



大连理工大学
DALIAN UNIVERSITY OF TECHNOLOGY



郑州大学
ZHENGZHOU UNIVERSITY

THE ASIAN CONGRESS OF STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION 2024 (ACSMO 2024)

MAY 19-23, 2024
ZHENGZHOU, CHINA

Organized by

Dalian University of Technology
Zhengzhou University

Sponsored by

The Asian Society for Structural and Multidisciplinary Optimization
The Chinese Society of Theoretical and Applied Mechanics
The Society of Theoretical and Applied Mechanics of Liaoning Province
State Key Laboratory of Structural Analysis Optimization and CAE Software for Industrial Equipment
School of Mechanics and Aerospace Engineering, Dalian University of Technology
National Engineering Research Center for Advanced Polymer Processing Technology



CONTENTS



Welcome Message	1
Organization	3
Conference Topics	8
Plenary Lectures	11
Keynote Lectures	18
Conference Venue	25
Program at a Glance	26
Social Program	28
Session Schedule	29
Technical Program	31

WELCOME MESSAGE

On behalf of the organizing committee, we are very pleased to invite you to participate in the Asian Congress of Structural and Multidisciplinary Optimization 2024 (ACSMO 2024) to be held in Zhengzhou, China, during May 19-23,2024.

Structural and multidisciplinary optimization is a hot topic in both theoretical research and engineering applications. Following the successful eight CJK-OSM conferences (Xian, China in 1999; Busan, Korea in 2002; Kanazawa, Japan in 2004; Kunming, China in 2006; Jeju, Korea in 2008; Kyoto, Japan in 2010; Huangshan, China in 2012; Gyeongju, Korea in 2014) and four ACSMO congresses (Nagasaki, Japan in 2016; Dalian, China in 2018; Krea, online in 2020; Matsue, on-site and on-line, Japan in 2022), ACSMO 2024 will be held in the famous city Zhengzhou, China, in May 19-23,2024.

ACSMO is a series of biennial congress which have stimulated and promoted researches and interests in all aspects of structural and multidisciplinary

optimization. It is an official conference sponsored by ISSMO (International Society of Structural and Multidisciplinary Optimization) and ASSMO (Asian Society of Structural and Multidisciplinary Optimization). As before, ACSMO 2024 will be a forum for exchange of recent research ideas and fostering new developments and new applications from various fields. We are most happy to welcome people not only from Asian countries but also from any other areas of the world, and we hope ACSMO 2024 will encourage joint researches among researchers, practicing engineers and students of all countries.

Gang Li

General Chair, ACSMO 2024

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CONFERENCE TOPICS

1. Optimization Methods

- 1.1 Optimization theories and algorithms
- 1.2 Design sensitivity analysis and global optimization
- 1.3 Parallel (or grid) computing in optimization
- 1.4 Multiobjective optimization
- 1.5 Probabilistic, heuristic, stochastic, evolutionary methods

2. Shape and Topology Optimization

- 2.1 Multiscale topology optimization
- 2.2 Topology optimization of metamaterials
- 2.3 Topology optimization of advanced materials and smart structures
- 2.4 Emerging topology and shape optimization techniques in design
- 2.5 Large-scale topology optimization
- 2.6 AI-based and data driven shape and topology optimization
- 2.7 Multi-physics topology optimization

3. Design under Uncertainty

- 3.1 Uncertainty modeling and uncertainty propagation
- 3.2 Reliability analysis and reliability-based design optimization
- 3.3 Robust design optimization
- 3.4 Model verification and validation
- 3.5 Time-dependent reliability analysis and design

4. Approximations, Surrogates, and Metamodeling

- 4.1 Approximation techniques
- 4.2 Approximation-based design optimization
- 4.3 Error and convergence studies
- 4.4 Model order reduction and benchmarking studies

5. Optimization in Engineering Applications

- 5.1 Acoustic and vibration problems
- 5.2 Additive manufacturing
- 5.3 Health monitoring, damage detection
- 5.4 Metamaterials
- 5.5 Multiscale and multiphysics problems
- 5.6 Noise/vibration suppression and control
- 5.7 Smart structures and energy harvesting

6. Industrial applications

- 6.1 Aerospace and aeronautical engineering
- 6.2 Architecture and civil engineering
- 6.3 Automotive engineering
- 6.4 Biomedical engineering
- 6.5 Electronics and electrical systems
- 6.6 Ship/ocean engineering
- 6.7 Chemical engineering
- 6.8 Renewable energy (wind, solar, etc.)

PLENARY LECTURES

PLENARY LECTURE



Bo Wang, Professor
Dalian University of Technology

Topic:

Topology optimization in aero-engine structure design

Abstract:

Topology optimization design is one of the most effective methods to obtain innovative aero-engine structure configurations and achieve structural lightweight designs. The topology optimization design of typical aero-engine structures, such as nozzles, blades, and disks, is faced with challenges such as special shapes and rich structural hierarchies, as well as complex dynamic or thermal environments, making it difficult for the traditional topology optimization method to meet the design and manufacturing requirements. To address these challenges, three representative topology optimization methods are proposed. Firstly, a novel stiffener topology optimization method is developed for the optimal stiffener layout on complex surface based on Helmholtz-type anisotropic filter, achieving lightweight design while ensuring high load-bearing performance and manufacturability. Then, the efficient structure dynamics topology optimization methods considering impact load or frequency response are established, and the

innovative blade configuration with the superior advantage of high hollow ratio can be obtained. Finally, a topology optimization framework for axisymmetric structures considering thermal load is proposed, and the density distribution function is employed to overcome the closed holes that are prone to be generated by the traditional topology optimization method, guaranteeing the manufacturability of the optimized disks. The above algorithms have been integrated into the self-developed software Desk. TOP, and applied to the optimization design of typical aero-engine structures such as nozzles, blades, and disks.

Biography:

Dr. Bo Wang is a professor in the School of Mechanics and Aerospace Engineering at Dalian University of Technology. Currently, he serves as the Vice President of Dalian University of Technology. He is also a recipient of the National Fund for Distinguished Young Scholars. His research interests include aerospace structural strength and lightweight design, structural and multidisciplinary optimization, as well as CAE software research and development. He has authored two books and over 230 peer-reviewed journal articles, which have received over 1000 citations. He has been included in Elsevier's list of Highly Cited Chinese Researchers. He is taking the lead in the development of Desk. CAE, a dedicated software for structural strength and lightweight design. He has been awarded the Second Prize of the State Technological Innovation Award (2020, as the first achiever), the First Prize of the Higher School Outstanding Achievements in Technological Invention (2017, as the first achiever), the 25th CAST Qiushi outstanding young talent achievement transformation award, and the XPLOER PRIZE.

PLENARY LECTURE



Satoshi Kitayama, Professor
Kanazawa University

Topic:

Practice of design optimization in manufacturing technology

Abstract:

The manufacturing process is considered as the input-output system. Thus, the input is the combination of process parameters and the output is the product quality or the productivity. The process parameters for the desirable output are conventionally determined through the experiments based on the trial-and-error method, but the experiment is expensive and time-consuming task. Computer aided engineering coupled with design optimization is one of the alternatives. The numerical simulation in manufacturing technology is computationally so expensive that it is preferable to adopt the metamodel-based optimization for the process parameters optimization. Sequential approximate optimization (SAO) that the metamodel is updated by adding new sampling points is recognized as one of the effective approaches to determine the optimal process parameters.

In this paper, several industrial applications using the SAO in manufacturing technology are presented. In sheet metal forming, variable blank holder force

(BHF) trajectory that the BHF varies through the stroke is optimized. In PIM, the performance of conformal cooling channel including the process parameters optimization is numerically and experimentally investigated. In forging, the optimal process parameters minimizing the risk of crack are determined. In all applications, based on the numerical result, the experiment is conducted to examine the validity of design optimization. It is clarified from the numerical and experimental results that design optimization can resolve several issues in manufacturing technology.

Biography:

Satoshi Kitayama graduated from Waseda University in 1997 (B) and 1999 (M), and received Ph.D. in 2002 (Waseda University). After that, he joined at Kanazawa University in 2002 as an assistant professor and was a professor in 2015. He developed sequential approximate optimization using radial basis function network for engineering design and applied this methodology to practical engineering problems in automotives or heavy industries. He awarded “Young Engineer’s Award” at CJK-OSM3 in 2004, “JSME Young Engineers Award” in 2006, “JSME Medal for Outstanding Paper” in 2011. He served the chair of Design & Systems division in JSME in 2023. He is now an executive council member of ACSMO.

PLENARY LECTURE



Dooho Lee, Professor
Dongeui University

Topic:

Substructuring of vibro-acoustic systems: a novel approach in design, updating, and identification problems

Abstract:

Complex machines consist of many subsystems, which are generally categorized as source, transfer system, and target response from the viewpoint of vibro-acoustic system analysis. Therefore, whether designing a vibro-acoustic system, updating a numerical model, or solving an inverse problem, a unified approach that considers substructuring can enhance the effectiveness and efficiency of the design, updating, and identification processes. This lecture introduces a novel approach to the design, updating, and identification of vibro-acoustic systems through basic formulation and numerous applied examples across various industrial domains.

The frequency response function (FRF)-based substructuring (FBS) method is widely used to synthesize the responses of a whole structure from the FRFs of its substructures. Recently, the Lagrange multiplier FBS (LM-FBS) formulation has

been also introduced in the dual domain and is gaining popularity across various fields. First, the design sensitivity analysis formulation under the FBS framework is introduced and validated using numerical examples.

In vibro-acoustic systems, a typical design problem is to determine the dynamic characteristics of joints between substructures to meet the vibro-acoustic performance requirements of target responses. Illustrative issues to demonstrate the effectiveness of the unified approach introduced here include the heterogeneities of computational models and subsystem companies. To address these heterogeneities, the hybrid FBS model using experimental and numerical FRFs, as well as the black-box FBS model, are introduced and demonstrated through industrial examples.

During the numerical model validation process, the numerical model repeatedly updates the selected model parameters by evaluating the differences between the target responses and reference responses. Combined with a suitable measure for comparison, the unified approach can enhance the efficiency and effectiveness of the model updating process by reducing discrepancies due to subjectivity as well as iteration costs. This is demonstrated through real-world examples, including the identification problems of structural parameters.

