DACOMA-25

DATA DRIVEN COMPUTING AND MACHINE LEARNING 2025

Beijing | China
10–12 October 2025

工程中的数据驱动计算与机器学习国际会议

2025年10月10–12日
中国 | 北京

PROGRAM BOOK

GUIDANCE

北京市科学技术协会
BEIJING ASSOCIATION FOR SCIENCE AND TECHNOLOGY

ORGANIZERS

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Bauhaus-Universität Weimar

Leibniz Universität Hannover

Transportation Guide

CONFERENCE ARRANGEMENTS

Date: October 10th-12th

Venue: Academic Hall, 1F, CAMIC Convention Center

民航国际酒店一层学术报告厅

3 Huajiadi East Road, Chaoyang District, Beijing, China

中国北京市朝阳区花家地东路 3 号

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※Guidances

Beijing Association for Science and Technology

※Organizers

Chinese Society of Theoretical and Applied Mechanics

Beijing Society of Theoretical and Applied Mechanics

Tsinghua University

※Co-Organizers

Peking University

Beijing International Center for Theoretical and Applied Mechanics

Leibniz University Hannover

Tongji University

Bauhaus University Weimar

Beijing Institute of Technology

German Association of Computational Mechanics

Chinese Association of Computational Mechanics

※Conference Website

www.dacoma.org.cn

※Conference Introduction

In the age of big data, machine learning technology has been effectively utilized in various fields such as image processing, genomics, engineering computing, macroeconomic forecasting, and medical diagnosis. However, despite its success, applying data-driven computing and machine learning in engineering analytics still presents many unresolved challenges. With the aim of promoting research and the application of big data analysis, data-driven computing, and artificial intelligence in engineering, as well as fostering scientific exchanges among scientists, practitioners and engineers from related disciplines, the International Conference on Data-Driven Computing and Machine Learning in Engineering (DACOMA) conference has been successfully held since 2019. The first DACOMA conference was held in 2019 in Shanghai, China and was hosted by Tongji University, with Prof. Hehua Zhu and Prof. Timon Rabczuk as its chairs. The second DACOMA conference was hosted by Tsinghua University in 2022, with Prof. Zhanli Liu and Prof. Xiaoying Zhuang as its chairs. The third DACOMA conference was hosted by Beijing Institute of Technology in 2023, with Prof. Pengwan Chen, Prof. Zhanli Liu and Prof. Xiaoying Zhuang as its chairs. The fourth DACOMA was hosted by Hohai University in 2024, with Prof. Hongwu Tang, Prof. Timon Rabczuk and Prof. Hehua Zhu as its chairs.

The 1st DACOMA, Shanghai, China, 2019.

The 2nd DACOMA, Beijing, China, 2022.

The 3rd DACOMA, Beijing, China, 2023.

The 4th DACOMA, Nanjing, China, 2024.

The 5th International Conference on Data-Driven Computing and Machine Learning in Engineering (DACOMA-25) will be held in Beijing, the capital of China, 10-12 October, 2025. DACOMA-25 will be hosted by Chinese Society of Theoretical and Applied Mechanics, Beijing Society of Theoretical and Applied Mechanics, Tsinghua University, and jointly organized by Peking University, Beijing International Center for Theoretical and Applied Mechanics, Leibniz University Hannover, Tongji University, Bauhaus University Weimar, Beijing Institute of Technology, German Association of Computational Mechanics, Chinese Association of Computational Mechanics . The conference will be held with Professor Zhuo Zhuang and Professor Timon Rabczuk, prominent scholars in the field of computational mechanics, serving as the conference chairs. This year's conference will continue to focus on machine learning and AI in general for relevant topics in Engineering and Science.

We sincerely invite experts, colleagues, and students in the fields of data-driven computational mechanics and machine learning to participate in the conference. We are looking forward to seeing you in Beijing. We believe that you will enjoy the wide variety of activities of the DACOMA-25, as well as your stay in this elegant city.

※Academic Committee

Zhuo Zhuang, Timon Rabczuk

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02 Agenda

October 10 Registration 14:00-20:00

October 11

Time	Events	Chair
7:30-8:30	**Registration**	
08:30-09:00	Opening Ceremony 28th Beijing Academic Exchange Month of Science and Technology in conjunction with DACOMA-25	
	Opening Address: Prof. Jinghai Li President, the Beijing Association for Science and Technology	Yong Ding Secretary, Leading Party Members Group of the Beijing Association for Science and Technology
	Welcome Address: Prof. Guowei He President, Chinese Society of Theoretical and Applied Mechanics (CSTAM)	Prof. Zhuo Zhuang
	Congratulatory Remarks: Prof. Timon Rabczuk Co-Chair, DACOMA 2025 International Conference	
09:00-09:40	**Plenary Lecture 1**	Prof. Zhuo Zhuang
	Title: Future of AI in Science and Engineering: From Foundations of Computing to Emerging Technologies **Speaker:** Prof. Klaus Mainzer, President of European Academy of Sciences and Arts	
09:40-10:20	**Plenary Lecture 2**	
	Title: Data-Driven Large-Eddy Simulation for Time-Accurate Prediction of Turbulent Flows: Turbulence Modeling and Shape Optimization **Speaker:** Prof. Guowei He, Institute of Mechanics, Chinese Academy of Sciences	
10:20-10:40	**Coffee Break**	
10:40-11:20	**Plenary Lecture 3**	Prof. Min Xie
	Title: Beyond Residual: Energy Based Solutions of Partial Differential Equations **Speaker:** Prof. Timon Rabczuk, Bauhaus University Weimar	

11:20-12:00	**Plenary Lecture 4** **Title:** Machine Learning and Mechanics Modeling Empowers Design of Variable Stiffness Structures for Large Composite Aircraft Wings **Speaker:** Prof. Zhuo Zhuang, Tsinghua University	Prof. Min Xie
12:00-13:30	**Buffet Lunch**	
13:30-18:00	Technical Sessions (Invited Lectures & Oral Presentations)	For details, please refer to page 15-22 of the handbook.
18:30-20:00	**Buffet Dinner**	

October 12

Time	Events	Chair
08:30-09:10	**Plenary Lecture 1** **Title:** Tensor Decomposition: Some Recent Results **Speaker:** Prof. Shaoqiang Tang, Peking University	Prof. Weisheng Zhang
09:10-09:50	**Plenary Lecture 2** **Title:** NMM-based Simulation of Macro-Meso Fracture Failure Behavior in Particle Agglomerates **Speaker:** Prof. Pengwan Chen, Beijing Institute of Technology	
09:50-10:10	**Coffee Break**	
10:10-10:50	**Plenary Lecture 3** **Title:** Machine Learning-powered Geometry-Aware Filter: A Human-Informed Approach for Advanced Topology Optimization **Speaker:** Prof. Weisheng Zhang, Dalian University of Technology	Prof. Xiaoying Zhuang
10:50-11:30	**Plenary Lecture 4** **Title:**A Discrete Learning Method for Nonlinear Solid Mechanics Problems **Speaker:** Prof. Yanping Lian, Beijing Institute of Technology	
11:30-13:30	**Buffet Lunch**	
13:30-18:00	Technical Sessions (Invited Lectures & Oral Presentations)	For details, please refer to page 23-30 of the handbook.

03 Plenary Lectures

October 11

Future of AI in Science and Engineering: From Foundations of Computing to Emerging Technologies

Speaker: Prof. Klaus Mainzer, President of European Academy of Sciences and Arts

Abstract of the speech:

We live in the age of artificial intelligence (AI), which has arrived in people's everyday lives and working environments with chatbots such as ChatGPT and DeepSeek. However, only few people realise that this key technology is deeply rooted in the logical, mathematical, physical and engineering foundations of science. Only those who know these fundamentals can correctly assess the potential and limits of AI technology. The lecture therefore examines the foundations and limits of digital machine learning, analog brain-orientated neuromorphic AI and quantum AI. These approaches have different advantages, but also limitations, for solving different types of problems. In the future, it will be challenging to integrate them into a hybrid AI technology that can be used independently of its hardware. The lecture is therefore also a plea for interdisciplinary foundational research in logic, mathematics, physics, material and engineering sciences, which has made possible long-term research breakthroughs and emerging technologies.

Short biography:

Klaus Mainzer, President of European Academy of Sciences and Arts. His research concerns the dynamic intersection of complex systems, artificial intelligence (AI), and emerging technologies. As AI-driven solutions become essential for handling vast and ever-growing data sets, innovation in computing technologies is crucial. At the same time, sustainability and resource limitations must be addressed. Bringing together classic digitalization, neuromorphic computing, quantum technologies, and the latest breakthroughs in generative AI (e.g., ChatGPT, DeepSeek), his research examines the evolving innovation portfolio that shapes the future of AI and computing. It highlights the balance between digital and analog technologies, advocating for a hybrid IT and AI approach geared toward efficiency and sustainability. Rooted in decades of research on complex systems and AI, his research sets the stage for a broader discussion on strategic innovation, offering insights into the evolving technological landscape and its impact on society. This research is not only documented in more than 40 international book publications and editions, but also with memberships and leading positions in universities, academies, and foundations. Klaus Mainzer studied mathematics, physics, and philosophy. He is currently Emeritus of Excellence (TUM Senior Excellence Faculty, Technical University of Munich) and senior professor (University of Tübingen). He was principal investigator of projects of the DFG (Germany), NSF (USA), the Fritz-Thyssen and Udo Keller Foundations and the Academia Europaea. He was a visiting professor in Brazil, China, EU, India, Japan, Korea, Russia, UK, USA.

He is member of the German National Academy of Science and Engineering (acatech), Academia Europaea (London), European Academy of Sciences and Arts (Salzburg: Dean of the class of natural sciences 2018/2019, since 2020 president, re-elected 2025), chairman of the committee of trustees (Udo Keller Foundation, Hamburg), et al.

Data-Driven Large-Eddy Simulation for Time-Accurate Prediction of Turbulent Flows: Turbulence Modeling and Shape Optimization

Speaker: Prof. Guowei He, Institute of Mechanics, Chinese Academy of Sciences

Abstract of the speech:

Large-eddy simulation (LES) has been increasingly used to predict turbulence-generated noise such as aero-and hydro-acoustics. This task requires that LES should be time-accurate: it can correctly predict space-time correlations or wavenumber-frequency spectra. The conventional turbulence models based on flow physics suffers from the problem of the competitive balances of multiple flow processes, such as energy dissipation and random backscatter, attached and separated flows, and the numerical issues, such as stochastic and realization differentials. The machine learning method is potential to become the workhorse for turbulence modelling and numerical issues. In this talk, we present our recent work. (1) Data-driven random forcing model: this model can be used to correctly predict space-time correlations, while the most-often-used eddy viscosity model largely over-predict the time correlations. (2) Knowledge-integrated additive (KIA) wall model: this model overcome the issue of “catastrophic forgetting” in machines learning and can be used to numerically simulate attached and separated flows. (3) LES-based shape optimization: the regularized ensemble Kalman method is introduced to overcome the blow-up of model gradient due to the chaotic nature of turbulence and the LES used for trailing-edge noise reduction. The application of LES to the noise radiated from turbulent flows around underwater vehicles is also presented.

Short biography:

Prof. Guowei He is a professor and the academic director of Institute of Mechanics, Chinese Academy of Sciences. He is an elected academician of Chinese Academy of Sciences and a fellow of American Physical Society. He is the current president of Chinese Society of Theoretical and Applied Mechanics and associate editor of APS journal *Phys. Rev. Fluids*. His research interests include: turbulence statistical theory and computational modeling, large eddy simulation of turbulence-generated noise and machine learning.

Beyond Residual: Energy Based Solutions of Partial Differential Equations

Speaker: Prof. Timon Rabczuk, Bauhaus University Weimar

Abstract of the speech:

Physics-Informed Neural Networks (PINNs) and their variational counterparts (VPINNs) have emerged as powerful tools for solving partial differential equations (PDEs). However, their reliance on residual minimization introduces well-documented challenges, including sensitive loss hyperparameter balancing, difficulties in enforcing constraints, and instability from high-order derivatives. This presentation argues that for the vast class of problems derived from variational principles, the Deep Energy Method (DEM) offers a superior framework. DEM directly minimizes the underlying energy functional, inherently avoids the loss balancing problem, ensures thermodynamic consistency, and provides a more natural mechanism for enforcing boundary conditions and inequality constraints. DEM will be subsequently extended to operator learning and in this context a variational physics informed Fourier Neural Operator will be presented which obviates the need of paired datasets. The performance of DEM and VINO will be demonstrated for a few selected problems in solid mechanics.

