PROGRAM

13th INTERNATIONAL MODELICA CONFERENCE

March 4–6, 2019
Ostbayerische Technische
Hochschule Regensburg, Germany

Chair: Prof. Anton Haumer

OTH OSTBAYERISCHE TECHNISCHE HOCHSCHULE REGENSBURG

MODELICA

PREFACE

The Modelica Conference is the main event for users, library developers, tool vendors and language designers to share their knowledge and learn about the latest scientific and industrial progress related to Modelica and to the Functional Mockup Interface.
Since the start of the collaborative design work for Modelica in 1996, Modelica has matured from an idea among a small number of dedicated enthusiasts to a widely accepted standard language for the modeling and simulation of cyber-physical systems. In addition, the standardization of the language by the non-profit organization Modelica Association enables Modelica models to be portable between a growing number of tools. Modelica is now used in many industries including automotive, energy and process, aerospace, and industrial equipment. Modelica is the language of choice for model-based systems engineering.

Highlights of the Conference:

- 76 oral presentations and 13 poster presentations, 4 libraries for the Modelica Library Award
- 2 Keynotes
- 7 Tutorials and 2 Industrial User Presentations Sessions
- 14 vendor sessions and 17 sponsors & exhibitors

CONFERENCE BOARD

- Prof. Anton Haumer, OTH Regensburg, Germany
- Dr. Hilding Elmqvist, Mogram, Sweden
- Prof. Peter Fritzson, Linköping University, Sweden
- Prof. Martin Otter, DLR, Germany
- Dr. Michael Tiller, Xogeny, USA

CONTENTS

WELCOME

Prof. Anton Haumer
OTH Regensburg, Germany
Conference Chair

I warmly welcome you to Regensburg, a city with history going back to Roman times, and to OTH the Technical University of Applied Sciences Regensburg.
Starting with this conference, you will notice some changes: First, we are going to organize the International Modelica Conference every two years in spring. In the years between International Modelica Conferences, Modelica Conferences are organized on other continents with country specific focus.

Although in 2018 there have been two very successful conferences in Japan and in the United States, we received 101 submissions from authors all over the world which have been thoroughly reviewed: 76 oral presentations and 13 posters will be presented.

Second, additional to the tutorials and vendor presentations on the first day of the conference, we are going to have Industrial User Presentations related to the Modelica Association Projects. These presentations are not included in the proceedings, but they should provide a nucleus for discussions and broadening the users groups.

I want to thank the members of the Program Committee for their work during the review process, as well as the members of the Organizing Committee – without their support this conference wouldn't have been a success.

MODELICA NEWS

Prof. Martin Otter
DLR, Wessling, Germany
Chair of the Modelica Association

In the name of the Modelica Association that is co-organizing this event, I also would like to welcome you in Regensburg. It is now already the 13th conference on Modelica, the Functional Mockup Interface and related technology. Since the number of projects and standards of the Modelica Association is growing, we would like to give you an overview about the current status in the traditional "Modelica Association News" section on Tuesday morning: All the Modelica Association Project leaders will give a short overview about their project and about their future plans.

KEYNOTE SPEAKERS

Modelica and virtual education

Dr. Christian Kral
TGM, Vienna, Austria

Abstract: Good education of engineering students requires theoretical knoweldge and lots of calculation experience to better understand theory and applications. Laboratory courses are offered to better relate theory and practical understanding. Simulations even more improve the linking of theory and practice, as systemic thinking is supported. Students learn to understand the interaction of simple models and more advanced systems.
In the keynote speech two virtual education scenarios in engineering will be presented: First, a workflow of creating and evaluating calculation and simulation examples is proposed. The workflow is based on Modelica and the online tool Letto. Second, virtual lab experiments of electric machines and drives are shown. In the virtual lab Modelica variables are controlled and viszualized by Labview. The presented approaches are possible steps in the direction of virtual education to improve and strengthen the students' expertise and knowledge and with the particular intention to motivate students.

Bio: Christian Kral received the diploma and doctoral degrees from the Vienna University of Technology, Vienna, Austria, in 1997 and 1999, respectively. From 1997 to 2000, he was a Scientific Assistant in the Institute of Electrical Drives and Machines, Vienna University of Technology. Since 2001, he has been with the AIT Austrian Institute of Technology GmbH (the former Arsenal Research) in Vienna. From January 2002 until April 2003, he was a Visiting Professor at the Georgia Institute of Technology, Atlanta. Dr. Kral is teaching electric machines and drives at the higher college of engineering »TGM« in Vienna and the university of applied research, »Technikum Wien« since 2013. His research interests include the modeling and simulation of electrical systems, machines and drives. He is a member of the Austrian Electrotechnical Association (OVE) and the Modelica Association. Dr. Kral published over 150 scientific papers and one book on Modelica and the object oriented modeling of electric machines.

Simulation Guided Design for New Automotive Applications

Dr. Gerd Rösel
Continental, Regensburg, Germany

Abstract: The Automotive Industry has to cope with disruptive technology and business changes within the next decade. Connected vehicles become reality and drive the development to automated driving. New mobility solutions will have to answer shared economy demands. The regulatory requirement on significant reduction of CO_2- and pollutant emission leads to fast changing parallel development of additional propulsion systems in the same period. Consequently, the variety of solutions within a vehicle will have to serve a furthermore increasing complexity from embedded-systems to system-of-systems to cyber-physical-systems.
Simulation guided design is the key to handle such complexity in all areas of application for an automotive supplier to keep quality, time to market and costs under control. The speech covers the main directions of disruptive technology changes and examples of dedicated solutions. There will be examples given which cover virtual function development for embedded systems as well as solutions for predictive maintenance and connected energy management as system-of-systems. The focus will be to point out the necessity to design and optimize such systems by simulation.

