

92ND ANNUAL MEETING

of the International Association of
Applied Mathematics and Mechanics

August 15-19 2022, Aachen, Germany

RWTHAACHEN
UNIVERSITY

Bildnachweis: (von oben) www.medien.aachen.de / Andreas Steindl, www.medien.aachen.de / Andreas Herrmann



General Information
&
Daily Program



GESELLSCHAFT für
ANGEWANDTE MATHEMATIK und MECHANIK e.V.
INTERNATIONAL ASSOCIATION of APPLIED MATHEMATICS and MECHANICS

gamm-ev.de

Conference Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:30		Sessions			
9:00		Sessions		Sessions	Sessions
9:30			Poster Session		
10:00					
10:30		Break	R.v.Mises Lecture	Break	Break
11:00		Plenary E. Kuhl		Plenary V. Simoncini	Plenary B.-X. Xu
11:30			General Assembly		
12:00	Registration	Plenary J. Hesthaven		Plenary A. Kecskemethy	Plenary E. Feireisl
12:30					
13:00	Opening*	Lunch	Lunch YAMM	Lunch	Closing
13:30					
14:00	Prandtl Lecture* T. Colonius	Mini- symposia & DFG PP	Sessions		
14:30					
15:00	Plenary* M. Burger				
15:30					
16:00	Break	Poster Sess.	Break	Break	
16:30				Plenary C.-D. Munz	
17:00	Young Researchers Mini- symposia	Sessions	Sessions		
17:30				Sessions	
18:00					
18:30					
19:00					
19:30					
20:00	Welcome Reception (until 23:00)	Public Lecture M. Tolan	Conference Dinner (until 23:00)		
20:30					
21:00					

* These events are held in a different location.

Please visit **Aula 1, RWTH main building, Templergraben 55** to participate.

Welcome from the local organizers

Dear participants,

After 2 years of pandemic, we are very pleased to welcome you personally to the 92nd GAMM Annual Meeting in Aachen. We are looking forward to exciting contributions, stimulating discussions and personal exchange with our guests.

We are grateful to our colleagues of the program committee and the organizers of the sections, young researchers' minisymposia, minisymposia, and DFG priority programs for their support and for ensuring a high quality of the scientific program.

We would like to express our thanks to RWTH Aachen University and its staff for their general support. We thank the city of Aachen, Dynamore, SpringerNature, MDPI, pecanode, and Maple Soft for supporting the conference.

We also sincerely thank the organizing team of the GAMM 2022 Meeting in Aachen for their engagement and contributions, which were of key importance for successful organization of the conference. Of course, there are numerous people, who contribute in the background to the success of such an event. Therefore, special thanks go to all the numerous colleagues and students who actively supported us in the preparations.

Enjoy this conference and your stay in Aachen!



Stefanie Reese



Bernd Markert



**Jaan-Willem
Simon**



Franz Bamer

Welcome from the President and Secretary

Dear participants,

The International Association of Applied Mathematics and Mechanics welcomes you at its 92nd Annual Scientific Conference, held in Aachen, Germany, from August 15 – August 19, 2022.

On behalf of the DGLR and the GAMM, we invite you to the 64th Ludwig Prandtl Memorial Lecture. Furthermore, we invite all GAMM members to the regular general assembly of the GAMM on Wednesday, August 17, 2022.



Jörg Schröder
President



Michael Kaliske
Secretary

Local Organizers



Stefanie Reese
Institute of Applied Mechanics
(IFAM)



Bernd Markert
Institute of General Mechanics
(IAM)



Jaan-Willem Simon
Institute of Applied Mechanics
(IFAM)



Franz Bamer
Institute of General Mechanics
(IAM)

Conference Office and Organization

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Institute of Applied Mechanics
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(IFAM)

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HU Berlin

Kerstin Weinberg

University of Siegen

Special Events

Monday, August 15

Opening Ceremony

13:00 - 14:00 @ Aula

Ludwig Prandtl Memorial Lecture

14:00 - 15:00 @ Aula

Welcome Reception

19:00 - 23:00 @ C.A.R.L.

Tuesday, August 16

Poster Session

16:00 - 16:30 @ C.A.R.L. Foyer

Public Lecture

19:30 - 21:00 @ H01

Wednesday, August 17

Poster Session

09:30 - 10:30 @ C.A.R.L. Foyer

Richard von Mises Prize Lecture

10:30 - 11:30 @ H01

GAMM General Assembly

11:30 - 13:00 @ H01

YAMM Lunch

13:00 - 14:00 @ C.A.R.L. 2nd floor

Conference Dinner

19:30 - 23:00 @ Das Liebig

Friday, August 19

Closing Ceremony

13:00 - 14:00 @ H01

Plenary Lectures - Mathematics

Monday, August 15, 15:00 - 16:00 @ Aula

Martin Burger

FAU Erlangen-Nürnberg
Germany

*Mathematical methods for
changing networks –
from neural to social*

Tuesday, August 16, 12:00 - 13:00 @ H01

Jan Hesthaven

EPFL
Switzerland

*Non-intrusive reduced order
models through neural
networks*

Thursday, August 18, 11:00 - 12:00 @ H01

Valeria Simoncini

University of Bologna
Italy

*On the versatility of Krylov
subspaces in modern matrix
computations*

Friday, August 19, 12:00 - 13:00 @ H01

Eduard Feireisl

Czech Acad. of Sciences Prague
Czech Republic

*Oscillatory solutions to
problems in fluid mechanics:
Analysis and numerics*

Plenary Lectures - Mechanics

Tuesday, August 16, 11:00 - 12:00 @ H01

Mechanics meets machine learning – What can we learn?

Ellen Kuhl
Stanford University
USA

Thursday, August 18, 12:00 - 13:00 @ H01

*Kinematics – Dead or alive?
Some applications of kinematics
in fast multibody dynamics,
creative mechanism design,
biomechanics and robotics*

Andres Kecskemethy
University of Duisburg-Essen
Germany

Thursday, August 18, 16:30 - 17:30 @ H01

*Sharp interface approximations
for compressible two-phase flow
with phase change*

Claus-Dieter Munz
University of Stuttgart
Germany

Friday, August 19, 11:00 - 12:00 @ H01

*Multiphysics phase-field
modeling and simulation of
advanced materials and
processing*

Bai-Xiang Xu
Technical University Darmstadt
Germany

Ludwig Prandtl Memorial Lecture

Monday, August 15, 14:00 - 15:00 @ Aula

Tim Colonius

California Institute of Technology
USA

*Structure and reduced-order-
modeling of turbulence in the
frequency domain*

Richard von Mises Lecture

Wednesday, August 17, 10:30 - 11:30 @ H01

The lecture will be held by the winner of the Richard von Mises Prize 2022. The awardee will be announced on Monday, August 15.

Tuesday, August 16, 19:30 @ H01



Prof. Dr. Metin Tolan
University of Göttingen
Germany

Prof. Dr. Metin Tolan is President of the University of Göttingen. Previously, the physicist was Professor of Experimental Physics at the Technical University of Dortmund. In addition to his research activities, he has become known to a wide audience primarily through his widely attended public lectures and as the author of various popular books.

GESCHÜTTELT, NICHT GERÜHRT

James Bond im Visier der Physik

007 im Physiksaal: Metin Tolan lüftet endlich James Bonds Geheimnisse und erklärt, wie Röntgenbrillen und Magnetuhren funktionieren. Kann man wirklich mit einem brennenden Auto übers Eis fahren, oder wird beim britischen Geheimdienst auch geschummelt? Nie war die Vermittlung physikalischen Wissens aufregender. Seit 13 Jahren geht Professor Tolan den technischen Spielereien aus den James-Bond-Klassikern auf den Grund und fühlt den Kompetenzen des Supertüftlers Q auf den Zahn: Kann man wirklich mit einem Raketenrucksack durch die Luft fliegen? Dass sich 007 bei seinen atemberaubenden Stunts nie den Hals bricht, ist nämlich nicht Glück, sondern angewandte Physik. Zusammen mit seinen Studierenden berechnet Metin Tolan Geschwindigkeiten von Verfolgungsjagden und Flugkurven rasender Autos und beantwortet schließlich auch die Frage aller Fragen: Warum muss der Wodka-Martini geschüttelt sein und nicht gerührt?

Young Researchers` Minisymposia

Monday, August 15, 17:00 - 19:00

YR 1 **Data assimilation** @ H07

Organizers: **Jana de Wiljes** University of Potsdam
Franca Hoffmann University of Bonn

YR 2 **The push to exascale: High performance numerical linear algebra on modern hardware** @ H08

Organizers: **Erin Carson** Charles University of Prague
Jan Blechta TU Chemnitz

YR 3 **Dynamic inversion and control of mechanical underactuated systems** @ H03

Organizers: **Svenja Drücker** TU Hamburg
Timo Ströhle KIT Karlsruhe

YR 4 **Computational design optimization** @ H04

Organizers: **Peter Gangl** TU Graz
Kevin Sturm TU Vienna

YR 5 **Tissue growth: Analytical aspects and applications** @ H05

Organizers: **Claudia Totzeck** University of Mannheim
Markus Schmidtchen TU Dresden

YR 6 **Climate dynamics and critical transition under uncertainty** @ H06

Organizers: **Kerstin Lux** TU Munich
Keno Riechers Potsdam Inst. for Climate Impact Res.

Poster Session GAMM Juniors

Tuesday, Aug. 16, 16:00 - 16:30 | Wednesday, Aug. 17, 9:30 - 10:30

Organizers: **Carmen Gräßle** TU Braunschweig

In this poster session, members of the GAMM Juniors present aspects of their current research. The GAMM Juniors are a group of young academics in the fields of applied mathematics and mechanics. The GAMM Juniors participate in a wide range of activities such as the organization of summer schools and interdisciplinary workshops, and aim to advance the interests of young academics within GAMM and the scientific community in general.

Carina Witt

TU Dortmund

Henrik Ebel

University of Stuttgart

Paul Schwerdtner

TU Berlin

Katrin Mang

Leibniz University Hannover

Franziska Sophie Egli

University of Stuttgart

Nina Reiter

FAU Erlangen-Nürnberg

Fabian Castelli

Karlsruhe Institute of Technology

Katharina Klioba

TU Hamburg

Johanna Waimann

RWTH Aachen University

Fabian Key

TU Vienna

Andreas Warkentin

University of Kassel

Margarita Chasapi

EPFL

Manuel Schaller

TU Ilmenau

Roland Maier

FSU Jena

YAMM Lunch

Wednesday, August 17, 13:00 - 14:00 @ C.A.R.L. 2nd floor

Organizers: **Idoia Cortes Garcia** TU Eindhoven
Johanna Waimann RWTH Aachen University

YAMM Lunch: Young Academics Meet Mentors

This event offers a platform for exchange between young researchers and experienced mentors. The whole discussion will take place in a relaxed “World Café” setting. Food and drinks will be served.

Pre-registration required.



Prof. Dr. Volker Mehrmann

TU Berlin - Institute for Mathematics

- Numerical analysis, numerical linear algebra
- Differential-algebraic systems and control theory
- Energy based mathematical modeling



Prof. Dr.-Ing. Daniel Balzani

Ruhr-University Bochum - Chair of Continuum Mechanics

- Computational continuum mechanics
- Biomechanics
- Multiscale simulation of microheterogeneous materials



Prof. Dr.-Ing. Benjamin Klusemann

LU Lünenburg - Institute for Product and Process Innovation

- Micromechanics and multi-scale modelling
- Process simulation
- Solid state materials processing



Prof. Dr. Claudia Schillings

FU Berlin - MATH+

- Uncertainties within optimization and inverse problems
- Approximation of complex systems by machine learning
- Efficient methods in the high or infinite dimensional setting



Prof. Dr. Alexandra Schwartz

TU Dresden - Institute for Numerical Mathematics

- Optimization with disjunctive constraints
- Game theory
- Multi-level optimization

Prof. Dr. Simone Göttlich

University of Mannheim - Department of Mathematics

- Multiscale modeling: particle and continuum dynamics
- Numerical methods for partial differential equations
- Control and optimization



Prof. Dr.-Ing. Ellen Kuhl

Stanford University - Robert Bosch Chair of Mechanical Engineering

- Living matter physics
- Machine learning
- Cardiac mechanics



Prof. Dr.-Ing. Stefanie Reese

RWTH Aachen University - Institute of Applied Mechanics

- Computational solid mechanics
- Data-driven mechanics and model reduction
- Finite element technology



Prof. Dr.-Ing. Jörg Schröder

University Duisburg-Essen - Institute of Mechanics

- Continuum mechanics of coupled problems
- Mixed finite element methods
- Numerical homogenization, scale transitions



Prof. Dr. Valeria Simoncini

Università di Bologna - Department of Mathematics

- Matrix computations
- Spectral perturbation theory
- Multivariate statistics



Prof. Dr.-Ing. Peter Wriggers

Leibniz Universität Hannover - Institute of Continuum Mechanics

- Contact mechanics
- Virtual element methods
- Nonlinear finite element methods



Prof. Dr. Christian Wieners

KIT Karlsruhe - Institute for Applied and Numerical Mathematics

- Scientific computing
- Finite element analysis
- Applications in solid mechanics



DFG Priority Programmes

Tuesday, August 16, 14:00 - 16:00

2013 The utilization of residual stresses induced by metal forming @ S04

Organizers: **Markus Kästner** TU Dresden
Dominik Brands University of Duisburg-Essen

1886 Polymorphic uncertainty modelling for the numerical design of structures @ S08

Organizers: **Michael Kaliske** TU Dresden

2298 Theoretical foundations of deep learning @ S12

Organizers: **Gitta Kutyniok** LMU Munich
Laura Thesing LMU Munich

2256 Variational methods for predicting complex phenomena in engineering structures and materials @ S16

Organizers: **Klaus Hackl** RUB Bochum
Dorothee Knees University of Kassel

2020 Cyclic deterioration of high-performance concrete in an experimental-virtual lab @ S03

Organizers: **Johannes Storm** TU Dresden
Fadi Aldakheel Leibniz University Hannover

1962 Non-smooth and complementarity-based distributed parameter systems: Simulation and hierarchical optimization @ S07

Organizers: **Michael Hintermüller** WI Berlin

Tuesday, August 16, 14:00 - 16:00

Mechanics of foams @ H01

MS 1

Organizers: **Anne Jung** University of Saarland
Jörg Hohe Fraunhofer IWM Freiburg

Optimization of shapes and on manifolds @ H02

MS 2

Organizers: **Ronny Bergmann** NTNU Trondheim
Stephan Schmidt University of Paderborn

Scientific machine learning @ H03

MS 3

Organizers: **Peter Benner** MPI Magdeburg
Axel Klawonn University of Cologne
Martin Stoll TU Chemnitz
Oliver Rheinbach TU Freiberg

Evolution equations with gradient flow structure @ H04

MS 4

Organizers: **Leon Bungert** University of Bonn
Matthias Erbar University of Bielefeld
Jan-Frederik Pietschmann TU Chemnitz

Modern poromechanics: Modeling, discretization and iterative solution methods @ H05

MS 5

Organizers: **Markus Bause** HSU Hamburg
Johannes Kraus University of Duisburg-Essen

Artificial meets natural intelligence: Data-integrated modeling and simulation of complex biological systems @ H06

MS 6

Organizers: **Silvia Budday** FAU Erlangen-Nürnberg
Alexander Heinlein TU Delft

Sections

Tuesday, August 16 - Friday, August 19

S 01 Multi-body dynamics @ S12

Organizers: **Robert Seifried** TU Hamburg
Pascal Ziegler University of Stuttgart

S 02 Biomechanics @ H10

Organizers: **Markus Böl** TU Braunschweig
Kevin Linka TU Hamburg

S 03 Damage and fracture mechanics @ H04 & H09

Organizers: **Markus Käßtner** TU Dresden
Andreas Ricoeur University of Kassel

S 04 Structural mechanics @ H02 & H11

Organizers: **Stefan Löhnert** TU Dresden
Christian Weißenfels University of Augsburg

S 05 Nonlinear oscillations @ S11

Organizers: **Malte Krack** University of Stuttgart
Sebastian Tatzko LU Hannover

S 06 Material modelling in solid mechanics @ H01 & H11

Organizers: **Marc-André Keip** University of Stuttgart
Thomas Böhlke KIT Karlsruhe

S 07 Coupled problems @ H06

Organizers: **Björn Kiefer** TU Freiberg
Holger Steeb University of Stuttgart

S 08 Multiscales and homogenization @ H03 & H10

Organizers: **Julia Mergheim** FAU Erlangen-Nuremberg
Ralf Jänicke University of Braunschweig

S 09 Laminar flows and transition @ S08

Organizers: **Christoph Egbers** BTU Cottbus
Jeanette Hussong TU Darmstadt

Turbulence and reactive flows @ S07 S 10

Organizers: **Andreas Dreizler** TU Darmstadt
Holger Marschall TU Darmstadt

Interfacial flows @ S11 S 11

Organizers: **Arnold Reusken** RWTH Aachen University
Dieter Bothe TU Darmstadt

Waves and acoustics @ S15 S 12

Organizers: **Georg Kocur** RWTH Aachen University
Erik Sanger Bochum University of Applied Sciences

Flow control @ S03 S 13

Organizers: **Kilian Oberleithner** TU Berlin
Wolfgang Schroder RWTH Aachen University

Applied analysis @ S12 S 14

Organizers: **Karoline Dissler** University of Kassel
Amru Hussein TU Kaiserslautern

Uncertainty quantification @ H08 & H11 S 15

Organizers: **Robert Scheichl** University of Heidelberg
Aretha Teckentrup University of Edinburgh

Optimization @ H09 S 16

Organizers: **Claudia Totzeck** University of Wuppertal
Michael Stiglmayr University of Wuppertal

Applied and numerical linear algebra @ S16 S 17

Organizers: **Patrick Kurschner** HTWK Leipzig
Silvia Gazzola University of Bath

Num. meth. for differential equations @ H05 & H08 S 18

Organizers: **Sandra May** Uppsala University
Alexander Heinlein TU Delft
Martin Kronbichler Uppsala University

Sections

S 19 Optimization of differential equations @ S07

Organizers: **Carmen Gräßle** MPI Magdeburg
Peter Gangl TU Graz

S 20 Dynamics and control @ S08

Organizers: **Sara Grundel** MPI Magdeburg
Benjamin Unger University of Stuttgart

S 21 Math. signal and image processing @ S16

Organizers: **Robert Beinert** TU Berlin
Martin Holler University of Graz

S 22 Scientific computing @ S04

Organizers: **Martin Lanser** University of Cologne
Stephanie Friedhoff University of Wuppertal

S 23 Applied operator theory @ S04

Organizers: **Christian Seifert** TU Hamburg
Jan Meichsner FernUniversität Hagen

S 24 History of mechanics and history, teaching and popularization of mathematics @ S04

Organizers: **Reinhold Kienzler** University of Bremen
Wolfgang H. Müller TU Berlin

S 25 Computational and mathematical methods in data science @ H07

Organizers: **Martin Grepl** RWTH Aachen University
Martin Stoll TU Chemnitz

S 26 Modelling, analysis and simulation of molecular systems @ S03

Organizers: **Benjamin Stamm** RWTH Aachen University
Gero Friesecke TU Munich

Conference Desk | Check-In

The conference desk is located at the entry of the C.A.R.L. Auditorium and will be open during the following hours. Check-In and Registration is only possible during the opening hours.

	Date	Opening Hours
Monday	August 15	12:00 - 20:00
Tuesday	August 16	08:00 - 18:00
Wednesday	August 17	08:00 - 18:00
Thursday	August 18	08:00 - 18:00
Friday	August 19	08:00 - 12:00

Please notice: For *Opening, Prandtl* lecture and the *plenary lecture* on Monday, a check-in is not required.

Service Hotline | Conference Office

+49 241 80-97861

WiFi Access

WiFi Access through *Eduroam* is available all across the campus of RWTH Aachen University.

For participants without access to *Eduroam*, we offer additional free WiFi access. To gain access, you can either scan the QR-Code or set up the connection manually using the credentials below.

WiFi network RWTH-guests

Login GAMM

Password rjqyvypis

Scan for Access



Conference App

You may download the conference app by using the QR code below. Please use the following passphrase: **GAMM22AACH**



Lockers | Luggage storage

Lockers for storage of small to medium luggage are available at C.A.R.L. auditorium at the ground floor. There is a 1 euro deposit per locker.

Lunch locations

There are various possibilities for having lunch near by the conference venue. In addition to the **Mensa Academica** right next to the C.A.R.L. auditorium, **Pontstrasse** offers a rich selection of restaurants and snack bars in various price categories, which can be reached by foot in less than 5 minutes.

You may purchase tokens for the Mensa Academica at the Conference Desk.

Conference Venue - C.A.R.L.



The main part of the GAMM annual conference takes place at the **C.A.R.L.** auditorium center, **Claßenstraße 11** in Aachen.

You may find a detailed floor plan at the end of the programme booklet.

Scan for Location



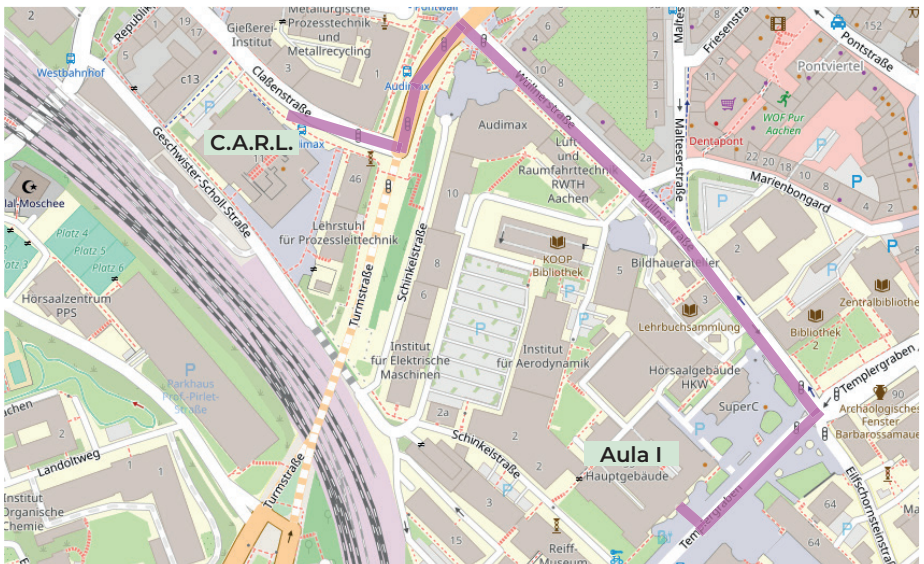
Conference Venue - Aula I



On Monday, August 15, we welcome you at the **Aula I** located in the main building of RWTH Aachen University, **Templergraben 55**.

Opening Ceremony, Ludwig Prandtl memorial lecture as well as the first Plenary lecture of the week will be hosted here.

Scan for Location



Conference Dinner

Wednesday, August 17, 19:30 - 23:00



The conference dinner will take place in one of the most modern and beautiful event locations in the city of Aachen. DAS LIEBIG offers more than 1,800 sqm of inspiring rooms and 1,000 sqm of outdoor space for events of all kinds and is exclusively available to conference participants for this event. The historic “Kälbermarkthalle” building on the former slaughterhouse grounds in Aachen is an atmospheric and cosy event location. Through a successful combination of historical building fabric and modern design, this location offers a unique ambience for its visitors. As one of the best caterers in the imperial city of Aachen, Kerres will indulge you with a selection of fresh food and finest drinks. In addition to an extensive buffet, several BBQ stands await you at which you can feast to your heart’s content.

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Liebigstraße 19
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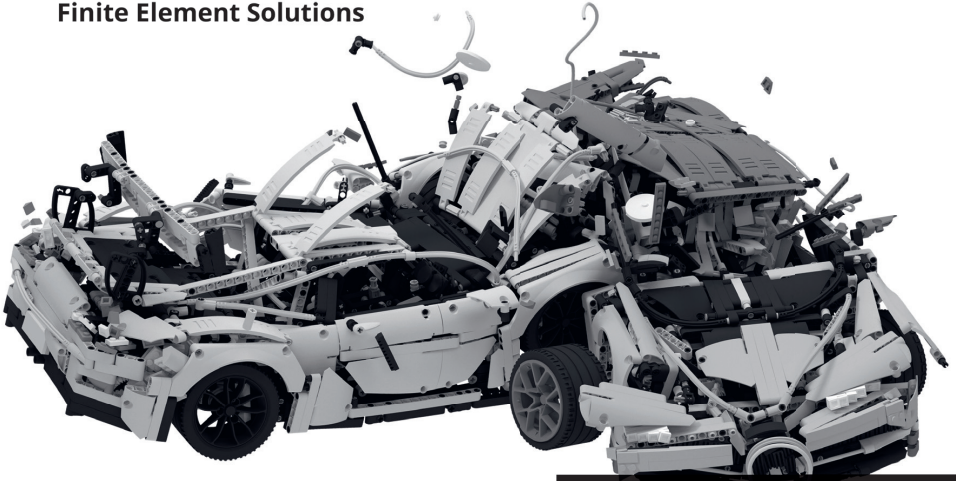


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Detailed Schedule

Detailed Schedule - Monday, August 15

12:00 Registration | Check-In

C.A.R.L. Registration desk opens

13:00 Opening Ceremony

Aula

14:00 Ludwig Prandtl Memorial Lecture

Aula

Tim Colonius California Institute of Technology

Structure and reduced-order-modeling of turbulence in the frequency domain

Laudation by: Martin Oberlack

15:00 Plenary Lecture

Aula

Martin Burger FAU Erlangen-Nuremberg

Mathematical methods for changing networks - from neural to social

Chaired by: Holger Rauhut

16:00 Coffee Break | Transfer to C.A.R.L.

