

ICCM2022 Handbook

The 13th International Conference on Computational Methods

Virtual Conference

25th-28th July 2022

Chairman: Nguyen-Xuan Hung
Honorary Chairman: Guirong Liu

1. WELCOME MESSAGE

Dear Colleagues and Friends,

It is with great pleasure that we welcome you to the 13th International Conference on Computational Methods (ICCM2022) which will be held online via Zoom from July 25 to July 28, 2022, by Ho Chi Minh University of Technology (HUTECH), Vietnam.

The ICCM is an international conference which has been serving as an important forum for exchanging ideas on recent advances in areas related to the computational methods and the numerical modeling of both man-made and natural systems. The conference offers presentations for a wide range of topics to facilitate the exchange of ideas from multiple disciplines and foster academic collaborations. Publications, which have been peer-reviewed and accepted, will be showcased through oral presentations at the conference. All presentations, including abstracts and papers, will be published on our conference website. The online presentation schedule will be posted on the website one week before the conference.

The ICCM conference series were originated in Singapore in 2004, followed by ICCM2007 in Hiroshima, Japan; ICCM2010 in Zhangjiajie, China; ICCM2012 in Gold Coast, Australia; ICCM2014 in Cambridge, England; ICCM2015 in Auckland, New Zealand; ICCM2016 in Berkeley, CA, USA; ICCM2017 in Guilin, China; ICCM2018 in Rome, Italy; ICCM2019 in Singapore; ICCM2020, ICCM2021 and ICCM2022 on the cloud.

We would like to express our appreciation to all members of the Organizing Committee, the International Scientific Committee, and all supporters who have been working tirelessly to make this conference possible. Also, we would like to thank the international reviewers for their meticulous work on reviewing the submitted abstracts and papers. Finally, we would like to thank you for your contribution to the ICCM conferences.

We look forward to welcoming you to the ICCM2022 and we hope to have your continued engagement for future ICCM conferences.

Professor Hung Nguyen-Xuan
Conference Chairman
CIRTECH Institute, HUTECH University
President of Vietnam Association of Computational Mechanics
Vietnam

Professor Guirong Liu
Honorary Conference Chairman
University of Cincinnati
USA

2. CONFERENCE DETAILS

The time used in this handbook is based on the U.S. Eastern Time (ET, UTC-4, GMT-4). Please take note of the time zone differences.

	Country/Region	Time 1	Time 2
1	USA (Eastern Time)	8:00 - 12:00	20:00 - 24:00
2	Australia	22:00 - 2:00	10:00 - 14:00
3	China	20:00 - 24:00	8:00 - 12:00
4	France	14:00 - 18:00	2:00 - 6:00
5	Hong Kong, China	20:00 - 24:00	8:00 - 12:00
6	India	17:30 - 21:30	5:30 - 9:30
7	Italy	14:00 - 18:00	2:00 - 6:00
8	Japan	21:00 - 1:00	9:00 - 13:00
9	Singapore	20:00 - 24:00	8:00 - 12:00
10	South Korea	21:00 - 1:00	9:00 - 13:00
11	Thailand	19:00 - 23:00	7:00 - 11:00
12	Taiwan, China	20:00 -24:00	8:00 - 12:00
13	Vietnam	19:00 - 23:00	7:00 - 11:00

Our conference medium is Zoom. All attendees have to download Zoom software on his/her own computer.

Please register your name on Zoom, make sure using the same name as your name at the conference website, so that your Session Chairman can easily identify you.

Please try and test various functions on Zoom before attending the conference online, on July 24th 2022:

- (a) **Share Screen** for your presentation, and **turn on** your webcam with **Start Video** when you speak;
- (b) **Mute** when you are not speaking, **Unmute** to speak;
- (c) **Raise hand** at the **Participants** tab or by clicking on **Reactions**, to ask questions during presentations;
- (d) If you want, you may also send your comments or contact the Session Chair in the **Chat** during the conference;

We will email the link for ICCM2022 Zoom to all registered participants and the co-authors by July 23th.

