93RD ANNUAL MEETING

of the International Association of Applied Mathematics and Mechanics

TECHNISCHE UNIVERSITÄT DRESDEN

May 30th – June 2nd, 2023
Dresden (Germany)

100 JAHRE GAMM

General Information
& Daily Program

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

2023.gamm-ev.de
gamm2023@tu-dresden.de

Conference Schedule

	Tuesday 30.05.	Wednesday 31.05.	Thursday 01.06.	Friday 02.06.
8:00				
8:30	Registration (HSZ)	Contributed Sessions / PP 2353	Contributed Sessions / PP 2020	Contributed Sessions / PP 2298
9:00	Opening			
9:30		Coffee Break/ Poster Session		
10:00	L. Prandtl Memorial Lecture			
10:30		R. v. Mises Price Lecture	Coffee Break	Coffee Break
11:00	Plenary A. Pandolfi		Plenary C. Egbers	Contributed Sessions / PP 2311
11:30		GAMM General Assembly		
12:00	Plenary A. Rüland		Plenary P. Maaß	
12:30	Lunch Break		Lunch Break	
13:00		Lunch Break/ YAMM Lunch		Lunch Break
13:30	Contributed Sessions / PP 1886		Minisymposia	
14:00		Contributed Sessions / PP 1962		Plenary K. Ellermann
14:30				
15:00				Plenary S. Serfaty
15:30			Coffee Break/Poster	Coffee Break
16:00	Coffee Break	Coffee Break	Contributed Sessions / PP 2256	Contributed Sessions
16:30	Young Researchers Minisymposia	Plenary P. Koumoutsakos		
17:00				
17:30		Plenary H. Gao		
18:00			Contributed Sessions / PP 2353	Closing
18:30	Welcome Reception (HSZ Foyer/ Festwiese)			
19:00			Midissage 100 Jahre GAMM	
19:30		Conference Dinner (Hygiene Museum)		
20:00			Public Lecture Wolfgang Ehlers	Public Lecture Harald Lesch
20:30				
21:00				
21:30				

Welcome from the local organizers

Dear participants,

we are very pleased to welcome you personally to the 93rd GAMM Annual Meeting in Dresden. This year's meeting is a special occasion as we celebrate the 100th anniversary of GAMM. 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 researcher minisymposia, minisymposia, and DFG Priority Program minisymposia for their support and for ensuring a high quality of the scientific program.

We would like to express our thanks to TU Dresden and its staff for their general support. We thank the city of Dresden, tracetronic, neocx, Springer, DGLR and the Green Office of the TU Dresden for supporting the conference.

We also sincerely thank the organizing team of the GAMM Annual Meeting 2023 in Dresden for their engagement and contributions, which were of key importance for the successful preparation 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 Dresden!

Michael Kaliske

Jochen Fröhlich

Axel Voigt

Welcome from the President and Secretary

Dear participants,

the International Association of Applied Mathematics and Mechanics welcomes you at its 93rd Annual Meeting, held in Dresden, Germany, from May 30 – June 2, 2023.

On behalf of the DGLR and the GAMM, we invite you to the 65th Ludwig Prandtl Memorial Lecture. Furthermore, we invite all GAMM members to the General Assembly of the GAMM on Wednesday, May 31, 2023.

Karsten Urban
President

Michael Kaliske
Secretary

Conference Office and Organization

Selina Zschocke
Chair of Structural Analysis

Doreen Göhlert
Chair of Structural Analysis

Johannes Menning
Chair of Mechanics
of Multifunctional Structures

Local Organizing Commitee

Michael Beitelschmidt
Chair of Dynamics
and Mechanism Design

Kerstin Eckert
Chair of Transport Processes
at Interfaces

Jochen Fröhlich
Chair of Fluid Mechanics

Markus Kästner
Chair of Computational
and Experimental Solid Mechanics

Michael Kaliske
Chair of Structural Analysis

Stefan Löhnert
Chair of Mechanics
and Shell Structures

Stefan Neukamm
Chair of Applied Analysis

Oliver Sander
Chair of Numerical Methods
of Partial Differential Equations

Axel Voigt
Chair for Scientific Computing
and Applied Mathematics

Thomas Wallmersperger
Chair of Mechanics
of Multifunctional Structures

Program Committee

Thomas Antretter
Leoben

Marek Behr
Aachen

Martin Burger
Erlangen

Patrick Dondl
Freiburg

Alexander Düster
Hamburg

Heike Faßbender
Braunschweig

Melina Freitag
Potsdam

Gero Friesecke
Munich

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Cologne

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Dresden

Michael Kaliske
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Stuttgart

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Renate Sachse
Munich

Claudia Schillings
Berlin

Jörg Schröder
Duisburg-Essen

Merten Stender
Hamburg

Utz von Wagner
Berlin

Andrea Walther
Berlin

100th anniversary of the GAMM

After discussions between several German researchers at the forefront of innovation in Applied Mathematics and Mechanics, like **Ludwig Prandtl, Richard von Mises**, and Hans-Jakob Reißner, a common conference on Mathematics and Physics was organized in Leipzig in September 1922. During a meeting on 21.9.1922, the creation of an engineering society was decided, without at this stage specifying the name. On 25.9.1923, the „Deutsche Ingenieurwissenschaftliche Vereinigung - Gesellschaft für angewandte Mathematik und Mechanik" was formally established in Marburg. On this background, and in addition to the usual scientific activities at such a meeting, the Annual Meeting of GAMM 2023 in Dresden will celebrate the **100th anniversary** of the GAMM association. This will be done by several measures:

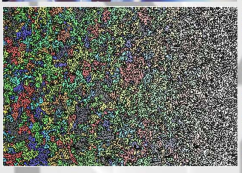
- An exhibition connecting Applied Mathematics and Mechanics in a historic perspective will be organized at the conference site. This exhibition shows artifacts of the academic heritage, scientific and art collections of TU Dresden, selected artworks of regional and international artists as well as installations.
- The public lecture by Wolfgang Ehlers is devoted to the history of GAMM.
- The organizers are explicitly soliciting contributions to the conference covering historical issues, and in particular issues in connection with the development of GAMM. These contributions will be scheduled within Section S24 and particularly featured in the conference proceedings of PAMM.

100 JAHRE GAMM

a scientific art exhibition

30.5. – 2.6.23 HSZ room 304

artifacts of the academic heritage, scientific and art collections of TU Dresden



installations fusing art, science and technology

artworks of regional and international artists

midissage 1.6.23 19:00

contributions by

Anton Ginzburg, Stefan Gumhold, Daniel Lordick, Wolfram Neumann, Marco Salvalaglio, Axel Voigt, Denise Walther

TECHNISCHE UNIVERSITÄT DRESDEN

Dresden.

ERLEBNISLAND MATHEMATIK DRESDEN

KUSTODIE

DFG

Sustainability

After 100 years of GAMM, the organizers of the 93rd Annual Meeting would like to particularly address the issue of sustainability. Without any doubt, this is mandatory in present times and will be on the agenda of the next 100 years to come. Within the established frame of the meeting, the organizers have implemented several measures in this respect and like to ask the participants to join them in the effort.

- **The three Keynote Lecturers** from overseas will not travel to Dresden but will deliver their presentation online to the screen of the auditorium. This will save travel time and resources. As a compensation, and a new feature of a GAMM Annual Meeting, special online slots will be organized for discussions of participants with the remote keynote lecturers.
- **Compensation**
  For each participant, a tree will be planted by an established local organization.
- **Conference documents**
  By default, participants will receive all conference documents (abstracts, programme etc.), only in electronic form via the conference app.
- **Catering**
  Catering during coffee breaks and Welcome Reception will particularly focus on local and regional goods.
- **Sustainability Award**
  Science can contribute a lot to saving of resources and sustainability. To highlight and support such activities the organizers have established the Sustainability Award that will be delivered to contributions addressing the issue.

Sustainability Speakers' Corner

The Sustainability Speakers' Corner aims to raise awareness and stimulate discussion on sustainability in the GAMM community, universities, education and research. The event will include informative talks and a forum to facilitate the exchange of ideas, as well as a poster exhibition, and a digital sustainability bulletin board. All participants are cordially invited to get involved. What is your point of view? What are your action items? Fill the board with your ideas.

Bulletin Board

Impulse talks: Sustainability

Wed., May 31, 9:45 – 10:15 @ in front of HSZ/E01

Stimulated by impulse talks provided by the local organizers, the Green Office, and the Environmental Committee of TU Dresden, we discuss what sustainability means or could mean for universities and scientific communities as GAMM, and how we, as students, university teachers, scientist, may contribute to Education for Sustainable Development goals.

Special Events

Tue., May 30

Opening Ceremony
09:00 - 10:00 @ HSZ/AUDI

Ludwig Prandtl Memorial Lecture
10:00 - 11:00 @ HSZ/AUDI

Welcome Reception
18:30 - 22:00 @ HSZ

Wed., May 31

Poster Session
09:30 - 10:30 @ HSZ/First Floor

Richard von Mises Prize Lecture
10:30 - 11:30 @ HSZ/AUDI

GAMM General Assembly
11:30 - 13:00 @ HSZ/H02

YAMM Lunch
13:00 - 14:00 @ HSZ/E03

Conference Dinner
19:30 - 23:00 @ Deutsches Hygiene-Museum

Thu., June 1

Midissage 100 Jahre GAMM – A scientific art exhibition
19:00 – 20:00 @ HSZ/304

Public Lecture
20:00 – 21:30 HSZ/AUDI (& H03)

Fri., June 2

Closing Ceremony
18:00 - 19:00 @ HSZ/AUDI

Public Lecture
20:00 – 21:30 HSZ/AUDI (& H03)

Plenary Lectures – Mathematics

Tue., May 30, 11:45 - 12:30 @ HSZ/AUDI

Angkana Rüland
University of Bonn
Germany

Rigidity and Flexibility in the Modelling of Shape-Memory Alloys

Wed., May 31, 16:30 - 17:15 @ HSZ/AUDI (Video)

Petros Koumoutsakos
Harvard-School of Engineering
USA

Alloys of AI and Computational Science

Thu., June 1, 11:45 - 12:30 @ HSZ/AUDI

Peter Maaß
University of Bremen
Germany

Regularization by architecture: Deep Learning for PDE-based inverse problems

Fri., June 2, 14:45 - 15:30 @ HSZ/AUDI (Video)

Sylvia Serfaty
Courant Institute of Mathematical Sciences
USA

Mean Field limits for singular flows

Plenary Lectures – Mechanics

Tue., May 30, 11:00 - 11:45 @ HSZ/AUDI

Anna Pandolfi
Politecnico di Milano
Italy

A material point method for advection-diffusion problems in open systems

Wed., May 31, 17:15 - 18:00 @ HSZ/AUDI (Video)

Huajian Gao
Nanyang Technological University Singapore
Singapore

Mechanics of Peeling Induced Shape Morphing in Plastic Films

Thu., June 1, 11:00 – 11:45 @ HSZ/AUDI

Christoph Egbers
Brandenburg University of Technology Cottbus – Senftenberg
Germany

Fluid Mechanics under microgravity conditions

Fri., June 2, 14:00 – 14:45 @ HSZ/AUDI

Katrin Ellermann
Technical University Graz
Austria

Efficient Modelling – how simple can it get?

Q&A Session with plenary lecturers from overseas

The three Keynote Lecturers from overseas will not travel to Dresden but will deliver their presentation online to the screen of the auditorium. This will save travel time and resources. As a compensation, and a new feature of the GAMM Annual Meeting, Q&A sessions will be organized for discussions of participants with the remote keynote lecturers.

Thu., June 1, 08:30 – 09:15 @ HSZ/H02
Huajian Gao

Thu., June 1, 16:00 – 17:00 @ HSZ/204
Sylvia Serfaty

Registration

Ludwig Prandtl Memorial Lecture

Tue., May 30, 10:00 - 11:00 @ HSZ/AUDI

Clarence W. Rowley
Princeton University
USA

Data-driven modeling
of fluid flows

Richard von Mises Lecture

Wed., May 31, 10:30 - 11:15 @ HSZ/AUDI

The lecture will be held by the winner of the Richard von Mises Prize 2023. The awardee will be announced on Tuesday, May 30.

Public Lecture Wolfgang Ehlers

Thu., June 1, 20:00 - 21:30 @ HSZ/AUDI

Prof. Dr.-Ing. Wolfgang Ehlers
University of Stuttgart
Germany

Wolfgang Ehlers is a professor emeritus at the University of Stuttgart. As a continuum mechanics expert, he has made significant contributions to the further development of the theory of porous media (TPM). His scientific interests include the development of model equations in geo- and biomechanics as well as the development of numerical models for solving coupled equations of multiphase and multicomponent systems.

100 Jahre GAMM: Motivation, Historie und Errungenschaften

Der Vortrag behandelt die 100-jährige Geschichte der GAMM von ihren Anfängen in den 20iger Jahren des vorigen Jahrhunderts bis heute und beleuchtet durch Beispiele die wissenschaftlichen Errungenschaften, an denen die GAMM und ihre Mitglieder mitgewirkt haben. Die Veranstaltung wird durch Musiker:innen der Sächsischen Staatskapelle Dresden umrahmt.

Public Lecture Harald Lesch

Fri., June 2, 20:00 - 21:30 @ HSZ/AUDI

© Gerald von Foris

Prof. Dr. Harald Lesch
LMU München
Germany

Harald Lesch, Professor of Astrophysics at the Department of Astronomy and Astrophysics at the LMU Munich, is not only well-known in science but also to the general public through many interesting science television programmes, such as Abenteuer Forschung, Terra-X and Leschs Kosmos.

Was hat das Universum mit mir zu tun?

In diesem astronomischen Vortrag widmet sich Harald Lesch der Frage: Wie hat alles angefangen, wie ist es geworden und was machen wir in diesem Universum. Die große Geschichte der Natur in gut einer Stunde. Es ist ein Spaziergang durch die empirischen, quantitativen Wissenschaften vom Kosmos, der Materie, dem Raum und der Zeit.

Poster Session GAMM Juniors

Wed., May 31, 09:30 - 10:30 | Thu., June 1, 15:30 - 14:00 @ HSZ

Organizer: **Merten Stender** (TU Berlin)

In this poster session, members of the GAMM Juniors present aspects of their current research during coffee breaks in between sessions. 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.

YAMM Lunch

Wed., May 31, 13:00 - 14:00 @ HSZ/E03

Organizers: **Jan-Hendrik Bastek** (ETH Zürich)
Giuseppe Capobianco (FAU Erlangen-Nürnberg)
Margarita Chasapi (EPFL)
Hendrik Geisler (LUH)
Alexander Henkes (TU Braunschweig)
Georgia Kikis (RWTH Aachen)
Nina Reiter (FAU Erlangen-Nürnberg)
Markus Schmidtchen (TU Dresden)

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. Martin Arnold
MLU Halle-Wittenberg - Institute of Mathematics

- Time integration methods for constrained and coupled systems of differential equations
- Numerical methods in engineering mechanics
- Model based simulation and optimization

Prof. Dr. Fleurianne Bertrand
University of Twente – Faculty of Electrical Engineering, Mathematics and Computer Science

- Finite element method
- Numerical analysis and error estimation
- Eigenvalues problems, least-squares, linear elasticity

Prof. Dr. Carolin Birk
Universität Duisburg-Essen – Department of Civil Engineering

- Scaled boundary finite element method
- Dynamic soil-structure interaction
- Image-based automatic mesh generation and structural analysis

Prof. Dr.-Ing. Silvia Budday
FAU Erlangen-Nürnberg - Department of Mechanical Engineering

- Experimental and computational soft tissue biomechanics
- Brain mechanics
- Material modeling and parameter identification

Prof. Dr. Laura De Lorenzis
ETH Zürich - Institute for Mechanical Systems

- Phase-field methods for fracture mechanics
- Lattice Boltzmann methods
- Automated, data-driven discovery of material models

Prof. Dr. Carmen Gräßle
TU Braunschweig - Institute for Partial Differential Equations

- Simulation and control of flows and dynamical systems
- Model order reduction and data-informed methods
- Phase field systems

Prof. Dr.-Ing. Sven Klinkel
RWTH Aachen – Faculty of Civil Engineering

- Computational analysis of beam and shell structures
- Homogenization and multiscale modeling
- Scaled boundary isogeometric analysis

Prof. Dr. Dennis M. Kochmann
ETH Zürich – Institute for Mechanical Systems

- Computational and experimental solid mechanic
- Multiscale modeling and homogenization methods
- Machine learning for inverse design of metamaterials

Prof. Dr. Volker Mehrmann
TU Berlin - Institute for Mathematics

- Applied and numerical linear algebra
- Differential algebraic equations
- Control theory

Prof. Dr.-Ing. habil. Stefanie Reese
RWTH Aachen – Institute of Applied Mechanics

- Biomechanics
- Model order reduction methods
- Data-driven methods

Prof. Dr. Thomas Wick
LUH - Institute of Applied Mathematics

- Numerical modeling of nonstationary, nonlinear, coupled PDE systems
- Adaptivity
- Space-time formulations

DFG Priority Programmes

Tue., May 30, 13:00 – Fri., June 2, 18:00 @ HSZ/204

PP 1886: Polymorphic Uncertainty Modelling for the Numerical Design of Structures (Tue., May 30, 13:30 – 15:30) 1

Organizer: Michael Kaliske (TU Dresden)

PP 1962: Non-Smooth and Complementarity-Based Distributed Parameter Systems: Simulation and Hierarchical Optimization (Wed., May 31, 14:00 – 15:30) 2

Organizer: Michael Hintermüller (WIAS Berlin)

PP 2020: Cyclic Deterioration of High-Performance Concrete in an Experimental-Virtual Lab (Thu., June 1, 08:30 – 10:30) 3

Organizers: Johannes Storm (TU Dresden)
Fadi Aldakheel (Leibniz University Hannover)

PP 2256: Variational Methods for Predicting Complex Phenomena in Engineering Structures and Materials (Thu., June 1, 16:00 – 18:00) 4

Organizers: Jörn Mosler (TU Dortmund)
Bernd Schmidt (Universität Augsburg)

PP 2298: Theoretical Foundations of Deep Learning (Fr., June 2, 13:30 – 15:30) 5

Organizers: Gitta Kutyniok (LMU München)
Laura Thesing (LMU München)

PP 2311: Robust coupling of continuum-biomechanical in silico models to establish active biological system models for later use in clinical applications - Co-design of modeling, numerics and usability (Fri., June 2, 11:00 – 13:00) 6

Organizers: Tim Ricken (Universität Stuttgart)
Oliver Röhrle (Universität Stuttgart)

PP 2353: Daring More Intelligence – Design Assistants in Mechanics and Dynamics (Tue., May 30, 08:30 – 09:30 | Thu., June 1, 18:00 – 19:00) 7

Organizers: Peter Eberhard (Universität Stuttgart)

Young Researcher's Minisymposia

Tue., May 31, 16:30 – 18:30

1	**Randomized algorithms in numerical linear algebra @ HSZ/H03**	
	Organizers:	Alice Cortinovis (Stanford University) Nicolas Boullé (University of Oxford)
2	**Novel modelling approaches in structural stability @ HSZ/H04**	
	Organizers:	Anton Köllner (TU Berlin) Rainer Groh (University of Bristol)
3	**Emergent behaviour in systems of hydrodynamically interacting particles @ CHE/S89**	
	Organizers:	Richard Höfer (Université de Paris) Richard Schubert (Universität Bonn)
4	**Robustness in deep learning @ HSZ/AUDI**	
	Organizers:	Francesco Croce (Universität Tübingen) Laura Thesing (LMU München)
5	**Material modelling across length scales @ POT/51**	
	Organizers:	Johanna Waimann (RWTH Aachen) Tobias Kaiser (TU Dortmund)
6	**Parameter identification: Methods and applications @ HSZ/H02**	
	Organizers:	Benjamin Jurgelucks (HU Berlin) Kai Schäfer (Universität Bremen)

Minisymposia

Thu., June 1, 13:30 – 15:30

Modern teaching and didactics in mathematics and mechanics @ HSZ/H02 **1**

Organizers: Andrea Walther (HU Berlin)
Thorsten Bartel (TU Dortmund)

Data-driven computational mechanics @ HSZ/AUDI **2**

Organizers: Laura De Lorenzis (ETH Zürich)
Stefanie Reese (RWTH Aachen)
Markus Kästner (TU Dresden)

High-order and parallel time integration @ HSZ/H03 **3**

Organizers: Sebastian Götschel (TU Hamburg)
Jörg Stiller (TU Dresden)

Data-driven methods in systems and control @ HSZ/H04 **4**

Organizers: Timm Faulwasser (TU Dortmund)
Jan Heiland (MPI Magdeburg)
Karl Worthmann (TU Ilmenau)