Transfer to the main conference venue

17:00 Young Researchers` Minisymposia

C.A.R.L. Parallel sessions

19:00 Welcome Reception

C.A.R.L. Opening of the conference week with drinks, fingerfood and some music.

Young Researchers Minisymposia

	YR 1 Data Assimilation Chair: O. Lang, F. Hoffmann @ H07	YR 2 The push to exascale Chair: E. Carson @ H08	YR 3 Dynamic inversion and control of mechanical underactuated systems Chair: S. Drücker, T. Ströhle @ H03
17:00	<i>Analysis of an interacting particle system using diffusion maps for Bayesian inference</i> <u>S. Pathiraja</u>	<i>Towards a faster computation of the Lagrangian Flowmap for Fluid Dynamic Applications</i> <u>R. Carratalá-Sáez</u> , J. Sierra-Pallares, D. R. LLanos, A. Gonzales-Escribano	<i>Comparison of Control Approaches of Soft Robots</i> <u>M. Grube</u> , J. C. Wieck, R. Seifried
17:20	<i>Data Assimilation for SPDEs driven by transport noise</i> <u>O. Lang</u>	<i>Matrix Multiplication in Multiword Arithmetic: Error Analysis and Application to GPU Tensor Cores</i> M. Fasi, F. Lopez, N. Higham, T. Mary, <u>M. Mikaitis</u>	<i>Hybrid Position-Compliance Control of Redundantly Actuated Parallel Kinematic Manipulators Equipped with Serial Elastic Actuators</i> <u>T. Kordik</u> , H. Gattringer, A. Müller
17:40	<i>Consensus Based Sampling</i> <u>F. Hoffmann</u>	<i>Portable Sparse Linear Algebra on Modern Hardware with the Ginkgo Framework</i> <u>T. Cojean</u> et al.	<i>Dielectric elastomer actuated multibody system dynamics and optimal control</i> <u>D. Huang</u> , S. Leyendecker
18:00	<i>Data-Driven Prediction of Partially Observed Multiscale Systems</i> <u>K. Manohar</u>	<i>Using mixed precision in Block Classical Gram-Schmidt</i> <u>E. Oktay</u> , E. Carson	<i>Tracking control of a rigid body carried by multiple heavy ropes</i> <u>A. Irscheid</u> , J. Rudolph
18:20	<i>Almost sure error bounds for data assimilation in dissipative systems with unbounded observation noise</i> <u>L. Oljaca</u>		<i>Inversion of a flexible link manipulator modeled by the ANCF</i> <u>S. Drücker</u>
18:40			<i>Space-time integration methods for the inverse dynamics simulation of flexible mechanical systems</i> <u>T. Ströhle</u> , P. Betsch

Monday, August 15, 16:30 - 18:30

<p>YR 4</p> <p>Computational design optimization</p> <p>Chair: P. Gangl @ H04</p>	<p>YR 5</p> <p>Tissue growth: Analytical aspects and applications</p> <p>Chair: M. Schmidtchen, C. Totzeck @ H05</p>	<p>YR 6</p> <p>Climate dynamics and critical transition under uncertainty</p> <p>Chair: K. Lux, K. Riechers @ H06</p>	
<p><i>A novel approach to shape optimisation with $W^{1,\infty}$ functions</i></p> <p>K. Deckelnick, P.J. Herbert, M. Hinze</p>	<p><i>Cellular Structures on the Sphere - Effects of Curvature on Epithelial Tissue</i></p> <p>L. Happel, D. Wenzel, A. Voigt</p>	<p><i>A data-driven approach to transitions in multiscale systems via covariant Lyapunov vectors</i></p> <p>M. Engel, A. Viennet, N. Vercauteren, D. Faranda</p>	<p>17:00</p>
<p><i>A Fully Discrete, Riemannian Approach to PDE-Constrained Shape Optimization</i></p> <p>E. Loayza-Romero, R. Herzog, B. Wirth</p>	<p><i>Micro-macro limit for tissue growth model</i></p> <p>S. Hecht</p>	<p><i>Overshoots and rate-induced tipping in conceptual climate models</i></p>	<p>17:20</p>
<p><i>Nonsmooth shape optimisation in linear elasticity with stress constraints</i></p> <p>P. Baumann, K. Sturm</p>	<p><i>Migration and remodeling in cartilage replacement materials – an in-vitro bioreactor study</i></p> <p>R. Salazar Ortiz, G. Dursun, H. Topol, B. Markert, M. Stoffel</p>	<p>P. Ritchie, J. Clarke, C. Huntingford, P. Cox, H. Alkhayoun, S. Wiczorek</p>	<p>17:40</p>
<p><i>Shape Optimization with Space Mapping Methods</i></p> <p>S. Blauth</p>	<p><i>On the incompressible limit for tumor growth models including convective effects</i></p> <p>T. Debiec, N. David, B. Perthame, M. Schmidtchen</p>	<p><i>Challenges for predictability in a highly multi-stable and out-of-equilibrium climate</i></p> <p>J. Lohmann</p>	<p>18:00</p>
<p><i>Optimizing optical properties of nanoparticles</i></p> <p>A. Uihlein, L. Pflug, M. Stingl</p>	<p><i>The interplay of spatio-temporal interactions and evolutionary dynamics during tumor growth</i></p> <p>S. Syga, A. Deutsch</p>	<p><i>Justification of Delay Equation Climate Models using the Mori-Zwanzig Formalism</i></p> <p>S. K. J. Falkena</p>	<p>18:20</p>
<p><i>Computing multiple solutions of topology optimization problems</i></p> <p>I. Papadopoulos, P. Farrell, T. Surowiec</p>	<p><i>Viscoelastic Cahn-Hilliard models for tumour growth</i></p> <p>H. Garcke, B. Kovács, D. Trautwein</p>		<p>18:40</p>

Detailed Schedule - Tuesday, August 16

8:30 Contributed Sessions

Parallel sessions

10:30 Coffee Break

11:00 Plenary Lecture

H01

Ellen Kuhl Stanford University

Mechanics meets machine learning – What can we learn?

Chaired by: Stefanie Reese

12:00 Plenary Lecture

H01

Jan Hesthaven EPFL Lausanne

Non-intrusive reduced order models through neural Networks

Chaired by: Benjamin Stamm

13:00 Lunch Break

14:00 Minisymposia | DFG Priority Programs

Parallel sessions

16:00 Coffee Break | Poster Session

Poster Session of GAMM Juniors

16:30 Contributed Sessions

Parallel sessions

19:30 Public Lecture

H01

Metin Tolan Georg-August-University Göttingen

Geschüttelt, nicht gerührt: James Bond im Visier der Physik

Chaired by: Stefanie Reese

Contributed Sessions

	S 02 Biomechanics Chair: M. Böhl @ H10	S 03 Damage and fracture mechanics Chair: K. Weinberg @ H04	S 04 Structural mechanics Chair: C. Weißenfels, S. Löhnert @ H02
8:30	<p><i>Mechanobiology of the aorta after endovascular aortic aneurysm repair</i></p> <p>S. Zhang, J. Laubrie, J. Mousavi, S. Avril</p>	<p><i>Mesh-convergence and regularization in blast simulations of concrete structures</i></p> <p>S. M. Rosenbusch, T. Titscher, D. Balzani, J. Unger</p>	<p><i>Mixed-dimensional contact interactions between 1D beams and 2D solid surfaces</i></p> <p>I. Steinbrecher, A. Popp</p>
8:50		<p><i>Bonded particle models for discrete element simulation of porous granules</i></p> <p>S. Rotter, C. Woitzik, A. Düster</p>	<p><i>An isogeometric finite element formulation for frictionless contact of hyperelastic Cosserat rods with unconstrained directors</i></p> <p>M.-J. Choi, S. Klinkel, R. A. Sauer</p>
9:10	<p><i>Generation of multiscale hepatic vasculature using mathematical optimization</i></p> <p>E. Jessen, M. Steinbach, C. Debbaut, D. Schillingner</p>	<p><i>Towards the Computational Homogenization of Fracturing in Poro-Elastic-Plastic Solids</i></p> <p>E. Polukhov, M.-A. Keip</p>	<p><i>A parametric study of high velocity impact prediction using the Mie-Grüneisen equation</i></p> <p>S. Kalapis, K.-U. Schröder</p>
9:30	<p><i>Modeling of the interaction of cardiovascular agents and smooth muscle activation in arterial walls</i></p> <p>S. Nurani Ramesh, K. Uhlmann, D. Balzani</p>	<p><i>On computing the effective crack energy of heterogeneous media</i></p> <p>F. Ernesti, M. Schneider</p>	<p><i>A geometrical parameter study of the analytical stress calculation in adhesive joints with thick bonding layers</i></p> <p>T. S. Methfessel, W. Becker</p>
9:50	<p><i>Modeling the contraction of smooth muscle in arterial walls: calcium-dependent and -independent pathway</i></p> <p>K. Uhlmann, D. Balzani</p>	<p><i>A comparison of different boundary conditions when computing the effective crack energy of random heterogeneous materials</i></p> <p>J. Lendvai, F. Ernesti, M. Schneider</p>	<p><i>Extension of a Physical Force Model with Cooling Lubricants for the Grinding Process</i></p> <p>F. Kästner, K. de Payrebrune</p>
10:10	<p><i>Numerical modeling of patient-based carotid artery flow with fluid-structure-interaction: hemodynamical risk parameters and compliance study</i></p> <p>K. Richter, T. Probst, A. Hundertmark</p>		<p><i>On the consideration of non-linear multipoint constraints in nonlinear finite element analyses based on a master-slave elimination scheme operating at the global level</i></p> <p>J. Boungard, J. Wackerfuß</p>

Tuesday, August 16, 08:30 - 10:30

<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: T. Böhlke @ H01</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: P. Junker @ H11</p>	<p>S 07</p> <p>Coupled problems</p> <p>Chair: B. Kiefer, H. Steeb @ H06</p>	
<p><i>On the boundary conditions of the relaxed micromorphic theory</i></p> <p><u>M. Sarhil</u>, L. Scheunemann, J. Schröder, P. Neff</p>	<p><i>A thermodynamic framework for the phase-field approach considering carbide precipitation during phase transformations</i></p> <p><u>H. Westermann</u>, R. Mahnken</p>	<p><i>Phase field modeling of chemically reactive multi-component/multi-phase systems</i></p> <p><u>A. Seupel</u>, S. Roth, B. Kiefer</p>	<p>8:30</p>
<p><i>Consistent Euler-Bernoulli beam theory in gradient elasticity: Two equivalent formulations of a simple constitutive law</i></p> <p>C. Broese, <u>Ö. Üngör</u>, S. Sideris, R. Müller, C. Tsakmakis</p>	<p><i>Quantifying surface elasticity in soft solids</i></p> <p><u>S. Heyden</u>, P. Vlahovska, E. Dufresne</p>	<p><i>Coupling stress fields and vacancy diffusion in phase-field models of voids as vacancy phase</i></p> <p><u>K. A. Pendl</u>, T. Hochrainer</p>	<p>8:50</p>
<p><i>Stress-gradient continua: On smaller-is-softer size effects and stress-free boundary layers</i></p> <p><u>T. Kaiser</u>, S. Forest, A. Menzel</p>	<p><i>An efficient implicit time integration scheme for solving gradient flow equations with Fourier spectral methods</i></p> <p><u>B. Yaraguntappa</u>, A. Krischok, M.-A. Keip</p>	<p><i>Wetting of structured surfaces in a phase field model</i></p> <p><u>J. Wolf</u>, Y. Flieger, F. Diewald, K. Langenbach, S. Stephan, H. Hasse, R. Müller</p>	<p>9:10</p>
<p><i>A finite strain gradient theory for viscoplasticity by means of micromorphic regularization</i></p> <p><u>A. Hamdoun</u>, R. Mahnken</p>	<p><i>Micro-macro phase-field optimization of 3D-printable structures and its numerical aspects</i></p> <p><u>A. Krischok</u>, B. Yaraguntappa, M.-A. Keip</p>	<p><i>Numerical treatment of sharp interfaces in diffusional phase transformation problems</i></p> <p><u>W. Flachberger</u>, J. Svoboda, T. Antretter, M. Petersmann, S. Leitner</p>	<p>9:30</p>
	<p><i>Towards Part-Scale Simulation of Metal Additive Manufacturing Processes: Consistent Material Laws and Efficient Parallel Algorithms</i></p> <p><u>C. Meier</u>, S. D. Proell, W. A. Wall</p>	<p><i>Physics-informed neural networks for solving diffusional coupled mechanics</i></p> <p><u>B. Lin</u>, S. Rezaei, B.-X. Xu</p>	<p>9:50</p>
	<p><i>Modeling the thermomechanical processes and residual stresses in additive manufacturing of metallic components</i></p> <p><u>B. Ali</u>, Y. Heider, B. Markert</p>	<p><i>In Silico Modeling of Coupled Physical-Biogeochemical (P-BGC) Processes in growing Antarctic Sea Ice</i></p> <p><u>A. Thom</u>, T. Ricken, S. Thoms, B. Kutschan</p>	<p>10:10</p>

Contributed Sessions

	S 08 Multiscales and homogenization Chair: J. Mergheim @ H03	S 11 Interfacial flows Chair: D. Bothe @ S11	S 12 Waves and acoustics Chair: G. Kocur, E. Saenger @ S15
8:30	<i>On the numerical homogenization of real polycrystalline microstructures</i> L. Scheunemann , J. Schröder	<i>Challenges in modelling the movement of sliding drops</i> H.-J. Butt	<i>Numerical prediction of acoustic wave dynamics in moving fluids and acoustic black holes</i> S. Schenke , F. Sewerin, B. van Wachem, F. Denner
8:50			
9:10	<i>An efficient Finite Element approach based on multiscale modeling of polycrystalline ferroic continua</i> R. Wakili , S. Lange, A. Ricoeur	<i>Contact line advection using a finite volume ALE interface tracking method</i> S. Raju , T. Marić, Ž. Tuković, D. Bothe, M. Fricke	<i>Focusing of inertial waves by a vertically annular forcing</i> J. Liu , M. Oberlack, Y. Wang
9:30	<i>Thermo-mechanical homogenization and experimental validation of residual stresses in laser-generated composite materials</i> S. Alameddine et al.	<i>New perspectives on capillary rise from complexity reduced models</i> M. Fricke , S. Raju, E. A. Ouro-Koura, J. De Coninck, D. Bothe	<i>Development of a FEM tool to calculate the dispersion curves of 2D phononic structures</i> C. Nies , M. Mellmann, B. Ankaev, C. Zhang
9:50	<i>Goal-oriented adaptivity based on a model hierarchy of mean-field and full-field homogenization methods in elasto-plasticity</i> A. Tchomgne Simeu , R. Mahnken		<i>A model order reduction technique for the linearised compressible flow equations</i> F. Toth , L. Luo
10:10	<i>High-order multiscale methods for the heterogeneous wave equation</i> F. Krumbiegel , R. Maier		<i>The kinks, the solitons and the shocks in series connected discrete Josephson transmission lines</i> E. Kogan

<p>S 14</p> <p>Applied analysis</p> <p>Chair: T. Eiter @ S12</p>	<p>S 15</p> <p>Uncertainty Quantification</p> <p>Chair: R. Scheichl @ H08</p>	<p>S 16</p> <p>Multiobjective Optimization</p> <p>Chair: K. Klamroth, C. Totzeck, M. Stiglmayr @ H09</p>	
<p><i>Convergence of a Nonlocal to a Local Diffuse Interface Model for Two-Phase Flow with Unmatched Densities</i></p> <p><u>H. Abels</u>, Y. Terasawa</p>	<p><i>Neural Network approximations in UQ</i></p> <p><u>J. Zech</u></p>	<p><i>Accelerated Multiobjective Optimization Algorithms motivated by Inertial Gradient-like Dynamical Systems</i></p> <p><u>K. H. Sonntag</u>, S. Peitz</p>	<p>8:30</p>
<p><i>Robustness of the relative entropy approach to interface evolution: Mean curvature flow with constant contact angle</i></p> <p><u>S. Hensel</u>, T. Laux, M. Moser</p>		<p><i>Convergence analysis of a novel consensus-based algorithm for multi-objective optimization</i></p> <p><u>G. Borghi</u>, M. Herty, L. Pareschi</p>	<p>8:50</p>
<p><i>Existence of nonnegative solutions to stochastic thin-film equations in two space dimensions</i></p> <p><u>S. Metzger</u></p>	<p><i>Polynomial-chaos-based Statistical Finite Element Method in Linear and Nonlinear Material Models</i></p> <p><u>V. Narouie</u>, H. Wessels</p>	<p><i>Multiscale Control of Stackelberg Games</i></p> <p><u>A. Thünen</u>, M. Herty, S. Steffensen</p>	<p>9:10</p>
<p><i>Minizing movements for problems involving inertia and large deformations</i></p> <p><u>M. Kampschulte</u></p>	<p><i>Multilevel Monte Carlo FEM for Elliptic PDEs with Besov Random Tree Priors</i></p> <p><u>A. Stein</u>, C. Schwab</p>	<p><i>Solving the Dynamic Dial-a-Ride Problem</i></p> <p><u>M. Stiglmayr</u>, D. Gaul, K. Klamroth</p>	<p>9:30</p>
<p><i>On thermodynamic extensions of the Cahn-Hilliard equation</i></p> <p><u>F. De Anna</u>, C. Liu, A. Schlömerkemper, J.-E. Sulzbach</p>	<p><i>A-posteriori numerical methods for random elliptic PDEs</i></p> <p>A. Barth, <u>C. A. Beschle</u></p>	<p><i>Variants of consensus-based optimization</i></p> <p><u>C. Totzeck</u>, K. Klamroth, M. Stiglmayr</p>	<p>9:50</p>
<p><i>A note on asymptotic behavior of a class of finite-energy sequences for the Cahn-Hilliard functional with non-coercive two-well potential in one dimension</i></p> <p><u>A. Raguz</u></p>	<p><i>Sparse polynomial chaos expansion for nonlinear finite element simulations with random material properties</i></p> <p><u>E. Voelsen</u>, M. Dannert, A. Bas-maji, F. Bense, U. Nackenhorst</p>	<p><i>A Derivative-Free Trust Region Algorithm with Filter for Nonlinear Constraints in Multiobjective Optimization</i></p> <p><u>M. B. Berkemeier</u>, S. Peitz</p>	<p>10:10</p>

Contributed Sessions

	S 18 Numerical methods of differential equations Chair: M. J. Kronbichler @ H05	S 19 Optimization of differential equations Chair: C. Gräßle @ S07	S 20 Dynamics and control Chair: S. Grundel, B. Unger @ S08
8:30	Embedded Trefftz Discontinuous Galerkin methods (How to Trefftzify your DG method) C. Lehrenfeld, P. Stocker	Optimization with almost sure state constraints A. Alphonse, C. Geiersbach, M. Hintermüller, T. Surowiec, W. Wollner	Application and damping mechanism of particle dampers B. B. Prasad, F. Duvigneau, E. Woschke, D. Juhre
8:50			Component tracking for hydrogen-natural gas mixtures for Stassfurt gas networks A. S. Nayak, S. Grundel
9:10	Efficient algorithms for HP-FEM using Specials functions and Symbolic Computations T. Haubold, S. Beuchler, V. Pillwein	Local quadratic convergence of SQP for an optimal control problem governed by a regularized fracture propagation model A. Hehl, I. Neitzel	Cooperation of Non-holonomic Mobile Robots: Object Transportation and Beyond H. Ebel, M. Rosenfelder, D. N. Fahse, P. Eberhard
9:30	Application of Nedelec Elements to Non-Oriented Grids with Hanging Nodes Applied to Time-Harmonic Maxwell's Equations S. Beuchler, S. Kinnewig, T. Wick	Space-time formulation for phase-field fracture optimal control problems D. Khimin, M. C. Steinbach, T. Wick	On the Stability of a Balanced Rigid Rotor in Actively Controlled Journal Bearings A. Bitner, C. Proppe
9:50	Convergence of a regularized finite element discretization of the two-dimensional Monge-Ampère equation D. Gallistl, N. T. Tran	Control of Sliding Droplets using the Contact Angle H. Bonart, C. Kahle	On the Systematic Construction of Lyapunov Functions for Polynomial Systems L. Natkowski, D. Gerbet, K. Röbenack
10:10	Nonconforming finite elements satisfying a strong discrete Miranda-Talenti inequality S. Tian, D. Gallistl	Optimization of Wetting Phenomena with Application to the Doctor Blading Process in Gravure Printing E. Diehl, S. Ulbrich	

Tuesday, August 16, 08:30 - 10:30

<p>S 21</p> <p>Mathematical signal and image processing</p> <p>Chair: R. Beinert, M. Holler @ S16</p>	<p>S 22</p> <p>Scientific computing</p> <p>Chair: M. Lanser @ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: M. Stoll, M. Grepl @ H07</p>	
<p><i>Optimal-transport-based approaches for dynamic image reconstruction</i></p> <p><u>K. Bredies</u>, M. Carioni, S. Fanzon, F. Romero</p>	<p><i>Efficient flow simulation in complex pore-scale geometries</i></p> <p><u>V. Pimanov</u>, P. Toktaliev, O. Iliev</p>	<p><i>What Can Machine Learning be Used for in Domain Decomposition Methods?</i></p> <p>A. Heinlein, <u>A. Klawonn</u>, M. Lanser, J. Weber</p>	<p>8:30</p>
	<p><i>Numerical modeling of reactive flow in porous media at the pore scale</i></p> <p><u>P. Toktaliev</u>, V. Pimanov, O. Iliev</p>		<p>8:50</p>
<p><i>On a linear Gromov-Wasserstein distance</i></p> <p><u>F. Beier</u>, R. Beinert, G. Steidl</p>	<p><i>Mathematical Modeling of Coolant Flow in the Discontinuous Drilling Processes with Temperature Coupling</i></p> <p><u>M. Fast</u>, O. Mierka, S. Turek</p>	<p><i>Physics-Informed Neural Networks for Predicting Flow Fields in Bioreactors</i></p> <p><u>V. Travnikova</u>, E. von Lieres, M. Behr</p>	<p>9:10</p>
<p><i>The Hellinger–Kantorovich barycenter and its fine structure</i></p> <p>M. Bonafini, <u>O. Minevich</u>, B. Schmitzer</p>	<p><i>Numerical simulation of fluid flow with a fast Boundary-Domain Integral Method</i></p> <p><u>J. Tibaut</u>, J. Ravnik, M. Schanz</p>	<p><i>Optimizing artificial neural networks for mechanical problems by physics-based Rao-Blackwellization</i></p> <p><u>G.-L. Geuken</u>, P. Kurzeja, J. Mosler</p>	<p>9:30</p>
<p><i>Exact reconstruction and convergence for noisy data with anisotropic total variation regularization</i></p> <p>M. Holler, B. Wirth</p>	<p><i>An efficient numerical method for the Maxey-Riley equation</i></p> <p><u>J. Urizarna Carasa</u>, D. Ruprecht</p>	<p><i>TNet: A Model-Constrained Deep Learning Solver for Inverse Problems</i></p> <p>H. Nguyen, R. Phillely, <u>T. Bui-Thanh</u></p>	<p>9:50</p>
<p><i>Geometry Segmentation with Total Variation Regularization</i></p> <p><u>M. Weiß</u>, R. Herzog, S. Schmidt, L. Baumgärtner, R. Bergmann</p>	<p><i>Numerical study of droplet drying and particle formation in an acoustic levitator</i></p> <p><u>M. Doß</u>, N. Ray, E. Bänsch</p>	<p><i>Multigrid in Convolutional Neural Networks - Efficiency and Robustness by Weight-Sharing and Coarsening in Resolution and Channel Dimensions</i></p> <p><u>A. van Betteray</u>, M. Rottmann, K. Kahl</p>	<p>10:10</p>