Biography:

Dooho Lee received his BS degree from Seoul National University (Korea) in 1988, his MS from KAIST (Korea) in 1990, and his Ph.D. from KAIST (Korea) in 1994. He worked for Samsung Motors, Inc. (1995-1999) and is currently a professor at Dongeui University. The lecturer's research includes optimization of structural-acoustic systems, evaluation of uncertainty propagation in dynamic systems, and the sound transfer characteristics of human hearing

KEYNOTE LECTURES



KEYNOTE LECTURE



Xiaogang Wang, Professor
Hunan University

Topic:

Strength and life assessment of mechanical structures: from physics-of-failure to reliability design

Abstract:

Mechanical structures may face a variety of failure modes during actual service. Inadequate understanding of the physical mechanism of failure and insufficient consideration of the uncertainty of the factors involved are serious constraints that affect the credibility of the assessment. This lecture is expected to provide a new technical route for strength and life assessment of mechanical structures from the perspective of physics-of-failure. To better clarify the main ideas of our research, the failure mode will mainly focus on fatigue failure, which accounts for about 90% of all mechanical service failures. Then this lecture is focused on typical fatigue crack initiation and propagation problems occurring in engineering materials and structures under service conditions. Based on advanced multi-scale experimental and numerical methods established, in-depth and systematic research has been carried out in the aspects of fatigue damage characterization, physical mechanisms

of failure, life prediction models, and reliability assessment of fatigue predictions. Some innovative methods, such as in-situ fatigue experiments, dissipated energy assessment, and interval uncertainty analysis and optimization, have been developed and applied in fatigue research. These studies have achieved some fruitful results, which are expected to help better understand the fatigue phenomena of mechanical structures from the perspective of physics-of-failure and improve the accuracy and reliability of existing life prediction models.

Biography:

Prof. Wang obtained his Ph.D. in Solid Mechanics from the University of Lille 1 in France in 2014 and then joined Hunan University. He was promoted to Associate Professor in 2017 and Full Professor in 2022. His research focuses on structural integrity evaluation and reliability design. The main research interests include damage mechanisms of advanced alloys, mechanical strength and life evaluation of aero-engine components, multi-scale modelling, uncertainty analysis and structural optimization design. He has published more than 50 scientific papers in peer-reviewed journals, including Proceedings of the National Academy of Sciences of the United States of America (PNAS), Acta Materialia, International Journal of Fatigue, etc. As the principal investigator, Prof. Wang has led a number of important scientific research projects, such as the National Natural Science Foundation Project for Excellent Young Scholars, the National Major Science and Technology Project. He won the first prize of Technology Invention Award of Hunan Province in 2022. He serves as an Associate Editor of the Journal of Mechanical Engineering Science. He also serves on the Committee of Fatigue Research Branch of Chinese Materials Research Society and the Youth Committee of the Materials Branch of Chinese Mechanical Engineering Society.

KEYNOTE LECTURE



Professor Kentaro Yaji
Osaka University

Topic:

Toward data-driven morphogenesis— gradient-free topology optimization for complex problems

Abstract:

Topology optimization aims to create innovative engineering designs with extensive design flexibility. However, it faces challenges due to strong multimodality, especially in nonlinear physical problems like turbulence or minimax optimization. Our research aims to establish a framework that states, "No matter how complex the problem, a promising optimized solution can be found if forward problems are solvable." The root cause of the difficulties faced by topology optimization lies significantly in its reliance on gradient-based methods. To tackle this issue, we employ deep generative models to address this challenge, using evolutionary algorithms in a low-dimensional latent space. The key idea is to construct a latent space corresponding to a low-dimensional manifold using encoder-decoder neural networks of a deep generative model based on input data composed of high-dimensional material distribution. The condensed space is updated based

on evolutionary algorithm operations such as crossover, selection, and mutation. It is important to emphasize that each individual only needs to solve forward problems, eliminating the need for sensitivity analysis and significantly reducing the risk of getting trapped in poor local solutions. Our approach, showcased with numerical examples, not only enhances topology optimization but also opens avenues for broader data-driven morphogenesis methods beyond this field.

Biography:

Dr. Yaji is an Associate Professor in the Department of Mechanical Engineering at Osaka University, specializing in topology optimization and its applications to thermal-fluid devices and battery systems, as well as data-driven design using deep learning. He graduated from Kyoto University with a master's degree in engineering in 2013 and received his Ph.D. in Engineering in 2016. Prior to joining Osaka University, he served as a Research Fellow for Young Scientists at the Japan Society for the Promotion of Science. He was also a visiting researcher at the Oden Institute for Computational Engineering and Sciences at the University of Texas at Austin from 2021 to 2022. Dr. Yaji has received numerous awards throughout his career, including the ASSMO Young Scientist Award and the JSME Design Engineering and Systems Division Award. As editor of journal papers, he worked as one of the guest editors of Structural and Multidisciplinary Optimization for a special issue on shape and topology optimization of flow-based multiphysics problems from 2021 to 2022. Additionally, he has been working as an editor of the Journal of Advanced Mechanical Design, Systems, and Manufacturing since 2023.

KEYNOTE LECTURE



Professor Sangho Kim
Konkuk University

Topic:

Digital twin technology to increase social acceptance of urban air mobility

Abstract:

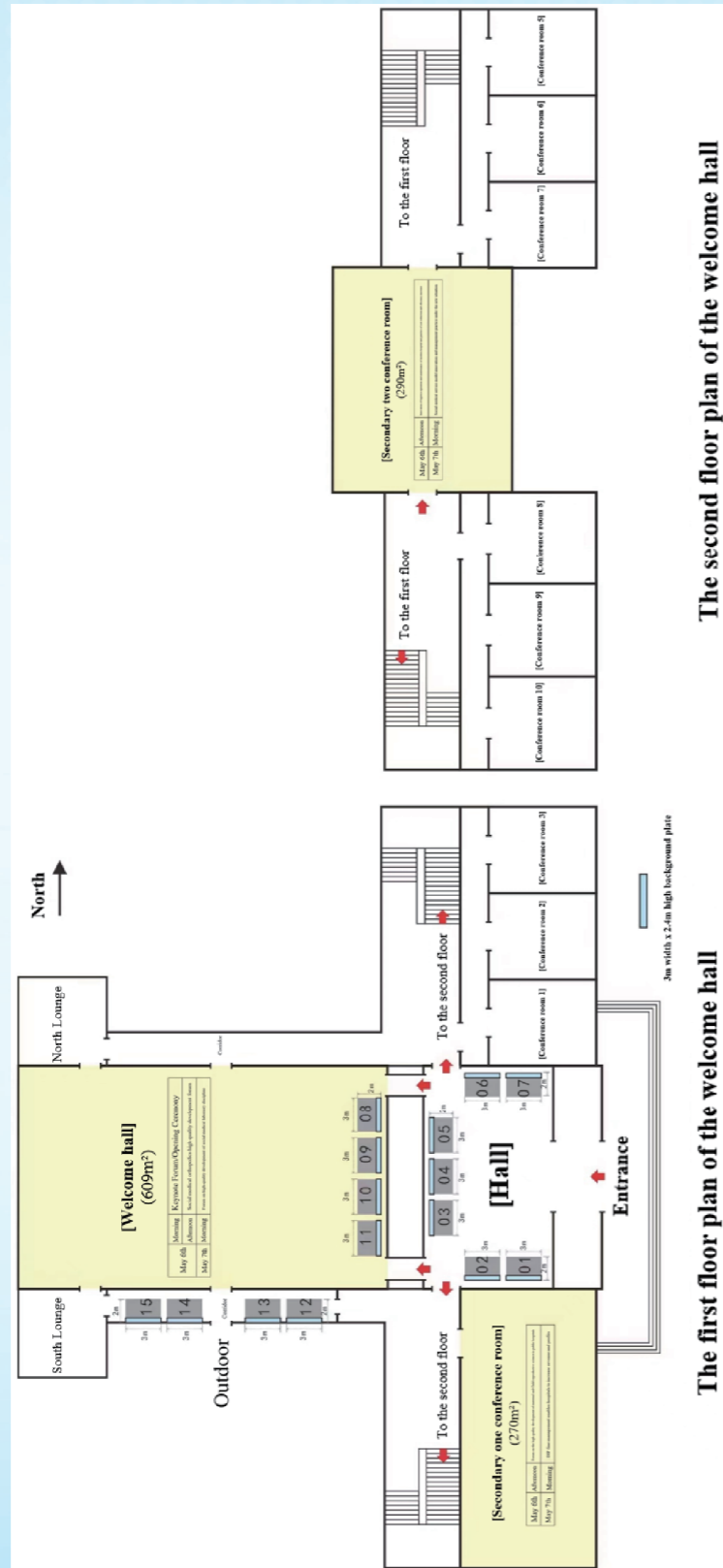
Modern society is suffering from air pollution and severe traffic congestion due to the numerous cars on the streets. Since Urban Air Mobility (UAM) is rapidly emerging as a new alternative to fundamentally address urban transportation and environmental issues by leveraging advancements and integration of technologies in the 4th Industrial Revolution era, a large-scale UAM industrial market is expected. UAM refers to aerial transportation within cities. Accordingly, efforts are being intensified worldwide to develop policies, build infrastructure, and secure core technologies for UAM aircraft development. Due to the technological characteristics of UAM, its implementation requires the development of key technologies such as eco-friendly high-efficiency propulsion systems, autonomous flight, and 3D communication networks. However, it is estimated that continuous efforts of 10 years or more will be needed for these technologies to reach a mature stage. UAM

operation digital twin technology is introduced to increase social acceptance of UAM, among the key technologies that need to be developed. Digital twin is a dynamic digital replica of a physical object and environment. The physical-digital interconnection of data and information will continually update changes in the digital asset and therefore can forecast the future of the corresponding physical assets. Essentially, the UAM operation digital twin consists of four main features: High-precision Vehicle Flight Simulation, Operation Control & Management, High-level Autonomy and Dynamic Digital Urban Environment. Exploring ways to integrate UAM operation digital twin with optimization technology is to be discussed.

Biography:

Sangho Kim is a Professor in the Department of Smart Vehicle Engineering at Konkuk University, and serves as the department chair. He graduated from Kyunghee University with a Bachelor degree, and received his master degree and Ph.D. at Stanford University (October 1993 - December 2001). Sangho Kim served as the senior researcher of Korean Agency for Defense Development from 2004 – 2008, the president of Korean Society for Design Optimization in 2023, and the vice president of Korean Academy of Space Security in 2023. At present, he is serving as the vice president of the Korea Society of Global Air and Space Industry, the director of the Innovative Defense Acquisition Society, the chair of Aerospace National Standards Committee, the expert committee of ISO/TC20 (Aerospace)/SC16 (Unmanned Vehicle), and the chair of Drone System, ICT Convergence Technical Committee. His research fields are Computational Fluid Dynamics and Aerodynamic Shape Optimization.

