

ICCM 2019

Singapore



CONFERENCE HANDBOOK

10th International Conference on Computational Methods

DR. FANGSEN CUI

CONFERENCE CHAIRMAN

*Institute of High Performance Computing, A*STAR*

Singapore Association for Computational Mechanics, Singapore

PROFESSOR GUI-RONG LIU

HONORARY CONFERENCE CHAIRMAN

University of Cincinnati, USA



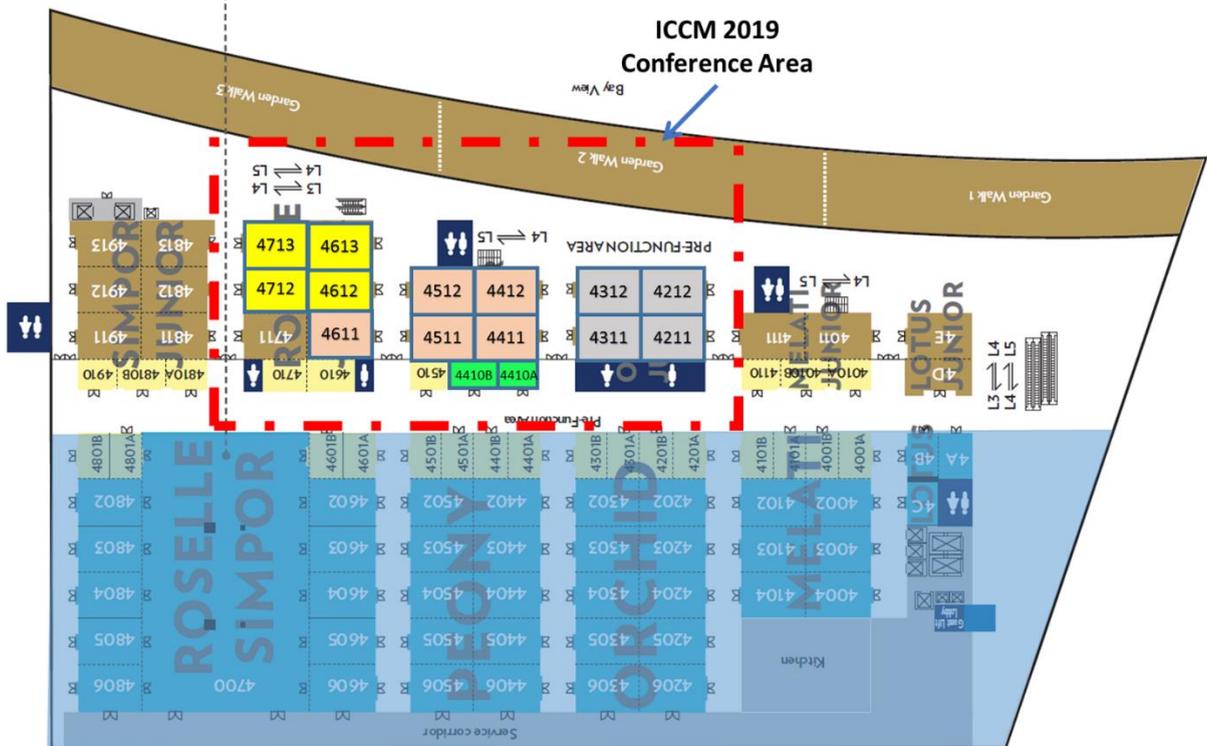
July 9-13 2019

Marina Bay Sands Expo & Convention Centre, Singapore

ICCM 2019 CONFERENCE SITE



Floor Plan of Level 4



Designation of Rooms Allocated for ICCM 2019 Event.

Room A	Room B	Room C	Room D	Room E	Room F	Room G
Rooms 4612, 4613, 4712 and 4713	Room 4411	Room 4412	Room 4511	Room 4512	Room 4611	Rooms 4211, 4212, 4311, 4312

1. WELCOME MESSAGE

Dear Colleagues and Friends

On behalf of the organising committees, we are delighted to welcome you to the 10th Conference on Computational Methods (ICCM2019) at Singapore.

The ICCM conference series is an international conference that provides an international forum for exchange of ideas on recent advances in areas related to computational methods, including computational mechanics, numerical modelling & simulation of manmade or natural systems, as well as their applications in engineering and sciences. It will accommodate presentations on a wide range of topics to facilitate interdisciplinary exchange of ideas in science, engineering and related disciplines, and foster various types of academic collaborations in the internationally. All papers accepted for publication in the proceedings have been peer reviewed. Papers may also be selected and invited to be developed into a full journal paper for publication in special issues of some peer-reviewed journals.

The ICCM (International Conference on Computational Methods) conference series were originated in Singapore in 2004 by Professor GR Liu, followed by ICCM2007 at Hiroshima, Japan, ICCM2010 at Zhangjiajie, China, ICCM2012 at Gold Coast, Australia, ICCM2014 at Cambridge, England, ICCM2015 at Auckland, New Zealand, ICCM2016 at Berkeley, CA, USA, ICCM2017 at Guilin, Guangxi, China. ICCM2018 at Rome, Italy. Now ICCM2019 comes back to Singapore for celebrating its 10th event.

The ICCM2019 conference program includes over 330 presentations from more than 20 countries and regions scheduled in 47 technical sessions. There will be 3 Plenary Lectures, 8 Thematic Plenary Lectures, many Keynote Lectures and Invited Lectures at the conference. The conference sessions will cover a broad range of topics related to computational methods, including formulation theory, computational techniques, machine learning, modelling techniques and procedures, materials, deformation processing, materials removal processes, processing of new and advanced materials, welding and joining, surface engineering and other related processes.

We would like to express our gratitude to all the members of the Local Organizing Committee, International Scientific Committee, and the student helpers who have contributed significantly in this conference. Our sincere thanks and appreciation go to some international reviewers for their prompt review reports on the submitted abstracts and papers. Our appreciation goes also to all the Mini-Symposium Organizers for their effort and contribution in the organization. Special thanks go to Dr. George Xu, the secretary general, for handling a lot of tedious work, Prof Li Hua for the great support by organizing student helpers.

We hope that this conference will provide a great venue of presenting and exchanging information for your scientific work. We wish all of you have a great time in this beautiful garden city Singapore.

Finally, we would like to thank you for your contribution to the ICCM2019 conference. We are looking forward to your participation and continued engagement for the future ICCM conferences.

Dr Fangsen Cui

Conference Chairman
Institute of High Performance Computing, A*STAR
Singapore Association for Computational Mechanics
Singapore



Professor Gui-Rong Liu

Honorary Conference Chairman
University of Cincinnati
USA



2. CITATION OF PAPERS PRESENTED IN THIS CONFERENCE

Papers in these proceedings may be identically cited in the following manner:

Author names, Paper title, Proceedings of the 10th International Conference on Computational Methods, 9th – 13th July 2019, Singapore, ScienTech Publisher, (ISSN 2374-3948, online).

3. CONFERENCE DETAILS

Conference Venue

ICCM2019 will be held in Marina Bay Sands Expo & Convention Centre, Singapore.

- The whole event will be held in Ballrooms on Level 4.
- Plenary Lectures (PL) will be held in Room A.
- Thematic Plenary Lectures (TPL) will be given in Rooms B, C, D and E, respectively.
- Parallel Sessions will be in Rooms B, C, D, E and F, respectively.
- Conference Banquet will be in Room G on July 11, 2019.

Please refer to the second page about the designation of rooms allocated for the event.

Catering

Morning and afternoon coffee breaks and buffet lunches are included in the conference registration (July 10 - 12), a welcome reception on the pre-conference day (July 9) is included for all registered participants, Banquet dinner on July 11 if not included in your registration fee has to be paid separately. Tickets will be provided at the on-site registration desk to all registered participants for accessing these services.

Instructions for Chairs and Presenters

Timeslots: Plenary Lecture 35 minutes; Thematic Plenary Lecture 30 minutes; All other presentations: 20 minutes. The timeslots include presentation and Q&A. It is advisable to give 5 minutes for Q&A. The conference program is fully packed. Please stick to the program schedule so as to facilitate the smooth transition between sessions.

Instructions for Oral Presenters

Only overhead projector and one computer are provided in each room. Please bring your file on a USB stick to the room of your presentation during the break before your session, or 20 minutes before the start of the day's proceedings. A volunteer in the room will help you to load the ppt.

Name Tags

Name tags are your entry to conference events. Please wear them at all times.

Registration/Information Desk

Please make the registration in Rooms 4410A and 4410B at Peony area, Level 4. Registration/Information Desk will be open between 4:00 pm and 6:30 pm on July 9, 2019, and between 8:30 am and 5:00 pm from July 10 to July 12, 2019.

Conference Banquet and Award Ceremony

The Banquet and Ceremony will be held from 6:30pm to 9:00pm on July 11 in Room G (Rooms 4211, 4212, 4311, 4312).

WIFI Service

Connecting point: MICE HOTSPOTS

4. ORGANIZATION COMMITTEE

Conference Chairman

*Fangsen Cui (Institute of High Performance Computing, A*STAR, Singapore)*

Honorary Chairman

Gui-Rong Liu (University of Cincinnati, OH, USA)

International Co-Chairs

Moubin Liu (Peking University, China)

Yuantong Gu (Queensland University of Technology, Australia)

Zishun Liu (Xi'an Jiaotong University, China)

Patrizia Trovalusci (Sapienza University of Rome, Italy)

Sung-Kie Youn (Korea Advanced Institute of Science and Technology, South Korea)

Local Co-Chairmen

Vincent Tan Bing Chye (National University of Singapore),

Hua Li (Nanyang Technological University)

Secretary General

*George Xu Xiangguo (Institute of High Performance Computing, A*STAR, Singapore)*

Local Organizing Committee

Gideon Praveen Kumar Vijayakumar, Jingjie Yeo, Hongying Li, Menglong Liu, Jun Liu, Yuan Cheng,

Ling Dai, Zhiqian Zhang, Zhoucheng Su, Yucheng Zhong, Dan Wang, Junyan Guo, Xiuqing Xing, Gioia

*Fusaro (Institute of High Performance Computing, A*STAR, Singapore)*

Xingyu ZHANG, Xiao CHEN, Yifeng WANG, Kewei CHEN, Clarence TEE, Brian LEE Zhan Rui, Elisa ANG Yun Mei,

Simiao FAN, Junheng REN (Nanyang Technological University, Singapore)

Yao SUN (National University of Singapore)

International Scientific Committee

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Aoki Takayuki (Japan)

Beer Michael (Germany)

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Dong Leiting (China)

Dulikravich George (USA)

Fan Chia-Ming (Taiwan)

Fantuzzi Nicholas (Italy)

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Gan Yixiang (Australia)

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Herrera Ismael (Mexico)