Contributed Sessions

S 26 Modelling, analysis and simulation of molecular systems Chair: B. Stamm @ S03	
8:30	<i>Bi-variational formulation of Complete Active Space Coupled Cluster Methods in Tensor Networks (QC-DMRG)</i> <u>R. Schneider</u> , S. Kvaal
8:50	
9:10	<i>Towards A Posteriori Error Estimates for the Coupled Cluster Equations</i> <u>M. Hassan</u> , Y. Maday, Y. Wang
9:30	<i>Tensor train approximation for the time-independent Schrödinger equation for chains of coupled excitons and phonons</i> P. Gelß, R. Klein, <u>S. Matera</u> , B. Schmidt
9:50	<i>Surrogate models for quantum spin systems based on reduced order modeling</i> <u>M. Herbst</u> , S. Wessel, M. Rizzi, B. Stamm
10:10	<i>Convolutional Moment Tensor Potentials</i> <u>T. Olbrich</u>

Tuesday, August 16, 08:30 - 10:30

Minisymposia

	MS 1 Mechanics of Foams Chair: A. Jung, J. Hohe @ H01	MS 2 Optimization of Shapes and on Manifolds Chair: R. Bergmann @ H02	MS 3 Scientific Machine Learning Chair: P. Benner, A. Klawonn, M. Stöll @ H03
14:00	<p><i>A hybrid approach to model the three-dimensional inelastic deformation behavior of cellular media using neural networks</i></p> <p><u>A. Malik</u>, M. Abendroth, G. Hütter, B. Kiefer</p>	<p><i>Overview of a quotient geometry with simple geodesics for the manifold of fixed-rank positive-semidefinite matrices</i></p> <p><u>E. Massart</u>, P.-A. Absil</p>	<p><i>On the Frank-Wolfe Approach for Abs-smooth Functions</i></p> <p>T. Kreimeier, S. Pokutta, <u>A. Walther</u>, Z. Woodstock</p>
14:20	<p><i>Generalized Strength Criteria for Hard Foams</i></p> <p>H. Altenbach, A. Jung, <u>V.A. Kolupaev</u></p>	<p><i>A mixed Shape-Newton/ Split-Bregman Scheme for Geometric Inverse Problems Involving the Total Variation of the Normal</i></p> <p><u>L. Baumgärtner</u> et al.</p>	<p><i>Machine Learning algorithms for model order reduction of time-dependent Partial Differential Equations</i></p>
14:40	<p><i>Multiscale structural and mechanical characterisation of open-cell metal foams: combining ex situ, in situ and in silico methods on different length scales</i></p> <p><u>C. Fleck</u> et al.</p>	<p><i>Efficient Algorithms to Compute Elastic Shape Distances between Closed Curves</i></p> <p><u>G. Dogan</u></p>	<p><u>L. Dede</u>, S. Pagani, F. Regazzoni, M. Salvador</p>
15:00	<p><i>Early stage failure identification in compression experiments of foam-like structures</i></p> <p><u>T. Nogatz</u>, C. Redenbach, K. Schladitz</p>	<p><i>Shape sensitivity analysis: transformations vs. dilations</i></p> <p><u>M. Berggren</u></p>	<p><i>Examples of machine-learning augmented CFD</i></p> <p><u>A. Beck</u>, J. Zeifang, A. Schwarz, M. Kurz</p>
15:20	<p><i>Impact performance of axisymmetric auxetic cellular metamaterials</i></p> <p>A. Mauko, N. Novak, M. Vesenjak, <u>Z. Ren</u></p>		<p><i>Identification of Nonlinear Dynamical Systems from Data: From Operator Inference to Quadratic Embeddings</i></p>
15:40	<p><i>Static and dynamic investigations of open-cell foam representative volumes</i></p> <p><u>K. Weinberg</u>, S. Buchen, L. Bogunia</p>		<p><u>P. Benner</u>, P. K. Goyal, J. Heiland, I. Pontes Duff</p>

Tuesday, August 16, 14:00 - 16:00

<p>MS 4</p> <p>Evolution Equations with Gradient Flow Structure</p> <p>Chair: J.-F. Pietschmann, M. Erbar @ H04</p>	<p>MS 5</p> <p>Modern poromechanics: Modeling, Discretization and Iterative Solution Methods</p> <p>Chair: M. Bause, J.K. Kraus @ H05</p>	<p>MS 6</p> <p>Artificial meets natural Intelligence: Data-integrated modeling and simulation of complex biological systems</p> <p>Chair: A. Heinlein, S. Budday @ H06</p>	
<p><i>A parabolic quantum model of sixth order: existence and long time asymptotics</i></p> <p><u>D. Matthes</u>, E.-M. Rott</p>	<p><i>Integrated framework for the numerical solution of generalized Biot's systems and applications in biomedical sciences</i></p> <p><u>M. D. Lymbery</u></p>	<p><i>Data-integrated modeling of the regionally and temporally varying behavior of human brain tissue</i></p> <p><u>S. Budday</u>, N. Reiter, M. S. Zarzor, J. Hinrichsen, K. Linka</p>	<p>14:00</p>
<p><i>Discrete models for atmospheric turbulence</i></p> <p><u>C. Geldhauser</u>, M. Romito</p>	<p><i>Iterative coupling of dynamic Biot equations</i></p> <p><u>J. W. Both</u>, N. Barnafi, A. Quarteroni, F. A. Radu, P. Zunino</p>	<p><i>Data- and Knowledge-Driven Multiphase and Multiscale Simulation of Deformation-Function-Perfusion Processes in the Human Liver</i></p> <p><u>L. Lambers</u>, S. Gerhäuser, L. Mandl, A. Mielke, T. Ricken</p>	<p>14:20</p>
<p><i>EDP-convergence for evolutionary systems with gradient flow structure</i></p> <p><u>M. Liero</u>, T. Frenzel</p>			<p>14:40</p>
<p><i>Gradient flows in the Hellinger-Kantorovich space</i></p> <p><u>A. Mielke</u></p>	<p><i>Efficient solution of porous media phase-field fracture: Matrix-free multigrid for the mechanics step and global-local approaches</i></p> <p><u>T. Wick</u> et al.</p>	<p><i>Expert-Enhanced Machine Learning for Cardiac Arrhythmia Classification</i></p> <p><u>M. Merkert</u>, F. Bernhardt, F. Kehrle, A. Potschka, S. Sager, B. Meder, H. Katus, E. Scholz</p>	<p>15:00</p>
<p><i>Tilting of gradient system</i></p> <p>M. Peletier, <u>A. Schlichting</u></p>		<p><i>Predicting Cardiovascular Flow Using Convolutional Autoencoder Neural Networks and Physical Constraints</i></p> <p>V. Grimm, <u>A. Heinlein</u>, A. Klawonn</p>	<p>15:20</p>
<p><i>Weak solutions to gradient flows in metric measure spaces</i></p> <p><u>W. Górny</u>, J. Mazón</p>		<p><i>Understanding the relation between microstructure and macroscopic mechanical properties of arteries by deep learning</i></p> <p><u>K. Linka</u> et al.</p>	<p>15:40</p>

DFG Priority Programs

	1886 Polymorphic Uncertainty Modelling for the Numerical Design of Structures Chair: Michael Kaliske @ S08	1962 Non Smooth and Complementarity-Based Distributed Parameter Systems Chair: M. Hintermüller @ S07	2013 The utilization of residual stresses induced by metal forming Chair: M. Käßtner, S. Hellebrand @ S04
14:00	<i>Reliability-Based Design Optimization under Polymorphic Uncertainties</i> <u>N. Miska</u> , D. Balzani	<i>Shape Optimization for the Mitigation of Coastal Erosion</i> <u>L. Schlegel</u> , V. Schulz	<i>Numerical simulation of forming induced residual stress and their effect on part performance</i> <u>M. Käßtner</u>
14:20	<i>Polymorphic Uncertain Structural Analysis: Challenges in Data-Driven Inelasticity</i> <u>S. Zschocke</u> , W. Graf, M. Kaliske	<i>PDE constrained shape optimization in the Lipschitz topology</i> K. Deckelnick, P. Herbert, <u>M. Hinzel</u>	
14:40	<i>Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods</i> <u>S. Wolff-Vorbeck</u> , P. Dondl, S. Neukamm, Y. Luo	<i>Constrained Deterministic NonSmooth Mean Field Games</i> <u>S. Essadi</u> , M. Hintermüller	<i>Numerical investigation of hot bulk forming processes with respect to the resulting residual stress distribution</i> <u>S. Hellebrand</u> , D. Brands, L. Scheunemann, J. Schröder
15:00	<i>Numerical upscaling of parametric microstructures in a possibilistic uncertainty framework with low-rank surrogates</i> <u>D. Moser</u> , R. Gruhlke	<i>A Newton derivative Setting for shape optimization problems constrained by variational inequalities</i> <u>N. Goldammer</u> , K. Welker, V. Schulz	<i>Modeling of texture evolution in duplex steel using an incremental two-scale material model</i> <u>M. Krause</u> , H. Erdle, T. Böhlke
15:20	<i>Insights into the composition of sensitivities for the design of structures under uncertainty based on the method of influence functions</i> <u>M. Fußeder</u> , K.-U. Bletzinger		<i>Gradient crystal plasticity enhanced by damaging grain boundaries</i> <u>J. Lara</u> , L. Spannraft, K. Runesson, P. Steinmann
15:40	<i>Part I: Combining structural mechanical and probabilistic modelling of computational soil and earth structure simulations with polymorphic uncertainties</i> <u>N. Waschinsky</u> , C. van Meegen, C. Henning, T. Ricken, K. Ickstadt		<i>Phase-field modelling of sub-surface fatigue crack initiation and growth in tooth flank fracture</i> <u>T. Schneider</u> , D. Müller, M. Seiler, T. Tobie, K. Stahl, M. Käßtner

Tuesday, August 16, 14:00 - 16:00

<p>2020</p> <p>Deterioration of High-Performance Concrete in an Experimental-Virtual Lab</p> <p>Chair: F. Aldakheel, J. Storm @ S03</p>	<p>2256</p> <p>Variational Methods for Predicting Complex Phenomena in Eng. Structures and Materials</p> <p>Chair: D. Knees, K. Hackl @ S16</p>	<p>2298</p> <p>Theoretical Foundations of Deep Learning</p> <p>Chair: G. Kutyniok, L. Thesing @ S12</p>	
<p><i>A gradient-enhanced fatigue damage model to simulate compressive fatigue behaviour of high-strength concrete</i></p> <p><u>S. Löhnert</u>, N. Oneschkow</p>	<p><i>A continuum rod model for brittle nanowires derived from an atomistic description</i></p> <p>B. Schmidt, <u>J. Zeman</u></p>	<p><i>Patch Normalizing Flows as Regularizers</i></p> <p><u>P. Hagemann</u></p>	<p>14:00</p>
<p><i>Phenomenological material model for damage in steel-fiber reinforced high performance concrete at low cycle fatigue</i></p> <p><u>M. Pise</u>, D. Brands, G. Gebuhr, J. Schröder, S. Anders</p>	<p><i>Relaxed Incremental Formulations for Damage at Finite Strains Including Strain Softening</i></p> <p><u>M. Köhler</u>, T. Neumeier, M. A. Peter, D. Peterseim, D. Balzani</p>	<p><i>Adaptive Neural Networks for Parametric PDEs</i></p> <p><u>J. Schütte</u>, M. Eigel</p>	<p>14:20</p>
<p><i>Phase-field modeling of fatigue fracture in high-strength concrete with different moisture-contents and loading-frequencies</i></p> <p><u>N. Noji</u> et al.</p>	<p><i>Simulation and Analysis of phase-field damage models for brutal crack evolution</i></p> <p>S. Boddin, D. Knees, J. Mosler, <u>F. Röntrop</u></p>		<p>14:40</p>
<p><i>Homogenisation of the Material Behaviour of UHPFRC under Tensile Loading</i></p> <p><u>L. Gietz</u>, D. Dinkler, U. Kowalsky</p>	<p><i>Dynamic Phase-Field Fracture in Viscoelastic Materials using a First-Order Formulation</i></p> <p>M. Thomas, <u>S. Torngquist</u>, K. Weinberg, C. Wieners</p>	<p><i>Self-Certifying Classification by Linearized Deep Assignment</i></p> <p><u>B. Boll</u>, A. Zeilmann, S. Petra, C. Schnörr</p>	<p>15:00</p>
<p><i>On The Energy Dissipation In Confined Concrete Subjected To Shear Cyclic Loading</i></p> <p><u>M. Aguilar</u>, A. Baktheer, R. Chudoba</p>	<p><i>A data-driven framework for the modeling and simulation of inelastic material behavior under non-monotonic loading</i></p> <p><u>T. Bartel</u>, M. Harnisch, B. Schweizer, A. Menzel</p>		<p>15:20</p>
<p><i>Numerical and experimental investigations of high-performance fiber-reinforced concrete under cyclic tensile loading</i></p> <p><u>V. Gudžulić</u>, N. Schäfer, R. Breitenbücher, G. Meschke</p>	<p><i>A Proof of Taylor (or Friedel) Scaling for the Critical Resolved Shear Stress</i></p> <p><u>P. Dondl</u></p>		<p>15:40</p>

Contributed Sessions

	S 02 Biomechanics Chair: H. Topol @ H10	S 03 Damage and fracture mechanics Chair: D. Balzani @ H04	S 04 Structural mechanics Chair: D. Juhre @ H02
16:30	<p><i>A one-dimensional model for the mechano-electrophysiology of human neurons under strain</i></p> <p><u>L. Werneck</u>, M.-A. Keip, M. Ortiz</p>	<p><i>A computational framework of two- and three-dimensional crack propagation driven by configurational forces and cohesive models.</i></p> <p><u>K. Daadouch</u>, V. Gudzulic, G. Meschke</p>	<p><i>Graph Neural Network enhanced Finite Element modelling</i></p> <p><u>R. Gulakala</u>, B. Markert, M. Stoffel</p>
16:50	<p><i>Computational Bite Force Estimation from a Human Mandible Density Profile</i></p> <p><u>H. Saleh</u>, M. Weiser, S. zachow</p>	<p><i>Configurational forces as accurate loading quantities in 3D finite element crack analyses</i></p> <p><u>K. Schmitz</u>, A. Ricoeur</p>	<p><i>Deep Neural Networks for Stiffness computation of plate structures</i></p> <p><u>S. B. Tandale</u>, B. Markert, M. Stoffel</p>
17:10	<p><i>A Procedure for Driftless Sagittal Angle Determination During Outdoor Running Using Inertial Measurement Units (IMUs)</i></p> <p><u>M. Ghiassi</u>, A. Kecskeméthy</p>	<p><i>A path-independent domain integral to characterize fatigue crack propagation by cyclic material forces</i></p> <p><u>J. Khodor</u>, M. Kaliske</p>	<p><i>Physics-Informed Neural Networks for Solid and Contact Mechanics</i></p> <p><u>T. Sahin</u>, M. v. Danwitz, A. Popp</p>
17:30	<p><i>A phase field model for soma-germline interactions in Drosophila oogenesis</i></p> <p><u>P. Dondl</u></p>	<p><i>Efficient simulation of ductile crack propagation at finite strains through metal matrix composites based on the Finite Cell Method and Eigeneration</i></p> <p><u>D. Wingender</u>, D. Balzani</p>	<p><i>Physics-informed neural networks for data-driven parameter identification</i></p> <p><u>H. Wessels</u>, D. Anton</p>
17:50	<p><i>Study the effect of simulated microgravity on the viscoelastic properties of endothelial cell</i></p> <p><u>S. M. Seyedpour</u>, T. Ricken</p>	<p><i>Stochastic aspects of crack deflection and propagation in short fiber reinforced polymer matrix composites</i></p> <p><u>K. Zarjov</u>, A. Ricoeur, F. Lindner</p>	<p><i>Structural stress prediction based on structural deformations using artificial neural networks</i></p> <p><u>N. Cottardi</u>, S. Freitag, G. Meschke</p>
18:10		<p><i>Material modeling of concrete on the mesoscale for crack-propagation analysis</i></p> <p><u>R. Najafi Koopas</u>, N. Rauter, R. Lammering</p>	<p><i>Machine Learning Enhanced Identification and Modeling of Superelastic Shape Memory Alloy Wires</i></p> <p><u>N. Lenzen</u>, O. Altay</p>

Tuesday, August 16, 16:30 - 18:30

<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: S. Wulfinghoff @ H01</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: M. Schneider @ H11</p>	<p>S 07</p> <p>Coupled problems</p> <p>Chair: A. Seupel, S. Prüger @ H06</p>	
<p><i>Analytical and numerical study of energies in pressure dependent plasticity</i></p> <p><u>G. Jezdan</u>, K. Hackl, G. Dolzmann, F. Behr</p>	<p><i>Implementation of a surrogate model for a novel path-based finite element simulation for additive manufacturing processes in construction</i></p> <p><u>V. Ekanayaka</u>, A. Hürkamp</p>	<p><i>Studies on degradation in solid-state batteries utilizing a chemo-mechanical coupled cohesive phase-field damage model</i></p> <p><u>S. Rezaei</u>, J. Amon, A. Asheri, C. Alex, B.-X. Xu</p>	<p>16:30</p>
<p><i>On the role of dissipation in plasticity theories</i></p> <p><u>A. Prah</u>s, T. Böhlke, M. Reder, B. Nestler</p>	<p><i>Electro-mechanical constitutive modeling with physics-augmented neural networks</i></p> <p><u>D. K. Klein</u>, R. Ortigosa, J. Martínez-Frutos, O. Weeger</p>	<p><i>Numerical Investigation of the Corrosion and Fatigue behavior of Clinched Joints</i></p> <p><u>S. Harzheim</u>, M. Hofmann, T. Wallmersperger</p>	<p>16:50</p>
<p><i>Modelling the anisotropic elasto-plastic material behavior of paper and paper-board at finite deformations</i></p> <p><u>N. Kopic-Osmanovic</u>, E. Prume, S. Felder, G. Kloppenburg, J.-W. Simon</p>	<p><i>On the simulation of inelastic material behavior using a data-driven approach based on history surrogates</i></p> <p>T. Bartel, <u>M. Harnisch</u>, B. Schweizer, A. Menzel</p>	<p><i>Computational framework for electrochemical dissolution-driven stress corrosion cracking utilizing a multi-phase-field approach</i></p> <p><u>C. S. Kandekar</u> et al.</p>	<p>17:10</p>
<p><i>Thermodynamically consistent single crystal plasticity modelling of magnesium including slip and twinning</i></p> <p><u>J. Dittmann</u>, S. Wulfinghoff</p>	<p><i>An artificial intelligence approach in the morphological and mechanical analysis of silica aerogels</i></p> <p><u>P. Pandit</u>, R. Abdusalamov, M. Itskov, B. Milow, A. Rege</p>	<p><i>Consideration of chemically-induced damage in a thermo-electrically coupled system</i></p> <p><u>J. Waimann</u>, T. van der Velden, A. Schmidt, S. Ritzert, S. Reese</p>	<p>17:30</p>
<p><i>Numerical modelling of stress-strain response and deformation-induced martensite in metastable austenitic stainless steels under monotonic tensile loading</i></p> <p><u>H. K. Thammineni</u> et al.</p>	<p><i>A Mesoscale Model of Non-crimp fabrics based on a deep learning framework</i></p> <p><u>S. Zhou</u>, M. Hillgärtner, R. Abdusalamov, M. Itskov</p>	<p><i>Modeling the moving boundary value problem of electrochemical machining</i></p> <p><u>T. van der Velden</u>, S. Ritzert, S. Reese, J. Waimann</p>	<p>17:50</p>
<p><i>Algorithm based on interior-point methods suitable for finite strain rate-independent crystal plasticity</i></p> <p><u>A. Niehüser</u>, J. Mosler</p>			<p>18:10</p>

Contributed Sessions

	S 08 Multiscales and homogenization Chair: L. Scheunemann @ H03	S 11 Interfacial flows Chair: D. Bothe @ S11	S 12 Waves and acoustics Chair: G. Kocur, E. Saenger @ S15
16:30	<i>Generative adversarial networks for three-dimensional microstructure generation</i> A. Henkes , H. Wessels	<i>Transport of surface active substances within the algebraic volume of fluid method</i> T. Anritter , T. Josyula, T. Gambaryan-Roisman, P. Stephan	<i>Global Stability Analysis of the Interaction Between a Longitudinal Vortex and an Oblique Shock Wave</i> M. Werner , S. Hein
16:50	<i>Generating microstructures of bicontinuous composites in the tensor-train format</i> L. Risthaus , M. Schneider	<i>Front tracking of surfactant-laden interfacial flows with surface viscosity</i> C. Gorges, F. Evrard, B. van Wachem, F. Denner	<i>A new theory for acoustic transmission problems with variable coefficients modeled as stable integral equations</i> F. Florian , R. Hiptmair, S. Sauter
17:10	<i>A procedure for determination of the microstructural probabilistic characteristics from micrographs and their impact on subsequent results</i> E. Klatt , I. M. Widera, N. Rauter	<i>Influence of surfactants on liquid shear-flow over bounded gas-filled cavities embedded in a plane</i> T. Baier , S. Hardt	<i>Analysis of solitons structure of the damped KdV equation arising in superthermal plasmas: Application of Homotopy Analysis method</i> M. Kumar , R. K. Jana
17:30	<i>Computational modelling of porous materials</i> R. Chandrasekaran, M. Hillgärtner, A. Rege, B. Milow, M. Itskov	<i>On derivations of evolving surface Navier-Stokes equations</i> P. Brandner, A. Reusken, P. Schwering	<i>Shock polars for ideal and non-ideal gas</i> V. W. Elling
17:50	<i>Using numerical homogenization to determine the representative volume element size of paper</i> G. Kloppenburg , E. Walther, H. Holthusen, C. Czibula, U. Hirn, J.-W. Simon	<i>Space-Time Trace Finite Element Methods for Partial Differential Equations on Evolving Surfaces</i> H. Sass	<i>Numerical Investigations of Lamb Wave Dispersion Behavior in FML Using the SAFE Method</i> T. Barth , J. Wiedemann, T. Roloff, C. Hühne, M. Sinapius, N. Rauter
18:10	<i>Validating differentiable microstructure characterization and reconstruction for creating 3D microscale domains from 2D slices</i> P. Seibert , A. Raßloff, K. Kalina, M. Kästner	<i>Shape oscillations of viscous liquid drops – nonlinear effects</i> M. Smuda, D. Zrnic, F. Kummer, M. Oberlack , G. Brenn	

Tuesday, August 16, 16:30 - 18:30

S14 Applied analysis Chair: A. Hussein @ S12	S15 Uncertainty Quantification Chair: D. Rudolf @ H08	S16 Optimization Methods and Algorithms Chair: M. Stiglmayr, C. Totzeck @ H09	
<p><i>Domain and Boundary Potentials for Stokes Problems with L_∞ Coefficients</i></p> <p><u>W. L. Wendland</u></p>	<p><i>Wasserstein Polynomial Chaos Expansion with application to computational homogenization and Bayesian inference</i></p> <p><u>R. Gruhlke</u>, M. Eigel</p>	<p><i>A stabilised gradient descent</i></p> <p><u>P. Trunschke</u>, A. Nouy</p>	<p>16:30</p>
<p><i>On the resolvent problem associated with flow outside a rotating body</i></p> <p><u>T. Eiter</u></p>	<p><i>Subsampling in Ensemble Kalman Inversion</i></p> <p><u>M. Hanu</u>, J. Latz, C. Schillings</p>	<p><i>Non-Smooth Optimization by Abs-Linearization and Structure Exploitation</i></p> <p><u>O. Weiß</u>, A. Walther</p>	<p>16:50</p>
<p><i>Mesoscopic limits for systems of particles with inertia, sedimenting in Stokes flow</i></p> <p>R. M. Höfer, <u>R. Schubert</u></p>	<p><i>Dynamical Low Rank Approximation of the Kolmogorov Backward Equation for Posterior Estimation in Bayesian Inference</i></p> <p><u>D. Sommer</u>, R. Gruhlke, M. Eigel</p>	<p><i>Constrained Piecewise Linear Optimization - About Applications and Solution Methods</i></p> <p><u>T. Kreimeier</u>, A. Walther</p>	<p>17:10</p>
<p><i>Global solutions for fluid-elastic interaction with small data</i></p> <p><u>M. Luckas</u>, K. Disser</p>	<p><i>Efficient and Reliable Approximation of high-dimensional Exponentials</i></p> <p><u>M. Eigel</u>, N. Farchmin, S. Heidenreich, P. Trunschke</p>	<p><i>A nonlinear randomized Kaczmarz method with Bregman projections</i></p> <p><u>M. Winkler</u></p>	<p>17:30</p>
<p><i>On a quasi-stationary fluid-structure interaction problem for plaque growth</i></p> <p>H. Abels, <u>Y. Liu</u></p>	<p><i>1 Wasserstein Sensitivity of Risk and Uncertainty Propagation</i></p> <p><u>O. G. Ernst</u>, A. Pichler, B. Sprungk</p>	<p><i>Parametric Stability Score for Local Solutions of Nonlinear Programs with Parameters</i></p> <p><u>I. Mykhailiuk</u>, C. Büskens</p>	<p>17:50</p>
<p><i>Analysis of coupled flows of micropolar heat conducting fluids with mixed boundary conditions</i></p> <p><u>M. Benes</u></p>	<p><i>Bayesian parameter identification of impedance boundary condition for Helmholtz problems</i></p> <p><u>N. Wulbusch</u>, R. Roden, M. Blau, A. Chernov</p>	<p><i>Non-Euclidean Proximal Algorithms for Quadratic-Composite Optimization: The Case of Mean Curvature Flow</i></p> <p><u>T. O. Pinta</u>, R. Luke</p>	<p>18:10</p>