CONFERENCE VENUE



PROGRAM AT A GLANCE

Sunday, May 19					
Registration (The lobby on the first floor of Block 9) : 14:00-17:30					
Dinner at the Wealthy Palace on the first floor of Building 10: 18:00-20:00					
Monday, May 20					
Registration (The lobby on the first floor of Block 9) : 8:30-17:30					
Welcome Hall:	Opening Ceremony: 8:30-9:00				
	Plenary lecture 1: 9:00-9:40				
	Tea break: 9:40-10:00				
	Plenary lecture 2: 10:00-10:40				
Plenary lecture 3: 10:40-11:20					
Lunch at the Wealthy Palace: 11:30-13:00					
Starting at 14:00					
Room Number					
A	B	C	D	E	F
1A1	1B1	1C1	1D1	1E1	1F1
Tea break: 15:40-16:00					
1A2	1B2	1C2	1D2	1E2	1F2
Welcome reception at the Wealthy Palace: 18:00-20:00					
ASSMO EC and GC meeting: 19:30-20:30					

SOCIAL PROGRAM

Tuesday, May 21					
Room Number					
A	B	C	D	E	F
Starting at 8:30					
2A1	2B1	2C1	2D1	2E1	2F1
Tea break: 9:50-10:10					
2A2	2B2	2C2	2D2	2E2	2F2
Lunch at the Wealthy Palace on the first floor of Building 10: 11:30-13:00					
Starting at 14:00					
2A3	2B3	2C3	2D3	2E3	2F3
Cultural visit: 15:30-21:00					
Note: Rooms A-C correspond to Meeting rooms 1-3 at Welcome Hall, and Rooms D-F correspond to Meeting rooms 5-7 at Welcome Hall.					
Wednesday, May 22					
Room Number					
A	B	C	D	E	F
Starting at 8:30					
3A1	3B1	3C1	3D1	3E1	3F1
Tea break: 9:50-10:10					
3A2	3B2	3C2	3D2	3E2	3F2
Lunch at the Wealthy Palace on the first floor of Building 10: 11:30-13:00					
Starting at 14:00					
3A3	3B3	3C3	3D3	3E3	3F3
Tea break: 15:40-16:00					
3A4	3B4	3C4	3D4	3E4	3F4
Award ceremony and Banquet at the Wealthy Palace on the first floor of Building 10: 18:00-20:00					
Note: Rooms A-C correspond to Meeting rooms 1-3 at Welcome Hall, and Rooms D-F correspond to Meeting rooms 5-7 at Welcome Hall.					

- **Welcome reception:**
Monday, May 20, 18:00-20:00
- **ASSMO EC and GC meeting:**
Monday, May 20, 19:30-20:30
- **Cultural visit:**
Tuesday, May 21, 15:30-21:00
- **Award ceremony and Banquet:**
Wednesday, May 22, 18:00-20:00

SESSION SCHEDULE

Monday, May 20						
Time	Room Number					
	A	B	C	D	E	F
8:30-9:00	Opening Ceremony (Welcome Hall)					
9:00-9:40	Plenary lecture 1 (Welcome Hall)					
9:40-10:00	Tea break					
10:00-10:40	Plenary lecture 2 (Welcome Hall)					
10:40-11:20	Plenary lecture 3 (Welcome Hall)					
11:30-13:00	Lunch at the Wealthy Palace on the first floor of Building 10					
14:00-15:40	1A1 (Optimization Methods)	1B1 (Shape and Topology Optimization)	1C1 (Design under Uncertainty)	1D1 (Approximations, Surrogates, and Metamodeling; Keynote lecture: 14:00-14:30)	1E1 (Optimization in Engineering Applications)	1F1 (Industrial applications)
15:40-16:00	Tea break					
16:00-17:40	1A2 (Optimization Methods)	1B2 (Shape and Topology Optimization)	1C2 (Design under Uncertainty)	1D2 (Approximations, Surrogates, and Metamodeling)	1E2 (Optimization in Engineering Applications)	1F2 (Industrial applications)
18:00-20:00	Welcome reception at the Wealthy Palace on the first floor of Building 10					

Tuesday, May 21						
Time	Room Number					
	A	B	C	D	E	F
8:30-9:50	2A1 (Optimization Methods)	2B1 (Shape and Topology Optimization; Keynote lecture: 8:30-9:00)	2C1 (Design under Uncertainty)	2D1 (Approximations, Surrogates, and Metamodeling)	2E1 (Optimization in Engineering Applications)	2F1 (Industrial applications)
9:50-10:10	Tea break					
10:10-11:30	2A2 (Optimization Methods)	2B2 (Shape and Topology Optimization)	2C2 (Design under Uncertainty)	2D2 (Approximations, Surrogates, and Metamodeling)	2E2 (Optimization in Engineering Applications)	2F2 (Industrial applications)
11:30-13:00	Lunch at the Wealthy Palace on the first floor of Building 10					
14:00-15:20	2A3 (Optimization Methods)	2B3 (Shape and Topology Optimization)	2C3 (Design under Uncertainty)	2D3 (Approximations, Surrogates, and Metamodeling)	2E3 (Optimization in Engineering Applications)	2F3 (Industrial applications)
Wednesday, May 22						
Time	Room Number					
	A	B	C	D	E	F
8:30-9:50	3A1 (Optimization Methods)	3B1 (Shape and Topology Optimization)	3C1 (Shape and Topology Optimization)	3D1 (Approximations, Surrogates, and Metamodeling; Keynote lecture: 8:30-9:00)	3E1 (Optimization in Engineering Applications)	3F1 (Industrial applications)
9:50-10:10	Tea break					
10:10-11:30	3A2 (Optimization Methods)	3B2 (Shape and Topology Optimization)	3C2 (Shape and Topology Optimization)	3D2 (Approximations, Surrogates, and Metamodeling)	3E2 (Optimization in Engineering Applications)	3F2 (Industrial applications)
11:30-13:00	Lunch at the Wealthy Palace on the first floor of Building 10					
14:00-15:40	3A3 (Optimization Methods)	3B3 (Shape and Topology Optimization)	3C3 (Shape and Topology Optimization)	3D3 (Approximations, Surrogates, and Metamodeling)	3E3 (Optimization in Engineering Applications)	3F3 (Industrial applications)
15:40-16:00	Tea break					
16:00-17:20	3A4 (Optimization Methods)	3B4 (Shape and Topology Optimization)	3C4 (Shape and Topology Optimization)	3D4 (Approximations, Surrogates, and Metamodeling)	3E4 (Optimization in Engineering Applications)	3F4 (Industrial applications)
18:00-20:00	Award ceremony and Banquet at the Wealthy Palace on the first floor of Building 10					

TECHNICAL PROGRAM

Plenary Lectures at Welcome Hall: May 20 8:30-9:40 10:00-11:20			
Chair:Gang Li			
8:30-9:00	Opening Ceremony		
Chair:Yoshihiro Kanno			
9:00-9:40	PL1	Topology optimization in aero-engine structure design	Bo Wang
9:40-10:00	tea break		
Chair: Jae Woo Lee			
10:00-10:40	PL2	Practice of design optimization in manufacturing technology	Satoshi Kitayama
Chair:Gang Li			
10:40-11:20	PL3	Substructuring of vibro-acoustic systems: a novel approach in design, updating, and identification problems	Dooho Lee

Monday, May 20 14:00-15:40			
1A1	Optimization Methods		ID
Meeting room 1	Chairs:Yunkang Sui (Member of ISSMO), Dooho Lee (Donguei University)		
14:00-14:20	1A1-1	Building a theoretical system of the reciprocal programming and achieving the rationalization for the model of structural topology optimization	*Yunkang Sui, Xirong Peng, Jun Tie, Hongling Ye (China) [A10270]
14:20-14:40	1A1-2	Approximations of unbounded and discontinuous generalized eigenvalue functions in topology optimization	*Akatsuki Nishioka, Yoshihiro Kanno (Japan) [A10261]
14:40-15:00	1A1-3	Sensitivity analysis of transmitting forces in complex systems based-on LM-FBS formulation	*Dooho Lee (Korea) [A20323]
15:00-15:20	1A1-4	ICM method with a mapping based on node-uncoupled topology variables	*Xirong Peng,Yunkang Sui, Yonggang Zheng (China) [A10254]
15:20-15:40	1A1-5	Fatigue topology optimization of anisotropic material based on independent continuous mapping (ICM) method	*Yang Xiao, Hongling Ye, Yongjia Dong (China) [A10412]
1B1	Shape and Topology Optimization		ID
Meeting room 2	Chairs:Haibo Chen (University of Science and Technology of China), Gil HoYoon (Hanyang University)		
14:00-14:20	1B1-1	Multiobjective design with gray scale modification algorithm for compliant gripper considering shape of gripping objects and performance verification	*Nozomu Kogiso, Kenta Koyama (Japan) [B30258]
14:20-14:40	1B1-2	Data-driven design of auxetic metamaterials for prescribed nonlinear mechanical behaviors with feature geometric parameters	*Yueyou Tang, Liang Xia (China) [B60277]
14:40-15:00	1B1-3	A multi-material topology optimization approach to hybrid material structures with gradient lattices	*Yedan Li, Wenke Qiu, Zhen Liu, Yuhan Liu, Liang Xia (China) [B10247]

15:00-15:20	1B1-4	Performance analysis and optimisation of spatially-varying infill microstructure within CAD geometries using asymptotic analysis and machine learning	*Chuang Ma, Yichao Zhu (China)	[B10257]
15:20-15:40	1B1-5	Topology optimization of structures composed of multiple materials with different tensile and compressive properties	*Jinhu Cai, Jianhua Rong, Lei Zhao, Mingjun Zhang, Zhijun Zhao (China)	[B30263]
1C1 Design under Uncertainty				
Meeting room 3	Chairs:Yoshihiro Kanno (The University of Tokyo), Zeng Meng(Hefei University of Technology)			ID
14:00-14:20	1C1-1	Confidence-based non-parametric reliability optimization of trusses based on data-driven approach to computational elasticity	*Yoshihiro Kanno (Japan)	[C20300]
14:20-14:40	1C1-2	Reliability-based topology optimization using variable density method and performance measure approach	*Ping Yi, Ying Liu, Na Li, Sulaiman Shah (China)	[C20248]
14:40-15:00	1C1-3	Lightweight design for dynamic response problem by using reliability-based topology optimization method	*Gang Yang, Zeng Meng (China)	[C20381]
15:00-15:20	1C1-4	Robust reliability-based design optimization for lead rubber bearings of girder bridge based on direct probability integral method	*Hui Li, Guohai Chen, Dixiong Yang (China)	[C20252]
15:20-15:40	1C1-5	Non-intrusive polynomial chaos expansion for robust topology optimization of truss-like continua under random loads	*Xinze Guo, Kemin Zhou (China)	[C30255]
1D1 Approximations, Surrogates, and Metamodeling				
Meeting room 5	Chairs:Sangho Kim (Konkuk University), Manyu Xiao (Northwestern Polytechnical University)			ID
14:00-14:30	1D1-1	Digital twin technology to increase social acceptance of urban air mobility	*Sangho Kim (Korea)	Keynote