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Hori Muneo (Japan)

Huang Wei (China)

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Huang Zhengming (China)

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Jabareen Mahmood (Israel)

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Kang Zhan (China)

Khoo Boo Cheong (Singapore)

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Kougioumtzoglou Ioannis (USA)

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Lee Chin-Long (New Zealand)

Lee Heow Pueh (Singapore)

Lee Ik-Jin (South Korea)

Lenci Stefano (Italy)

Leo Hwa Liang (Singapore)

Li Hua (Singapore)

Li Quanbing Eric (UK)

Li Wei (China)

Li Yueming (China)

Lim Keng Hui (Singapore)

Lim Kian Meng (Singapore)

Liu Feng (China)

Liu Jie (China)

Liu Moubin (China)

Liu Yan (China)

Liu Yijun (China)

Liu Zhanli (China)

Liu Zishun (China)

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Miller Karol (Australia)

Montenegro Armas Rafael (Spain)

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Ng Teng Yong (Singapore)
Nithiarasu Perumal (UK)
Niu Xiaodong (China)

Poh Leong Hien (Singapore)
Qin Qinghua (Australia)
Quek Sinsin Jerry (Singapore)
Reali Alessandro (Italy)
Rębielak Janusz (Poland)
Reddy Daya (South Africa)
Saavedra Flores Erick (Chile)
Sadowski Tomasz (Poland)
Saitoh Takahiro (Japan)
Shen Lian (USA)
Shen Luming (Australia)
Shen Yongxing (China)
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Song Chongmin (Australia)
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Tanaka Satoyuki (Japan)
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Trovalusci Patrizia (Italy)
Trung Nguyen-Thoi (Vietnam)

Nogueira Xesús (Spain)
Ogino Masao (Japan)
Orlande Helci (Brazil)

Tsubota Kenichi (Japan)
Wan Decheng (China)
Wang Bo (China)
Wang Cheng (China)
Wang Hu (China)
Wang Jie (China)
Wang Lifeng (China)
Wang Wenquan (China)
Wu Yanling (China)
Xiang Zhihai (China)
Xiao Feng (Japan)
Xiao Jinyou (China)
Xie Mike (Australia)
Xu Chao (China)
Xu Minglong (China)
Xu Xiangguo George (Singapore)
Xu Xu (China)
Yang Chun Charles (Singapore)
Yang Judy (Taiwan)
Yang Yeong-Bin (Taiwan)
Yang Zhenjun (China)

Papadrakakis Manolis (Greece)
Peng Qing (USA)
Picu Catalin (USA)

Yao Jianyao (China)
Yao Yao (China)
Ye Hongling (China)
Ye Wenjing (Hong Kong)
Yeo Jingjie (Singapore)
Yoshimura Shinobu (Japan)
Youn Sung-Kie (South Korea)
Yu Chengxiang Rena (Spain)
Yuan Mingwu (China)
Zeidan Dia (Jordan)
Zhan Haifei (Australia)
Zhang Jian (China)
Zhang Lihai (Australia)
Zhang Lucy (USA)
Zhang Xiong (China)
Zhang Zhao (China)
Zhao Kejie (USA)
Zhao Ligu (UK)
Zhou Kun (Singapore)
Zhuang Zhuo (China)

5. PROGRAM OVERVIEW

Overall Conference Program

ICCM2019, July 9-13, 2019

Date	Time	Conference Program
Day 0 July 9 (Tuesday)	16:00-18:30	On-site Registration
	18:00-20:00	Welcome reception
July 10 - 12	08:30-17:00	On-site Registration
Day 1 July 10 (Wednesday)	08:30-08:35	Opening Ceremony
	08:35-09:10	Plenary Lecture I
	09:10-09:45	Plenary Lecture II
	09:45-10:20	Plenary Lecture III
	10:20-10:40	Morning Coffee/Tea
	10:40-13:00	Parallel Sessions
	13:00-13:50	Lunch
	13:50-15:50	Parallel Sessions
	15:50-16:10	Afternoon Coffee/Tea
	16:10-18:30	Parallel Sessions
Day 2 July 11 (Thursday) & Day 3 July 12 (Friday)	08:30-09:00	Thematic Plenary Lectures (Four in Parallel)
	09:00-10:20	Parallel Sessions
	10:20-10:40	Morning Coffee/Tea
	10:40-13:00	Parallel Sessions
	13:00-13:50	Lunch
	13:50-15:50	Parallel Sessions
	15:50-16:10	Afternoon Coffee/Tea
	16:10-18:30	Parallel Sessions
July 13 (Saturday)	08:30-12:00	Free discussions & meetings

Conference Banquet: 18:30 – 21:00 on Thursday, July 11, 2019.

6. SUMMARY OF PLENARY LECTURE, THEMATIC PLENARY LECTURE AND MINI-SYMPOSIA

Plenary Lecture (PL)

- **PL-1:** Smart Structures: From 3D to 4D Printing / *Daining Fang*
- **PL-2:** Integration of Digital Design and Additive Manufacturing Process Workflow / *Keng Hui Lim*
- **PL-3:** Industrial Application of Moving Particle Semi-implicit Method for Fluid Dynamics / *Seiichi Koshizuka*

Thematic Plenary Lecture (TPL)

- **TPL-1:** Numerical Modelling of the Mechanics of Off-shore Structures / *Nicholas Fantuzzi*
- **TPL-2:** Global-element-based Free Element Method / *Xiao-Wei Gao*
- **TPL-3:** Virtual Models for Processing and Testing / *Sridhar Narayanaswamy*
- **TPL-4:** Smoothed Finite Element Methods: Recent Academic/Practical Progress / *Yuki Onishi*
- **TPL-5:** An Isogeometric Variational Method for Analysis of Structural-acoustic Coupling Systems with Arbitrary Bounded Domains / *Hui Zheng, Yongzhen Mi*
- **TPL-6:** The Immersed Smoothed Point Interpolation Method (IS-PIM) for Fluid-structure Interaction Problems / *Guiyong Zhang*
- **TPL-7:** SPH Modeling and Experimental Verification of Entire Process of Landslides Triggered by Earthquakes Based on a Unified Constitutive Model / *Yu Huang*
- **TPL-8:** Topology Optimisation for Crash and Blast Loading / *Qing Li, Guangyong Sun, Jianguang Fang, Shujuan Hou, Guangyong Li, Xu Han*

Proposed Mini-Symposium (MS) - Titles and Organizers

MS	Mini-symposium (MS) Title	Organizers
MS-000	General paper	Fangsen Cui, Institute of High Performance Computing, A*STAR Gui-Rong Liu, University of Cincinnati
MS-001	Theory and Formulation for Novel Computational Methods	Gui-Rong Liu, University of Cincinnati
MS-002	Advances in polygonal and polyhedral finite elements	Nguyen-Xuan Hung, Ho Chi Minh City University of Technology (HUTECH)
MS-003	Computational Damage and Fracture Modeling in Solids and Structures	Tinh Quoc Bui, Tokyo Institute of Technology Sohichi Hirose, Tokyo Institute of Technology Satoyuki Tanaka, Hiroshima University Cheng-Tang Wu, Livermore Software Technology Corporation
MS-004	Multiscale Approaches Bridging Atomistic and Continuum Domains	Woo Kyun Kim, University of Cincinnati
MS-005	Methods for Multi-Phase Flows	Dia Zeidan, German Jordanian University Lucy Zhang, Rensselaer Polytechnic Institute / Tianjin University of Science & Technology
MS-006	Optimization of structures and materials	Zhan Kang, Dalian University of Technology
MS-007	Particle Based Methods	Zhen Chen, Dalian University of Technology / University of Missouri Yan Liu, Tsinghua University Xiong Zhang, Tsinghua University
MS-008	Multiscale Design, Optimization and Simulation of Novel Materials and Structures	Quan Bing Eric Li, Teesside University
MS-010	Solid state processing and additive manufacturing	Zhao Zhang, Dalian University of Technology
MS-011	Advanced computational modelling of materials with microstructures	Erick Saavedra Flores, Universidad de Santiago de Chile

MS-012	Computational Nanomechanics and Nanoscale Thermal Transport	Yuantong Gu, Queensland University of Technology Haifei Zhan, Queensland University of Technology
MS-013	Structural uncertainty modelling and analysis	Chao Jiang, Hunan University Xiangyun Long, Hunan University Bingyu Ni, Hunan University
MS-014	Modeling on composite failures	Zheng-Ming Huang, Tongji University
MS-015	Computational Acoustics and Elastodynamics in Solids and Structures	Weiqiu Chen, Zhejiang University Yue-Sheng Wang, Beijing Jiaotong University Bin Wu, Politecnico di Torino Chuanzeng Zhang, Universitat Siegen
MS-016	Numerical methods for multiphase fluid flow and heat transfer	Hongying Li, Institute of High Performance Computing, A*STAR
MS-017	Advanced Computational Methods for Soft Matter and Machine	Hua Li, Nanyang Technological University
MS-018	Progresses of Computational Marine Hydrodynamics	Jianhua Wang, Shanghai Jiao Tong University Cheng Liu, Shanghai Jiao Tong University Decheng Wan, Shanghai Jiao Tong University Lu Zou, Shanghai Jiao Tong University
MS-019	Large Scale Coupled Problems and Related Topics	Hiroshi Kanayama, Japan Women's University Lijun Liu, Osaka University Masao Ogino, Daido University Ryuji Shioya, Toyo University
MS-021	Computational methods in fluid engineering	Songying Chen, Shandong University Guichao Wang, Shandong University
MS-023	Acoustic metamaterials and phononic crystals: from fundamental theory to potential applications	Feng Jin, Xi'an Jiaotong University
MS-024	Lattice Boltzmann method on multiphase flow and fluid-Structure Interaction	Xiaodong Niu, Shantou University
MS-025	Applications of Computational Methods in Structural Engineering	Feng Liu, Guangdong University of Technology Xin Wang, Guangdong University of Technology Gongfa Chen, Guangdong University of Technology
MS-026	Novel Methods for Structural Damage Modeling, Detection and Identification	Shancheng Cao, Hong Kong Polytechnic University Fei Du, Northwestern Polytechnical University Nguyen-Thoi Trung, Ton Duc Thang University Chao Xu, Northwestern Polytechnical University Cong Zhou, University of Canterbury Yunlai Zhou, The Hong Kong Polytechnic University
MS-027	Recent Advances in Meshfree and Particle Methods	Seiichi Koshizuka, University of Tokyo Moubin Liu, Peking University Aman Zhang, Harbin Engineering University
MS-028	Computational studies of skeletal structures and metamaterials	Heow-Pueh LEE, National University of Singapore
MS-029	Data Analysis Based and Simulation Based Multidiscipline Optimization Methods and Their Applications	Xiuqing Xing, Institute of High Performance Computing, A*STAR George XU, Institute of High Performance Computing, A*STAR
MS-030	Reduced order models for structures and fluids	Jianyao Yao, Chongqing University
MS-031	Data-driven Surrogate Modeling Techniques for Computational Inverse Problems	Hu Wang, Hunan University Jian Zhang, Jiangsu University
MS-032	Concurrent multiscale modeling from electrons to finite elements	Qiang Cao, Wuhan University Sheng Liu, Wuhan University Qing Peng, University of Michigan Yan Zhao, Wuhan University of Technology
MS-033	Methods of approximate calculations in static analyses	Janusz Rebielak, Cracow University of Technology