Contributed Sessions

	S 18 Numerical methods of differential equations Chair: A. Heinlein @ H05	S 19 Optimization of differential equations Chair: P. Gangl @ S07	S 20 Dynamics and control Chair: B. Unger @ S08
16:30	<p><i>FEM analysis and Newton-multigrid solver for thixoviscoplastic flow problems</i></p> <p><u>N. Begum</u>, A. Ouazzi, S. Turek</p>	<p><i>Convergence of numerical sensitivity and adjoint schemes for optimal boundary control of discontinuous solutions of hyperbolic conservation laws</i></p> <p><u>S. Ulbrich</u>, P. Schäfer Aguilar</p>	<p><i>BIBO-stability and variants for infinite-dimensional systems</i></p> <p><u>F. Schwenninger</u></p>
16:50	<p><i>Robust Schur-type Preconditioning for Mixed Phase-field Fracture and Fluid-Structure Interaction Problems</i></p> <p><u>K. Mang</u>, T. Wick, T. Heister, R. Rolfes</p>		
17:10	<p><i>Quantitative convergence analysis of a class of augmented Uzawa-type iterative methods based on a new stability result for perturbed saddle-point problems</i></p> <p><u>J. K. Kraus</u></p>	<p><i>A Variational Calculus for Optimal Control of Networks of Scalar Conservation or Balance Laws</i></p> <p><u>M. M. Steinhardt</u>, S. Ulbrich</p>	<p><i>Spectral approximation of Lyapunov operator equations with applications in high dimensional non-linear feedback control</i></p> <p>T. Breiten, <u>B. Höveler</u></p>
17:30	<p><i>On the necessity of the inf-sup condition for a mixed formulation</i></p> <p>F. Bertrand, <u>D. Boffi</u></p>	<p><i>Control in the Coefficients of an Obstacle Problem</i></p> <p><u>N. Simon</u>, W. Wollner</p>	<p><i>Lyapunov stabilization of non-local traffic flow models</i></p> <p><u>J. Friedrich</u>, M. Herty, S. Göttlich</p>
17:50	<p><i>Low-rank tensor product approximations for the Radiative Transfer Equation</i></p> <p>M. Bachmayr, R. Bardin, <u>M. Schlottbom</u></p>	<p><i>Num. Continuation of Weak Local Minimizers of Parameterized Non-Smooth Trajectory Optimization Problems with Applications to Optimal Gait Generation for Biped Robots</i></p> <p><u>N. Rosa</u>, M. Raff, C. D. Remy</p>	<p><i>Optimal control of attitude maneuvers with prohibited directions</i></p> <p><u>D. Ailabouni</u>, A. Meister, K. Spindler</p>
18:10			<p><i>Flat input based canonical form observers for non-integrable nonlinear discrete-time systems</i></p> <p><u>K. Fritzsche</u>, K. Röbenack</p>

Tuesday, August 16, 16:30 - 18:30

<p>S 21</p> <p>Mathematical signal and image processing</p> <p>Chair: R. Beinert, M. J. Holler @ S16</p>	<p>S 22</p> <p>Scientific computing</p> <p>Chair: J. Weber @ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: M. Stoll, M. Grepl @ H07</p>	
<p><i>Confidence intervals for compressive MRI</i></p> <p>F. Hoppe, F. Kraemer, C. Mayrink Verdun, H. Rauhut</p>	<p><i>Aggregated type handling in CoDiPack</i></p> <p>M. Sagebaum, N. R. Gauger</p>	<p><i>The semismooth Conjugate Gradients Method</i></p> <p>A. Griewank, A. Walther, F. Bethke</p>	<p>16:30</p>
<p><i>High Dynamic Range Tomography via Modulo Radon Transform</i></p> <p>M. Beckmann</p>	<p><i>Building a Knowledge Graph for Scientific Computing</i></p> <p>R. Fritze, C. Himpe, H. Klei-kamp, M. Ohlberger, S. Rave</p>	<p><i>An a-priori parameter estimate for overrelaxation in the Sinkhorn algorithm</i></p> <p>A. Uschmajew</p>	<p>16:50</p>
<p><i>Magnetic Particle Imaging using an FFL-Scanner: Radon-based Image Reconstruction for Dynamic Particle Concentrations</i></p> <p>S. Blanke, C. Brandt</p>	<p><i>Active-learning-driven surrogate modeling for parametric physical systems</i></p> <p>H. Kapadia, L. Feng, P. Benner</p>	<p><i>Gradient-Based Quantification of Epistemic Uncertainty for Deep Object Detectors</i></p> <p>T. Riedlinger, M. Rottmann, M. Schubert, H. Gottschalk</p>	<p>17:10</p>
<p><i>Mending Impaired Flow Areas in the Temporal Interpolation of Power Doppler Ultrasound using Optical Flow</i></p> <p>S. Biberger, G. Mercier, C. Wallinger, D. Buckton, O. Scherzer</p>	<p><i>A survey on machine learning: preserving selected physical principles in hyperelasticity</i></p> <p>R. Pereira Alessio</p>	<p><i>A Recursive Multilevel Algorithm for Deep Learning</i></p> <p>I. Jacob, S. Ulbrich</p>	<p>17:30</p>
<p><i>Denosing of OCT images by combining X-lets using Morphological Component Analysis</i></p> <p>R. Razavi, G. Plonka, H. Rabbani</p>	<p><i>Enhancing Physics-Informed Neural Networks with Quantum Layers</i></p> <p>A. Mielke, L. Mandl, T. Ricken</p>	<p><i>Low-Rank Tensor Methods for High-Dimensional Gaussian Processes</i></p> <p>J. König, M. Pfeiffer, M. Stoll</p>	<p>17:50</p>
<p><i>Dictionary learning for an inverse problem in quantitative mri</i></p> <p>C. Sirotenko, G. Dong, M. Hintermüller</p>	<p><i>Stabilizing Training of Physics-Informed Neural Networks in Multiphysical Domains: Application to Poromechanics</i></p> <p>L. Mandl, A. Mielke, S. M. Seyed-pour, T. Ricken</p>	<p><i>Adaptive Gaussian Process Regression for Efficient Building of Surrogate Models in Inverse Problems</i></p> <p>P. Semler, M. Weiser</p>	<p>18:10</p>

Contributed Sessions

S 26 Modelling, analysis and simulation of molecular systems Chair: G. Friesecke @ S03	
16:30	<i>Koopman Analysis of Quantum Systems</i> F. Nüske, S. Klus, S. Peitz
16:50	<i>Simulation-based inference of single-molecule force-spectroscopy experiments</i> R. Covino, L. Dingeldein, P. Cossio
17:10	<i>Sample-based robust model order reduction for nonlinear systems biology models</i> U. Falkenhagen, C. Himpe, C. Kloft, J. Knoechel, W. Huisinga
17:30	<i>Computation of forces arising from the linear Poisson-Boltzmann method in the domain-decomposition paradigm</i> A. Jha, M. Nottoli, C. Quan, B. Stamm
17:50	<i>Simulating the self-assembly of a 2D model shape</i> L. Mayrhofer, G. Friesecke
18:10	<i>Time-delayed synchronization and attractors in chemical reaction networks: a random dynamical systems perspective</i> G. Olicón Méndez, M. Engel, S. Winkelmann, N. Unger

Tuesday, August 16, 16:30 - 18:30

Detailed Schedule - Wednesday, August 17

8:30 Contributed Sessions

Parallel sessions

9:30 Coffee Break | Poster Session

Poster Session of GAMM Juniors

10:30 Richard von Mises Lecture

H01

Lecture held by the Awardee of the Richard v. Mises Prize 2022.

11:30 GAMM General assembly

H01

13:00 Lunch Break | YAMM Lunch

YAMM Lunch @ 2nd floor of C.A.R.L.

14:00 Contributed Sessions

Parallel sessions

16:00 Coffee Break

16:30 Contributed Sessions

Parallel sessions

19:30 Conference Dinner

Liebig

Contributed Sessions

	S 03 Damage and fracture mechanics Chair: S. Prüger @ H04	S 03 Damage and fracture mechanics Chair: M. Kästner @ H09	S 04 Structural mechanics Chair: S. Klinkel @ H02
8:30	<i>Linear elasticity of cracks revisited</i> J. <u>Scheel</u> , D. Wallenta, A. Ricoeur	<i>Crack propagation measurements using Digital Volume Correlation for an in situ Wedge Splitting Test on mortar.</i> S. <u>F. Dray</u> , A. Fau, F. Hild, T. Wick	<i>Hybrid Digital Twins: A Proof of Concept for Reinforced Concrete Beams</i> M. <u>von Danwitz</u> , T. T. Kochmann, T. Sahin, J. Wimmer, T. Braml, A. Popp
8:50	<i>Electromagnetic Volume Traction and the Implications for Cracks</i> A. <u>Schlosser</u> , A. Ricoeur	<i>Combining High cycle fatigue and Dynamic Mechanical Testing experiments</i> H. <u>Madadi</u> , H. Steeb	<i>Comparison of data-driven surrogate models for the prediction of temperature induced creep strains in solder joints</i> L. <u>Heindel</u> , S. Muench, D. Bhat, P. Hantschke, M. Roellig, M. Kästner
9:10	<i>A unified continuum constitutive model for the healing of damaged soft biological tissue</i> Y. <u>He</u> , K. Hackl	<i>Influence of specimen geometry on a bimodal weakest-link model</i> D. <u>V. Klein</u> , M. Boåsen, P. Efsing, J. Faleskog	<i>Physics-based surrogate model for the manufacturing of thermoplastic composites</i> A. <u>Hürkamp</u>

Wednesday, August 17, 8:30 - 9:30

<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: F. Aldakheel @ H01</p>	<p>S 07</p> <p>Coupled problems</p> <p>Chair: B. Kiefer, H. Steeb @ H06</p>	<p>S 08</p> <p>Multiscales and homogenization</p> <p>Chair: R. Jänicke @ H03</p>	
<p><i>The interaction of martensitic phase transformations with dislocations.</i></p> <p><u>R. Strobl</u>, M. Budnitzki, S. Sandfeld</p>	<p><i>Internal prestressing of ultra-high performance concrete using shape memory fibers</i></p> <p><u>S. Descher</u>, P. Krooß, D. Kuhl, A. Wetzel, S. Wolf</p>	<p><i>A multiscale study of the retention behavior and hydraulic anisotropy in deformable porous media</i></p> <p><u>M. Chaaban</u>, Y. Heider, B. Markert</p>	<p>8:30</p>
<p><i>Modeling of ultrasonic fatigue testing based on experimental thermography data</i></p> <p><u>M. Koster</u>, A. Schmiedel, A. Weidner, H. Biermann, S. Sandfeld</p>	<p><i>Multiphase modelling of the effect of external loading on internal relative humidity in concrete</i></p> <p><u>A. Brugger</u>, P. Gamnitzer, G. Hofstetter</p>	<p><i>Coupling of open-boundary particle subdomain and fluctuating hydrodynamics reservoir via adaptive change of resolutions</i></p> <p><u>A. Gholami</u>, R. Klein, L. Delle Site</p>	<p>8:50</p>
<p><i>Three-dimensional modelling of dislocation flow and sources activation under high temperature distribution in semiconductors</i></p> <p><u>B. D. Nguyen</u>, J. Steiner, P. Wellmann, S. Sandfeld</p>	<p><i>CT-data-based modeling of ionic transport in concrete</i></p> <p><u>K. A. Meyer</u>, R. Kruse, T. Tofeti Lima, R. Jänicke</p>	<p><i>Robust Multiscale Generalised Finite Elements for Heterogeneous Helmholtz Problems</i></p> <p><u>C. Ma</u>, C. Alber, R. Scheichl</p>	<p>9:10</p>

Contributed Sessions

	S 08 Multiscales and homogenization Chair: J.-W. Simon @ H10	S 11 Interfacial flows Chair: A. Reusken @ S11	S 12 Waves and acoustics Chair: G. Kocur, E. Saenger @ S15
8:30	<p><i>A mixed-order quasicontinuum approach for efficient multiscale simulations of truss-based metamaterials</i></p> <p><u>K. Kraschewski</u>, G. P. Philipot, D. M. Kochmann</p>	<p><i>A Unified Framework of Navier-Stokes Cahn-Hilliard Models with Non-Matching Densities</i></p> <p><u>M. ten Eikelder</u>, K. van der Zee, I. Akkerman, D. Schillinger</p>	<p><i>On the influence of the probabilistic microstructural characteristics of glass fiber-reinforced composites on the wave propagation in GLARE</i></p> <p><u>N. Rauter</u>, W. E. Weber</p>
8:50	<p><i>Challenges in two-scale computational homogenization of mechanical metamaterials</i></p> <p><u>H. Danesh</u>, T. Brepols, S. Reese</p>	<p><i>Simulation of Aerosol Particles and the Need of Innovative Visualization</i></p> <p><u>J. Fey</u>, W. Eissler</p>	<p><i>On the optimal localization of pendulum impacts using a non-contact acoustic array</i></p> <p><u>G. Kocur</u>, B. Markert</p>
9:10	<p><i>Exploring metamaterials' structures through the relaxed micromorphic model</i></p> <p><u>G. Rizzi</u>, J. Voss, L. Perez Ramirez, P. Neff, A. Madeo</p>		<p><i>A two-dimensional analysis of the influence of delamination on the wave propagation in a fiber metal laminate</i></p> <p><u>W. Fulgence</u>, N. Rauter, R. Lammring</p>

Wednesday, August 17, 8:30 - 9:30

S 14 Applied analysis Chair: M. Heida @ S12	S 15 Uncertainty Quantification Chair: O. G. Ernst @ H11	S 18 Numerical methods of differential equations Chair: A. Heinlein @ H05	
<p><i>Fully discrete approximations for rate-independent crack propagation</i></p> <p><u>V. Shcherbakov</u></p>	<p><i>Rare event estimation with PDE-based models</i></p> <p><u>E. Ullmann</u></p>	<p><i>Adaptive Localized Reduced Basis Methods in Multiscale PDE-Constrained Parameter Optimization</i></p> <p><u>T. Keil</u>, M. Ohlberger, S. Rave, S. Volkwein</p>	<p>8:30</p>
<p><i>On the interplay of anisotropy and geometry for polycrystals in single-slip crystal plasticity</i></p> <p><u>D. Engl</u>, <u>C. Kreisbeck</u></p>	<p><i>Enhancements for Hamiltonian Monte Carlo Markov-Chain methods and their application to rare event simulation</i></p> <p><u>D. Thaler</u> et al.</p>	<p><i>Reduced-order modelling for parametrized time-dependent Navier-Stokes equations</i></p> <p><u>H. Fischer</u>, <u>T. Wick</u></p>	<p>8:50</p>
<p><i>Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods</i></p> <p><u>Y. Luo</u>, N. Stefan, W.-V. Steve, D. Patrick</p>	<p><i>Efficient Importance Sampling via Stochastic Optimal Control for Stochastic Reaction Networks</i></p> <p><u>C. Ben Hammouda</u>, N. Ben Rached, R. Tempone, S. Wiechert</p>	<p><i>Numerical Analysis and Reduced Order Modelling of Plastic Profile Extrusion Processes</i></p> <p><u>D. Hilger</u>, N. Hosters</p>	<p>9:10</p>

Contributed Sessions

	S 18 Numerical methods of differential equations Chair: M. Kronbichler @ H08	S 20 Dynamics and control Chair: B. Unger, S. Grundel @ S08	S 21 Mathematical signal and image processing Chair: M. Holler, R. Beinert @ S16
8:30	<p><i>Numerical simulation of the thermal wave induced by a moving interfacial heat source with respect to Christov-Cattaneo's equation</i></p> <p><u>M. C. Feike</u>, C. Mundt</p>	<p><i>Port-Hamiltonian descriptor systems, a Lagrange-Dirac approach</i></p> <p><u>V. Mehrmann</u>, A. van der Schaft</p>	<p><i>An Approximate Joint Diagonalization Algorithm for Off-the-Grid Sparse and Non-Sparse Recovery</i></p> <p><u>P. Catala</u>, J.-F. Cardoso, V. Duval, G. Peyré</p>
8:50	<p><i>Temporal homogenisation and parallelisation for the numerical simulation of atherosclerotic plaque growth</i></p> <p><u>S. Frej</u>, A. Heinlein, T. Richter</p>	<p><i>Lagrangian and Hamiltonian networks compared regarding system symmetry preservation</i></p> <p><u>E. Dierkes</u>, K. Flaßkamp</p>	<p><i>Sparse super resolution and its trigonometric approximation in microscopy</i></p> <p><u>M. Hockmann</u>, S. Kunis, M. Wageringel, P. Catala</p>
9:10	<p><i>Monolithic matrix-free solver for fluid-structure interaction problems: time integration scheme and preconditioning</i></p> <p><u>M. Wichrowski</u>, P. Krzyżanowski, S. Stupkiewicz, L. Heltai</p>	<p><i>Modeling electrical machines in the context of a digital twin</i></p> <p><u>K. Cherifi</u>, P. Schulze</p>	<p><i>Sparse Mixture Models inspired by ANOVA Decompositions</i></p> <p><u>J. Hertrich</u>, F. A. Ba, G. Steidl</p>

Wednesday, August 17, 8:30 - 9:30

S 22 Scientific computing Chair: M. Mayr @ S04	S 25 Computational and mathematical methods in data science Chair: M. Stoll, M. Grepl @ H07	
<i>Adaptive and frugal FETI-DP for virtual elements</i> A. Klawonn, M. Lanser, <u>A. Wasiak</u>	<i>Curvature of data</i> <u>P. Joharinad</u> , J. Jost	8:30
<i>Three-level adaptive BDDC using frugal constraints</i> A. Klawonn, M. Lanser, <u>J. Weber</u>	<i>Principal Geodesic Analysis in dynamics of mechanical systems</i> C. G. Gebhardt, <u>J. Schubert</u> , M. C. Steinbach	8:50
<i>Adaptive Nonlinear Domain Decomposition Methods</i> <u>M. Lanser</u> , A. Heinlein, A. Klawonn	<i>On Estimating the Distribution of the Maximum Likelihood Estimator in Exponential Families</i> <u>H. Höllwarth</u>	9:10

Contributed Sessions

	S 03 Damage and fracture mechanics Chair: Y. Heider @ H04	S 03 Damage and fracture mechanics Chair: M. Kaliske @ H09	S 04 Structural mechanics Chair: M. Stoffel @ H02
14:00	<i>A phase field model for fractures in ice shelves</i> <u>R. Sondershaus</u> , R. Müller	<i>Novel red. integration-based solid and solid-shell finite elem. for gradient-extended damage and fracture</i> <u>T. Brepols</u> , O. Barfusz, H. Holthusen, T. van der Velden, S. Reese	<i>Optimization of paper-based sandwich panels during the quasi-static pressing process using design of experiments</i> <u>Y. Wej</u> , F. Hirsch, D. Süße, B. Lutsch, M. Kästner
14:20	<i>An enriched phase-field approach to efficiently simulate fracture, part 1: phase-field approximation</i> <u>V. Klempt</u> , C. Krüger, S. Loehnert	<i>Geometric and material sensitivities for elasto-plasticity including non-local damage regularisation</i> <u>F. Guhr</u> , F.-J. Barthold	<i>Topology optimisation of lattice structures to increase damping</i> <u>C. Daniel</u> , E. Woschke
14:40	<i>An enriched phase-field approach to efficiently simulate fracture, part 2: displacement field approximation</i> <u>C. Krüger</u> , V. Klempt, S. Loehnert	<i>How to (not) crack your chocolate: on the curvature-dependence of gradient-based damage reg. and dark chocolate as a model material</i> <u>P. Kurzeja</u> , K. Langenfeld, J. Mosler	<i>Concurrent material and structure optimization of hierarchical structures with applications in additive manufacturing</i> <u>T. Gangwar</u> , D. Schillinger
15:00	<i>A phase field approach for fracture in ductile materials in the context of continuum damage mechanics</i> <u>A. Tsakmakis</u> , M. Vormwald	<i>The side effect „curvature dependence“ of gradient-enhanced (quasi-)brittle damage models</i> <u>K. Langenfeld</u> , P. Kurzeja, J. Mosler	<i>Analysis of strut-based lattice cores in sandwich panels using homogenization and dehomogenization methods</i> <u>H. Georges</u> , C. Mittelstedt, W. Becker
15:20	<i>Coupled thermo-viscoplastic fracture model for ductile-brittle failure of amorphous glassy polymers with phase-field approach</i> <u>S. Başdemir</u> , O. Gültekin, H. Dal	<i>Where to put the gradient in logarithmic strain space plasticity-damage?</i> <u>J. Friedlein</u> , J. Mergheim, P. Steinmann	<i>Reduced order modeling of modular parameter dependent structures based on proper orth. decomposition and mesh tying</i> <u>S. Ritzert</u> , D. Macek, J.-W. Simon, S. Reese
15:40		<i>An Investigation on Limiting Potentials for the Energy Limiting Method for Damage Prediction of Viscoelastic Adhesives</i> <u>A. Schumacher</u> , A. Matzenmiller	<i>Methods of Model Order Reduction for Coupled Systems Applied to a Brake Disc-Wheel Composite</i> <u>F. Matter</u> , I. Iroz, P. Eberhard

Wednesday, August 17, 14:00 - 16:00

<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: M.-A. Keip @ H01</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: M. Kästner @ H11</p>	<p>S 07</p> <p>Coupled problems</p> <p>Chair: O. El Khatib, S. Roth @ H06</p>	
<p><i>The affine network revisited: insights through a new class of constitutive models</i></p> <p><u>B. R. Britt</u>, E. Mazza, A. E. Ehret</p>	<p><i>A multiscale model for predicting the Young's modulus of concrete at high temperature</i></p> <p><u>S. Peters</u>, G. Meschke</p>	<p><i>Modeling and simulation of magnetorheological elastomers across scales</i></p> <p><u>K. A. Kalina</u>, P. Metsch, J. Brummund, M. Kästner</p>	<p>14:00</p>
<p><i>Semi-crystalline polymers at finite strains: A thermo-coupled constitutive model for varying degrees of crystallinity and temperatures</i></p> <p><u>M.-C. Reuvers</u>, B. Boes, S. Felder, T. Brepols, S. Reese</p>	<p><i>Variety of planar fourth-order fiber orientation tensors and implications on effective elastic stiffnesses</i></p> <p><u>J. K. Bauer</u>, T. Seelig, T. Böhlke</p>	<p><i>A magneto-mechanically coupled material model for magnetic sensor investigation</i></p> <p><u>C. Dorn</u>, S. Wulfinghoff</p>	<p>14:20</p>
<p><i>Numerical prediction of strain-induced crystallization under complex loadings</i></p> <p><u>R. Poudel</u>, M. Itskov, V. N. Khiêm</p>	<p><i>Parameter identification and uncertainty quantification of the thermal conductivity tensor for transversely isotropic composite materials</i></p> <p><u>J.-A. Tröger</u>, S. Hartmann</p>	<p><i>A numerical study of finite element based micromagnetic simulations on the influence of grain sizes and interphase thicknesses of NdFeB magnets</i></p> <p><u>M. Reiche</u>, J. Schröder</p>	<p>14:40</p>
<p><i>Finite element based modeling and simulation of an elastomer gear rim</i></p> <p><u>J. D. M. Menning</u>, A. Ewert, A. Prokopchuk, B. Schlecht, M. Henke, T. Wallmersperger</p>	<p><i>On the steady vibration problems in the theory of elastic triple-porosity materials</i></p> <p><u>M. Svanadze</u></p>	<p><i>A general-kinetics phase-field model for ferroelectrics</i></p> <p>L. Guin, H.-C. Cheng, <u>D. M. Kochmann</u></p>	<p>15:00</p>
<p><i>Explicit temperature coupling in phase-field crystal models of solidification - elastic properties and multi-scale behavior</i></p> <p><u>M. Punke</u>, M. Salvalaglio, A. Voigt, S. W. Wise</p>	<p><i>Influence of pore-structure characteristics on the mechanical properties of open-porous materials</i></p> <p><u>S. Aney</u>, L. Ratke, B. Milow, A. Rege</p>	<p><i>Forward coupling approach to model time periodic piezoelectric problems</i></p> <p><u>A. Papst</u>, F. Toth, M. Kaltenbacher</p>	<p>15:20</p>
	<p><i>Numerical analysis of stress tensor mapping without an external solver</i></p> <p><u>J. Wagner</u>, K. Dröder, R. Thater, A. Hürkamp</p>		<p>15:40</p>

