
Contents

Index of authors	7
Session 2A	9
Automotive Simulation - I	
Johan Andreasson <i>Division of Vehicle Dynamics, Royal Institute of Technology, Sweden: VehicleDynamics library</i>	11
Stefan Heller, Tilman Bunte <i>TU München; DLR Oberpfaffenhofen, Germany: Modelica Vehicle dynamics library: Implementation of driving maneuvers and a controller for active car steering</i>	19
Hilding Elmqvist, Sven Erik Mattsson, Hans Olsson, Johan Andreasson, Martin Otter, Christian Schweiger, Dag Brück <i>Dynasim; Royal Institute of Technology; DLR: Real-time Simulation of Detailed Automotive Models</i>	29
Session 2B	39
Thermodynamic Systems - I	
Francesco Casella, Alberto Leva <i>Dipartimento di Elettronica e Informazione, Politecnico di Milano: Modelica open library for power plant simulation: design and experimental validation</i>	41
Tomas Skoglund <i>Tetra Pak Processing Systems, Sweden: Simulation of Liquid Food Process in Modelica</i>	51
Martin Råberg, Jan Tuszynski <i>Carl Bro Energikonsult, Sweden: Thermo hydraulic library for power systems applications</i>	59
Session 3A	73
Automotive Simulation - II	
Michael Tiller, Paul Bowles, Mike Dempsey <i>Ford Motor Company, USA; Claytex, UK: Development of a Vehicle Modeling Architecture in Modelica</i>	75
Leo Laine, Johan Andreasson <i>Chalmers Institute of Technology; Royal Institute of Technology, Sweden: Modelling of Generic Hybrid Electric Vehicles</i>	87
Erik Surewaard, Eckhard Karden, Michael Tiller <i>Energy Management Group, Ford Forschungszentrum Aachen, Germany; Ford Motor Company, USA: Advanced Electric Storage System Modeling in Modelica</i>	95
Session 3B	103
Tools - I	
Per Sahlin and Pavel Grozman <i>Equa Simulation AB, Sweden: IDA Simulation Environment - a tool for Modelica based end-user application deployment</i>	105
Mike Dempsey <i>Claytex Services Limited: Automatic translation of Simulink models into Modelica using Simelica and the AdvancedBlocks library</i>	115

Eva-Lena Lengquist Sandelin, Susanna Monemar, Peter Fritzon, Peter Bunus <i>PELAB , Linköping University: DrModelica - An Interactive</i> <i>Tutoring Environment for Modelica</i>	125
Session 4A	137
Automotive Simulation - III	
John Batteh, Michael Tiller and Charles Newman <i>Ford Motor</i> <i>Company, USA: Simulation of Engine Systems in Modelica</i>	139
Christian Schweiger, Martin Otter <i>Institute of Robotics and</i> <i>Mechatronics, DLR : Modeling 3D Mechanical Effects of 1D Powertrains</i>	149
Session 4B	159
Electrical and Chemical Systems	
Carla Martin, Alfonso Urquia and Sebastian Dormido <i>Department of</i> <i>Computer Science and Automatic Control, UNED, Spain: SPICELib -</i> <i>Modeling and Analysis of Electric Circuits with Modelica</i>	161
Gerald Reichl <i>Department of Automation and Systems Engineering,</i> <i>Technische Universität Ilmenau: WasteWater - a Library for Modeling and</i> <i>Simulation of Wastewater Treatment Plants in Modelica</i>	171
Session 5: Poster session:	177
Jörgen Svensson and Per Karlsson <i>Dept. of Industrial Electrical</i> <i>Engineering and Automation, Lund University: Adaptive signal</i> <i>management</i>	179
Christian Hoffmann and Jens Kahler <i>Department of Automation and</i> <i>System Engineering, Technische Universität Ilmenau, Germany; De</i> <i>Montfort University, UK: Object-oriented simulation of energy supply</i> <i>systems on the basis of renewable energy</i>	189
Torge Pfafferott, Gerhard Schmitz <i>Department of Technical</i> <i>Thermodynamics, Technical University Hamburg-Harburg:</i> <i>Implementation of a Modelica Library for Simulation of Refrigeration</i> <i>Systems</i>	197
Jerzy Mikler and Vadim Engelson <i>PELAB, Linköping University; Royal</i> <i>Institute of Technology, Sweden : Simulation for Operation Management:</i> <i>Object Oriented Approach using Modelica</i>	207
Emma Larsdotter Nilsson and Peter Fritzon <i>PELAB, Linköping</i> <i>University : BioChem - A Biological and Chemical Library for Modelica</i>	215
Dr S.Sumathi, K. Vinod Kumar <i>PSG College of Technology,</i> <i>Coimbatore, India : Simulation and Control of Induction Motor in Dymola</i>	221