Short biography:

Timon Rabczuk is the Chair Professor of Computational Mechanics at Bauhaus University Weimar. He is a member of the European Academy of Sciences and Art, Academia Europea and Europe Academy of Science. His key research area is computational mechanics, AI for mechanics and advanced computational materials design. Prof. Rabczuk obtained his doctoral degree from Karlsruhe Institute of Technology (KIT) in Germany in 2002 which is followed by his postdoctoral research with Prof. Ted Belytschko in University of Northwestern. He became the Chair Professor in Computational Mechanics in his current institution in 2009. He has published so far 3 academic monographs, over 700 SCI papers, with H-Index of 120, attracting over 50000 times citations in Web of Science core collection. He has been awarded with the ERC Consolidator Grant from European Union, Feodor-Lynen Fellow from Humboldt Foundation and was listed as Highly Cited Researchers.

Machine Learning and Mechanics Modeling Empowers Design of Variable Stiffness Structures for Large Composite Aircraft Wings

Speaker: Prof. Zhuo Zhuang, Tsinghua University

Abstract of the speech:

The wing panels and beams of wide-body aircraft have large thickness characteristics. By continuously changing the fiber layup angle, layer plates with variable stiffness are designed. A continuum-based plate-shell element is established, and a non-uniform anisotropic constitutive model is adopted. A machine learning cross-scale co-evolution algorithm is proposed to achieve the optimization design of high-dimensional/continuous-discrete hybrid variable-stiffness composite wing structures of large aircraft.

Short biography:

Professor of the School of Aerospace Engineering at Tsinghua University, Academician of the European Academy of Sciences and Arts (EASA), Vice President of the International Association for Computational Mechanics (IACM), Invited Expert of the China Committee of the International Council of Science (ISC-China). Doctor of the University College Dublin, Ireland, Honorary Doctor of Swansea University, UK. Chief Scientist of the 973 Project. Published over 380 academic papers and authored more than 10 academic books. Papers and books have been cited over 15,000 times. Obtained over 25 invention patents and 10 software copyrights. Received 8 national and provincial-level science and education awards.

Tensor Decomposition: Some Recent Results

Speaker: Prof. Shaogiang Tang, Peking University

Abstract of the speech:

Tensor Decomposition (TD) method and its variant, Proper Generalized Decomposition (PGD) method, resolve an unknown multivariate function by summing modes in variable-separated form. This effectively reduces Degrees of Freedom (DoF) in problem solving. In this talk, we shall discuss some recent results on theoretical analysis and algorithm development.

1, Taking two-mode solution of Poisson's equation as an example, we rigorously prove that PGD selects modes in an order different from Singular Value Decomposition (SVD) for a range of relative amplitudes. Appropriate preconditioning may rectify the order. Numerical tests verify the ordering difference, which holds true for more general solutions and other type of equations. This reveals the PGD algorithm not providing optimal convergence in general.

2. We propose a multi-level Variational Multiscale-Tensor Decomposition (VMS-TD) algorithm to solve the heat conduction with moving source that arises from additive manufacturing. In particular, for a three-level three-dimensional example, it is much more efficient than the fully resolved TD algorithm, let alone traditional direct numerical simulations.

3. Solving by TD the linear response of a Repeated Unit Cell (RUC) problem with inclusion of parametrized shape, we obtain homogenized elasticity tensor. Based on this, topology optimization for structure consisting such RUCs is performed with respect to the parameters by another TD algorithm. This demonstrates the effectiveness of TD algorithms for problems in high dimensional physical-parameter space.

Short biography:

Tang Shaoqiang , Professor at Peking UniversityHis research focuses on computational mechanics and applied mathematics, with particular interests in multiscale algorithms, numerical homogenization, and the theory and computation of nonlinear waves. He has served as Principal Investigator of one Key Project and several General Projects granted by the National Natural Science Foundation of China, and participates in the Basic Science Center Program. He has published more than one hundred refereed journal papers and was supported by the Program for New Century Excellent Talents of the Ministry of Education. He is a Council Member of the Chinese Society of Theoretical and Applied Mechanics and an Executive Council Member of the International Chinese Association for Computational Mechanics. He currently serves on the editorial boards of *Computational Mechanics* and other international journals, and is Associate Editor of *Theoretical and Applied Mechanics Letters*. For undergraduate education, he has long taught core courses in mechanics and reformed their mathematical content, authored three textbooks, and led the Mathematical Analysis teaching team of the College of Engineering to be honored as an Excellent Teaching Team of Peking University. His course Applied Analysis was funded by the Ministry of Education as a Bilingual Teaching Demonstration Project. He was twice elected one of the "Top Ten Teachers" of Peking University (2002, 2009), received the Peking University Teaching Excellence Award (2008), Beijing Outstanding Teacher Award (2013), Beijing Role Model in Professional Ethics (2016), and Beijing Distinguished University Teacher Award (2021), among other honors.

NMM-based Simulation of Macro-Meso Fracture Failure Behavior in Particle Agglomerates

Speaker: Prof. Pengwan Chen, Beijing Institute of Technology

Abstract of the speech:

Particle agglomerates (e.g., ceramics, concrete) exhibit complex mesostructures (high particle packing density, voids/microcracks, weak interfaces) and sensitive mechanical behavior (low strength, brittle failure), making experimental characterization of their fracture and fragmentation behavior extremely challenging. Effective numerical simulation approaches are urgently needed to reveal their underlying failure mechanisms. This study employs Numerical Manifold Method (NMM) framework to systematically simulate the macro-meso fracture failure behavior of particle agglomerates. The framework integrates the continuous field handling capabilities of the Finite Element Method (FEM) with the discontinuous deformation simulation strengths of the Discrete Element Method (DEM), and incorporates contact detection theory, crack propagation algorithms, and viscoelastic-plastic constitutive models. The research encompasses quantitative prediction of the influence of initial meso-defects (debonding, voids, microcracks) on equivalent mechanical properties at the mesoscale, and full-process simulation of deformation, fracture-to-fragmentation failure behavior under macroscopic complex loading scenarios such as impact tests and projectile penetration. The simulation results reveal the complex failure modes and impact response characteristics of agglomerates under various loads and configurations, elucidating the intrinsic relationship between internal defect evolution, crack propagation, and macroscopic mechanical failure in the material. This work provides a numerical analysis tool for structural integrity assessment and performance optimization of relevant brittle materials.

Short biography:

Ph.D. in Engineering, Professor, Ph.D. Supervisor
Distinguished Professor, Beijing Institute of Technology (BIT)
Member of the National High-level Talent Program
Long-term research focuses on explosion mechanics, impact dynamics, and safety of energetic materials.
Secured over 10 key projects including the National Natural Science Foundation of China (NSFC) projects and national defense research programs. Awarded 4 provincial/ministerial first prizes and 2 provincial/ministerial second prizes.
Published over 200 SCI-indexed papers. Granted over 30 inventive patents.

Machine Learning-powered Geometry-Aware Filter: A Human-Informed Approach for Advanced Topology Optimization

Speaker: Prof. Weisheng Zhang, Dalian University of Technology

Abstract of the speech:

This work introduces an innovative topology optimization method that integrates geometric features into structural design through enhanced filtering techniques. Unlike conventional approaches that treat aesthetic or geometric constraints as supplementary conditions, this method embeds predefined geometric features into the filtering process during the initial optimization phase, making them intrinsic drivers of structural generation. These features can be either human-specified geometric elements or stylized patterns extracted from textures. By modifying traditional filtering techniques, geometric patterns are seamlessly integrated into the density field filtering process, guiding the optimization algorithm to follow specific geometric trajectories while optimizing material distribution. The results in structures that balance mechanical performance with unique aesthetic characteristics. The method supports texture-driven structural generation, flexible combinations of textures with stiffness optimization results, and intuitive human-designed geometries, enabling diverse hybrid structural forms with precise geometric control. By incorporating aesthetic elements early in the optimization process, the method ensures smooth and coherent geometric integration, avoiding the inconsistencies of post-optimization adjustments. Compared to traditional methods, it eliminates the need for complex external constraints, enhancing computational efficiency, robustness, and the ability to avoid local optima. This approach facilitates the generation of structures with diverse geometric features, naturally embedding unique aesthetic styles while meeting mechanical performance requirements, thus harmonizing design intent with engineering feasibility.

Short biography:

Weisheng Zhang is a Professor in the Department of Engineering Mechanics at Dalian University of Technology, China. His research focuses on computational mechanics, structural optimization, and topology optimization, with current work advancing machine-learning assisted topology optimization for human-centered design. With over 80 publications and 8000+ Google Scholar citations, he has received significant honors including the National Natural Science Award (China, 2019), and NSFC Distinguished Young Scholar Fund (2024). Prof. Zhang serves as President of the Chinese Association of Computational Mechanics.

A Discrete Learning Method for Nonlinear Solid Mechanics Problems

Speaker: Prof. Yanping Lian, Beijing Institute of Technology

Abstract of the speech:

Numerical simulation is a powerful approach for engineering and scientific problems. However, the traditional mesh-based and particle-based numerical methods suffer from the inherent shortcoming of being time-consuming for complex problems with real-time analysis requirements. Although data-driven machine learning (ML) methods offer a promising path forward, revolutionizing prediction speed, it is still an open question to have a widely acceptable ML method with interpretability and generalization for those problems featuring nonlinearity, large scale, and high dimensionality. In this lecture, we introduce our recently proposed discrete learning method (DLM), aiming for real-time prediction of complex nonlinear structural responses in solid mechanics. It is important to understand that the performance of a numerical method depends not only on the governing equation to be solved and its spatial-temporal discretization scheme, but also on the way to treat the dataset, particularly for the ML method. In DLM, we introduced a novel dual-discretization concept for the training dataset, leading to the divide-and-conquer methodology, thus the name of the proposed method. It is particularly beneficial for small-sample ML methods, such as Gaussian process regression (GPR), in addressing the challenges posed by large-scale data. For the solid mechanics problems of concern, the dual-discretization consists of the solution space discretization and material domain discretization to the dataset, yielding a set of sub-datasets, featuring a small sample size and low dimensionality. Each sub-dataset is used to train a local reduced-order GPR, and the combination of these local GPRs can predict the high-dimensional problem. The proposed DLM has been demonstrated by A set of problems involving material, geometric, and boundary condition nonlinearities. On one hand, it can offer predictions within a second and attain high precision for a specific problem, and outperforms the traditional GPR for error reductions ranging from 1 to 3 orders of magnitude. On the other hand, it takes less than 1 minute to complete the online predictions for nonlinear extreme deformation problems with over 10 million degrees of freedom, which is not achievable by traditional GPR. We expect the proposed DLM to be a powerful tool for the fast and accurate prediction of large-scale nonlinear problems. In addition, it is straightforward to extend the DLM by integrating other small-sample ML methods.

Short biography:

Yanping Lian, Professor at Beijing Institute of Technology. He has been recognized as a National Young Talent and served as the Chief Scientist of a National Key Program for Basic Research Enhancement. His professional affiliations include membership in the Solid Mechanics Committee of the Chinese Society of Theoretical and Applied Mechanics (CSTAM), the Data-Driven Computational Mechanics Methods Group, and the National Engineering Computational Methods Liaison Committee. He also serves on the editorial boards of the Chinese Journal of Theoretical and Applied Mechanics, the Chinese Journal of Computational Mechanics, and Materials. He has led multiple national research projects with funding of more than 40 million RMB. His distinctions include the Beijing Natural Science Award (Second Class, 2nd contributor), First Prize in the International Numerical Simulation Challenge for Additive Manufacturing (1st contributor), and the Tsinghua University Outstanding Doctoral Dissertation Award, among others.

Prof. Lian's research field focuses on computational mechanics, with emphasis on numerical methods for metal additive manufacturing, impact penetration, advanced materials and structures design, and data-driven computational mechanics. He has pioneered several numerical methods, including: adaptive finite element material point method for extreme deformation problems, multi-scale and multi-physics methods for metal additive manufacturing, data-driven discrete learning method, and high-accuracy and stable methods for fractional partial differential equations. His scholarly output comprises over 60 publications in leading journals such as CMAME and CM, accumulating 2,000+ citations. He has co-authored two monographs, secured 20+ software copyrights, and filed six patents. The developed numerical methods have been applied to high-end equipment development, aerospace failure analysis, and commercial CAE software.