14:30-14:50	1D1-2	Prediction of load-displacement curve of outer panel using GNN and GRU	*Youngjin Ju, Minsik Seo, Yongho Bang, Byeong Eun Moon, Seungjae Min (Korea)	[F30552]
14:50-15:10	1D1-3	Aerodynamic modeling optimization of bus under crosswind condition based on improved gaussian process	*Mingkuan Yao, Xu Shao	[D10283]
15:10-15:25	1D1-4	Film pressure prediction and optimization for hydrodynamic textured surfaces using lightweight batch normalization-free fully convolutional residual network	*Bao Zhu, Jie Lin, Weisheng Zhang (China)	[D20269]
15:25-15:40	1D1-5	Iteration-free design of stiffened thin-walled structures guided by data-rich buckling modes	*Liang Meng (China)	[B40291]
1E1 Optimization in Engineering Applications				
Meeting room 6	Chairs:Hayoung Chung (Ulsan National Institute of Science and Technology), Shutian Liu(Dalian University of Technology)			ID
14:00-14:20	1E1-1	Integrated optimization of piezo-embedded compliant structures considering fundamental frequency constraints	Mingze Wang, Jingyu Hu, Yunfeng Luo, *Shutian Liu (China)	[E50430]
14:20-14:40	1E1-2	Optimization of anisotropy lattice structure arrangement in water cooling plates	*Kazutaka Yanagihara, Shomu Murakoshi, Akihiro Takezawa (Japan)	[E20287]
14:40-15:00	1E1-3	Optimizing jacket platform safety: a hybrid deep learning solution for damage evaluation	*Su Xin, Qi Zhang, Yi Huang (China)	[E30256]
15:00-15:20	1E1-4	Crack identification of composite beam structure based on mechanism and data fusion	Liangliang Yang, *Zhuangzhuang Gong, Xiwang He, Peng Li, Xueguan Song (China)	[E30502]
15:20-15:40	1E1-5	Rapid prediction of structural thermal sources and temperature field based on physics and data co-driven approach under limited measuring points	*Hongze Du, Yufeng Bu, Qi Xu, Wenbo Li, Chenguang Zhang, Jun Yan (China)	[E30425]
1F1 Industrial applications				
				ID

Meeting room 7	Chairs:Yongtao Lyu(Dalian University of Technology), Takanori Chihara(Kanazawa University)		
14:00-14:20	1F1-1	Optimization of rear-view monitor installation height for reverse drive support of wheel loader	*Takanori Chihara, Hiroto Morita, Kento Ohmae, Toshihiko Komatsuzaki, Shigeaki Usui, Hirofumi Wada, Satoru Tokiwa, Shuichi Ohsawa (Japan) [F30341]
14:20-14:40	1F1-2	Design, optimization, and evaluation of novel TPMS-based bone scaffold with multi-functional pores for bone implant	*Yongtao Lyu, Yi Huo, Hangxing Zhu (China) [F40259]
14:40-15:00	1F1-3	Topology optimization design for degradable implants with coatings	Hao Sun, *Min Xiong, Heng Zhang, Xiaohong Ding (China) [F40424]
15:00-15:20	1F1-4	Integrating ADNM and MLP for on-device digital twin modeling in HVAC systems	*Nuri Kim, Yoojeong Noh, Young-Jin Kang, Noma Park, Soonyong Choi, Yoonjei Hwang (Korea) [F50504]
15:20-15:40	1F1-5	Back propagation neural network based prediction for shapes of a petal hole induced by hydrodynamic ram	*Wenwen Wang, Wentao Xu, Ya Zhang, Kerong Ren (China) [F10524]

17:00-17:20	1A2-4	Multi-resolution topology optimization method for composite structures with in-plane periodicity	*Wenke Qiu, Yinkang Zou, Shaohua Li, Liang Xia (China) [A10260]
17:20-17:40	1A2-5	Nonlinear topology optimization for prescribed deformed geometry using inverse motion analysis	*Zhirui Fan, Jun Yan, Qianqian Sui, Zhihui Liu, Xu Yin (China) [A10460]

1B2	Shape and Topology Optimization		ID
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Meeting room 2 Chairs:Haibo Chen (University of Science and Technology of China), Gil HoYoon (Hanyang University)

16:00-16:20	1B2-1	A multi-scale bi-material topology optimization approach for exterior vibro-acoustic interaction system	*Haibo Chen, Jialong Zhang, Xuefan Xiong (China) [B10273]
16:20-16:40	1B2-2	Ode-driven boundary penalization method combined with isogeometric analysis for structural topology and shape optimization	*Bo Xia, Hongyuan Ren, Yang Liu, Jianbin Du (China) [B40282]
16:40-17:00	1B2-3	Topology optimization for gas-particle flow: a finite difference approach to eulerian-eulerian modeling	*Chih-Hsiang Chen, Kentaro Yaji (Japan) [B70262]
17:00-17:20	1B2-4	A geometric post-processing method for metamaterial design results	*Hongyuan Ren, Bo Xia, Yang Liu, Xueqian Chen, Jianbin Du (China) [B20274]
17:20-17:40	1B2-5	Deep generative design for manufacturing: meeting the design constraints of casting and injection molding	*Jihoon Kim, Yongmin Kwon, Namwoo Kang (Korea) [B60560]

1C2	Design under Uncertainty		ID
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Meeting room 3 Chairs:Zeng Meng (Hefei University of Technology), Yoshihiro Kanno(The University of Tokyo), Dongjin Lee (Hanyang University)

16:00-16:20	1C2-1	Robust design optimization for char combustion in a biomass power plant	*Dongjin Lee, Yulin Guo, Boris Kramer (Korea) [C30563]
16:20-16:40	1C2-2	An improved maximum entropy method with polynomial fitting	*Yixuan Wang, Gang Li, Yan Zeng, Wanxin He (China) [C20275]
16:40-17:00	1C2-3	Reliability-based design optimization of inter-story viscous dampers using sensitivity analysis and kriging	*Mitsuru Murase (Japan) [C20319]

Monday, May 20 16:00-17:40			
1A2	Optimization Methods		ID
Meeting room 1	Chairs:Changting Zhong (Hainan University), Masao Arakawa (Waseda University)		
16:00-16:20	1A2-1	Starfish optimization algorithm (SFOA): a nature-inspired metaheuristic method by comparing 100 algorithms	*Changting Zhong, Gang Li, Zeng Meng, Haijiang Li, Ali Riza Yildiz, Seyedali Mirjalili (China) [A50295]
16:20-16:40	1A2-2	Grouping and explosions of PSO for large scale problems	*Masao Arakawa (Japan) [A50510]
16:40-17:00	1A2-3	Continuous filter method of topological control based on persistence homology	*Qianglong Wang, Chong Wang, Haitao Han, Tongxing Zuo, Zhenyu Liu (China) [A10297]

17:00-17:20	1C2-4	Probabilistic volume element model of 2D woven C/SiC composites considering copula dependence between strength and modulus	*Qiang Li, Gang Li, Qiang li(China)	[C10276]
1D2	Approximations, Surrogates, and Metamodeling			ID
Meeting room 5	Chairs:Manyu Xiao (Northwestern Polytechnical University), Ikjin Lee(Korea Advanced Institute of Science and Technology)			
16:00-16:20	1D2-1	Enhancing scalability in large-scale structural dynamics optimization through integrated reduced models	*Manyu Xiao, Jun Ma, Piotr Breitkopf, Weihong Zhang (China)	[D40320]
16:20-16:40	1D2-2	Multi-objective optimization for minimizing warpage and cycle time in plastic injection molding using pressure vibration	*Kenta Yamaya, Satoshi Kitayama, Yusuke Yamazaki, Yoshikazu Kubo, Yasuhiro Kitamura, Shuji Aiba (Japan)	[D20265]
16:40-17:00	1D2-3	Study on action-PINN to predict the behavior of the system having phase transition	*Semin Lee, Hayoung Chung (Korea)	[D30558]
17:00-17:20	1D2-4	Integrated optimization of variable-stiffness composite laminates under manufacturing constraints using multi-fidelity surrogate models	*ZhangYao Zheng, Haichao An, Teng Long (China)	[D20354]
17:20-17:40	1D2-5	Mixed-variable IPM motor design optimization using an RBF surrogate model	*Tatsuya Asanuma, Yoshihiro Kanno (Japan)	[D20317]
1E2	Optimization in Engineering Applications			ID
Meeting room 6	Chairs:HayoungChung (Ulsan National Institute of Science and Technology), Shutian Liu(Dalian University of Technology), Liang Xue (Yanshan University)			
16:00-16:20	1E2-1	NSH structure optimization using multi-fidelity modeling under manufacturing uncertainty	*Taemin Noh, Hyungdo Kim, Young-Jin Kang (Korea)	[E20498]
16:20-16:40	1E2-2	Designing mode shapes and chladni patterns with the eigenvectors-guided topology optimization method	*Liang Xue, Guilin Wen, Fengwen Wang, Niels L. Pedersen (China)	[E10307]

16:40-17:00	1E2-3	Experimental and numerical investigation on the optimizing turbulent heat transfer with staggered v-shaped pin fins minichannels heat sink	*Weibo Gu, Xiang Zhang, Bohan Zhang, Qisen Lin, Qian Li (China)	[E50525]
17:00-17:20	1E2-4	Optimization and manufacturing of lightweight metal additive manufacturing mirror	*Qianglong Wang, Chong Wang, Han Zhang, Luchao Cheng, Wenda Niu, Zhenyu Liu (China)	[E20298]
17:20-17:40	1E2-5	Multi-material topology optimization via stochastic discrete steepest descent multi-valued integer programming	Zeyu Deng*, Yuan Liang, Gengdong Cheng	[A10484]
1F2	Industrial applications			ID
Meeting room 7	Chairs:Yongtao Lyu(Dalian University of Technology), Takanori Chihara(Kanazawa University)			
16:00-16:20	1F2-1	Linearly approximated differentiable layout optimization of heat-generating components on one satellite cabin plate	*Xianqi Chen, Weien Zhou, Wen Yao, Yufeng Xia, Zhongneng Zhang (China)	[F10279]
16:20-16:40	1F2-2	Thermal design and optimization of metal-hydride hydrogen storage stack	*Tiange Chu, Lu Li, Ke Wang (China)	[F80534]
16:40-17:00	1F2-3	Three-field floating projection topology optimization of structures subjected to design-dependent inertial loads	*Zihao Meng, Yiru Ren (China)	[F10296]
17:00-17:20	1F2-4	Stress field prediction: UNet model integrated with focal net transformer	*Sania Shujaat, Ikjin Lee (Korea)	[F30332]
17:20-17:40	1F2-5	Satellite component assignment and layout optimization by combining differential evolution and mixed integer linear programming	*Yufeng Xia, Xianqi Chen, Weien Zhou, Wen Yao, Zhongneng Zhang (China)	[F10501]

