
	Thomas Horger, Barbara Wohlmuth, and Linus Wunderlich	
<b>7</b>	<b>Reduced Basis Approximations for Maxwell's Equations in Dispersive Media</b> .....	<b>107</b>
	Peter Benner and Martin Hess	
<b>8</b>	<b>Offline Error Bounds for the Reduced Basis Method</b> .....	<b>121</b>
	Robert O'Connor and Martin Grepl	
<b>9</b>	<b>ArbiLoMod: Local Solution Spaces by Random Training in Electrodynamics</b> .....	<b>137</b>
	Andreas Buhr, Christian Engwer, Mario Ohlberger, and Stephan Rave	

<b>10</b>	<b>Reduced-Order Semi-Implicit Schemes for Fluid-Structure Interaction Problems</b> .....	149
	Francesco Ballarin, Gianluigi Rozza, and Yvon Maday	
<b>11</b>	<b>True Error Control for the Localized Reduced Basis Method for Parabolic Problems</b> .....	169
	Mario Ohlberger, Stephan Rave, and Felix Schindler	
<b>12</b>	<b>Efficient Reduction of PDEs Defined on Domains with Variable Shape</b> .....	183
	Andrea Manzoni and Federico Negri	
<b>13</b>	<b>Localized Reduced Basis Approximation of a Nonlinear Finite Volume Battery Model with Resolved Electrode Geometry</b> .....	201
	Mario Ohlberger and Stephan Rave	
<b>14</b>	<b>A-Posteriori Error Estimation of Discrete POD Models for PDE-Constrained Optimal Control</b> .....	213
	Martin Gubisch, Ira Neitzel, and Stefan Volkwein	
<b>15</b>	<b>Hi-POD Solution of Parametrized Fluid Dynamics Problems: Preliminary Results</b> .....	235
	Davide Baroli, Cristina Maria Cova, Simona Perotto, Lorenzo Sala, and Alessandro Veneziani	
<b>16</b>	<b>Adaptive Sampling for Nonlinear Dimensionality Reduction Based on Manifold Learning</b> .....	255
	Thomas Franz, Ralf Zimmermann, and Stefan Görtz	
<b>17</b>	<b>Cross-Gramian-Based Model Reduction: A Comparison</b> .....	271
	Christian Himpe and Mario Ohlberger	
<b>18</b>	<b>Truncated Gramians for Bilinear Systems and Their Advantages in Model Order Reduction</b> .....	285
	Peter Benner, Pawan Goyal, and Martin Redmann	
<b>19</b>	<b>Leveraging Sparsity and Compressive Sensing for Reduced Order Modeling</b> .....	301
	J. Nathan Kutz, Syuzanna Sargsyan, and Steven L. Brunton	
<b>20</b>	<b>A HJB-POD Approach to the Control of the Level Set Equation</b> .....	317
	Alessandro Alla, Giulia Fabrini, and Maurizio Falcone	
<b>21</b>	<b>Model Order Reduction Approaches for Infinite Horizon Optimal Control Problems via the HJB Equation</b> .....	333
	Alessandro Alla, Andreas Schmidt, and Bernard Haasdonk	
<b>22</b>	<b>Interpolatory Methods for <math>\mathcal{H}_\infty</math> Model Reduction of Multi-Input/Multi-Output Systems</b> .....	349
	Alessandro Castagnotto, Christopher Beattie, and Serkan Gugercin	

**23 Model Reduction of Linear Time-Varying Systems with Applications for Moving Loads** ..... 367  
 M. Cruz Varona and B. Lohmann

**24 Interpolation Strategy for BT-Based Parametric MOR of Gas Pipeline-Networks** ..... 387  
 Y. Lu, N. Marheineke, and J. Mohring

**25 Energy Stable Model Order Reduction for the Allen-Cahn Equation** ..... 403  
 Murat Uzunca and Bülent Karasözen

**26 MOR-Based Uncertainty Quantification in Transcranial Magnetic Stimulation** ..... 421  
 Lorenzo Codecasa, Konstantin Weise, Luca Di Rienzo, and Jens Haueisen

**27 Model Order Reduction of Nonlinear Eddy Current Problems Using Missing Point Estimation** ..... 439  
 Y. Paquay, O. Brüls, and C. Geuzaine

**28 On Efficient Approaches for Solving a Cake Filtration Model Under Parameter Variation** ..... 455  
 S. Osterroth, O. Iliev, and R. Pinnau

**29 Model Reduction for Coupled Near-Well and Reservoir Models Using Multiple Space-Time Discretizations**..... 471  
 Walid Kheriji, Yalchin Efendiev, Victor Manuel Calo, and Eduardo Gildin

**30 Time-Dependent Parametric Model Order Reduction for Material Removal Simulations** ..... 491  
 Michael Baumann, Dominik Hamann, and Peter Eberhard



<http://www.springer.com/978-3-319-58785-1>

Model Reduction of Parametrized Systems

Benner, P.; Ohlberger, M.; Patera, A.; Rozza, G.; Urban, K. (Eds.)

2017, XII, 504 p., Hardcover

ISBN: 978-3-319-58785-1