Port-Hamiltonian systems @ CHE/S89 **5**

Organizers: Birgit Jacob (Bergische Universität Wuppertal)
Paul Kotyczka (TU München)

Modelling and simulation of thin mechanical films @ POT/51 **6**

Organizers: Sören Bartels (Universität Freiburg)
Stefan Neukamm (TU Dresden)
Oliver Sander (TU Dresden)

Sections

Tue., May 30, 13:00 – Fri., June 2, 18:00

S01 Multi-body dynamics

Organizers: Katrin Ellermann (TU Graz)
Johannes Edelmann (TU Wien)

S02 Biomechanics

Organizers: Oliver Röhrle (Universität Stuttgart)
Sandra Klinge (TU Berlin)

S03 Damage and fracture mechanics

Organizers: Laura De Lorenzis (ETH Zürich)
Paul Steinmann (FAU Erlangen-Nürnberg)

S04 Structural mechanics

Organizers: Stefani Elgeti (RWTH Aachen)
Bastian Österle (TU Hamburg-Harburg)

S05 Nonlinear oscillations

Organizers: Hartmut Hetzler (Universität Kassel)
Fadi Dohnal (Vorarlberg University of Applied Science)

S06.1 Material modelling with metals

Organizers: Jörn Mosler (TU Dortmund)
Patrik Kurzeja (TU Dortmund)

Material modelling with non-metals	**S06.2**
Organizers:	Alexander Lion (Universität der Bundeswehr, München) Ralf Landgraf (TU Chemnitz)

Coupled problems	**S07**
Organizers:	Alexander Popp (Universität der Bundeswehr, München) Christian J. Cyron (TU Hamburg)

Multiscales and homogenization	**S08**
Organizers:	Marc-André Keip (Universität Stuttgart) Christian Hesch (Universität Siegen)

Laminar flows and transition	**S09**
Organizers:	Gunther Brenner (TU Clausthal) Dominique Thevenin (Universität Magdeburg)

Turbulence and reactive flows	**S10**
Organizers:	Heiko Schmidt (BTU Cottbus) Oliver Stein (Karlsruhe Institut für Technologie)

Interfacial flows	**S11**
Organizers:	Karin Schwarzenberge (TU Dresden) Holger Marschall (TU Darmstadt)

Waves and acoustics	**S12**
Organizers:	Sabine Langer (TU Braunschweig) Martin Schanz (TU Graz)

S13	Flow control	
	Organizers:	Sven Grundmann (Universität Rostock) Jochen Kriegseis (Karlsruhe Institut für Technologie)

S14	Applied analysis	
	Organizers:	Marita Thomas (WIAS Berlin) Stefan Neukamm (TU Dresden) Markus Schmidtchen (TU Dresden)

S15	Uncertainty quantification	
	Organizers:	Bojana Rosic (University of Twente) Alexander Litvinenko (RWTH Aachen)

S16	Optimization	
	Organizers:	Alexandra Schwartz (TU Dresden) Imke Joormann (TU Braunschweig)

S17	Applied and numerical linear algebra	
	Organizers:	Thomas Mach (Universität Potsdam) Elisabeth Ullmann (TU München)

S18	Numerical methods for differential equations	
	Organizers:	Carmen Gräßle (TU Braunschweig) Roland Maier (Universität Jena)

S19	Optimization of differential equations	
	Organizers:	Caroline Geiersbach (WIAS Berlin) Olga Weiß (Universität Hamburg)

Dynamics and control **S20**

Organizers: Janine Matschek (Universität Magdeburg)
Kathrin Flaßkamp (Universität des Saarlandes)

Mathematical signal and image processing **S21**

Organizers: Christina Brandt (Universität Hamburg)
Bernhard Schmitzer (Universität Göttingen)

Scientific computing **S22**

Organizers: Thomas Richter (Universität Magdeburg)
Tobias Breiten (TU Berlin)

Applied operator theory **S23**

Organizers: Ralph Chill (TU Dresden)
Marcus Waurick (TU Freiberg)

History of mechanics and history, teaching and popularization of mathematics **S24**

Organizers: Dietmar Gross (TU Darmstadt)
Wolfgang Wendland (Universität Stuttgart)

Applied operator theory **S25**

Organizers: Jan-Frederik Pietschmann (Universität Augsburg)
Martin Stoll (TU Chemnitz)

Modelling, analysis and simulation of molecular systems **S26**

Organizers: Feliks Nüske (Universität Paderborn)
Roberto Covino (Frankfurt Institute for Advanced Studies)

Conference Desk | Check-In

The conference desk is located at HSZ/E02 and will be open during the following hours. Check-In and Registration is only possible during the opening hours.

Date	Opening Hours
Tuesday, May 30	8:00-19:30
Wednesday, May 31	8:00-18:30
Thursday, June 1	8:00-17:30
Friday, June 2	8:00-17:30

WiFi Access

WiFi Access through Eduroam is available all across the campus of TU Dresden. An alternative WiFi login will available at the conference desk, if Eduroam is unavailable or inaccessible.

On-Site-Information

On-Site-Information, such as lost & found, available workplaces can be accessed via the following link. You can leave your baggage at the wardrobe at the HSZ.

Scan for Access

Information for Presenters

- Please check the time and lecture room of your presentation in the daily program.
- Technical staff is assigned to each lecture room for help with technical equipment, each lecture room is equipped with a computer (Windows 10, Microsoft Office 2021, Acrobat Reader DC) and a beamer. Your slides shall be prepared in the format of 16:9, whereas 4:3 is also possible.
- You are asked to transfer your presentation to the computers in the rooms at the very latest in the break before the session.
- Please be present at least 10 minutes prior to the start of your session and let the chairperson know you are there.
- The time scheduled for the presentations is **20 min. (incl. discussion) for regular presentations** in Contributed Sessions, MS, YRM, DFG-PP sessions and 40 min. (incl. discussion) for Topical Speakers in Contributed Sessions

Information for Chairs

- You are kindly asked to switch between presentations by simply announcing the name of the next presenter and the title of the presentation. Due to the tight schedule, there will not be sufficient time for introducing individual lecturers in a more detailed manner.
- Please do your best to **strictly limit the duration of each presentation** and discussion to the allotted time.
- If a lecturer is missing, **please stick to the original program**, i.e., extend the discussion time of the preceding presentation or allow a break for the duration of the missing lecture(s). This enables participants to move in between sessions and to listen to chosen individual lectures according to the announced sequence.

Conference App

The Conference4me smartphone app provides you with the most comfortable tool for planning your participation at GAMM 2023. Browse the complete program directly from your phone or tablet and create your very own agenda on the fly. Just type in GAMM2023 in the search bar and click on the download button on the right. The app is available for Android, iOS, Windows Phone via the following link.

Download Link

Lunch locations

There are several very good cafeterias on the TU Dresden campus, namely **Zeltschlösschen**, **Alte Mensa** and **Siedepunkt** where you can choose between different dishes, including vegetarian and vegan dishes. Additionally, several bakeries and supermarkets can be reached by foot in a few minutes.

Daily menu

Conference Dinner

Wed., May 31, 19:30 – 23:00

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The conference dinner will take place in an architectural monument of classical modernism which is a museum known throughout Europe. It is located next to the baroque park "Great Garden" which invites to a walk before or after the dinner. The ***Deutsches Hygiene-Museum*** is exclusively available to conference participants for this event.

When the weather is nice, you can dine in the great foyer of the museum as well as in the courtyard. As one of the best caterers in Dresden, the museumsKÜCHE offers modern cuisine made from fresh ingredients, as far as possible from the region and with good meat. The same applied for the beverages. And for the pasta lovers: they make their own pasta.

Conference Venue

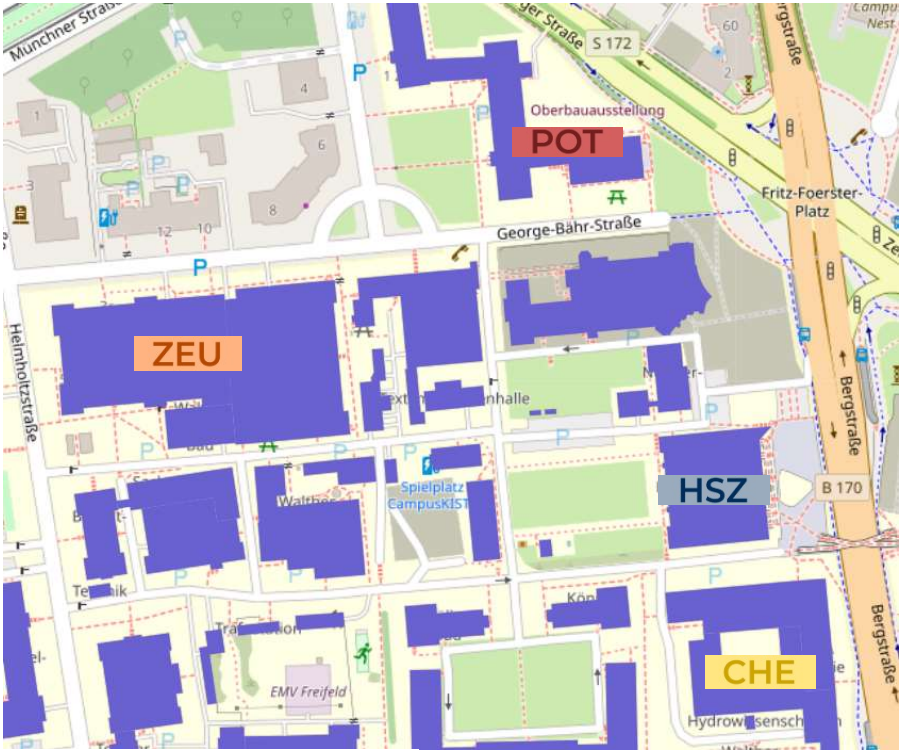
The GAMM Annual Meeting will take place at the Hörsaalzentrum and the historical buildings beside. The routes to the buildings and rooms will be signposted. In addition, you can use the Campus Navigator (see QR Code) to conveniently view the location of the buildings and rooms.

Campus Navigator

In order to simplify orientation, the following color code presented below will be used throughout the conference for the various buildings. The Hörsaalzentrum (HSZ) is the main conference building. You will find it by following the markings on the ground from all close by tramway and bus stops. The historical buildings beside, namely:

- CHE: Chemie/Hydrowissenschaften
- ZEU: Zeuner-Bau
- POT: Gerhart-Potthoff-Bau

can be found by following the markings in the respective colors starting at the HSZ.



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Wir sind das Joint Venture von TraceTronic und Volkswagen. Wir verbinden Wissen aus den Bereichen Fahrzeugproduktion, Software-Entwicklung und Automatisierung. Dieses Know-how bildet die Grundlage für unsere Vision: die Continuous Integration-Factory (CI-Factory), die alle VW Konzernmarken bei der Integration und Absicherung von hochkomplexen Fahrzeugfunktionen unterstützen wird.

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CONTINUOUS EVERYTHING

Detailed Schedule

Detailed Schedule - Tuesday, May 30

8:00 **Registration | Check-In**

HSZ — Registration desks open

9:00 **Opening**

HSZ/AUDI

10:00 **Ludwig Prandtl Memorial Lecture**

HSZ/AUDI — **Clarence W. Rowley** Princeton University, USA
Data-driven modeling of fluid flows
Laudation: Martin Oberlack

11:00 **Plenary Lecture 1**

HSZ/AUDI — **Anna Pandolfi** Politecnico di Milano, Italy
A material point method for advection-diffusion problems in open systems
Chaired by: Stefanie Reese

11:45 **Plenary Lecture 2**

HSZ/AUDI — **Angkana Rüland** University of Bonn, Germany
Rigidity and Flexibility in the Modelling of Shape-Memory Alloys
Chaired by: Barbara Zwicknagl

12:30 **Lunch Break**

13:30 **DFG Priority Program 1886 | Contributed Sessions**

Parallel sessions

16:00 **Coffee Break**

HSZ

16:30 **Young Researchers' Minisymposia**

Parallel sessions

18:30 **Welcome Reception**

HSZ

DFG PP 1886 | Contributed Sessions

	PP 1886 **Polymorphic Uncertainty Modelling for the Numerical Design of Structures** Chair(s): M. Kaliske HSZ/204	S02 **Biomechanics** Chair(s): B. Cansiz, S. Klinge POT/351	S03 **Damage and fracture mechanics** Chair(s): L. De Lorenzis HSZ/H04
13:30	Artificial neural network surrogate modeling for uncertainty quantification and structural optimization of reinforced concrete structures S. Freitag, P. Edler, S. Schoen, G. Meschke	A New Approach for Analysing Motion and Deformation of Left Ventricle: Post-processing 3D Echocardiography Data with Finite Element Method B. Cansiz, K. Sveric, A. Linke, M. Kaliske	An enhanced phase field framework for cohesive fracture H. Lammen, J. Mosler
13:50	Incorporating Uncertainty in Stress-Strain Data Acquisition: Extended Model-Free Data-Driven Identification S. Zschocke, W. Graf, M. Kaliske	Combined Modeling of major mechanical aspects in arterial walls including active response, growth-based residual stresses and fiber reorientation K. Uhlmann, D. Balzani	Numerical 3D-bifurcation analysis of star-shaped crack patterns using the energy method N. Jesch-Weigel, M. Hofmann, T. Wallmersperger
14:10	Reduced order modeling of structural problems with damage and plasticity J. Kehls, S. Kastian, T. Brepols, S. Reese	Comparative Computational Studies of Left Ventricular Strains using Hyperelastic Active Frameworks D. Ogiermann, L.E. Perotti, D. Balzani	An adaptive time-discretization method for phase-field damage models with discontinuous crack evolution F. Rörentrop, J. Mosler
14:30	Incorporation of the IGA-FEM basis functions into the non-deterministic FEM-framework D. Pivovarov, P. Steinmann, K. Willner	Coupling of a poroelastic model to a vascular tree with application in liver modeling A. Ebrahem, T. Gangwar, E. Jessen, M.F. ten […]	An adaptive acceleration scheme for phase-field modelling of high-cycle fatigue J. Heinzmann, P. Carrara, A.M. Mirzaei, L. De […]
14:50	Polymorphic Uncertainty Quantification for the Additive Manufacturing of Elastic Rods S. Wolff-Vorbeck, Y. Luo, P. Dondl, S. Neukamm, […]	Using Anisotropic Voronoi Tessellations to connect Arterial and Venous Synthetic Hepatic Trees E. Jessen, M.C. Steinbach, C. Debbaut, […]	A Hierarchical Sequence based Rank-One Convexification Algorithm with Linear Complexity for a Special Class of Functions. M. Köhler, T. Neumeier, M.A. Peter, D. Peterseim, […]
15:10	Preconditioner for iterative solvers for numerical models under polymorphic uncertainty A. Schmidt, T. Lahmer	Switchless constitutive relation for passive myocardium that accounts for the distinct load-bearing characteristics of collagen and muscle fibers in […] H.S.C. Tammisetti, A. K, K. Kannan	Evaluation of effective mechanical properties of particle reinforced composites via numerical simulations of representative volume elements H. Zanardi, F.L. Schiavon, I.P. Zago, R.A. Angélico

	PP 1886 **Polymorphic Uncertainty Modelling for the Numerical Design of Structures** Chair(s): M. Kaliske HSZ/204	S02 **Biomechanics** Chair(s): B. Cansiz, S. Klinge POT/351	S03 **Damage and fracture mechanics** Chair(s): L. De Lorenzis HSZ/H04
15:30			Multiscale modeling of fracture behavior of glassy polymers across molecular and continuum scales W. Zhao, S. Pfaller
15:50			Phase-Field Modeling of Fracture in Polymer Nano-Composites via Graded Interphases P. Kumar, J. Mergheim

DFG PP 1886 | Contributed Sessions

	S04 **Structural mechanics** Chair(s): B. Oesterle HSZ/AUDI	S05 **Nonlinear oscillations** Chair(s): H. Hetzler, F. Dohnal CHE/183	S06.2 **Material modelling with non-metals** Chair(s): A. Lion, R. Landgraf POT/151
13:30	A total Lagrangian, objective, and intrinsically locking-free Petrov-Galerkin SE(3) Cosserat rod finite element formulation S.R. Eugster, J. Harsch	Internal resonance in non-linear structures and what it can be used for S. Tatzko	Hydrothermal influences on PA 6 - dynamic mechanical analysis and viscoelastic material modeling L. Kehrer, J. Keursten, V. Hirschberg, T. Böhlke
13:50			
14:10	Assumed natural strain method for an isogeometric solid beam element A. Shafqat, O. Weeger, S. Rezaei, B.-X. Xu	Nonlinear Dynamics and Machine Learning M. Stender, J. Ohlsen, M. Wedler, S. Ehlers, […]	Thermoviscoelastic Modeling and Simulation of Polyamide 6 J. Keursten, T. Böhlke
14:30	An efficient exact geometrically defined Reissner-Mindlin shell element for analysis of shell structures N. Azizi, W. Dornisch		Parameter identification for additively manufactured polymers with orthotropic material properties C. Steinweller, J.-A. Tröger, S. Hartmann
14:50	On the use of dual basis functions in explicit dynamics within isogeometric analysis S. Held, W. Dornisch	On Functional Observers for Polynomial Systems with Nonlinear Oscillations K. Röbenack, D. Gerbet	Influence of process parameters on geometric and elasto-visco-plastic material properties in vat photopolymerization I. Valizadeh, O. Weeger
15:10	Simulation of Linear Elastic Structural Elements Using the Petrov-Galerkin Finite Element Method F. Zähringer, P. Betsch	Sparse identification of the dynamics of a nonlinear multistable oscillator S. Kamecke, P. Wulff, N. Gräbner, U. von Wagner	Experimental investigations of uniaxial and biaxial cold stretching within PC-films and bars using optical measurements A. Hamdoun, R. Mahnken

Tuesday, May 30, 13:30 - 16:10

	S04 **Structural mechanics** Chair(s): B. Oesterle HSZ/AUDI	S05 **Nonlinear oscillations** Chair(s): H. Hetzler, F. Dohnal CHE/183	S06.2 **Material modelling with non-metals** Chair(s): A. Lion, R. Landgraf POT/151
15:30		Stability analyses for Hill Equation by the Homotopy perturbation method M.L. Ramirez Barrios, F. Dohnal	A Material Model for Thick, Rate-Dependent Adhesives with Delocalized Softening A. Schumacher, A. Matzenmiller
15:50		Koopman eigenfunction approximations by a least-squares Galerkin method U.J. Römer	On Different Classes of Constitutive Descriptions in Finite Electro-Mechanics: Computational Modelling of Isotropic and Anisotropic Electro-Active […] A. Kanan, M. Kaliske

DFG PP 1886 | Contributed Sessions

	S07 **Coupled problems** Chair(s): F. Aldakheel, C. Weißenfels CHE/S89	S08 **Multiscales and homogenization** Chair(s): E. Polukhov HSZ/H03	S10 **Turbulence and reactive flows** Chair(s): H. Schmidt, O.T. Stein CHE/184
13:30	Electro-chemo-mechanical induced fracture modeling in proton exchange membrane water electrolysis for sustainable hydrogen production F. Aldakheel	Micromorphic multi-scale simulation of the elastic-plastic behavior of foams A. Malik, G. Hütter, M. Abendroth, B. Kiefer	Map-based stochastic modeling of multiscale transfer processes in turbulent flows M. Klein
13:50			
14:10	A volumetric heat source model for the identification of the mushy zone in laser beam welding. P. Hartwig, L. Scheunemann, J. Schröder	Modeling large-scale acoustic meta-structures through the reduced relaxed micromorphic model G. Rizzi, J. Voss, S. Hermann, M. Collet, P. Neff, […]	Impact of spatially varying magnetic fields on turbulent thermal convection S. Bhattacharya, T. Boeck, D. Krasnov, J. Schumacher
14:30	Application of DeepONet for Temperature Prediction in Powder Bed Fusion Process H. Safari, H. Wessels	Parameter Identification in the Relaxed Micromorphic Model M. Sarhil, L. Scheunemann, J. Schröder, P. Neff	SGS modeling in lattice Boltzmann method for non-fully resolved turbulent flows S.R.G. Polasanapalli, M. Klein, H. Schmidt
14:50	Basics and challenges in IGA-based modelling of temperature and hydrodynamic properties in the context of wet grinding P. Thunich, Y. Tong, M. Müller, O. Schömig, […]	Size effects in numerical homogenization of polycrystalline silicon M. Weber, M. Aßmus, R. Glüge, M. von Zabiensky, […]	Spatio-temporal evolution and kinematic properties of large-scale coherent structures in fully developed turbulent pipe flow A. Shahirpour, J. Sesterhenn
15:10	Chemo-mechanical modelling of the breathing effect during lithiation and delithiation in Li-Si batteries J. Dittmann, J.-O. Stern, H. Beiranvand, […]	Unfolding engineering metamaterials design: relaxed micromorphic modeling of large-scale acoustic metastructures. F. Erel-Demore, G. Rizzi, M. Collet, P. Neff, […]	Effects of Reynolds number on turbulent concentric coaxial pipe flow using stochastic modeling P.-Y. Tsai, H. Schmidt, M. Klein