Contributed Sessions

	S 08 Multiscales and homogenization Chair: F. Aldakheel @ H03	S 08 Multiscales and homogenization Chair: B. Kiefer @ H10	S 11 Interfacial Flows Chair: A. Reusken @ S11
14:00	<i>FFT-based simulation of evolving microstructures utilizing an adapting reduced set of Fourier modes</i> C. Gierden , J. Waimann, B. Svendsen, S. Reese	<i>Two-scale modeling of the electro-chemically coupled transport of ions in structural battery electrolytes</i> V. Tu , F. Larsson, K. Runesson, R. Jänicke	<i>Monolithic Newton-Multigrid Solver for Multiphase Flow Problems with Surface Tension</i> M. A. Afag , S. Turek, A. Fatima, A. Ouazzi
14:20	<i>FFT-accelerated Finite Element Solver for Periodic Homogenization</i> M. Ladecký , R. J. Leute, A. Falsafi, I. Pultarová, L. Pastewka, T. Junge, J. Zeman	<i>A chemo-mechanical multi-scale model applied to Li-ion battery electrode material</i> D. R. Rollin , F. Larsson, K. Runesson, R. Jänicke	<i>Unfitted Eulerian Time-Stepping for a Coupled Moving Interface Problem</i> H. von Wahl , T. Richter
14:40	<i>Composite Boxels with imperfect Interfaces (ComBI) at finite strains with FFT-based solvers</i> S. Keshav , F. Fritzen, M. Kabel	<i>Effective Transport Parameters for Porous Electrodes in Redox Flow Batteries</i> R. P. Schärer , J. Wlodarczyk, J. O. Schumacher	<i>Optimal preconditioners for CutFEM discretizations of elliptic interface problems</i> S. Gross , A. Reusken
15:00	<i>Homogenizing the viscosity of shear-thinning fiber suspensions with an FFT-based computational method</i> B. Sterr , D. Wicht, M. Schneider, T. Böhlke	<i>Dissipative elasto-electromagnetic crystalline microstructures: Modelling and computational homog. via the Virtual Element Method</i> C. Böhm et al.	<i>Validation of the plicRDF-isoAdvectord unstructured Volume-of-Fluid (VOF) method for wetting problems</i> M. H. Asghar , T. Maric, M. Fricke, D. Bothe
15:20	<i>Two-scale FE-FFT-based thermo-mech. coupl. modeling of elasto-viscopl. polycryst. materials at finite strains</i> A. Schmidt , C. Gierden, J. Waimann, B. Svendsen, S. Reese	<i>Modeling the DC and AC electromechanically coupled effects in CNT-based nano-composite sensors</i> X. Xia , S. Hellebrand, D. Brands, J. Schröder	<i>Injection molding of semi-crystalline polymers in a space-time framework</i> B. Ferrer Fabón , L. Gesenhues, M. Behr
15:40	<i>Homogenization of Schrödinger's operators having oscillating potentials</i> E. Cancès , L. Garrigue , D. Gontier	<i>Thermo-chemo-mechanical modelling of a curing-process combined with mean-field homogenization methods at large strains</i> P. Lenz , R. Mahnken	<i>A Contribution to the Process Simulation of Selective Laser Melting</i> L. Luberto , K. de Payrebrune

Wednesday, August 17, 14:00 - 16:00

<p>S 12</p> <p>Waves and acoustics</p> <p>Chair: G. Kocur, E. Saenger @ S15</p>	<p>S 14</p> <p>Applied analysis</p> <p>Chair: H. Abels @ S12</p>	<p>S 18</p> <p>Numerical methods of differential equations</p> <p>Chair: H. Ranocha @ H05</p>	
<p><i>FEM-Modeling of thermal and viscous effects in piezoelectric MEMS loudspeakers</i></p> <p><u>H. Hassanpour Guilvaiee</u>, F. Toth, M. Kaltenbacher</p>	<p><i>Korn inequalities for incompatible tensor fields with conformal dislocation energy</i></p> <p><u>P. Lewintan</u>, S. Müller, P. Neff</p>	<p><i>Conservative iterative methods for conservation laws</i></p> <p><u>P. Birken</u>, V. Linders</p>	<p>14:00</p>
<p><i>Comparing of the analytical investigation with the FEM simulation for minimizing the total radiated sound from a vibrating plate</i></p> <p><u>M. Hajilou</u>, D. Sachau</p>	<p><i>Rank-one convexity and quasi-convexity for planar functions with an additive volumetric-isochoric split</i></p> <p><u>R.J. Martin</u>, J. Voss, O. Sander, P. Neff</p>		<p>14:20</p>
<p><i>Parameter Estimation for Damage Detection in Fibre Metal Laminates Utilizing a Reduced Basis Ensemble Kalman Filter</i></p> <p>N. K. Bellam Muralidhar, D. Lorenz, <u>C. Gräßle</u></p>	<p><i>Existence results for the higher order isotropic Cosserat shell model</i></p> <p><u>M. Birsan</u>, I.-D. Ghiba, P. Neff</p>	<p><i>An asymptotic preserving hybrid discontinuous Galerkin method for singularly perturbed convection-diffusion problems on networks</i></p> <p><u>N. M. Philippi</u>, H. Egger</p>	<p>14:40</p>
<p><i>Frequency domain full wave-form inversion with small-scale laboratory measurements for reconnaissance in mechanized tunneling</i></p> <p><u>C. Riedel</u>, K. Musayev, M. Baitsch, K. Hackl</p>	<p><i>A homogenized bending theory for prestrained plates</i></p> <p><u>D. Padilla-Garza</u></p>	<p><i>A central scheme for conservation laws on networks</i></p> <p><u>N. Kolbe</u>, M. Herty, S. Müller</p>	<p>15:00</p>
<p><i>Wave propagation in an acoustic metamaterial modeled as a relaxed micromorphic continuum</i></p> <p><u>J. Voss</u>, G. Rizzi, P. Demetriou, P. Neff, A. Madeo</p>	<p><i>Periodic unfolding for thin structures</i></p> <p><u>R. Falconi</u>, J. Orlik, G. Griso</p>	<p><i>A 3rd/2nd order MOOD limited scheme for the shallow water equations</i></p> <p><u>S. Hörnschemeyer</u>, P. Bacigaluppi, S. Noelle, G. Chen</p>	<p>15:20</p>
<p><i>Investigation on the elastic wave propagation in phononic structures</i></p> <p><u>A. Umlauf</u>, M. Mellmann, B. Ankey, C. Zhang</p>	<p><i>Modelling and Simulation of Transport Processes in an Elastically Deformable Perforated Medium</i></p> <p><u>J. Knoch</u>, M. Gahn, N. Neuß, M. Neuss-Radu</p>	<p><i>Multiresolution-analysis for stochastic hyperbolic conservation laws</i></p> <p>M. Herty, <u>A. Kolb</u>, S. Müller</p>	<p>15:40</p>

Contributed Sessions

	S 18 Numerical methods of differential equations Chair: M. Kronbichler @ H08	S 19 Optimization of differential equations Chair: P. Gangl @ S07	S 20 Dynamics and control Chair: B. Unger @ H08
14:00	<p><i>Goal oriented error estimation and adaptivity for Galerkin discretizations and Physics Inspired Neural Networks</i></p> <p>T. Richter, D. Meidner, P. Minakowski</p>	<p><i>Adaptive concepts for the prediction horizon in MPC of PDE systems</i></p> <p>A. Alla, C. Gräßle, <u>M. Hinze</u></p>	<p><i>A two-sided iteration algorithm for parametric model reduction via parameter-varying projection</i></p> <p><u>I.V. Gosea</u>, S. Gugercin, B. Unger</p>
14:20		<p><i>Eigenvalue optimization with respect to shape-variations in electro-magnetic systems</i></p> <p><u>C. Herter</u>, S. Schöps, W. Wollner</p>	<p><i>Towards effective a posteriori error bounds for system-theoretic model reduction</i></p> <p><u>B. Liljgren-Sailer</u></p>
14:40	<p><i>Adaptive space-time goal-oriented methods for nonstationary flow problems</i></p> <p><u>J. Roth</u>, J. P. Thiele, T. Wick, U. Köcher</p>	<p><i>Robust shape optimization of electric motors using second-order approximations and model order reduction techniques</i></p> <p><u>B. Polenz</u>, S. Ulbrich</p>	<p><i>Model reduction for stochastic differential equations driven by fractional Brownian motion</i></p> <p><u>N. Jamshidi</u>, M. Redmann</p>
15:00	<p><i>A PU localization for space-time goal oriented adaptive refinement for nonlinear parabolic equations</i></p> <p>J. Roth, <u>J. P. Thiele</u>, T. Wick, U. Köcher</p>	<p><i>Stochastic multi-shape optimization for a fluid-mechanical application including geometrical constraints</i></p> <p>C. Geiersbach, <u>T. Suchan</u>, K. Welker</p>	<p><i>Discretization schemes for bilinear systems and their influence on the complexity reduction procedure</i></p> <p><u>D. S. Karachalios</u>, V. I. Gosea, A. C. Antoulas</p>
15:20	<p><i>Two sided bounds for the DWR method with and without interpolation</i></p> <p><u>B. Endtmayer</u>, U. Langer, T. Wick</p>	<p><i>Influence of Extension Operator on Numerical Properties of Shape Optimization Problems</i></p> <p><u>S. Onyshkevych</u>, M. Siebenborn</p>	<p><i>Model Order Reduction of hyperbolic systems</i></p> <p><u>S. Grundel</u></p>
15:40		<p><i>Shape Optimization Of Flow Channels In Profile Extrusion Dies Using Reinforcement Learning</i></p> <p><u>D. Wolff</u>, C. Fricke, M. Kemmerling, S. Elgeti</p>	<p><i>Model order reduction via substructuring for a nonlinear, differential-algebraic machine tool model with moving loads</i></p> <p>Q. Aumann, P. Benner, J. Saak, <u>J. Vettermann</u></p>

Wednesday, August 17, 14:00 - 16:00

<p>S 21</p> <p>Mathematical signal and image processing</p> <p>Chair: M. Holler, R. Beinert @ S16</p>	<p>S 22</p> <p>Scientific computing</p> <p>Chair: K. Lund @ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: M. Grepl, M. Stoll @ H07</p>	
<p><i>The Assignment Flow Approach to Neural ODEs and Deep Networks</i></p> <p><u>C. Schnörr</u></p>	<p><i>An algebraic multigrid method for partially structured grids</i></p> <p><u>M. Mayr</u>, L. Berger-Vergiat, P. Ohm, R. S. Tuminaro</p>	<p><i>The World of Graph Neural Networks: From the Mystery of Generalization to Foundational Limitations</i></p> <p><u>G. Kutyniok</u></p>	<p>14:00</p>
	<p><i>Algebraic multigrid block-preconditioning for beam/solid meshtying</i></p> <p><u>M. Firmsbach</u>, A. Popp, M. Mayr</p>		<p>14:20</p>
<p><i>Clustering of orientation valued images</i></p> <p><u>R. Hielscher</u></p>	<p><i>Scalability of algebraic multigrid methods for mortar based contact problems</i></p> <p><u>C. Steimer</u>, M. Mayr, A. Popp</p>	<p><i>Graph-based learning of time-series data</i></p> <p><u>M. Stoll</u>, L. Peroche, D. Buenger, M. Gondos</p>	<p>14:40</p>
<p><i>A distribution-dependent Mumford-Shah model for unsupervised hyperspectral image segmentation</i></p> <p><u>J.-C. Cohrs</u>, C. Bajaj, B. Berkels</p>	<p><i>Finite cell method with geometric multigrid for flow problems</i></p> <p><u>S. Saberi</u>, G. Meschke, A. Vogel</p>	<p><i>Sparse signals on graphs and simplicial complexes</i></p> <p><u>T. Emmrich</u>, M. Juhnke-Kubitzke, S. Kunis</p>	<p>15:00</p>
<p><i>Optimization of Mirror Positioning for Single-Camera 3D Displacement Measurements</i></p> <p><u>M. Gille</u>, J. Maierhofer, D. J. Rixen</p>	<p><i>The ghosted paradigm for solving periodic problems with the QMGRIT algorithm and its semi-algebraic mode analysis.</i></p> <p><u>S. Bogdanov</u>, M. Bolten, S. Friedhoff</p>	<p><i>Stability and Generalization Capabilities of Message Passing Graph Neural Networks</i></p> <p><u>S. Maskey</u>, Y. Lee, R. Levie, G. Kutyniok</p>	<p>15:20</p>
<p><i>Motif extraction from crystalline images in real space</i></p> <p><u>A. Shamseldeen Ali Alhassan</u>, B. Berkels</p>	<p><i>Machine learning for parallel-in-time methods</i></p> <p>J. Angel, <u>S. Götschel</u>, D. Ruprecht</p>	<p><i>Which neural networks can be computed by an algorithm? - Expressivity meets Turing in Deep Learning</i></p> <p><u>L. Thesing</u>, A. C. Hansen</p>	<p>15:40</p>

Contributed Sessions

S 26

Modelling, analysis and simulation of molecular systems

Chair: G. Friesecke

@ S03

14:00 *Calculation of response properties in DFT*

G. Kemlin, É. Cancès, M. F. Herbst, A. Levitt, B. Stamm

14:20 *On the approximation of energy bands in the Brillouin zone*

E. Cancès, L. Antoine, [L. Vidal](#)

14:40 *A Two-Level Domain Decomposition Method for Periodic Schrödinger Eigenstates in Anisotropically Expanding Domains*

[L. Theisen](#), B. Stamm

15:00 *An adaptive many-body expansion over convex subgraphs of interaction graphs*

[J. Barker](#), M. Griebel, H. Jan

15:20 *Renormalization of tensor product approximations in quantum chemistry*

[H.-J. Flad](#)

15:40 *Measure concentration and the Schrödinger equation*

[H. Yserentant](#)

Wednesday, August 17, 14:00 - 16:00

Contributed Sessions

	S 02 Biomechanics Chair: S. Budday @ H10	S 03 Damage and fracture mechanics Chair: S. Löhnert @ H04	S 04 Structural mechanics Chair: H. Wessels @ H02
16:30	<i>Tissue-scale biomechanical testing of brain tissue for the calibration of nonlinear material models</i> J. <u>Faber</u> , J. Hinrichsen, A. Greiner, N. Reiter, S. Budday	<i>A convex damage model to predict the anisotropic stiffness degradation in hardening-type SMC composites</i> J. <u>Görthofer</u> , M. Schneider, A. Hrymak, T. Böhlke	<i>Mechanical and Caloric Investigation of Nylon-6 Blends</i> S. <u>Kulkarni</u> , A. Lion, M. Johlitz
16:50	<i>Regional Characterization of Human Brain Tissue</i> N. <u>Reiter</u> , J. Hinrichsen, F. Paulsen, S. Budday	<i>Correlation of the remote laser cutting process of carbon fibre reinforced polymers and mechanical properties</i> B. <u>Schmidt</u> , M. Zimmermann, M. Kästner	<i>Mechanical characterisation of cables in different loading directions</i> P. <u>Sharma</u> , A. Hildebrandt, A. Düster, S. Diebels
17:10	<i>Inverse identification of region-specific hyperelastic material parameters for human brain tissue</i> J. <u>Hinrichsen</u> , N. Reiter, F. Paulsen, S. Kaessmair, S. Budday	<i>A thermodynamically consistent anisotropic damage model for metallic glasses</i> J. <u>Shi</u> , S. Ma, B. Markert	<i>Efficient simulation of cables with anisotropic high-order solid elements</i> A. <u>Hildebrandt</u> , P. Sharma, S. Diebels, A. Düster
17:30	<i>Poro-Viscoelastic Effects During Biomechanical Testing of Human Brain Tissue</i> A. <u>Greiner</u> , N. Reiter, F. Paulsen, G. A. Holzapfel, P. Steinmann, E. Comellas, S. Budday	<i>Anisotropic damage and fracture with crack-closure based on a crack-orientation director</i> S. Wulfinghoff, C. <u>Dorn</u>	<i>Experiments and Modelling of the Load Capacity of Green Wood</i> S. <u>Loske</u> , I. Münch
17:50	<i>Numerical stabilization of a multifield computational model for human brain development</i> M. S. <u>Zarzor</u> , P. Steinmann, S. Budday	<i>Anisotropic damage modelling of concrete under compressive loading at the mesoscale</i> M. <u>Hammad</u> , U. Nackenhorst	<i>Growth of green wood based on a phase field model</i> J. B. <u>Wulf</u> , I. Münch
18:10	<i>On data integration in simulation of tumours in brain tissue</i> M. <u>Suditsch</u> , T. Ricken, A. Wagner	<i>Experimental and numerical studies on damage in anisotropic metals</i> S. Koirala, S. Gerke, M. <u>Brünig</u>	

Wednesday, August 17, 16:30 - 18:30

<p>S 04</p> <p>Structural mechanics</p> <p>Chair: C. Weißenfels @ HTI</p>	<p>S 05</p> <p>Nonlinear oscillations</p> <p>Chair: M. Krack, S. Tatzko @ SI1</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: R. Jänicke @ H01</p>	
<p><i>Vibration analysis of painting supports</i></p> <p><u>E. M. Hartlieb</u></p>	<p><i>Frequency Response of Non-linear Defected Structures through Sensitivity Analysis of Parametric Reduced Order Models</i></p> <p>A. Sacconi, J. Marconi, <u>P. Tiso</u></p>	<p><i>Continuum Mechanical Modeling of the Inelastic Response of Woven Textile Membranes</i></p> <p><u>L. Makhool</u>, D. Balzani</p>	<p>16:30</p>
<p><i>The inverse static analysis of canvas paintings</i></p> <p><u>M. Meyer-Coors</u>, K. Kracht, R. Schröder</p>		<p><i>Enhancement in the Numerical Simulation of Textile Fabrics by Local Calculation of Stress-Ratio-Dependent Material Parameters</i></p> <p><u>M. Motevalli</u>, D. Balzani</p>	<p>16:50</p>
<p><i>FE-based modeling of meso-scale piezoelectric motors</i></p> <p><u>P. Marter</u>, F. Duvingneau, R. Orszulik, D. Juhre</p>	<p><i>Steep resonance of parametrically excited active MEMS cantilevers with artificial softening or hardening for dynamic mode in Atomic Force Microscopy</i></p> <p><u>J. Ehrmann</u> et al.</p>	<p><i>Application of a microplane damage model for concrete to an isogeometric scaled boundary formulation for 3D solids</i></p> <p><u>G. Kikis</u>, L. Mester, R. Chudoba, S. Klinkel</p>	<p>17:10</p>
<p><i>Stiffness pairing in soft-hard active-passive actuators</i></p> <p><u>A. Ehrenhofer</u></p>	<p><i>A Homotopic Approach to Generate Optimally Actuated Periodic Motions for Legged Systems from Energetically Conservative Non-Smooth Dynamics</i></p> <p><u>M. Raff</u>, N. Jr. Rosa, C. D. Remy</p>	<p><i>Uncertainty estimation using Gaussian Error Propagation in metal forming process simulation</i></p> <p><u>P. K. Dileep</u>, S. Hartmann, M. Javadi, H. Palkowski, T. Fischer, G. Ziegmann</p>	<p>17:30</p>
<p><i>Isogeometric Analysis in Machining Applications</i></p> <p><u>E. Salzmann</u>, F. Zwicke, S. Elgeti</p>	<p><i>How to obtain the Hill stability matrix using the Koopman framework?</i></p> <p><u>F. Bayer</u>, R. I. Leine</p>	<p><i>Application of radial basis functions in strain analysis of digital image correlation</i></p> <p><u>L. Müller-Lohse</u>, J.-A. Tröger, S. Hartmann</p>	<p>17:50</p>
	<p><i>Safe Basins of Escape of a Particle from an Asymmetrically Truncated, Quadratic Potential Well under Harmonic Excitation</i></p> <p><u>A. Genda</u>, A. Fidlin</p>	<p><i>Identifiability of heat exchange coefficients based on dissipation induced self heating of a specimen and full field data</i></p> <p><u>L. Rose</u>, A. Menzel</p>	<p>18:10</p>

Contributed Sessions

	S 07 Coupled problems Chair: M.-A. Keip, B. Kiefer @ H06	S 08 Multiscales and homogenization Chair: Y. Heider @ H03	S 14 Applied analysis Chair: F. De Anna @ S12
16:30	<p><i>A multiscale approach to coupled thermo-electro-mechanical effects at cracks in ferroelectric ceramics</i></p> <p><u>O. El Khatib</u>, M. Kuna</p>	<p><i>Multiscale prediction of the mechanical behaviour of polymers and their composites</i></p> <p><u>S. Pfaller</u>, C. Bauer, M. Ries, F. Weber, W. Zhao</p>	<p><i>Convergence of the infinite range SQRA operator</i></p> <p><u>M. Heida</u></p>
16:50	<p><i>Modeling of higher-order electromechanical coupling in piezoelectric solids using mixed FEM</i></p> <p><u>P. H. Serrao</u>, S. Kozinov</p>	<p><i>Exp. invest. and modelling of the quasi-static micro-mech. behavior in carbon long fiber reinforced polyamide 6 exposed to various env. conditions</i></p> <p><u>N. Christ</u> et al.</p>	<p><i>Analysis of a reactive-diffusive porous media model for rock dehydration processes</i></p> <p><u>A. Zafferri</u>, M. Thomas</p>
17:10	<p><i>On the importance of chemo-electro-mechanical coupling in flexoelectricity-induced bone remodelling processes</i></p> <p><u>C. Witt</u>, T. Kaiser, A. Menzel</p>	<p><i>Influence of the correlation length on the probabilistic material modeling of short fiber-reinforced composites on the component level</i></p> <p><u>J. M. Widera</u>, E. Klatt, N. Rauter</p>	<p><i>Homogenisation of a reaction-diffusion process coupled with an evolving microstructure</i></p> <p><u>D. Wiedemann</u>, M. A. Peter</p>
17:30	<p><i>Multiscale Constitutive Modeling of Ferroelectrics Using a Generalized Voigt-Reuss Approximation</i></p> <p><u>S. Lange</u>, A. Warkentin, A. Ricoeur</p>	<p><i>A convex fatigue-damage model for the stiffness degradation in short-fiber reinforced polymers – upscaling in time and space</i></p> <p><u>N. Magino</u> et al.</p>	<p><i>Homogenization of a nonlinear drift-diffusion system for multiple charged species in a porous medium</i></p> <p><u>A. Bhattacharya</u>, M. Gahn, M. Neuss-Radu</p>
17:50	<p><i>An electro-mechanical metamaterial for direct stress minimization</i></p> <p><u>M. Blaszczyk</u>, <u>K. Hackl</u></p>	<p><i>Micromechanical Parameter Identification Using Bayes Method</i></p> <p><u>L. Gaynutdinova</u>, O. Rokoš, J. Zeman, I. Pultarová, J. Havelka</p>	<p><i>Analysis of a nonlinear PDE system in transient porous media flow models</i></p> <p><u>M. Bachmayr</u>, S. Boisserée, L. M. Kreusser</p>
18:10		<p><i>Multiscale analysis of the acoustic damping properties of polymer blends</i></p> <p><u>J. Hohe</u>, C. Beckmann</p>	