Tuesday, May 21 8:30-9:50				
2A1	Optimization Methods			ID
Meeting room 1	Chairs: Gang-Won Jang (Sejong University), Hai Huang (Beihang University)			
8:30-8:50	2A1-1	Spring-connected rigid link model for topology optimization of linkage mechanisms	*Gang-Won Jang, Quang Dat Tran (Koera)	[B40321]
8:50-9:10	2A1-2	Topology optimization using quantum annealing-based optimizer	*Naruethep Sukulthanasorn, Junsen Xiao, Koya Wagatsuma, Shuji Moriguchi, Kenjiro Terada (Japan)	[A50366]
9:10-9:30	2A1-3	Topology optimization method of coated structure with non-uniform thickness coating	*Junfeng Gao, Kangjie Liu, Yongcun Zhang, Shutian Liu (China)	[A10416]
9:30-9:50	2A1-4	Structural topology optimization design method based on topology recognition and control	*Chong Wang, Tongxing Zuo, Qianglong Wang, Haitao Han, Zhiqi Wang, Zhenyu Liu (China)	[A10452]
2B1	Shape and Topology Optimization			ID
Meeting room 2	Chairs: Jun Yan (Dalian University of Technology), Kentaro Yaji (Osaka University)			
8:30-8:50	2B1-1	Toward data-driven morphogenesis—gradient-free topology optimization for complex problems	*Kentaro Yaji (Japan)	Keynote
9:00-9:20	2B1-2	Isotropic hybrid metamaterials inspired by topology optimization	*Yuping Han, Yaguang Wang, Zhan Kang (China)	B30375
9:20-9:35	2B1-3	A creative design approach for multiple output link mechanisms through topology optimization of a micropolar elasticity model	*Yurika Sayo, Takayuki Yamada (Japan)	B40281
9:35-9:50	2B1-4	Topology optimization of continuous fiber-reinforced polymers (CFRPs) structures considering the residual stress in additive manufacturing	*Yongjia Dong, Hongling Ye (China)	B10349

2C1	Design under Uncertainty			ID
Meeting room 3	Chairs: Dixiong Yang (Dalian University of Technology), Weifei Hu (Zhejiang University)			
8:30-8:50	2C1-1	Unified framework for uncertainty quantification and design optimization of static and dynamic structures	*Dixiong Yang, Guohai Chen (China)	[C20253]
8:50-9:10	2C1-2	Multi-target-reliability-based design optimization: a new RBDO method considering multiple target reliabilities simultaneously	Jiquan Yan, *Weifei Hu, Sichuang Cheng, Feng Zhao, Jianrong Tan (China)	[C20495]
9:10-9:30	2C1-3	An adaptive sampling strategy for interval bounds analysis of structures and cable-net antennas	*Naigang Hu, Baoyan Duan (China)	[C10329]
9:30-9:50	2C1-4	F-sensitivity analysis of type IV hydrogen cylinder based on PC-GK-SBL model	*Yiyuan Wang, Gang Li, Wanxin He, Qiang Li, Ye Liu (China)	[A20427]
2D1	Approximations, Surrogates, and Metamodeling			ID
Meeting room 5	Chairs: Masakazu Kobayashi (Toyota Technological Institute), Kyunghoon Lee (Pusan National University)			
8:30-8:50	2D1-1	Component-based aircraft wing reconfiguration and structural response prediction on the fly	Bongseok Kim, Shinseong Kang, *Kyunghoon Lee (Koera)	[D40377]
8:50-9:10	2D1-2	Optimization of chair comfort settings using design of experiment and response surface method	*Masakazu Kobayashi, Kenya Muraishi (Japan)	[D20455]
9:10-9:30	2D1-3	A data-driven bi-directional homogenization method for the design of multi-scale metamaterials	*Senlin Huo, Bingxiao Du, Yong Zhao, Xiaoqian Chen (China)	[B20411]
9:30-9:50	2D1-4	Unified bayesian framework of dynamic model order reduction and master DOFs selection	*Ting Liu, Ke Wang, Ce Huang (China)	[D40541]
2E1	Optimization in Engineering Applications			ID
Meeting room 6	Chairs: Xiang Li (China Three Gorges University), Satoshi Kitayama (Kanazawa University)			

8:30-8:50	2E1-1	Window size and sampling rate selection for cost-optimal deep learning-based fault diagnosis	*Hyeongmin Kim, Byeng D. Youn (Koera)	[E30562]
8:50-9:10	2E1-2	Cellular structure for reducing dynamic instability by using topology optimization	*Sol Ji Han, Gil Ho Yoon, Akihiro Takezawa (Koera)	[E60335]
9:10-9:30	2E1-3	Crashworthiness analysis of a novel bionic honeycomb structure based on variable cross-section design	*Xiang Li, Ningchuan Li, Yuechao Zhao, Qishuang Hu, Linjun Wang, Junjian Fu (China)	[E40413]
9:30-9:50	2E1-4	Dynamics analysis of an asymmetric bistable piezoelectric energy harvester with unilateral piecewise nonlinearity	*Jianhui Wang, Wei Wang (China)	[E70511]
2F1 Industrial applications				
Meeting room 7	Chairs: Ming Li (Dalian University of Technology), Sangho Kim (Konkuk University)			ID
8:30-8:50	2F1-1	Density-based multi-material topology optimization with length scale control and applications in aerospace structures	*Tong Gao, Longlong Song, Yang Li, Yongbin Huang, Weihong Zhang (China)	[F10380]
8:50-9:10	2F1-2	Topology optimization of lattice structure unit cell geometry in crash box design	*Jiung (Kevin) Choi, Lkjin Lee (Koera)	[F30333]
9:10-9:30	2F1-3	Multi-phase-based local search method considering steel cost for structural optimization of building frames	*Hiroyasu Miura, Toshihide Saka, Eisaku Nakamura, Nao Maekawa, Akihiro Kunisue, Kohei Ota, Makoto Yamakawa (Japan)	[F20358]
9:30-9:50	2F1-4	Morphological evaluation of arteriovenous fistula based on hemodynamic finite element simulation	*Ning Zhang, Yingzheng Lu, Zichen Yuan, Hongtao Zhang, Xiaofeng Wang, Yang Lu, Qian Li (China)	[F40550]

Tuesday, May 21 10:10-11:30				
2A2 Optimization Methods				
Meeting room 1	Chairs: Gang-Won Jang (Sejong University), Hai Huang (Beihang University)			
10:10-10:30	2A2-1	A cross-sectional type and topology optimization method for frames	*Hai Huang, Jiayi Fu (China)	[A10500]
10:30-10:50	2A2-2	A method for limiting structural topology in structural topology optimization	*Tongxing Zuo, Haitao Han, Qianglong Wang, Chong Wang, Zhenyu Liu (China)	[A10302]
10:50-11:10	2A2-3	Optimization design and experimental study of typical node of ship superstructure based on fatigue strength	*Xianyin Chen, Wei Xia, Haoran Zhang, Jiayin Mao (China)	[A10304]
11:10-11:30	2A2-4	A numerical method for shape optimization based on the hilbertian regularization with boundary integral formulation	*Kei Matsushima, Takayuki Yamada (Japan)	[A20444]
2B2 Shape and Topology Optimization				
Meeting room 2	Chairs: Jun Yan (Dalian University of Technology), Kentaro Yaji (Osaka University)			
10:10-10:30	2B2-1	Intelligent design of topology optimization considering physics-related information	*Jun Yan, Qi Xu, Dongling Geng, Qi Zhang (China)	[B60351]
10:30-10:50	2B2-2	Loopwise route representation-based topology optimization for vehicle routing problems	*Geunu Kim, In Gwun Jang (Koera)	[B40559]
10:50-11:10	2B2-3	Explicit topology optimization of the large deforming multi-material composite structures	*Byeonghyeon Goh, Zongliang Du, Hayoung Chung (Koera)	[B40557]
11:10-11:30	2B2-4	Multi-objective PSO driven by DEA	*Siwen Xu, Masao Arakawa (Japan)	[A40343]
2C2 Design under Uncertainty				
Meeting room 3	Chairs: Zeng Meng (Hefei University of Technology), Naigang Hu (Xidian University)			

10:10-10:30	2C2-1	Bubble sampling method for system reliability analysis of complex engineering structure	*Zeng Meng, Changquan Li (China)	[C20388]
10:30-10:50	2C2-2	Modified constrained bayesian optimization algorithms for efficient structural reliability analysis	*Jingwen Song, Pengfei Wei, Weihong Zhang (China)	[C20362]
10:50-11:10	2C2-3	A metaheuristic data-driven probability uncertainty analysis method based on the B-spline theory and the maximum entropy method	*Wanxin He, Gang Li (China)	[C20312]
11:10-11:30	2C2-4	Model updating based on bayesian theory and improved objective function	*Wanhua Yan (China)	[A10572]
2D2	Approximations, Surrogates, and Metamodeling			ID
Meeting room 5	Chairs: Masakazu Kobayashi (Toyota Technological Institute), Heng Zhang (University of Shanghai for Science and Technology)			
10:10-10:30	2D2-1	Machine-learning assisted bionic topology optimization method for free-vibrating continuum Structures	Sen Kong, Xiaohong Ding,*Heng Zhang,Min Xiong (China)	[B60420]
10:30-10:50	2D2-2	Data-driven multifidelity topology design with persistent homology-based selection strategy	*Taisei Kii, Kentaro Yaji, Hiroshi Teramoto, Kikuo Fujita (Japan)	[B60456]
10:50-11:10	2D2-3	Large-scale and high-performance parallel topology optimization based on problem independent machine learning(PIML)	*Xinyu Ma (China)	[B50518]
11:10-11:30	2D2-4	Accelerating topology optimization via graph neural network for design domain with unstructured meshes	*Hyogeun Park, Seunghun Lee, Minsik Seo, Seungjae Min (Koera)	[B60553]
2E2	Optimization in Engineering Applications			ID
Meeting room 6	Chairs: Xiang Li (China Three Gorges University), Satoshi Kitayama (Kanazawa University)			
10:10-10:30	2E2-1	DL-based inverse design framework: a case study of a defective phononic crystal for narrowband filtering	*Donghyu Lee, Soo-Ho Jo, Byeng D. Youn (Koera)	[E40342]