3. ORGANIZATION COMMITTEES

Conference Chairman

Nguyen-Xuan Hung, Ho Chi Minh City University of Technology (HUTECH), Vietnam

Honorary Chairman

Guirong Liu, University of Cincinnati, United States

International Co-Chairs

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Local Co-Chairmen

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(ordered by last name)

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	Tian Zhao-Feng (Australia)	Zhou Kun (Singapore)
	Trung Nguyen-Thoi (Vietnam)	Zhuang Zhuo (China)
	Tsubota Ken-Ichi (Japan)	

4. PROGRAM OVERVIEW

Date	Meeting Time (U.S. Eastern Time, UTC-4, GMT-4)	Room A	Room B
Day 0 July 24 th , 2022 Sunday	8:00-10:00	Presentation trials at Zoom	Presentation trials at Zoom
	20:00-21:00	Presentation trials at Zoom	Presentation trials at Zoom
Day 1 July 25 th , 2022 Monday	8:00 - 8:15	Opening Speeches	
	8:15 - 9:45	Session 1A Plenary Lectures	
	9:50 - 12:00	Session 1A-1 Semi Plenary Lectures	Session 1B-1 Semi Plenary Lectures
	20:00 - 24:00	Session 1A-2	Session 1B-2
Day 2 July 26 th , 2022 Tuesday	8:00 - 12:00	Session 2A-1	Session 2B-1
	20:00 - 24:00	Session 2A-2	Session 2B-2
Day 3 July 27 th , 2022 Wednesday	8:00 - 12:00	Session 3A-1	Session 3B-1
	20:00 - 24:00	Session 3A-2	Session 3B-2

Note: The times used in this handbook are in the U.S. Eastern Time (UTC-4, GMT-4).

5. MINI-SYMPOSIA AND ORGANIZERS

MS	Mini Symposium Title	Organizers
MS-001	Theory and Formulation for Novel Computational Methods	Guirong Liu, University of Cincinnati
MS-002	Particle Based Methods	Xiong Zhang, Tsinghua University Yan Liu, Tsinghua University Zhen Chen, Dalian University of Technology / University of Missouri
MS-003	Mechanics of surface/interface and bionics	Shaohua Chen, Beijing Institute of Technology
MS-004	Boundary Element Methods and Mesh Reduction Methods	Xiaowei Gao, Dalian University of Technology
MS-005	Reduced order models for structures and fluids	Jianyao Yao, Chongqing University Ke Liang, Northwestern Polytechnical University
MS-006	Crash safety and structural optimization	Xu Han, Hebei University of Technology Shujuan Hou, Hunan University
MS-007	Fire Simulation	Zhao-Feng Tian, University of Adelaide Xiao Chen, Sotera Fire Engineering
MS-008	Modeling and Simulation of Complex Flow and Transport Phenomena	Jingfa Li, Beijing Institute of Petrochemical Technology Shuyu Sun, King Abdullah University of Science and Technology Bo Yu, Beijing Institute of Petrochemical Technology
MS-009	Computational Methods in Fluid Engineering	Songying Chen, Shandong University Deyu Luan, Qingdao University of Science and Technology
MS-010	Data-driven Surrogate Modeling Techniques for Inverse and Other Related Problems	Guangyao Li, Shenzhen Automotive Research Institute, Beijing Institute of Technology Teng Long, Beijing Institute of Technology Hu Wang, Hunan University Jian Zhang, Jiangsu University Xueguan Song, Dalian University of Technology
MS-011	Damage and Failure Modelling in Composite Materials	Raj Das, RMIT University
MS-012	Deformation, Fatigue and Fracture of Advanced Materials	Liguo Zhao, Loughborough University Rong Jiang, Nanjing University of Aeronautics and Astronautics
MS-013	Large Scale Coupled Problems and Related Topics	Masao Ogino, Daido University Hiroshi Kanayama, Japan Women's University Ryuji Shioya, Toyo University Lijun Liu, Osaka University
MS-014	Progresses of Computational Marine Hydrodynamics	Guiyong Zhang, Dalian University of Technology Decheng Wan, Shanghai Jiaotong University Aman Zhang, Harbin Engineering University
MS-015	Smoothed Finite Element Methods and Related Techniques	Yuki Onishi, Tokyo Institute of Technology
MS-016	Computational Mechanics for Composite Plates and Shells	Taran Kant, Indian Institute of Technology Bombay
MS-017	Computational methods in Hydraulic engineering	Nguyen The Hung, The University of Danang