Tuesday, May 30, 13:30 - 16:10

	S07 **Coupled problems** Chair(s): F. Aldakheel, C. Weißenfels CHE/S89	S08 **Multiscales and homogenization** Chair(s): E. Polukhov HSZ/H03	S10 **Turbulence and reactive flows** Chair(s): H. Schmidt, O.T. Stein CHE/184
15:30	Determination of the effective properties of solid oxide fuel cell electrodes by applying a computational homogenization approach E. Langner, A. Makradi, M. El Hachemi, […]	Comparison of different homogenization approaches for the inelastic behavior of porous structures M. Abendroth, A. Malik, N. Lange, G. Hütter, […]	Large-eddy simulation of a channel flow over an irregular porous matrix W. Sadowski, M. Sayyari, F. di Mare
15:50			

DFG PP 1886 | Contributed Sessions

	S13 **Flow control** Chair(s): S. Grundmann, J. Kriegseis CHE/S91	S14 **Applied analysis** Chair(s): D. Knees POT/51	S15 **Uncertainty quantification** Chair(s): B. Rosic, A. Litvinenko POT/13
13:30	Controlling shock-induced separation with air-jet vortex generators A.-M. Schreyer	Sedimentation of Particles with Very Small Inertia in Stokes Flows R. Höfer, R. Schubert	Metropolis-adjusted interacting particle sampling B. Sprungk, S. Weissmann, J. Zech
13:50		An existence theory for solitary waves on a ferrofluid jet M.D. Groves, D. Nilsson, L. Schütz	
14:10	Design Optimization of Three-dimensional Geometry of a Micro Horizontal Axis Wind Turbine Blade Using the Response Surface Method R. Bekkai, R. Laouar, R. Mdouki	Coagulation equations for non-spherical clusters I. Cristian, J.J.L. Velázquez	Data sparse multilevel covariance estimation in optimal complexity J. Dölz
14:30	Control of the formation of the boundary layer over a surface with a cavity G. Voropaiev, N. Rozumnyuk, O. Baskova	The diffusion equilibrium approximation of the stationary radiative transfer equation. E. Dematté, J.J. Velázquez	Bayesian Inversion Using Generative Machine Learning Models for EIT O. Ernst, D. Gerth
14:50	Surrogate-based optimization for active drag reduction of turbulent boundary layer flows F. Hübenthal, M. Albers, M. Meinke, W. Schröder	Convergence to self-similar profiles in reaction-diffusion systems A. Mielke, S. Schindler	Bayesian sparse self-organized maps B. Rosic, B. van de Weg
15:10	Performance estimation of small-scale horizontal axis wind turbine blade R. Laouar, R. Bekkai, R. Mdouki	An effective bulk-surface thermistor model for large-area organic light-emitting diodes A. Glitzky	On definitions of modes and MAP estimators I. Klebanov

Tuesday, May 30, 13:30 - 16:10

	S13 **Flow control** Chair(s): S. Grundmann, J. Kriegseis CHE/S91	S14 **Applied analysis** Chair(s): D. Knees POT/51	S15 **Uncertainty quantification** Chair(s): B. Rosic, A. Litvinenko POT/13
15:30		Existence results for ferromagnetic elastomers M. Bresciani, M. Friedrich, C. Mora-Corral	Practical Uncertainty Quantification in Non-Linear Finite Element Simulations using Gaussian Error Propagation S. Hartmann, P.K. Dileep, L. Müller-Lohse, […]
15:50			

DFG PP 1886 | Contributed Sessions

	S16 **Optimisation** Chair(s): I. Joormann, A. Schwartz HSZ/105	S18 **Numerical methods for differential equations** Chair(s): R. Maier, C. Gräßle HSZ/H02	S19 **Optimisation of differential equations** Chair(s): C. Geiersbach, O. Weiß HSZ/101
13:30	Mixed-integer NMPC for real-time supervisory control of buildings' energy management D. Bitner, A. Burda, M. Grotjahn, C. Kirches, […]	Certified and Adaptive Surrogate Modeling for Parameterized Large Scale Systems M. Ohlberger	Fully-corrective generalized conditional gradient methods for nonsmooth optimization D. Walter
13:50	Optimal Yaw Control in Wind Farms by Integer Programming F. Bestehorn, F. Bürgel, C. Kirches, S. Stiller, […]		
14:10	Using Predictions in Online Combinatorial Optimization N. Megow	Model order reduction for a parametrized Cahn-Hilliard problem O. Burkovska, C. Gräßle	A topological derivative-based algorithm to solve optimal control problems with $L^0(\Omega)$ control cost D. Wachsmuth
14:30		Discretization of PDEs with Variable Coefficients Using Locally Adaptive Sparse Grids R. Scherner-Grießhammer, C. Pflaum	On Integer Optimal Control Problems with Total Variation Regularization J. Marko, G. Wachsmuth
14:50	A random preconditioned gradient method for least squares optimization problems N. Vater, A. Borzì	Higher order space-time finite element multigrid solver for coupled hyperbolic-parabolic systems M. Bause, M. Anselmann	A semismooth* Newton method for contact problems with Coulomb friction M. Mandlmayr
15:10	ResQPASS: an algorithm for bound constrained least squares problems B. Symoens, W. Vanroose	Higher order convergence for the wave equation with rough coefficients F. Krumbiegel, R. Maier	Greedy algorithms for the reconstruction of operators in dynamical systems S. Buchwald, G. Ciaramella, J. Salomon

Tuesday, May 30, 13:30 - 16:10

	S16 **Optimisation** Chair(s): I. Joormann, A. Schwartz HSZ/105	S18 **Numerical methods for differential equations** Chair(s): R. Maier, C. Gräßle HSZ/H02	S19 **Optimisation of differential equations** Chair(s): C. Geiersbach, O. Weiß HSZ/101
15:30		Adaptive discretizations for temporal multiscale problems T. Richter, S. Frei, L. Leopold	High-accuracy numerical optimal control of dynamical systems with switches and state jumps A. Nurkanovic, M. Diehl
15:50		An optimally stable discretization scheme for parametrized convection-dominated problems L. Renelt, C. Engwer, M. Ohlberger	

DFG PP 1886 | Contributed Sessions

	S20 **Dynamics and control** Chair(s): K. Flaßkamp, S. Peitz HSZ/401	S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201	S22 **Scientific computing** Chair(s): J. Heiland HSZ/103
13:30	Online Learning for Control: Bringing Sequential Decision Making in the Loop A. Iannelli	Dynamical vs. variational perspectives in shape spaces and the flow of diffeomorphisms B. Wirth	Optimized routes for ship in-ice navigation based on sea ice classifications and ice drift forecasts B. Schmitz, C. Eis, C. Büskens
13:50			A nonconforming finite element method to solve viscous-plastic flow problems on the sphere C. Mehlmann
14:10	Approximate Time Optimal Control by Deep Neural Networks Trained with Numerically Obtained Optimal Trajectories C. Zauner, H. Gattringer, A. Müller	Discrete Geodesic Calculus in the Manifold of Sobolev Curves F. Hartwig, M. Rumpf, B. Wirth	A Rigorous Mathematical Definition of Particle Methods and its Application in Scientific Computing J. Pahlke
14:30	Towards neural network enhanced integrators for efficient lifetime assessment of wind energy converters A. Othmane, K. Flaßkamp	Data-driven reduced order modeling framework using nonlinear dimensionality reduction A. Mjalled, M. Şereflioğlu, E. Torres, M. Mönnigmann	Application of a multirate method to model the degradation of the Iridium Anode Catalyst Layer in a Proton Exchange Membrane Water Electrolyzer D. Chang Dominguez, A.P. Dam, T. Richter, […]
14:50	On the approximability of Koopman-based operator Lyapunov equations T. Breiten, B. Höveler	Parametrizing Product Shape Manifolds by Composite Networks J. Sassen, K. Hildebrandt, B. Wirth, M. Rumpf	Coupled-model implementation and analysis of hydrogen tracking in natural gas pipelines P. Benner, S. Grundel, A.S. Nayak
15:10	Finite-data error bounds for kernel-based approximations of the Koopman operator F. Nüske, S. Peitz, F. Philipp, M. Schaller, […]	LiDAR based object detection for agricultural robots D. Stronzek-Pfeifer, S. Patel, B. Christof	A Discontinuous Galerkin Approach for Cloudy Air with Implicit Condensation S. Hittmeir, P.L. Lederer, J. Schöberl, H. von Wahl

Tuesday, May 30, 13:30 - 16:10

	S20 **Dynamics and control** Chair(s): K. Flaßkamp, S. Peitz HSZ/401	S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201	S22 **Scientific computing** Chair(s): J. Heiland HSZ/103
15:30	Willems' fundamental lemma for linear descriptor systems T. Faulwasser, P. Schmitz, K. Worthmann	Measurement methods in digital images of high-speed recordings for a quantitative vibration analysis of flame pulsations J.A. Morich, S. Günther, S. Odenbach	
15:50			

	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): F. Nüske HSZ/403		
13:30	Designing molecular models with machine learning and experimental data C. Clementi		
13:50			
14:10	A comparative study of recent deep-learning techniques for identifying collective variables of molecular dynamics W. Zhang		
14:30	Molecular free energy and kinetics from AI-assisted path sampling simulations G. Lazzeri, H. Jung, P.G. Bolhuis, R. Covino		
14:50	Kernel-Based Approximation of the Koopman Generator for Coarse-Grained Stochastic Dynamical Systems V. Nateghi, F. Nüske		
15:10	Validating Molecular Dynamics (MD) and continuum simulations by calculation of the X-ray and neutron scattering patterns A. Majumdar, M. Mueller, S. Busch		

	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): F. Nüske HSZ/403		
15:30	Rate-limiting recovery processes in neurotransmission under sustained stimulation A. Ernst, N. Unger, C. Schütte, A. Walter, […]		
15:50			

Young Researchers' Minisymposia

	YRM1 **Randomized algorithms in numerical linear algebra** Chair(s): A. Cortinovis HSZ/H03	YRM2 **Novel Modelling Approaches in Structural Stability** Chair(s): A. Köllner, R. Groh HSZ/H04	YRM3 **Emergent behaviour in systems of hydrodynamically interacting particles** Chair(s): R. Höfer, R. Schubert CHE/S89
16:30	Randomized Joint Diagonalization of Symmetric Matrices H. He, D. Kressner	Efficient modelling of nonlinear structural instability problems with material damage A. Köllner	On the (numerical) stability of an equilibria for the Transport Stokes problem M. Bonnivard, A. Mecherbet
16:50	Randomized Krylov methods for efficient solution of linear systems and eigenvalue problems. O. Balabanov, L. Grigori	A Fast Design Tool for Tracing the Geometrically Nonlinear Response of Thin-walled Aircraft Structures G. Zucco, P.M. Weaver	Γ–convergence for nearly incompressible fluids P. Bella, E. Feireisl, F. Oschmann
17:10	On the Unreasonable Effectiveness of Single Vector Krylov for Low-Rank Approximation R. Meyer, C. Musco, C. Musco		A connection between homogenisation of compressible Navier-Stokes and fluid-structure problems. M. Bravin
17:30	Randomized preconditioning for least squares in mixed precision I. Daužickaitė, E.C. Carson	Multifield computational model predicts the interplay between cellular processes and geometrical instabilities in the developing human brain M.S. Zarzor, I. Blümcke, S. Budday	Variational approaches to Fluid-Structure Interactions and related problems M. Kampschulte
17:50	Multigrid Multilevel Monte Carlo and Deflation G. Ramirez-Hidalgo, A. Frommer, J. Jimenez-Merchan	Complex instability phenomena in biological and engineered shell structures R. Groh	On Implicitly Constituted Fluids with Implicitly Constituted Boundary Conditions E. Maringová, M. Bulicek, J. Malek
18:10	The parallelization of sketching algorithms for the tensor-train decomposition T. Shi, M. Ruth, A. Townsend		Convergence rates for the Stokes-Brinkman equations as homogenisation limit J. Jansen

Tuesday, May 30, 16:30 - 18:30

YRM4 **Robustness in Deep Learning** Chair(s): F. Croce, L. Thesing HSZ/AUDI	YRM5 **Material Modelling Across Length Scales** Chair(s): J. Waimann, T. Kaiser POT/51	YRM6 **Parameter Identification: Methods and Applications** Chair(s): B. Jurgelucks, K. Schäfer HSZ/H02	
Generalized Hardness of approximation in deep learning – What can we learn with neural networks? L. Thesing, A. Bastounis, A.C. Hansen	Efficient thermo-mechanically coupled FE-FFT-based multiscale simulation of polycrystals C. Gierden, A. Schmidt, J. Waimann, B. Svendsen, […]	Benchmarking Methods for Parameter Identification in Dynamical Systems M. Wiesner, C. Büskens	**16:30**
How to quickly obtain models robust to multiple threats, and their advantages F. Croce	Modeling intragranular slip localization modes within polycrystals A. Marano, S. Forest, L. Gélébart		**16:50**
		Symmetry detection combined with Hamiltonian neural networks E. Dierkes, C. Offen, S. Ober-Blöbaum, K. Flaßkamp	
Still no free lunch – On hallucinations and non-robustness in AI for imaging V. Antun	Multiscale and Multiphase Simulation of Function-Perfusion Processes in the Liver on Whole Body, Organ, Lobule, and Cell Scale L. Lambers, S. Gerhäusser, L. Mandl, T. Ricken		**17:10**
Towards Reliable Graph Neural Networks D. Zügner	Numerical model reduction in computational homogenization of fractured porous media F. Ekre, C. Gräßle, R. Jänicke	Identification of the basal drag parameter in ice sheet models L.-S. Höyns, T. Kleiner, A. Rademacher, M. Rückamp, […]	**17:30**
Understanding robustness in the parameter space of deep networks M. Andriushchenko	Reaching larger length and time scales in atomistic simulations via statistically averaged coarse graining S. Saxena, M. Spinola, P. Gupta, D.M. Kochmann		**17:50**
		Inverse procedure for the identification of piezoelectric material parameters supported by dense neural networks L. Claes, L. Meihost, B. Jurgelucks	
Training machine learning models with malicious teachers A.E. Cinà	Second-order computational homogenization of fluid flow in porous media E. Polukhov, H. Khurshid, M.-A. Keip		**18:10**

Detailed Schedule - Wednesday, May 31

8:30 **DFG Priority Program 2353-1 | Contributed Sessions**

Parallel sessions

9:30 **Coffee Break | Poster Session 1**

HSZ

10:30 **Richard von Mises Lecture**

HSZ/AUDI Lecture held by the Awardee of the Richard v. Mises Prize 2023.

11:30 **GAMM General assembly**

HSZ/H02

13:00 **Lunch Break | YAMM Lunch**

HSZ

14:00 **DFG Priority Program 1962 | Contributed Sessions**

Parallel sessions

16:00 **Coffee Break**

HSZ

16:30 **Plenary Lecture 3**

HSZ/AUDI **Petros Koumoutsakos** Harvard-School of Engineering, MA, USA
Alloys of AI and Computational Science
Chaired by: Peter Benner

17:15 **Plenary Lecture 4**

HSZ/AUDI **Huajian Gao** Nanyang Technological University Singapore, Singapore
Mechanics of Peeling Induced Shape Morphing in Plastic Films
Chaired by: Dennis Kochmann

19:30 **Conference Dinner**

HYG Hygiene-Museum

DFG PP 2353-1 | Contributed Sessions

	PP 2353-1 **Daring More Intelligence – Design Assistants in Mechanics and Dynamics** Chair(s): P. Eberhard, H. Ebel HSZ/204	S02 **Biomechanics** Chair(s): M. Mohammadkhah, M. Hossain POT/351	S03 **Damage and fracture mechanics** Chair(s): J. Mosler HSZ/H04
08:30	Approaches for the approximation of acoustic models by deep learning J. Schultz, J. van Delden, C. Blech, S.C. Langer, […]	A novel modeling approach for stress-driven anisotropic growth of bioengineered tissues T. Brepols, H. Holthusen, C. Rothkranz, L. Lamm, […]	Combining Damage and Fracture Mechanics for the identification of crack propagation parameters S. Dray, A. Fau, F. Hild, T. Wick
08:50	Path planning and control of concentric tube continuum robots Z. Ding, K. Flaßkamp, M.K. Hoffmann, […]	Characterisation of the layer, direction and time-dependent mechanical behaviour of the human oesophagus and the effects of formalin preservation M. Hossain, C. Durcan, G. Chagnon, D. Peric, […]	Employing Miniaturized Test Methods to Determine High-temperature Strength of Carbon-bonded Alumina S. Takht Firouzeh, M. Abendroth, B. Kiefer
09:10	Towards intelligent design assistants for planar multibody mechanisms B. Röder, H. Ebel, P. Eberhard	Exploring the reason for tension and compression stress-strain asymmetry observed in passive skeletal muscle M. Mohammadkhah, P. Murphy, S. Klinge, C. Simms	Fractures in glaciers – crack tips and their stress fields by observation and modelling A. Humbert, D. Gross, R. Sondershaus, R. Müller, […]

Wednesday, May 31, 08:30 - 09:30

S04 **Structural mechanics** Chair(s): O. Weeger HSZ/AUDI	S05 **Nonlinear oscillations** Chair(s): U.J. Römer, H. Hetzler CHE/183	S06.2 **Material modelling with non-metals** Chair(s): A. Lion POT/151	
Remeshing and data transfer in the finite cell method for problems with large deformations R. Sartorti, A. Düster	Nonlinear Vibrations of Bimodular Beam by Means of Isogeometric Analysis G. El Chabaan	A method for characterizing hyperelastic material parameters based on the incompressible invariant plane S. Buchen, N.H. Kröger, K. Weinberg	**08:30**
Incorporating knowledge of the material tangent for the data-driven discovery of hyperelastic material models D.H. Nguyen, C. Weißenfels	Detection and characterization of local nonlinearity in a clamped-clamped beam with state space realization U. Gogilan, A. Oveisi, T. Nestorović	Modelling the viscoelastic properties of elastomer blends by a diffuse interphase approach D. Juhre, J. Voges	**08:50**
Experimental and numerical analysis of strain and thermal behaviour on 3D-printed flexible auxetic structures B. Pi Savall, S.M. Seyedpour, R. Tim	Various beam and shell models for nonlinear vibrations of long slender end-mills in the area of high-speed cutting R. Schmidt, A. Ams	A constitutive modelling approach to simulate time-dependent phenomena in rubber-like materials R. Landgraf, J. Ihlemann	**09:10**

DFG PP 2353-1 | Contributed Sessions

	S07 **Coupled problems** Chair(s): M. Graf, R. Schussnig CHE/S89	S07 **Coupled problems** Chair(s): S. Budday, K. Linka CHE/184	S08 **Multiscales and homogenization** Chair(s): R. Jänicke HSZ/H03
08:30	Coupling strategies for the cardiovascular system R. Schussnig, M. Kronbichler	A diffusion-driven biofilm growth model based on an extension of the Hamilton principle F. Klempt, M. Soleimani, P. Junker	Modeling the material behavior of heterogeneous materials considering a two-scale FE-FFT-based simulation framework A. Schmidt, C. Gierden, J. Waimann, S. Reese
08:50	Coupling instable pore geometries with local flow to allow for high attenuation at low frequencies P. Kurzeja, B. Quintal	Mathematical modeling of biological ion channels C. Keller, J. Fuhrmann, M. Landstorfer, B. Wagner	An iterative multi-step solver for linear systems arising in the context of periodic phase-field problems A. Krischok, B. Yaraguntappa, M.-A. Keip
09:10	Drag modeling for the flow-induced reconfiguration of a tapered flexible ribbon K. Schoppmann, B. Löhrer, J. Fröhlich	On numerical aspects of forward and inverse analysis of a two-phase bone model M. Blaszczyk, K. Hackl	Composite Boxels with imperfect Interfaces (ComBI) with FFT-based solvers S. Keshav, F. Fritzen, M. Kabel