10:30-10:50	2E2-2	Machine-learning-based asymptotic homogenisation and localisation considering boundary layer effects	*Xiwei Pan, Zhengcheng Zhou, Chuang Ma, Shaoshuai Li1, Yichao Zhu (China)	[E50338]
10:50-11:10	2E2-3	Damage identification with structural elastography method considering the coupling effect of stiffness and mass	*Junjian Fu, Tiechuan Peng, Xiang Li, Xiangman Zhou, Ran Li (China)	[E30361]
11:10-11:30	2E2-4	Topological communication network optimization for distributed cooperative vibration control of truss structure	*Zihan Fu, Shenyang Chen (China)	[E60407]
2F2	Industrial applications			ID
Meeting room 7	Chairs: Tong Gao (Northwestern Polytechnical University), Ming Li (Dalian University of Technology)			
10:10-10:30	2F2-1	Wrinkle-free membranes with optimized holes	*Ming Li, Heng Gao (China)	[F10284]
10:30-10:50	2F2-2	Stacking optimization of drop-off laminated composites under empirical stacking constraints and programmatic visualization for FEM analysis verification	*Yuki Ishikawa, Nozomu Kogiso (Japan)	[F10373]
10:50-11:10	2F2-3	Aerodynamic/propulsion/trajectory integrated optimization research for intelligent missiles	Hua Su, *Songyu Liu, Tengfei Zhang, Licong Zhang, Qi Liu, Junmin Zhao, Chunlin Gong (China)	[F10402]
11:10-11:30	2F2-4	Topology optimization of LSM-YSZ cathode for solid oxide fuel cells via multiphase level-set method	*Miaomiao Gao, Mingyuan Wang (China)	[F80537]

Tuesday, May 21 14:00-15:20				
2A3	Optimization Methods			ID
Meeting room 1	Chairs: Yamin Li (Northwestern Polytechnical University), Hongling Ye (Beijing University of Technology)			
14:00-14:20	2A3-1	Concurrent optimization method of principal stress orientation interpolated continuous fiber angle and structural topology	*Hongling Ye, Yongjia Dong (China)	[B30403]
14:20-14:40	2A3-2	Discrete adjoint system for topology optimization of rarefied gas considering specular boundary reflection condition	*Kaiwen Guan, Takayuki Yamada (Japan)	[A20350]
14:40-15:00	2A3-3	A new gradient infill structure generation method for multi-axis printing	*Yamin Li (China)	[E20567]
15:00-15:20	2A3-4	The crashworthiness prediction and optimization for shrink circular tube energy-absorbing structures based deep learning	*Jiaxing He, Jie Xing, Bo Wang, Xin Zheng, Anqi Shu (China)	[A40331]
2B3	Shape and Topology Optimization			ID
Meeting room 2	Chairs: Makoto Ohsaki (Kyoto University), Jun Tie (Tianjin University of Finance and Economics)			
14:00-14:20	2B3-1	Non-parametric structural shape optimization of piecewise developable surfaces using discrete differential geometry	*Makoto Ohsaki, Kentaro Hayakawa, Jingyao Zhang (Japan)	[B40314]
14:20-14:40	2B3-2	Semigroup structure and properties of some kinds of mappings in structural topology optimization ICM method with a novel filter scheme	*Jun Tie, Yunkang Sui, Xirong Peng, Hongling Ye (China)	[A10313]
14:40-15:00	2B3-3	Topology optimization for particle control considering particle-structure contact	*Young Hun Choi, Gil Ho Yoon (Koera)	[B40334]
15:00-15:20	2B3-4	Data-driven multifidelity approach for stress-based topology optimization	*Misato Kato, Taisei Kii, Kentaro Yaji, Kikuo Fujita (Japan)	[B60483]

2C3	Design under Uncertainty			ID
Meeting room 3	Chairs: Jian Zhang (Northwestern Polytechnical University), Weifei Hu (Zhejiang University)			
14:00-14:20	2C3-1	Reliability analysis of high-dimensional complex structures using combined dimension reduction and adaptive sparse polynomial chaos expansion	*Jian Zhang, Donghui Hao, Xinxin Yue, Lei Chen (China)	[C20487]
14:20-14:40	2C3-2	Uncertainty quantification of aerodynamic characteristics of wind turbine blade airfoils considering dynamic stall using bayesian calibration	*Weifei Hu, Shengjun Wang, Tongzhou Zhang, Jianrong Tan (China)	[C10496]
14:40-15:00	2C3-3	Reliability-based topology Optimization under stress and displacement constraints with high accuracy	*Qiaochu Qian, Zeng Meng (China)	[C20359]
15:00-15:20	2C3-4	Multi-objective optimization design of the automotive battery packs with fiber metal laminates based on kriging model	*Yang Ni, Gang Li (China)	[F30315]
2D3	Approximations, Surrogates, and Metamodeling			ID
Meeting room 5	Chairs: Heng Zhang (University of Shanghai for Science and Technology), Kazuo Yonekura (The University of Tokyo)			
14:00-14:20	2D3-1	Ship hull form design synthesis using generative adversarial network	*Kazuo Yonekura, Xinran Qi, Katsuyuki Suzuki (Japan)	[B60453]
14:20-14:40	2D3-2	Developing efficient prediction models with advanced feature engineering and tailored evaluation metrics for limited performance data	*Jaehyun Jung, Young-Jin Kang, Ju Chan Yuk, Suk Hee Park, Han Kim, Byungju Min, Yoojeong Noh (Koera)	[D30570]
14:40-15:00	2D3-3	AI-assisted topology optimization of the impact-resistant structures	*Chunpeng Wang, Yanping Lian (China)	[B60419]
15:00-15:20	2D3-4	Accelerating topology optimization using MOR	*Kazusuke Chin, Kazuo Yonekura, Shun Ogawa, Katsuyuki Suzuki	[D20491]
2E3	Optimization in Engineering Applications			ID
Meeting room 6	Chairs: Xiang Li (China Three Gorges University), Satoshi Kitayama (Kanazawa University)			

14:00-14:20	2E3-1	Optimizing the mechanical properties of a novel lattice structure	*Cem Guzelbulut, Katsuyuki Suzuki (Japan)	[E40404]
14:20-14:40	2E3-2	Topology optimization on a distribution of multiple types of miniaturized dynamic vibration absorbers for damping of multiple vibration modes of a flat plate	*Jun Iwasaki, Riku Yoneoka, Akihiro Takezawa, Yuya Saito, Takeshi Matsuoka, Takahiro Komamura, Naoyuki Uchida and Masanari Nakayama (Japan)	[E60357]
14:40-15:00	2E3-3	Multiscale shape optimization method for natural vibration design of porous structures	*Ayu Kamiya, Masatoshi Shimoda (Japan)	[E50378]
15:00-15:20	2E3-4	Physics-guided neural network for nonsmooth dynamic problems	Zilin Li, Jinshuai Bai, *Feifan Zhang, Ronghan Wei, Yuantong Gu (China)	[E10507]
2F3	Industrial applications			ID
Meeting room 7	Chairs: Tong Gao (Northwestern Polytechnical University), Sangho Kim (Konkuk University)			
14:00-14:20	2F3-1	Drone noise prediction model based on experimental data	*Sangho Kim, Dahui Choi, Jaeuk Bae, Juhyun Lee, Youngrok Son (Koera)	[F10543]
14:20-14:40	2F3-2	Smooth distribution for deep learning in optimum design of 3D building frames	*Wakana Matsumoto, Makoto Yamakawa, Kohei Ota (Japan)	[F20522]
14:40-15:00	2F3-3	Maximization of fundamental frequency for small satellite components layout	*Wei Cong, Bingxiao Du, Yong Zhao, Xiaoqian Chen (China)	[F10437]
15:00-15:20	2F3-4	Parameterized level set method based topology optimization of solid-shell coupling structures	*Haoran Wu, Dingkun Chen, Peng Wei (China)	[F20408]

Wednesday, May 22 8:30-9:50				
3A1	Optimization Methods			ID
Meeting room 1	Chairs: Xiaodong Huang (Swinburne University of Technology), Kun Yan (Dalian University of Technology)			
8:30-8:50	3A1-1	Design of topological insulators by maximizing acoustic bandgap width	*Xiaodong Huang, Weibai Li (China)	[B20347]
8:50-9:10	3A1-2	Topology optimization design of natural convection heat sinks using a darcy flow model incorporating pseudo-boundary layer	*Kaito Ohtani, Kentaro Yaji, Kikuo Fujita (Japan)	[B70383]
9:10-9:30	3A1-3	An efficient GPU solver for 3D large-scale topology optimization of continuous fiber-reinforced composite structures	*Tianyuan Qi, Junpeng Zhao, Chunjie Wang (China)	[A30503]
9:30-9:50	3A1-4	Topology optimization of Shell-infill structures considering thermomechanical buckling	*Chuang Wei, Hongjiang Mao, Mingdong Zhou (China)	[B70415]
3B1	Shape and Topology Optimization1			ID
Meeting room 2	Chairs: Junji Kato (Nagoya University), Zongliang Du (Dalian University of Technology)			
8:30-8:50	3B1-1	Multi-material topology optimization based on viscoelastic dynamic structural response	*Junji Kato, Takumi Sugiura, Norihiko Kaga, Kotaro Hayakawa, Hiroshi Kadowaki, Hiroya Hoshiba, Koji Nishiguchi (Japan)	[B30431]
8:50-9:10	3B1-2	A multi-objective topology optimization approach based on the modified hypervolume increment	*Zheng Li (Japan)	[B40278]
9:10-9:30	3B1-3	Deep learning-based topology optimization for shortest path problems.	*Jeonghun Kim, Geunu Kim, In Gwun Jang (Korea)	[B60337]
9:30-9:50	3B1-4	Large-scale topology optimization of anisotropic acoustic metamaterials	*Nari Nakayama, Kozo Furuta, Kazuhiro Izui, Shinji Nishiwaki (Japan)	[B20544]