Wednesday, August 17, 16:30 - 18:30

S 15 Uncertainty Quantification Chair: E. Ullmann @ H08	S 16 Data-driven Optimization Chair: C. Totzeck, M. Stiglmayr @ H09	S 18 Numerical methods of differential equations Chair: C. Lehrenfeld @ H05	
<p><i>Elliptical Slice Sampling</i></p> <p><u>D. Rudolf</u></p>	<p><i>Tensile Strength-oriented Nonwoven Material Design by Surrogate Optimization</i></p> <p><u>M. Harmening</u></p>	<p><i>DoD-stabilized DG schemes for solving conservation laws on cut cell meshes</i></p> <p><u>F. Streitbürger</u>, G. Birke, C. Engwer, S. May</p>	<p>16:30</p>
<p><i>Dimension-independent Markov chain Monte Carlo on the sphere</i></p> <p>H. C. Lie, D. Rudolf, <u>B. Sprungk</u>, T. Sullivan</p>	<p><i>Implicitly Regularized Empirical Risk Minimization</i></p> <p><u>H.-H. Chou</u>, J. Maly, D. Stöger</p>	<p><i>DoD stabilization of linear hyperbolic PDEs on general cut-cells</i></p> <p><u>G. Birke</u>, C. Engwer, S. May, F. Streitbürger</p>	<p>16:50</p>
<p><i>Bayesian optimal design of experiment via conditional expectation with SGD implementation</i></p> <p><u>T. V. Hoang</u>, S. Krumscheid, R. Tempone</p>	<p><i>Parameter Identification of Interacting particle dynamics and its Mean-Field Limit</i></p> <p><u>Z. Turarov</u>, C. Totzeck</p>	<p><i>Geometrically Higher Order Unfitted Space-Time Methods for PDEs on Moving Domains</i></p> <p><u>F. Heimann</u>, C. Lehrenfeld, J. Preuß</p>	<p>17:10</p>
<p><i>Optimal experimental design for photoacoustic imaging</i></p> <p><u>K. Koval</u>, R. Herzog, R. Scheichl</p>	<p><i>Favorable optimization models in hybrid Data Driven Computational Mechanics</i></p> <p><u>S. Lange</u>, M. C. Steinbach, C. G. Gebhardt</p>	<p><i>Multigrid Preconditioning of Space-Time Finite Element Approximations to Dynamic Poro-/Thermoelasticity and Navier-Stokes Systems</i></p> <p>M. Anselmann, <u>M. Bause</u></p>	<p>17:30</p>
	<p><i>PINN-Training Using Multiobjective Optimization</i></p> <p>F. Heldmann, S. Treibert, M. Ehrhardt, <u>K. Klamroth</u></p>	<p><i>Modeling of Growth using an Immersed Finite Element Method</i></p> <p><u>A. Ebrahem</u>, R. R. Hiemstra, S. K. F. Stoter, D. Schillingner</p>	<p>17:50</p>
		<p><i>Concepts of Analysis-Suitability for 3D T-splines</i></p> <p><u>P. Morgenstern</u>, R. Görmer</p>	<p>18:10</p>

Contributed Sessions

	S 19 Optimization of differential equations Chair: C. Gräßle @ S07	S 20 Dynamics and control Chair: S. Grundel @ S08	S 21 Mathematical signal and image processing Chair: M. Holler, R. Beinert @ S16
16:30	<i>Material distribution topology optimization for boundary dominated physics</i> <u>E. Wadbro</u> , A. Mousavi, M. Berggren	<i>Non-intrusive Model Order Reduction for Mechanical Systems</i> <u>Y. Filanova</u> , I. Pontes Duff, P. Benner	<i>The Riemannian Chambolle-Pock Algorithm</i> <u>R. Bergmann</u> , R. Herzog, M. Silva Louzeiro, D. Tenbrinck, J. Vidal-Núñez
16:50	<i>Topology Optimization of Contact-Constrained Dynamical Systems</i> <u>T. Schmidt</u> , R. Seifried	<i>Data-driven Discovery of Linear Time-Invariant Port-Hamiltonian Systems</i> R. Morandin, <u>J. Nicodemus</u> , B. Unger	<i>Total-Variation-Based Phase Retrieval in Optical Diffraction Tomography</i> <u>R. Beinert</u> , M. Quellmalz
17:10	<i>Topology optimization of a rotating electric machine by the topological derivative</i> <u>N. Krenn</u> , P. Gangl	<i>Structured Optimization-Based Control and Parametric Model Order Reduction of Port-Hamiltonian Systems</i> <u>P. Schwertdner</u> , M. Schaller, M. Voigt	<i>Recovery guarantees for phase retrieval via the randomized Kaczmarz algorithm</i> <u>P. Römer</u> , F. Filbir, F. Krahme \ddot{r}
17:30	<i>Topology and Material Optimization of Optical Properties of Particulate Products by Discrete Dipole Approximation and Sequential Global Programming</i> <u>N. Nees</u> et al.	<i>Structure-preserving model reduction for passive descriptor systems</i> <u>B. Unger</u>	<i>Stability and convergence rates for random inverse source problems</i> <u>P. Micken</u> , T. Hohage
17:50	<i>Discrete material optimization based on separable first order approximations</i> <u>P. Gangl</u> , N. Nees, M. Stingl	<i>System Order Reduction for Gas and Energy Networks</i> <u>C. Himpe</u> , S. Grundel	<i>Designing and Analysing General Morphological Derivative Approximations</i> <u>K. A. Schaefer</u> , J. Weickert
18:10	<i>Topology optimization based on a Numerical Topological-Shape Derivative</i> <u>M. H. Grerer</u> , P. Gangl	<i>Semi-active Damping Optimization of Vibrational Systems using the Reduced Basis Method</i> <u>J. Przybilla</u> , I. Pontes Duff, P. Benner	<i>Nonnegative Least Squares: An overparametrized point of view</i> <u>C. Mayrink Verdun</u>

Wednesday, August 17, 16:30 - 18:30

<p>S 22</p> <p>Scientific computing</p> <p>Chair: S. Götschel @ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: A. Klawonn @ H07</p>	<p>S 26</p> <p>Modelling, analysis and simulation of molecular systems</p> <p>Chair: B. Stamm @ S03</p>	
<p><i>Block Gram-Schmidt algorithms and their stability properties</i></p> <p>E. Carson, K. Lund, M. Rozložník, S. Thomas</p>	<p><i>Mathematical Foundations of Generative Adversarial Learning</i></p> <p>H. Gottschalk, H. Asatryan, M. Lippert, M. Rottmann</p>	<p><i>Interaction of defects in disordered materials</i></p> <p>T. Focks, F. Bamer, B. Markert, B. Stamm</p>	<p>16:30</p>
<p><i>Linear: An efficient Linear Algebra Library</i></p> <p>K. Böhm</p>	<p><i>Limitations of Deep Learning for Inverse Problems on Digital Hardware</i></p> <p>A. Fono, H. Boche, G. Kutyniok</p>	<p><i>Glass generation and fracture on the nanoscale</i></p> <p>Z. Wu, F. Bamer, B. Markert</p>	<p>16:50</p>
<p><i>Fast formation and assembly for spline-based fictitious domain methods</i></p> <p>B. Marussig</p>	<p><i>Scale Separation in Convolutional Neural Networks: A Multigrid Approach</i></p> <p>R. Pochampalli, N. R. Gauger</p>	<p><i>Mechanical properties of disordered 2D materials</i></p> <p>J. Stratmann, F. Bamer, B. Markert</p>	<p>17:10</p>
<p><i>Increased convergence speed for inverse problems via arbitrary sensitivity</i></p> <p>B. Jurgelucks</p>	<p><i>Input Reconstruction from Compressed Latent Features in Deep Neural Networks</i></p> <p>T. Riedlinger, M. Rottmann</p>	<p><i>Interphase characterization in polystyrene-silica nanocomposites based on molecular dynamics simulations</i></p> <p>M. Ries, F. Weber, G. Possart, P. Steinmann, S. Pfaller</p>	<p>17:30</p>
<p><i>Comparison of an h- and hp-Adaptive Finite Element Solver for Chemo-Mechanically Coupled Battery Electrode Particles</i></p> <p>F. Castelli, W. Dörfler</p>	<p><i>A Neural Network Explainer in the Wavelet Domain</i></p> <p>S. Kolek, D. A. Nguyen, R. Levie, J. Bruna, G. Kutyniok</p>	<p><i>Molecular Dynamics Study on the Effect of Interfacial Cellulose Polymers in Strengthening the Stress Transfer Between Alumina Nanoparticles and Epoxy</i></p> <p>A. Y. Al-Maharma et al.</p>	<p>17:50</p>
<p><i>Spectral deferred correction methods for second-order problems</i></p> <p>I. Akramov, S. Götschel, M. Minion, D. Ruprecht, R. Speck</p>	<p><i>Neural Tangent Kernel Beyond the Infinite-Width Limit: Effects of Depth and Initialization</i></p> <p>M. Seleznova, G. Kutyniok</p>	<p><i>Preconditioning for the integration of a spatio-temporal pharmacodynamic system</i></p> <p>J. Duintjer Tebbens, M. Lanzendorfer, C. Matonoha, S. Papacek</p>	<p>18:10</p>

Detailed Schedule - Thursday, August 18

8:30 Contributed Sessions

Parallel sessions

10:30 Coffee Break

11:00 Plenary Lecture

H01 Valeria Simoncini University of Bologna

On the versatility of Krylov subspaces in modern matrix computations

Chaired by: Arnold Reusken

12:00 Plenary Lecture

H01 Andres Kecskemethy University of Duisburg-Essen

Kinematics – Dead or alive?

Some applications of kinematics in fast multibody dynamics, creative mechanism design, biomechanics and robotics

Chaired by: Jörg Wallaschek

13:00 Lunch Break

14:00 Contributed Sessions

Parallel sessions

16:00 Coffee Break

16:30 Plenary Lecture

H01 Claus-Dieter Munz University of Stuttgart

Sharp interface approximations for compressible two-phase flow with phase change

Chaired by: Wolfgang Schröder

17:30 Contributed Sessions

Parallel sessions

Contributed Sessions

	S 01 Multi-body dynamics Chair: R. Seifried @ S12	S 02 Biomechanics Chair: S. Brandstätter @ H10	S 03 Damage and fracture mechanics Chair: M.-A. Keip @ H04
8:30	<i>Efficient detection of rope-to-sheave contacts in reeving systems</i> M. Arnold, J. Gerstmayr, K. Ntarladima	<i>Articular cartilage under tensile loading: experimental and numerical investigation of its behavior</i> F. S. Eglj, S. M. Seyedpour, T. Ricken	<i>Fiber-matrix interface characterization in normal and shear direction</i> B. Rohrmüller, P. Gumbsch, J. Hohe
8:50	<i>Spatial nonlinear beam theory for soft pneumatic actuators</i> S. R. Eugster, J. Harsch	<i>Simulating vertebroplasty using a continuum model based on the Theory of Porous Media and its validation</i> Z. Trivedi et al.	<i>On the characterisation of cohesive interfaces by the mode I interlaminar energy release ratio</i> M. Linke, R. Lammering
9:10	<i>The 'Modal Nonlinearities' of a Painting and Their Influence on Transportation Processes</i> Y. Gao, P. Ziegler, P. Eberhard	<i>Extension of an in vitro spine test rig to track load-dependent biomechanics of the lumbar spine under physiological conditions</i> K. Brenzel et al.	<i>Influence of Mean Stress on Lifetime Prediction of Adhesive Bonds</i> C. Köster, A. Matzenmiller
9:30	<i>Multi-body analysis of machine tools using reduced-order thermo-mechanical models</i> Q. Aumann, P. Benner, J. Saak, J. Vettermann	<i>Modeling of function-perfusion interaction in the human liver based on a multiscale porous media model</i> S. Gerhäuser, L. Lambers, L. Mandl, M. König, T. Ricken	<i>Runtime reduction methods for lifetime prediction of adhesives under cyclic loading</i> S. U. Wagner, A. Matzenmiller
9:50	<i>Observing the deformation state of elastic wind turbine structures based on inertial measurements</i> J. Luthe, Y. Su, A. Schulze, J. Ehret, J. Zierath, C. Woernle	<i>Modelling Material Injection Into Porous Structures With the Theory of Porous Media Under Non-isothermal Conditions Applied to Percutaneous Vertebroplasty</i> J.-S.L. Völter	<i>Validation of semi-analytical approach for prediction of crack initiation in adhesive joints for wind turbine blades subjected to cyclic loading</i> M. Rosemeier, A. Krimmer, A. Antoniou
10:10		<i>Multiphasic modelling of thrombus formation and growth based on the Theory of Porous Media</i> I. Gupta, M. Schanz	<i>Methods Development for the Characterization, Damage Modeling and Simulation of Hygro-Thermo-Mechanical Effects for Thick Layer Adhesives in Steel Structures</i> F. Kötz, A. Matzenmiller

Thursday, August 18, 8:30 - 10:30

<p>S 04</p> <p>Structural mechanics</p> <p>Chair: D. Balzani</p> <p>@ H02</p>	<p>S 04</p> <p>Structural mechanics</p> <p>Chair: W. Dornisch</p> <p>@ H11</p>	<p>S 05</p> <p>Nonlinear oscillations</p> <p>Chair: S. Tatzko, M. Krack</p> <p>@ S11</p>	
<p><i>Closed-form buckling analysis of unsymmetrically laminated plates</i></p> <p><u>P. Schreiber</u>, C. Mittelstedt</p>	<p><i>Curved, linear Kirchhoff beams formulated using tangential differential calculus and Lagrange multipliers</i></p> <p><u>M. W. Kaiser</u>, T.-P. Fries</p>	<p><i>Autoregressive Convolutional Neural Networks (AR-CNN) to predict forced vibrations of nonlinear systems</i></p> <p><u>T. Westmeier</u>, D. Kreuter, S. Bäuerle, H. Hetzler</p>	<p>8:30</p>
<p><i>Approximate computational model for the local post-buckling of omega-stringer-stiffened composite panels</i></p> <p><u>J. C. Schilling</u>, C. Mittelstedt</p>	<p><i>Simulation of the geometrically exact beam model using Isogeometric Analysis</i></p> <p><u>P. Wasmer</u>, P. Betsch</p>	<p><i>Active learning for data-driven identification of nonlinear dynamic systems</i></p> <p><u>P. Milicevic</u>, O. Altay</p>	<p>8:50</p>
<p><i>Simulations of the snap-through behavior of a fiber reinforced elastomer structure for the design of a simple clamping mechanism</i></p> <p><u>M. M. Schasching</u>, R. Duy, M. Todt, H. E. Pettermann</p>	<p><i>A critical view on modeling pneumatic soft robots with the Cosserat beam theory</i></p> <p><u>F. Lamping</u>, K. M. de Payrebrune</p>	<p><i>Towards neural network-based numerical friction models</i></p> <p><u>K. Vater</u>, M. Stender, N. Hoffmann</p>	<p>9:10</p>
<p><i>Core thickness optimization of buckling-endangered sandwich columns under compressive loads</i></p> <p><u>M. Nuño</u>, K.-U. Schröder</p>	<p><i>Scaled boundary isogeometric analysis with C1 coupling for Kirchhoff-Love theory</i></p> <p><u>J. Arf</u>, M. Reichle, S. Klinkel, B. Simeon</p>	<p><i>Data-driven stability maps for friction-induced vibrations</i></p> <p><u>C. Geier</u>, M. Stender, S. Hamdi, N. Hoffmann, T. Chancelier</p>	<p>9:30</p>
<p><i>Behavior of additively manufactured lattice structures under compressive loading</i></p> <p><u>S. Bieler</u>, K. Weinberg</p>	<p><i>Reduced order modelling approach for isogeometric Kirchhoff-Love shells</i></p> <p><u>M. Chasapi</u>, P. Antolin, A. Buffa</p>	<p><i>A first analysis of possible elementary causes of self-excited vibrations in roller coaster rides</i></p> <p><u>M. C. Zamora Agustí</u>, A. Kecskeméthy</p>	<p>9:50</p>
<p><i>Sensitivity of predicted stresses in thick-walled steel/ceramics spherical FGM-structures to parameter uncertainties</i></p> <p><u>E. Arslan</u>, W. Mack</p>	<p><i>A modified scaled boundary isogeometric formulation for static analysis of plates and shells</i></p> <p><u>M. Reichle</u>, M. Klassen, S. Klinkel</p>	<p><i>Influence of Tyre Characteristics on Periodic Motions for an Understeering Vehicle</i></p> <p><u>A. Steindl</u>, J. Edelmann, M. Plöchl</p>	<p>10:10</p>

Contributed Sessions

	S 06 Material modelling in solid mechanics Chair: O. Weeger @ H01	S 07 Coupled problems Chair: TBA @ H06	S 08 Multiscales and homogenization Chair: R. Jänicke @ H03
8:30	<p><i>Constitutive Artificial Neural Networks (CANNs)</i></p> <p>K. P. Abdolazizi, K. Linka, C. J. Cyron</p>	<p><i>Energy-Momentum-Entropy consistent time integration of dissipative thermomechanical systems in an extended framework of GENERIC</i></p> <p>V. Valdes y Beck, P. Betsch</p>	<p><i>Efficient upscaling in computational solid mechanics with deep material networks</i></p> <p>M. Schneider</p>
8:50	<p><i>A data-driven statistical learning framework with generalization guarantees</i></p> <p>V. N. Khiêm, A. J. Gil</p>	<p><i>Analysis of block preconditioning strategy for enhanced continuum models with micropolar and nonlocal damage formulations</i></p> <p>N. Alkmin, P. Gamnitzer, M. Neuner, G. Hofstetter</p>	
9:10	<p><i>An efficient data-driven multiscale scheme based on physics-constrained neural networks and autonomous data mining</i></p> <p>L. Linden, K. A. Kalina, J. Brummund, M. Kästner</p>	<p><i>A Novel Energy and Momentum Consistent Mixed Formulation for Coupled Non-linear Electro-Thermo-Elastodynamics</i></p> <p>F. Zähringer, M. Franke, P. Betsch</p>	<p><i>Deep CNNs Learn Lessons of Homogenization to Predict Elasticity Tensors With Bounds</i></p> <p>B. Eidel</p>
9:30	<p><i>Hyperelastic material modeling using symbolic regression</i></p> <p>R. Abdusalamov, M. Hillgärtner, M. Itskov</p>	<p><i>Variationally-consistent formulations of chemo-mechanics within a parallel computing framework</i></p> <p>B. Kiefer, S. Prüger, O. Rheinbach, F. Röver</p>	<p><i>Nonlinear Multiscale Simulation of Beam Lattice Structures with Physics-Augmented Neural Networks</i></p> <p>M. Fernández, D. K. Klein, T. Gärtner, O. Weeger</p>
9:50	<p><i>A hybrid parameter identification scheme for constitutive models based on neural networks and non-linear optimisation</i></p> <p>R. Schulte, C. Karca, R. Ostwald, C. Birk, A. Menzel</p>	<p><i>FEM/DEM coupling solution for compaction models of granular materials</i></p> <p>A. Atrian, L. Radtke, M. Dosta, A. Düster</p>	<p><i>Using machine learning for efficient computational homogenization of variable artificial microstructure morphologies</i></p> <p>S. Kozinow, N. Miska, D. Balzani</p>
10:10	<p><i>A Matrix Approach to Imposing Constraints in Continuum Mechanics</i></p> <p>R. Schlebusch</p>	<p><i>A Penalty Method for Coupling of Finite-Element and Peridynamic Model</i></p> <p>A. Parnatij, U. Gabbert, K. Naumenko, C. Willberg, J.-T. Hesse</p>	<p><i>A data driven approach to the constitutive closure for continuum dislocation dynamics</i></p> <p>B. Heiningner, B. Weger, T. Hochrainer</p>

Thursday, August 18, 8:30 - 10:30

<p>S 10</p> <p>Turbulence and reactive flows</p> <p>Chair: J. Medina, C. Strassacker @ S07</p>	<p>S 13</p> <p>Flow control</p> <p>Chair: K. Oberleithner, W. Schröder @ S03</p>	<p>S 15</p> <p>Uncertainty Quantification</p> <p>Chair: C. Powell @ H08</p>	
<p><i>Generation of REDIM reduced kinetics for Flame-Wall Interactions using data obtained from experimental investigations</i></p> <p><u>C. Strassacker</u>, F. Zentgraf, U. Maas</p>	<p><i>Spectral modal decomposition of turbulent flows: new applications and algorithmic developments</i></p> <p><u>O. T. Schmidt</u></p>	<p><i>Development of Surrogate Models for Uncertainty Quantification in Manufacturing Engineering and Material Analysis</i></p> <p><u>F. Key</u>, S. Elgeti</p>	<p>8:30</p>
		<p><i>Approaches for optimizing surrogate models considering uncertain parameters</i></p> <p><u>T. Oberleiter</u>, K. Willner</p>	<p>8:50</p>
<p><i>A detailed surface reaction mechanism to investigate oxidation of methane over nickel catalyst</i></p> <p><u>R. Rakhi</u>, V. Günther, F. Mauss</p>	<p><i>Inlet disturbances as a tool to control heat transport in magnetohydrodynamic duct flows</i></p> <p>I. Belyaev, <u>D. Krasnov</u>, Y. Kolesnikov, D. Chernysh, Y. Listratov, O. Zikanov</p>	<p><i>Data-Driven Surrogate Modeling for Inverse Problems in Vehicle Engineering</i></p> <p><u>V. Holfeld</u>, M. Burger, C. Schillings</p>	<p>9:10</p>
<p><i>Investigation of turbulent mixing using a stochastic hierarchical parcel swapping mixing model</i></p> <p><u>T. Starick</u>, H. Schmidt</p>	<p><i>Optimizable LES: Coupling PDE solvers and Reinforcement Learning</i></p> <p><u>A. Beck</u>, M. Kurz, P. Offenhäuser</p>	<p><i>Deep neural network surrogates in shape uncertainty quantification</i></p> <p><u>L. Scarabosio</u></p>	<p>9:30</p>
<p><i>Lagrangian curvature statistics from Gaussian sub-ensembles in turbulent von-Kármán flow</i></p> <p><u>Y. Hengster</u> et al.</p>	<p><i>Dynamic leading and trailing edge flaps for gust load alleviation of transport aircraft</i></p> <p><u>T. Lutz</u>, J. Ullah, J. Müller, M. Hillebrand</p>		<p>9:50</p>
			<p>10:10</p>

Contributed Sessions

	S 16 Shape Optimization Chair: M. Stiglmayr, C. Totzeck @ H09	S 17 Applied and numerical linear algebra Chair: P. Kürschner @ S16	S 18 Numerical methods of differential equations Chair: A. Heinlein @ H05
8:30	<i>A Scalable Algorithm for Geometric Constrained Shape Optimization in Banach Spaces</i> J. A. Pinzon Escobar , M. Siebenborn	<i>A block Householder based QR decomposition of hierarchical matrices</i> S. Le Borne	<i>Equilibration strategies for the Biot equations</i> F. Bertrand
8:50	<i>Multiobjective Shape Optimization</i> O. T. Doganay , H. Gottschalk, K. Klamroth		
9:10	<i>Optimizing Efficiency and Reliability of Gas Turbine Blades</i> J. Schultes , D. Luft, J. Backhaus, M. Bolten	<i>Discretization of the *-product</i> N. Van Buggenhout , S. Pozza	<i>Computational lower bounds of the Maxwell eigenvalues</i> D. Gallist, V. Olkhovskiy
9:30	<i>Design exploration of layered composite shells</i> J. Liedmann , F.-J. Barthold, N. Gerzen	<i>Adapted contour integration for nonlinear eigenvalue problems in wave-guide coupled resonators</i> K. Schmidt , P. Jorkowski, C. Schenker, L. Grubišić, R. Schumann	<i>Mixed methods and lower eigenvalue bounds</i> D. Gallist
9:50	<i>On Computing p-Harmonic Descent Directions and Their Limits for Shape Optimization</i> H. Wyszka , M. Siebenborn	<i>Inexpensive surrogate modeling of frequency response problems by greedy minimal rational interpolation</i> D. Pradovera , F. Nobile	<i>A new mixed method for the biharmonic eigenvalue problem</i> V. Kosin , S. Beuchler, T. Wick
10:10	<i>Variational shape sensitivity analysis of dynamic structures applied to a damage material using IGA</i> S. A. Ghasemi , J. Liedmann, F.-J. Barthold		<i>Pressure-robust and conforming discretization of the Stokes equations on anisotropic meshes</i> V. Kempf