Bio: Dr. Gerd Rösel is heading the departments Advanced System Engineering for Engine Systems (since 2015) as well as Hybrid Electric Vehicle Business Unit (since 2018) for Continental Powertrain. The application and further development of simulation methodologies is a significant building block in these responsibilities. The variety in simulation technology covers propulsion system simulation as well as specialized simulation in areas like electric machines, mixture formation and NVH.
From 1996 until 2015 he has been responsible in different positions for Gasoline- and Diesel-System-Development for serial and advanced applications. From 1992 to 1997 he was a research associate at Technical University of Dresden and finished with the graduation of Dr.-Ing. in 1997. The Diploma degree in electrical engineering from Technical University of Dresden was achieved in 1992.

GENERAL SCHEDULE

	S054 | floor 1	S051 | floor 0	S053 | floor -1	S052 | floor 0

Monday, March 4

13:00 – 16:30	Industrial User Presentations and Tutorials
16:30 – 17:00	Coffee Break
17:00 – 19:15	Vendor Sessions
19:15 – 19:30	Short Break
19:30	Welcome Reception

Tuesday, March 5

09:00 – 09:15	Welcome			
09:15 – 09:45	Modelica News			
09:45 – 10:30	Keynote 1: Dr. Christian Kral, Vienna, Austria Modelica and virtual education			
10:30 – 11:00	Coffee Break			
11:00 – 12:15	Session 1A: Buildings 1	Session 1B: Power&Energy 1	Session 1C: FMI 1	Session 1D: Automotive 1
12:15 – 13:45	Lunch			
13:45 – 15:00	Session 2A: Buildings 2	Session 2B: Power&Energy 2	Session 2C: FMI 2	Session 2D: Electrical Power 2
15:00 – 15:30	Coffee Break			
15:30 – 17:00	Postersession | Forum Building K			
17:00 – 18:40	Session 3A: HVAC	Session 3B: Language	S. 3C: Mechanics&Transport	Session 3D: New Applications
18:40 – 20:00	Transfer to Dinner Location			
20:00	Conference Dinner at the Castle of Emmeram			

Wednesday, March 6

08:30 – 09:15	Keynote 2: Dr. Gerd Rösel, Regensburg, Germany Simulation Guided Design for New Automotive Applications			
09:15 – 09:30	Short Break			
09:30 – 10:45	Session 4A: Power&Energy 3	Session 4B: Automotive 2	Session 4C: Aerospace	Session 4D: Numerical Methods
10:45 – 11:15	Coffee Break			
11:15 – 12:30	Session 5A: Buildings 3	Session 5B: Power&Energy 4	Session 5C: Thermodynamic 1	Session 5D: Electrical Power 2
12:30 – 14:00	Lunch			
14:00 – 15:15	Session 6A: Buildings 4	Session 6B: Thermodynamic 2	Session 6C: Tools	Session 6D: Automotive 3
15:15 – 15:30	Short Break			
15:30 – 15:45	Closing Session			

PROGRAM – MONDAY AFTERNOON

S054 floor 1 | S051 floor 0 | S053 floor -1 | S052 floor 0 | S057 floor 0 | S059 floor 0 | S157 floor 1 | S159 floor 1 | S101 floor 1 | S103 floor 1

13:00–16:30 Industrial User Presentations and Tutorials

13:00–16:30

Industrial User Presentations
FMI+DCP+SSP

Industrial User Presentations
LANG+LIB

Tutorial
Livio Mariano/Altair
Connecting Separated Worlds for True Multidisciplinary System Simulation – by Using Altair Activate™

Tutorial
Peter Fritzson/OSMC et al
Introduction to Modeling, Simulation, Debugging, and Julia Interoperability with Modelica and OpenModelica

13:00–16:30

Tutorial
Thomas Beutlich/ESI Group
Creating and Working with Modelica-State-Machines

Tutorial
Edmund Widl/AIT
The FMI++ Python Interface: A Python package for importing and exporting FMUs

Tutorial
Lennart Ochel and Robert Braun/OSMC
Introduction to FMI including Model-Exchange and Co-simulation, SSP, and Graphic Editing of Composite FMI Models

Tutorial
Torsten Sommer/ Dassault Systemes
Hacking FMI

Tutorial
Andreas Heckmann/DLR
Modeling and Simulation of Railway Dynamics in Modelica

16:30–17:00 Coffee Break

17:00–19:15 Vendor Sessions

17:00–17:45

Altair
Michael Hoffmann
Altair's Open Integration Platform for Multi-Disciplinary System Simulation

ESI Group
Alex Magdanz
SimulationX 4.0: What's new?