MS-034	Modelling Heterogeneous Media: Fracture, Localisation and Multiphase Flow	Daniel Dias da Costa, University of Sydney Yixiang Gan, University of Sydney Leong Hien Poh, National University of Singapore Luming Shen, The University of Sydney
MS-035	Modelling & Simulation for Urban and Built Environment	Hee Joo Poh, Institute of High Performance Computing, A*STAR George XU, Institute of High Performance Computing, A*STAR
MS-036	Experimental and modelling analysis of Residual Stresses in Additive Manufacturing	Alexander Korsunsky, University of Oxford Xu Song, Singapore Institute of Manufacturing Technology
MS-037	Novel Mesh-Reduction Methods for Engineering & Sciences	Leiting Dong, Beihang University Chia-Ming Fan, National Taiwan Ocean University Zhuojia Fu, Hohai university
MS-038	Novel Algorithms Artificial Intelligence	Shuyong Duan, Hebei University of Technology
MS-039	Semi-analytical methods: Recent advances and applications	Carolin Birk, Universitat Duisburg-Essen Hauke Gravenkamp, University of Duisburg-Essen Sundararajan Natarajan, Indian Institute of Technology-Madras Ean Tat Ooi, Federation University Australia Chongmin Song, University of New South Wales
MS-040	Smoothed Finite Element Methods and Related Techniques	Chen Jiang, Hunan University Yuki Onishi, Tokyo Institute of Technology
MS-041	Machine learning based computational mechanics modeling and simulation	Zhanli Liu, Tsinghua University
MS-042	Computational Methods in Natural Hazards and Earth System Sciences	Yu Huang, Tongji University Bin Ye, Tongji University
MS-043	Computational Fluid Structure Interaction and Application	Wenquan Wang, Kunming University of Science and Technology
MS-044	Advances in damage and failure mechanics	Phu Nguyen, Monash University Leong Hien Poh, National University of Singapore Jianying Wu, South China University of Technology
MS-045	Modeling and Simulation of Sensor and Actuator	Minglong Xu, Xi'an Jiaotong University Tongqing Lu, Xi'an Jiaotong University
MS-047	Microfluidics and nanofluidics	Zirui Li, Wenzhou University
MS-048	High Performance Computing on Simulations	George XU, Institute of High Performance Computing, A*STAR

7. DETAILED PROGRAM - CONFERENCE SESSIONS

Overview of Scheduled Presentations in Different Meeting Rooms

	Meeting Time	Session Type	Room A	Room B	Room C	Room D	Room E	Room F
Day 1 July 10	08:30-08:35	Opening Ceremony	Opening Address					
	08:35-10:20	PL	PL-1 to PL-3					
	10:20-10:40	Tea Break						
	10:40-13:00	PS		MS-003	MS-034	MS-006	MS-025	MS-018
	13:00-13:50	Lunch						
	13:50-15:50	PS		MS-003	MS-034	MS-006	MS-025	MS-018 MS-007
	15:50-16:10	Tea Break						
	16:10-18:30	PS		MS-003 MS-031	MS-023 MS-028	MS-006 MS-038	MS-042	MS-007 MS-002
Day 2 July 11	08:30-09:00	TPL		TPL-1	TPL-2	TPL-3	TPL-4	
	09:00-10:20	PS		MS-047	MS-027	MS-041	MS-013	MS-012
	10:20-10:40	Tea Break						
	10:40-13:00	PS		MS-045	MS-027	MS-040	MS-013 MS-010 MS-036	MS-012
	13:00-13:50	Lunch						
	13:50-15:50	PS		MS-045	MS-021	MS-040	MS-039	MS-008
	15:50-16:10	Tea Break						
	16:10-18:30	PS		MS-045 MS-026	MS-021	MS-040 MS-019	MS-039 MS-033	MS-008 MS-029
Day 3 July 12	08:30-09:00	TPL		TPL-5	TPL-6	TPL-7	TPL-8	
	09:00-10:20	PS		MS-024	MS-030	MS-005	MS-016	MS-017
	10:20-10:40	Tea Break						
	10:40-13:00	PS		MS-037	MS-048	MS-035	MS-000	MS-017 MS-032
	13:00-13:50	Lunch						
	13:50-15:50	PS		MS-001	MS-015	MS-004	MS-043	MS-044
	15:50-16:10	Tea Break						
	16:10-18:30	PS		MS-001	MS-015	MS-011	MS-043	MS-044 MS-014

- PL - Plenary Lectures
 TPL - Thematic Plenary Lectures
 PS - Parallel Sessions
 MS - Mini-Symposium

Plenary Lectures (PL) and Thematic Plenary Lectures (TPL)

Day 1 Plenary Lectures: Wednesday, July 10, 2019

08:00-08:10 Opening Ceremony: Room A (Room 4612+4613+4712+4713)

Day 1 Plenary Lectures: Wednesday, July 10, 2019

Plenary Lectures (PL), Room A (Room 4612+4613+4712+4713), Chairs: Fangsen Cui and Gui-Rong Liu

Time	ID	Presenter and Title
08:35-09:10	3668	PL-1: Smart Structures: From 3D to 4D Printing / <i>Daining Fang</i> , Beijing Institute of Technology, China
09:10-09:45	3669	PL-2: Integration of Digital Design and Additive Manufacturing Process Workflow / <i>Keng Hui Lim</i> , Institute of High Performance Computing, A-STAR, Singapore
09:45-10:20	4180	PL-3: Industrial Application of Moving Particle Semi-implicit Method for Fluid Dynamics / <i>Seiichi Koshizuka</i> , The University of Tokyo, Japan

Day 2 Thematic Plenary Lectures (TPL): Thursday, July 11, 2019

Time	ID	Presenter and Title
TPL-1, Room B (Room 4411), Chair: - Gui-Rong Liu		
08:30-09:00	3889	Numerical Modelling of the Mechanics of Off-shore Structures / <i>Nicholas Fantuzzi</i>
TPL-2, Room C (Room 4412), Chair: - Qing Li		
08:30-09:00	3930	Global-element-based Free Element Method / <i>Xiao-Wei Gao</i>
TPL-3, Room D (Room 4511), Chair: - Hui Zheng		
08:30-09:00	3979	Virtual Models for Processing and Testing / <i>Sridhar Narayanaswamy</i>
TPL-4, Room E (Room 4512), Chair: - Guiyong Zhang		
08:30-09:00	4182	Smoothed Finite Element Methods: Recent Academic/Practical Progress / <i>Yuki Onishi</i>

Day 3 Thematic Plenary Lectures (TPL): Friday, July 12, 2019

Time	ID	Presenter and Title
TPL-5, Room B (Room 4411), Chair: - Sridhar Narayanaswamy		
08:30-09:00	3692	An Isogeometric Variational Method for Analysis of Structural-acoustic Coupling Systems with Arbitrary Bounded Domains / <i>Hui Zheng, Yongzhen Mi</i>
TPL-6, Room C (Room 4412), Chair: - Yuki Onishi		
08:30-09:00	4021	The Immersed Smoothed Point Interpolation Method (IS-PIM) for Fluid-structure Interaction Problems / <i>Guiyong Zhang</i>
TPL-7, Room D (Room 4511), Chair: - Nicholas Fantuzzi		
08:30-09:00	4135	SPH Modeling and Experimental Verification of Entire Process of Landslides Triggered by Earthquakes Based on a Unified Constitutive Model / <i>Yu Huang</i>
TPL-8, Room E (Room 4512), Chair: - Xiao-Wei Gao		
08:30-09:00	4213	Topology Optimisation for Crash and Blast Loading / <i>Qing Li, Guangyong Sun, Jianguang Fang, Shujuan Hou, Guangyong Li, Xu Han</i>

Parallel Sessions

Day 1: Room B (Room 4411) Parallel Sessions: Wednesday - July 10, 2019

Session 1B1

MS-003 Computational Damage and Fracture Modeling in Solids and Structures

– Chairs: Cheng-Tang Wu, Martin Oliver Steinhauser

Time	ID	Title / Authors
10:40-11:00	3944	<i>Keynote:</i> Particle Simulation of Modern Mechanical Fastening Processes and Their Failure Analyses in Automotive Applications / Xiaofei Pan, Wei Hu, Youcai Wu
11:00-11:20	3614	<i>Invited:</i> Modeling and Simulation of Fracture and Failure in Hypervelocity Impact / Martin Steinhauser
11:20-11:40	3644	An Advanced Finite Element Method for Three-dimensional V-shape Corners in a Hole Defect / Xuecheng Ping, Yuxuan Zhang, Zhongmin Xiao
11:40-12:00	3663	Modeling Penny-shaped Crack using a Single High Order Smooth Element / Hang Ma, Donghong He, Zhao Guo
12:00-12:20	3874	Numerical Simulation for Crack Instabilities in Quenched Glass Plates / Sayako Hirobe, Kenji Oguni
12:20-12:40	4045	Application of PDS-FEM to the Simulation of Dynamic Crack Propagation and Supershear Rupture / Lionel Quaranta, Lalith Wijerathne, Tomoo Okinaka, Muneo Hori
12:40-13:00	3780	Temperature Control Simulation and Stability Analysis of Diversion Tunnel Plug for Hydropower Project / Jing Cheng

Session 1B2

MS-003 Computational Damage and Fracture Modeling in Solids and Structures

– Chairs: Cheng-Tang Wu, Martin Oliver Steinhauser

Time	ID	Title / Authors
13:50-14:10	4128	Analysis of Cracked Body Strengthened by Adhesively Bonded Patches by BEM-FEM Coupling / Binh Viet Pham, Thai Binh Nguyen, Jaroon Rungamornrat
14:10-14:30	3755	Mechanical Analysis of Widespread Corrosion-damaged Structure Based on ES-PIM / Jimin Li, Keliang Ren, Hua Ji, Ting Wang, Lihong Ding, Jia Yang
14:30-14:50	3670	Modeling the Effect of Drying Shrinkage-induced Damage on Coupled Moisture and Chloride Transport in Concrete Structures / Yunping Xi, Mohamed Abdelrahman
14:50-15:10	3827	Fatigue Life Estimation of Riveted Joints using Crack Growth Concept / Jakub Sedek
15:10-15:30	3632	The Problem of Static Equilibrium in Computational Methods Coupling Classical Mechanics and Peridynamics / Ugo Galvanetto, Tao Ni, Greta Ongaro, Pablo Seleson, Mirco Zaccariotto
15:30-15:50	4177	Damage and Fracture of Titanium Alloys Under Dynamic Loading / Vladimir Skripnyak, Vladimir Skripnyak, Evgeniya Skripnyak