Wednesday, May 31, 08:30 - 09:30

S08 **Multiscales and homogenization** Chair(s): M.-A. Keip HSZ/403	S14 **Applied analysis** Chair(s): S. Neukamm POT/51	S15 **Uncertainty quantification** Chair(s): R. Pulch POT/13	
A phase-field approach for optimizing unit cells for structures with anisotropic properties B. Yaraguntappa, A. Krischok, M.-A. Keip	A Nonlocal Maximum Principle J. Huschens	On Uncertainty Quantification of Eigenpairs with Higher Multiplicity J. Dölz, D. Ebert	**08:30**
Coarse-grained phase-field crystal modeling of elasticity and plasticity M. Salvalaglio	Maximum principle for fourth-order hyperbolic equations with applications. K. Buryachenko	Efficient solution of the covariance eigenvalue problem for stationary random fields C. Zhang, O. Ernst	**08:50**
Nonlinearly weighted homogenization of phase-field evolution laws involving spatial and temporal scale-separations V. von Oertzen, B. Kiefer	Regional problem M. Vu	On analytic and Gevrey class regularity for parametric elliptic eigenvalue problems A. Chernov, T. Le	**09:10**

DFG PP 2353-1 | Contributed Sessions

	S17 **Applied and numerical linear algebra** Chair(s): E. Ullmann, T. Mach HSZ/103	S18 **Numerical methods for differential equations** Chair(s): R. Maier, C. Gräßle HSZ/H02	S19 **Optimisation of differential equations** Chair(s): C. Geiersbach, O. Weiß HSZ/101
08:30	Randomized sketching of nonlinear eigenvalue problems and beyond S. Güttel, D. Kressner, B. Vandereycken	Higher-order semi-explicit time integration methods for poroelasticity problems R. Altmann, A. Mujahid, B. Unger	Pressure-robustness in the context of optimal control of incompressible flows C. Merdon, W. Wollner
08:50		Port-Hamiltonian descriptor systems and structure-preserving time integration R. Morandin, V. Mehrmann	Space-time phase-field fracture as a constrained nonlinear optimization problem D. Khimin, M.C. Steinbach, T. Wick
09:10	Divide and conquer methods for functions of matrices with banded or hierarchical low-rank structure A. Cortinovis, D. Kressner, S. Massei	Applications of numerical homotopy continuation for nonlinear boundary value problems L. Anastasopoulos	Application of the SQP Method to Phase-Field Fracture Optimal Control Problems A. Hehl, I. Neitzel

Wednesday, May 31, 08:30 - 09:30

S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201	S22 **Scientific computing** Chair(s): T. Wick HSZ/401	S25 **Computational and mathematical methods in data science** Chair(s): M. Stoll, J.-F. Pietschmann POT/112	
A Mean-Field Optimal Control Approach to the Training of NeurODEs & Autoencoders C. Cipriani	Dimensional Reduction for Parametric Projection-based Reduced Order Models in Crash M. Lesjak, F. Duddeck	Linearized unbalanced optimal transport B. Schmitzer	**08:30**
The Geometry of Adversarial Training L. Bungert	Block-structured mesh generation from implicit geometries for cardiovascular applications D. Bosnjak, T.-P. Fries		**08:50**
p-Laplacian Operators for Hypergraphs A. Fazeny, D. Tenbrinck, M. Burger		A Pareto optimal extension of the model-free data-driven approach K. Ciftci, K. Hackl	**09:10**

DFG PP 1962 | Contributed Sessions

	PP 1962 **Non smooth and complementarity-based distributed parameter systems: […]** Chair(s): M. Hintermüller HSZ/204	S01 **Multi-body dynamics** Chair(s): J. Edelmann POT/351	S03 **Damage and fracture mechanics** Chair(s): M. Jabareen HSZ/H04
14:00	Shape optimization in the Lipschitz topology with the ADMM method K. Deckelnick, P. Herbert, M. Hinze	An improved development process of production plants using digital twins with extended dynamic behavior in virtual commissioning. D. Pfeifer, J. Scheid, J. Fehr	Ductile damage and failure of thin sheet metals: new biaxial experiments and numerical simulations S. Gerke, F. Ramón Valencia, M. Brünig
14:20			Characterization of ductile damage and fracture behavior under shear reverse loading condition Z. Wei, S. Gerke, M. Brünig
14:40		Energy Efficiency of a Bipedal Robot That Walks on Compliant Ground Y. Luo, P.L. Arbogast, U.J. Römer, M. Zirkel, […]	A non-local damage-plasticity model based on a smooth elastic-plastic transition M. Livnoni, M. Jabareen
15:00		Comparing reference conditions of floating frame of reference formulations expressed in absolute boundary coordinates K. van Voorthuizen, M.I. Abdul Rasheed, J. Schilder, […]	Gradient-plasticity vs Gradient-damage – What to choose for the Modelling and Calibration of Ductile Damage? J. Friedlein, J. Mergheim, P. Steinmann
15:20		An experimental study on rotor interaction of fixed tilted UAV rotors D. Bernstein, J. Bieber, M. Beitelschmidt	Analysis of effects of material anisotropy on ductile damage using microscopic unit cell-model S. Koirala, S. Gerke, M. Brünig
15:40		Computationally Efficient Implementation of the Gauss-Newton Method for solving the Forward Kinematics of Redundant Cable-Driven Parallel Robots J. Bieber, S. Pallmer, M. Beitelschmidt	Limitations and possibilities of (an-)isotropic ductile damage models in metal forming K. Feike, K. Langenfeld, P. Kurzeja, J. Mosler

Wednesday, May 31, 14:00 - 16:00

S04 **Structural mechanics** Chair(s): A. Pechstein HSZ/AUDI	S06.1 **Material modelling with metals** Chair(s): P. Kurzeja, J. Mosler POT/112	S06.2 **Material modelling with non-metals** Chair(s): J. Ihlemann, A. Lion POT/151	
Modular Topology Optimization Aided by Deep Learning L. Gaynutdinova, M. Doškář, O. Rokoš, I. Pultarová, […]	A variational approach for the cyclic behavior of nickel titanium under thermal as well as mechanical loading J. Waimann, P. Junker	Constitutive modeling based on physics-augmented neural networks for compressible hyperelastic materials L. Linden, K. Kalina, J. Brummund, D. Klein, […]	**14:00**
Modified Settlement-Stability-Optimization Method for Numerical Foundation Design of Tower Cranes H.W. Müllner, M. Koza	Applying the Simplified Theory of Plastic Zones to Single-Parameter Cyclic Loading M. Zobel, H. Hübel, B. Vollrath, W. Dornisch	Automated Constitutive Modeling of Viscoelastic Materials using Physics-Augmented Neural Networks M. Rosenkranz, K.A. Kalina, J. Brummund, M. Kästner	**14:20**
Identification of creep parameters from multi-step relaxation tests on miniaturized specimen R.W. Schirmer, M. Selent, M. Abendroth, B. Kiefer	The simulation of residual stress evolution during cyclic loading T. Schneider, M. Kästner	Analytical tangents for arbitrary material laws derived from rheological models at large deformations R. Gypstuhl, R. Landgraf, H. Wulf, J. Ihlemann	**14:40**
Multi-objective optimization in design and synthesis of compliant mechanisms A. Humer, S. Platzer, A. Pechstein	Characterisation of damage by means of electrical measurements: numerical predictions D. Güzel, T. Kaiser, A. Menzel	Microscopic Mode-Coupling Theory for Macroscopic Simulations of Elastoviscoplastic Materials T. Treskatis, S. Steinhäuser, S. Turek, T. Voigtmann	**15:00**
Theoretical aspects and applications of goal-oriented reanalysis methods D. Materna	Isogeometric Analysis for Sintering Hollow Spheres T. Wiegold, P. Kurzeja, J. Mosler	A novel thermo-mechanically coupled material model for glass above the glass transition temperature S. Bögershausen, H. Holthusen, S. Felder, […]	**15:20**
A novel surrogate modelling approach for additive manufacturing processes A. Hürkamp, V. Ekanayaka	Coupled strain and temperature gradient analysis in curved surfaces L. Müller-Lohse, J.-A. Tröger, S. Hartmann	Theoretical modelling of polymer interlayer of laminated glass B. Halkova	**15:40**

DFG PP 1962 | Contributed Sessions

	S07 **Coupled problems** Chair(s): R. Schussnig, M. Graf CHE/S89	S08 **Multiscales and homogenization** Chair(s): A. Krischok HSZ/H03	S09 **Laminar flows and transition** Chair(s): G. Brenner CHE/183
14:00	Fluid-structure interaction of a dynamic seal with 3D-printed surface M. Graf, T. Lankenau	Scattering Transform in Microstructure Reconstruction P. Reck	Boundary layer transition delay via biomimetic fish-scale arrays M. Muthuramalingam, D. Puckert, U. Rist, C. Bruecker
14:20	Fluid-structure interaction with fully coupled mesh generation T. Schwentner, T.-P. Fries	A microstructure-generation method for fiber composites accounting for fiber length and orientation distribution coupling A.R. Mehta, M. Schneider	Thermo-electrohydrodynamic convection in differentially rotating spherical shell Y. Gaillard, P. Szabo, C. Egbers
14:40	Large Eddy Simulation of the flow over a canopy with spanwise patches J. Fröhlich, B. Löhrer	3D orientation map reconstruction using the 2-point correlation function in MCRpy A.R. Safi, P. Seibert, M. Kästner, B. Klusemann	Experimental study of perturbation growth in a round laminar jet L. Gareev, D. Ashurov, O. Ivanov, V. Vedeneev
15:00	Numerical study of the motion of an aquatic canopy envelope in relation to the surrounding fluid B. Löhrer, J. Fröhlich	Statistical descriptors in structure-property linkages for inverse microstructure design A. Raßloff, P. Seibert, K.A. Kalina, M. Kästner	The classical unsteady boundary layer: a numerical study M. Kaczvinszki, S. Braun
15:20	An isogeometric Mortar-Based Model for EHL contacts Y. Tong, M. Müller, G.-P. Ostermeyer	Microstructure generation for discontinuous long fiber-reinforced polymers with curved fiber description and prescribed fiber orientation […] C. Lauff, M. Schneider, T. Böhlke	Extension of Squires Theorem for Spatial Instabilities - On New Linear 3D Sub-Critical Oblique Modes M. Oberlack, A. Yalcin, J. Laux
15:40	Towards coupled fire-structure simulations for forecasting smoke leakage in case of concrete structures under fire A. Palani, C. Kandekar, M. Breuer, W.E. Weber	Automatic generation of microstructures for materials based on cellulose fibers J.M. Pfeifer, G. Kloppenburg, S. Kochersperger, […]	

Wednesday, May 31, 14:00 - 16:00

S10 **Turbulence and reactive flows** Chair(s): H. Schmidt, O.T. Stein CHE/184	S11 **Interfacial flows** Chair(s): M. Scholle CHE/S91	S14 **Applied analysis** Chair(s): S. Neukamm POT/51	
Infinite Lundgren hierarchy of turbulence: Isotropy, super-isotropy and a finite dimensional eigenvalue problem S. Görtz, J.H. Conrad, M. Oberlack	An arbitrary Lagrangian-Eulerian formulation for Navier-Stokes flow on deforming surfaces R.A. Sauer	Universality of the magnetisation ripple – variational methods for a singular stochastic PDE R. Ignat, F. Otto, T. Ried, P. Tsatsoulis	**14:00**
Random field modeling of turbulent flows in industrial production processes of non-woven textiles M. Antoni, Q. Kürpick, F. Lindner, […]	A geometrical phase indicator for the unstructured finite-volume Level Set Method T. Marić, J. Reitzel, M. Fricke, D. Bothe, D. Juric, […]		**14:20**
ODT augmented RaNS C. Glawe, M. Klein, H. Schmidt	Feedback stabilization of a surface tension system modeling the motion of a two-dimensional soap bubble S. Court	Variational models for pattern formation in biomembranes: A Gamma-convergence result J. Ginster, G. Hayrapetyan, A. Pešić, B. Zwicknagl	**14:40**
Transition in the torque scaling in a very wide gap turbulent Taylor-Couette flow ($\eta = 0.1$) M.H. Hamede, S. Merbold, C. Egbers	Monolithic Solver for Interfacial Flow Problems with Implicit Surface Tension M.A. Afaq, A. Fatima, S. Turek	A homogenized bending theory for prestrained plates D. Padilla-Garza, S. Neukamm, K. Boehnlein, […]	**15:00**
Anisotropy and relaminarisation of the turbulent flow near a rotating cylindrical cavity wall T. Hultsch, F. Rüdiger, J. Stiller, J. Fröhlich	The effect of particles on the film drainage and bubble coalescence in a slurry bubble column Y. Liao	One-dimensional viscoelastic von Kármán theories L. Machill, M. Friedrich	**15:20**
Higher-order moments of three velocity components in pipe flow at high Reynolds number N. Furuichi, M. Ono, Y. Tsuji	Eulerian simulations of premixed submerged multiphase turbulent jets: RANS based approach V.V. Kamble, R. Rzehak, J. Fröhlich	A Gamma-convergence result for discrete elastic rods C.A. Hounkpe, P.W. Dondl, M. Jesenko	**15:40**

DFG PP 1962 | Contributed Sessions

	S16 **Optimisation** Chair(s): A. Schwartz, I. Joormann HSZ/105	S18 **Numerical methods for differential equations** Chair(s): C. Gräßle, R. Maier HSZ/H02	S20 **Dynamics and control** Chair(s): K. Flaßkamp, H. Ebel HSZ/401
14:00	Knight descent: a parallel stochastic method for nonlinear optimization problems. A. Angino, A. Kopanicakovà, R. Krause, M. Donatelli	Structure-preserving numerical methods for dispersive wave equations H. Ranocha	Sample efficiency in data-driven MPC and Reinforcement Learning S. Peitz
14:20	A Multilevel Low-Rank Newton Method with Superlinear Convergence Rate and its Application to Non-convex Problems N. Tsipinakis, P. Tigkas, P. Parpas		
14:40	SLEQP: An Open Source Package for Nonlinear Programming C. Hansknecht, C. Kirches	Advances on cut-cell stabilization methods for hyperbolic PDEs C. Engwer, G. Birke, S. May	Non-holonomic Systems: Geometry, Design of Predictive Controllers, and Remaining Difficulties H. Ebel, M. Rosenfelder, P. Eberhard
15:00	Sequential optimality conditions for cardinality-constrained optimization problems with algorithmic applications C. Kanzow, A.B. Raharja, A. Schwartz	On discrete ground states of rotating Bose–Einstein condensates M. Yadav, P. Henning	Funnel MPC D. Dennstädt
15:20	Branching Exponents in NLP-Based Synthetic Vascular Trees E. Jessen, M.C.C. Steinbach, C. Debbaut, […]	A posteriori error analysis of the inf-sup constant for the divergence D. Gallistl	Recent progress on data-driven output feedback stochastic predictive control G. Pan, R. Ou, T. Faulwasser
15:40		A posteriori error estimates for H2 nonconforming finite element methods on fourth order elliptic problems S. Tian, D. Gallistl	A generalized stacked reinforcement learning method for sampled systems P. Osinenko, D. Dobriborsci

Wednesday, May 31, 14:00 - 16:00

S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201	S22 **Scientific computing** Chair(s): T. Richter HSZ/103	S23 **Applied operator theory** Chair(s): R. Chill, M. Waurick HSZ/101	
Approximation of functions by short exponential sums G. Plonka-Hoch	Can neural networks replace traditional numerical methods for partial differential equations? C. Lessig	Spectral inclusions and approximations of finite and infinite banded matrices M. Lindner	**14:00** **14:20**
L^1-data fitting for Inverse Problems with subexponentially-tailed data K. Meth, F. Werner	Benchmarking Hybrid Finite Element/Deep Neural Networks and Classical Finite Element Methods in 2D and 3D N. Margenberg, R. Jendersie, M. Anselmann, M. Bause, […]	Operator splitting based dynamic iteration for linear infinite-dimensional port-Hamiltonian systems B. Farkas, B. Jacob, T. Reis, M. Schmitz	**14:40**
Inexact proximal Langevin sampling L. Kuger, M. Ehrhardt, C.-B. Schönlieb	Domain Decomposition with Neural Network Interface Approximations for time-harmonic Maxwell's equations with different wave numbers T. Knoke, S. Kinnewig, S. Beuchler, […]	Infinite-Dimensional Control Systems as Evolutionary Equations A. Buchinger	**15:00**
Rebricking frames and bases T. Fink, B. Forster-Heinlein, F. Heinrich	Analysis of a hybrid finite element / neural network solver U. Kapustsin, T. Richter, U. Kaya	Weak Observability Estimates for the Heat Equation on Discrete Graphs C. Seifert	**15:20**
Efficient Data Optimisation for Polyharmonic Inpainting with Finite Elements V.M. Chizhov	Parameter Identification of Piezoelectrics improved by Neural Networks B. Jurgelucks	Pathwise Uniform Convergence of Time Discretisation Schemes for SPDEs K. Klioba	**15:40**

DFG PP 1962 | Contributed Sessions

	S25 **Computational and mathematical methods in data science** Chair(s): J.-F. Pietschmann, M. Stoll POT/13	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): G. Friesecke HSZ/403	
14:00	Computability of Optimizers Y. Lee, H. Boche, G. Kutyniok	Optimizing the diffusion of overdamped Langevin dynamics T. Lelièvre, G. Pavliotis, G. Robin, R. Santet, […]	
14:20	Well-Definedness Matters: Solving the Uniqueness Problem in PDE Learning P. Scholl, A. Bacho, H. Boche, G. Kutyniok	Efficient estimation of transition rates as functions of pH L. Donati, M. Weber	
14:40	Physics-Informed Neural Networks for Material Model Calibration in Structural Health Monitoring D. Anton, A. Henkes, H. Wessels	Stochastic Norton Dynamics for Computing Transport Coefficients N. Blassel, G. Stoltz	
15:00	Adaptive step size control for stochastic optimization A. Schiela, F. Köhne	Extending the regime of linear response with synthetic forcings R. Spacek, G. Stoltz	
15:20	Singularities in Principal Geodesic Analysis for Hybrid Mechanical Systems J. Schubert, M.C.C. Steinbach, C.G. Gebhardt	Sticky Coupling as a Control Variate for Computing Transport Coefficients S. Darshan, A. Eberle, G. Stoltz	
15:40	A data-driven surrogate model for magneto-static simulations R. Niekamp, J. Niemann, M. Reichel, J. Schröder	A priori error analysis of periodic Schrödinger equations with analytic potentials G. Kemlin, E. Cancès, A. Levitt	

Detailed Schedule - Thursday, June 1

8:30 **DFG Priority Program 2020 | Contributed Sessions**

Parallel sessions

10:30 **Coffee Break**

HSZ

11:00 **Plenary Lecture 5**

HSZ/AUDI **Christoph Egbers** BTU Cottbus, Germany
Fluid Mechanics under Microgravity Conditions
Chaired by: Jochen Fröhlich

11:45 **Plenary Lecture 6**

HSZ/AUDI **Peter Maaß** University of Bremen, Germany
Regularization by architecture: Deep Learning for PDE-based inverse problems
Chaired by: Gerlind Plonka-Hoch

12:30 **Lunch Break**

13:30 **Minisymposia**

Parallel sessions

15:30 **Coffee Break | Poster Session 2**

HSZ

16:00 **DFG Priority Programs 2256 & 2353-2 | Contributed Sessions**

Parallel sessions

20:00 **Public Lecture 1**

HSZ/AUDI **Wolfgang Ehlers** University of Stuttgart, Germany
100 Jahre GAMM: Motivation, Historie und Errungenschaften
Chaired by: Karsten Urban