MS-018	Data, Uncertainty, Machine Learning and Digital Twin	Chenfeng Li, Swansea University
MS-019	Methods for Multi-Phase Flows	Dia Zeidan, German Jordanian University Lucy Zhang, Rensselaer Polytechnic Institute
MS-020	Concurrent multiscale modeling from electrons to finite elements	Qing Peng, King Fahd University of Petroleum and Minerals Qiang Cao, Wuhan University
MS-021	Multiscale modelling of engineering materials	Sarah Zhang, Western Sydney University
MS-022	Advances in computational methods for large deformation problems in geo-mechanic	Domenico Lombardi, The University of Manchester Wei Wu, University of Natural Resources and Life Sciences
MS-023	Recent Advances In Meshfree and Particle Methods	Bin Chen, Xi'an Jiaotong University
MS-024	Meshfree and Other Advanced Numerical Methods for Engineering and Applied Mathematical Problems	Lihua Wang, Tongji University Zheng Zhong, Harbin Institute of Technology Chuanzeng Zhang, University of Siegen
MS-025	Limit state analysis of structures and materials	Canh Van Le, International University - VNU
MS-026	Modeling and Simulation for Additive Manufacturing	Van-Nam Hoang, Vietnam Maritime University Jonathan Tran, RMIT Nguyen-Xuan Hung, Ho Chi Minh City University of Technology
MS-027	Computational Acoustics and Elastodynamics in Materials and Structures	Weiqiu Chen, Zhejiang University Yuesheng Wang, Beijing Jiaotong University Bin Wu, Politecnico di Torino Chuanzeng Zhang, Universitat Siegen
MS-028	Kernel and machine learning based solutions of PDEs	Zhuojia Fu, Hohai University Elena Atroshchenko, The University of New South Wales Timon Rabczuk, Bauhaus University Weimar
MS-029	Stochastic BEM in Fracture Mechanics	Cheng Su, South China University of Technology Zhongwei Guan, University of Liverpool
MS-030	Acoustic metamaterials and phononic crystals: from fundamental theory to potential applications	Feng Jin, Xi'an Jiaotong University
MS-031	Design optimization of structures and metamaterials	Zhan Kang, Dalian University of Technology
MS-032	Local and nonlocal modeling approaches in dynamics	Ugo Galvanetto, University of Padova Mirco Zaccariotto, University of Padova Pawel Packo, AGH - University of Science Technology
MS-033	Computational Biomechanics	Ken-ichi Tsubota, Chiba University Xiaobo Gong, Shanghai Jiao Tong University
MS-034	Recent Advances and Developments for Damage and Failure of Engineering Materials and Structures	Tinh Quoc Bui, Tokyo Institute of Technology Shunhua Chen, Sun Yat-sen University
MS-035	Modelling Heterogeneous Media: Fracture, Localisation and Multiphase Flow	Yixiang Gan, The University of Sydney Leong Hien Poh, National University of Singapore Luming Shen, The University of Sydney

		Daniel Dias-da-Costa, The University of Sydney
MS-036	Mechanics of soft materials	Zishun Liu, Xian Jiaotong University
MS-037	Computational Biomechanics	Xi-Qiao Feng, Tsinghua University
MS-038	Computational methods for advanced soft matter and soft robotics	Hua Li, Nanyang Technological University
MS-039	Computational Particle Dynamics	Moubin Liu, Peking University Dianlei Feng, Leibniz University Hannover Christian Weißenfels, Technische Universität Braunschweig
MS-040	Computational and Machine Learning Studies of Hierarchical Cellular Structures	Pattabhi Ramaiah Budarapu, Indian Institute of Technology Bhubaneswar Sundararajan Natarajan, Indian Institute of Technology Madras I.V. Singh, Indian Institute of Technology Roorkee
MS-041	Multiscale multiphysical damage and fracture simulation of cementitious composites	Zhenjun Yang, Wuhan University Jianying Wu, South China University of Technology
MS-042	Uncertainty quantification and analysis for structures	Chao Jiang, Bingyu Ni, Hunan University Bingyu Ni, Hunan University Zhe Zhang, Hunan University
MS-043	Data-driven modeling and design approaches	Wenjing Ye, Hong Kong University of Science and Technology
MS-044	Micro-/Nano-mechanics for Novel Materials	Yuantong Gu, Queensland University of Technology Haifei Zhan, Zhejiang University
MS-045	Computational design, optimization and manufacturing advanced materials and structures	Quan Bing Eric Li, Teesside University Bing Li, Northwestern Polytechnical University