OSMC
Peter Fritzson et al
OpenModelica Status and News

Modelon
Jiří Navrátil and Johan Windahl
Making an Impact with Modelica and FMI

Monentia
Jose Juan Hernandez Cabrera
Daccosim NG: co-simulation made simpler and faster

17:45–18:30

Dassault Systemes
Dag Brück et al
Recent updates and candidate directions for development in Dymola and 3DEXPERIENCE

Wolfram
Jan Brugard
Providing Modelica to millions of users

Maplesoft
Stephen Forrest
MapleSim 2018 and Expanded FMI Support

Reseau de Transport d'Electricite RTE
Adrien Guironnet et al
Dynawo, an open source hybrid C++/Modelica tool for power system simulations

Concurrent
Ramesh Praveenkumar
Running FMUs in real-time under Simulation Workbench (SimWB)

18:30–19:15

Siemens
Bruno Lacabanne
Combining Modelica models, FMUS and causal libraries in a same environment, Simcenter Amesim

Gaio Technology
Koichi Saito
The consideration and verification of FMI/FMU effective use on embedded software area

Claytex
Mike Dempsey
Modelica and FMI solutions from Claytex

Ansys
Manzoor Tiwana
ANSYS Twin Builder: Simulation based Digital Twin using Modelica

19:15–19:30 Short Break

19:30 Welcome Reception

INDUSTRIAL USER PRESENTATIONS

FMI + DCP + SSP

Torsten Blochwitz, Andreas Junghanns, Martin Krammer, Jochen Köhler
Overview over standards FMI + DCP + SSP

Christian Bertsch
Usage of FMI at Bosch – status and outlook

Tim Schenk, Andrès Botero Halblaub and Jan Christoph Wehrstedt
Co-Simulation scenarios in industrial production plants

Magnus Eek and Robert Hällqvist
Enhancing the Model Integration Workflow in Aircraft System Simulation using FMI & SSP

Nadja Marko, Hannes Schneider, Andreas Biehn and Jonas Rübsam
Simulation of sensor models for testing ADAS using DCP

Juan Carlos Mendo, Borja García and Alejandro Torres
Enabling Standardized Distributed Co-Simulation at Boeing

Andreas Soppa, Sinan Balci and Martin Benedikt
DCP application use-cases at Volkswagen AG

LANG + LIB

Hans Olsson and Thomas Beutlich
Status and further development of Language and Libraries

Mathieu Caujolle and Markus Andres
Modeling and simulating hybrid distribution networks with EPSL

Manuel Gräber, Jennifer Puschke, Tobias Henß, Eugen Dering, Andreas Pillekeit, Christian Schulze
Physical Modeling of Heat Pumps for Hardware-in-the-Loop Testing

Jungdo Kee, Daeoh Kang, Kwang-Woo Lee and Seung-Jin Heo
Development of MODELICA based vehicle dynamic model considering limited handling for FAD controller

Rafal Bryk, Holger Schmidt, Thomas Mull, Ingo Ganzmann and Oliver Herbst
Modeling of Self-Driven Processes in Passive Safety Systems of III+ Generation BWR

SCIENTIFIC PROGRAM – TUESDAY MORNING

S054 floor 1 | S051 floor 0 | S053 floor -1 | S052 floor 0

09:00 – 09:15 Welcome

09:15 – 09:45 Modelica News

09:45 – 10:30 Keynote 1: Dr. Christian Kral, Vienna, Austria | Modelica and virtual education

10:30 – 11:00 Coffee Break

11:00 – 12.15

Session 1A: Buildings 1	Session 1B: Power&Energy 1	Session 1C: FMI 1	Session 1D: Automotive 1
Raymond Sterling, Jesús Febres, Andrea Costa, Adeleh Mohammadi, Rafael Carrillo, Baptiste Schubnel, Yves Stauffer, Pietro De Cinque, Krzysztof Klobut, Marcus Keane **A virtual test-bed for building Model Predictive Control developments**	Jovan Brkic, Muaz Ceran, Mohamed Elmoghazy, Anton Haumer, Christian Kral **Open Source PhotoVoltaics Library for Systemic Investigations**	Lennart Ochel, Robert Braun, Bernhard Thiele, Adeel Asghar, Lena Buffoni, Magnus Eek, Peter Fritzson, Dag Fritzson, Sune Horkeby, Robert Hällquist, Åke Kinnander, Arunkumar Palanisamy, Adrian Pop, Martin Sjölund **OMSimulator – Integrated FMI and TLM-based Co-simulation with Composite Model Editing and SSP**	Jakub Tobolar, Martin Leitner, Andreas Heckmann **Anti-Roll Bar Model for NVH and Vehicle Dynamics Analyses**
Moritz Lauster, Dirk Müller **Characterization of Linear Reduced Order Building Models Using Bode Plots**	Mareike Leimeister **Python-Modelica Framework for Automated Simulation and Optimization**	Lars Ivar Hatledal, Houxiang Zhang, Arne Styve, Geir Hovland **FMU-proxy: A Framework for Distributed Access to Functional Mock-up Units**	James Jeffs, Andrew McGordon, Widanalage Dhammik Widanage, Simon Robinson, Alessandro Picarelli **System level heat pump model for investigations into thermal management of electric vehicles at low temperatures**
Christoph Nytsch-Geusen, Jörg Rädler, Matthis Thorade, Carles Ribas Tugores **BIM2Modelica – An open source toolchain for generating and simulating thermal multi-zone building models by using structured data from BIM models**	Jörn Benthin, Annika Heyer, Philipp Huismann, Anne Hagemeier, Klaus Görner **Demand oriented Modelling of coupled Energy Grids**	Martin Krammer, Klaus Schuch, Christian Kater, Khaled Alekeish, Torsten Blochwitz, Stefan Materne, Andreas Soppa, Martin Benedikt: **Standardized Integration of Real-Time and Non-Real-Time Systems: The Distributed Co-Simulation Protocol**	John Batteh, Ashok Kumar Ravi, Dale Pickelman **Diesel Cooling System Modeling for Electrification Potential**