DFG PP 2020 | Contributed Sessions

	PP 2020 **Cyclic deterioration of high-performance concrete in an experimental-virtual [...]** Chair(s): J. Storm, F. Aldakheel HSZ/204	S02 **Biomechanics** Chair(s): M. Suditsch, S. Klinge POT/351	S03 **Damage and fracture mechanics** Chair(s): M. Kästner HSZ/H04
08:30	High-speed fatigue testing of High-Performance Concretes and parallel characterization using Dynamic Mechanical Analysis (DMA) H.R. Madadi Varzaneh, H. Steeb	A unified approach for data- and continuum-mechanical-driven simulations of tumours in brain tissue M. Suditsch, T. Ricken, A. Wagner	An anisotropic damage model for finite strains with full and reduced regularization of the damage tensor T. van der Velden, H. Holthusen, T. Brepols, [...]
08:50	Fatigue failure mechanism for concrete microstructure in fully saturated porous media N. Noii, F. Aldakheel, M. Abubakar Ali, [...]		On the predictive capabilities of nonlocal models for ductile crack propagation under different levels of stress triaxiality R.D. PHAM, O. El Khatib, G. Hütter, A. Seupel, [...]
09:10	Mesoscale Modeling Of High-performance Fiber-reinforced Concrete Under Monotonic And Cyclic Loading K. Daadouch, V. Gudžulić, G. Meschke	A Data-Driven Constitutive Model for Soft Biological Tissues A.K. Açan, O.Z. Tikenoğulları, H. Dal	Multiphase-field modelling of the interactive pitting corrosion and ductile fracture in biodegradable magnesium alloys S. Ma, D. Zhang, B. Markert
09:30	Phase-field modeling of failure behavior of reinforced ultra high performance concrete at low cycle fatigue M. Pise, G. Gebuhr, D. Brands, S. Anders, [...]	Constitutive Artificial Neural Networks (CANNs) with applications to soft biological tissues K. Linka, C.J. Cyron	A gradient-extended two-surface damage-plasticity model for geomaterials J. Zhang, T. Brepols, S. Reese
09:50	Modelling of Overload Effects on Fatigue Behaviour via Representative Crack Elements J. Storm, M. Kaliske	Deep learning-based surrogate modeling of coronary in-stent restenosis J. Shi, K. Manjunatha;, S. Reese	Modeling fatigue at the microscale by a viscous gradient-enhanced damage model H.I. Kök, P. Junker
10:10		Prescribed-motion and quasi-steady CFD of left ventricular hemodynamics – comparison to 4D flow MRI data L. Obermeier, K. Vellguth, M. Wiegand, [...]	An anisotropic gradient-enhanced damage model for low cycle fatigue and the influence of forming-induced pre-damage K. Langenfeld, P. Kurzeja, J. Mosler

S04 **Structural mechanics** Chair(s): S. Klinkel HSZ/AUDI	S05 **Nonlinear oscillations** Chair(s): E. Woschke, F. Dohnal CHE/183	S06.1 **Material modelling with metals** Chair(s): T. Kaiser, P. Kurzeja POT/112	
Locking-free coupling of continuum and shell elements in large deformation problems A. Pechstein, M. Neunteufel, M. Krommer	Simulation of foil bearing supported rotor systems considering tilting motions S. Nitzschke, E. Woschke, C. Daniel	Constitutive modeling of single and oligo crystals based on an Augmented Lagrangian formulation – Application to TWIP-steels and SMAs S. Prüger, P. Löps, V. von Oertzen, B. Kiefer	**08:30**
	Periodic oscillations of a rotor disc in an axial flux reluctance machine P. Altoé, A. Fidlin	On the numerical efficiency and robustness of interior-point algorithms for finite strain rate-independent single crystal plasticity A. Niehüser, J. Mosler	**08:50**
Investigations on adapted interpolation orders for a displacement-strain-mixed isogeometric formulation L. Stammen, W. Dornisch	SBFEM with reduced modal basis for hydrodynamic bearings S. Pfeil, C. Song, E. Woschke	A modular data-driven approach for inelasticity based on history surrogates T. Bartel, M. Harnisch, B. Schweizer, A. Menzel	**09:10**
Accurate and efficient explicit structural dynamics via finite element technology-based selective mass scaling B. Oesterle, M. Hoffmann, A. Tkachuk, M. Bischoff	Modeling, simulation, and implementation of a superconducting magnetic bearing twisting system in a high-speed ring spinning process Y.J. Perez Delgado, M. Beitelschmidt, M. Hossain, […]	Finite element modeling of the phase transformation behavior in metastable austentic stainless steels H.K. Thammineni, R. Denzer, H. Hallberg, R. Müller	**09:30**
A Highly Efficient Lagrange Multiplier Based Mixed Finite Element Formulation for Gradient Damage J. Riesselmann, D. Balzani	A new approach for modelling railway overhead contact lines with global shape functions to calculate dynamic contact force fluctuations M. Beitelschmidt, S. Noack, J. Hietzge, E. Brandes	Recovery of Battery Ageing Dynamics using Bayesian Inference A. Selahi	**09:50**
Geometrically Nonlinear Locking Phenomena that are Unknown from Linear Analysis S. Bieber, T. Willmann, M. Bischoff	Squeak and rattle noise prediction in vehicle acoustics A. Rauter, L. Utzig, K. Weisheit, M. Maeder, […]	Automating constitutive modeling by Machine Learning: a lightweight ML approach for cyclic plasticity S. Hildebrand, S. Klinge	**10:10**

	S07 **Coupled problems** Chair(s): C. Weißenfels, F. Aldakheel CHE/S89	S08 **Multiscales and homogenization** Chair(s): F. Fritzen HSZ/H03	S11 **Interfacial flows** Chair(s): K. Schwarzenberger CHE/S91
08:30	Simulation of Powder Bed Fusion Processes using Smoothed Particle Hydrodynamics: Physical Modeling and Requirements on Meshfree Solution Schemes C. Weißenfels	Novel Architectures of Deep Homogenization Neural Networks for Universal Predictions B. Eidel	Stability analysis of wall-attached Bénard-Marangoni convection in a vertical magnetic field T. Boeck
08:50			Bilayer Couette Flow over a Profiled Plate M. Scholle, P.H. Gaskell, S. Ismail-Sutton, […]
09:10	Grinding process model considering an intermediate liquid phase F. Kästner, K. de Payrebrune	Double U-Net: Microstructure modeling via convolutional neural networks J. Lißner, F. Fritzen	Enhancement of interfacial instabilities by solid particles during fast stretching of a liquid suspension bridge P. Brockmann, L. Liu, I. Roisman, J. Hussong
09:30	Modelling the post-buckling behaviour of steel sheets under induction heating V. Filkin, Y. Vetyukov, F. Toth	Continuous Self-Adversarial Training of Recurrent Neural Network Based Constitutive Descriptions A.A. Khedkar, J.P. Stöcker, S. Zschocke, M. Kaliske	Non-invasive experiments of the fluid film behaviour in a horizontal rotating cylinder O. Sommer, A. la Monaca, E. Bretschneider, […]
09:50	Physics-Informed Reduced Order Modeling in Context of Digitial Shadows for Plastics Profile Extrusion D. Hilger, N. Hosters	FE-NN: efficient scale transition for arbitrary heterogeneous microstructures using neural networks J.P. Stöcker, F. Aldakheel, M. Kaliske	Extended Integral Boundary Layer method for reactive species mass transfer in rotating films S. Kebinger, G. Brenn, H. Steiner
10:10	Simulation of the laser metal deposition process using meshfree methods X. Tang, C. Weißenfels, P. Wriggers	Multiscale ANN-based constitutive modeling of multi-phase deformable porous materials Y. Heider, M. Chaaban, W. Sun	Mass and momentum transport in vertically impinging jets on moving substrates at high Schmidt number S. Kebinger, G. Brenn, H. Steiner

S12 **Waves and Acoustics** Chair(s): M. Schanz, S.C. Langer CHE/184	S14 **Applied analysis** Chair(s): M. Schmidtchen POT/51	S15 **Uncertainty quantification** Chair(s): L. Tamellini, B. Sprungk POT/13	
Elastic tracking of dynamic viscoelastic displacements by actuation stress: Theory and 1D analytic example involving shock waves H. Irschik, M. Krommer	A nonlocal approach to cell migration in heterogeneous environments C. Surulescu, M. Eckardt, K. Painter, A. Zhigun	Stochastic Galerkin method and port-Hamiltonian form for second-order differential equations R. Pulch	**08:30**
		A Sampling-free Statistical Finite Element Method in Computational Mechanics V. Narouie, H. Wessels, U. Römer	**08:50**
Modeling Elastic Waves in Unbounded Domains using Peridynamics A. Shojaei, A. Hermann, C.J. Cyron	Two-phase flows with bulk-surface interaction: A Navier–Stokes–Cahn–Hilliard model with dynamic boundary conditions P. Knopf, A. Giorgini	Data-driven domain decomposition describing nonlinear mechanical response of battery cells T. Gödde, B. Rosic	**09:10**
Hydrodynamic Forces Acting on Mechanical Systems in Linear and Nonlinear Ocean Waves M. Hollm, R. Seifried	Optimal distributed control for a non-local viscous diffuse interface tumour growth model M. Fornoni, E. Rocca	Estimation of the probability of failure bounds for metal foam structures J. Kaupp, C. Proppe	**09:30**
An approach for improving SHM systems with guided ultrasonic wave detection and embedded sensors by a planar gradient acoustic impedance matching M. Rottmann, W.E. Weber	On a diffuse interface model for incompressible viscoelastic two-phase flows Y. Liu, D. Trautwein	Enhancing Structural Design Procedures by Evaluating Polymorphic Uncertain Quantities using Information Reduction Measures M. Böttcher, W. Graf, M. Kaliske	**09:50**
	Existence and approximation of a viscoelastic Cahn–Hilliard model for tumour growth D. Trautwein, H. Garcke		**10:10**

	S16 **Optimisation** Chair(s): I. Joormann, A. Schwartz HSZ/105	S19 **Optimisation of differential equations** Chair(s): C. Geiersbach, O. Weiß HSZ/101	S20 **Dynamics and control** Chair(s): S. Maslovskaya, K. Flaßkamp HSZ/401
08:30	Path and Power Optimization of an Electric Airship with Integrated Solarcells J. Motyl, C. Pflaum	One-shot Learning of Surrogates in PDE-constrained Optimization Under Uncertainty P. Guth, C. Schillings, S. Weissmann	Time-Optimal Trajectory Planning of a Redundantly Actuated Planar Parallel Robot Driven with Series Elastic Actuators T. Kordik, C. Zauner, T. Marauli, H. Gattringer, […]
08:50	Optimal Strategies of ISO and Producers on Electricity Markets with Elastic Demand, Production Bounds and Costs M. Branda, E. Allevi, J. Outrata, M. Pištěk, […]		Pareto-optimal primitives for graph-based motion planning M.V.A. Pedrosa, K. Flaßkamp
09:10	Application of Parameter Identification for Modelling of Energy Storages in a Smart Energy Management System L. Kappertz, E. Dierkes, A. Hackenberg, […]	Deep Learning from an optimal control point of view with adaptive time stepping H. Antil, H. Diaz, E. Herberg	Interplay of stage-cost design and discretization in optimal control of linear port-Hamiltonian systems G.D. Şen, M. Schaller, K. Worthmann
09:30	Data-Driven Distributional Robustness with Applications in Material Science and in Energy F. Liers	Controlling the Vlasov-Poisson model using a Monte Carlo framework J. Bartsch, P. Knopf, S. Scheurer, J. Weber	Ellipsoidal Inter-Sample Collision Avoidance in Optimal Control M. Herrmann-Wicklmayr, K. Flaßkamp
09:50		Stochastic Optimal Control of District Heating Networks under Demand Uncertainty J. Heidrich	Turnpike property of mechanical systems K. Flaßkamp, S. Maslovskaya, S. Ober-Blöbaum, […]
10:10		A novel homotopy approach based on exponentially modified Gaussian functions for the reliable determination of model parameters for chromatographic […] D.H. Cebulla, C. Kirches, A. Potschka	Learning polynomial based approximation for optimal feedback control D. Vasquez Varas, K. Kunisch

S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201	S22 **Scientific computing** Chair(s): T. Breiten HSZ/103		
Modeling Large-scale Joint Distributions and Inference by Randomized Assignment B. Boll, J. Schwarz, D. Gonzalez-Alvarado, […]	Computational Approaches to H-infinity-robust Controller Design for Large-scale Systems J. Heiland, P. Benner, S.W. Werner		**08:30**
Quantum State Assignment Flows J. Schwarz, B. Boll, D. Sitenko, […]			**08:50**
Splines in Wasserstein Spaces and Application to Texture Interpolation J.A. Justiniano, M. Rumpf, M. Erbar	Approximation of the uncertainty propagation of initial value perturbations in coupled thermal models A. Naumann, R. Herzog		**09:10**
Trigonometric Approximations of the Sparse Super-Resolution Problem in Wasserstein Distances P. Catala, M. Hockmann, S. Kunis, M. Wageringel	Parallelization in time for optimal control and inverse problems S. Götschel		**09:30**
The genetic column generation algorithm for multi-marginal optimal transport M. Penka, G. Friesecke	A Dynamic Bayesian Network Approach for Digital Twins J. Henning, K. Urban		**09:50**
Multi-level Geometric Optimization S. Müller, M. Zisler, S. Petra	Adjacency-based, non-intrusive reduced-order modeling for Fluid-Structure Interactions L. Gkimisis, T. Richter, P. Benner		**10:10**

Minisymposia

	MS1 **Modern teaching and didactics in mathematics and mechanics** Chair(s): T. Bartel HSZ/H02	MS2 **Data-driven computational mechanics** Chair(s): M. Kästner, L. De Lorenzis HSZ/AUDI	MS3 **High-order and Parallel Time Integration** Chair(s): S. Götschel, J. Stiller HSZ/H03
13:30	Basic concepts of didactics and examples of competence-oriented implementations. T. Bartel	Physics-based and data-driven hybrid modelling of materials, structures and processes. F. Chinesta, E. Cueto	Parallel-in-time high-order multiderivative IMEX solvers J. Schütz, A. Thenery Manikantan, E. Theodosiou, [...]
13:50	How to make students study during the semester D.M. Kochmann, A. Franze		Enhancing scalability through parallel-in-time algorithms using performance modeling J. Hahne, S. Friedhoff, M. Bolten
14:10	Proving as a main aspect and implementing as a secondary aspect? Results of an interview study on competencies in numerical analysis courses L. Burr	Application of hybrid machine learning approaches to exploit process-structure-property linkages in technological production processes B. Klusemann, F.E. Bock, N. Huber	Across-the-method parallelization of spectral deferred corrections for shallow water equations J. Fregin, T. Lunet, D. Ruprecht, S. Goetschel
14:30	Above all: motivation ++ our maths-for-engineers teaching concept U. Feldmann, S. Franz	What data-driven mechanics can do for structural health monitoring H. Wessels	Theoretical and Practical Aspects of Implementations of Space-Time DG-SEM L. Versbach, V. Linders, R. Klöfkorn, P. Birken, [...]
14:50	Teaching mechanics with individual exercise assignments and automated correction M.H. Gfrerer, B. Marussig, K. Maitz, M.M. Bangerl	Data-driven finite element computation of microstructured materials K. Weinberg	Parallel-in-Time Integration of Transients in Superconducting Accelerator Magnets E. Schnaubelt, M. Wozniak, J. Dular, I. Cortes [...]
15:10	Mechanics goes data - between opportunities and overload H. Wessels	Physics-enhanced neural networks for multiscale and multiphysics material modeling O. Weeger, D.K. Klein, M. Fernández, R. Ortigosa	IMEX Runge-Kutta and Spectral Deferred Correction Methods for Incompressible Navier-Stokes Problems J. Stiller

Thursday, June 1, 13:30 - 15:30

MS4 **Data-driven Methods in Systems and Control** Chair(s): T. Faulwasser, J. Heiland, K. Worthmann HSZ/H04	MS5 **Port-Hamiltonian systems** Chair(s): B. Jacob, P. Kotyczka CHE/S89	MS6 **Modelling and simulation of thin mechanical films** Chair(s): S. Neukamm, O. Sander POT/51	
Multi-classification using Deep Neural Networks E. Zuazua, M. Hernandez	Boundary controlled Oseen equations in port-Hamiltonian formulation T. Reis, M. Schaller	Effective models for membranes and plates with soft inclusions B. Schmidt	**13:30**
Data-driven Control and Behaviors of Stochastic Systems – Combining the Ideas of Wiener and Willems T. Faulwasser, R. Ou, G. Pan, P. Schmitz, […]	Differential-algebraic systems with dissipative Hamiltonian and maximally monotone structure V. Mehrmann, A. van der Schaft	Simulating models for nonlinear plate bending C. Palus	**13:50**
On reliable data-based predictive control in the Koopman framework F. Nüske, S. Peitz, F. Philipp, M. Schaller, […]	Don't forget the energy: model reduction for port-Hamiltonian systems J. Nicodemus, P. Schwerdtner, B. Unger		**14:10**
Subsampling in ensemble Kalman inversion M. Hanu, J. Latz, C. Schillings	Nonlinear elastodynamics in the context of port-Hamiltonian modeling: Formulation and structure-preserving discretization P.L. Kinon, T. Thoma, P. Betsch, P. Kotyczka	Amplitude expansion of the phase-field crystal model on deformable surfaces L. Benoit–Maréchal, M. Salvalaglio, I. Nitschke, […]	**14:30**
Gaussian Process-Based Online Learning for Control with Performance Guarantees A. Lederer, S. Hirche	Optimal Control of Port-Hamiltonian Systems – Putting Energy in the Objective T. Faulwasser, B. Maschke, F. Philipp, M. Schaller, […]	Dimension reduction and homogenization for fluid flow across a thin porous elastic layer M. Gahn, W. Jäger, M. Neuss-Radu	**14:50**
Data-driven Robust Model Predictive Control exploiting Finisler's Lemma and LMI Reformulations H.H. Nguyen, M. Friedel, R. Findeisen	Structure-Preserving Methods for a Coupled port-Hamiltonian System of Compressible Non-Isothermal Fluid Flow S.-A. Hauschild, N. Marheineke		**15:10**

DFG PPs 2256 & 2353-2 | Contributed Sessions

	PP 2256 **Variational Methods for Predicting Complex Phenomena in Engineering Structures [...]** Chair(s): J. Mosler, B. Schmidt HSZ/204	PP 2353-2 **Daring More Intelligence – Design Assistants in Mechanics and Dynamics** Chair(s): P. Eberhard, H. Ebel HSZ/204	S01 **Multi-body dynamics** Chair(s): K. Ellermann POT/351
16:00	Approximation schemes for energies of prescribed fracture geometry P. Wozniak		Simplified Description of Hard Particles in Tribological Systems Using Statistical Sample Particles R. Bilz, K. de Payrebrune
16:20	Balanced-Viscosity solutions for a Penrose-Fife phase-field model with friction M. Liero, A. Mielke, P. Pelech		A soft Robot Gripper with Integrated Shape and Gripping-Force Sensors M. Grube, R. Seifried
16:40	Modeling and Simulation of Thin Sheet Folding S. Bartels		Towards Intelligent Trajectory Planning of Air-to-Ground Coordinated Robot Motion J. Chen, H. Ebel, W. Luo, P. Eberhard
17:00	Perspectives for homogenization on randomly perforated domains M. Heida, D. Vu, B. Jahnel		Stability investigations for Lie group integrators applied to dissipative systems M. Arnold, D. Tumiotto
17:20	Regularity questions in geometrically nonlinear Cosserat elasticity A. Gastel, V. Hüsken		Yarn modelling in textile machines using MBS, the reef-knot as example M. Beitelschmidt, M. Krentzien
17:40	Scaling laws for multi-well nucleation problems A. Tribuzio, A. Rüland		Fast determination of the points of contact for non-spherical particles and application to ellipsoids R. Rebel, J. Fröhlich

Thursday, June 1, 16:00 - 19:00

	PP 2256 **Variational Methods for Predicting Complex Phenomena in Engineering Structures [...]** Chair(s): J. Mosler, B. Schmidt HSZ/204	PP 2353-2 **Daring More Intelligence – Design Assistants in Mechanics and Dynamics** Chair(s): P. Eberhard, H. Ebel HSZ/204	S01 **Multi-body dynamics** Chair(s): K. Ellermann POT/351
18:00		Data-Driven Machine Learning Enhanced Optimization of Crash Box Design for Crashworthiness Analysis A. Borse, R. Gulakala, M. Stoffel	Linearization and change of observer for rotating discrete tire structures T. Ruhwedel
18:20		Transferability of a discrepancy model for the dynamics of electromagnetic oscillating circuits M. Wohlleben, L. Muth, S. Peitz, [...]	Towards a remote-access testbed for teaching mobile underwater robotics N. Bauschmann, D.A. Duecker, [...]
18:40		Identification of dynamic systems assisted by an autoregressive recurrent model T. Bielitz, D. Bestle	