04 Thematic Lecture

October 11 Technical Session

Session Theme 1: Data-Driven Computing and Simulating
Organizers: Chensen Ding, Yufei Zhang
Time: 13:30 – 17:40

Venue: Meeting Room 401, 4F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 1	Jun Yan* Dalian University of Technology Fast prediction of elastoplastic effective properties of lattice structures based on FCA method	Chensen Ding
13:50-14:00		Jinyan Cai Northwestern Polytechnical University Optimal Probe Placement for Wind Tunnel Wall Pressure Measurement Using Deep Learning and Genetic Algorithms	
14:00-14:10		Tianju Xue Hong Kong University of Science and Technology On differentiable programming and the JAX-FEM library	
14:10-14:20		Jianxiu Qin China Academy of Aerospace Aerodynamics A Multi - Fidelity Data Fusion Framework for Aerodynamic Modeling Using Limited Wind Tunnel Data	
14:20-14:40		Yufei Zhang* Tsinghua University Research Progress of AI Based Aerodynamic Design and Optimization	Jun Yan
14:40-14:50		Yingcong Li Chongqing University A GAN Framework for Modeling and Fast Prediction of Membrane Wrinkling	
14:50-15:00		Shengye Wang National University of Defense Technology Semi-Differential Reynolds Stress Model and Symbolic Regression Optimization	
15:00-15:10		Meng You University of Chinese Academy of Sciences Meta-learning for supersonic flow mixing performance prediction	
15:10-15:30	Coffee Break		
15:30-15:50	Session Theme 1	Jiaqing Kou* Northwestern Polytechnical University Machine Learning for Unsteady Aerodynamic Modelling and Aircraft Configuration Design	Yufei Zhang
15:50-16:10		Jun Zhang* Beihang University Data-Driven Discovery of Governing Equations in Fluid Dynamics from Molecular Simulations	
16:10-16:30		Zifeng Yuan* Peking University A Data-driven Computational Method for Analytical Solution with Finite Element (CMAS-FE)	
16:30-16:40		Ziqi Ji Beihang University:|:City University of Hong Kong A symbolic regression-based implicit algebraic stress turbulence model: incorporating the production of Reynolds stress anisotropy tensor	
16:40-17:00		Chensen Ding* Peking University Small-Sample, Low-Computational-Cost Intelligent Analysis and Design Methods for Engineering Equipment	Jiaqing Kou
17:00-17:10		Yixuan Wu South China University of Technology An Explicit Physics-Informed Neural Network for Dynamic Response Prediction of Vehicle-Bridge Coupled System	
17:10-17:20		Yanchuan Hui Shenyang University A Data-driven Multiscale Reduced Model for Composite Beam Structures	
17:20-17:30		Hongge Han Tianjin University Data-Driven Reduced-Order Modeling of Human Ear Dynamics under Blast Loading Using Genetic Algorithm Optimization	
17:30-17:40		Jingwei Liang South China University of Technology An Explicit Physics-Informed Neural Network for Dynamic Response Prediction of Nonlinear Systems with Unknown Parameters	

Session Theme 7: Data-Driven Techniques in Multiscale and Multiphysics Simulations
Organizers: Huadong Yong, Jia Li
Time: 13:30 – 16:50
Session Theme 13: Machine Learning Computing for Damage and Fracture Mechanics
Organizers: Yizheng Wang, Jinshuai Bai
Time: 16:50 – 18:00

Venue: Meeting Room 403, 4F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 7	Yonggang Zheng* Dalian University of Technology An Unsupervised Data-Driven Method for Automatically Identifying Governing Equations and Its Applications	Huadong Yong
13:50-14:10		Sheng Mao* Peking University Learning the history-dependent material behavior of viscoelastic composites using recurrent neural operator	
14:10-14:20		Shengqiao Zhu Dalian University of Technology Data-Driven Polygonal Multiscale Topology Optimization via Graph Convolutional Networks	
14:20-14:30		Hongyang Feng Bauman Moscow State Technical University Physics-Informed Neural Networks for Rapid Multiscale Simulation and Design Optimization of Woven Composites	
14:30-14:50		Yajun Zhang* Lanzhou University Machine learning-based multiscale modeling of fracture and fatigue in superconducting materials	Yonggang Zheng
14:50-15:00		Dongming An Hohai University Stress-Equilibrium-Enhanced Deep Energy Method for Electromagnetic-Mechanical Coupling in Superconductors	
15:00-15:10		Yisong Qiu Dalian University of Technology Machine Learning-Driven Optimization Framework for Programmable Hydrogel-based Metamaterials	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 7	Jia Li* College of Mechanical and Vehicle Engineering, Hunan University Machine Learning-Aided Design and Multiscale Modeling of Strong and Ductile High-Entropy Alloys	Yajun Zhang
15:50-16:00	Session Theme 7	Junsong Qiu Peking University Modified Reduced-Order Homogenization Method via Incompatible Influence Functions	Yajun Zhang
16:00-16:10		Yuyang Lu Yangtze Delta Region Academy of Beijing Institute of Technology Machine Learning-Enabled Design of Fast-Charging Li-Ion Battery Microstructures via Multi-physics Simulation	
16:10-16:20		Gangling Wu Lanzhou University The Application of Machine Learning in Superconductor	
16:20-16:30		Xiaoai Yi Hunan University Phase field crystal simulation of mechanical properties and grain boundary evolution of complex concentration alloys	Jia Li
16:30-16:40		Jing Peng Hunan university Microstructure formation mechanisms and processing parameter optimization of alloys in additive manufacturing	
16:40-16:50		Yunmei Zhao Tongji University Homogenized Irradiation Creep Modeling of CERCER Fuel Composites Using Physics-Informed Neural Networks	
16:50-17:10	Session Theme 13	Wenyang Liu* Hunan University Informatics-enhanced prediction of failure strength in skeletal muscle tissue	Yizheng Wang
17:10-17:30		Jinshuai Bai* Tsinghua University Applications of the physics-informed neural network in computational mechanics	
17:30-17:50		Su Chen* Beijing University of Technology AI for Engineering Seismology and Its Applications	Jinshuai Bai
17:50-18:00		Yizheng Wang Tsinghua University AI for PDEs in Fracture Mechanics	

Session Theme 3: Data-Driven Engineering Applications
Organizers: Qian Zhang, Jian Xiong
Time: 13:30 – 16:40
Session Theme 10: Visualization and Analysis of Multi-source Data
Organizers: Lei Wang, Jing Xie
Time: 16:40 – 18:10

Venue: Meeting Room 501, 5F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 3	Jian Xiong* Harbin Institute of Technology Carbon Fiber Composite Honeycomb Materials: Design and Mechanics	Qian Zhang
13:50-14:10		Licheng Zhou* South China University of Technology Unsupervised Structural Damage Assessment Method Based on Response Correlations	
14:10-14:20		Yingbo Gao Chongqing University Prediction method of transverse loads on bolted joints based on probabilistic deep learning and its application	
14:20-14:30		Yuanbin Cai Chongqing University Model Order Reduction for Fluid-Structure Interaction System Based on Krylov Subspace Method	
14:30-14:50		Hu Liu* Southwest Jiaotong University Prediction of low-velocity impact responses for bio-inspired helicoidal laminates based on machine learning	Jian Xiong
14:50-15:00		Yuan Li University of Chinese Academy of Sciences Remaining Useful Life Prediction with Spatial-Temporal Gate-based Physics-informed Neural Networks	
15:00-15:10		Jie Luo Beijing Institute of Technology Study on data-driven parameter prediction for large-scale structures	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 3	Zhang Qian* Tianjin University Mechanical Logic Guided Machine Learning: Extensibility Modeling Framework for Complex Engineering System	Hu Liu
15:50-16:00	Session Theme 3	Yang Chen Hunan University Bridging the atomic-to-continuum modeling gap: a data-driven approach for predicting complex concentrated alloy mechanical behavior	Hu Liu
16:00-16:10		Xu Wang Zhejiang University A deep learning framework utilizing spatio-temporal point clouds for fast unsteady flow prediction across geometries	
16:10-16:30		Guowei Zhou* Shanghai Jiao Tong University The cross-scale modelling coupled crystal plasticity with neural network for metal plastic deformation	Licheng Zhou
16:30-16:40		Xiangyuan Sun Tongji University RCLA: A dynamic temporal feature learning model for shield attitude prediction	
16:40-17:00	Session Theme 10	Jiaxing Wang* Institute of Automation, Chinese Academy of Sciences Objective quantitative evaluation of multidimensional mental fatigue based on EEG signals	Lei Wang
17:00-17:20		Yanwei Liu* Beihang University Mechanical behavior prediction and inverse design of biological staggered composites	
17:20-17:30		Qingkun Zhao Zhejiang University AI-Powered Visualization of Invisible Mechano-Information: Stress, Defects, and Beyond	
17:30-17:50		Chao Zhang* Zhengzhou University Multi-scale and improvement study on the performance of trenchless rehabilitation materials	Jing Xie
17:50-18:10		Zeng Meng* Hefei University of Technology A novel framework of reliability-based topology optimization by using problem-independent machine learning	
18:10-18:20		Qianqian Ge Department of Neurosurgery, Beijing Tiantan Hospital, Capital Medical University Integrating Multimodal Neural Data from Brain Stimulation to Advance Prognosis and Treatment of Disorders of Consciousness	

Session Theme 9: Data-Driven Design and Optimization
Organizers: Hongling Ye, Zhi Sun
Time: 13:30 – 16:00
Session Theme 11: Multi-source Information Fusion Methods
Organizers: Yufeng Huang, Hongwei Guo
Time: 16:00 – 17:50

Venue: Meeting Room 503, 5F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 9	Hongling Ye* Beijing University of Technology Data-driven topology optimization design of continuum structures	Zhi Sun
13:50-14:10		Yichao Zhu* Dalian University of Technology Geometrically characteristic, thermodynamic and kinetic theory for the modelling of ductile damage at large deformation	
14:10-14:20		Xunuo Huang Wuhan University A Stress-Space Downsampling Framework for Target-Oriented Data-Driven Constitutive Modeling in Geomechanics	
14:20-14:40		Qun Huang* Wuhan University Data-driven computational mechanics for stability problems	Hongling Ye
14:40-15:00		Jingtong Zhang* Dalian University of Technology On-the-fly Machine Learning-Assisted Second-principles Model and Its Application in Heat Transfer Design	
15:00-15:10		Jinbin Liang Sun Yat-Sen University Control co-design of floating offshore wind turbines for the platform structure and semi-active tunned mass damper by a novel Bayesian optimization framework	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 9	Changting Zhong* Hainan University Starfish Optimization Algorithm (SFOA): A nature-inspired metaheuristic method by comparing 100 algorithms	Jingtong Zhang
15:50-16:00		Yongjia Dong Beijing University of Technology Concurrent optimization method of topology and fiber orientation for continuous fiber-reinforced composite structure	
16:00-16:10	Session Theme 9	Xin Zhou Dalian University of Technology K-means algorithm and neural network methods combined with DIC experimental data to predict displacement field of sandwich	Jingtong Zhang
16:10-16:20		Bingyi Liang Dalian University of Technology A Problem-Independent Machine Learning (PIML) enhanced substructure-based approach for large-scale structural analysis of fiber-reinforced composite laminate structures	
16:20-16:40	Session Theme 11	Lingkun Luo* Shanghai Jiao Tong University Noise-Optimized Conditional Diffusion for Robust Domain Adaptation in Image Classification and Industrial Fault Diagnosis	Yufeng Huang
16:40-17:00		Xi Wang* The Hong Kong Polytechnic University Physics-Encoded Numerical Network for Heterogeneous Multi-Dimensional Boundary Value Problems	
17:00-17:20		Longxiao Guo* Hebei University of Technology Preliminary Study on the Coupling of DDA and DL in the Analysis of Microscopic Mechanisms of Rock and Soil	
17:20-17:40		Shan Lin* Beijing University of Technology Next-Generation Data-Driven Early Warning Systems for Geohazards: From Classical Machine Learning to Novel Neural Architectures	Hongwei Guo
17:40-18:00		Bokai Liu* Korea University;Umeå University Data-Driven Stochastic Multiscale Modeling of Polymer Nanocomposites: From Theoretical Simulation to Experimental Application	
18:00-18:10		Shaowei Zhu Chongqing University Non-Random Global Optimization Algorithm for Lightweight Metastructures Based on Multi-Model Fusion	