Session 1B3

MS-003 Computational Damage and Fracture Modeling in Solids and Structures

– Chairs: Cheng-Tang Wu, Martin Oliver Steinhauser

MS-031 Data-driven Surrogate Modeling Techniques for Computational Inverse Problems

– Chairs: Hu Wang, Jian Zhang

Time	ID	Title / Authors
16:10-16:30	3803	A Bézier Extraction based XIGA Approach for Vibration Analysis of Cracked FGM Plate using Simple First-Order Shear Deformation Theory / Sunil Kumar Singh, Indra Vir Singh, Bhanu Kumar Mishra
16:30-16:50	4196	Phase field modeling of the crack propagation within multilayer HTS thin films under mechanical-thermal-electromagnetic multi-physical fields / Ze Jing
16:50-17:10	3610	<i>Keynote:</i> Machine Learning-based Closed Loop Parameter Optimization for MMC-based Topology Optimization / Hu Wang, Yu Li, Kangjia Mo, Xinchao Jiang
17:10-17:30	3829	<i>Keynote:</i> Unified Ensemble of Surrogates (UES): a Novel Strategy of Integrating Global Measures with Local Measures for Engineering Design and Optimization / Jian Zhang, Jiajia Qiu, Xinxin Yue
17:30-17:50	3637	Reanalysis Assisted Stochastic Analysis with IGA for Free Vibration Problems of Variable-stiffness Composite Laminate / Yaya Zhang, Hu Wang

Parallel Sessions

Day 1: Room C (Room 4412) Parallel Sessions: Wednesday - July 10, 2019

Session 1C1

MS-034 Modelling Heterogeneous Media: Fracture, Localisation and Multiphase Flow

– Chairs: Yixiang Gan, Leong Hien Poh, Luming Shen

Time	ID	Title / Authors
10:40-11:00	3823	<i>Keynote:</i> A Hybrid Method on Modeling of Grain Crushing / Jidong Zhao
11:00-11:20	3786	<i>Keynote:</i> Structure-Preserving Algorithms for Multi-Phase Flow in Fractured Porous Media / Shuyu Sun
11:20-11:40	3774	Configurational Damage Model with Material Forces as Internal Variables / Qun Li, Zhongbo Yuan
11:40-12:00	3729	Disorder Characterization of Porous Media and Its Effect on Fluid Displacement / Yixiang Gan, Zhongzheng Wang, Kapil Chauhan, Jean-Michel Pereira
12:00-12:20	3738	Modeling Flow Field in Fractured Porous Media Using an LBM-PNM Coupling Technique / Si Suo
12:20-12:40	3787	Meso-scale Fracture Behaviour of Concrete with Fractal Aggregate Shapes: An FDEM Approach / Deheng Wei
12:40-13:00	3770	An Investigation of Matching 3D Crushed Sand Particles / Mengmeng Wu, Jianfeng Wang

Session 1C2

MS-034 Modelling Heterogeneous Media: Fracture, Localisation and Multiphase Flow

– Chairs: Yixiang Gan, Leong Hien Poh, Luming Shen

Time	ID	Title / Authors
13:50-14:10	4041	<i>Keynote:</i> Modelling Mesoscale Multiphase Interactions using Modified Smoothed Particle Hydrodynamics / Luming Shen
14:10-14:30	3981	<i>Invited:</i> CFD-DEM Simulation of Fluid Flow Assisted Mixing of Binary Granular Beds / Ratna Kumar Annabattula, Bajju Joy, Akhil Vijayan Panicker
14:30-14:50	3850	Pore-scale Modelling of Instability in Partially Saturated Granular Soils / Yixiang Gan
14:50-15:10	3795	An Efficient Discrete Strong Discontinuity Approach for Simulation of Fracture Based on Minimum Enhanced Degrees of Freedom / Daniel Dias-da-Costa, Marcelo Carvalho
15:10-15:30	4056	A Coarse-Grained Model for Microscale Multiphase Interactions and Its Applications in Dynamic Wetting / Pengyu Huang, Luming Shen, Yixiang Gan, Federico Maggi, Abbas El-Zein, Giang D. Nguyen
15:30-15:50	4063	Three Dimensional Crack Orientation Measuring Technique Based on X-ray Computed Tomography / Sheng Jiang, Luming Shen, Francois Guillard, Itai Einav

Session 1C3

MS-034 Modelling Heterogeneous Media: Fracture, Localisation and Multiphase Flow

– Chairs: Yixiang Gan, Leong Hien Poh, Luming Shen

MS-023 Acoustic Metamaterials and Phononic Crystals: from Fundamental Theory to Potential Applications

– Chairs: Feng Jin

MS-028 Computational Studies of Skeletal Structures and Metamaterials

– Chairs: Heow-Pueh LEE, Zishun Liu

Time	ID	Title / Authors
16:10-16:30	3742	<i>Invited:</i> Numerical simulations of the propagation of shock waves in granular materials with the multi-phase particle-in-cell method / Kun Xue, Junsheng Zeng
16:30-16:50	3647	<i>Keynote:</i> Thermal Tuning on Band Gaps of the Coupled Extensional, Thickness-stretch / Feng Jin
16:50-17:10	3673	<i>Invited:</i> Nonlinear Interaction of Internal Waves Due to Two Point Vortices / Zhen Wang, Di Liu
17:10-17:30	4105	Development of a Windows System with Acoustic Metamaterial for Air and Noise Control / Gioia Fusaro
17:30-17:50	3778	<i>Keynote:</i> Plate-Type Acoustic Metamaterials for Large-Scale Noise Control Applications / Heow-Pueh Lee
17:50-18:10	3711	Thermal Tuning Negative Effective Mass Density of Acoustic Metamaterial with Hexagonal Lattice / Zhen Li
18:10-18:30	4078	<i>Invited:</i> Dynamic Response of Mechanical Metamaterials / Zishun Liu, Ruijie Lin

Parallel Sessions

Day 1: Room D (Room 4511) Parallel Sessions: Wednesday - July 10, 2019

Session 1D1

MS-006 Optimization of Structures and Materials

– Chairs: Zhan Kang, Wenjing Ye

Time	ID	Title / Authors
10:40-11:00	3617	<i>Keynote:</i> Multi-material Topology Optimization Considering Material Interfaces / Zhan Kang
11:00-11:20	3848	<i>Keynote:</i> Design of Elastic Wave Metasurfaces using Topology Optimization / Junjie Rong, Wenjing Ye
11:20-11:40	4011	An Effective POD-based ROM for Harmonic Response Analysis and Optimization of Stiffened Shells / Yuwei Li, Bo Wang, Peng Hao, Kuo Tian
11:40-12:00	3624	Using Material Removal Scheme of BESO for Hole Nucleation in Level Set Based Topology Optimization of Multi-material Structures / Qi Xia
12:00-12:20	3727	Band Gap Analysis and Optimal Design of Elastic Metamaterials / Kepeng Qiu, Jianqiang Jin
12:20-12:40	3600	Post Processing of Optimization Based on Truss-Like Material Model / Kemin Zhou
12:40-13:00	3904	Differential evolution algorithm for optimization of functionally graded cylindrical panels based buckling analysis / Pham Toan Thang, Eun-A Sim, Jeomin Oh, Nguyen Van Nam, Huynh Nhat Thanh, Jaehong Lee

Session 1D2

MS-006 Optimization of Structures and Materials

– Chairs: Zhan Kang, Wenjing Ye

Time	ID	Title / Authors
13:50-14:10	3909	Deep Learning Used in Optimization Problems / Hau Tien Mai, Sangeun Park, Taeseop Kim, Tuan Anh Nguyen, Ngoc Tan Nguyen, Jaehong Lee
14:10-14:30	3609	A High-efficient Topology Optimization using a Triple Acceleration Method / Yingjun Wang
14:30-14:50	3666	Hydraulic-Thermal Analysis and Optimization for a Circumferentially Grooved Seal Based on Bulk Flow Theory / Yuefang Wang, Xiaojian Cao
14:50-15:10	4066	The Application of SPTA in Large-Scale Complex Engineering Optimization / Caihua Zhou, Haixin Zhao, Tong Li, Bo Wang
15:10-15:30	3604	Topology Optimization of Channel Cooling Structures with Simplified Thermofluidic Models / Mingdong Zhou
15:30-15:50	3654	A Multi-material Topology Optimization Method Considering Enclosed Feature / Yingchun Bai, Shuai Zhang, Hongshuai Lei, Cheng Lin

Session 1D3

MS-006 Optimization of Structures and Materials

– Chairs: Zhan Kang, Wenjing Ye

MS-038 Novel Algorithms Artificial Intelligence

– Chairs: Shuyong Duan

Time	ID	Title / Authors
16:10-16:30	4073	<i>Invited:</i> Crashworthiness Optimization: Materials, Structures, and Vehicle Bodies / Shujuan Hou
16:30-16:50	4132	Crashworthiness Optimization of Composite Tubes by Experiments and Simulations / Zheyi Zhang
16:50-17:10	3717	Minimizing Stress Concentration Around the Voids by Location Optimization / Wenyi Yan, Dedao Liu, Louis Chiu
17:10-17:30	3630	<i>Keynote:</i> A Novel Dynamic Movement Primitives Method for Robot Movement Generation / Gao Yongsheng, Ti Boyang
17:30-17:50	3785	<i>Keynote:</i> A Data-Driven Inverse Identification of Material Parameters for Composite Laminates / Shuyong Duan, Zhanming Zhang, Xu Han, Gui-Rong Liu
17:50-18:10	4176	Uncertainty Quantification and Propagation Analysis Method Based on Contour Multi-ellipsoid Convex Model / Qiming Liu, Xu Han, Xingfu Wu