6. SUMMARY OF PLENARY LECTURE, SEMI PLENARY LECTURE

Plenary Lecture (PL)

- PL-1:** Multiphase Large-eddy Simulations of Human Cough Jet Development and Expiratory Droplet Dispersion
Shaofan Li, University of California-Berkeley, United States
- PL-2:** Physics Informed Machine-Learning based Computational mechanics
Yuantong Gu, Queensland University of Technology, Australia

Semi Plenary Lecture (SPL) (ordered by last name)

- SPL-1:** Semi-resolved CFD-DEM for particulate flows with thermal convection
Moubin Liu, Peking University, China
- SPL-2:** Numerical modeling of wave propagation in complex media: application to bone diagnostics
Vu-Hieu Nguyen, Université Paris-Est Créteil, France
- SPL-3:** Electro-thermal simulation with IGBTs and model reduction by Generalized Falk method
Loc Vu-Quoc, University of Illinois at Urbana-Champaign, United States
- SPL-4:** Wavelet methods for solving nonlinear mechanical problems
Jizeng Wang, Lanzhou University, China
- SPL-5:** Meshfree Stabilized Collocation Method: theory, algorithm and applications from solid-mechanics to fluid-structure interaction problems
Lihua Wang, Tongji University, China
- SPL-6:** Phase-field modeling of fracture in multiphysical problems
Jiaying Wu, South China University of Technology, China

7. DETAILED PROGRAM – CONFERENCE SESSIONS

Please note:

- The times used in this handbook are in the U.S. Eastern Time (UTC-4, GMT-4).
- Presenters' names are in boldface.

July 25th, 2022, Monday

Day 1: Room A

8:00 - 8:10	Chairman	Nguyen-Xuan Hung
8:10 - 8:15	Chairman	Guirong Liu

Day 1: Room A

Session 1A: Plenary Lecture

Chair: Nguyen-Xuan Hung

Time	ID	Title / Authors
8:15-9:00	4915	Physics Informed Machine-Learning Based Computational Mechanics / Yuantong Gu
9:00-9:45	4893	Multiphase Large-eddy Simulations of Human Cough Jet Development and Expiratory Droplet Dispersion / Shaofan Li

Day 1: Room A

Session 1A-1: Semi Plenary Lectures

Chair: Nguyen-Xuan Hung

Time	ID	Title / Authors
9:50-10:20	4899	Numerical Modeling of Wave Propagation in Complex Media: Application to Bone Diagnostics / Vu-Hieu Nguyen
10:20-10:50	4917	Semi-resolved CFD-DEM for particulate flows with thermal convection / Moubin Liu
10:50-11:20	4895	Electro-thermal Simulation with IGBTs and Model Reduction by Generalized Falk Method / Loc Vu-Quoc

Day 1: Room B

Session 1B-1: Semi Plenary Lectures

Chair: Guirong Liu

Time	ID	Title / Authors
9:50-10:20	4909	Wavelet Methods for Solving Nonlinear Mechanical Problems / Jizeng Wang
10:20-10:50	4916	Phase-field Modeling of Fracture in Multiphysical Problems / Jianying Wu
10:50-11:20	4920	Meshfree Stabilized Collocation Method (SCM): theory, algorithm and applications from solid mechanics to fluid-structure interaction problems / Lihua Wang