October 12 Technical Sessions

Session Theme 6: Machine Learning-Based Metamaterials and Advanced Materials Design
Organizers: Qinglei Zeng, Xiang Li
Time: 13:30 – 16:00
Session Theme 8: Data-Driven Techniques for Continuous and Discrete Methods
Organizers: Dan Huang, Chuanqi Liu
Time: 16:00 – 17:40

Venue: Meeting Room 401, 4F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 6	Ke Liu* Peking University Populating cellular metamaterials on the extrema of attainable elasticity through neuroevolution	Xiang Li
13:50-14:10		Qinglei Zeng* Beijing Institute of Technology Data-driven design of biomimetic heterogeneous structures with velocity-dependent impact resistance	
14:10-14:30		Jinlong Fu* Queen Mary University of London",”Leibniz University Hannover Computational Design of Bioinspired Structures for Customized Multifunctional Performance	Ke Liu
14:30-14:40		Ziming Yan Tsinghua University Toward Controllable Microstructure Evolution: Physics-Informed Neural Operator Modeling of Anisotropic Cahn–Hilliard Equations	
14:40-15:00		Quan Jiao* Liaoning Academy of Materials A machine learning perspective on the inverse indentation problem	Qinglei Zeng
15:00-15:10		Tianming Qi Hainan Normal University Voxel-based Adaptive Fourier Neural Operator for Predicting the Anisotropic Elasticity of Cellular Material Volume Elements	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 6	Xiang Li* Hainan Normal University Designing spongy-bone-like cellular materials: Matched topology and anisotropy	Quan Jiao
15:50-16:00		Xueqian Zhang Beijing Jiaotong University Accelerated engineering of band gaps and topological interface states in one-dimensional metamaterials via deep learning	
16:00-16:10	Session Theme 6	Chenguang Zhang Dalian University of Technology Multi-scale analysis and optimization design of impact-resistant lattice filled structure	Quan Jiao
16:10-16:30	Session Theme 8	Yu Guo* Zhejiang University Data-driven mechanical design of zigzag particle assemblies and thermo-responsive control of shape memory particle systems	Chuanqi Liu
16:30-16:45		Mengqi Wu* Tsinghua University Deep Learning-Based Prediction of Pebble-Bed Flow Characteristics	
16:45-17:00		Xianjia Chen* Institute of Mechanics, Chinese Academy of Sciences Frequency-Scanning Physics-Informed Neural Network (FS-PINN): A novel framework for solving harmonic response and natural frequency of structures	
17:00-17:15		Jun Li* Wuhan University of Technology Demonstration Zone The deformation behaviors and ductility mechanisms of boron carbide from machine-learning molecular dynamics simulations	Yu Guo
17:15-17:25		Hao Liu Dalian University of Technology Deep Image Prior-based Reconstruction of Non-homogeneous Elastic Property Distribution of Solids	
17:25-17:35		Weilong Liu Wuhan University of Technology Demonstration Zone Optimal design approach of interpenetrating pre-stressed metal-ceramic composites based on deep learning neural network	
17:35-17:50		Yuzhi Zhang* DP Technology SciMaster : Towards General-Purpose Scientific AI Agent	Dan Huang
17:50-18:00		Hongjiang Wang Shanghai Jiao Tong University A non-intrusive hyper reduced order model using spatial-differential-enriched reduced basis	
18:00-18:10		Peng Liu Shanghai University Concurrent Atomistic-Continuum Coupling via Physics-Informed Neural Networks (PINNs-CAC) with Adaptive Energy Weighting and Direct Boundary Encoding	
18:10-18:20		Guangtao Xu Chinese Academy of Sciences Automatic differentiation and signed distance function based virtual elements for frictional contact involving elastoplastic finite deformation	

Session Theme 4: Data-Driven Constitutive Models
Organizers: Shan Tang, Bin Ding
Time: 13:30 – 17:20

Venue: Meeting Room 403, 4F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 4	Chao Zhang* Northwestern Polytechnical University Mechanics-informed Data-driven Approach for Constitutive Modeling of Aerospace Materials	Bin Ding
13:50-14:10		Sheng Sun* Shanghai University Metamaterials design accelerated by AI: Softwares and applications	
14:10-14:20		Wenyu Zhang Wuhan University Physics-Constrained Data-Driven Constitutive Modeling for Enhanced Stability	
14:20-14:30		Xudong Yang Research & Development Institute of Northwestern Polytechnical University in Shenzhen Minimal state-space - Closed Continuous-depth Neural Network Surrogate Model of J2 plasticity	
14:30-14:50		Jici Wen* State Key Laboratory of Nonlinear Mechanics (LNM), Institute of Mechanics, Chinese Academy of Sciences Top-down constitutive modelling to capture nanoscale shear localization in metallic glasses	Jie Yang
14:50-15:00		Xuyang Zhang Xi'an Jiaotong University Thermodynamically Consistent Data-Driven Constitutive Modeling of Fibrous Composites	
15:00-15:10		Wenbo Xing Civil Aviation University of China Research on the data-driven layerwise method of composite laminated plates	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 4	Shan Tang* Dalian University of Technology Mechanics-based Data-Driven Computational Mechanics: Towards Domain-Specific CAE LLM	Sheng Sun
15:50-16:10	Session Theme 4	Jie Yang* Wuhan University Model-free data-driven computational homogenization and its coupling with model-driven computing for composite structures	Sheng Sun
16:10-16:20		Huanbo Weng Tsinghua University Physics-informed self-learning constitutive model considering cyclic crystal deformation mechanism	
16:20-16:30		Guozheng Xiao National University of Defense Technology A Physics-Data Fusion Driven Approach for High-Fidelity Dynamics Modeling of Hypersonic Vehicles	
16:30-16:50		Bin Ding* Beihang University Deep Learning in the Frequency Domain for Inverse Identification of Nonhomogeneous Material Properties	Jici Wen
16:50-17:00		Yi Zhu Beijing University of Technology Constitutive Modeling of Geomaterials: Discovery and Intelligent Frameworks	
17:00-17:10		Qingyang Zhang Peking University A symbolic machine learning method for linear homogenization problem of fibrous composite material based on the Mori-Tanaka method	
17:10-17:20		Guangyan Liu Beijing Institute of Technology Physics-Constrained deep learning for inverse identification of constitutive parameters of Fiber-Reinforced Composites	

Session Theme 5: Machine Learning-Based Solution for Partial Differential Equations
Organizers: Xiaoying Zhuang, Zhuojia Fu
Time: 13:30 – 17:00

Venue: Meeting Room 501, 5F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 5	Zhuojia Fu* Hohai University Several improved Physics-informed neural networks for solving varied PDEs	Yanpeng Gong
13:50-14:00		Gang Yang Hefei University of Technology Non-iterative reliability-based topology optimization of structures with uncertain-but-bounded parameters	
14:00-14:10		Pengwei Liu Zhejiang University AeroGTO: An Efficient Graph-Transformer Operator for Learning Large-Scale Aerodynamics of 3D Vehicle Geometries	
14:10-14:20		Xiong Xiong Northwestern Polytechnical University Separated-Variable Spectral Neural Networks: A Physics-Informed Learning Approach for High-Frequency PDEs	
14:20-14:40		Xiaoying Zhuang* Tongji University Multi-Head Neural Operator for Modelling Interfacial Dynamics	Zhuojia Fu
14:40-14:50		Yuan Guo Hohai University A Study on Parameter Optimization of the Sediment Transport Model in the Three Gorges Reservoir Using Physics-Informed Neural Networks	
14:50-15:00		Jiahao Li Hohai University The Virtual Boundary Integral Neural Network for Solving Complex Acoustic Scattering Problems	
15:00-15:10		Yida He Beijing University of Technology Physics-Informed Neural Operator for multi-material elasticity problems in electronic packaging	
15:10-15:30	**Coffee Break**		
15:30-15:50	Session Theme 5	Yiming Zhang* Zhejiang Sci-Tech University AGM-PINN: A Novel Framework for Solving Biot's Consolidation	Junpu Li
15:50-16:00	Session Theme 5	Sheng Zhou Northwestern Polytechnical University Offline-online computational decomposition: an efficient framework for parametric dynamical systems via regional clustering dimensionality reduction and adaptive radial basis functions	Junpu Li
16:00-16:10		Haolong Chen Hefei University of Technology Solving multi-media nonlinear transient heat conduction problem based on physics-informed neural networks	
16:10-16:30		Yanpeng Gong* Beijing University of Technology Energy-Based Physics-Informed Kolmogorov-Arnold Networks for Multi-Scale Multi-Material Electronic Packaging Structures	Haolong Chen
16:30-16:40		Yujia Zhang Zhejiang University Accurate Stress Field Prediction for Drilled Flange Connections Using Conditional Diffusion Models	
16:40-16:50		Runze Sun Hebei University of Technology Physics-informed neural networks for multi-physics coupling microfluidic problems	
16:50-17:00		Junpu Li Zhengzhou University An intelligent programming and simulation scheme based on large language models	

Session Theme 2: Digital Twin Modeling
Organizers: Peng Hao, Weifei Hu
Time: 13:30 – 15:00
Session Theme 12: AI for Design of Non-Hermitian Metamaterials and Bio-inspired Metastructures
Organizers: Hui Chen, Yabin Jin
Time: 15:30 – 17:20

Venue: Meeting Room 503, 5F

Time	Section	Name Affiliation Title	Chair
13:30-13:50	Session Theme 2	Weifei Hu* Zhejiang University AI-Driven Digital Twin Modelling for Design, Manufacturing, and O&M of Large-Scale Wind Turbines	Peng Hao
13:50-14:10		Xiangyun Long* Hunan University Physics-Informed Neural Network-Driven Structural Digital Twin Technology	
14:10-14:20		Chong Liu Dalian University of Technology Digital Twin-based Advanced Forecasting Method for Strength Testing of Large-scale Cabin Segments	
14:20-14:40		Yiming Zhang* Zhejiang University Toward Trustworthy AI for Risk Management of Aviation System under Uncertainty	Weifei Hu
14:40-14:50		Xuanwei Hu Dalian University of Technology Digital Twin-driven Deformation Field Reconstruction Method for Stiffened Shell Structure	
14:50-15:00		Shaojun Feng Dalian University of Technology An adaptive calibration method based on correlation for realistic inversion of model uncertainty parameters	
15:00-15:10		Ningyu Wang State Key Laboratory of Hydroscience and Engineering, Tsinghua University An LSTM model for drilling system temperature analysis	
15:10-15:30 Coffee Break			
15:30-15:50	Session Theme 12	Tuo Liu* Institute of Acoustics, Chinese Academy of Sciences Performing acoustic simulation at complex frequencies in real-frequency solvers	Guobiao Hu
15:50-16:10		Weidong Yang* Tongji University Spatio-temporal Prediction of Curing-induced Deformation for Composite Structures Using a Hybrid CNN-LSTM and Finite Element Approach	
16:10-16:20		Yilin Rao Tongji University Machine Learning for Transmission Spectra Prediction on Gradient Seismic Metastructure	
16:20-16:30		Liangshu He Tongji University A Magnetic Dipole Dynamics-Based Architecture for Physical Reservoir Computing	
16:30-16:50		Guobiao Hu* The Hong Kong University of Science and Technology (Guangzhou) Bio-Inspired and Mechanics-Driven Energy Harvesters for Stable, High-Power Output in Smart Infrastructure	Weidong Yang
16:50-17:10		Yilin Zhu* Ningbo University Properties enhancement and regulation of mechano-thermally coupled auxetic metamaterials	
17:10-17:20		Jiahao Zou Nanjing University of Aeronautics and Astronautics Data-Driven Homogenization of Flexoelectric Composites within couple stress theory	

05 Invited Speakers of Thematic Session

1-Data-Driven Computing and Simulating

Speaker: Yufei Zhang, Tsinghua University
Short biography:
Yufei Zhang is a tenured associate professor at the School of Aerospace Engineering, Tsinghua University. He has received the Young Scientist Award from the Aeronautics Society, the Young Talent Award from the Aerodynamics Society. His main research focuses on aerodynamic analysis and optimization design of aerospace vehicles, including supercritical wing design, unsteady flow separation simulation, flow control, aerodynamic acoustics, and aerodynamic applications of artificial intelligence.