Parallel Sessions

Day 1: Room E (Room 4512) Parallel Sessions: Wednesday - July 10, 2019

Session 1E1

MS-025 Applications of Computational Methods in Structural Engineering

– Chairs: Feng Liu, Tzu-Ying Lee

Time	ID	Title / Authors
10:40-11:00	3752	A Coupled Eulerian-Lagrangian Algorithm for Explosion and Shock Problems / Xiangzhao Xu, Fanlin Meng, Jianguo Ning
11:00-11:20	3732	Matched Interface and Boundary Method for Free Vibration Analysis of Triangular and Quadrilateral Membranes / Zhiwei Song, Wei Li, Xiaoqiao He, De Xie
11:20-11:40	3927	Comparative Studies on Regularization Strategies for Structural Damage Detection / Ling Yu, Ziwei Luo
11:40-12:00	3656	Seismic Performance of Eccentrically Braced Steel Frames Using Steel Slit Dampers with Shape Memory Alloy / Joo-Woo Kim
12:00-12:20	3907	Nonlinear Analysis of Two-way Beam String Structures / Minhee Seo, Seunghye Lee, Thi Thanh Dieu Do, Thi Mai Linh Phi, Jaehong Lee
12:20-12:40	3651	Numerical Analysis on Inelastic Buckling of Cold-formed Thin-walled Channel Column / Huang Lihua, Wenbin Yang, Tingwei Shi
12:40-13:00	3762	Wrinkling Analysis of Pre-stressed Membranes using Element Free Galerkin Method / Arun C O, Unnikrishnan K R, I R Praveen Krishna

Session 1E2

MS-025 Applications of Computational Methods in Structural Engineering

– Chairs: Feng Liu, Tzu-Ying Lee

Time	ID	Title / Authors
13:50-14:10	3825	Experimental Analysis of T-pipe Joints Forming / Jaroslaw Bartnicki, Jaroslaw Switacz, Zbigniew Pater
14:10-14:30	3860	A Simple Implicit Nonlinear Dynamic Analysis with Structural Damping in Inelastic Structural Systems / Tzu-Ying Lee, Wen-Hsiao Hung
14:30-14:50	4064	Numerical and Experimental Study of the Stressed Skin Effect of Radome Structures / Wang Le, Wu Yue, Sun Baohua, Meng Song
14:50-15:10	3733	Aeroelastic Wind Tunnel Tests on 2D Membrane Structure / Sun Xiaoying, Wu Yue
15:10-15:30	4199	Simulation of the Magnetic Stiffness of PM-HTS Levitation System / Yong Yang
15:30-15:50	4104	Topology Optimization of Continuum Structures Considering Compliance, Stress and Buckling Constraints Simultaneously / Xingjun Gao
	3846	One Dimensional Finite Element Modeling on an FRP-To-Concrete Bounded Joint Anchored with Inclined U-Jackets / Chuying Cui, Lijuan Li, Bing Fu, Feng Liu

Session 1E3

MS-042 Computational Methods in Natural Hazards and Earth System Sciences

– Chairs: Jian Chen, Min Xiong

Time	ID	Title / Authors
16:10-16:30	4170	<i>Keynote:</i> Large-scale Discrete Element Simulations of Soil Drilling Process / Jian Chen, Mikito Furuichi, Daisuke Nishiura
16:30-16:50	3957	<i>Keynote:</i> Isolation Effect Analysis on Friction Pendulum Bearings in Underground Station Structures / Peng Jia, Zhiyi Chen
16:50-17:10	4087	<i>Invited:</i> The Nonlinear Seismic Dynamic Time-dependent Reliability of Anchored Slope Based on Machine Learning Algorithm / Min Xiong
17:10-17:30	3858	A Quantitative Method for Vulnerability Assessment of Buildings to Landslides using DBN-SVM / Yuanchuang Xing
17:30-17:50	3845	Response Analysis of a Dam Under the Impact of Debris Flow using Smooth Finite Element Method / Jie Liu
17:50-18:10	3918	Effects of Hydrodynamic Pressure on the Seismic Responses of Underground Vertical Shafts / Bu Zhang, Zhiyi Chen
18:10-18:30	3950	Energy Response Characteristics of a Subway Station Structure Based on Probability Density Evolution Method / Zhiqian Liu, Zhiyi Chen

Parallel Sessions

Day 1: Room F (Room 4611) Parallel Sessions: Wednesday - July 10, 2019

Session 1F1

MS-018 Progresses of Computational Marine Hydrodynamics

– Chairs: Decheng Wan, Guiyong Zhang

Time	ID	Title / Authors
10:40-11:00	3891	<i>Keynote:</i> Numerical Analysis of Yawed Turbine Wake Under Atmospheric Boundary Layer Flows / Wan Decheng, Ning Xu
11:00-11:20	3887	Numerical Study of FIO of Circular Cylinder with Different Heights of Passive Turbulence Control Strips/Chunhui Ma, Decheng Wan
11:20-11:40	3698	Full Scale Simulations of the External and Internal Flow Fields for a Waterjet-propelled Ship / Jie Gong, Chunyu Guo
11:40-12:00	3889	Thick Strip Model for Numerical Investigations on VIV of a Flexible Cylinder / Wan Decheng, Di Deng
12:00-12:20	4208	Energy Saving Mechanism of Propeller with Endplates at Blade Tips / Wan Decheng, Yijie Liu
12:20-12:40	3890	Comparison of Liquid Sloshing in Different Tanks Based on MPS Method / Wan Decheng, Fengze Xie
12:40-13:00	3893	Aerodynamic Analysis of the Wind Turbine by Two Different Numerical Methods / Wan Decheng, Ruicheng Zhang

Session 1F2

MS-018 Progresses of Computational Marine Hydrodynamics

– Chairs: Decheng Wan, Guiyong Zhang

MS-007 Particle Based Methods

– Chairs: Zhen Chen, Yan Liu, Xiong Zhang

Time	ID	Title / Authors
13:50-14:10	3892	Unsteady Aerodynamics of a Spar-type Floating Offshore Wind Turbine Induced by Platform Pitch Motion / Wan Decheng, Yang Huang
14:10-14:30	3641	<i>Keynote:</i> Comparative Study of Molecular Dynamics and Material Point Method for Simulating Failure Evolution / Zhen Chen
14:30-14:50	3926	<i>Keynote:</i> Staggered Grid Material Point Method and Its Applications / Xiong Zhang, Yong Liang, Lei Kan
14:50-15:10	3875	<i>Keynote:</i> A Discrete Element-material Point Coupling Method for Impact with Multiple Particles / Yan Liu, Chenyang Xu
15:10-15:30	3709	<i>Invited:</i> Preliminary Analysis of Hydro-mechanical Coupling B-spline Material Point Method for Ionic Rare Earth In-situ Leaching Landslide / Zheng Sun, Xiaomin Zhou
15:30-15:50	3869	Global Particle-in-Cell Simulation of Fusion Plasmas / Zhihong Lin, Scott Klasky

Session 1F3

MS-007 Particle Based Methods

– Chairs: Zhen Chen, Yan Liu, Xiong Zhang

MS-002 Advances in Polygonal and Polyhedral Finite Elements

– Chairs: Nguyen-Xuan Hung, Xiong Zhang

Time	ID	Title / Authors
16:10-16:30	3685	<i>Keynote:</i> The Size Dependence of the Mechanical Property of the Single-layer Molybdenum Disulfide (MoS ₂) / Hongfei Ye, Dong Li, Junfei Zhao, Yonggang Zheng, Hongwu Zhang, Zhen Chen
16:30-16:50	3766	<i>Invited:</i> Numerical Investigation of Water-running Locomotion in the Basilisk Lizard using Smoothed Particle Hydrodynamics / Chen Zhuang, Dean Hu, Gang Yang, Xu Han
16:50-17:10	4084	Coupling Single-/Multi-Component Lattice Boltzmann and Material Point Method for Fluid-Solid Interaction Problems / Yu Liu, Hongfei Ye, Hongwu Zhang, Yonggang Zheng
17:10-17:30	3736	Research on the Similarity of Tire Spray Caused by Rolling in the Water and Falling Into Water / Fei Xu, Xianpeng Zhang, Xuanqi Ren, Xiangyang Gao
17:30-17:50	3683	A Cosserat Continuum based Implicit GIMP Method for the Thermal Induced Strain Localization Problems / Yonggang Zheng, Jun Tao, Hongwu Zhang, Zhen Chen
17:50-18:10	4174	<i>Keynote:</i> Polytopal Composite Finite Elements / Nguyen-Xuan Hung

Parallel Sessions

Day 2: Room B (Room 4411) Parallel Sessions: Thursday - July 11, 2019

Session 2B1

MS-047 Microfluidics and Nanofluidics

– Chairs: Lihai Zhang

Time	ID	Title / Authors
09:00-09:20	3967	<i>Keynote:</i> Modelling Contact Behavior of Synovial Joints / Lihai Zhang
09:20-09:40	4134	Numerical Study of the Solute Dispersion in Microchannel with Interphase Transport / Wenbo Li, Cunlu Zhao, Fang Qian, Deng Huang
09:40-10:00	3862	Numerical Simulation of Electrokinetic Desalination using Parallel Permselective Microchannels / Jing Tang
10:00-10:20	3812	Numerical Simulation of Electroconvection Based on Electrodialysis: Effects of Shear Flow on the System / Jiang Jiafei

Session 2B2

MS-045 Modeling and Simulation of Sensor and Actuator

– Chairs: Minglong Xu, Menglong Liu

Time	ID	Title / Authors
10:40-11:00	3915	<i>Keynote:</i> Hydrogel Based Soft Pressure Sensor and Its Underwater Application / Yang Gao
11:00-11:20	3870	<i>Keynote:</i> Finite Element Analysis on the Nonlinear Oscillation of Dielectric Elastomer Actuator Under Parametric Excitation / Kun Jia
11:20-11:40	3842	Modeling of Piezoelectric-driven Stick-slip Actuator / Minglong Xu, Yuan Wang, Shubao Shao, Yan Shao
11:40-12:00	3837	A Method of Detecting Gap and Dynamic Force Based on Flexoelectricity / Minglong Xu, Kaiyuan Liu, Tonghui Wu, Shuwen Zhang, Hui Ji
12:00-12:20	3838	Design and Analysis of a Novel Sensing Method Based on Flexoelectric Effect / Minglong Xu, Tonghui Wu, Kaiyuan Liu, Shuwen Zhang, Hui Ji
12:20-12:40	3843	Design and Analysis of a Novel Precision Fast Steering Mirror with Wide Bandwidth Based on Piezoelectric Actuator / Minglong Xu, Wenwen Han, Zheng Tian, Siyang Song
12:40-13:00	3839	Dynamic Analysis of Axially Preloaded Piezoelectric Actuators with Non-smooth Behavior / Minglong Xu, Yan Shao, Shubao Shao