Thursday, August 18, 8:30 - 10:30

<p>S 20</p> <p>Dynamics and control</p> <p>Chair: S. Grundel</p> <p>@ S08</p>	<p>S 22</p> <p>Scientific computing</p> <p>Chair: M. Lanser</p> <p>@ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: M. Grepl, M. Stoll</p> <p>@ H07</p>	
<p><i>Funnel control for the monodomain equations</i></p> <p><u>T. Berger</u>, T. Breiten, M. Puche, T. Reis</p>	<p><i>Mathematical Modeling and Simulation of Coal Gasification Process by Applying Pinch and Cost Analysis</i></p> <p><u>M. Ahsan</u>, M. S. Zafar</p>	<p><i>A surrogate model for the prediction of permeabilities and flow through porous media</i></p> <p><u>R. Niekamp</u>, J. Niemann, J. Schröder</p>	<p>8:30</p>
<p><i>Variational multirate integrators in optimal and model predictive control</i></p> <p><u>S. Ober-Blöbaum</u></p>	<p><i>Numerical smoothing and hierarchical approximations for efficient option pricing and density estimation</i></p> <p><u>C. Ben Hammouda</u>, C. Bayer, R. Tempone</p>	<p><i>Statistical analysis and machine learning of Discrete Dislocation Dynamics simulations: initial structures, cross-slip, and microstructure evolution</i></p> <p><u>A. Demirci</u>, M. Stricker, N. Merkert, D. Weygand, S. Sandfeld</p>	<p>8:50</p>
<p><i>Classical Optimal Control and Reinforcement Learning for Path Planning Tasks - The Best of Both Worlds</i></p> <p><u>S. Gottschalk</u></p>	<p><i>Product integration method for the simulation of radial effects in fiber melt spinning of semi-crystalline polymers</i></p> <p><u>M. Ettmüller</u>, W. Arne, N. Marheineke, R. Wegener</p>	<p><i>Discrete Empirical Interpolation Method applied to a structural problem with a gradient-extended two-surface damage-plasticity model.</i></p> <p><u>J. Kehls</u>, S. Kastian, S. Reese</p>	<p>9:10</p>
<p><i>Singular optimal control of port-Hamiltonian systems</i></p> <p>T. Faulwasser, B. Maschke, F. Philipp, <u>M. Schaller</u>, K. Worthmann</p>	<p><i>Optimization and modeling of electrode setups on piezo-ceramics using boundary conditions of the underlying PDEs</i></p> <p><u>V. Schulze</u>, B. Jurgelucks, S. Schmidt, L. Claes, N. Feldmann</p>	<p><i>Robustness and Generalization in Training Deep Neural Networks</i></p> <p><u>L. Galli</u>, H. Rauhut, M. Schmidt</p>	<p>9:30</p>
<p><i>Strategies for Finding Training Snapshots for the Hyper-reduction Method ECSW in Magnetodynamic Systems</i></p> <p><u>J. Maierhofer</u>, D. J. Rixen</p>	<p><i>Stabilization of Multi-Dimensional Hamilton-Jacobi Equations</i></p> <p><u>F. Thein</u>, M. Herty</p>	<p><i>Strategies for Finding Training Snapshots for the Hyper-reduction Method ECSW in Magnetodynamic Systems</i></p> <p><u>J. Maierhofer</u>, D. J. Rixen</p>	<p>9:50</p>
<p><i>Data assimilation in coupled machine tools</i></p> <p><u>A. Naumann</u>, R. Herzog</p>	<p><i>Stabilization of Multi-Dimensional Hamilton-Jacobi Equations</i></p> <p><u>F. Thein</u>, M. Herty</p>	<p><i>Data assimilation in coupled machine tools</i></p> <p><u>A. Naumann</u>, R. Herzog</p>	<p>10:10</p>

Contributed Sessions

	S 01 Multi-body dynamics Chair: M. Arnold @ S12	S 02 Biomechanics Chair: M. Böl, A. E. Ehret @ H10	S 03 Damage and fracture mechanics Chair: A. Ricoeur @ H04
14:00	<p><i>Structure-preserving integrators for constrained mechanical systems in the framework of the GGL principle</i></p> <p>P. L. Kinon, P. Betsch</p>	<p><i>Mechanotransduction through hydrated collagenous tissues</i></p> <p>A. Stracuzzi, A. Martyts, A. Wahlsten, R. Hopf, C. Giampietro, E. Mazza, A. E. Ehret</p>	<p><i>Nonlocal degrading interfaces</i></p> <p>M. Laurien, A. Javili, P. Steinmann</p>
14:20	<p><i>A generalized-alpha scheme for the simulation of flexible multibody systems with constraints</i></p> <p>J. Harsch, G. Capobianco, S. R. Eugster, R. I. Leine</p>		<p><i>Combining peridynamic and finite element simulations to capture the residual strength of biodegradable magnesium bone implants</i></p> <p>A. Hermann et al.</p>
14:40	<p><i>Adjustable numerical damping for a generalized-alpha scheme used to simulate flexible multibody systems</i></p> <p>G. Capobianco, J. Harsch</p>	<p><i>Bifurcation of fiber-reinforced inflated membranes with different natural configurations of the constituents</i></p> <p>H. Topol, H. Demirkoparan, M. Stoffel, B. Markert, J. Merodio</p>	<p><i>Peridynamic simulations of Rock Indentation and excavation</i></p> <p>S. Butt, G. Meschke</p>
15:00	<p><i>Incorporation of thermal effects into the energy-momentum consistent elastic model for fiber-bending stiffness in composites</i></p> <p>I. Kalaimani, J. Dietzsch, M. Groß</p>	<p><i>A constitutive model for modeling the mechanical behavior of the peltate leaf of <i>Stephania japonica</i> (Menispermaceae)</i></p> <p>D. Macek et al.</p>	<p><i>Dynamic fracture with continuum-kinematics-based peridynamics</i></p> <p>K. Frieberthäuser, C. Wieners, K. Weinberg</p>
15:20	<p><i>Development of an efficient substitute model describing the normal force of a fluid in narrow gaps</i></p> <p>R. Bilz, K. M. de Payrebrune</p>	<p><i>Dispersion-type Anisotropic Viscoelasticity: Model Validation for Myocardium</i></p> <p>A. K. Acan, C. Altun, H. Dal</p>	<p><i>Dynamic Crack Propagation in a Lattice Boltzmann Method for Solids</i></p> <p>H. Müller, A. Touil, A. Schlüter, R. Müller</p>
15:40	<p><i>Linearization of rolling tire models</i></p> <p>T. Ruhwedel</p>	<p><i>Efficient Electromechanical Simulation of Cardiac Tissue</i></p> <p>D. Ogiermann, L. E. Perotti, D. Balzani</p>	<p><i>Embedded strong discontinuity quadrilateral for modelling fracture in quasi-brittle solids</i></p> <p>A. Stanic, H. G. Matthies</p>

Thursday, August 18, 14:00 - 16:00

<p>S 04</p> <p>Structural mechanics</p> <p>Chair: J. Wackerfuß</p> <p>@ H02</p>	<p>S 04</p> <p>Structural mechanics</p> <p>Chair: K.-U. Schröder</p> <p>@ H11</p>	<p>S 05</p> <p>Nonlinear oscillations</p> <p>Chair: S. Tatzko, M. Krack</p> <p>@ S11</p>	
<p><i>A mixed finite element formulation to alleviate volumetric locking in polygonal meshes</i></p> <p><u>B. Sauren</u>, S. Klarmann, S. Klinkel</p>	<p><i>Computational model for the semi-analytical assessment of the free-edge effect in composite laminated shells</i></p> <p><u>A. Kappel</u>, C. Mittelstedt</p>	<p><i>Thermomechanical investigation of a rotary friction joint with axial excitation</i></p> <p><u>S. Keller</u>, A. Fidlin</p>	<p>14:00</p>
<p><i>Spurious Hourglassing Patterns of Locking-Free Mixed Finite-Element Methods for Nearly Incompressible Large Deformation Solid Mechanics</i></p> <p><u>M. Hille</u>, R. Pfefferkorn, P. Betsch</p>	<p><i>Isogeometric surface and shell viscoelasticity based on a multiplicative surface deformation split</i></p> <p><u>K. Paul</u>, R. A. Sauer</p>	<p><i>A comparison of different nonlinear shell theories for rotating fluid-filled structures</i></p> <p><u>R. Schmidt</u>, A. Ams</p>	<p>14:20</p>
<p><i>Mesh Distortion Insensitive Hourglassing-Free Petrov-Galerkin EAS Elements for Large Deformation Solid Mechanics</i></p> <p><u>R. Pfefferkorn</u>, P. Betsch</p>	<p><i>Investigations on dual test functions for isogeometric explicit dynamic analysis</i></p> <p><u>S. Held</u>, W. Dornisch</p>	<p><i>Developing a heat pipe for rotating mechanical components to improve thermal conductivity</i></p> <p><u>S. Weise</u>, T. Buschner, M. Gross</p>	<p>14:40</p>
<p><i>Robust and Efficient Mixed Finite Element Discretization for Gradient-Enhanced Elasticity</i></p> <p><u>J. Riesselmann</u>, D. Balzani</p>	<p><i>On the use of mixed basis function degrees within a convective isogeometric element formulation</i></p> <p><u>L. Stammen</u>, W. Dornisch</p>	<p><i>Oscillations of a rotor disc under electromagnetic influence in an axial flux reluctance machine</i></p> <p><u>P. Altoé</u>, A. Fidlin</p>	<p>15:00</p>
<p><i>Adaptive Gaussian Integration of Trimmed Cells Based on Bezier Approximation</i></p> <p><u>S. F. Hosseini</u>, M. Gorji, A. Düster</p>	<p><i>A comparison of integration schemes for isogeometric analysis</i></p> <p><u>W. Dornisch</u></p>	<p><i>Influence of a transient bubble dynamics cavitation model for squeeze film dampers on the dynamic run-up behaviour of a turbocharger rotor</i></p> <p><u>T. Drapatow</u>, E. Woschke</p>	<p>15:20</p>
<p><i>Meshfree consistent non-linear peridynamic Galerkin methods from the viewpoint of finite elements</i></p> <p><u>T. Bode</u>, C. Weibenfels, P. Wriggers</p>		<p><i>Simulation models investigating the dynamic characteristics of shock isolators</i></p> <p><u>M. D. Clasen</u>, B. Heinemann, D. Sachau</p>	<p>15:40</p>

Contributed Sessions

	S 06 Material modelling in solid mechanics Chair: B. Kiefer @ H01	S 07 Coupled problems Chair: TBA @ H06	S 08 Multiscales and homogenization Chair: J. Waimann @ H03
14:00 <i>Mathematical Modeling of Electro-elastic Dislocations in Piezoelectric Materials</i> <u>E. Agiasofitou</u> , M. Lazar	<i>Modelling of hydraulically-induced fracturing processes in variable saturated porous media</i> <u>A. Wagner</u> , A. Sonntag, W. Ehlers	<i>Averaging techniques for microstructures with localization bands due to damage progression</i> L. Poggenpohl, H. Holthusen, <u>J.-W. Simon</u>	
14:20 <i>A hybrid modeling approach towards visco-ferroelectric energy dissipation and investigation of ferroelectric energy harvesting</i> <u>A. Warkentin</u> , A. Ricoeur	<i>THM phase-field modeling of fracturing and heat exchange in biphasic porous materials with thermally non-equilibrated constituents</i> <u>C. L. Nguyen</u> , Y. Heider, B. Markert	<i>Multiscale modeling of compressible cementitious materials</i> <u>T. Iskhakov</u> , J. J. Timothy, G. Meschke	
14:40 <i>A convergence results for antiplane frictional contact of electro-viscoelastic cylinders</i> <u>M. Dalah</u>	<i>Semi-explicit discretization schemes for weakly coupled poroelasticity problems</i> R. Altmann, <u>R. Maier</u> , B. Unger	<i>Multiscale Modeling of Crack Propagation in Complex Materials under Impact Load</i> <u>H. Knobloch</u> , S. Loehnert	
15:00 <i>Extension of the temperature expansion model for photo-thermo-sensitive hydrogels</i> <u>D. Mählich</u> , A. Ehrenhofer, T. Wallmersperger	<i>Comparing methods for permeability computation of porous materials and their limitations</i> <u>D. Krach</u> , H. Steeb	<i>A simple damage model for strain softening at small strains</i> <u>T. Neumeier</u> , M. A. Peter, D. Peterseim	
15:20 <i>Modelling of time-dependent fatigue crack growth of hydrogels</i> <u>D. Liu</u> , S. Ma, B. Markert	<i>Robust discretization methods for incompressible, poroelastic problems</i> <u>M. Brodbeck</u> , F. Bertrand, T. Ricken	<i>A Multiscale Epidemiological Crack Percolation Model</i> <u>M. Harder</u> , P. Lion, L. Mäde, T. Beck, H. Gottschalk	
15:40 <i>Mechanical modeling of calcified hydrogels by using homogenization schemes</i> <u>S. Avgün</u> , S. Klinge	<i>On the Variational Formulation and Finite-Element Implementation of Second-Gradient Poro-mechanics</i> <u>H. Khurshid</u> , E. Polukhov, M.-A. Keip	<i>Characterizing discrete dislocation configurations with alignment tensors and correlations</i> <u>T. Hochrainer</u> , B. Weger, B. Heiningner, S. Gupta	

Thursday, August 18, 14:00 - 16:00

<p>S 09</p> <p>Laminar flows and transition</p> <p>Chair: J. Hussong @ S08</p>	<p>S 10</p> <p>Turbulence and reactive flows</p> <p>Chair: J. Medina, C. Strassacker @ S07</p>	<p>S 13</p> <p>Flow control</p> <p>Chair: K. Oberleithner, W. Schröder @ S03</p>	
<p><i>Hele-Shaw flows: Controlling flow patterns and switching between them</i></p> <p><u>S. Hardt</u></p>	<p><i>Intrinsic Instabilities in Laminar and Turbulent Hydrogen Flames</i></p> <p>L. Berger, <u>H. Pitsch</u></p>	<p><i>Linear mean-flow modelling for estimation and control of turbulent shear flow</i></p> <p><u>P. Jordan</u></p>	<p>14:00</p>
<p><i>Pipe Flow Development and Transition in CoSmaPipe Facility</i></p> <p><u>S. Richter</u>, E.-S. Zanoun, J. Peixinho, C. Egbers</p>	<p><i>Generative Modeling of Turbulence</i></p> <p><u>C. Drygala</u>, B. Winhart, F. di Mare, H. Gottschalk</p>	<p><i>Flow physics of Pulsed-Jet Actuation for separation control</i></p> <p><u>J. Weiss</u>, B. Steinfurth</p>	<p>14:20</p>
<p><i>Influence of annular gap curvature on the stability behavior of Spiral Poiseuille Flow with either inner or outer cylinder rotation.</i></p> <p><u>P. Brockmann</u>, V. I. Vasanta Ram, S. Jakirlic, J. Hussong</p>	<p><i>On a new symmetry-based modeling approach and its practical application</i></p> <p><u>D. Klingenberg</u>, M. Oberlack</p>	<p><i>Aerodynamic predictions using machine learning</i></p> <p><u>R. Semaan</u></p>	<p>14:40</p>
<p><i>Thermo-electrohydrodynamic convection in a differentially heated cylindrical shell with electric central force field at $\epsilon\alpha=0.7$</i></p> <p><u>P. S. B. Szabo</u>, Y. Gaillard, C. Egbers</p>	<p><i>Towards the evaluation of heat and mass transfer in pipe flows with cocurrent falling films using One-Dimensional Turbulence</i></p> <p><u>J. Medina</u>, H. Schmidt</p>	<p><i>Closed-loop Feedback based Adaptive Model Predictive Control of a Bluff-Body Wake</i></p> <p>C. Ghiroaga, C. Morton, <u>R. Martinuzzi</u></p>	<p>15:00</p>
<p><i>Thermo-electrohydrodynamic convection in a differentially heated cylindrical shell with electric central force field at $\epsilon\alpha=0.7$</i></p> <p><u>P. S. B. Szabo</u>, Y. Gaillard, C. Egbers</p>	<p><i>Emission characteristics of turbulent premixed propane/air/carbon dioxide and propane/air/ammonia swirl flames through a rich-lean combustor</i></p> <p><u>H. Abdelkader</u>, B. Abdelhalim, D. Thévenin</p>	<p><i>Closed-loop Feedback based Adaptive Model Predictive Control of a Bluff-Body Wake</i></p> <p>C. Ghiroaga, C. Morton, <u>R. Martinuzzi</u></p>	<p>15:20</p>
<p><i>Emission characteristics of turbulent premixed propane/air/carbon dioxide and propane/air/ammonia swirl flames through a rich-lean combustor</i></p> <p><u>H. Abdelkader</u>, B. Abdelhalim, D. Thévenin</p>	<p><i>Emission characteristics of turbulent premixed propane/air/carbon dioxide and propane/air/ammonia swirl flames through a rich-lean combustor</i></p> <p><u>H. Abdelkader</u>, B. Abdelhalim, D. Thévenin</p>	<p><i>Emission characteristics of turbulent premixed propane/air/carbon dioxide and propane/air/ammonia swirl flames through a rich-lean combustor</i></p> <p><u>H. Abdelkader</u>, B. Abdelhalim, D. Thévenin</p>	<p>15:40</p>

Contributed Sessions

	S 15 Uncertainty Quantification Chair: J. Zech @ H08	S 16 Shape Optimization Chair: M. Stiglmayr, C. Totzeck @ H09	S 17 Applied and numerical linear algebra Chair: P. Kürschner @ S16
14:00	<i>Hybrid physics-based and data-driven dynamical systems identification using polynomials and kernel-based methods</i> <u>A. Airoud Basmaji</u> , J.-H. Urrea-Quintero, U. Nackenhorst	<i>A comparison of level set methods and the method of moving asymptotes for the topology optimization of flexible comp. in multibody systems</i> <u>A. Azari Nejat</u> , A. Held, R. Seifried	<i>A Unified View of Residual Minimizing Krylov Subspace Methods</i> <u>R. Herzog</u> , K. Soodhalter
14:20	<i>Model-Free Data-Driven Inference in Computational Mechanics</i> <u>E. Prume</u> , R. Eggersmann, S. Reese, M. Ortiz	<i>Optimizing Synthetic Hepatic Vascular Trees</i> E. Jessen, <u>M. C. Steinbach</u> , C. Debbaut, D. Schillinger	
14:40	<i>Efficient Parameter Estimation for Dynamical Systems with Incomplete Data</i> <u>J. Grashorn</u> , J. H. Urrea-Quintero, M. Broggi, L. Chamoin, M. Beer	<i>Modular-topology optimization of compliant structures and mechanisms</i> M. Tyburec, M. Doškář, <u>J. Zeman</u> , M. Kružík	<i>The Hamiltonian Extended Krylov Subspace Method</i> <u>P. Benner</u> , H. Faßbender, M.-N. Senn
15:00	<i>On Gradient Based Log Marginal Likelihood Maximization for Universal Kriging</i> <u>M. Fischer</u> , C. Proppe	<i>Partial Outer Convexification for Compressor Optimization in Gas Networks</i> <u>S. Göttlich</u>	<i>Symplectic Subspace Interpolation for Model Order Reduction of Parameter Dependent Hamiltonian Systems</i> <u>T. Bendokat</u>
15:20	<i>Critical Transitions under Parametric Uncertainty</i> <u>K. Lux</u> , C. Kuehn	<i>On the inclusion of plastic material behavior within the thermodynamic topology optimization</i> <u>M. Kick</u> , P. Junker	<i>Krylov subspace residual and restarting for certain second order differential equations</i> M. Botchev, L. Knizhnerman, <u>M. Schweitzer</u>
15:40	<i>Higher-order adaptive numerical methods for computing the exit times of stochastic processes</i> <u>S. Ragunathan</u> , H. Hoel		<i>A Tensor Lanczos procedure for non-autonomous ODEs</i> S. Cipolla, <u>S. Pozza</u> , M. Redivo-Zaglia, N. Van Buggenhout

Thursday, August 18, 14:00 - 16:00

<p>S 18</p> <p>Numerical methods of differential equations</p> <p>Chair: M. Kronbichler @ H05</p>	<p>S 24</p> <p>History of Mechanics and Mathematics</p> <p>Chair: R. Kienzler, W. Müller @ S04</p>	<p>S 25</p> <p>Computational and mathematical methods in data science</p> <p>Chair: P. Benner @ H07</p>	
<p><i>Elliptic Operators with Discontinuous Coefficients in Meshfree GFDM</i></p> <p><u>H. Kraus</u>, A. Meister, J. Kuhnert, P. Suchde</p>	<p><i>Some glimpses in the history of the theories for beams in bending</i></p> <p><u>R. Kienzler</u></p>	<p><i>Adjacency-based DMD on Deforming Grids for Vortex-Induced Vibrations</i></p> <p><u>L. Gkimitis</u>, T. Richter, P. Benner</p>	<p>14:00</p>
<p><i>Deep spectral methods for solving variational problems arising from differential equations</i></p> <p><u>Y. Saleh</u>, V. Sanjay, A. Yachmenev, J. Küpper, A. Iske</p>	<p><i>On the History of Gradient Materials</i></p> <p><u>A. Bertram</u></p>	<p><i>Physics-Aware Convolutional Neural Networks for Computational Fluid Dynamics Simulations</i></p> <p><u>V. H. Grimm</u>, A. Heinlein, A. Klawonn</p>	<p>14:20</p>
<p><i>Constructive relaxation formalism for lattice Boltzmann methods</i></p> <p>S. Simonis, M. Frank, M. J. Krause</p>	<p><i>On the History of Rheology and some new Trends</i></p> <p><u>H. Altenbach</u></p>	<p><i>Parametric dynamic mode decomposition for nonlinear parametric dynamical systems</i></p> <p>S. Sun, L. Feng, H. S. Chan, T. Milicic, T. Vidakovic-Koch, P. Benner</p>	<p>14:40</p>
<p><i>Lattice Boltzmann for linear elastic solids</i></p> <p><u>O. Boolakee</u>, M. Geier, L. De Lorenzis</p>	<p><i>André Lévêque's Contribution to Boundary Layer Theory</i></p> <p><u>N. M. McMahon</u></p>	<p><i>Learning in High-Dimensional Feature Spaces Using ANOVA-Based Fast Matrix-Vector Multiplication</i></p> <p>F. Nestler, M. Stoll, <u>T. Wagner</u></p>	<p>15:00</p>
<p><i>A novel space-time backward substitution method for transient heat conduction problems in FGMs</i></p> <p><u>Y. Zhang</u>, J. Lin</p>	<p><i>Forerunners of the power iteration method in the 16th and 18th centuries</i></p> <p><u>P. Ullrich</u></p>	<p><i>Simultaneously-updated Support Tensor Train Machine</i></p> <p><u>K. Kour</u>, S. Dolgov, M. Stoll, P. Benner</p>	<p>15:20</p>
	<p><i>Stability and chaos in mechanics. A historical tour from Newton to modern tools, including Riemannian structures in dynamics and mechanics.</i></p> <p><u>R. Gunesch</u></p>	<p><i>Machine learning algorithms for prediction of breakthrough curve in three-dimensional case</i></p> <p><u>D. Fokina</u>, P. Toktaliev, O. Iliev, I. Oseledets</p>	<p>15:40</p>

Contributed Sessions

	S 03 Damage and fracture mechanics Chair: F. Aldakheel @ H04	S 03 Damage and fracture mechanics Chair: A. Ricoeur @ H09	S 04 Structural mechanics Chair: T. Bode @ H02
17:30	<p><i>A phase field approach to cohesive fracture</i></p> <p><u>H. Lammen</u>, J. Mosler</p>	<p><i>A two-surface damage-plasticity model involving non-linear isotropic and kinematic hardening for geomaterials</i></p> <p><u>J. Zhang</u>, T. Brepols, S. Reese</p>	<p><i>A novel transition element formulation to couple beam and solid elements</i></p> <p><u>S. Klarmann</u>, S. Klinkel, J. Wackerfuß</p>
17:50	<p><i>Numerical crack path predictions with phase-field assisted cohesive zone modeling – Challenges and solution strategies</i></p> <p><u>S. Roth</u>, B. Kiefer</p>	<p><i>Analysis of ductile damage evolution and failure mechanisms due to reverse loading conditions for the aluminum alloy EN-AW 6082-T6</i></p> <p><u>Z. Wei</u>, M. Zistl, S. Gerke, M. Brüning</p>	<p><i>Efficient simulation of waves in heterogeneous domains using the scaled boundary finite element method</i></p> <p><u>S. Nattoji Shara</u>, C. Birk, H. Gravenkamp</p>
18:10	<p><i>Cohesive phase-field modeling within the Representative Crack Element framework</i></p> <p><u>B. Yin</u>, M. Kaliske</p>		<p><i>Calculation of Errors in the Position and Orientation of the Parallel Mechanism Due to the Elasticity of the Structure Using the Finite Element Method</i></p> <p><u>M. D. Petrasinovic</u>, A. M. Grbovic, D. M. Petrasinovic, B. P. Rasuo</p>

Thursday, August 18, 17:30 - 18:30

<p>S 05</p> <p>Nonlinear oscillations</p> <p>Chair: S. Tatzko, M. Krack @ S11</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: T. Kaiser @ H01</p>	<p>S 06</p> <p>Material modelling in solid mechanics</p> <p>Chair: T. Barthel @ H11</p>	
<p><i>A small parameter study of the transient behavior of two coupled exciters</i></p> <p><u>T. Yüzbasioglu</u>, A. Fidlin</p>	<p><i>Investigation of time-temperature superposition for amorphous thermoplastics at finite strain based on molecular dynamics simulations</i></p> <p><u>W. Zhao</u>, S. Pfaller</p>	<p><i>A thermomechanical finite strain shape memory alloy model</i></p> <p><u>M. Sielenkämper</u>, S. Wulfinghoff</p>	<p>17:30</p>
<p><i>Numerical Simulation of droplet oscillations with arbitrarily large deformations</i></p> <p><u>S. Akbari</u>, D. Plümacher, F. Kummer, Y. Wang, M. Oberlack</p>	<p><i>Application of the Coupled Eulerian Lagrangian Method to the Prediction of Single-Grain Cutting Forces in Grinding</i></p> <p><u>T. Furlan</u>, T. Tsagkir Dereli, N. Schmidt, D. Biermann, A. Menzel</p>	<p><i>Modeling the response of NiTi endodontic files subjected to cyclic non-proportional loading</i></p> <p><u>L. A. Woodworth</u>, M. Kaliske</p>	<p>17:50</p>
	<p><i>Application of moving grid technique to solve particle size distributions for modeling precipitation kinetics</i></p> <p><u>J. Herrring</u>, P. Staron, B. Klusemann</p>	<p><i>A phase field modelling of the fatigue damage of Ni-based superalloys</i></p> <p><u>H. Gao</u>, S. Ma, B. Markert</p>	<p>18:10</p>