DFG PPs 2256 & 2353-2 | Contributed Sessions

	S03 **Damage and fracture mechanics** Chair(s): S. Löhnert HSZ/H04	S04 **Structural mechanics** Chair(s): F. Aldakheel HSZ/AUDI	S06.2 **Material modelling with non-metals** Chair(s): V.N. Khiêm, R. Landgraf POT/151
16:00	3D Fracture Simulations with an eXtended Phase-Field Method (XPFM) V. Klempt, C. Krüger, S. Loehnert	Multidomain physics-informed neural networks for analysis of 2D thin-walled structures P. Zhang, Y. Gu, C. Zhang	Identifying microstructural properties of paper G. Kloppenburg, X. Li, A. Dinkelmann, H. Finkh, […]
16:20	Simulation of Fatigue Fracture Processes using an eXtended Phase-Field Method (XPFM) C. Krüger, V. Klempt, S. Loehnert	Full-field prediction and target design of nonlinear metamaterial responses via probabilistic models J.-H. Bastek, D.M. Kochmann	A constitutive model for describing decoupled material behavior in thickness and in-plane directions B. Boes, J.-W. Simon, H. Holthusen
16:40	Crack Tip Loading Analysis and Crack Growth Simulation with the Virtual Element Method K. Schmitz, A. Ricoeur	Generative learning based model for the prediction of 2D Stress distribution R. Gulakala, B. Markert, M. Stoffel	Mechanics of mechanoresponsive polymeric microbubbles under ultrasonication V.N. Khiêm, M. Itskov
17:00	A boundary element method with novel special crack-tip elements for dynamic interface crack analysis Y. Chai, Y. Gu, C. Zhang	Modelling of additive manufacturing processes with time-dependent material properties using physics-informed neural networks V. Ekanayaka, A. Hürkamp	Morphological implications on the mechanics of porous materials A. Rege
17:20	On the general 2D case of dynamic brittle fracture in a Lattice Boltzmann method for solids H. Müller, E. Faust, F. Steinmetz, […]	Effects of Variational Formulations on Physics-Informed Neural Network Performance in Solid Mechanics N. Radin, S. Klinkel, O. Altay	Importance of geometric parameters in modelling of porous materials – A finite element study R. Chandrasekaran, M. Itskov, A. Rege
17:40	Numerical investigation of multi-particle interactions using the discrete element method S. Rotter, A. Düster	A Label Machine for Mechanical Systems: Discovering Operating States with Unsupervised Learning from load time series J. Riebe, P. Hantschke, M. Kästner, […]	Analytical network-averaging: gradient damage of textile composites x. tang, R. Poudel, M. Itskov, […]

	S03 **Damage and fracture mechanics** Chair(s): S. Löhnert HSZ/H04	S04 **Structural mechanics** Chair(s): F. Aldakheel HSZ/AUDI	S06.2 **Material modelling with non-metals** Chair(s): V.N. Khiêm, R. Landgraf POT/151
18:00	Peridynamic simulations of Rock Indentation and excavation S. Butt, G. Meschke	Effective mechanical properties of architectured materials: forward prediction and inverse design by data-driven methods X.-L. Peng, B.-X. Xu	The Inelastic Response of Woven Textile Membranes – Experimental data analysis and mechanical modeling L. Makhool, J. Uhlemann, […]
18:20	Why develop twice? Integration of continuum mechanical material models in Peridynamics C. Willberg, J.-T. Hesse, A. Pernatii, […]	On the role of locking in solving structural mechanics problems via physics informed neural networks L. Striefler, B. Oesterle	Failure analysis of thick-walled composite pipes under combined loading: comparative analysis of numerical models M. Menshykova, T. Wang, O. Menshykov
18:40	Peridynamic framework to model additive manufacturing processes J.-T. Hesse, C. Willberg, R. Hein, […]	Using Conditional Generative Adversarial Networks for the Prediction of Stresses in a Adhesive Composite A.W. Khan	Modeling the temperature dependent deformation behavior of fiber reinforced thermoplastics for the analysis of thermoforming processes J.-P. Ziegs, D. Weck, M. Kästner

	S07 **Coupled problems** Chair(s): K. Linka, S. Budday, Y. Heider CHE/S89	S08 **Multiscales and homogenization** Chair(s): O. Weeger HSZ/H03	S09 **Laminar flows and transition** Chair(s): D. Thevenin CHE/183
16:00	A magneto-mechanically coupled material model for Barkhausen noise investigation C. Dorn, S. Wulfinghoff	Nonlinear electro-elastic finite element analysis with physics-augmented neural network constitutive models D.K. Klein, R. Ortigosa, O. Weeger	Experimental investigation of the laminar-turbulent transition in coiled tubes with PIV and LDA C. Müller, P. Kováts, K. Zähringer
16:20	A note on NdFeB magnets generated by severe plastic deformation M. Reichel, J. Schröder	Time-adaptive FE²-simulations with deep neural networks for local level evaluation J.-A. Tröger, H. Eivazi, S. Hartmann, […]	How to find the perfect application pattern for adhesives F. Flaig, T. Fräger, M. Kaufmann, […]
16:40	A thermo-chemo-mechanically coupled continuum theory and it's application in Finite-Element simulations J. Gisy, A. Dyck, T. Böhlke	Descriptor-based microstructure characterization and reconstruction – features and recent progress in MCRpy P. Seibert, A. Raßloff, K. Kalina, […]	Numerical simulation of wood-polymer composites in hyperbolic dies F. Liese, O. Wünsch
17:00	An efficient Finite Element approach for macroscopic boundary value problems of ferroelectric continua based on multiscale modeling R. Wakili, S. Lange, A. Ricoeur	Stress and strain partitioning in nanocrystalline thin films using atomistic simulations and statistical machine learning A. Prakash	SPH simulations of non-Darcian fluid flow in porous materials D. Krach, H. Steeb
17:20	Computational and data-driven surrogate modeling of structural instabilities in electroactive polymers S. Sriram, E. Polukhov, M.-A. Keip	Multiscale modeling of additively manufactured shell lattice metamaterials M. Shojaee, I. Valizadeh, D. Klein, […]	Numerical investigation of a mixed convection flow over a heated horizontal plate L. Babor
17:40	Coupling of diffusional phase transformations and constitutive laws to predict damage at small scales W. Flachberger, S. Gaddikere Nagaraja, […]	Adaptive MOR techniques for non-linear FE simulations of unitcells Y. Özmen, R. Niekamp, P.S.B. Nigro, […]	Investigation of the heat transfer coefficient for a red clay brick J. Tibaut, M. Schanz, M. Gfrerer

Thursday, June 1, 16:00 - 19:00

	S07 **Coupled problems** Chair(s): K. Linka, S. Budday, Y. Heider CHE/S89	S08 **Multiscales and homogenization** Chair(s): O. Weeger HSZ/H03	S09 **Laminar flows and transition** Chair(s): D. Thevenin CHE/183
18:00	CT-data-based coupled poro-chemical modeling of transport in concrete K.A. Meyer, R. Kruse, R. Jänicke	Computational homogenization by the monolithic hyper ROM FE² method using clustered training N. Lange, G. Hütter, B. Kiefer	
18:20	Effects of inhomogeneous heating on the unfolding of shape memory alloy fibers S. Wolf, S. Descher, D. Kuhl	Asymptotic Reduction for Thin Porous Materials with a Linearized Corrector A. Armiti-Juber, T. Ricken	
18:40	FEM implementation of transient finite-strain coupled diffusion-deformation theories for hydrogels using Fenics J.H. Urrea Quintero, U. Nackenhorst	Two-scale methods at finite elasticity based on the Virtual Element Method C. Böhm, B. Hudobivnik, M. Marino, […]	

DFG PPs 2256 & 2353-2 | Contributed Sessions

	S10 **Turbulence and reactive flows** Chair(s): H. Schmidt, O.T. Stein CHE/184	S11 **Interfacial flows** Chair(s): T. Boeck CHE/S91	S14 **Applied analysis** Chair(s): M. Schmidtchen POT/51
16:00	Towards green energy from metal fuels: numerical methods for fluid flow, heat transfer, and many reacting particles A. Scholtissek, J. Mich, B.-D. Nguyen, […]	Moving contact lines for sliding droplets D. Peschka	Nonlocal cross-interaction systems on graphs J.-F. Pietschmann, G. Heinze, […]
16:20			
16:40	Investigation dry reforming of methane over nickel using a one-dimensional model R. Rakhi, V. Günther, T. Franken, […]	Interfacial effects at gas bubbles growing on micro-electrodes Y. Han, A. Bashkatov, A. Babich, […]	Regularisation and separation for evolving surface Cahn-Hilliard equations D. Caetano, C.M. Elliott, M. Grasselli, […]
17:00	Collision Dynamics of Particles and Bubbles in Gravity-Driven Flotation: A DNS Investigation B. Tiedemann, J. Fröhlich	Hydrogen bubble motion reversals during water electrolysis A. Babich, A. Bashkatov, S.S. Hossain, […]	On the analysis of a class of cross-diffusion systems with Cahn-Hilliard effects J. Cauvin-Vila, E. Davoli, V. Ehrlacher, […]
17:20	Numerical study on Turbulence-Chemistry-Interaction models for the partial oxidation of natural gas G.A. Gonzalez Ortiz, M. Hutter, […]	Experimental investigation of Taylor bubble shape in narrow tubes with constrictions R. Maestri, F. Bürkle, L. Büttner, […]	On A Thermodynamically Consistent Electro-Energy-Reaction-Diffusion System M. Kniely, A. Mielke
17:40	Stochastic modeling of turbulent mixing based on a hierarchical swapping of fluid parcels T. Starick, H. Schmidt	Mapping the gas fraction distribution in bubble flows through open-porous foams by radiographic imaging T. Lappan, G. Jiao, R. Michak, S. Loos, […]	Excluded volume and order in systems of Brownian needles M. Bruna, J. Chapman, M. Schmidtchen

Thursday, June 1, 16:00 - 19:00

	S10 **Turbulence and reactive flows** Chair(s): H. Schmidt, O.T. Stein CHE/184	S11 **Interfacial flows** Chair(s): T. Boeck CHE/S91	S14 **Applied analysis** Chair(s): M. Schmidtchen POT/51
18:00	Linear analysis of a turbulent swirl flame G. Varillon, T.L. Kaise, […]	Bubble generation by a plunging jet in the column of a pressurised pneumatic flotation cell T. Zürner, K. Ortmann, K. Eckert	A model for lime consolidation of porous solids B. Detmann, C. Gavioli, P. Krejčí, […]
18:20	Assessing the Aeroacoustic Performance of the SSV-PANS Method for Slanted Back Ahmed Body A. Moosavifard, M. Schäfer	Investigation of microalgae and bubble interaction in electroflotation via image processing T. Marquardt, K. Schwarzenberger, […]	
18:40		Response of a surfactant- and particle-laden bubble surface to asymmetric shear flow M. Eftekhari, K. Schwarzenberger, […]	

	S16 **Optimisation** Chair(s): A. Schwartz, I. Joormann HSZ/105	S17 **Applied and numerical linear algebra** Chair(s): T. Mach, E. Ullmann HSZ/103	S18 **Numerical methods for differential equations** Chair(s): R. Maier, C. Gräßle HSZ/H02
16:00	An experimental validation of simulation results of the thermodynamic topology optimization including plasticity M. Kick, P. Junker	On a new family of low-rank algorithms for large-scale algebraic Riccati equations H. Faßbender, C. Bertram	Discrete Helmholtz Decompositions P. Bringmann, J. Ketteler, […]
16:20	Topology and material orientation optimization of layered anisotropic materials D.R. Jantos, P. Junker		
16:40	Topology optimization considering self-weight D. Masarczyk, D. Kuhl	Symplectic Exponential Runge-Kutta-Methods for Solving Large Nonlinear Hamiltonian Systems T. Peters	Finite element approximation for second order linear PDE in nondivergence form N.T. Tran
17:00	Influence of weighted gradients in topology optimization of flexible multibody systems A. Azari Nejat, A. Held, R. Seifried	Data-driven Loewner matrix approach for estimating large-scale structured real stability radius N. Aliyev	Implementation of equilibration-based a-posteriori error estimators into the FEniCSx finite element framework M. Brodbeck, F. Bertrand, T. Ricken
17:20	Isogeometric topology optimization using the Cahn-Hilliard based phase-field method G. Kikis, S. Klinkel	Learning Structure-preserving Quadratic Models of Hamiltonian Systems S. Yıldız, P. Goyal, T. Bendokat, […]	Dynamic boundary conditions and bulk-surface splitting methods R. Altmann, C. Zimmer
17:40	Topology Optimization Using the Phase Field Method and Compliance Constraints F. Fohler, W. Dornisch	A Novel Recycling Linear Solver for Stable Parametric Model Order Reduction K. Ahuja, R. Choudhary	Least-Squares methods for coupled eigenvalue problems F. Bertrand

Thursday, June 1, 16:00 - 19:00

	S16 **Optimisation** Chair(s): A. Schwartz, I. Joormann HSZ/105	S17 **Applied and numerical linear algebra** Chair(s): T. Mach, E. Ullmann HSZ/103	S18 **Numerical methods for differential equations** Chair(s): R. Maier, C. Gräßle HSZ/H02
18:00	Eigenvalue Optimization with a Phase Field Approach H. Garcke, P. Hüttl, C. Kahle, […]		Constrained First-Order System Least Squares for Elastoplasticity G. Starke, H. Schneider
18:20		Damping optimization of mechanical systems using a singe damper N. Truhar, W.E. Weber, K. Veselić	A central scheme for coupled systems of conservation laws N. Kolbe, M. Herty, S. Müller
18:40		Solving the Parametric Eigenvalue Problem by Taylor Series and Chebyshev Expansion T. Mach, M.A. Freitag	Numerical approximation of generalized solutions to the Ericksen–Leslie equations R. Lasarzik, M. Reiter

DFG PPs 2256 & 2353-2 | Contributed Sessions

	S19 **Optimisation of differential equations** Chair(s): O. Weiß, C. Geiersbach HSZ/101	S20 **Dynamics and control** Chair(s): A. Irscheid, M. Schaller HSZ/401	S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201
16:00	Optimization on Hilbert Manifolds A. Schiela	Model order reduction strategies for interconnected systems with a large number of inputs and outputs Q. Aumann, P. Benner, J. Saak, […]	Solving linear inverse problems with invertible residual networks C. Arndt, A. Denker, S. Dittmer, […]
16:20	Topology optimization of a bipolar plate L.N. Baeck, S. Blauth, R. Pinnau, […]	Nonintrusive model order reduction for stochastic differential equations M. Freitag, M. Nicolaus, M. Redmann	A method development for the extraction of particle traces in fast X-Ray micro tomography by utilising motion artefacts J.M.U. Siebert, S. Odenbach
16:40	Shape Optimization Algorithms in Banach Spaces J.A. Pinzon Escobar, P. Herbert, […]	Time-Limited Balanced Truncation for Data Assimilation J. König, M. Freitag	Inversion of the Modulo Radon Transform via Orthogonal Matching Pursuit M. Beckmann
17:00	Optimization of multiple non-smooth shapes based on a product shape manifold L. Pryymak, T. Suchan, K. Welker	Discrete time scattering passive port-Hamiltonian systems K. Cherifi, H. Gernandt, D. Hinsen, […]	A projection-based approach to extend digital volume correlation for 4D spacetime measurements V. Kosin, A. Fau, C. Jailin, […]
17:20	Eigenvalue optimization with respect to shape-variation in electromagnetic cavities C. Herter, W. Wollner	Towards a modeling class for port-Hamiltonian systems with time-delay T. Breiten, D. Hinsen, B. Unger	
17:40	A Novel Approach for Topology Optimization of Fluid Flow J. Haubner, M. Ulbrich, F. Neumann	An Embedding Observer for Nonlinear Dynamical Systems with Global Convergence D. Gerbet, K. Röbenack	

	S19 **Optimisation of differential equations** Chair(s): O. Weiß, C. Geiersbach HSZ/101	S20 **Dynamics and control** Chair(s): A. Irscheid, M. Schaller HSZ/401	S21 **Mathematical signal and image processing** Chair(s): B. Schmitzer, C. Brandt HSZ/201
18:00	Preserving Mesh Quality in Shape Optimization S. Onyshkevych, M. Siebenborn, […]	An approach to non-linear observer design via optimal control theory - the Mortensen observer J. Schröder, T. Breiten	
18:20	A Second-Order Method for Mesh Denoising and Inpainting L. Baumgärtner, R. Bergmann, R. Herzog, […]	The effect of model uncertainties in the reinforcement learning based regulation problem: an experimental case study with inverted pendulum A.K. Pal, A. Oveisi, T. Nestorović	
18:40	Asymptotically based optimization of flow-induced deformation of periodic flexural structures made of thin yarns M. Krier, J. Orlik, R. Pinnau	Catalog of Dynamical System Models J. Fiedler, C. Knoll	

	S25 **Computational and mathematical methods in data science** Chair(s): M. Stoll POT/13	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): F. Nüske HSZ/403	
16:00	The Numerical Linear Algebra of Training Gaussian Processes M. Stoll	Accelerating mathematical developments in materials modelling by composable software M. Herbst	
16:20	Spiking Neural Networks for Nonlinear Stochastic Regression A. Henkes, J.K. Eshraghian, H. Wessels		
16:40	Discovering Asymptotic Expansions of Physical Problems Using Symbolic Regression R. Abdusalamov, J. Kaplunov, M. Itskov	Next-order correction to the Dirac exchange energy of the free electron gas and generalized gradient approximations G. Friesecke, T. Carvalho Corso	
17:00	A nonlinear spectral core-periphery detection method for multiplex networks K. Bergermann, M. Stoll, F. Tudisco	The density-density response function in time-dependent density functional theory: mathematical foundations and pole shifting T. Carvalho Corso, M.-S. Dupuy, […]	
17:20	Incorporation of physical knowledge into artificial neural networks by physics-based Rao-Blackwellization for mechanical problems G.-L. Geuken, P. Kurzeja, J. Mosler	Robust Solvers for the Schrödinger Eigenvalue Problem with Long-Range Interactions in Anisotropically Expanding Domains L. Theisen, B. Stamm	
17:40	Posterior-Variance-Based Error Quantification for Inverse Problems in Imaging A. Habring, M. Holler, D. Narnhofer, […]	Exact dissociation of the hydrogen dimer in density functional theory with the particle-hole random phase approximation M.-S. Dupuy, K. Thicke	

Thursday, June 1, 16:00 - 19:00

	S25 **Computational and mathematical methods in data science** Chair(s): M. Stoll POT/13	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): F. Nüske HSZ/403	
18:00		Boson peak in disordered materials under shear deformation T. Focks, F. Bamer, B. Markert	
18:20		Detecting local spots in network materials prone to mechanical failure Z. Wu, F. Bamer, B. Markert	
18:40		Numerical investigation of the Poisson's ratio of amorphous graphene sheets J. Stratmann, F. Bamer, B. Markert	

Detailed Schedule - Friday, June 2

8:30 | **DFG Priority Program 2298** | **Contributed Sessions**

Parallel sessions

10:30 | **Coffee Break**

HSZ

11:00 | **DFG Priority Program 2311** | **Contributed Sessions**

Parallel sessions

13:00 | **Lunch Break**

14:00 | **Plenary Lecture 7**

HSZ/AUDI **Katrin Ellermann** Technical University Graz, Austria
Efficient Modelling – how simple can it get?
Chaired by: Robert Seifried

14:45 | **Plenary Lecture 8**

HSZ/AUDI **Sylvia Serfaty** Courant Institute of Mathematical Sciences, NY, USA
Mean Field limits for singular flows
Chaired by: Patrick Dondl

15:30 | **Coffee Break**

HSZ

16:00 | **Contributed Sessions**

Parallel sessions

18:00 | **Closing**

HSZ/AUDI

20:00 | **Public Lecture 2**

HSZ/AUDI **Harald Lesch** University of Munich, Germany
Was hat das Universum mit mir zu tun?
Chaired by: Stefan Löhnert

DFG PP 2298 | Contributed Sessions

	PP 2298 **Theoretical Foundations of Deep Learning** Chair(s): L. Thesing HSZ/204	S02 **Biomechanics** Chair(s): M. Hossain, S. Ma POT/351	S03 **Damage and fracture mechanics** Chair(s): L. De Lorenzis, P. Steinmann HSZ/H04
08:30	Curse-of-Dimensionality-free Approximations of Optimal Value Functions with Neural Networks under a Decaying Sensitivity Assumption L. Grüne, M. Sperl	Modeling the finite viscoelasticity of brain tissue based on microstructural information N. Reiter, F. Paulsen, S. Budday	A viscoelastic phase field model for the fracture of ice R. Sondershaus, A. Humbert, R. Müller
08:50	Implicit bias of gradient descent for learning linear neural networks H. Rauhut	Multifield computational model for human brain development: explicit numerical stabilization M.S. Zarzor, P. Steinmann, S. Budday	Modelling of damage and failure within polymeric adhesives L. Lamm, J.M. Pfeifer, H. Holthusen, T. Brepols, […]
09:10	Improved Representation Learning Through Tensorized Autoencoders P.M. Esser, S. Mukherjee, M. Sabanayagam, […]	Towards a multiscale framework for patient-specific liver simulation S. Gerhäusser, L. Lambers, L. Mandl, M. König, […]	A Generalized Phase-Field Approach for Rate-Dependent Failure of Rubber-Like Materials K. Açıkgöz, B.E. Tanış, H. Dal
09:30	On the ELBO of Probabilistic Generative Models and Its Equality to Entropy Sums at Convergence J. Lücke, S. Damm, D. Forster, D. Velychko, […]	Vibration analyses of a mandible A. Vulović, T. Geroski, U. Gogilan, I. Saveljić, […]	The rate- and temperature-dependent brittle fracture-to-ductile transition of Toffee: Experimental investigation and phase-field modelling F. Dammaß, M. Kästner
09:50	Robustness of Low Rank Matrix Recovery under Adversarial Noise J. Kostin, F. Krahmer, D. Stöger	In vitro study design derived from an in vivo lifting task K. Brenzel, L. Johnen, M. Praster, N. Blomeyer, […]	Investigation on Shear Band Formation at High Strain Rates with a Split Hopkinson Bar Setup S. Jentzsch, D. Stock, R. Häcker, V. Kindrachuk, […]
10:10		Gender differences in cycling motions: On objective functions for urban cycling C. Schwöbel, D. Kelkel, S. Leyendecker, R. Hoffmann	