Session 2B3

MS-045 Modeling and Simulation of Sensor and Actuator

– Chairs: Minglong Xu, Menglong Liu

Time	ID	Title / Authors
13:50-14:10	4049	<i>Keynote:</i> Guided Wave-based in Situ Disbond Detection with Embedded Flexible Piezoelectric Wafer / Menglong Liu, Fangsen Cui
14:10-14:30	3849	<i>Keynote:</i> Measurement and analysis of vibration disturb during the rotation of satellite antenna / Bo Gao, Minglong Xu
14:30-14:50	3836	Modeling and Control of a Piezoelectric Actuated Precision Tip-tilt Mechanism / Zheng Tian, Minglong Xu, Wenwen Han
14:50-15:10	3910	Highly Stretchable and Transparent Dielectric Gels for High-performance Soft Sensors and Actuators / Haoyu Guo, Lei Shi, Shujiang Ding, Tiejun Wang, Tongqing Lu
15:10-15:30	4131	Equivalent Circuit Modeling and Analysis Study for Vortex-induced Aerodynamic Energy Harvesting / Jinda Jia, Xiaobiao Shan, Tao Xie, Yaowen Yang
15:30-15:50	4136	Resonant Frequencies of a Radial Field Piezoelectric Diaphragm / Tao Xie, Xingxu Zhang, Xiaobiao Shan, Jianmin Miao

Session 2B4

MS-045 Modeling and Simulation of Sensor and Actuator

– Chairs: Minglong Xu, Menglong Liu

MS-026 Novel Methods for Structural Damage Modeling, Detection and Identification

– Chairs: Tommy Chan, Ning Guo

Time	ID	Title / Authors
16:10-16:30	4200	Study on magnetoelectric response due to flexoelectricity and flexomagnetism coupling in multiferric composites / Yang Shi
16:30-16:50	4140	Mechanical behavior of micro/nano piezoelectric cantilever induced by adsorption / Jiqiao Zhang, Fangsen Cui
16:50-17:10	3796	<i>Keynote:</i> SHM of Bridges and Buildings: Prestress Force Identification and Deterioration Assessment / Tommy Chan, Khac-Duy Nguyen, Thisara Pathirage, Benyamin Monavari, Ziru Xiang, Manal Hussin
17:10-17:30	3735	Initial Delamination Detection of Fiber Reinforced Composite Via Electrical Based Method using Electrode Network / Yunfei Gao, Feng Xu, Chao Xu
17:30-17:50	3633	<i>Invited:</i> Multiple Damage Detection in Structure by FE Model Updating using Coordinate Strain Modal Assurance Criterion / Ning Guo
17:50-18:10	3745	A Substructural Damage Detection Approach for Shear Structures Based on the Combination of ARMAX Model Residual and Jensen-Shannon Divergence / Liu Mei, Huaguan Li, Yunlai Zhou
18:10-18:30	3694	A Stochastic B-spline Wavelet on the Interval Finite Element Method for Elastic Buckling of Columns / Shashank Vadlamani, Arun C.O.

Parallel Sessions

Day 2: Room C (Room 4412) Parallel Sessions: Thursday - July 11, 2019

Session 2C1

MS-027 Recent Advances in Meshfree and Particle Methods

– Chairs: Seiichi Koshizuka, Moubin Liu, Aman Zhang

Time	ID	Title / Authors
09:00-09:20	3639	<i>Keynote: An Improved Multiphase SPH Model for the Simulation of Water Entries</i> / A-Man Zhang, Zifei Meng, Pingping Wang, Furen Ming, Pengnan Sun, Han Cheng
09:20-09:40	3634	A Finite Element Particle Method (FEPM) for Modeling Fluid-structure Interaction Problems with Large Fluid Deformations / Ting Long
09:40-10:00	3759	A Multiphase SPH Method with the Application on Hydrate-bearing Sediment / Can Huang
10:00-10:20	3921	A Semi-Lagrangian Meshfree Method for Flow Problems with Strong Convection / Xiaodong Wang, Haidan Wang, Ying Liu

Session 2C2

MS-027 Recent Advances in Meshfree and Particle Methods

– Chairs: Seiichi Koshizuka, Moubin Liu, Aman Zhang

Time	ID	Title / Authors
10:40-11:00	3873	A Two-dimensional Ghost Cell Boundary Model for the Explicit MPS Method / Zumei Zheng, Guangtao Duan, Naoto Mitsume, Shunhua Chen, Tomonori Yamada, Shinobu Yoshimura
11:00-11:20	3805	Improved MPS Method with Adaptive Variable-size Particles / Kai Zhang, Zhongguo Sun, Guang Xi
11:20-11:40	3847	3D numerical study of wet foam behavior and channels by MPS method / Zhongguo Sun, Yong Zhang, Qixin Liu, Yijie Sun, Guang Xi
11:40-12:00	3894	Meshless Generalized Finite Difference Method for Inverse Bioheat Transfer Problem of Size and Location of Tumor / Wenhui Chu
12:00-12:20	4055	A Weighted Meshfree Collocation Method for Incompressible Flows using Radial Basis Functions / Lihua Wang
12:20-12:40	3895	The Study on Applicability of an Improved SPH Algorithm for Multiphase Flows Based on Riemann Solution / Yang Qiuzu
12:40-13:00	4187	Peridynamic modelling of metal materials under high-speed velocity impact / Xin Lai, Jiale Yan, Shaofan Li, Sai Li, Lisheng Liu

Session 2C3

MS-021 Computational Methods in Fluid Engineering

– Chairs: Zuoli Xiao, Harish Gopalan

Time	ID	Title / Authors
13:50-14:10	3616	Hybrid Reconstructed Discontinuous Galerkin Method for Solving the Incompressible Navier-Stokes Equations / Fan Zhang, Tiegang Liu
14:10-14:30	3783	Shape Optimization of a 3D Diaphragm Pump using the Continuous Adjoint Approach to the Cut-Cell Method / Konstantinos Samouchos, Dimitrios Kapsoulis, Xenofon Trompoukis, Kyriakos Giannakoglou
14:30-14:50	4079	Numerical Simulation on Shock-induced Combustion of Premixed Hydrogen-oxygen Mixtures / Junhong Li
14:50-15:10	3793	Numerical Computation Study on Turbulence Models for Simulating the Internal Flow Field of a Subway Passenger Compartment / Lei Zhang, Yu Tao, Tiantian Wang, Mingzhi Yang
15:10-15:30	3798	Numerical Computation Study on Ventilation Panel Models in a Subway Passenger Compartment / Tiantian Wang, Yu Tao, Lei Zhang, Mingzhi Yang
15:30-15:50	4080	Numerical Aeroheating Analysis of Revolutionary Body / Hao Jingke

Session 2C4

MS-021 Computational Methods in Fluid Engineering

– Chairs: Zuoli Xiao, Harish Gopalan

Time	ID	Title / Authors
16:10-16:30	3828	Weak Shock Reflection from Blunt Bodies with the High-Order Numerical Simulation Using an Immersed Boundary Method / Se-Myong Chang, Hyunjin Kwon
16:30-16:50	3903	Numerical Simulation of Separated Flows: the Role of Turbulence Models / Zuoli Xiao, Rui Wang
16:50-17:10	4095	Numerical Simulation of Unsteady Film Condensation in a Vertical Channel / Gihun Son, Yumin Choi
17:10-17:30	4005	A Free Element Method for Solving Incompressible Fluid Flow using a Pressure Correction Method / Huayu Liu
17:30-17:50	3819	Discontinuous Galerkin Method with Artificial Viscosity for Compressible Fluid Flows / Penghui Su, Liang Zhang
17:50-18:10	4054	Accuracy Verification of a 2D Adaptive Mesh Refinement Method using Backward Facing Step Flows of Low Reynolds Numbers / Zhenquan Li

Parallel Sessions

Day 2: Room D (Room 4511) Parallel Sessions: Thursday - July 11, 2019

Session 2D1

MS-041 Machine Learning Based Computational Mechanics Modeling and Simulation

– Chairs: Wenjing Ye, Alessio Alexiadis

Time	ID	Title / Authors
09:00-09:20	3876	<i>Keynote:</i> Deep Learning Methods for Structure and Metamaterial Design / Wenjing Ye
09:20-09:40	3650	Coupling Discrete Multiphysics with Reinforcement Learning for Simulating of Human Physiology / Alessio Alexiadis
09:40-10:00	3672	Surface Mesh Generation Based on Segmentation Via Deep Learning / Feifei Shang, Jia-Xin Zhao, Hua Ding
10:00-10:20	4197	A Machine Learning Approach of the Prediction of Tissue Differentiation for Dental Implants / Nien-Ti Tsou, Pei-Ching Kung, Chai-Wei Hsu, An-Cheng Yang, Nan-Yow Chen

Session 2D2

MS-040 Smoothed Finite Element Methods and Related Techniques

– Chairs: Chen Jiang, Yuki Onishi

Time	ID	Title / Authors
10:40-11:00	4107	<i>Keynote:</i> An Optimal Multiple Smoothing Scheme of Selective Cell-based Smoothed Finite Element Methods with 10-node Tetrahedral Elements for Large Deformation of Nearly Incompressible Solids / Yuki Onishi
11:00-11:20	4118	<i>Keynote:</i> A novel locking-free smoothed 4-node quadrilateral elements based on the incompatible modes for near-incompressible linear elasticity / Dean Hu, Detao Wan, Gang Yang, Xu Han, Guirong Liu
11:20-11:40	4028	<i>Invited:</i> Analysis of Large Deformation Problems using a Stable Node-based Smoothed Finite Element Method / Xiangyang Cui, Hong Yang, Hui Feng
11:40-12:00	3728	Stable Node-Based Smoothed Finite Element Method / Cui Xiangyang, Yong Cai, Guangyao Li
12:00-12:20	4142	The Performanace of 3-node ES-FEM with Automatic Mesh Adaptation in Engineering Mechanics Applications / Vu Hoang Le, Sawekchai Tangaramvong
12:20-12:40	4032	Finite Element Full-process Gpu Parallel Computing Scheme for Complex Contact Problems / Xiangyang Cui, Cao Xinggang, Yong Cai
12:40-13:00	4120	Performance Evaluation of Edge-based Smoothed Finite Element Method for 4-node Tetrahedral Meshes on Electrodeposition Simulation. / Kai Kitamura, Yuki Onishi, Takeshi Kashiyama, Kenji Amaya

Session 2D3

MS-040 Smoothed Finite Element Methods and Related Techniques

– Chairs: Chen Jiang, Yuki Onishi

Time	ID	Title / Authors
13:50-14:10	3852	<i>Keynote:</i> Immerse Boundary Cell-based Smoothed Finite Element Method for Incompressible Laminar Flow / Chen Jiang, Guang-Jun Gao, G.R. Liu
14:10-14:30	4023	<i>Keynote:</i> An ES-FEM Mechanics Analysis Method using the Experimental Forces for the Conical Pick / Qiuxia Fan
14:30-14:50	3914	<i>Invited:</i> A High-order Edge-based Smoothed Finite Element Method with Piecewise Linear Strain Fields / Yan Li, Guirong Liu, Zhiqiang Feng
14:50-15:10	3830	A Smoothed Finite Element Method for Stress Analysis Based on Octree-based Polyhedral Meshes / Shuhao Huo, Guirong Liu, Junqi Zhang, Chongmin Song, and Shuyong Duan
15:10-15:30	4191	A novel hybrid deterministic-statistical approach for the mid-frequency vibro-acoustic problems / Gang Wang, Yanxu Zhang, Xu Han
15:30-15:50	3776	A High Order Cell-Based Smoothed Finite Element Method (CS-FEM) using Triangular and Quadrilateral Elements / Xin Cui, Xu Han, Shuyong Duan, Guirong Liu