Speaker: Chensen Ding, Peking University
Short biography:
Chensen Ding is an Assistant Professor and Ph.D. Supervisor in the Department of Scientific Computation and Intelligent Engineering, School of Mechanics and Engineering Science, Peking University. He also serves as Director of the Modeling and Simulation Division at a National Key Laboratory. His research has long been dedicated to the frontier theories, advanced algorithms, and independent software development in intelligent computational mechanics, encompassing numerical methods and industrial software development, data-driven/artificial intelligence algorithms and their engineering applications, as well as analysis and optimization of major high-precision equipment.
He has been selected for the JKW Overseas Talent Program, the Ministry of Education's Overseas Talent Recruitment Program, and the UK Global Talent Program. He has led multiple significant research projects, including the National Natural Science Foundation of China General Program, the JKW Basic Research Enhancement Program, the KGJ Intelligent Analysis Software Program, sub-projects of the Ministry of Science and Technology's Key R&D Programs, and sub-projects of the Science and Technology Commission's Key Programs. As first or corresponding author, he has published nearly 30 papers in leading SCI journals such as *Computer Methods in Applied Mechanics and Engineering (CMAME)*. He has pioneered a novel small-sample, low-energy intelligent computing framework and software, which overcomes the dependence of conventional AI approaches on high computing power and massive high-quality datasets, enabling efficient and reliable intelligent computation and design with only low computational resources and small samples. His methods have successfully addressed critical challenges in institutions such as the China Academy of Engineering Physics, the Aero-Engine Research Institute, and hydropower engineering sectors, earning wide recognition and adoption from academicians, experts, and leading organizations.

Speaker: Jun Yan, Dalian University of Technology
Short biography:
Jun Yan, professor of computational mechanics at Dalian University of Technology, the dean of School of Mechanics and Aerospace Engineering. The Distinguished Professor, serves as the chairman of Liaoning Society of Theoretical and Applied Mechanics. He specializes in the fields of multiscale topology optimization of advanced materials/structures, artificial intelligence-based innovative design of structures/materials, innovative design of intelligent marine flexible equipment, represented by deep-water umbilicals and composite hoses, research and development in structural strength analysis and experimental techniques for marine composite flexible cables and hoses in offshore engineering. He published over 170 journal papers and was cited over 2,400 times. Granted 47 patents for inventions and authored or co-authored 6 books. Editorial Board Member of the journal "Materials", "International Journal for Simulation and Multidisciplinary Design Optimization" and "Science & Technology Review".

Speaker: Jun Zhang, Beihang University
Short biography:
Jun Zhang is a professor at Beihang University. He completed his Ph.D. at the Institute of Mechanics, Chinese Academy of Sciences (CAS), in 2009. Following this, he gained professional experience at the CAS, as well as at the University of Strathclyde and the University of Edinburgh in the UK. He returned to China and joined Beihang University in 2017. His research focuses on multiscale simulation and data-driven modeling for nonequilibrium gas flows and gas-surface interactions. He has published over 70 papers featured in top journals such as the *Journal of Fluid Mechanics* and Journal of Computational Physics. As a principal investigator, he has overseen 5 projects supported by the National Natural Science Foundation of China.

Speaker: Jiaqing Kou, Northwestern Polytechnical University
Short biography:
Jiaqing Kou is currently a National Young Talented Professor (Overseas) in School of Aeronautics, Northwestern Polytechnical University. Before that, he was an Alexander von Humboldt Postdoctoral Fellow at the Institute of Aerodynamics, RWTH Aachen University. He received a PhD degree in 2022 at the School of Aeronautics, Technical University of Madrid (Universidad Politécnica de Madrid, UPM), and did a short-term postdoctoral research in the same department. During his PhD, he was a Marie-Curie Early Stage Researcher in the project ASIMIA (Advanced High-Order Simulation Methods for Industrial Applications), working as a Development Engineer at NUMECA. He obtained his B. Eng. and M. Eng. degrees in 2015 and 2018 from School of Aeronautics, Northwestern Polytechnical University (NPU). His research interest includes complex flow simulation of aircraft and artificial intelligence for fluid mechanics in aerospace engineering. He has published over 40 papers in leading international journals including Progress in Aerospace Sciences, *Journal of Fluid Mechanics*, Journal of Computational Physics, AIAA Journal, etc. He has been continuously selected for the annual scientific influence ranking list of "Top 2% Leading Scientists in the World" by Stanford University for five consecutive years. Currently, he is the Deputy Director of the Youth Work Committee of the Chinese Aerodynamics Society and an Associate Editor of Aerospace Science and Technology.

2-Digital Twin Modeling

Speaker: Weifei Hu, Zhejiang University
Short biography:
Weifei Hu, tenured associate professor and Ph.D. supervisor, was selected into the national young talent program in 2020. He received the B.S. degree in 2008 from Zhejiang University, Hangzhou, China, the M.S. degree in 2010 from Hanyang University, Seoul, South Korea, and the Ph.D. degree in 2015 from the University of Iowa, Iowa city, Iowa, USA, all in mechanical engineering. From February 2016 to September 2018, Dr. Hu was a postdoctoral fellow at Cornell University, Ithaca, New York, USA. His research interests include digital twin, design optimization under uncertainty, artificial intelligence, and wind energy. He has published more than 80 peer reviewed SCI papers and authored 2 English books published by Springer. He has been listed among the top 2% of the world's top scientists by Elsevier. He has been authorized 25 Chinese invention patents and 1 US patent. He has been participating in the formulation of 1 national standard for the design of wind power equipment. He won 1 Second Prize of Zhejiang Provincial Science and Technology Progress Award. He has served as the organizers and session chairs of several renowned domestic and international academic conferences, including the World Congress of Structural and Multidisciplinary Optimization (WCSMO), the Asian Congress of Structural and Multidisciplinary Optimization (ACSMO), and the International Conference on Machine Design of the Chinese Mechanical Engineering Society. He serves as an editorial board member of the SCI journal Wind Energy, an Associate Editor of Wind Energy Science, a Review Editor of Structural and Multidisciplinary Optimization, a member of the Committee on Renewable and Advanced Energy Systems of the American Society of Mechanical Engineers, the vice president of the Zhejiang Engineering Graphics Society, and a member of the Product Information Modeling Professional Committee of the Chinese Graphics Society.

Speaker: Yiming Zhang, Zhejiang University
Short biography:
Dr. Yiming Zhang is a Tenure-track Professor at the School of Mechanical Engineering, Zhejiang University. His research focuses on Trustworthy AI and risk management of aviation systems. He received his PhD from the University of Florida in 2018 and his BS from Shanghai Jiao Tong University in 2012. Before joining Zhejiang University in 2021, he worked as a Lead Engineer at GE Research Center, developing industrial AI algorithms for large-scale aero-engine fleet design and management. He has led more than ten major research projects, including China's National Key R&D Program and has collaborated extensively with aviation industries. Dr. Zhang has published over fifty peer-reviewed papers in journals and conferences such as RESS, AST, ESWA, AMM, AIAA Journal, AIAA SciTech. He also serves as an active member of the AIAA NDA Committee and several industrial advisory panels.

Speaker: Xiangyun Long, Hunan University
Short biography:
Xiangyun Long is a Professor and Doctoral Supervisor at the College of Mechanical and Vehicle Engineering, Hunan University. His primary research focuses on AI-empowered mechanical design and strength, covering areas such as physics-informed intelligence, smart damage monitoring, and reliability. He has led more than 10 national or national defense projects, including the National Natural Science Foundation of China (NSFC) General/Youth Programs, the Innovation Fund Project of Aero Engine Corporation of China (AECC), AECC Industry-Academia-Research Cooperation Projects, and commissioned projects from institutions such as AECC's 608th Institute, AVIC's 618th Institute, and Yunjian Group. He has published over 50 high-level papers in prestigious journals such as COMPUTATIONAL METHODS IN APPLIED MECHANICS AND ENGINEERING, INTERNATIONAL JOURNAL OF FATIGUE, and ENGINEERING FRACTURE MECHANICS. He has been selected for numerous talent programs, including the National Postdoctoral Program for Innovative Talents, Huxiang Young Talents, Outstanding Young Scholar of Hunan Province, the Young Faculty Career Support Program of Hunan University, and the Yuelu Scholar program. His academic service includes serving as a Member of the Chinese Committee of the International Federation for the Promotion of Mechanism and Machine Science (IFToMM), Section Editor for the Journal of Reliability Science and Engineering, a Young Editorial Board Member for the SCI journal International Journal of Structural Integrity, an Editorial Board Member for the core Chinese journal Mechanical Design and Manufacturing Engineering, and a Young Editorial Board Member for the Journal of Mechanical Engineering, Mechanical Design, and the EI-indexed Journal of Hunan University (Natural Sciences Edition). He has delivered over 10 invited talks at domestic and international academic conferences and has been involved in organizing 15 major academic conferences (serving as a session chair or organizer for 5 international conferences). He has received one Second Prize of the National Teaching Achievement Award and one Grand Prize of the Hunan Provincial Teaching Achievement Award.

3-Data-Driven Engineering Applications

Speaker: Hu Liu, Southwest Jiaotong University
Short biography:
Hu Liu, male, is Professor in Southwest Jiaotong University, and he also serves as the Associate Dean of the Graduate School at Southwest Jiaotong University. His research focuses on composite materials mechanics and fatigue reliability. He is primarily engaged in scientific work related to composite materials mechanics, and structural impact dynamics.
He has led several projects funded by National Natural Science Foundation of China (NSFC) and Sichuan Natural Science Foundation. With over 50 SCI-indexed journal publications as first or corresponding author, his work has been cited more than 1,000 times in SCI publications. He holds more than 10 authorized invention patents. He also serves as a youth editorial board member for journals such as Defence Technology, Journal of Reliability Science and Engineering, and Computational Mechanics.

Speaker: Qian Zhang, Tianjin University
Short biography:
Qian Zhang is currently a Professor at the Department of Mechanics in Tianjin University of P.R. China. Her current research interests include the combination methods of mechanics and artificial intelligence and their applications in engineering. Her research papers have been published in Journal of the Mechanics and Physics of Solids, Automation in Construction, Experimental Mechanics, Tunnelling and Underground Space Technology, Computers and Geotechnics, etc. Prof. Zhang currently serves as a member of Experimental Mechanics Committee of Chinese Society of Mechanics. She has presided 8 national scientific research projects and subjects, including the Excellent youth project of NSFC and so on, and has won 4 first prizes of provincial and ministerial-level science and technology awards.

Speaker: Licheng Zhou, South China University of Technology
Short biography:
Licheng Zhou is an associate professor at South China University of Technology. At present, he serves as the deputy secretary-general of the Guangdong Mechanics Society, the young editorial board member of the journal “Applied Mathematics and Mechanics”, the member of the experimental big data analysis professional group of the Chinese Mechanics Society, the member of the professional group of intelligent materials and structures, and the member of the liaison committee of the Southern Computational Mechanics Liaison Committee. He is mainly engaged in research work on long-term structural health monitoring technology based on artificial intelligence and integrated design of electromagnetic transmission/stealth materials and structures. So far, he has published more than 30 SCI papers as the first or corresponding author, many of which have been published in top journals including Composites Science and Technology, Composites Part A, Engineering Structures, IEEE Transactions on Antennas and Propagation, AIAA Journal, etc. He has won the second prize of Guangdong Science and Technology Progress Award (ranked 4th). He has also presided over 4 projects of the National Natural Science Foundation of China, as well as other projects such as the Natural Science Foundation of Guangdong Province, the Guangzhou Science and Technology Plan Project, and the China Postdoctoral Science Foundation of China, etc.