July 25th, 2022, Monday

Day 1: Room A

Session 1A-2: Theory and Formulation for Novel Computational Methods

Chair: Haifei Zhan, Jian-Li Shao, Vu-Hieu Nguyen

Time	ID	Title / Authors
20:00-20:20	4818	Keynote: The Bending Limit of 2D Diamane / Haifei Zhan , Shangchun Jiang
20:20-20:40	4840	Nanoscale Dynamic Response of the Structural Transition in Single Crystal Iron: Ramp Wave and Pressure-shear Wave Loading / Jian-Li Shao , Xiu-Xia Guo
20:40-21:00	4851	2D Frictionless Contact Analysis Based on a New Node-to-segment Approach using Cell-based Smoothed Finite Element Method / Chao Sun , Zirui Li
21:00-21:20	4837	Low-dissipation Numerical Methods for Multiphase Compressible Cavitation Flows Based on BVD Principle / Hiro Wakimura , Tatsuin Li, Feng Xiao
21:20-21:40	4831	Formulation of a Novel Implicit Stress Integration Algorithm Based on Plastic Consistency Parameter and Its Verification Using Von Mises Plasticity / Madgedara Lalith, Migel Arachchillage Kasun Madusanka Dharmasiri , Kohei Fujita, Tsuyoshi Ichimura, Muneo Hori
21:40-22:00	4796	Studies on Interface of Pipe Joints Based on Exponential Softening Bond-slip Law Under Torsional Loads / Hong Yuan, Jun Han, Ziyong Mo, Lan Zeng
22:00-22:20	4863	Composite Element Method for Modelling Groundwater Flow in Fractured Media / Xiaoping Hou , Shenghong Chen, Isam Shahrour
22:20-22:40	4828	Analytical Nonlinear Equilibrium Solutions for Snap-through Buckling of Shallow Arches with Geometric Imperfections Using Groebner Bases / Y. Jane Liu, Samuel Dunham , John Peddieson

Day 1: Room B

Session 1B-2: Opetimization, Crash safty and extreme conditions

Chair: Qingcheng Yang, Shujuan Hou, Yan Li, Jici Wen

Time	ID	Title / Authors
20:00-20:20	4792	Keynote: Numerical and Experimental Study of a Mixing Process in Dry and Saturated Conditions / Jian Chen , Daisuke Nishiura, Mikito Furuichi
20:20-20:40	4839	Multiresolution Molecular Mechanics: a Generalized Nonlocal Quasicontinuum Framework / Qingcheng Yang , Albert C. To
20:40-21:00	4855	Stress Evolution and Failure Models in Elastic-plastic Electrodes During Electrochemical-mechanical Coupling / Jici Wen
21:00-21:20	4913	Size and Topology Optimization of Giant Inclined Bracing Structures in High-rise Buildings / Haidong Lin , Shujuan Hou
21:20-21:40	4892	Topology Optimization of Shell-infill Structures using Structural-similarity Conditional Generative Adversarial Networks / Wu Yong , Bai Yingchun
21:40-22:00	4815	Study on Energy Conservation in Dynamic Ultra-large Deformation Analysis of Plane Frame Structures / Erjon Krasniqi , Shuhei Yamashita, Hiroyuki Obiya
22:00-22:20	4823	Structural Topology Optimization Method Considering Bi-modulus Properties of Materials / Xuanpei Rong , Jing Zheng
22:20-22:40	4888	Crushing Response of Sustainable Structures Under Static and Dynamic Loading / Jianbo Chen , Shujuan Hou

