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## **Advances in Simulation Techniques for Applied Dynamics**

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### **Preface**

This special issue of *Multibody System Dynamics* contains selected papers first presented at EUROMECH Colloquium No. 452 on *Advances in Simulation Techniques for Applied Dynamics*, held at Martin–Luther–University Halle–Wittenberg, Germany, from March 1–4, 2004.

The Colloquium focused on novel modelling and simulation techniques for the design of advanced mechatronical systems consisting of mechanical, electrical and hydraulical components as well as control devices with computer hardware and software. There were 55 participants from 15 countries, most of them from Europe.

The scientific activities were addressed in 10 sessions with 36 papers on the theoretical background and modelling of coupling conditions in multi-domain applications, on different approaches to modelling and dynamical simulation of coupled mechanical systems and on adapted numerical solution methods and related theoretical and numerical subjects. Case studies and industrial applications found special interest. In addition, one session with seven papers was devoted to the life of late Willi Kortüm and his outstanding scientific work on simulation techniques for applied dynamics.

Session titles and speakers read as follows.

#### *Simulation and Time Integration*

O. Brüls (University of Liege), G. Rill (FH Regensburg, University of Applied Sciences)

#### *Mechatronic Systems*

H.-P. Kotz (SIEMENS Transportation Systems), D.Yu. Pogorelov (Bryansk State Technical University), T. Geier (Munich University of Technology)

#### *Multifield Problems*

T. Schirle (DaimlerChrysler AG), M. Hanke (CAD-FEM GmbH), A. Heckmann (DLR German Aerospace Center), D.G. Marinova (Technical University of Sofia)

#### *Analysis of Dynamical Systems*

D. Sachau (University of the Federal Armed Forces Hamburg), J.P. Meijaard (University of Nottingham), G. Schupp (DLR German Aerospace Center), Y. Terumichi (Sophia University Tokyo), F. Lakrad (University of Stuttgart)

#### *Willi Kortüm Memorial Session*

P. Lugner (Technical University of Vienna), H. True (Technical University of Denmark), R.S. Sharp (Imperial College), A. Wickens (Loughborough University), A. Eichberger (INTEC GmbH), W. Krüger (DLR German Aerospace Center), M. Valášek (CTU Prague)

*Electro-Mechanical Systems*

V. Rochus (University of Liege), Ch. Clauß (FhG Dresden), M. Goedecke (DLR German Aerospace Center)

*Vehicle Dynamics, Flexible Multibody Systems*

R.M. Goodall (Loughborough University), C. Lange (Canadian Space Agency), J.A.C. Ambrósio (Instituto Superior Tecnico Lisboa)

*Simulation and Optimization*

C. Schmitke (University of Waterloo), O. Wallrapp (Munich University of Applied Sciences), J. Fraczek (Warsaw University of Technology), J. Arnold (DLR German Aerospace Center)

*Time Integration of Flexible Multibody Systems*

D.J. Rixen (T.U. Delft), R.G.K.M. Aarts (University of Twente), O.N. Dmitrochenko (Bryansk State Technical University), F. Fleißner (University of Stuttgart), Y. Vetyukov (University of Linz)

*Time Integration of Hybrid and Coupled Systems*

P.G. Thomsen (Technical University of Denmark), J. Gerstmayr (University of Linz), M. Arnold (University of Halle)

*Optimal Control, Miscellaneous*

R. Höpler (DLR German Aerospace Center), M. Knauer (University of Bayreuth), K. Chudej (University of Bayreuth), S. Lutzenberger (Technical University of Munich)

As the organizers of the EUROMECH Colloquium No. 452, we would like to thank again all the colleagues who contributed to the success of this meeting. We are especially grateful to the authors of the five contributions to this special issue that were selected to represent recent developments in simulation techniques for applied dynamics in more detail.

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Guest Editors

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