10:00 – 10:25 | 11:25 – 11:50 | 11:50 – 12:15

12:15 – 13:45 Lunch

SCIENTIFIC PROGRAM – TUESDAY AFTERNOON

S054 floor 1 S051 floor 0 S053 floor -1 S052 floor 0

13:45–15:00

	Session 2A: Buildings 2	Session 2B: Power&Energy 2	Session 2C: FMI 2	Session 2D: Electrical Power 2
13:45–14:10	Nadine Aoun, Roland Bavière, Mathieu Vallée, Adrien Brun, Guillaume Sandou **Dynamic Simulation of Residential Buildings Supporting the Development of Flexible Control in District Heating Systems**	Torsten Schwan, Ole Ziessler, Tom Eckhardt, Rene Unger **A Modelica-Based Framework for District Heating Grid Simulation**	Claire-Eleuthériane Gerrer, Sylvain Girard **Non Linear Dimension Reduction of Dynamic Model Output**	Alexander Grimm, Anton Haumer **Parametrization of a Simplified Physical Battery Model**
14:10–14:35	Filip Jorissen, Lieve Helsen **Integrated Modelica Model and Model Predictive Control of a Terraced House Using IDEAS**	Abdulrahman Dahash, Annette Steingrube, Mehmet Elci, Fabian Ochs **Optimization of District Heating Systems: European Energy Exchange Price-Driven Control Strategy for Optimal Operation of Heating Plants**	Slaven Glumac, Zdenko Kovačić **Relative Consistency and Robust Stability Measures for Sequential Co-simulation**	Mads Nannestad, Benoit Bidoggia, Zhe Zhang, Tiberiu-Gabriel Zsurzsan, Kasper Skriver **Modeling of transformer-rectifier sets for the energization of electrostatic precipitators using Modelica**
14:35–15:00	Scott Bortoff, Christopher Laughman **An Extended Luenberger Observer for HVAC Application using FMI**	Michael Mans, Tobias Blacha, Peter Remmen, Dirk Müller **Automated model generation and simplification for district heating and cooling networks**	Kenji Sawada, Mamoru Sakura, Osamu Kaneko, Seiichi Shin, Isao Matsuda, Toru Murakami **Energy balance based Verification for Model Based Development**	Alberto Romero, Alejandro Goldar, Emanuele Garone **A Model Predictive Control Application for a Constrained Fast Charge of Lithium-ion Batteries**

15:00 – 15:30 Coffee Break

15:30 – 17:00 Postersession | Forum Building K

POSTER SESSION – TUESDAY – FORUM BUILDING K

15:30 – 17:00

Hans Olsson

Flow Network based Diagnostics for Incorrect Synchronous Models

Masatomo Inui, Tomohisa Fujinuma

Study on Efficient Development of 1D CAE Models of Mechano-Electrical Products

Jan-Peter Heckel, Christian Becker

Advanced Modeling of Electric Components in Integrated Energy Systems with the TransiEnt Library

Andreas Nicolai, Anne Paepcke, Hauke Hirsch

Robust and accurate co-simulation master algorithms applied to FMI slaves with discontinuous signals using FMI 2.0 features

Yutaka Watanabe, Toru Takahashi

Development of a General-purpose Analytical Tool for Evaluating the Dynamic Characteristics of Thermal Energy Systems

Jose Evora, Jose Juan Hernandez Cabrera, Jean-Philippe Tavella, Stéphane Vialle, Enrique Kremers, Loïc Frayssinet

Daccosim NG: co-simulation made simpler and faster

Atiyah Elsheikh

der(x,p) !? Applications and Computational Methods of Dynamic Parameter Sensitivities

Bingrui Bao, Junfeng Guo, Baokun Zhang, Fanli Zhou

Frequency Response Estimation Method for Modelica Model and Frequency Estimation Toolbox Implementation

Yangyang Fu, Xing Lu, Wangda Zuo

Modelica Models for the Control Evaluations of Chilled Water System with Waterside Economizer

Sooncheol Park, Yonggwon Jeon, Dae-Oh Kang, Min-Su Hyun, Seung-Jin Heo

Predicting the vehicle performance at an early stage of development process via suspension bush design tool

Yuhui Liu, Liping Chen, Yan Zhao, Shanshan Liu, Fanli Zhou, Duansen Shangguan

Modelica-Based Modeling and Application Framework on the Hybrid Electric Vehicles

John Webster, Carsten Bode

Implementation of a Non-Discretized Multiphysics PEM Electrolyzer Model in Modelica