July 26th, 2022, Tuesday

Day 2: Room A

Session 2A-1: Methods for Complex Flows, Heat Transfer, Fire

Chair: Nguyen The Hung, Kuo-Chi Liu, Zhenquan Li

Time	ID	Title / Authors
8:00-8:20	4781	Averaging Navier-Stokes Equations by a Dual Approach / Nguyen The Hung , Nguyen The Hung, Nguyen Dong Anh
8:20-8:40	4844	Analysis for Bioheat Transfer with Thermoelastic Effect / Kuo-Chi Liu
8:40-9:00	4773	Accuracy of a 3D Adaptive Mesh Refinement Method with Analytical Velocity Fields / Zhenquan Li , Rajnesh Lal
9:00-9:20	4772	GPU Parallel Study of Explicit and Implicit Solution of Poisson Equation in Particle Method / Zhe Sun, Zi-kai Xu , Xi Zhang, Bi-ye Yang, Gui-yong Zhang, Zhi-fan Zhang
9:20-9:40	4911	Numerical Study of Effects of Wind on the Vertical Fire Spread with Vertical/horizontal Spandrel / Zefeng Huang , Zhao Tian, Xiao Chen
9:40-10:00	4777	Semi-analytical Solutions to 2D Advection-dispersion-reaction Equations in a Finite Domain Subject to Point-source and Boundary-source / Xianghong Ding , Shijin Feng
10:00-10:20	4779	A Coupled SPH-DEM Model for the Simulation of Abrasive Water-jet Impacting Solid Surface / Ran Yu , Xiangwei Dong, Zengliang Li
10:20-10:40	4919	Numerical Simulation of Multi-barrier Microfluidic System for Lithium Extraction from Salt Lake Brines / Yaru Hu , Zirui Li

Day 2: Room B

Session 2B-1: Composites and Other Novel Materials

Chair: Joe Petrolito, Francesco Fabbrocino, Nam V. Nguyen, Zhen Yan

Time	ID	Title / Authors
8:00-8:20	4765	Keynote: Radial Point Interpolation Method for Higher Order Composite Strain Gradient Plate Models / Francesco Fabbrocino , Serena Saitta, Riccardo Vescovini, Nicholas Fantuzzi, Raimondo Luciano
8:20-8:40	4769	Alternative Formulations for Finite Elements for Thick Plate Analysis / Joe Petrolito , Daniela Ionescu
8:40-9:00	4898	Dynamic Instability of Porous Sandwich Plates Reinforced with Graphene Platelets / Jaehong Lee, Nam V. Nguyen
9:00-9:20	4829	Analytical Solutions for Geometric Non-linear Beam-Reinforced Thin Plates Using the Methodology of Groebner Bases / Y. Jane Liu , John Peddieson, Stephen Idem
9:20-9:40	4880	Fracture Analyses of Interfacial Cracks in Piezoelectric-piezomagnetic Bi-layered Structures by the Extended Finite Element Method / Zhen Yan , W.J. Feng
9:40-10:00	4886	Interfacial Property Measurement of Van Der Waals Heterostructures / Peijian Chen , Liqun Lou
10:00-10:20	4889	Mesoscale Failure Simulation of UHPFRC with Explicit Modelling of Cohesive Fibre-matrix Interfaces / Zhenjun Yang, Xin Zhang , Zhenyu Wang
10:20-10:40	4894	Direct Validation of 3D Meso-scale Fracture Modelling of UHPFRC by In-situ Micro X-ray CT Wedge-split Tests / Mo Lin , Zhen Jun Yang, Xin Zhang

July 26th, 2022, Tuesday

Day 2: Room A

Session 2A-2: Advanced Methods: S-FEM, meshfree, and other novel methods

Chair: Yuki Onishi, Jian Chen, Wei Li

Time	ID	Title / Authors
20:00-20:20	4900	Keynote: A Large Deformation Tetrahedral Smoothed Finite Element Formulation for Nearly Incompressible Solids Based on the Strain Smoothed Element (SSE) Technique / Yuki Onishi
20:20-20:40	4793	Keynote: Development of a Plate Discrete Element Method: Geometry and Kinematics / Jian Chen , Hans-Georg Matuttis
20:40-21:00	4832	A Node-based Smoothed Finite Element Method (NS-FEM) for Free and Forced Vibration Analysis of Three-dimensional (3D) Structures / J.G. Zhao , Z.R. Li, S.H. Huo
21:00-21:20	4814	Quadrilateral Overlapping Finite Elements for the Free Vibration Analysis of Two-dimensional Linear Elastic Solids / Wei Li, Qiang Gui , Yuzheng Yang, Yingbin Chai
21:20-21:40	4879	Bending Analyses of Magnetoelastic Plates Considering Size Effect Based on the Meshless Method of Polynomial Particular Solutions / Yating Han , Z. Yan, W.J. Feng
21:40-22:00	4861	Dynamics analysis of a FGM rectangular Mindlin plate undergoing large overall motion in temperature field / Chaofan Du, Yanlong Zheng , Dingguo Zhang, Tingkui Cao
22:00-22:20	4841	A New Hamiltonian Global Nodal Position Finite Element Method for Dynamics Analysis of Submarine Cables / Hang Zhou , Xue Yan, Dean Hu, Xu Han