S04 **Structural mechanics** Chair(s): M. Kästner HSZ/AUDI	S04 **Structural mechanics** Chair(s): S. Löhnert HSZ/201	S05 **Nonlinear oscillations** Chair(s): S. Tatzko, H. Hetzler CHE/183	
Comparison of modelling approaches for the bending behaviour of fibre-reinforced thermoplastics in finite element forming analyses P. Kabala, J. Middelhoff, D. Voigt, K. Dröder, […]	Inelastic and multiphysics beam modelling and simulation with isogeometric collocation methods J.C. Alzate Cobo, O. Weeger	Dissipation near anti-resonance in parametrically excited systems Z. Kraus, P. Hagedorn	**08:30**
Construction, modeling, and control of a three-beam prototype using interactive fiber rubber composites A.I. Acevedo Velazquez, N. Keshtkar, J. Mersch, […]	Isogeometric cohesive zone modeling of interfaces in reinforced concrete structures S. Klinkel, G. Kikis, S. Klarmann, R. Chudoba	Estimation of maximum amplitude during passage through resonance M.S. Fasih, F. Dohnal	**08:50**
Development of a finite element model for the simulation of the flexural behavior of pressed paper-based sandwich panels with a sinusoidal core Y. Wei, F. Hirsch, D. Süße, B. Lutsch, M. Kästner	An augmented stress resultant plasticity model to accelerate shell finite element simulations of sheet metal roll forming E. Kocbay, J. Scheidl, Y. Vetyukov	Numerical detection of synchronisation phenomena in quasi-periodic solutions A. Seifert, S. Bäuerle, H. Hetzler	**09:10**
Approximate postbuckling analysis of shear deformable laminates J.C. Schilling, C. Mittelstedt	Nonlinear cable computations using high-order solid elements with hp-adaptive refinement for anisotropic plasticity A. Hildebrandt-Raj, P. Sharma, S. Diebels, A. Düster	Critical Manifolds in a Simple Two-wheel Vehicle Model A. Steindl, J. Edelmann, M. Plöchl	**09:30**
Thermal and mechanical characterization of PA6 with a focus on simulating thermoforming process S.R. Kulkarni, A. Lion, M. Johlitz, K. Loos, […]	A Proximal Newton Solver for Rate-Independent Formulations of Finite-Strain Plasticity P. Jaap, B. Pötzl, O. Sander, A. Schiela	Continuation and stability analysis of quasi-periodic solution branches: A unified framework based on different torus discretization strategies S. Bäuerle, A. Seifert, J. Kappauf, H. Hetzler	**09:50**
Geometrically accurate one-point integration of higher order virtual elements in finite deformations T. Bode	Beams and frames with dissipative joints of shape memory material M. Kuczma, M. Łasecka-Plura, A. Tabrizikahou	Stability analysis of roller coaster trains along spatial trajectories M.G. Zamora Agustí, A. Kecskeméthy	**10:10**

DFG PP 2298 | Contributed Sessions

	S06.1 **Material modelling with metals** Chair(s): K. Langenfeld, J. Mosler POT/112	S06.2 **Material modelling with non-metals** Chair(s): J. Eisenträger, R. Landgraf POT/151	S07 **Coupled problems** Chair(s): K. Linka, A. Shojaei CHE/S89
08:30	Implementation of crystal plasticity in the context of multiphase-field method and jump conditions A. Prahs, L. Schöller, D. Schneider, B. Nestler	Into the load bearing mechanisms of cemented granular material: a mesoscale FE approach M. Komodromos, M. Gorji, A. Düster, J. Grabe	Incremental variational principles for coupled chemo-mechanical problems in elastic and dissipative solids S. Gaddikere Nagaraja, W. Flachberger, T. Antretter
08:50	Investigation of microstructure evolution accounting for crystal plasticity in the multiphase-field method T. Kannenberg, L. Schöller, A. Prahs, D. Schneider, […]	Image-based analysis of granular materials using the finite cell method M. Gorji, M. Komodromos, A. Düster, J. Grabe	Influence of particle distribution on the quasistatic and dynamic mechanical properties of thermoplastic polyurethane magnetorheological elastomers D. Kare Gowda, S. Odenbach
09:10	Phase field modelling of thermo-mechanical fatigue damage in Ni-based superalloys H. Gao, S. Ma, B. Markert	Modelling Rate-Dependent Inelasticity in Composites with the Scaled Boundary Finite Element Method J. Eisenträger, J. Zhang, S. Eisenträger, C. Song	Latent Heat Effects in Inductive Heating of Shape Memory Alloy Fibers S. Descher, P. Krooß, D. Kuhl, S. Wolf
09:30	Phase-field investigations of new low-order explicit last stage diagonal implicit Runge-Kutta schemes (ELDIRK) with the finite-element method H. Westermann, R. Mahnken	Multiphasic model of early stage hydration in concrete using the Theory of Porous Media S. Prskalo, M.H. Gfrerer, M. Schanz	Meso-scale thermo-magneto-mechanical constitutive model for magneto-active elastomers W. Klausler, M. Kaliske
09:50	Amplitude expansion of the phase-field crystal model for complex crystal structures M. De Donno, M. Salvalaglio	Considering Orthotropic Material Behavior in a Gradient-Enhanced Damage-Plasticity Model for 3D Printed Concrete T. Mader, M. Schreter-Fleischhacker, G. Hofstetter	Modeling and simulation of a dielectric elastomer sensor and of the substitute system of a sensor-integrated jaw coupling J.D.M. Menning, A. Ewert, A. Prokopchuk, […]
10:10	Elasticity in the phase-field crystal framework M. Punke, M. Salvalaglio	A micropolar Model accounting for asymmetric Behaviour of a Cold-Box Sand in Relation to Tensile and Compression Tests A. Börger, R. Mahnken	Modeling approaches for phase transition in growing Antarctic Sea Ice A. Thom, T. Ricken, S. Thoms, B. Kutschan

S08 **Multiscales and homogenization** Chair(s): B. Kiefer HSZ/H03	S11 **Interfacial flows** Chair(s): A. Voigt CHE/S91	S12 **Waves and Acoustics** Chair(s): S.C. Langer, M. Schanz CHE/184	
Multidimensional numerical relaxation in continuum damage mechanics D. Balzani, M. Köhler, T. Neumeier, M.A. Peter, [...]	Role of surface forces in wetting of rigid and soft substrates at the nanoscale N. Kubochkin, T. Gambaryan-Roisman	Multi-fidelity Gaussian Processes for an efficient approximation of frequency sweeps in acoustic problems C. Gürbüz, S. Marburg	**08:30**
Multiscale simulation of fracture in complex materials under impact loads H. Knobloch, S. Loehnert		Realizations of the Generalized Adaptive Cross Approximation in an Acoustic Time Domain Boundary Element Method M. Schanz	**08:50**
Influence of homogenization scheme and material morphology on multiscale simulation of concrete damage G. Vu, J.J. Timothy, G. Meschke	Electrokinetic Modelling of Moving Contact Lines L.S. Bauer, A.D. Ratschow, S. Hardt	Partial Integration based Regularization in Fast Multipole Boundary Element Method V. Lakshmi Keshava, M. Schanz	**09:10**
Finite Element Study of Pore Collapse and Densification in Silica Aerogels using Representative Volume Elements W. Xiong, R. Abdusalamov, M. Itskov, B. Milow, [...]	How droplets pin on solid surfaces J. Zhang, W. Ding, U. Hampel	Adaptive time stepping for generalized Convolution Quadrature A. Balagopal Menon, M. Schanz	**09:30**
MULTISCALE MODELING OF COMPRESSIBLE CEMENTITIOUS MATERIALS T. Iskhakov, J.J. Timothy, G. Meschke	Droplets on elastic substrates - Numerical simulation of soft wetting S. Aland	Efficient solutions of preconditioned large-scale systems for simulative aircraft noise assessment Y. Hüpel, C. Blech, H.K. Sreekumar, S.C. Langer	**09:50**
Two-scale modeling of the viscosity of fiber suspension B. Sterr, M. Schneider, T. Böhlke	Modeling flow through tubes and annuli with liquid-infused surfaces for enhanced stability of the fluid-fluid interface S. Zimmermann, E. Bold, E. Oesterschulze, M. Chijiwa, [...]		**10:10**

DFG PP 2298 | Contributed Sessions

	S14 **Applied analysis** Chair(s): M. Thomas POT/51	S16 **Optimisation** Chair(s): I. Joormann, A. Schwartz HSZ/105	S18 **Numerical methods for differential equations** Chair(s): C. Gräßle, R. Maier HSZ/H02
08:30	Sharp Interface Limit of a Navier-Stokes/Allen-Cahn system with vanishing mobility via rigorous asymptotic expansions H. Abels, M. Fei, M. Moser	Multi-objective Optimization for Neural Networks Training: Weighted Chebyshev Scalarization S.S. Hotegni, S. Peitz, M. Berkemeier	Fast semi-iterative finite element Poisson solvers for Tensor Core GPUs D. Ruda, S. Turek, D. Ribbrock, P. Zajac
08:50	Sharp interface limit via relative entropy: Navier-Stokes/Allen Cahn system with vanishing mobility M. Moser, H. Abels, J. Fischer	Nonlinear Conjugate Gradient Directions with Guaranteed Descent for Smooth Multi-Objective Optimization M.B. Berkemeier, S. Peitz	Adaptive mesh refinement in HPC and applications in the geosciences C. Burstedde
09:10	Schemes for approximating solutions of a rate-independent phase field damage model S. Boddin, D. Knees	Generating the Pareto-frontier in multi-objective optimization problems by a design of experiments based on the Normal-boundary-intersection […] P.A. Gellerich, J.-P. Majschak	Pendulum dynamics on a quantum computer with fixed-point arithmetic and the Runge-Kutta method A. Mielke, T. Ricken
09:30	A first-order formulation for dynamic phase-field fracture in viscoelastic materials M. Thomas, S. Tornquist, K. Weinberg, C. Wieners	Gradient-based determination of principal design influences on composite structures J. Liedmann, F.-J. Barthold, N. Gerzen	The Bulk Trace FEM for the Simultaneous Solution of Structural Membranes on all Level-sets over a Bulk Domain T.-P. Fries, M.W. Kaiser
09:50	On some generalizations of the notion of oscillatory sequence of functions and their applications A. Raguz	Shape modes of dynamic structures S.A. Ghasemi, J. Liedmann, F.-J. Barthold	Solving Partial Differential Equations on (Evolving) Surfaces with Radial Basis Functions H. Wendland
10:10	Variational analysis of integral functionals involving nonlocal gradients on bounded domains H. Schönberger, J. Cueto, C. Kreisbeck		Formation of wrinkles in a bi-layer system using manifold-valued finite elements L.J. Nebel, O. Sander

S19 **Optimisation of differential equations** Chair(s): O. Weiß, C. Geiersbach HSZ/101	S20 **Dynamics and control** Chair(s): A. Iannelli, A. Klünker HSZ/401	S22 **Scientific computing** Chair(s): N. Margenberg HSZ/103	
Derivatives and optimal control of a sweeping process M. Brokate	Application of feedforward and funnel feedback control to underactuated multibody systems S. Drücker, T. Berger, L. Lanza, T. Reis, […]	Diagonally Addressed Matrix Nicknack: Sparse Matrix Vector Product J. Saak, J. Schulze	**08:30**
An Optimal Design Problem for an Elastic Plate in a Dynamic Contact with an Obstacle I. Bock	Stability and performance analysis of controlled brake system considering delayed actuator dynamics and communication delay Á. Horváth, P. Béda	Discrete Event Estimation for Spectral Deferred Corrections M. Bolten, R. Speck, J. Strake, L. Wimmer, J. Zhang	**08:50**
Optimal Control of Free Boundary Problems R. Pinnau	An Approach to Agile Maneuvering with Hydrobatic Micro Underwater Robots T.L. Alff, R. Seifried, D.A. Duecker	Scalability of a HPC framework for mortar based contact problems C. Steimer, M. Mayr, A. Popp	**09:10**
Optimal Control of Free Boundary Problems C. Zurloh	Modeling and parameter identification for agricultural machines R. Simonelli, C. Büskens	The numerical flow iteration for the Vlasov equation R.-P. Wilhelm, M. Kirchhart	**09:30**
Network Boundary Control of the Semilinear Isothermal Euler Equation Modeling Gas Transport on a Network of Pipelines M. Bongarti, M. Hintermuller	An adaptive scheme for the optimization of damping positions in vibrational systems J. Przybilla, M. Ugrica, N. Truhar, P. Benner	Viscoelastic model hierarchy for the simulation of fiber melt spinning of semi-crystalline polymers including radial effects M. Ettmüller, W. Arne, N. Marheineke, […]	**09:50**
Uniform Turnpike Property and Singular Limits M. Hernandez, E. Zuazua	A trajectory based study of mixing processes in closed and open flow systems A. Klünker, K. Padberg-Gehle		**10:10**

	S25 **Computational and mathematical methods in data science** Chair(s): J.-F. Pietschmann, M. Stoll POT/13		
08:30	Koopman-based Modeling at the Molecular Scale F. Nüske		
08:50			
09:10	Equivariant Neural Networks for Indirect Measurements N. Heilenkötter, M. Beckmann		
09:30	Fast Explainable Fourier-ANOVA Methods for Machine Learning F. Nestler		
09:50	Towards Reliable AI: From Digital to Analog Hardware A. Fono, H. Boche, G. Kutyniok		
10:10	Aspects of image data preparation to extend a classification scheme for cleaning mechanisms to realistic soils C. Golla, L. Boddin, H. Köhler, F. Rüdiger, […]		

DFG PP 2311 | Contributed Sessions

	PP 2311 **Robuste Kopplung kontinuumsbiomechanischer in silico Modelle für aktive [...]** Chair(s): T. Ricken HSZ/204	S02 **Biomechanics** Chair(s): H. Topol, M. Mohammadkhah POT/351	S04 **Structural mechanics** Chair(s): J. Edelmann HSZ/AUDI
11:00	Simulation Supported Liver Assessment for Donor Organs (SimLivA) - Continuum-Biomechanical Modeling for Staging of Ischemia Reperfusion Injury [...] L. Mandl, S. Gerhäusser, L. Lambers, M. König, [...]	Chemo-electro-mechanical modelling of the stress corrosion cracking in biodegradable magnesium-rare earth alloys D. Zhang, S. Ma, B. Markert	Nonlinear dynamic analysis of rods precluding shear and torsion with isogeometric discretizations T.-H. Nguyen, B.A. Roccia, R.R. Hiemstra, [...]
11:20	Bifurcations and patterns in a cell-based mathematical model for meniscus tissue regeneration N. Mohan, C. Surulescu	Computational modeling of a coated piezoelectric scaffold V. Badali, S. Checa, M. Zehn, D. Marinkovic, [...]	Simultaneous solution of ropes and membranes on all level sets within a bulk domain M.W. Kaiser, T.-P. Fries
11:40	Data Sharing for Collaborative Modeling and Simulation Research Y. Villota-Narvaez, O. Röhrle	Flexoelectric and piezoelectric effects in cortical bone remodelling processes C. Witt, T. Kaiser, A. Menzel	Towards realistic nonlinear elastic bending behavior for cable simulation T. Zhao, F. Schneider-Jung, J. Linn, R. Müller
12:00	Modeling Drug Diffusion and Smooth Muscle Response in Arteries S. Nurani Ramesh, L. Saßmannshausen, K. Uhlmann, [...]	Modeling of Mechanosensitive Remodeling Processes in Collagen Fibers H. Topol, M. Stoffel, B. Markert, T.J. Pence	Experimental investigation of cables and its components under multi-directional loading P. Sharma, A. Hildebrandt-Raj, A. Düster, S. Diebels
12:20	Multiscale analysis of intracranial arteriovenous malformations including realistic nidus segmentation and patient-specific hemodynamics J. Stahl, J. Korte, L. Spitz, D. Behme, N. Kaneko, [...]	The numerical treatment of a cell-based mathematical model of tissue regeneration E. Grosjean, B. Simeon	Experimental investigations of the dynamic behaviour of high-voltage cables in electric trucks J. Volltrauer, F. Buck, E. Fründ, H. Hetzler, [...]
12:40	Statistical mechanics approach to neuron excitation L. Werneck, E. Yildiz, M.-A. Keip, M. Ortiz		Economic fatigue damage monitoring for vehicle fleets using the scattering transform L. Heindel, P. Hantschke, M. Kästner

S04 **Structural mechanics** Chair(s): S.R. Eugster HSZ/201	S06.1 **Material modelling with metals** Chair(s): J. Mosler, P. Kurzeja POT/112	S07 **Coupled problems** Chair(s): C. Weißenfels, A. Schwarz CHE/S89	
Out-of-plane buckling and dynamic instability of an axially moving flat Euler-Bernoulli beam under the action of in-plane distributed forces J. Scheidl, A. Steindl	A comparison of predictions from micropolar and strain gradient crystal plasticity theories for textured oligocrystals I.T. Tandogan, O. Bulut, M. Budnitzki, […]	Numerically robust mixed finite elements for analyses of flexoelectricity P.H. Serrao, S. Kozinov	**11:00**
An energy-based finite-strain constitutive model for bent heterostructured materials Y. Hadjimichael, C. Merdon, P. Farrell, M. Liero	Investigation of propagative instabilities in aluminium alloy AW5083 M. Mucha, L. Rose, B. Wcisło, A. Menzel, J. Pamin	Theoretical investigation and analysis on ferroelectric energy harvesting cycles exploiting domain switching A. Warkentin, L. Behlen, A. Ricoeur	**11:20**
Dynamic response of frames with viscoelastic dampers under uncertain parameters M. Łasecka-Plura	A large-strain thermoplasticity model including recovery, recrystallisation and grain-size effects M. Böddecker, A. Menzel	Towards modeling of concrete degradation caused by freezing-thawing cycles A. Levent, K.A. Meyer, R. Jänicke	**11:40**
A practicable approach for stability analysis in soft robotics R. Seis, F. Lamping, K.M. de Payrebrune	Nonlocal elasticity of Klein-Gordon type with internal length and time scales: constitutive modelling and dispersion relations E. Agiasofitou, M. Lazar	Variational Thermomechanical Reduced-Order Modeling of Shape Memory Alloy based Bistable Microactuators M.B. Shamim, M. Hörsting, S. Wulfinghoff	**12:00**
Experimental and simulation-based modeling of a vehicle seat P. Wagner	Toupin-Mindlin first strain gradient elasticity for cubic and isotropic materials at small scales M. Lazar, E. Agiasofitou	On the coupled theory of thermoelasticity for nanoporous materials with triple porosity M. Svanadze	**12:20**
Lévy-type solutions for buckling of shear deformable unsymmetrically laminated plates with rotational restraints P. Schreiber, C. Mittelstedt	Evaluation of deformation in interactive fibre rubber composites using Woodworth-Kaliske Shape Memory Alloy material model A.R. Annadata, Z. Wang, L. Woodworth, […]	Modelling of mechanically-induced failure processes in electrically conducting interfaces T. Kaiser, M. Andreas	**12:40**