Speaker: Jian Xiong, Harbin Institute of Technology
Short biography:
Jian Xiong is a tenured professor at Harbin Institute of Technology. He currently serves as the director of the Laboratory of Lightweight Materials and Structures (HIT), Deputy Director of the National Key Laboratory of Science and Technology on Advanced Composites in Special Environments, and Chairman of the Heilongjiang Youth Science and Technology Association.In 2012, He obtained a doctoral degree from Harbin Institute of Technology, China. During this period, he selected for the China Scholarship Council (CSC) joint doctoral program abroad in Northeastern University, U.S (2011.01-2012.01), then worked as Humboldt Research Fellow in Siegen University, Germany from 2015.04 to 2016.08, visiting scholar in Siegen University, Germany(2013.09-2013.12), Hong Kong Polytechnic University(2025.01-2025.03, 2017.12-2018.01) and National University of Singapore (2024.07).
He is dedicated to researching high strength design methods and mechanical properties of carbon fiber composite sandwich structure: designing novel composite lattice/folded core materials with exceptional specific strength; significantly enhancing the face-core interface properties of these novel composite sandwich structures; and establishing theoretical models for the mechanical properties of these structures.With 150+ publications, These papers have been cited more than 5000 times.

Speaker: Guowei Zhou, Shanghai Jiao Tong University
Short biography:
Guowei Zhou is an associate professor at Shanghai Jiao Tong University. His research interests are mainly on the crystal plasticity model development considering multiple deformation mechanisms and the multiscale simulation with machine learning method for plastic deformation. He has published over 40 papers including International Journal Plasticity, Acta Materialia, Journal of the Mechanics and Physics of Solids.

4-Data-Driven Constitutive Models

Speaker: Shan Tang, Dalian University of Technology
Short biography:
Professor, Department of Engineering Mechanics, Dalian University of Technology. Long-term research in the fields of mechanical properties of materials, fracture mechanics theory and computational methods with their applications, and data-driven computational mechanics, dedicated to solving practical engineering problems through applied mechanics approaches. Over 110 SCI-indexed papers have been published, which have collectively garnered 2,152 citations in the Web of Science and 3,037 citations on Google Scholar, including contributions to premier mechanics journals such as *JMPS, CMAME*, and *IJP*, as well as top-tier multidisciplinary journals such as *Advanced Materials, Advanced Energy Materials*, and *Nano Letters*. In the past five years (2020–present), authored 47 first-author or corresponding-author papers, with approximately 1,128 SCI citations in Web of Science and 2,458 citations in Google Scholar. Invited to contribute two book chapters for Springer Publishing. Awarded the Wang Ren Young Scientist Award, selected for the fifth cohort of the Young Thousand Talents Plan by the Central Organisation Department, and honoured with Xinghai Outstanding Young Scholar Award of Dalian University of Technology. Served as principal investigator for the sub-project 'Structural Design of Novel XXX Vehicles' under the National Defence 973 Programme , and led three National Natural Science Foundation of China (NSFC) General Projects. He has also led a sub-project for Liaoning Province's Major Science and Technology Special Project titled "Research on AI-Based Structural Innovation Design Methods", two commissioned projects for the China Ship Research and Design Centre, one commissioned project for Huawei Machinery Co., Ltd., and one commissioned project for Shandong Jingbo Holding Group Co., Ltd.

Speaker: Sheng Sun, Shanghai University
Short biography:
Sheng Sun is graduated from The Hong Kong University of Science and Technology (HKUST), completed his postdoctoral research at HKUST. He is currently a professor and Ph.D. supervisor at the Materials Genome Institute at Shanghai University. His long-term research focuses on computational materials science, computational mechanics, material informatics, and mechanics informatics. He has led four National Natural Science Foundation of China (NSFC) projects as principal investigator, one major project under the National Key R&D Program of China, and participated in multiple NSFC projects and provincial-level programs. Over the past five years, he has published more than 30 academic papers with over 1000 citations added; co-authored a book ranked second among authors (one); obtained five invention patents and registered software copyrights for more than twenty items.

Speaker: Bin Ding, Beihang University
Short biography:
Bin Ding is an Associate Professor at Beihang University. She obtained her Ph.D. in Solid Mechanics from Tsinghua University in 2017. Her research focuses on micro/nano mechanics and fracture mechanics of energy storage materials as well as amorphous materials. She has published nearly 40 academic papers in prestigious journals such as Nature, Nature Communications, Journal of the Mechanics and Physics of Solids, International Journal of Plasticity, International Journal of Solids and Structures, and National Science Review.

Speaker: Chao Zhang, Northwestern Polytechnical University
Short biography:
Dr. Zhang is Professor of Northwestern Polytechnical University. His research direction lies in the fields of multi-scale mechanics of composite materials, impact dynamics, and strength of aerospace engines structures. Dr. Zhang has been awarded more than 20 scientific research projects (5 from NSFC). He is recipient of the National High-level Talent Youth Program, Shaanxi Youth Scientist Award and National Outstanding Young Scholar in Explosive Mechanics et al. Dr. Zhang has published more than 150 journal papers, with Google Citations over 5800. He serves as editorial board member for several scientific journals, e.g. Compos Struct, Acta Mechan Sin, Chin J Aeronaut, J Aero Eng et al., and active members of the Chinese Society for Composite Materials and The Chinese Society of Theoretical and Applied Mechanics.

Speaker: Jie Yang, Wuhan University
Short biography:
Dr. Jie Yang is an associate professor at Wuhan University. He obtained a PhD degree in Solid Mechanics at Wuhan University in June 2017 and a joint PhD degree in Mechanics at University of Lorraine (France) in January 2018. He then conducted postdoctoral research at the LEM3 laboratory in Metz, France, before joining the faculty of Wuhan University in March 2019. His research interests focuses on data-driven computational mechanics and multi-scale modeling and simulation of composite structures, with over 40 academic papers published in renowned scientific journals such as CMAME, IJNME, and JCP.

Speaker: Jici Wen, Institute of Mechanics, Chinese Academy of Sciences
Short biography:
Jici Wen is an Associate Researcher at the State Key Laboratory of Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences. He received his B.S. in Engineering Mechanics from Shandong University (2013) and Ph.D. from the University of Chinese Academy of Sciences (2019). His research focuses on solid mechanics, particularly constitutive modeling of engineering materials, multi-physics finite element simulations, and reliability assessment of energy devices and structures. He has published over 20 peer-reviewed papers in journals such as Journal of the Mechanics and Physics of Solids, Advanced Energy Materials, Reliability Engineering & System Safety, International Journal of Fatigue, and Applied Mathematical Modelling.

5-Machine Learning-Based Solution for Partial Differential Equations

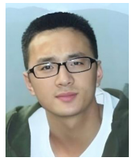
Speaker: Yanpeng Gong, Beijing University of Technology
Short biography:
Yanpeng Gong is an Associate Researcher at Beijing University of Technology and a Humboldt Scholar. He has conducted visiting research at Durham University in the UK and Leibniz University Hannover in Germany. His research primarily focuses on electronic packaging mechanics, multiscale structural simulation, soft material mechanical behavior, numerical analysis of soft robots and related algorithm development, and computational mechanics software development. He has led several research projects, including the National Natural Science Foundation of China Youth Project and the Beijing Municipal Education Commission Science and Technology Plan (General) Project. He has published over 50 SCI papers, with more than 20 SCI papers as first/corresponding author in journals such as CMAME, Comput. Mech., Eng. Fract. Mech., and Int. J. Numer. Methods Eng., and co-authored one monograph. He has received honors including “Outstanding Young Talent under the Phoenix Plan of Chaoyang District, Beijing (2024)” and “Du Qinghua Outstanding Young Scholar Award for Engineering Computational Methods (2025)”. He serves as an editorial board member of the SCI journal Sci. Rep. and a young editorial board member of the Chinese Journal of Applied Mechanics.

Speaker: Xiaoying Zhuang, Tongji University
Short biography:
Prof. Xiaoying Zhuang’s key research area is computational mechanics and materials design for nano composites, metamaterials and nanostructures as well as computational methods for multiphysics and multiscale modelling. Prof. Zhuang was elected as member of the European Academy of Science and Art in 2024. She has published over 300 papers with more than 20000 times citations in ISI web of science. Her scientific impact is recognized by international community including Leibnitz Prize from DFG (2018), the International Chinese Computational Mechanics Fellowship Award (2017), Heisenberg-Professor from DFG (2020), KJ Bathe Prize (2023) and Qidi Prize (2024).

Speaker: Zhuojia Fu, Hohai University
Short biography:
Dr. Zhuojia Fu is currently a full professor in the College of Mechanics and Engineering Science of Hohai University in Nanjing, China. He received his B.S. and Ph.D. degrees from Hohai University. His studies are focused on Computational Mechanics and Engineering Simulation including Green’s function method, Scientific Machine Learning and so on. He is the PI of four NSFC projects. He published 100 plus peer-reviewed journal papers and 2 monographs, and his current H-index is 28. He has been awarded Humboldt Fellowship, DAAD Fellowship, ICACM Young Investigator Award, and he was selected as the Elsevier Most Cited Chinese Researchers and World’s Top 2% most-cited scientists by Stanford University. He is the General Committee Member of ICACM, the Committee Member of CACM. He is now the Associate Editor of Engineering Analysis with Boundary Elements.

Speaker: Yiming Zhang, Zhejiang Sci-Tech University
Short biography:
I am a Ph.D. Supervisor and an Academician of the Russian Academy of Natural Sciences.
My academic journey began at Tongji University, where I completed my bachelor’s and master’s degrees in the School of Civil Engineering from 2002 to 2009. In 2013, I earned my Ph.D. in Materials and Structural Mechanics from the Vienna University of Technology (TU Wien) in Austria.
Following my doctorate, I spent eight years engaged in scientific research in Austria and Germany. During this time, I had the unique experience of being the sole Chinese participant in three sub-projects of the Austrian National Security Program and one project funded by the Austrian Science Fund (FWF). I have also led multiple national, provincial, and ministerial-level projects.
Currently, I serve on the youth editorial boards for six Chinese and English journals, including Mechanics in Engineering and the Journal of Transportation Safety & Environment. I am also an expert for the Hai-Zhi Program of the China Association for Science and Technology (CAST), a council member of the Underground Engineering Branch of the Chinese Society for Rock Mechanics and Engineering, and a council member of the Engineering Risk and Insurance Research Branch of the China Civil Engineering Society.
Among my achievements, I am proud to have coached the first-prize winning team in the Simulation and Innovative Design category of the 2022 Belt and Road & BRICS Skills Development and Innovation Competition. I was honored with the Second Prize in the Natural Science Awards from the Chinese Society for Rock Mechanics and Engineering in 2022, and the First Prize for the Invention, Entrepreneurship, and Innovation Award from the China Association of Inventions in 2023. As a result of my work on hybrid neural networks, I was invited to serve as the Co-Chairman and Proceedings Editor for the 11th International Conference on Computer Engineering and Networks (CENet).
My research has been well-received in the academic community. Three of my SCI papers have been recognized as the most cited papers over a three-year period by international journals in their fields. Two of my original methods have been evaluated by international authorities as world-leading, and one of my monographs was acclaimed by international experts as the first of its kind in the world.

6-Machine Learning-Based Metamaterials and Advanced Materials Design



Speaker: Jinlong Fu, Leibniz University Hannover
Short biography:
Dr. Jinlong Fu is currently an Alexander von Humboldt Research Fellow at Leibniz University Hannover, Germany. He received his PhD in Computational Mechanics from Swansea University in 2020 and was awarded the Best PhD Thesis Prize (the Roger Owen Award, 2021) and the Outstanding Contribution Award (2023) by the UK Association for Computational Mechanics (UKACM). Dr. Fu has a multidisciplinary research background spanning computational mechanics, multiphysics simulation, data science, and artificial intelligence (AI). His research interests include AI-physics modeling, optimal design, model order reduction, and high-performance computing. The overarching goal of his work is to model and simulate physical systems across multiple scales by integrating computational methods and AI; and to develop strategies for real-time system learning and prediction, as well as optimization and decision-making.

Speaker: Ke Liu, Peking University
Short biography:
Dr. Ke Liu is currently an Assistant Professor of the Department of Advanced Manufacturing and Robotics at Peking University. He got his PhD degree from Georgia Tech in 2019. He then worked at Caltech as a postdoc for 3 years before joining Peking University. His research covers soft robots, metamaterials, reconfigurable structures, and AI for design, with focus on the interplay between geometry and mechanical properties. He has published on prestigious journals including Science, Science Robotics, Nature Communications, Advanced Materials, and PRL. He is listed in the Stanford/Elsevier Top 2% Scientists of 2024 yearly impact. He is awarded the Sigma Xi Best Ph.D. Thesis Award by Georgia Tech, the Melville Medal by ASME, the First Prize in Young Faculty Teaching Competition by Peking University, and the 2023 Xiong Youlun Young Talent Award of China.