3C1	Shape and Topology Optimization2		ID
Meeting room 3	Chairs: Zunyi Duan (Northwestern Polytechnical University), Shutian Liu (Dalian University of Technology)		
8:30-8:50	3C1-1	Topology optimization method for vibrating structures and phononic crystals with prescribed frequency forbidden bands	Qiangbo Wu ,Quhao Li, *Shutian Liu (China) [B10429]
8:50-9:10	3C1-2	An Interactive design method with topology optimization	Peng Wei, *Jinjia Liu (China) [B40448]
9:10-9:30	3C1-3	A general approach for multi-scale numerical shape function construction and its application in topology optimization	*Mingshuo Zhang, Yuan Liang, Gengdong Cheng(China) [B10450]
9:30-9:50	3C1-4	A fluid topology optimization method considering interface element cutting and normal velocity constraint	*Chong Wang, Yuan Liang, Zhiqi Wang, Zhenyu Liu, Gengdong Cheng (China) [B70470]
3D1	Approximations, Surrogates, and Metamodeling		ID
Meeting room 5	Chairs: Xiaogang Wang (Hunan University), Yoojeong Noh (Pusan National University)		
8:30-9:00	3D1-1	Strength and life assessment of mechanical structures: from physics-of-failure to reliability design	Xiaogang Wang Keynote
9:00-9:20	3D1-2	Discovering interpretable latent factors in multiobjective topology optimization by using an encoder-decoder model	*Ryo Tsumoto, Kentaro Yaji, Yutaka Nomaguchi, Kikuo Fujita (Japan) [B60387]
9:20-9:35	3D1-3	Development of surrogate optimization driven by PCA-RBFN	*Jingyi Qiao, Masao Arakawa (Japan) [D20266]
9:35-9:50	3D1-4	Large-scale three-dimensional non-uniform shell-graded-infill structure optimization based on problem-independent machine learning and partitioned coordinate mapping under explicit topology optimization framework	*Xianglong Cao, Wu Xu, Chang Liu (China) [B40538]
3E1	Optimization in Engineering Applications		ID

Meeting room 6	Chairs: Masatoshi Shimoda (Toyota Technological Institute), Feifan Li (Northwestern Polytechnical University)			
8:30-8:50	3E1-1	Combined anisotropic and cyclic constitutive model for laser powder bed fusion fabricated aluminum alloy	*Feifan Li (China)	[E20568]
8:50-9:10	3E1-2	Topology optimization of periodic lattice structures for specified mechanical properties using machine learning considering member connectivity	*Tomoya Matsuoka, Makoto Ohsaki, Kazuki Hayashi (Japan)	[B60370]
9:10-9:30	3E1-3	Topology optimization of rotor machines based on energy conservation law in fluid machines	*Takamitsu Sasaki, Tsuguo Kondoh, Kisho Hatakenaka, Akira Kubo, Kozo Furut, Kazuhiro Izui, Shinji Nishiwaki (Japan)	[B50389]
9:30-9:50	3E1-4	EMsFEM-based data-driven multiscale optimization of graded lattice structures with multiple microstructure configurations	*Xinglong Chen, Hui Liu, Peng Wei (China)	[B10392]
3F1	Industrial applications			ID
Meeting room 7	Chairs: Yohei Yokosuka (Kagoshima University), Yahui Zhang (Dalian University of Technology)			
8:30-8:50	3F1-1	Neural networks as surrogate models structural optimization of steel frames using classifiers	Yamato Ishimoto, *Yohei Yokosuka (Japan)	[F20391]
8:50-9:10	3F1-2	Multi-material topology optimization of high-aspect-ratio wing considering geometrical nonlinearity with deformation controls	*Longlong Song, Tong Gao, Yongbin Huang, Yang Li, Pingchu Fang, Weihong Zhang (China)	[F10344]
9:10-9:30	3F1-3	Optimisation of laser cutting process parameters for TC4 titanium alloy	*Ya Zhang, Wentao Xu, Wenwen Wang, Chunyu Wang, Xianfeng Zhang (China)	[F10512]
9:30-9:50	3F1-4	Optimal design on the cross-section shape of disc spring based on quasi-zero stiffness characteristic	*Junshan Zhu, Dazhou Sun, Xiao Han, Chengwei Wu (China)	[F80324]

Wednesday, May 22 10:10-11:30			
Meeting room 1			
3A2	Optimization Methods		ID
Chairs:Xiaodong Huang (Swinburne University of Technology), Pai Liu (Dalian University of Technology)			
10:10-10:30	3A2-1	A form-finding design method for tensegrity structures based on ADMM algorithm	[B30423]
10:30-10:50	3A2-2	Topology optimization of hyperelastic periodic microstructures based on inverse motion and nonlinear homogenization	[B10286]
10:50-11:10	3A2-3	Simultaneous optimization design of shell structural topology and supports for dynamic performance improvement	[B40539]
11:10-11:30	3A2-4	Multi-material structural topology optimization with material interfacial stress constraints	[A10330]
Meeting room 2			
3B2	Shape and Topology Optimization1		ID
Chairs:Junji Kato(Nagoya University),Zongliang Du (Dalian University of Technology)			
10:10-10:30	3B2-1	Generative design of diverse optimized structures with controllable complexities	[B60516]
10:30-10:50	3B2-2	Topology optimization of transient response problems using automatic differentiation	[B40386]
10:50-11:10	3B2-3	Isogeometric topology optimization of Kirchhoff-Love shell structures using phase field model	[B40288]
11:10-11:30	3B2-4	On the formulation of topology optimization for finite strain elastoplastic materials using continuous adjoint method	[B30264]

3C2	Shape and Topology Optimization2		ID
Meeting room 3			
Chairs:Shutian Liu (Dalian University of Technology), Kentaro Yaji (Osaka University)			
10:10-10:30	3C2-1	Variable stiffness design optimization of composite laminates based on modified adaptive normal distribution fiber optimization interpolation scheme with minimizing structural compliance	[B10280]
10:30-10:50	3C2-2	Data-driven topology design for a turbulence problem finalized by shape optimization	[B60461]
10:50-11:10	3C2-3	Topology optimization based on peridynamics for the fracture resistance	[A10476]
11:10-11:30	3C2-4	Inverse motion analysis-based topology optimization design of elastic structures with desirable output forces	[B30465]
Meeting room 5			
3D2	Approximations, Surrogates, and Metamodeling		ID
Chairs:Xiaogang Wang (Hunan University), Makoto Yamakawa (Tokyo University of Science)			
10:10-10:30	3D2-1	Developing prediction models for washing machine performance: advanced feature engineering and tailored evaluation metrics for limited data	[D30573]
10:30-10:50	3D2-2	Real-time topology optimization based on principal stress information	[B60353]
10:50-11:10	3D2-3	A parameterized stiffener layout optimization method based on radial basis functions	[B40482]
11:10-11:30	3D2-4	Problem-independent machine learning enhanced large-scale topology optimization	[B60521]
Meeting room 6			
3E2	Optimization in Engineering Applications		ID
Chairs:Masatoshi Shimoda (Toyota Technological Institute), Fei-Fan Li (Northwestern Polytechnical University)			

10:10-10:30	3E2-1	Machine-learning-based asymptotic homogenisation/localisation and design of spatially-varying lattice configurations	*Yichao Zhu(China)	[E50328]
10:30-10:50	3E2-2	Research on concrete spalling mechanism and parameter optimization under fire and firewater	*Xinke Wang, Ke Wang, Tianshui Liang (China)	[E50529]
10:50-11:10	3E2-3	Optimization of micro-shell structures in 3D macrostructure	*Rina Nagai, Masatoshi Shimoda (Japan)	[E50449]
11:10-11:30	3E2-4	An interlocking joints generation method for multi-component topology optimization in two dimensions	*Yukun Feng, Takayuki Yamada (Japan)	[E20325]
3F2	Industrial applications			ID
Meeting room 7	Chairs:Yohei Yokosuka(Kagoshima University), Yahui Zhang (Dalian University of Technology),KentaroYaji(Osaka University)			
10:10-10:30	3F2-1	Optimization of the shape memory alloy-based hybrid structures: design and test of the self-actuating serrated nozzles in aircraft engines	*Yahui Zhang, Zeying Yang, Yang Wang, Jihong Zhu, Weihong Zhang(China)	[E70564]
10:30-10:50	3F2-2	Layout design of hybrid core sandwich panel considering penetration constraints and maximum size constraints via multi-material topology optimization	*Yongbin Huang, Tong Gao, Longlong Song, Yang Li, Pingchu Fang, Weihong Zhang (China)	[F10369]
10:50-11:10	3F2-3	Topology optimization of in-wheel motor with halbach array	*Taehoon Jung, Jaewook Lee (Korea)	[F50363]
11:10-11:30	3F2-4	Topology optimization design of the replacement for a damaged cooling fan fabricated via additive manufacturing	*Xiwen You, Tong Gao, Weihong Zhang (China)	[F10367]

Wednesday, May 22 14:00-15:40

3A3	Optimization Methods		ID
Meeting room 1	Chairs:Kun Yan (Dalian University of Technology), Pai Liu (Dalian University of Technology)		
14:00-14:20	3A3-1	Fundamental study on curve-fitting topology optimization of hyperelastic microstructures considering numerical stabilization	*Tomoaki Shimada,Yuya Okuda, Daiki Watanabe, Hiroya Hoshiba, Koji Nishiguchi, Junji Kato (Japan) [B30352]
14:20-14:40	3A3-2	Topology optimization of microchannel with rib geometry	*Hithaish Doddamani,Ryotaro Ikematsu, Kentaro Yaji (Japan) [B70517]
14:40-15:00	3A3-3	Integrated topology and size optimization for frame structures considering overall mechanical requirements	*Lei Zhao, Jiabin Zheng, Jinhua Cai, Zhijun Zhao, Jijun Yi, Jianhua Rong (China) [B40401]
15:00-15:20	3A3-4	Structural topology optimization method with beam features of multiple cross-sections	*Jie Wang, Weihong Zhang(China) [B40400]
15:20-15:40	3A3-5	A novel explicit design method for complex thin-walled structures based on embedded solid moving morphable components	*Wendong Huo, Chang Liu, Xu Guo(China) [A10523]
3B3	Shape and Topology Optimization1		ID
Meeting room 2	Chairs:Zheng Li (Dalian University of Technology), Junji Kato(Nagoya University)		
14:00-14:20	3B3-1	An integrated isogeometric analysis framework for buckling optimization of grid-stiffened shells utilizing asymptotic homogenization and rayleigh-ritz methods	*Yu Sun (China) [B10479]
14:20-14:40	3B3-2	Topology optimization to maximize nonlinear buckling load factor with stress and stiffness constraints	*Keisuke Imoto, Hiroya Hoshiba, Hisao Uozumi, Koji Nishiguchi, Junji Kato (Japan) [B40348]