Day 2: Room B

Session 2B-2: Computational Acoustics, waves, and Acoustic Materials

Chair: Guannan Wang, Shuai Cao, Jing Xiao

Time	ID	Title / Authors
20:00-20:20	4876	Keynote: Multiscale Investigation on the Static, Dynamic and Buckling Responses of Functionally Graded Porous Beams Reinforced with Grapheme Platelets / Zhenbo Xu, Rongqiao Xu, Guannan Wang
20:20-20:40	4885	Ultrasonic Waves for Nanobubble Cleaning Enhancement / Shuai Cao , Yongzhen Mi, Wei He, Fangsen Cui
20:40-21:00	4842	Ultrasonic echo data-driven method for intelligent identification of material characteristic parameters / Shuyong Duan, Zhenghu Yu
21:00-21:20	4858	Machine Learning Based Surface Crack Characterization Using Rayleigh Wave Signals / Jing Xiao , Shuai Cao, Fangsen Cui
21:20-21:40	4869	An Efficient Multiscale Method for Wave Propagation Analysis of Functionally Graded Sandwich Plate with Nanopores / Zhelong He , Guannan Wang
21:40-22:00	4807	Acoustic Scattering of Underwater Multiple Spheres using T-supermatrix Method / Wei Li, Yuzheng Yang , Yang Zhang
22:00-22:20	4865	Free Vibration of Steel Pipe Piles Using the State Space Method / Rongqiao Xu, Kexuan Zhao , Jinbiao Cai

July 27th, 2022, Wednesday

Day 3: Room A

Session 3A-1: Advances in Materials and Structures

Chair: Isamu Riku, Ravindra K. Saxena, Maddegedara Lalith Lakshman Wijerathne

Time	ID	Title / Authors
8:00-8:20	4833	Keynote: Numerical Studies on the Fracture Behavior of Steel Plates of Varying Thickness Under High-velocity Impact / Nikesh Kumar Ojha, Ravindra K. Saxena
8:20-8:40	4830	Keynote: Application of PDS-FEM to Simulate High-power LASER Induced Cracking / Maddegedara Lalith Lakshman Wijerathne
8:40-9:00	4803	Molecular Dynamic Study on Entangled Structure of Polymer Chains in Soft Material / Isamu Riku
9:00-9:20	4788	Enhanced Flexoelectricity by Pre-stretch in Elastomers / Hui Ji , Shuwen Zhang, Minglong Xu
9:20-9:40	4821	Design and Finite Element Simulation of Novel Decoupled Piezo-actuated Fast Steering Mirror Integrated with Self-sensing Unite / Wenwen Han
9:40-10:00	4827	Particle Swarm Optimization for Minimum Connection Placement in Prefabricated Modular Housing Design / Thamonwan Suwannasri , Arnut Sutha, Thu Huynh Van, Sawekchai Tangaramvong
10:00-10:20	4824	An ANN-BCMO Approach for Material Distribution Optimization of Bidirectional Functionally Graded Nanocomposite Plates with Geometrically Nonlinear Behaviors / Jaroon Rungamornrat, Paowpat Pensupa , Toan Minh Le
10:20-10:40	4801	Crystal Plasticity Finite Element Analysis of Mechanical Behavior of Sintered Silver Nanoparticles / Xu Long, Kainan Chong , Yutai Su