DFG PP 2311 | Contributed Sessions

	S07 **Coupled problems** Chair(s): A. Shojaei, Y. Heider CHE/183	S08 **Multiscales and homogenization** Chair(s): T. Bartel HSZ/H03	S11 **Interfacial flows** Chair(s): C. Schönecker CHE/S91
11:00	A fully coupled chemo-mechanical phase-field model for reactive multi-component and multi-phase systems A. Seupel, S. Roth, B. Kiefer	On the three-dimensional numerical analysis of residual stresses on two scales in hot bulk forming parts S. Hellebrand, D. Brands, J. Schröder	The interplay of geometry and coarsening in multicomponent lipid vesicles under the influence of hydrodynamics E. Bachini, V. Krause, A. Voigt
11:20	A phase-field model of elastic surfaces in flow M. Kloppe, S. Aland	Downwind and upwind approximations for mesh- and model adaptivity of elasto-plastic composites A. Tchomgue Simeu, R. Mahnken	A numerical approach for fluid deformable surfaces with conserved enclosed volume V. Krause, A. Voigt
11:40	Phase field approximation of hyperelastic interfaces H. Wilbuer, J. Mosler	Extension of a shell-like RVE model to represent transverse shear effects in textile reinforced composites O. Khattabi, R. Landgraf, J. Ihlemann	A novel finite element formulation for thermal multi-phase flow including melting and evaporation with application to metal additive manufacturing […] M. Schreter-Fleischhacker, N. Much, P. Munch, […]
12:00	Phase-field modeling of hysteretic behavior of shape memory alloys incorporating rate-independent dissipation O. El Khatib, V. von Oertzen, S.A. Patil, B. Kiefer	Multiscale Modelling of Concrete Reinforced with Shape Memory Alloys: An Investigation into the Mechanical Properties of High-Performance Concrete A. Tabrizikahou, M. Kuczma	Simulations for Two-Phase Flows in Injection Molding Processes B. Ferrer Fabón, M. Behr
12:20	Simulation of vibrating droplets using a phase field approach J. Wolf, X. Rutz, S. Stephan, H. Hasse, R. Müller	Variationally consistent computational homogenization of chemo-mechanical properties of structural battery electrode materials D. Rollin, F. Larsson, K. Runesson, R. Jänicke	Influence of different pipe wall and flushing liquid temperature on flushing behavior of highly viscous fluids V. Liebmann, M. Heide, H. Köhler, F. Rüdiger, […]
12:40		Influence of grain boundaries on the overall diffusivity in polycrystalline solids L. Scholz, F. Fritzen, B. Grabowski	A magnetically-activited fluidic based thermal switch R. Michak, K. Ortmann, Z. Lei

S12 **Waves and Acoustics** Chair(s): S.C. Langer, M. Schanz CHE/184	S14 **Applied analysis** Chair(s): S. Neukamm POT/51	S15 **Uncertainty quantification** Chair(s): J. Dölz, I. Klebanov POT/13	
Multi-metamaterial structures via the reduced relaxed micromorphic model L.A. Perez Ramirez, G. Rizzi, J. Voss, A. Madeo	Optimal relaxation rates for the Mullins-Sekerka Evolution F. Otto, R. Schubert, M.G. Westdickenberg	The MISC method for uncertainty quantification in engineering problems C. Piazzola, L. Tamellini	**11:00**
Modeling wave propagation in a finite-size metamaterial through a reduced relaxed micromorphic model. P. Demetriou, J. Voss, G. Rizzi, A. Madeo	Energy scaling laws for a variational model of epitaxial growth L. Abel, J. Ginster, B. Zwicknagl		**11:20**
Improved sound absorption characteristics of a novel porous metamaterial structure Q. Liu, C. Zhang	Truesdell's empirical inequalities and the coaxiality of stress and stretch J. Voss, R.J. Martin, P. Neff	Uncertainty quantification in the coastal aquifers using Multi Level Monte Carlo A. Litvinenko, D. Logashenko, R. Tempone, […]	**11:40**
Towards the use of a reduced order and stochastic turbulence model for assessment of far-field sound radiation: low Mach number jet flows J.A. Medina Méndez, S. Sharma, H. Schmidt, M. Klein	Korn-Maxwell-Sobolev inequalities for general incompatibilities F. Gmeineder, P. Lewintan, P. Neff	Data-driven model order reduction in subset simulations D. Thaler, M.D. Shields, B. Markert, F. Bamer	**12:00**
Estimation of ODT-resolved acoustic sources in high Reynolds number turbulent jets S. Sharma, L. Ayton, M. Klein, H. Schmidt	Gel models for phase separation at finite strains L. Schmeller, M. Thomas	On probabilistic entropies application in uniaxial deformation of hyper-elastic materials M. Kamiński	**12:20**
Vortex cusps V. Elling	Analysis of poro-visco-elastic solids at finite strains W. van Oosterhout, M. Liero		**12:40**

DFG PP 2311 | Contributed Sessions

	S18 **Numerical methods for differential equations** Chair(s): C. Gräßle, R. Maier HSZ/H02	S22 **Scientific computing** Chair(s): J. Saak HSZ/103	S23 **Applied operator theory** Chair(s): R. Chill, M. Waurick HSZ/101
11:00	Adaptive unstructured T-splines for linear elasticity R. Maier, P. Morgenstern, T. Takacs	A mechanically consistent model for fluid-structure interactions with contact including seepage S. Frei, E. Burman, M.A. Fernández	Sharp boundary trace theory for second order elliptic operators on Lipschitz domains J. Behrndt
11:20	A cost-efficient modified combined active-set Newton method for solving phase-field fracture into the monolithic limit L.M. Kolditz, K. Mang, T. Wick	A wavelet-enhanced adaptive hierarchical FFT-based approach for the efficient solution of microscale boundary value problems T. Kaiser, T. Raasch, J.J.C. Remmers, M.G.D. Geers	
11:40	High order biorthogonal basis functions S. Beuchler	Adaptive parallel space-time discontinuous Galerkin Methods for the linear transport equation C. Wieners	Quasi Gelfand triple N. Skrepek
12:00	Algorithmic realization of exact three-point difference scheme for singular Sturm-Liouville problem N. Khomenko, M. Kutniv, V. Schulz	Efficient simulation of incompressible flows: a parallel finite element algorithm with semi-explicit time integration and local pressure-corrections U. Kaya, T. Richter	G-convergence of Friedrichs systems K. Burazin, M. Erceg, M. Waurick
12:20	Step size control for the Newton iteration for the p-Stokes equations decreases computation time N. Schmidt	Matrix-free preconditioners for isogeometric discretization of the Stokes equations M.Ł. Mika, R.R. Hiemstra, M.F.P. ten Eikelder, [...]	Holomorphic G-convergence M. Waurick
12:40	Mixed FEM for Gradient Elasticity and the Singularly Perturbed Biharmonic problem J. Ketteler, M. Schedensack, D. Balzani, [...]	Towards a Benchmark Framework for Model Order Reduction in the Mathematical Research Data Initiative (MaRDI) P. Benner, C. Himpe, K. Lund, T. Mitchell, J. Saak, [...]	Spectral properties of Dirichlet Laplacian in spiral-shaped regions P. Exner

S24 **History of applied mathematics and mechanics** Chair(s): W.L. Wendland, D. Gross HSZ/105	S26 **Modeling, analysis and simulation of molecular systems** Chair(s): W. Zhang HSZ/403		
On the Invention of Iterative Methods for Linear Systems M.J. Gander	Fracture Simulations of Polymers: Coupling Molecular and Continuum Models F. Weber, C. Bauer, M. Ries, W. Zhao, S. Pfaller		**11:00**
	Molecular modeling of disordered solids F. Bamer		**11:20**
A historical overview of various types of entropy in the mathematical theory of dynamical systems R. Gunesch	Molecular dynamic study of fracture in silica glass S. Shekh Alshabab, F. Bamer, B. Markert		**11:40**
History of Mathematics at the University of Freiburg D. Kroener	Influence of Binding Energies on needed Conditions for Ceramic Formation in Aerosol Deposition B. Daneshian, F. Gärtner, W. Weber, H. Assadi, [...]		**12:00**
	Grassmann Extrapolation of Density Matrices for Born–Oppenheimer Molecular Dynamics E. Polack, G. Dusson, F. Lipparini, B. Stamm		**12:20**
	Compressing multireference character of wave functions via fermionic mode optimization M. Máté, K. Petrov, S. Szalay, Ö. Legeza		**12:40**

Contributed Sessions

	S03 **Damage and fracture mechanics** Chair(s): P. Steinmann HSZ/H04	S04 **Structural mechanics** Chair(s): G. Kikis HSZ/AUDI	S06.1 **Material modelling with metals** Chair(s): P. Kurzeja, J. Mosler POT/112
16:00	Numerical Optimisation of Damage in Forming Processes F. Guhr, F.-J. Barthold	Multi-level Bézier extraction of truncated hierarchical B-splines for isogeometric analysis A. Grendas, B. Marussig	A continuum model for disconnection-mediated interface migration: Application to the interface faceting-defaceting behavior C. Qiu, M. Salvalaglio, D. Srolovitz, J. Han
16:20	Numerical investigation of the process-structure-property relationship of remote laser cut CFRP structures B. Schmidt, K. Hollmer, M. Zimmermann, M. Kästner	Transient Response of Pavement Structures Under Moving Wheel Loads Using the ALE Methodology A. Anantheswar, I. Wollny, M. Kaliske	Numerical modeling of multi-point blanking process of electrical steel Ł. Bohdal, L. Kukiełka, R. Patyk, K. Kośka, […]
16:40	A thermo-mechanical phase-field fracture model: application to hot cracking simulations in additive manufacturing H. Ruan, S. Rezaei, B.-X. Xu	Monolithic FE² approach for thermomechanical modeling of beam structures S. Klarmann, P. Gebhart, T. Wallmersperger, […]	Generalizing Kocks's Natural Basis to Higher-Order Tensors M. Krause, T. Böhlke
17:00	A phase-field model for hydrogen-promoted fracture based on a mixed rate-type variational setting V. Diddige, A. Seupel, S. Roth, B. Kiefer	Method of Manufactured Solutions in the Context of Embedded Domain Simulations M. Petö, F. Duvigneau, S. Eisenträger, D. Juhre	
17:20	Phase-field cohesive modeling of chemo-mechanical fracture in polycrystalline cathode structures of lithium-ion batteries W. Chen, S. Rezaei, B.-X. Xu	Use of differential forms in the determination of differentials of cross products of tensors in nonlinear solid mechanics R. Flajs	
17:40	Chemo-mechanical damage modeling of polycrystalline secondary active material for batteries A. Asheri, S. Rezaei, V. Glavas, B.-X. Xu	Simulation of the mechanical behavior of coated particles using DEM-BPM W. Safdar, S. Rotter, S. Heinrich, A. Düster	

S06.2 **Material modelling with non-metals** Chair(s): S. Kozinov, R. Landgraf POT/151	S07 **Coupled problems** Chair(s): F. Aldakheel, A. Shojaei CHE/S89	S07 **Coupled problems** Chair(s): A. Schwarz, M. Göttlicher CHE/183	
Description of the deformation behavior of magnetic alginate-methylcellulose hydrogels C. Czichy, S. Günther, S. Odenbach	A numerical study of microbubble dynamics using the isogeometric boundary element method M.P. Rajski, M. Itskov, R.A. Sauer, V.N. Khiêm	A mixed least-squares finite element method for a geometrically nonlinear TPM formulation A. Schwarz, C. Schwarz, J. Bluhm, J. Schröder	**16:00**
Effective Diffusion Properties of Calcified Hydrogels Obtained by the Asymptotic Homogenisation M. Graham, S. Klinge	Immersed isogeometric analysis with boundary-conformal quadrature for large deformation thermo-elasticity Y.T. Elbadry, P. Antolin, O. Weeger	A coupled finite element TPM formulation for the modeling of freezing processes using a discontinuous approximation for the volume fraction ice M. Koßler, A. Schwarz, J. Bluhm, J. Schröder	**16:20**
A model for the evolution size and composition of olivine crystals H.H. Haddenhorst, K. Hackl, S. Chakraborty	Neural network based coupling of CALPHAD and the FEM in thermo-chemo-mechanical calculations S. Roth, T. Zienert, B. Kiefer	Numerical simulation of miscible multiphase flow and fluid-fluid interaction in deformable porous media S. Peters, Y. Heider, B. Markert	**16:40**
Modelling of precipitate hardening in ferroelectric material M. Bohnen, R. Müller	A FEM-PD coupling based on an Arlequin approach to impose boundary conditions in Peridynamics A. Pernatii, U. Gabbert, C. Willberg, J.-T. Hesse	A Mixed Hu-Washizu-type Variational Formulation for Second-Gradient Poroelasticity H. Khurshid, E. Polukhov, M.-A. Keip	**17:00**
Second-Order Collocation Mixed FEM for Flexoelectric Solids K. Tannhäuser, S. Kozinov	Adaptive time integration for dynamic problems in the Theory of Porous Media using an EVI-formulation J.N. Sunten, A. Schwarz, J. Bluhm, J. Schröder	Analytical solution of dielectric two-domain problem and implications for interface conditions and crack tip loading L. Behlen, D. Wallenta, A. Ricoeur	**17:20**
Physically motivated modeling of piezoceramics in the context of mesoscale motors P. Marter, M. Khramova, F. Duvigneau, R. Orszulik, […]	An Efficient Newton-multigrid FEM Solver for Multifield Nonlinear Problems Applied to Thixo-viscoplastic Flows N. Begum, A. Ouazzi, S. Turek	Nonclassical Potential for the Two States Analysis M. Göttlicher	**17:40**

Contributed Sessions

	S08 **Multiscales and homogenization** Chair(s): F. Aldakheel HSZ/H03	S11 **Interfacial flows** Chair(s): S. Aland CHE/S91	S14 **Applied analysis** Chair(s): M. Thomas POT/51
16:00	Multi-scale modelling and homogenization of weakly cemented granular mixtures Y. Jiang	Diffuse-interface incompressible fluid mixture models M. ten Eikelder, K. van der Zee, D. Schillinger	Existence of Quasi-Static Crack Evolution for Atomistic Systems J. Seutter, M. Friedrich, R. Badal
16:20	Investigating the impact of deformation on foam permeability through CT scans and the Lattice-Boltzmann method T.P. Nguyen, U. Navrath, Y. Heider, J. Carmai, […]	A Numerically Consistent Unstructured Volume-of-Fluid Discretization for the Two-Phase Momentum Convection with High-Density Ratios J. Liu, T. Tolle, H. Scheufler, D. Zuzio, […]	Long-time dynamics and singular limits of transmission problems for elastic arch beams. T. Fastovska
16:40	Guaranteed lower bounds to effective stiffness in 3D I. Pultarová, L. Gaynutdinova, M. Ladecky, J. Zeman	Curvature approximation for the unstructured geometrical VOF method G. Chai, J. Liu, T. Tolle, A. Lippert, D. Bothe, […]	Well- and ill-posedness results on the hyperbolic Prandtl system in Gevrey-spaces F. De Anna, J. Kortum, S. Scrobogna
17:00	Homogenization of plane ring mesh under static loading F.W. Dries, T. Wallmersperger, J. Kessler		Energy-variational solutions for a class of hyperbolic conservation laws T. Eiter, R. Lasarzik
17:20	Modelling of single layer carbon-based nanostructures with a Reissner-Mindlin shell element including rotational degrees of freedom through […] J. Ochs, J. Wackerfuß		On Frictional Unilateral Contact in Finite Strain Elasticity J. Gwinner
17:40	Finite Element approximation for a homogenized plate bending model C. Smoch, M. Rumpf, S. Simon		

Friday, June 2, 16:00 - 18:00

S15 **Uncertainty quantification** Chair(s): A. Litvinenko, B. Rosic POT/13	S17 **Applied and numerical linear algebra** Chair(s): E. Ullmann, T. Mach HSZ/103	S18 **Numerical methods for differential equations** Chair(s): C. Gräßle, R. Maier HSZ/H02	
Applied Bayesian Structural Health Monitoring: inclinometer data anomaly detection and forecasting D.K.E. Green, A. Jaspan	Multigrid methods for block Toeplitz and block circulant matrices M. Bolten, M. Donatelli, P. Ferrari, I. Furci	Raviart-Thomas enriched Scott-Vogelius finite element methods for the Navier-Stokes equations V. John, X. Li, C. Merdon	**16:00**
Stochastic buckling loads of thin-walled structures combining linear and nonlinear analysis M. Fina, W. Wagner, S. Freitag, M.A. Valdebenito, […]	Properties of hybrid LSQR method for the solution discrete inverse problems in Single Particle Analysis E. Havelková, I. Hnětynková	On the design of global-in-time Navier-Stokes solvers C. Lohmann, S. Turek	**16:20**
Non-intrusive operator inference for a soft robot segment M.W. Berghuis, A. Stanić, B. Rosic	Hierarchical Block Structures for the Preconditioning of Saddle Point Problems with H-Matrix Decompositions J. Grams, S. Le Borne	Higher order discontinuous Galerkin methods in time and pressure-robust finite element discretizations applied to time-dependent Stokes problems N. Ahmed, S. Becher, G. Matthies	**16:40**
Parameter identification in dynamic crack propagation modelled by ED-FEM A. Stanić, M. Nikolić, N. Friedman, H. G. Matthies	Fully reliable iteration method based on simplification of the original operator T.S. Samrowski	Immersed boundary method for the 3D compressible Navier-Stokes equation F. Kristoffersen, M. Larsson, S.G. Johnsen, […]	**17:00**
Time-separated stochastic mechanics for the simulation of locally fluctuating viscoelastic materials with application to composites H. Geisler, P. Junker	Symbol-Based Analysis of Structured Matrices in Electromagnetic Scattering Problems M. Bolten, I. Furci, R. Spoerer	Time-spectral extension to a compressible Navier-Stokes method with nested solution algorithms E. Gros, R. Haupt, A. Stueck	**17:20**
Modelling and estimation of the reliability of electrical components for autonomous driving S.-J. Kimmerle	Krylov-Simplex and residual subspace Simplex W.I. Vanroose, B. Symoens	A structure-preserving ALE method for the two-phase Navier-Stokes flow H. Garcke, R. Nurnberg, Q. Zhao	**17:40**

Contributed Sessions

	S19 **Optimisation of differential equations** Chair(s): O. Weiß, C. Geiersbach HSZ/101	S20 **Dynamics and control** Chair(s): A. Othmane, M. Voigt HSZ/401	S24 **History of applied mathematics and mechanics** Chair(s): D. Gross, W.L. Wendland HSZ/105
16:00	Optimal control of quasilinear parabolic PDEs with gradient terms and pointwise state-gradient-constraints L. Bonifacius, F. Hoppe, H. Meinlschmidt, I. Neitzel	Sample-and-hold funnel control L. Lanza, D. Dennstädt, K. Worthmann, S. Trenn, [...]	On the lever law of Archimedes in the mechanics of bodies H. Balke
16:20	Space -time Variational Methods for Parabolic Optimal Control Problems A. Reinhold, N. Beranek	Control-Oriented Models for the Shallow Water Equations using Energy-Conserving Higher Order Discretization Schemes L. Mayer, J. Wurm, F. Woittennek	
16:40	An Algorithmic Framework for Optimal Control of Hybrid Dynamical System with Parabolic PDEs C. Kuchler, F. Hante	Prescribed finite-time stabilization for flat systems A. Irscheid, J. Rudolph	A short Historical Review on Porous-media Research W. Ehlers
17:00	Inverse optimal control in transportation networks T. Schillinger, S. Göttlich, P. Mehlitz	Input-to-state stability of a time-invariant system with control delay and additive disturbances I. Ursu, A. Toader, G. Tecuceanu, D. Enciu	From beam to plate bending R. Kienzler
17:20	Parameter identification in piezoelectricity based on all-at-once and reduced regularization R. Kuess	Frequency-dependent Switching Control for Disturbance Attenuation of Linear Systems J.J. Zhang, J. Heiland, P. Benner, X. Du	The study program "Dynamics and Strength of Machinesïn the formerly USSR H. Altenbach
17:40	A trust-region algorithm for parameter identification in multigroup pandemic models M. Friedemann	Fixed-Order H-infinity Control of Port-Hamiltonian Systems P. Schwerdtner, M. Voigt	

S26 **Modeling, analysis and simulation of molecular systems** Chair(s): B. Stamm HSZ/403			
Nonlinear reduced basis using mixture Wasserstein barycenters: application to an eigenvalue problem M. Dalery, G. Dusson, V. Ehrlacher, A. Lozinski			**16:00**
On the Well-Posedness of the Discrete Single-Reference Coupled Cluster Equations M. Hassan, Y. Maday, Y. Wang			**16:20**
Density fitting for clusters of rigid molecules in the context of QM/MM simulations I.-M. Lygatsika, Y. Maday, J.-P. Piquemal, […]			**16:40**
Domain Decomposition Methods for the Poisson-Boltzmann Equations A. Jha, B. Stamm			**17:00**
The domain decomposition X library for continuum solvation models M. Nottoli, B. Stamm			**17:20**
			17:40

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