14:40-15:00	3B3-3	A dynamic structural optimization method with approximate dynamic response sensitivity using equivalent static loads	*Delin Cao, Yan Zeng, Gang Li (China)	[D20322]
15:00-15:20	3B3-4	An ODE-driven boundary penalization method	*Yang Liu, Hongyuan Ren, Bo Xia, Jianbin Du (China)	[B40293]
15:20-15:40	3B3-5	A BIM-based collaborative framework for integrating multi-domain assessment in the design of disaster prevention structures	*Lini Xiang, Gang Li, Haijiang Li (China)	[B40497]
3C3		Shape and Topology Optimization2		ID
Meeting room 3	Chairs:Chang Liu (Dalian University of Technology), Kentaro Yaji (Osaka University)			
14:00-14:20	3C3-1	Explicit optimization design of complex thin-walled structures based on computational conformal Mmapping and moving morphable component approach	*Chang Liu, Xu Guo (China)	[B40513]
14:20-14:40	3C3-2	Multiobjective shape optimization of self-contacting structures	*Mai Morikawa, Masatoshi Shimoda (Japan)	[B40463]
14:40-15:00	3C3-3	Adhesion reduction at solid/liquid interfaces by using topologically optimized micro-textures	*Zhen Li, Yongbo Deng(China)	[B20509]
15:00-15:20	3C3-4	A velocity field level set topology optimization under stress constraints	*Wei Cheng, Yaguang Wang , Xiaopeng Zhang (China)	[B40493]
15:20-15:40	3C3-5	Design of graded stochastic cellular structure based on the homogenization method	*Lianxiong Chen, Hui Liu(China)	[B10548]
3D3		Approximations, Surrogates, and Metamodeling		ID
Meeting room 5	Chairs:Bin Niu (Dalian University of Technology), Makoto Yamakawa (Tokyo University of Science)			
14:00-14:20	3D3-1	Data-driven topology optimization of spatially varying cellular structures	*Bin Niu, Hongchao Zhang , Detian Tie , Siyuan Xu (China)	[B60434]

14:20-14:40	3D3-2	Functionally graded heat sink design based on data-driven multiscale topology optimization	**Shun Noguchi, Naoyuki Ishida, Ayami Sato, Haruki Motegi, Takahiro Shimada, Shinji Nishiwaki, Kazuhiro Izui (Japan)	[B10360]
14:40-15:00	3D3-3	Data-driven topology design incorporating pix2pix with fragmentation learning	*Yusibo Yang, Ryuichiro Hashimoto, Kentaro Yaji*, Shintaro Yamasaki, Kikuo Fujita (Japan)	[B60385]
15:00-15:20	3D3-4	Evaluating generalization performance of boundary-informed cGANs for continuum topology optimization	*On Takahashi, Kazuki Hayashi , Makoto Ohsaki (Japan)	[B60438]
15:20-15:40	3D3-5	Machine learning enhanced high-precise multiresolution discrete variable topology optimization method	*Yuan Liang, Mingshuo Zhang, Mengcheng Huang, GengdongCheng, Xu Guo (China)	[B10474]
3E3		Optimization in Engineering Applications		ID
Meeting room 6	Chairs:Masatoshi Shimoda (Toyota Technological Institute), Yichao Zhu (Dalian University of Technology)			
14:00-14:20	3E3-1	A Shell-lattice pipeline-crawling soft robot	*Di Guo,Yiqiang Wang, Zhan Kang(China)	[E40574]
14:20-14:40	3E3-2	Actuator placement optimization for vibration control of large truss structure aiming at robustness	*Kaiwen Quan, Shenyan Chen(China)	[E60418]
14:40-15:00	3E3-3	Topology and orientation optimization of fiber-reinforced composites with coexisting orthogonal orientations and their experimental validation	*Saito Ishiue, Akihiro Takezawa, Tsuguo Kondoh (Japan)	[E20526]
15:00-15:20	3E3-4	Energy absorption of thin-walled tubes with a prefolded origami-inspired structure	*Xin Chen (China)	[F30336]
15:20-15:40	3E3-5	Topology optimization design of frictional steel truss coupling Beam	Yao Cui, *Haoyang Wang, Jindian Hu, Xiaowei Deng, Senbin Huang (China)	[F20390]

3F3	Industrial applications		ID
Meeting room 7	Chairs:Yahui Zhang (Dalian University of Technology), KentaroYaji (Osaka University)		
14:00-14:20	3F3-1	Realization of square cell periodic structure with negative thermal expansion coefficient by multi-material topology optimization based on topological derivatives of thermal strain	*Masaki Noda, Takayuki Yamada (Japan) [B30368]
14:20-14:40	3F3-2	Uniform multiple laminates interpolation (UMLI) method for angle optimization of double-double (DD) composite laminates based on multi-material topology optimization strategy	*Pingchu Fang, Tong Gao, Dan Wang, Weihong Zhang (China) [B30310]
14:40-15:00	3F3-3	Multi-physical invisibility cloak design based on explicit topology optimization and compatible boundary conditions	*Xubing Cheng, Zongliang Du, Chang Liu, Xu Guo (China) [B20531]
15:00-15:20	3F3-4	Integrated optimization of piezo-embedded compliant structures considering fundamental frequency constraints	*Mingze Wang, Jingyu Hu, Yunfeng Luo, Shutian Liu (China) [B30492]
15:20-15:40	3F3-5	Topology optimization for all-solid-state-batteries considering a conductive additive	*Naoyuki Ishida, Kozo Furuta, Masashi Kishimoto, Kazuhiro Izui, Hiroshi Iwai, Shinji Nishiwaki (Japan) [F70442]

Wednesday, May 22 16:00-17:20			
3A4	Optimization Methods		ID
Meeting room 1	Chairs:Xiaodong Huang (Swinburne University of Technology), Pai Liu (Dalian University of Technology)		
16:00-16:20	3A4-1	Structural topology optimization considering uniformity of normal deformation	*Dihuan Wu, Tong Gao (China) [A10457]
16:20-16:40	3A4-2	Topology optimization method for vibrating structures and phononic crystals with prescribed frequency forbidden bands	*Qiangbo Wu, Quhao Li, Shutian Liu (China) [A10488]
16:40-17:00	3A4-3	Fast frequency response topology optimization for viscoelastic structures based on high order Krylov subspace method	*Yongxin Qu, Quhao Li (China) [A10475]
3B4	Shape and Topology Optimization1		ID
Meeting room 2	Chairs:Zheng Li (Dalian University of Technology), Junji Kato(Nagoya University)		
16:00-16:20	3B4-1	Bridging topological results and thin-walled frame structures considering manufacturability	*Jiantao Bai, Wenjie Zuo (China) [B40306]
16:20-16:40	3B4-2	A novel topology optimization method of natural frequency of grid Plate vibration isolation structure based on moving morphable components method	*Jinhang Zhou, Yan Zeng, Gang Li (China) [B40308]
16:40-17:00	3B4-3	Stabilized time-series moving morphable components method for topology optimization	*Xueyan Hu, Zonghao Li, Weiqiu Chen (China) [B40309]
3C4	Shape and Topology Optimization2		ID
Meeting room 3	Chairs:Chang Liu (Dalian University of Technology), Junpeng Zhao(Beihang University)		

16:00-16:20	3C4-1	A high-resolution topology optimization framework for composite structures with spatially varying fiber orientations	*Junpeng Zhao, Tianyuan Qi, Chunjie Wang (China)	[B30486]
16:20-16:40	3C4-2	Topology optimization method with variable design method	*Daiki Yamane, Masatoshi Shimoda (Japan)	[B40462]
16:40-17:00	3C4-3	Design optimization of vibrating lattice plate structures	*Haotian Wang, Bin Niu (China)	[B10436]
3D4	Approximations, Surrogates, and Metamodeling			ID
Meeting room 5	Chairs:Bin Niu(Dalian University of Technology), Yoojeong Noh (Pusan National University)			
16:00-16:20	3D4-1	Problem-independent machine learning enhanced high-fidelity stress calculation method for discrete variable topology Optimization	*Zhenzeng Lei,Yuan Liang, Dixiong Yang (China)	[A10249]
16:20-16:40	3D4-2	Shape and topology optimization of truss structure using design variable reduction strategies	*Lidong Zhu,Jingyao Zhang (Japan)	[B40374]
16:40-17:00	3D4-3	Generating solutions for laplace equations by using physics-guided generative adversarial networks	*Zoho Gi,Katsuyuki Suzuki, Kazuo Yonekura (Japan)	[B60480]
3E4	Optimization in Engineering Applications			ID
Meeting room 6	Chairs:MasatoshiShimoda (Toyota Technological Institute), Yichao Zhu (Dalian University of Technology)			
16:00-16:20	3E4-1	Basic study of topology optimization of three dimensional phononic crystals with band gap in high frequency range	*Naoki Murai, Takayuki Yamada (Japan)	[E40318]
16:20-16:40	3E4-2	A novel lamination sintering method to prepare TiC particle-reinforced titanium matrix composites with different C content	*Ning Wan,Yongbum Choi, Kazuhiro Matsugi (Japan)	[F10468]
16:40-17:00	3E4-3	Optimal design of lattice structures in composites for maximization of shear stiffness	*Kenta Imanishi,Hiroya Hoshiba, Hiroki Ogura, Koji Nishiguchi , Junji Kato (Japan)	[E20439]

3F4	Industrial applications			ID
Meeting room 7	Chairs:Yohei Yokosuka (Kagoshima University), KentaroYaji (Osaka University)			
16:00-16:20	3F4-1	Topology optimization of the 3D heat conduction structure via the adaptive feature-driven method	*Qianqian Zhang , Shouyu Cai , Yuxin Sun, Ke Wang (China)	[B40545]
16:20-16:40	3F4-2	EMsFEM based concurrent topology optimization method for hierarchical structure with multiple substructures	*Yunfei Liu,Ruxin Gao, Ying Li, Daining Fang (China)	[B10555]
16:40-17:00	3F4-3	Discrete topology optimization of non-proportionally damped structures under harmonic excitation	*Zhihao Ou (China)	[F20426]
17:00-17:20	3F4-4	Multiscale topology optimization of coated structures with multiple self-connected infilling microstructures	*Tiannan Hu, Yaguang Wang, Kozo Furuta, Kazuhiro Izui, Shinji Nishiwaki (Japan)	[B10379]