Speaker: Qinglei Zeng, Beijing Institute of Technology
Short biography:
Qinglei Zeng is an Associate Professor at the Institute of Advanced Structure Technology, Beijing Institute of Technology (BIT). He received both his bachelor's and Ph.D. degrees from Tsinghua University and subsequently worked as a postdoctoral fellow at Johns Hopkins University before joining BIT. His research focuses on the dynamic mechanical behavior of advanced materials and structures, as well as data-driven and multiscale computational methods.

Speaker: Quan Jiao, Liaoning Academy of Materials
Short biography:
Dr. Quan Jiao is a professor at the Institute of Materials Plainification, Liaoning Academy of Materials. He received his Ph.D. in Mechanical Engineering from Johns Hopkins University in 2019 and completed postdoctoral research at Harvard University. His research focuses on solid mechanics and the mechanical behavior of advanced materials, combining experimental approaches with computational simulations. His interests include the strength and toughness design of metallic materials, fracture and fatigue, metal additive manufacturing, advanced mechanical characterization methods, and the mechanics of semiconductors and thin films. His work has been published in leading journals such as the *Journal of the Mechanics and Physics of Solids* and *Acta Materialia*.

Speaker: Xiang Li, Hainan Normal University
Short biography:
Xiang Li is a faculty member at Hainan Normal University. His research focuses on AI for Science, dedicated to solving forward and inverse problems in engineering computation. Specific applications include the design of bone prostheses, the development of acoustic metamaterials, and the property characterization of heterogeneous materials. His findings have been published in academic journals such as Computer Methods in Applied Mechanics and Engineering and International Journal of Mechanical Sciences.

7-Data-Driven Techniques in Multiscale and Multiphysics Simulations

Speaker: Jia Li, Hunan University
Short biography:
Jia Li, Professor at Hunan University, Doctoral Supervisor, National Young Talent, and Youth Editorial Board Member of journals such as Advanced Powder Materials and Acta Mechanica Sinica. Addressing major national demands in defense sectors such as aerospace and nuclear energy, his research focuses on cross-scale computational modeling, strengthening and toughening mechanisms of alloys, service performance, and machine learning-driven design. He has presided over three National Natural Science Foundation of China, published over 80 first/corresponding author papers in journals including PNAS, Journal of the Mechanics and Physics of Solids, International Journal of Plasticity, and Acta Materialia, with over 4,000 citations. He holds five Chinese invention patents and has published one English monograph. He was awarded the Hunan Provincial Natural Science Second Prize in 2020 and 2024, the Wang Ren Youth Science and Technology Award in 2023.

Speaker: Yonggang Zheng, Dalian University of Technology
Short biography:
Dr. Yonggang Zheng is a professor in the Department of Engineering Mechanics, School of Mechanics and Aerospace Engineering, Dalian University of Technology. His research interests include computational mechanics for multiscale and multiphysics systems and data-driven computational mechanics. He has published over 150 papers in leading journals such as CMAME and IJNME, and has received the National Young Talent Support Program, the Natural Science Award of Liaoning Province (Second Class, first contributor), and the ICACM Young Investigator Award, etc.

Speaker: Sheng Mao, Peking University
Short biography:
Sheng Mao is currently an Assistant Professor in the School of Mechanics and Engineering Science, Peking University. He received his Bachelor's degree in Theoretical and Applied Mechanics from Peking University in 2011 and his Ph.D. in Applied Mechanics from the University of Pennsylvania in 2016. Subsequently, he was a postdoctoral researcher at Princeton University. His primary research focuses on the complex physics and mechanical behavior of soft materials and their multiscale computational methods using machine learning and data-driven methods. His works have been published in renowned academic journals such as CMAME, JMPS, PNAS and PRL.

Speaker: Yajun Zhang, Lanzhou University
Short biography:
Dr. Yajun Zhang is an Associate Professor at the School of Civil Engineering and Mechanics, Lanzhou University, holding dual PhDs in Solid Mechanics from Zhejiang University and in Condensed Matter Physics from the University of Liège, Belgium. From February to August 2025, he conducted visiting research at Nanyang Technological University in Singapore. His work focuses on multiphysics coupling and multi-scale modeling of functional materials, with significant contributions to the understanding of ferroelectric, magnetic, multiferroic, and superconducting properties. He has published over 50 SCI-indexed papers in leading journals such as Nature Materials, Physical Review Letters, and Advanced Functional Materials, which have garnered over 1200 citations, including references in Science and Nature.

8-Data-Driven Techniques for Continuous and Discrete Methods

Speaker: Xianjia Chen, Institute of Mechanics, Chinese Academy of Sciences
Short biography:
Xianjia Chen works as an assistant professor in the state key laboratory of nonlinear mechanics at Institute of Mechanics, Chinese Academy of Sciences. He obtained his Ph.D. in Solid Mechanics from Beihang University in 2018. His research focuses on computational solid mechanics, service reliability of engineering structures, and machine learning in engineering science. His research has been published in Aerosp. Sci. Technol., Phys. Fluids., Sci. China Technol. Sc., and other international academic journals.

Speaker: Yu Guo, Zhejiang University
Short biography:
Yu Guo works as a Principal Researcher in the Department of Engineering Mechanics at Zhejiang University. His research focuses on advancement of numerical simulation methods and development of theoretical models for multiphase flows involving solid particles: i) Developed flexible fiber particle Discrete Element Method (DEM), which has been widely used in analyses of fluidization and transportation processes involving fibrous materials in chemical, energy, medical, and agricultural industries; ii) Establishment of rheological constitutive models considering particle aspect ratio, angularity, and polydispersity; iii) Development and applications of smart particles and granular metamaterials. His research has been published in Annual Review of Fluid Mechanics, Nature Communications, *Journal of Fluid Mechanics*, AIChE Journal, and other international journals. He serves as an Editor of Journal of Hydrodynamics, a Topical Editor of Materials, and a Youth Fellow of Academic Committee of Process Simulation & Modeling of Chinese Society of Chemical Engineering.

Speaker: Mengqi Wu, Tsinghua University
Short biography:
Mengqi Wu received her Ph.D. from the Institute of Nuclear and New Energy Technology (INET), Tsinghua University, in 2023, and was awarded the title of Outstanding Doctoral Graduate and Outstanding Doctoral Dissertation by Tsinghua University. She currently serves as a Research Assistant Professor at INET. Her research focuses on the digitalization of flow and heat transfer and AI-enabled reactor thermal-hydraulics, with particular emphasis on the pebble flow and boiling phenomena. She has published nine SCI papers as first author in journals including IJHMT, ICHMT, CES, etc. She taught a student research training course at Tsinghua University titled "Neural Network-Based Bubble Image Recognition and Boiling Crisis Studies, and also serves as the Principal Investigator of a CNNC Leading Innovation Project.

Speaker: Yuzhi Zhang, DP Technology
Short biography:
Yuzhi Zhang, as a Senior Researcher at DP Technology, graduated from Peking University. He is a core developer of the open-source software series “Deep Potential,” including DeePMD-kit and DP-GEN, widely used in molecular simulation and materials design. He led the development of Hermite® Uni-FEP, a software for free energy perturbation in drug design, as well as the AI for Science research and study platform Bohrium® and the battery design automation platform Piloteye®, and General-Purpose Scientific AI Agent SciMaster. His work was recognized as an outstanding case in Beijing’s National AI Innovation Application Pilot Zone.

9-Data-Driven Design and Optimization

Speaker: Qun Huang, Wuhan University
Short biography:
Dr. Qun Huang is an Associate Professor at Wuhan University. He received his PhD degrees in Solid Mechanics from Wuhan University (China) in 2017 and University of Lorraine (France) in 2018. His main research interests are in the field of multi-scale modelling of thin-walled composite structures, data-driven computational mechanics. He has published 34 JCR Q1 papers among which, 17 papers are the first-authored or corresponding-authored works published in renowned journals such as JMPS, CMAME, and IJSS. He has led two projects of the National Natural Science Foundation of China, served as the co-chair of organizing committee of 28th International Conference on Composite Structures (ICCS28), and currently serves as a standing director of the Hubei Society for Composite Materials and an Assistant Editor for the JCR Q1 journal Composite Structures (CS, IF=7.1).

Speaker: Yichao Zhu, Dalian University of Technology
Short biography:
Yichao Zhu is a professor based in the School of Mechanics and Aerospace Engineering at Dalian University of Technology (DUT). He got his PhD on applied mathematics from University of Oxford. He bears strong interests in projects, where mathematical tools can be used by all means to solve industrial problems. He has published more than 50 peer-reviewed articles. He is now sitting in the junior editorial board of Acta Mechanica Solidia Sinica, and serves in the administrative panel on mechanics of soft materials underneath the Chinese Society of Theoretical and Applied Mechanics.

Speaker: Jingtong Zhang, Dalian University of Technology
Short biography:
Jingtong Zhang is an Associate Professor at Dalian University of Technology (DUT). He obtained his Ph.D. from Zhejiang University in 2022, after which he conducted postdoctoral research at the Zhejiang Lab. He joined DUT in November 2024. His primary research focuses on the multi-scale and multi-field simulation of ferroelectric materials. He has over 30 publications in journals such as npj Computational Materials, Advanced Functional Materials, and Nano Letters. He currently leads a project funded by National Natural Science Foundation of China (NSFC) Young Scientists Program.

Speaker: Changting Zhong, Hainan University
Short biography:
Dr. Changting Zhong is an associate professor and PhD supervisor in Hainan University, China. He earned PhD from Hunan University in 2020 and worked as a postdoctoral researcher at Dalian University of Technology from 2020 to 2022.
He was named among the “World’s Top 2% scientists” at 2025, in the sub-field of Artificial Intelligence & Image Processing. His research interests include optimization, metaheuristic algorithms, surrogate models, and structural reliability. He has made more than 10 publications in peer-reviewed international journals, with more than 1,300 citations on Google Scholar and an h-index of 11 since 2020. Especially, he published a novel metaheuristic algorithm called beluga whale optimization (BWO), which was selected as an ESI highly cited paper in last 24 months and ESI hot paper in 16 months, received 780+ citations from Google Scholar, 540+ citations in Web of Science, one of top-cited papers in Knowledge-Based Systems. BWO has been used in more than 200 peer-reviewed international journal articles, and has been discussed or applied by several distinguished professors. Furthermore, the SFOA paper also has more than 100 citations on Google Scholar.

Speaker: Hongling Ye, Beijing University of Technology
Short biography:
Hongling Ye is a full Professor in School of Mathematical Statistics and Mechanics, Beijing University of Technology. Dr. Ye obtained her PhD and Master degrees in Beijing University of Technology. As a visiting scholar, she also worked in the Department of Aeronautics and Astronautics at the University of Colorado Boulder. Dr. Ye has expertise in multidisciplinary structural analysis and optimization design, topology optimization design, innovative design of additive manufacturing composite materials, structural mechanics of composite materials, theoretical methods and software development of computational mechanics. She has published more than 100 scientific papers, including those published in Structural and Multidisciplinary Optimization, Computer Methods in Applied Mechanics and Engineering, Composite Structures, Thin Walled Structures, Materials &Design. She also serves as a member of the Chinese Society of Mechanics and a member of the Professional Committee for Intelligent Composite Materials, Composite Structure Design, and Composite Additive Manufacturing of the Chinese Society of Composite Materials. Her research has been supported by the National Natural Science Foundation of China and Beijing Natural Science Foundation. She has been awarded honors such as National Excellent Teacher in Mechanics, Beijing Teaching Expert Award, Young teacher award by Fok Ying Tong Education Foundation, Du Qinghua Mechanics and Engineering Education Award, and Beijing Education and Teaching Achievement Second Prize.