Jean-Philippe Chancelier, Sébastien Furic, Pierre Weis

Translating Simulink Models to Modelica using the {\NSP} Platform

SCIENTIFIC PROGRAM – TUESDAY EVENING

S054 floor 1 S051 floor 0 S053 floor -1 S052 floor 0

17:00–18:40

	Session 3A: HVAC	Session 3B: Language	Session 3C: Mechanics&Transport	Session 3D: New Applications
17:00–17:25	Rohit Dhumane, Jiazhen Ling, Vikrant Aute, Reinhard Radermacher **Modeling Heat Pump Recharge of a Personal Conditioning System with Latent Heat Storage**	Christoff Bürger **Modelica language extensions for practical non-monotonic modelling: on the need for selective model extension**	Andreas Heckmann, Marc Ehret, Gustav Grether, Alexander Keck, Daniel Lüdicke, Christoph Schwarz **Overview on the DLR RailwayDynamics Library**	Michael Tiller **Modeling Supply and Demand in Modelica**
17:25–17:50	Wenyi Wang, Yaoyu Li **Real-time optimization of intermediate temperature for a cascade heat pump via extreme seeking**	Peter Fritzson, Adrian Pop, Martin Sjölund, Adeel Asghar **MetaModelica – A Symbolic-Numeric Modelica Language and Comparison to Julia**	Scott Bortoff **Using Baumgarte's Method for Index Reduction in Modelica**	John Redford, Ana Bisinella, Jean-Philippe Saut, Jacques Robert, Maria Albuquerque, Jean-Pierre Merland, Jean-Michel Ghidaglia **Modelica Modelling of an Ammonia Stripper**
17:50–18:15	Zhenning Li, Hongtao Qiao, Vikrant Aute **Tube-fin Heat Exchanger Circuitry Optimization For Improved Performance Under Frosting Conditions**	Bernhard Thiele, Bernt Lie, Martin Sjölund, Adrian Pop, PeterFritzson **Controller Design for a Magnetic Levitation Kit using OpenModelica's Integration with the Julia Language**	Tatsuro Ishibashi, Tadao Kawai **Modeling of Rotating Shaft with Partial Rubbing**	Andrea Neumayr, Martin Otter **Algorithms for Component-Based 3D Modeling**
18:15–18:40	Hongtao Qiao, Saleh Nabi, Xu Han, Christopher Laughman **Coupled Simulation of a Room Air-conditioner with CFD Models for Indoor Environment**	Giovanni Agosta, Emanuele Baldino, Francesco Casella, Stefano Cherubin, Alberto Leva, Federico Terraneo **Towards a High-Performance Modelica Compiler**	Martin Kuhn, Yang Ji, Bo Wang, Xiang Li, Bohui Liu, Feng Sha, Dunwen Gan, Feng Gao **Aspects of Train Systems Simulation**	Jan Šilar, Filip Ježek, Arnošt Mládek, David Polák, Jiří Kofránek **Model visualization for e-learning, Kidney simulator for medical students**

18:40–20:00 Transfer to Dinner Location

20:00 Conference Dinner at the Castle of Emmeram

SCIENTIFIC PROGRAM – WEDNESDAY MORNING I

S054 floor 1 S051 floor 0 S053 floor -1 S052 floor 0

08:30–09:15 Keynote 2: Dr. Gerd Rösel, Regensburg, Germany | Simulation Guided Design for New Automotive Applications

09:15– 09:30 Short Break

09:30–10:45

Session 4A: Power&Energy 3	Session 4B: Automotive 2	Session 4C: Aerospace	Session 4D: Numerical Methods
			09:30 – 09:55
Johan Windahl, Håkan Runvik, Stephane Velut **Platform for Microgrid Design and Operation**	Romain Gillot, Alessandro Picarelli, Mike Dempsey **Fault Insertion for Controller Calibration in a Range of Engine Models**	Duansen Shangguan, Liping Chen, Jianwan Ding, Yuhui Liu **Modeling and Simulation of Dual Redundant Electro-Hydrostatic Actuation System with Special Focus on model architecting and multidisciplinary effects**	Erik Henningsson, Hans Olsson, Luigi Vanfretti **DAE Solvers for Large-Scale Hybrid Models**
			09:55 – 10:20
Carsten Bode, Gerhard Schmitz **Influence of Excess Power Utilization in Power-to-Heat Units on an Integrated Energy System with 100 % Renewables**	Nikolas Schröder, Oliver Lenord, Ralph Lange **Enhanced Motion Control of a Self-Driving Vehicle Using Modelica, FMI and ROS**	Max Arzberger, Dirk Zimmer **A Modelica-based environment for the simulation of hybridelectric propulsion systems**	Rebeka Farkas, Gábor Bergmann, Ákos Horváth **Adaptive Step Size Control for Hybrid CT Simulation without Rollback**
			10:20 – 10:45
Anh Nguyen, John Batteh **Model-Based Controls Development and Implementation for a Hydroelectric Power System**	Artem Kolesnikov, Dzmitry Tretsiak, Morgan Cameron **Systematic Simulation of Fault Behavior by Analysis of Vehicle Dynamics**	Daniel Milz, Christian Weiser, Franciscus van der Linden, Matthias Hellerer, Andreas Seefried, Tobias Bellmann **Advances in Flight Dynamics Modelling and Flight Control Design by Using the DLR Flight Visualization and Flight Instruments Libraries**	Christian Schulze, Andreas Varchmin, Wilhelm Tegethoff **Steady State Initialization of Vapor Compression Cycles Using the Homotopy Operator**