Session 2D4

MS-040 Smoothed Finite Element Methods and Related Techniques

– Chairs: Chen Jiang, Yuki Onishi

MS-019 Large Scale Coupled Problems and Related Topics

– Chairs: Lijun Liu, Masao Ogino, Ryuji Shioya

Time	ID	Title / Authors
16:10-16:30	4144	Simulation and analysis of Stream Finishing processes using Computational Fluid Dynamics methods / Santanu Mitra, Durga Vasudevan, Saarang Gaggar, Pankaj Kumar, Ming Stephen Wan Yee
16:30-16:50	3867	<i>Keynote:</i> Using Serum Amino Acids Composition to Predict Livestock Growth / Zheng Hongjie, Shioya Ryuji, Masuda Masato, Nakabayashi Yasushi
16:50-17:10	3996	<i>Keynote:</i> Simulations of Organic Field-Effect Transistors by the Combination of Finite Difference Method and Kinetic Monte Carlo Method / Lijun Liu, Haoyuan Li, Jean-Luc Brédas
17:10-17:30	3781	Initial Particle Placement Based on the Centroidal Voronoi Tessellation for Two-dimensional Flow Simulation by the Particle Method / Masao Ogino, Hayate Hasegawa, Yusuke Imoto
17:30-17:50	4190	An Iterative Domain Decomposition Method for Magnetic Field Problems with the Gauge Condition / Daisuke Tagami, Shi-ichiro Sugimoto
17:50-18:10	4194	Finite element method based analysis of bio-heat transfer problems in human skin during burns and afterwards / Abul Mukid Mohammad Mukaddes, Ryuji Shioya, Masao Ogino

Parallel Sessions

Day 2: Room E (Room 4512) Parallel Sessions: Thursday - July 11, 2019

Session 2E1

MS-013 Structural Uncertainty Modelling and Analysis

– Chairs: Xiangyun Long, Wei Gao

Time	ID	Title / Authors
09:00-09:20	4057	<i>Keynote:</i> Unified Uncertainty Analysis Under Probability, Evidence, Fuzzy and Interval Uncertainties / Xiangyun Long, Chao Jiang, DongLin Mao
09:20-09:40	3724	<i>Invited:</i> Machine Learning Aided Structural Uncertainty and Reliability Analysis / Wei Gao, Qihan Wang, Yuan Feng, Qingya Li, Di Wu
09:40-10:00	4061	A Marginal Interval Analysis Method Based on Evidence Theory for Structural Uncertainty Propagation Analysis / Lixiong Cao, Jie Liu
10:00-10:20	3966	Accurate Reliability Evaluation of Complex Structures Based on Isogeometric Analysis / Peng Hao, Yutian Wang, Rui Ma, Bo Wang, Gang Li

Session 2E2

MS-013 Structural Uncertainty Modelling and Analysis

– Chairs: Xiangyun Long, Wei Gao

MS-010 Solid State Processing and Additive Manufacturing

– Chairs: Hua Li, Xiangyang Cui

MS-036 Experimental and Modelling Analysis of Residual Stresses in Additive Manufacturing

– Chairs: Hua Li, Xiangyang Cui

Time	ID	Title / Authors
10:40-11:00	3789	High-precision Uncertainty Propagation Involving Multimodal Probability Distributions / Zhe Zhang, Chao Jiang
11:00-11:20	4058	An Interval Vector Finite Element Method for Eigenvalue Problems of the Dielectric-filled Waveguide / Zhonghua Wang
11:20-11:40	4014	Sensitivity Analysis of a Large-order Nonlinear Dynamical Rotor System with Parametrical Uncertainties / Jin Huang
11:40-12:00	4201	Uncertainty Analysis for Large Structure Deformation Measurement System Based on Machine Vision / Bao-Quan Shi
12:00-12:20	4027	<i>Keynote:</i> Numerical Simulation of Magnetic Pulse Welding Process using an Edge-based Smoothed Finite Element Method / Yongjie Pei, Xiangyang Cui, She Li
12:20-12:40	4157	Application of Molecular Dynamics Simulation to Study Melt Track Size in Powder Bed Fusion / Brian Lee, Hua Li
12:40-13:00	3877	Numerical Modeling and Experimental Characterization for Mechanical Properties of Metallic Parts Fabricated by Selective Laser Melting Processes / Xue Wang, Liping Zhao, Heow Pueh Lee

Session 2E3

MS-039 Semi-Analytical Methods: Recent Advances and Applications

– Chairs: Hauke Gravenkamp, Chongmin Song

Time	ID	Title / Authors
13:50-14:10	3886	<i>Keynote:</i> Aspects of SBFEM-based Models for Dynamics and Wave Propagation / Hauke Gravenkamp, Chongmin Song, Carolin Birk
14:10-14:30	3854	<i>Keynote:</i> Treatment of Nonmatching Meshes Using the Scaled Boundary Finite Element Method / Chongmin Song, Junqi Zhang, Weiwei Xing
14:30-14:50	3747	An Application of the Scaled Boundary Finite Element Method to Laminates: Prediction of Interlaminar Crack Onset Caused by the Free-edge Effect / Sebastian Dolling, Julian Felger, Jonathan Hahn, Sophia Bremm, Wilfried Becker
14:50-15:10	4018	An Enriched Scaled Boundary Finite Element Method for 3D Stress Singularities in Anisotropic Multi-Material Configurations / Wilfried Becker, Sascha Hell
15:10-15:30	4052	Analytical Solution of Stiffness and Damping for Finite Length Vertical Journal Bearing / Jianping Jing, Changmin Chen
15:30-15:50	3986	Numerical Modeling of Thin and Thick Shells using the Scaled Boundary Finite Element Method / Milan Wallner, Carolin Birk, Hauke Gravenkamp

Session 2E4

MS-039 Semi-Analytical Methods: Recent Advances and Applications

– Chairs: Hauke Gravenkamp, Chongmin Song

MS-033 Methods of Approximate Calculations in Static Analyses

– Chairs: Janusz Rebielak

Time	ID	Title / Authors
16:10-16:30	3940	Improving the Accuracy of Stress Intensity Factors Obtained by the Scaled Boundary Finite Element Method on Hierarchical Meshes / Adrian Egger, Savvas Triantafyllou, Eleni Chatzi
16:30-16:50	3941	Exploring Topology Optimization on Hierarchical Meshes by Scaled Boundary Finite Element Method / Adrian Egger, Albert Saputra, Savvas Triantafyllou, Eleni Chatzi
16:50-17:10	3998	Phase Field Modeling of Quasi-static Brittle Fracture using the Scaled Boundary Finite Element Method / L N Pramod A, Hirshikesh Hirshikesh, Annabattula Rk, Ooi Et, Song C, Natarajan S
17:10-17:30	3753	A Mesh Refinement Algorithm for Mixed Boundary Value Elastic Problems / Md Abdus Salam Akanda, Aminul Islam Khan
17:30-17:50	4020	<i>Keynote:</i> Approximate Calculation of Some Type of Statically Indeterminate Truss / Janusz Rebielak
17:50-18:10	3906	Effect of creep deformation on thermal-fatigue life of solder connections / Xu Long, Junmeng Xu, Wenbin Tang

Parallel Sessions

Day 2: Room F (Room 4611) Parallel Sessions: Thursday - July 11, 2019

Session 2F1

MS-012 Computational Nanomechanics and Nanoscale Thermal Transport

– Chairs: Yuantong Gu, Haifei Zhan

Time	ID	Title / Authors
09:00-09:20	4086	<i>Keynote:</i> Mechanical Tensile Properties and Design of 3D Printed Polycaprolactone (PCL) Tubular Mesh Scaffolds / Yuantong Gu
09:20-09:40	3993	<i>Keynote:</i> Mechanical Deformation of Carbon Nanothread Bundle / Haifei Zhan
09:40-10:00	3671	Pre-crack Fracture Behaviors of Van Der Waals Layered Materials / Qin Huasong, Liu Yilun
10:00-10:20	4068	Hall-Petch Effect and Dislocation Evolution in Gradient-Structured Polycrystalline Copper Under Uniaxial Tension / Jia Sun, Hongfei Ye, Hongwu Zhang, Yonggang Zheng

Session 2F2

MS-012 Computational Nanomechanics and Nanoscale Thermal Transport

– Chairs: Yuantong Gu, Haifei Zhan

Time	ID	Title / Authors
10:40-11:00	3775	<i>Keynote:</i> Investigation of Structural and Mechanical Properties of Biomaterials and Their Applications / Yuan Cheng
11:00-11:20	4162	Computational Design of Single- and Multi-layer Transverse Flow Carbon Nanotube Membrane using Empirical Molecular Dynamics / Elisa Ang
11:20-11:40	4173	Influence of Surface and Couple Stresses on Response of Surface-loaded Elastic Half-plane / Toan Minh Le, Jaroon Rungamornrat, and Tinh Quoc Bui
11:40-12:00	4192	MD Simulation of Nanoparticle Transport Induced by Different Mechanisms / Shaohua Chen, Shuai Wang, Chao Wang, Yazheng Yang
12:00-12:20	3678	Atomistic simulations on the fragmentation of metals under various decaying shocks / Jianli Shao
12:20-12:40	4046	On the Heat Conduction in Micro-periodic Laminate: Uncertainty of Material Properties / Piotr Ostrowski, Jaroslaw Jedrysiak
12:40-13:00	4145	Heat Transfer in Periodic Laminated Layer - Robin Boundary Conditions / Ewelina Pazera, Piotr Ostrowski

Session 2F3

MS-008 Multiscale Design, Optimization and Simulation of Novel Materials and Structures

– Chairs: Quan Bing Eric Li, Tong Li

Time	ID	Title / Authors
13:50-14:10	4101	<i>Keynote:</i> Design and Optimization of Acoustic Metamaterials with Efficient Algorithms / Quan Bing Eric Li
14:10-14:30	3881	<i>Keynote:</i> Computations of Elastic Modulus of Biological Tissues by using the Smoothed Finite Element Methods and the Particle Swarm Optimization / Xu Xu, Sha Wang, Eric Li
14:30-14:50	3760	Multi-scale Asymptotic Computations for Piezoelectric Modal Problem of Perforated Composites / Qiang Ma
14:50-15:10	4077	Flow Distribution of Hydrocarbon Fuel in Parallel Channels / Min Chu
15:10-15:30	4093	Mechanical Properties of Square Tube Reinforced with Rivets using Non-linear Finite Element Method / Xinxin Wang
15:30-15:50	4092	Mechanical Performance of Hierarchical Metal Honeycomb Subjected to Axial Loading--numerical Simulation / Zhendong Li