Contributed Sessions

	S 07 Coupled problems Chair: TBA @ H06	S 08 Multiscales and homogenization Chair: M. Schneider @ H03	S 08 Multiscales and homogenization Chair: H. Wessels @ H10
17:30	<p><i>A Strongly Coupled Dirichlet-Neumann Partitioned Algorithm for a Mortar-type Mixed-Dimensional Fluid-Beam Interaction Model</i></p> <p><u>N. Hagemeyer</u>, M. Mayr, A. Popp</p>	<p><i>Finite element phase-field simulations of precipitation in Al alloys</i></p> <p><u>R. Chafle</u>, A. Safi, E. Mathew, J. Herrnring, B. Klusemann</p>	<p><i>The Two-scale Methods FE-VE and VE² Based on the Virtual Element Method for Large Deformations</i></p> <p><u>B. Hudobivnik</u>, C. Böhm, M. Marino, J. Korelc, P. Wriggers</p>
17:50	<p><i>Simulation strategy for Fluid-Structure-Interaction of a pretensioned dynamic seal</i></p> <p>T. Lanckenau, <u>M. Graf</u>, T. Ebel, K. Ottink</p>	<p><i>Penrose-Fife model with activated phase transition - Existence and effective model for slow-loading regimes</i></p> <p><u>P. Pelech</u>, M. Liero, A. Mielke</p>	<p><i>Homogenisation for macroscopic shell structures with application to textile-reinforced mesostructures</i></p> <p><u>L. Mester</u>, S. Klarmann, S. Klinkel</p>
18:10	<p><i>Numerical simulation of viscoelastic fluid-structure interaction and multi-compartment drug therapy problems with application to the human eye</i></p> <p><u>A. Drobný</u>, E. Friedmann</p>	<p><i>The concept of unequally and non-linearly weighted averaging operators as a basic homogenization framework in phase field modeling</i></p> <p><u>V. von Oertzen</u>, B. Kiefer</p>	<p><i>Mixed Multiscale Generalized Finite Element Method</i></p> <p><u>C. Alber</u>, C. Ma, R. Scheichl</p>

Thursday, August 18, 17:30 - 18:30

S 09 Laminar flows and transition Chair: C. Egbers @ S08	S 10 Turbulence and reactive flows Chair: L. Berger @ S07	S 14 Applied analysis Chair: A. Hussein @ S12	
<p><i>Modeling and numerical simulation of flow processes of wood-polymer composites</i></p> <p><u>F. Liese</u>, O. Wunsch</p>	<p><i>Transitional rotor internal flow investigated with LES using a spectral element method</i></p> <p><u>T. Hultsch</u>, J. Stiller, F. Rüdiger, J. Fröhlich</p>	<p><i>Large data limit for the MBO scheme for data clustering</i></p> <p><u>T. Laux</u>, J. Lelmi</p>	17:30
<p><i>Numerical Investigation on the performance of a solar chimney power plant System (SCPP)</i></p> <p><u>R. Laouar</u>, O. Wunsch</p>	<p><i>Modeling simultaneous momentum and passive scalar transfer in turbulent annular Poiseuille flow</i></p> <p><u>P.-Y. Tsai</u>, H. Schmidt, M. Klein</p>	<p><i>Uniform Convergence Rates for Lipschitz Learning on Graphs Down to Graph Connectivity</i></p> <p><u>T. Roith</u>, L. Bungert, J. Calder</p>	17:50
			18:10

Contributed Sessions

	S 18 Numerical methods of differential equations Chair: A. Heinlein @ H05	S 23 Applied operator theory Chair: C. Seifert @ S04	S 25 Computational and mathematical methods in data science Chair: M. Grepl, M. Stoll @ H07
17:30	<p><i>A quadratic finite element for the relaxed micromorphic model</i></p> <p>A. Sky, I. Muench, P. Neff</p>	<p><i>On the Lumer-Phillips theorem for bi-continuous semigroups</i></p> <p>K. Kruse, C. Seifert</p>	<p><i>Differentiated uniformization: A new method for inferring Markov chains on combinatorial state spaces including stochastic epidemic models</i></p> <p>K. Rupp et al.</p>
17:50	<p><i>On the discretization of PDEs with dynamic boundary conditions modeled as coupled system</i></p> <p>R. Altmann, C. Zimmer</p>	<p><i>On Positivity and Contractivity of Semigroups generated by Fractional Powers</i></p> <p>J. Meichsner, D. Mugnolo</p>	<p><i>Model-free data-driven inelasticity - a study how to obtain data from measurements.</i></p> <p>K. Ciftci, K. Hackl</p>
18:10	<p><i>Efficient numerical methods for the treatment of strongly nonlinear viscous-plastic flow problems</i></p> <p>C. Mehlmann</p>	<p>TBA</p> <p><u>TBA</u></p>	<p><i>Application of back propagation neural networks and random forest algorithms in material research of hydrogels</i></p> <p>Y. Wang, T. Wallmersperger, A. Ehrenhofer</p>

Thursday, August 18, 17:30 - 18:30

Detailed Schedule - Friday, August 19

8:30 Contributed Sessions

Parallel sessions

10:30 Coffee Break

11:00 Plenary Lecture

H01

Bai-Xiang Xu Technical University Darmstadt

Multiphysics phase-field modeling and simulation of advanced materials and processing

Chaired by: Ingo Steinbach

12:00 Plenary Lecture

H01

Eduard Feireisl Czech Academy of Sciences Prague

Oscillatory solutions to problems in fluid mechanics: Analysis and numerics

Chaired by: K. Weinberg

13:00 Closing Ceremony

H01

Contributed Sessions

	S 01 Multi-body dynamics Chair: G. Capobianco @ S12	S 02 Biomechanics Chair: T. Brepols, S. Ma @ H10	S 03 Damage and fracture mechanics Chair: M. Kästner @ H04
8:30 Y. Luo , M. Zirkel, U. J. Römer, L. Zentner, A. Fidlin	<i>Efficient bipedal walking on stairs using compliant mechanisms</i>	S. Brandstaeter , S. L. Fuchs, J. Biehler, R. C. Aydin, W. A. Wall, C. J. Cyron	<i>Global sensitivity analysis of a homogenized constrained mixture model applied to aortic growth and remodeling</i> <i>A comparative study between phase-field and micromorphic gradient-extended damage models for brittle fracture</i>
8:50 E. Hildebrandt , V. Stirnweiß, C. Woernle	<i>Input Shaping Control of a Three-Cable Suspension Manipulator</i>	F. Klempf , M. Soleimani, P. Junker	<i>Numerical comparison of biofilm growth models using prominent modeling approaches</i> <i>A phase-field model for ductile fracture at finite strains based on a double-well crack surface energy</i>
9:10 K.-D. Bauer , J. Haslinger, G. Offner	<i>A floating frame of reference formulation in frequency domain for application in driveline systems</i>	H. Holthusen , C. Rothkranz, L. Lamm, T. Brepols, S. Reese	<i>Phase-field modelling of coupled pitting corrosion and ductile fracture in biodegradable magnesium alloys</i> S. Ma , B. Markert
9:30 A. C. Kalu-Uka , C. G. Ozoegwu, P. Eberhard	<i>3D FEM Simulation of Titanium alloy (Ti6Al4V) Machining with Harmonic Endmill Tools</i>	M. Sesa , H. Holthusen, L. Lamm, C. Böhm, S. Jockenhövel, S. Reese	<i>Mechanical modeling of the maturation process for textile reinforced tissue-engineered heart valves</i> <i>Configurational Forces in Phase Field Model for Cyclic Fatigue</i>
9:50 M. Morlock, A. Held, R. Seifried	<i>Geometric nonlinearities within the kinematics of a flexible link robot</i>	J. Nachtsheim , S. Ma, B. Markert	<i>Crack propagation in heterogeneous materials: phase-field modeling with multiple crack order parameters</i>
10:10		D. Zhang , S. Ma, B. Markert	<i>Machine learning for predicting the corrosion behaviour of biodegradable magnesium alloys with PEO coatings</i>

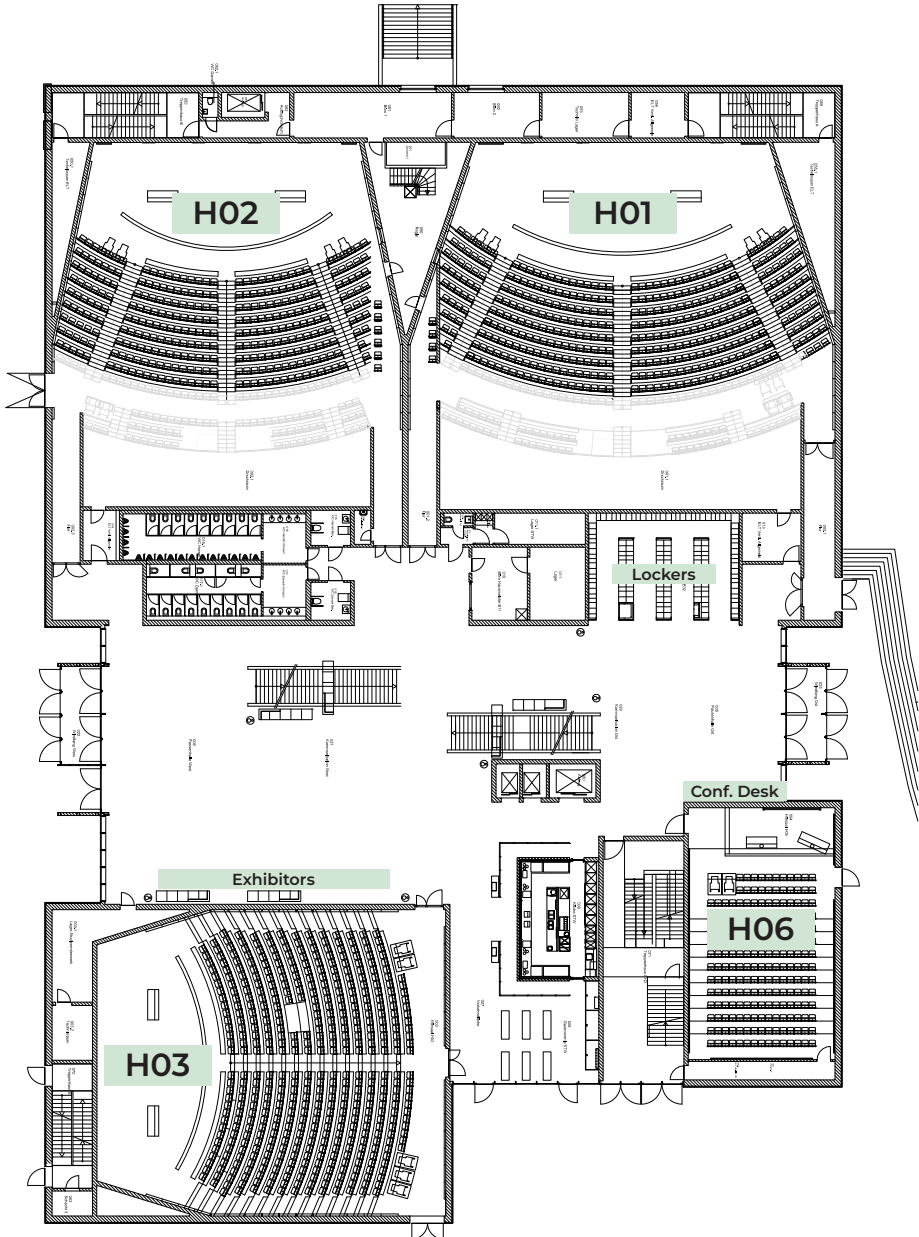
S 04 Structural mechanics Chair: S. Löhnert @ H02	S 06 Material modelling in solid mechanics Chair: K. Weinberg @ H01	S 07 Coupled problems Chair: B. Kiefer, H. Steeb @ H06	
<p><i>Non-incremental time integration schemes in structural mechanics</i></p> <p><u>F. Bamer</u>, B. Markert</p>	<p><i>Linear and nonlinear thermo-viscoelastic behavior of Polyamide 6</i></p> <p><u>J. Keursten</u>, L. Kehrer, T. Böhlke</p>	<p><i>Higher Order Asymptotic Expansion Effects in Laser Cutting Modelling</i></p> <p><u>G. Vossen</u>, D. Itner, M. Niessen</p>	8:30
<p><i>Modelling transient stresses in dynamically loaded elastic solids using the Lattice Boltzmann Method</i></p> <p><u>E. Faust</u>, A. Schlüter, H. Müller, R. Müller, K. de Payrebrune</p>	<p><i>Thermoviscoelastic material behavior of Polyamide 6 at different humidity levels</i></p> <p><u>L. Kehrer</u>, J. Keursten, V. Hirschberg, T. Böhlke</p>	<p><i>On the numerical treatment of heat sources in laser beam welding processes</i></p> <p><u>P. Hartwig</u>, L. Scheunemann, J. Schröder</p>	8:50
<p><i>The Numerical Assembly Technique for arbitrary planar frames based on an alternative homogeneous solution</i></p> <p><u>T. Kramer</u>, M. H. Gfrerer</p>	<p><i>Parametric Visco-Hyperelastic Constitutive Modeling of Functionally Graded Polymers Manufactured via Grayscale Masked Stereolithography</i></p> <p><u>I. Valizadeh</u>, O. Weeger</p>	<p><i>Simulation of thermoplastic sandwich structures through thermoforming process under large deformations</i></p> <p><u>V. K. Minupala</u>, T. Glaesser, M. Zscheuye, R. Bhatt</p>	9:10
<p><i>Efficiency increasing reconstruction of 3D-Vessel scan data using a NURBS surface</i></p> <p><u>L. Maurer</u>, R. Makvandi, D. Juhre</p>	<p><i>Numerical modeling for cantilever smart sandwich structures with partially covered constrained viscoelastic layer</i></p> <p><u>Y. S. Gao</u>, S. Q. Zhang, S. Y. Ma, B. Markert</p>	<p><i>A depth-averaged description of unsaturated granular flows with a compressible $\mu(I)$ rheology</i></p> <p><u>W. Sun</u>, Y. Wang</p>	9:30
<p><i>Image-based analysis of complex microstructures using the finite cell method</i></p> <p><u>M. Gorji</u>, M. Komodromos, J. Grabe, A. Düster</p>	<p><i>Dynamic simulation of viscoelastic structures with random material properties using time-separated stochastic mechanics</i></p> <p><u>H. Geisler</u>, J. Nagel, P. Junker</p>	<p><i>A High-Order Method for Multiphase Problems with Three-Phase Contact Lines</i></p> <p><u>L. Beck</u>, F. Kummer</p>	9:50
<p><i>Adaptive mesh refinement using Octree for finite cell simulation and its application for tunneling in dual-phase soils</i></p> <p><u>Y. Zendaki</u></p>	<p><i>Investigation, modelling and simulation of damage and failure within silicone-based, polymeric adhesives</i></p> <p><u>L. Lamm</u>, J.M. Pfeifer, T. Brepols, S. Reese</p>	<p><i>Calibrating Reduced Order Chromatography Models using High Definition Simulations</i></p> <p><u>J. S. Rao</u>, M. Behr, E. von Lieres</p>	10:10

Contributed Sessions

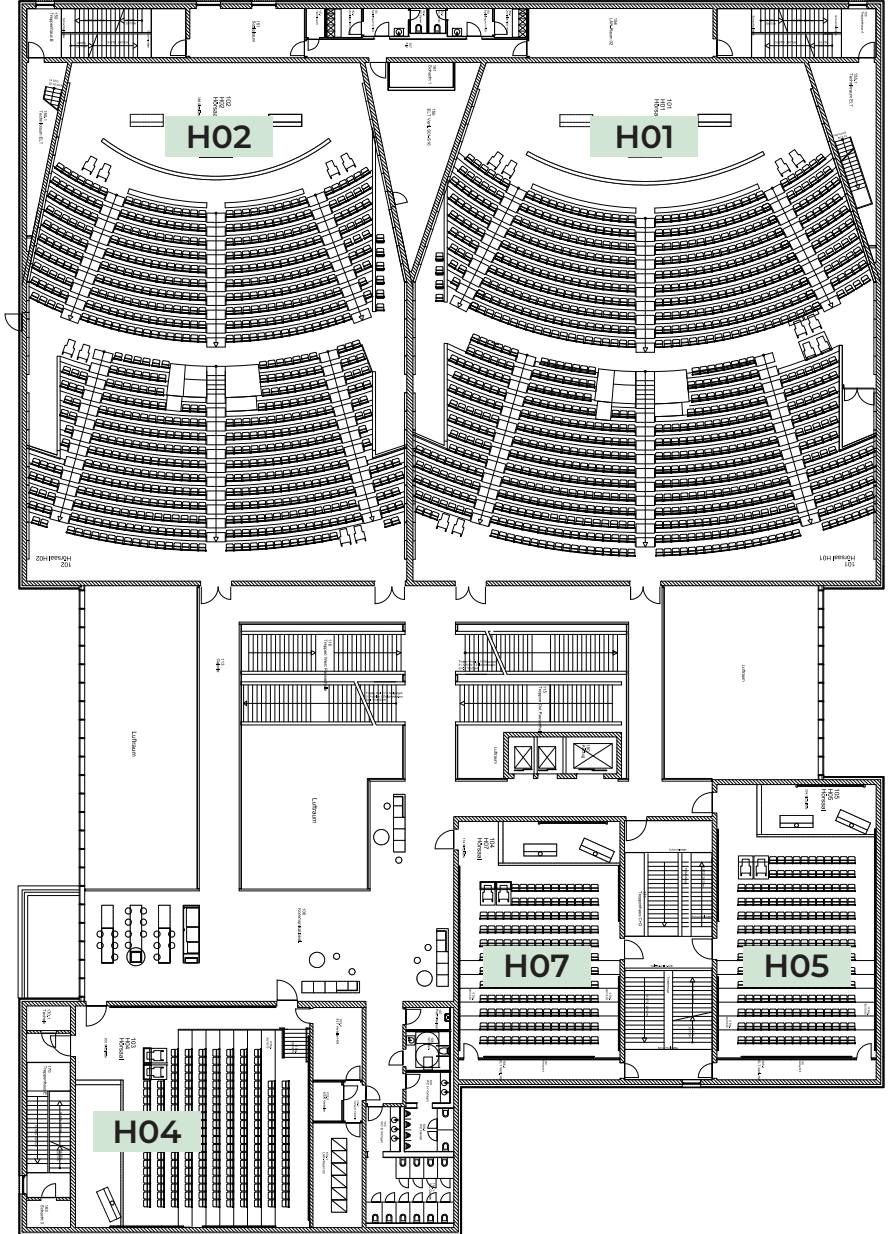
	S 08 Multiscales and homogenization Chair: S. Pfaller @ H03	S 15 Uncertainty Quantification Chair: B. Sprungk @ H08	S 16 Optimization of Energy Systems Chair: M. Stiglmayr, C. Totzeck @ H09
8:30	<i>Accelerating geometrically parameterized nonlinear microstructures via a reduced-basis method and hyper-reduction</i> T. Guo , O. Rokoš, K. Veroy	<i>Efficient reliability assessment of a dynamically excited railway bridge modeled as bridge-train interaction system based on a model-correction method</i> B. Hirzinger , U. Nackenhorst	<i>Mixed-Integer Nonlinear Optimization of Heating Networks</i> L. Rehlich , S. Ulbrich, M. Pfetsch
8:50	<i>Adaptive methods for MOR in non-linear FE simulations of unitcells</i> Y. Özmen , L. Scheunemann, P. S. B. Nigro, J. Schröder	<i>Computing vulnerability curves for tall buildings under uncertain wind conditions</i> A. Kodakkal , N. Ummer, K.-U. Bletzinger, R. Wuechner	<i>Optimal sensor placement for dynamic simulation of district heating networks</i> J. M. Heidrich
9:10	<i>Convolutional Neural Network for Computational Homogenization of Heterogeneous Materials</i> F. Aldakheel , P. Wriggers	<i>Appl. of state-space models with frequency-dependent uncertainty for efficient reliability anal. of a railway bridge subj. to high-speed trains</i> J.-H. Urrea-Quintero , B. Hirzinger, U. Nackenhorst	<i>Optimal photovoltaic plant dimensioning using consumption data</i> A. Hackenberg , C. Büskens
9:30	<i>Data-based prediction of the viscoelastic behavior of short fiber reinforced composites</i> J. Marr , L. Zartmann, D. Reinel-Bitzer, H. Andrä, R. Müller	<i>Multi-fidelity Moving Particles Considering Polymorphic Uncertainty</i> J. Kaupp , C. Proppe	<i>Towards Data-Based Modelling of Energy Storages in an Intelligent Energy Management System</i> L. Kappertz , C. Büskens
9:50	<i>Interpolated deep material networks: A data-driven upscaling approach for short fiber reinforced composites</i> S. Gajek , M. Schneider, T. Böhlke		<i>A tractable multi-leader multi-follower game with applications in energy markets</i> V. Grimm, D. Nowak, L. Schewe, M. Schmidt, A. Schwartz , G. Zöttl
10:10	<i>Objectivity and accuracy enhancement within ANN-based multiscale material modeling</i> Y. Heider		

S 17 Applied and numerical linear algebra Chair: P. Kürschner @ S16	S 18 Numerical methods of differential equations Chair: P. Birken @ H05	S 23 Applied operator theory Chair: J. Meichsner @ S04	
<p><i>Low-rank tensor methods for Markov chains with applications to tumor progression models</i></p> <p><u>M. Klever</u>, L. Grasedyck, R. Schill, R. Spang, T. Wettig, P. Georg</p>	<p><i>Parallel numerical method for the abstract Cauchy problem with fractional derivative of Caputo type</i></p> <p><u>D. Sytnyk</u>, B. Wohlmuth</p>	<p><i>A new approach to the hot spots conjecture</i></p> <p><u>J. Rohleder</u></p>	8:30
<p><i>Parameter-dependent multigrid method using low-rank tensor formats</i></p> <p>L. Grasedyck, <u>T. A. Werthmann</u></p>	<p><i>C¹-conforming variational discretization of the biharmonic wave equation</i></p> <p>M. Bause, M. Lybery, <u>K. Osthus</u></p>		8:50
<p><i>An Analysis of Low-Rank and Small-in-Norm Perturbations of the Identity Matrix</i></p> <p><u>A. K. Carr</u>, E. de Sturler, M. Embree</p>	<p><i>Runge–Kutta based semi-explicit time integration of weakly coupled elliptic–parabolic problems</i></p> <p>R. Altmann, <u>A. Mujahid</u>, B. Unger</p>	<p><i>An operator-theoretic approach to port-Hamiltonian systems</i></p> <p><u>T. Reis</u></p>	9:10
<p><i>Iteratively Reweighted Least Squares Recovery on Tensor Tree Networks</i></p> <p><u>S. Krämer</u></p>	<p><i>Energy-preserving time integration of nonlinear Schrödinger equations</i></p> <p><u>C. Döding</u>, P. Henning</p>	<p><i>Approximation of Random Evolution Equations</i></p> <p><u>K. Klioba</u>, C. Seifert</p>	9:30
<p><i>Automated interpolatory (P) MOR via low-rank (tensor) approximation</i></p> <p><u>J. Saak</u>, H. Al Daas</p>	<p><i>Stability of modified Patankar-Runge-Kutta schemes</i></p> <p>T. Izgin, <u>S. Kopecz</u>, A. Meister</p>	<p><i>Non-self-adjoint boundary conditions on graphs</i></p> <p><u>A. Hussein</u></p>	9:50
<p><i>Inexact linear solves in the low-rank Sylvester-ADI</i></p> <p><u>P. Kürschner</u></p>	<p><i>Efficient and Robust Time Integration with Automatic Step Size Control for Compressible Computational Fluid Dynamics</i></p> <p><u>H. Ranocha</u></p>	<p><i>Final State Observability Estimates in Banach Spaces</i></p> <p><u>C. Seifert</u></p>	10:10

Floor Plan C.A.R.L. - Ground Floor



Floor Plan C.A.R.L. - 1st Floor



Floor Plan C.A.R.L. - 2nd Floor