10:45– 11:15 Coffee Break

SCIENTIFIC PROGRAM – WEDNESDAY MORNING II

S054 floor 1 **S051** floor 0 **S053** floor -1 **S052** floor 0

11:15 – 12:30

	Session 5A: Buildings 3	Session 5B: Power&Energy 4	Session 5C: Thermodynamic 1	Session 5D: Electrical Power 2
11:15 – 11:40	Hauke Hirsch, Andreas Nicolai, Hans Petzold **Co-Simulation Through Exchange of Time-Series Data Applied to an Energy System Model and Detailed Ground Heat Exchanger Model**	Luis Corona Mesa-Moles, Jean-Philippe Argaud, Audrey Jardin, Amine Benssy, Yulu Dong **Robust Calibration of Complex ThermosysPro Models using Data Assimilation Techniques: Application on the Secondary System of a Pressurized Water Reactor**	Dirk Zimmer **Towards Hard Real-Time Simulation of Complex Fluid Networks**	Biswarup Mukherjee, Luigi Vanfretti **Modeling of PMU-Based Automatic Re-synchronization Controls for DER Generators in Power Distribution Networks using Modelica and the OpenIPSL**
11:40 – 12:05	Queralt Altes-Buch, Sylvain Quoilin, Vincent Lemort **Greenhouses: A Modelica Library for the Simulation of Greenhouse Climate and Energy Systems**	Yangyang Fu, Sen Huang, Draguna Vrabie, Wangda Zuo **Coupling Power System Dynamics and Building Dynamics to Enabling Building-to-Grid Integration**	Martin Otter, Hilding Elmqvist, Dirk Zimmer, Christopher Laughman **Media and Fluid Modeling with Modern Programming Language Construct**	Marcelo de C. Fernandes, Luigi Vanfretti, Janaína G. de Oliveira, Maxime Baudette **A Fundamental Time-Domain and Linearized Eigenvalue Analysis of Coalesced Power Transmission and Unbalanced Distribution Grids using Modelica and the OpenIPSL**
12:05 – 12:30	Ryan Rogers, Vickram Lakhian **Modeling of Low Temperature Thermal Networks Using Historical Building Data from District Energy Systems**	Tobias Ramm, Mathias Ehrenwirth, Tobias Schrag **Modelling of the Central Heating Station within a District Heating System with Variable Temperatures**	Maximilian Hebeler, Christian Schulze, Wilhelm Tegethoff, Jürgen Köhler **Simulative Potential Analysis of Combined Waste Heat Refrigeration using Ammonia in an Intercity Bus on dynamic route**	Andrea Bartolini, Francesco Casella, Adrien Guironnet **Towards Pan-European Power Grid Modelling in Modelica: Design Principles and a Prototype for a Reference Power System Library**

12:30 – 14:00 Lunch

SCIENTIFIC PROGRAM – WEDNESDAY AFTERNOON

S054 floor 1 | S051 floor 0 | S053 floor -1 | S052 floor 0

14:00–15:15

Session 6A: Buildings 4	Session 6B: Thermodynamic 2	Session 6C: Tools	Session 6D: Automotive 3
14:00–14:25	Maximilian Kormann, Imke Lisa Krüger **Application of a Real Gas Model by Van-der-Waals for a Hydrogen Tank Filling Process**	Adrian Pop, Per Östlund, Francesco Casella, Martin Sjölund, Rüdiger Franke **A New OpenModelica Compiler High Performance Frontend**	Weitao Chen, Shenhai Ran, Bengt Jacobson **Integration and Analysis of EPAS and Chassis System in FMIbased co-simulation**
Bruno Hadengue, Andreas Scheidegger, Eberhard Morgenroth, Tove A. Larsen **The WaterHub Modules: Material and Energy Flow Analysis of Domestic Hot Water Systems**			
14:25–14:50	Sukhwinder Singh, Gerhard Schmitz, Bodo Mickan **Modeling of the Flow Comparator Prototype as New Primary Standard for High Pressure Natural Gas Flow Metering**	Bernt Lie, Arunkumar Palanisamy, Alachew Mengist, Lena Buffoni, Martin Sjölund, Adeel Asghar, Adrian Pop, Peter Fritzson **OMJulia: An OpenModelica API for Julia-Modelica Interaction**	Theodor Ensbury, Mike Dempsey, David Briant **Virtual Proving Ground Testing: Deploying Dymola and Modelica to recreate Full Vehicle Proving Ground Testing Procedures**
Anna Vannahme, Tobias Schrag, Mathias Ehrenwirth, Tobias Ramm **Comparison of a usual heat-transfer-station with a hydraulic modified version under the aspect of exergy saving**			
14:50–15:15	Tim Eller, Florian Heberle, Dieter Brüggemann **Transient modelling and simulation of a double-stage Organic Rankine Cycle**	Christian Vering, Sven Hinrichs, Moritz Lauster, Dirk Müller **"hello, (Modelica) world": Automated documentation of complex simulation models exemplified by expansion valves**	Franz Rudolf Holzinger, Martin Benedikt **Hierarchical Coupling Approach Utilizing Multi-Objective Optimization for Non-Iterative Co-Simulation**
Anne Senkel, Carsten Bode, Gerhard Schmitz **Evaluating the Resilience of Energy Supply Systems at the Example of a Single Family Dwelling Heating System**			
15:15 – 15:30 Short Break			
15:30 – 15:45 Closing Session			

SOCIAL PROGRAM

The Conference Dinner will take place on Tuesday, March 5, 2019, 20:00 in the riding hall of the Castle of Emmeram, Emmeramsplatz, Regensburg.

It is located in walking distance (approximately 2 km) from the Conference venue as well as from many hotels.

However, for your convenience we will provide a bus shuttle from the Conference venue to the Dinner location. We ask for your understanding that the bus can't stop at the hotels during this short ride. After the dinner, we provide a bus shuttle from the Dinner location at least to the recommended hotels:
https://www.modelica.org/events/modelica2019/subpages/travellingaccomodation

PRACTICAL INFORMATION

Application Access
Download from Google Play or App Store the application **Modelica 2019**.

Proceedings
They are available at **Modelica 2019 Proceedings Page**
https://modelica.org/events/modelica2019/proceedings/Modelica2019Proceedings.html
or in the application **Modelica 2019** for download.

WIFI Connection
Information about the free wireless Internet will be available at the Conference Registration desk.

Registration Desk
The registration desk is open from Monday March 4 2017 12:00 throughout the whole conference.