Session 7A	229
Mechatronic Systems - I	
Gianni Ferretti, Marco Gritti, Gianantonio Magnani, Paolo Rocco, <i>Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy:</i> A Remote User Interface to Modelica Robot Models	231
Angelika Peer, Naim Bajcinca, Christian Schweiger <i>Institute of Robotics and Mechatronics, DLR:</i> Physical-based Friction Identification of an Electro-Mechanical Actuator with Dymola/Modelica and MOPS	241
Lars Eriksson <i>Vehicular Systems, Linköping University:</i> VehProLib - Vehicle Propulsion Library. Library development issues	249
Session 7B	257
Thermodynamic Systems - II	
Stefan Wischhusen, Bruno Lüdemann, Gerhard Schmitz <i>Department of Technical Thermodynamics, TU Hamburg-Harburg; Imtech Deutschland GmbH, Germany:</i> Economical Analysis of Complex Heating and Cooling Systems with the Simulation Tool HKSIm	259
Hilding Elmqvist, Hubertus Tummescheit and Martin Otter <i>Dynasim, Sweden; UTRC, USA; DLR, Germany:</i> Object-Oriented Modeling of Thermo-Fluid Systems	269
Rüdiger Franke, Manfred Rode, Klaus Krüger <i>ABB Corporate Research, ABB Utilities GmbH, Germany:</i> On-line Optimization of Drum Boiler Startup	287
Session 8A	297
Mechatronic Systems - II	
Ivan I. Kossenko and Maia S. Stavrovskaja <i>Moscow State University of the Service, Russia:</i> How One Can Simulate Dynamics of Rolling Bodies via Dymola: Approach to Model Multibody System Dynamics Using Modelica	299
Martin Otter, Hilding Elmqvist and Sven Erik Mattsson <i>DLR; Dynasim:</i> The New Modelica MultiBody Library	311
Peter Beater and Martin Otter <i>Fachhochschule Südwestfalen in Soest; DLR, Germany:</i> Multi-Domain Simulation: Mechanics and Hydraulics of an Excavator	331
Session 8B	341
Thermodynamic Systems - III	
Francesco Casella and Francesco Schiavo <i>Dipartimento di Elettronica e Informazione, Politecnico di Milano:</i> Modelling and Simulation of Heat Exchangers in Modelica with Finite Element Methods	343
Magnus Holmgren <i>Solvina, Sweden:</i> Process simulation in industrial projects	353
Andreas Idebrant and Lennart Näs <i>MathCore Engineering AB; Alstom Industrial Turbines AB, Sweden:</i> Gas Turbine Applications using ThermoFluid	359

Session 9A	367
Mechatronic Systems - III	
Peter Beater and Christoph Clauss <i>University of Applied Sciences Südwestfalen, Soest; Fraunhofer-Institut für Integrierte Schaltungen, Dresden: Multidomain Systems: Pneumatic, Electronic and Mechanical Subsystems of a Pneumatic Drive Modelled with Modelica</i>	369
Johann Bals, Gerhard Hofer, Andreas Pfeiffer, Christian Schallert <i>Institute of Robotics and Mechatronics, DLR: Object-Oriented Inverse Modelling of Multi-Domain Aircraft Equipment Systems and Assessment with Modelica</i>	377
Mats Beckman and Johan Andreasson <i>Division of Vehicle Dynamics, Royal Institute of Technology, Sweden: Wheel model library for use in vehicle dynamics studies</i>	385
Niklas Pettersson, Karl Henrik Johansson <i>Scania; Royal Institute of Technology, Sweden: Modelica Library for Simulating Energy Consumption of Auxiliary Units in Heavy Vehicles</i>	393
Session 9B	399
Tools - II	
Wim Lammen, Jos Vankan, Robert Maas and Johan Kos <i>National Aerospace Laboratory, The Netherlands: Approximation of black-box system models in Matlab with direct application in Modelica</i>	401
Michael Tiller <i>Ford Motor Company: Parsing and Semantic Analysis of Modelica Code for Non-Simulation Applications</i>	411
Adrian Pop, Peter Fritzson <i>PELAB, Linköping University: ModelicaXML: A Modelica XML Representation with Applications</i>	419
Peter Aronsson, Peter Fritzson, Levon Saldamli, Peter Bunus and Kaj Nyström <i>PELAB, Linköping University: Meta Programming and Function Overloading in OpenModelica</i>	431