Day3: Room B

Session 3B-1: Computational Particle Dynamics, Structure Stability

Chair: Dianlei Feng, Xiangwei Dong, Moubin Liu

Time	ID	Title / Authors
8:00-8:20	4774	Keynote: Three Dimensional Simulation of Liquid Droplets Impact on Elastic Structures Based on the SPH Method / Xiangwei Dong , Xin Zhang, Ran Yu
8:20-8:40	4767	Comparison of Surface Tension Discrete Models for the ISPH-FVM Coupling Method / Yixiang Xu , Gang Yang, Chen Zhuang, Dean Hu, Shuang Liu
8:40-9:00	4778	GPU-accelerated Numerical Modeling of Hypervelocity Impacts on CFRP using SPH / Lu Yao , Jianyu Chen, Dianlei Feng
9:00-9:20	4782	Numerical Modeling of 3D Natural Convection in a Horizontal Concentric Annulus with a GPU-accelerated SPH Method / Moubin Liu, Yibo Ma , Zhilang Zhang
9:20-9:40	4784	A New Kernel Function of Smoothed Particle Hydrodynamics for Modeling Liquid Dynamics / Chaoyang Guo , Huashan Zhang, Moubin Liu
9:40-10:00	4786	Energy Analysis of Nanocarbon Materials with Defect Structure using NEB Method / Yuki Hayashi , Xiaowen Lei
10:00-10:20	4775	Numerical study of the effect of shear keys on the stability of cantilever retaining walls / Changcheng Du , Jianfeng Chen

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Day 3: Room A

Session 3A-2: Uncertainty quantification and analysis for structures

Chair: Bingyu Ni, Dixiong Yang, Jing Zheng

Time	ID	Title / Authors
20:00-20:20	4790	Keynote: A Sequential Simulation Method for Structural Response Bounds Analysis Under Interval Uncertainties / Bingyu Ni , Chao Jiang
20:20-20:40	4849	Keynote: Unified Framework of Stochastic Mechanics: Direct Probability Integral Method / Dixiong Yang , Hanshu Chen, Guohai Chen
20:40-21:00	4787	Robust Topology Optimization for Multi-scale Structure Considering Both Thermal and Mechanical Loadings / Jing Zheng , Shaonan Ding, Chao Jiang
21:00-21:20	4890	An Enhanced Derivative Lambda-PDF Method for Uncertainty Quantification and Analysis of Mechanical Structures / Dequan Zhang, Junkai Jia , Xu Han
21:20-21:40	4882	Kinematic Reliability Analysis of Ammunition Loading System Based on Envelope Function / Yongji Liu , Gongsong Chen
21:40-22:00	4907	Enhanced Probabilistic Uncertainty Propagation Through Gaussian Mixture Model / Quan Chen , Zhe Zhang, and Dean Hu
22:00-22:20	4870	Time-Dependent Kinematic Reliability Analysis of Gear Mechanism Based on Saddle-Point Approximation / Junhua Chen , Longmiao Chen
22:20-22:40	4908	Deep Learning for Reliability Analysis with Epistemic Uncertainty / Li Chen , Zhe Zhang, Gang Yang

Day 3: Room B

Session 3B-2: Boundary Element, Mesh Reduction, Machine Learning Methods

Chair: Lei Chen, S.Y. Duan, Ruiping Niu, Min Lei

Time	ID	Title / Authors
20:00-20:20	4799	Keynote: Machine Learning Boosted Data-driven Modeling and Simulation of Additive Manufacturing: Process, Structure and Property / Lei Chen , Zhuo Wang
20:20-20:40	4904	Keynote: Two-way Neural Network and Engineering Application / S.Y Duan , Yule Li
20:40-21:00	4809	Solving Time-dependent Partial Differential Equations Based on FDM_RNN / Ying Liang, Ruiping Niu
21:00-21:20	4846	A FEM-SPH Coupling Approach for Dynamic Response Analysis of Composite Plates with Brick-and-mortar Structure / Yihua Xiao , Wenbing Zou
21:20-21:40	4819	Improved Boundary Knots Method for Multi-dimensional Laplace Equation / Min Lei , Le Liu
21:40-22:00	4826	Simulating Transmission Properties on Metamaterials Surfaces by A Localized Extrinsic Collocation Method / Zhuo Jia Fu, Wen Hu , Leevan Ling
22:00-22:20	4812	Improved Meshless Finite Integration Method for Solving Time Fractional Diffusion Equations / Pengyuan Liu , Min Lei
22:20-22:40	4791	The Kernel-based Collocation Methods for Elastic Wave Obstacle Scattering Problems / Jing Zhang, Siqing Li , Junhong Yue

Day 3: Room A

Final Session: Farewell Speeches

Time	ID	Title / Authors
22:40-22:45	Chair- man	Nguyen-Xuan Hung
22:45-22:50	Chair- man	Guirong Liu