Parking
Visitors coming by car should use the A3 and A93 "Autobahnen". Take the "Universität/Klinikum" exit then follow the signs to "Universität/Fachhochschule". This takes you to Galgenbergstrasse. The car park is on Galgenbergstraße on the left hand side between the buildings of the University of Regensburg and OTH Regensburg.

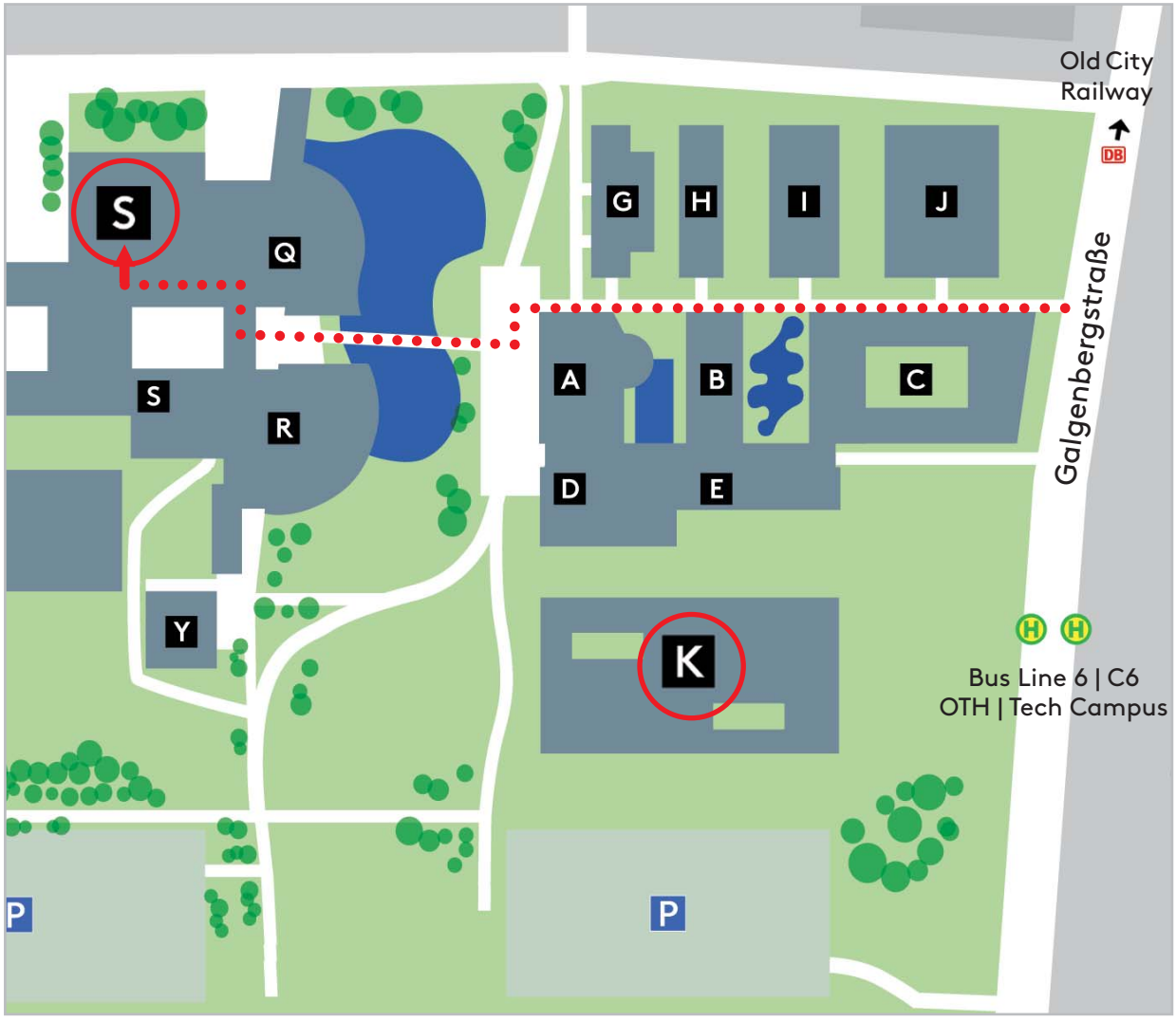
Voltage
Electricity in Germany is 230 Volts, alternating at 50 Hertz. The used power sockets are 2 round pin plugs (Type C and E).

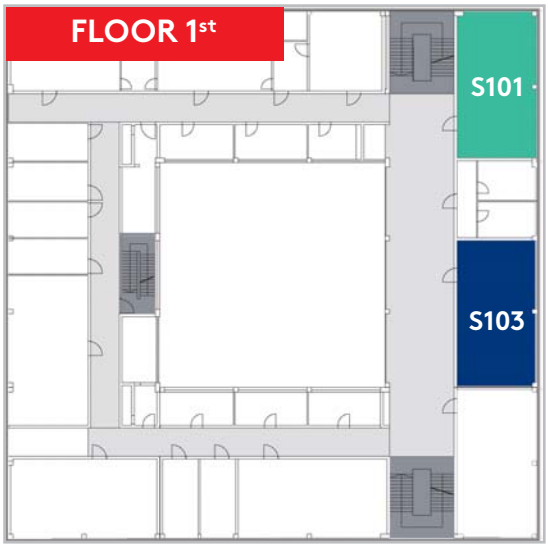
Emergency Numbers
112 – European Emergency Number
(Fire Service, Emergency Medical Service)
110 – Police
International Dialing Code of Germany **+49**

Tourist Information
For more information about Regensburg, please go to http://www.tourismus.regensburg.de