10-Visualization and Analysis of Multi-source Data

Speaker: Zeng Meng, Hefei University of Technology
Short biography:
Zeng Meng is a professor in Hefei University of Technology. The research directions include optimization of uncertain structures, analysis and optimal design of aerospace and civil structures, structural topology optimization, etc. He was funded as an outstanding youth of Anhui Province project, and has over twenty projects, including two National Natural Science Foundation of China general projects, two National Natural Science Foundation of China Youth Projects. He won two first prizes for scientific and technological progress of Anhui Society of Mechanics. From 2021 to 2024, he was consecutively in the list of the world’s top 2% of scientists and the highly cited author list of Computers & Structures journal. He has published more than 100 SCI journal papers, including over 60 as the first author or corresponding author. Google citations have exceeded 4,700 times, and there are 9 ESI highly cited papers and 3 hot papers.

Speaker: Yanwei Liu, Beihang University
Short biography:
Yanwei Liu received his Ph.D. in Science from Peking University in 2021 and joined Beihang University in 2025. He is currently an associate professor at the Institute of Solid Mechanics, School of Aeronautic Science and Engineering. His research focuses on the trans-scale elastic-plastic and fracture behavior of advanced materials and structures. He has made significant advances in general elastic trans-scale theory, experimental characterization and applications, as well as trans-scale plasticity and fracture of materials under multi-field coupling. He has published 26 SCI papers in internationally renowned journals such as Int. J. Mech. Sci., Compos. Struct., and Appl. Math. Model., and has been granted two national invention patents. He has presided over a project supported by the National Natural Science Foundation of China. In 2024, his doctoral dissertation was selected for inclusion in the 2022 Collection of Outstanding Doctoral Dissertations by the Chinese Society of Mechanics. In 2022, he was selected for the Postdoctoral Innovation Talent Support Program of the Ministry of Human Resources and Social Security of China. In 2021, he was awarded the Peking University Boya Postdoctoral Fellowship. He serves as an independent reviewer for journals including Mater. Today Commun., J. Comput. Methods Sci., Acta Mechanica Sinica, and so on.

Speaker: Jiaxing Wang, Institute of Automation, Chinese Academy of Sciences
Short biography:
Jiaxing Wang is an Associate Professor at the Institute of Automation, Chinese Academy of Sciences. Her research primarily focuses on brain-computer interfaces and rehabilitation robotics. She has led or participated in six national-level research projects, including those funded by the National Natural Science Foundation of China and the National Key Research and Development Program. Dr. Wang has been selected for the Young Elite Scientists Sponsorship Program of the China Association for Science and Technology. She has published over 20 academic papers and holds more than 10 authorized national invention patents.

Speaker: Chao Zhang, Zhengzhou University
Short biography:
Full Professor in School of Water Conservancy and Transportation/Yellow River Laboratory/ Underground Engineering Research Institute, Zhengzhou University
Selected as Top Talents of Central Plains Youth Program, high-level talent in Henan Province, the Program for Science and Technology Innovation Talents in Universities of Henan Province
Mainly engaged in the multi-scale physical and mechanical properties and improvement of engineering rehabilitation materials, the design and application of advanced structures and materials, micro mass and heat transfer and macro disaster characterization of frozen soil as well as the theory and technology of polymer grouting rehabilitation for undergrounding engineering.
Membership of lots of international academic organizations, such as the executive member in The Marine Engineering Geology Commission (C34)-The International Association for Engineering Geology and the Environment (IAEG), and so on.
Hosted and participated in the completion of more than 20 national and provincial-level projects, published over 100 papers, including 2 ESI hot topic papers and 5 highly cited papers, and applied for and granted more than 40 patents.

11-Multi-source Information Fusion Methods

Speaker: Lingkun Luo, Shanghai JiaoTong University
Short biography:
Lingkun Luo served as a research assistant and postdoc at Ecole Centrale de Lyon, Department of Mathematics and Computer Science. He is currently a research fellow at Shanghai Jiao Tong University. He has authored over 40 research articles, including publications in IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal of Computer Vision, ACM Computing Surveys, IEEE Transactions on Image Processing, IEEE Transactions on Cybernetics, IEEE Transactions on Information Forensics and Security, International Joint Conference on Artificial Intelligence and others. His research interests include machine learning and pattern recognition.

Speaker: Longxiao Guo, Hebei University of Technology
Short biography:
Longxiao Guo is an Associate Professor and master's supervisor in the School of Civil and Transportation Engineering at Hebei University of Technology. He was awarded the "Yuanguang Scholar" distinction in July 2022. Guo completed his doctorate at Kyushu University (Japan) in 2021 under the supervision of Professor Guangqi Chen. His primary research interests are discontinuous deformation analysis (DDA), deep learning, rock mechanics, and unsaturated soil mechanics. To date, he has published more than ten SCI papers and is the recipient of the National Natural Science Foundation of China Young Scientists Fund (grant No. 5250082976) and the Youth Fund of Hebei Province (grant No. E2024202208).

Speaker: Shan Lin, Beijing University of Technology
Short biography:
Shan Lin, Professor at Beijing University of Technology. She acquired her Ph.D. from the Institute of Rock and Soil Mechanics, Chinese Academy of Sciences in 2019. She has been selected as a High-Level Talent (Outstanding Young Talent) at Beijing University of Technology. Her research focuses on the application of artificial intelligence in civil engineering. Her work encompasses developing intelligent simulation methods with high robustness and generalization capabilities, as well as interpretable data mining and disaster early warning in civil engineering. She has published 42 papers in SCI-indexed journals, one of which was selected as an ESI Highly Cited Paper.

Speaker: Xi Wang, The Hong Kong Polytechnic University
Short biography:
Xi Wang got his bachelor's degree (1/503) and PhD from Tongji University, supervised by Hehua Zhu, Academician of Engineering. He also holds a master's degree of science in computer science in UT Austin with full GPA. He was a postdoc in HKUST with Professor Jidong Zhao and now is a postdoctoral fellow in the Hong Kong Polytechnic University with Professor Zhen-Yu Yin. Xi works on classical numerical methods like discontinuous deformation analysis (DDA), FEM and combination with PINN.

Speaker: Bokai Liu, Korea University.
Short biography:
Dr.-Ing. Bokai Liu is a Research Professor at Korea University, South Korea, supported by the Swedish STINT Academic Mobility Fellowship (since September 2025), as well as a Staff Scientist at Umeå University, Sweden. He received his Ph.D. in Computational Mechanics from Bauhaus-Universität Weimar, Germany (February 2022). His research focuses on AI for science, stochastic data-driven and multiscale modeling, computational mechanics, and energy-efficient composite materials, linking materials design with sustainable energy systems. As Principal Investigator, he has led multiple international projects with funding exceeding 2.4 million SEK (~2 million RMB), and has published over 25 peer-reviewed papers in leading international journals.

12-AI for Design of Non-Hermitian Metamaterials and Bio-inspired Metastructures

Speaker: Tuo Liu, Institute of Acoustics, Chinese Academy of Sciences
Short biography:
https://people.ucas.ac.cn/~tuoliu

Speaker: Guobiao Hu, The Hong Kong University of Science and Technology (Guangzhou)
Short biography:
Dr. Guobiao Hu is currently a tenure-track assistant professor with the IoT Thrust at HKUST(GZ). He received his Ph.D. degree from the University of Auckland, New Zealand. Before joining HKUST(GZ), he worked as a Research Fellow in the School of Civil and Environmental Engineering at Nanyang Technological University. His research interests include energy harvesting technologies, battery-free Internet of Things, acoustic/elastic metamaterials, and intelligent material structures/systems. He has published over 140 peer-reviewed technical papers in prestigious journals and international conferences. He received the 2024 Ephrahim Garcia Best Paper Award and the 2023 Best Paper Award in Energy Harvesting from the ASME SMASIS Division, as well as the Best Paper Finalist Award at the SPIE Smart Structures/NDE Conference in 2018. He has filed 3 patents, including 1 Singapore patent and 2 Chinese patents.

Speaker: Weidong Yang, Tongji University
Short biography:
Prof. Weidong Yang is the head of Aerospace Engineering Department, Tongji University. He received his B.Eng. and M.Eng. in Aerospace Engineering from Tongji University in 2009 and 2012, followed by a Ph.D. degree in Solid Mechanics from Shanghai Jiao Tong University in 2017.Then, He as Research Fellow worked at Department of Materials Science and Engineering, National University of Singapore. Since 2020, he has been working on polymeric composite materials and structures at the School of Aerospace Engineering and Applied Mechanics, Tongji University Shanghai, China. Prof. Yang's research interests currently focus on composites mechanics, multifunctional composites, additive manufacturing, and AI-driven composites design and manufacturing. He has over 70 publications in the peer-reviewed journals with more than 2600 citations. He also serves as Assistant Editor of Composites Science and Technology, executive director of SAMPE China General Association, and member of the Youth Work Committee of China Composite Materials Society.

Speaker: Yilin Zhu, Ningbo University

Short biography:

Dr. Yilin Zhu is a Professor at the Center for Mechanics Plus under Extreme Environments, Ningbo University. His research primarily focuses on auxetic metamaterials, intelligent structural design, and their applications in extreme environment protection.

He has led two projects funded by the National Natural Science Foundation of China (NSFC), undertaken a sub-project of a key program supported by the Science and Technology Commission of the Central Military Commission, and secured more than ten additional grants from other funding agencies.

To date, Dr. Zhu has published over 75 SCI-indexed papers, including 38 as first or corresponding author in leading mechanics journals such as International Journal of Plasticity and International Journal of Solids and Structures. His work has been cited more than 2,000 times on Google Scholar. He holds eight invention patents (four as first inventor) and one registered software copyright.

His achievements have gained broad international recognition: he was named among the World's Top 2% Scientists (2024, annual impact) and received the Wang Ren Young Scientist Award (2023) and the National Outstanding Young Scholar Award in Metamaterials (2025).

Dr. Zhu serves as Secretary-General of the Multibody System Dynamics Committee (MSDC) of the International Society for Mechanical System Dynamics (ISMSD), Council Member of the Sichuan Society of Theoretical and Applied Mechanics, and Council Member of the Metamaterials Branch of the Chinese Materials Research Society. He is also an Editorial Board Member of the International Journal of Applied Mechanics and a Youth Editorial Board Member of several academic journals.

He has delivered over 30 invited talks at international and domestic conferences and has chaired seven technical symposia.

13-Machine Learning Computing for Damage and Fracture Mechanics

Speaker: Su Chen, Beijing University of Technology

Short biography:

Su Chen is a Professor at Beijing University of Technology. He has presided over multiple national-level scientific research projects, including major projects of the National Natural Science Foundation of China and Key research and development programs. Provide earthquake technology services for multiple major infrastructure projects in our country. The research focuses on the determination of seismic fortification in engineering and the intersection of scientific artificial intelligence (AI4S), etc. He has published over a hundred academic papers and obtained 8 authorized invention patents, etc. Received the First Prize for Scientific and Technological Progress from the Ministry of Education and the Second Prize for National Defense Science and Technology, and the Youth Science Award from the China Association for Disaster Prevention, etc.

Speaker: Wenyang Liu, Hunan University

Short biography:

Wenyang Liu, Associate Professor in the College of Mechanical and Vehicle Engineering at Hunan University. Research interests include non-local theory and the integration of informatics to advance computational mechanics. Currently serves on the editorial board of the Journal of Peridynamics and Nonlocal Modeling and on the young editorial board of the Chinese Journal of Computational Mechanics.

Speaker: Jinshuai Bai, Tsinghua University

Short biography:

Dr. Jinshuai Bai is currently a postdoctoral researcher and a ShuiMu fellow at Tsinghua University. He received his bachelor's degree from the Department of Engineering Mechanics at Hunan University, a master's degree and a doctoral degree from Queensland University of Technology. He was awarded the National Scholarship for Outstanding Self-Financed Students Abroad. He mainly engages in research related to intelligent computational mechanics methods and biomechanics of fracture. He has published over 40 SCI-indexed journal papers in CMAME, JMPS, Comput.Mech., Eng.Struct.

Conference record

Guidance Unit: Beijing Association for Science and Technology

Organizers: Chinese Society of Theoretical and Applied Mechanics
Beijing Society of Theoretical and Applied Mechanics
Tsinghua University

Co-Organizers: Peking University
Beijing International Center for Theoretical and Applied Mechanics
Leibniz University Hannover
Tongji University
Bauhaus University Weimar
Beijing Institute of Technology
German Association of Computational Mechanics
Chinese Association of Computational Mechanics