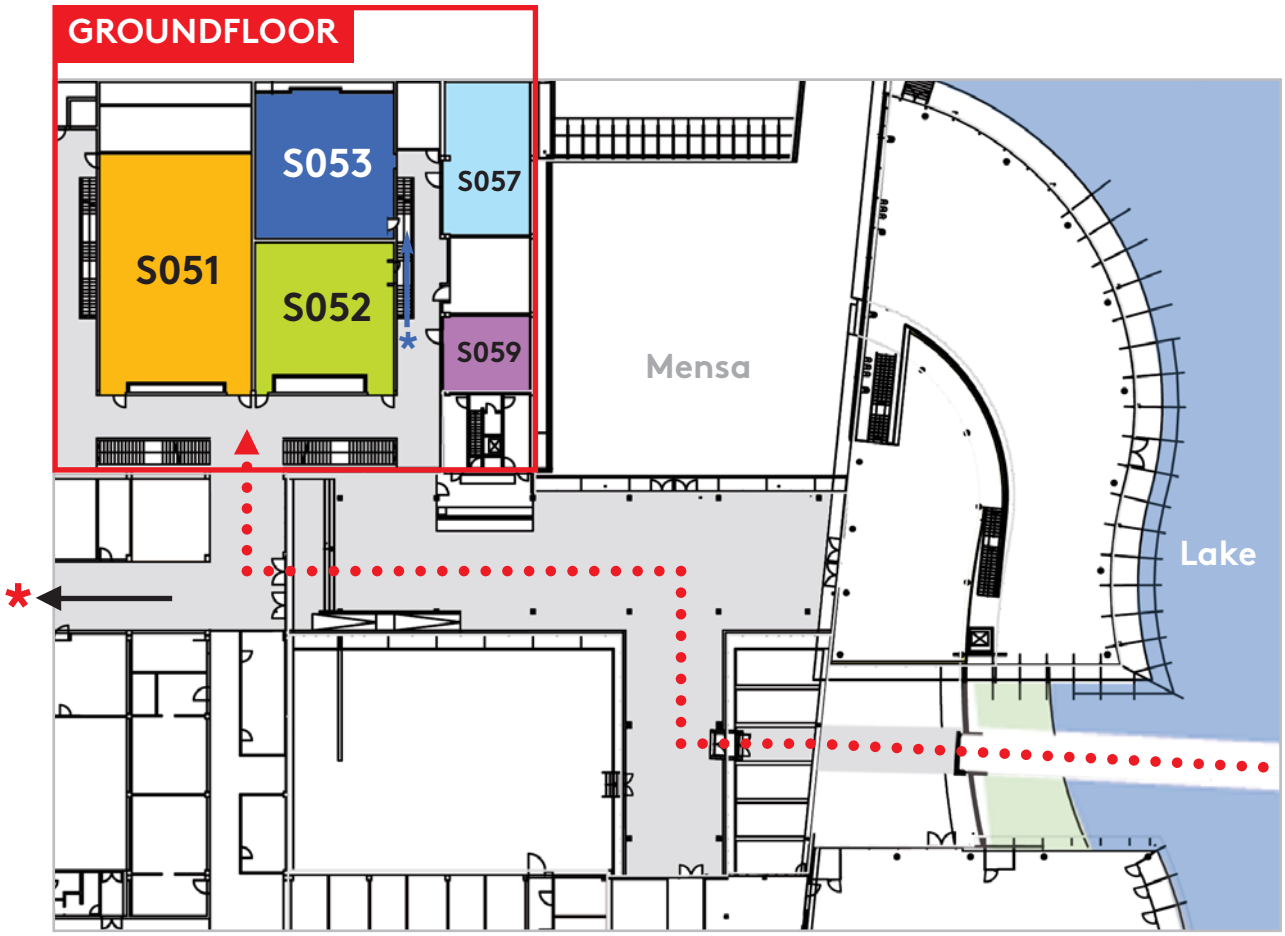
Regensburg City Transport Fares
Take bus number 6 operated by Regensburg Integrated Transport. Then alight at the „Tech Campus" (Galgenbergstraße).
Passengers have to purchase their tickets before boarding the vehicle or entering the RVV system. The ticket is valid only if marked in the validation machine. Tickets can be bought in the bus or via RVV-App.
For more information: http://www.rvv.de
Or download the application RVV-App from Google Play or App Store.

SITE PLAN


Old City
Railway
DB
Galgenbergstraße
S
Q
G
H
I
J
A
B
C
S
R
D
E
Y
K
Bus Line 6 | C6
OTH | Tech Campus
P
P
N

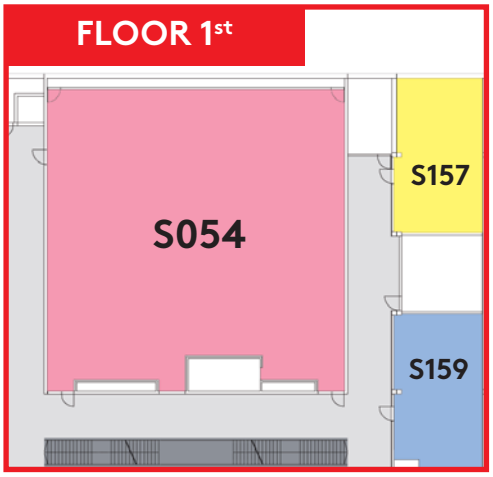

FLOOR 1st
S101
S103

SITE PLAN



* to reach S053: some steps downstairs

* to reach **S101 | S103**: first staircase on the left



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