Session 2F4

MS-008 Multiscale Design, Optimization and Simulation of Novel Materials and Structures

– Chairs: Quan Bing Eric Li, Tong Li

MS-029 Data Analysis Based and Simulation Based Multidiscipline Optimization Methods and Their Applications

– Chairs: Quan Bing Eric Li, George Xu

Time	ID	Title / Authors
16:10-16:30	4042	<i>Keynote:</i> Prediction of Void Growth and Fiber Volume Fraction Based on Filament Winding Process Mechanics / Tong Li, Qi Wang, Ming Ren
16:30-16:50	4195	<i>Invited:</i> Robust Concurrent Topological Design of Macrostructure and Composite Material with Hybrid Interval Random Modeled Imprecise Uncertainties Via BESO / Zhicheng He
16:50-17:10	4074	Effective Thermal Conductivity of Open-cell Ceramic Foams / Zi Kang Low, Nawfal Blal
17:10-17:30	4149	Structural Design of Nonuniform Metasurface to Mimic the Deformation Behavior of Human Skin at Highly-Stretched Joint Area / Yafeng Han, Changmeng Liu, Shuyuan Ma, Jiping Lu, Ying Liu, Wenfeng Lu
17:30-17:50	4198	Design of 3D Printed Dental Implants by Using Response Surface and Topological Optimization Methods / Yu-Chieh Tsai
17:50-18:10	4164	Research on Prediction Method of Ship Impact Environment Based on Probabilistic Neural Network / Jun Guo

Parallel Sessions

Day 3: Room B (Room 4411) Parallel Sessions: Friday - July 12, 2019

Session 3B1

MS-024 Lattice Boltzmann Method on Multiphase Flow and Fluid-Structure Interaction

– Chairs: Haibo Huang

Time	ID	Title / Authors
09:00-09:20	4113	A Numerical Study of the Rheology of Flexible Fiber Suspensions / Haibo Huang
09:20-09:40	3640	Phase field lattice Boltzmann method for multiphase flows / Hong Liang
09:40-10:00	3704	An interface-compressed diffuse interface lattice Boltzmann method for multiphase flows / Jie Wu

Session 3B2

MS-037 Novel Mesh-Reduction Methods for Engineering & Sciences

– Chairs: Leiting Dong, Chia-Ming Fan, Zhuojia Fu

Time	ID	Title / Authors
10:40-11:00	4129	<i>Keynote:</i> A New Fragile Points Method (FPM) in Computational Mechanics, Based on the Concepts of Point Stiffnesses and Numerical Flux Corrections / Leiting Dong
11:00-11:20	3765	<i>Keynote:</i> Localized Trefftz Method for Solving Two-dimensional Laplace, Helmholtz and Biharmonic Equations / Chia-Ming Fan, Yan-Cheng Liu, Yeichung Yeih, Cheng-Yu Ku
11:20-11:40	3884	<i>Keynote:</i> Bandgap calculation of elastic wave in 2D solid phononic crystals by the meshless generalized finite difference method / Zhuojia Fu
11:40-12:00	3809	A Precise Integration Scheme in Dual Reciprocity Boundary Element Method for Transient Problems / Zhou Fenglin
12:00-12:20	3977	A Rapid Calculating Method for the Concentrated Notch Stress in Thin-walled Structures / Yunfeng Shi, Rui Li, Bo Wang, Bin Wang
12:20-12:40	3777	The Space-time Generalized Finite Difference Method for Solving Two-dimensional Burgers' Equations / Po-Wei Li, Zhuo-Jia Fu, Chia-Ming Fan
12:40-13:00	3968	A New Method of Fundamental Solutions for Helmholtz Problem with Simply-connected Domain / Ying-Te Lee, Shyh-Rong Kuo

Session 3B3

MS-001 Theory and Formulation for Novel Computational Methods

– Chairs: Xiaowei Gao, Ziqian Li, Zhihai Xiang

Time	ID	Title / Authors
13:50-14:10	3684	<i>Keynote:</i> A Novel Perspective of the Scale-law of Elastic Moduli and Polymer Fraction in Soft Materials (hydrogel) / Ziqian Li
14:10-14:30	4076	<i>Keynote:</i> Calculation of the Approximate Upper Bound of Knockdown Factors for Cylindrical Shells Based on the Willis-form Finite Element Method / Zhihai Xiang, Yixiao Sun
14:30-14:50	3917	Application of the R-function Theory for the Bending Problem of Shallow Spherical Shells with Concave Boundary / Hong Yuan
14:50-15:10	3749	A Novel Theory of Beam and Plate and the Finite Element Implementation / Luxian Li, Yongle Pei, Peishuai Geng
15:10-15:30	3831	Element Differential Method for Piezoelectric Problems / Jun Lv, Minjie Shao, Miao Cui, Xiaowei Gao
15:30-15:50	3625	High-order Multiphase Flow Numerical Simulation with Pseudo Arc-length Method / Zhang Hetao, Ning Jianguo

Session 3B4

MS-001 Theory and Formulation for Novel Computational Methods

– Chairs: Xiaowei Gao, Ziqian Li, Zhihai Xiang

Time	ID	Title / Authors
16:10-16:30	4151	Adaptive and Parallel Local Mesh Generation Method and Its Application / Weiwei Zhang
16:30-16:50	4102	Super Conforming Mixed Element in Dynamic Analysis / XiangRong Fu, Pu Chen, ShuLi Sun, MingWu Yuan
16:50-17:10	3797	Experimental acquisition of joint stiffness of a six-axis tandem robot and discussion of a macroscopic accurate modal analysis method / Pengfei Xu, Shuyong Duan

Parallel Sessions

Day 3: Room C (Room 4412) Parallel Sessions: Friday - July 12, 2019

Session 3C1

MS-030 Reduced Order Models for Structures and Fluids

– Chairs: Jianyao Yao, Ruoyu Li

Time	ID	Title / Authors
09:00-09:20	3872	Coupling of Non-matching Interfaces in a Component Mode Synthesis Method for 3D Finite Element Method / Ruoyu Li, Jianyao Yao, Shiyuan Deng, and Zichu Jia
09:20-09:40	3865	<i>Keynote:</i> Calculating the Forced Response of a Mistuned Blisk Via Surrogate Models / Yao Jianyao, Deng Shiyuan
09:40-10:00	3799	<i>Invited:</i> Stress/Displacement Field Calculation for Discontinuous Mechanical Structure Based on Layered Elastic Theory / Liangguo Meng, Qingchao Sun, Yunlong Wang, Lin Xue
10:00-10:20	4167	<i>Keynote:</i> Nonlinear Buckling Analysis of Structures using a Novel Reduced Order Model / Ke Liang

Session 3C2

MS-048 High Performance Computing on Simulations

– Chairs: Jun Liu, Xiangyang Cui

Time	ID	Title / Authors
10:40-11:00	4007	<i>Keynote:</i> A Novel Parallel Finite Element Procedure for Sheet Metal Forming Using GPU and Mixed Precision Algorithm / Yong Cai, Shengquan Wang, Xiangyang Cui, Guangyao Li
11:00-11:20	4123	Exploiting Symmetry in Elemental Computation and Assembly Stage of GPU-Accelerated FEA / Subhajit Sanfui, Deepak Sharma
11:20-11:40	3939	A GPU Based Acceleration of Finite Element and Isogeometric Analysis / Sachin Gautam, Utpal Kiran, Vishal Agrawal, Deepak Sharma
11:40-12:00	3999	Interactive Simulation and Control on Soft Robotic Arms Grasping Deformable Objects / Jun Liu, Zhuangjian Liu
12:00-12:20	3971	An Efficient Parallel Aggregative Algebraic Multigrid Solver on Sunway Many-core Architectures / Hanfeng Gu
12:20-12:40	4119	Development and Application of Parallel Accelerated Techniques for Large-Scale Computation of Structures Based on Finite Particle Method / Yaozhi Luo, Chao Yang, Yanfeng Zheng, Wei Wang
12:40-13:00	3945	Data Management Challenges of Exascale Scientific Simulations: A Case Study with the Gyrokinetic Toroidal Code and ADIOS / Lipeng Wan, Kshitij Mehta, Scott Klasky, Matthew Wolf, H. Y. Wang, W. H. Wang, J. C. Li, Zhihong Lin

Session 3C3

MS-015 Computational Acoustics and Elastodynamics in Solids and Structures

– Chairs: Hongping Hu, Zai-You Yan

Time	ID	Title / Authors
13:50-14:10	3705	<i>Keynote:</i> A Coupled "FE-Meshfree" RPIM-T3 Element for Two-dimensional Acoustic Radiation Problems / Wei Li, Cong Cheng, Qiang Gui, Yingbin Chai
14:10-14:30	4009	<i>Invited:</i> Numerical Simulation and Analysis of Target Strength of Underwater Buried Objects / Jiawang Li, Wei Li
14:30-14:50	3947	<i>Invited:</i> Isogeometric Collocation in Acoustics: Higher-order Boundary Conditions, Optimization and Inverse Problems / Elena Atroshchenko
14:50-15:10	3739	Radial Point Interpolation Method for Acoustic Scattering Numerical Computation / Qiang Gui, Wei Li
15:10-15:30	3856	A Highly Efficient and Accurate Analytical Method for Elastodynamic Problems Within the Whole Frequency Range / Xiang Liu
15:30-15:50	3697	Numerical Model of Bolt Stress Measurement Based on Acoustoelastic Theory / Qingchao Sun, Bo Yuan, Shuo Zhou, Wei Sun, Xiaokai Mu

Session 3C4

MS-015 Computational Acoustics and Elastodynamics in Solids and Structures

– Chairs: Hongping Hu, Zai-You Yan

Time	ID	Title / Authors
16:10-16:30	4060	<i>Keynote:</i> Analysis of wave propagation and transient response in laminated piezoelectric cylindrical shells / Yunying Zhou
16:30-16:50	3815	<i>Keynote:</i> The study of frequency-temperature behavior of SAW resonator / Hongping Hu, Yanming Zhang, Qin Qian
16:50-17:10	3750	<i>Invited:</i> The PFFT Accelerated BEM for 3-D Acoustic Problems / Zai-you Yan
17:10-17:30	4169	Research on the Vibration and Noise of Surface Ships Based on Time Domain Method / Fuzhen Pang, Haichao Li, Yuhui Li, Cong Gao, Yuan Du

Parallel Sessions

Day 3: Room D (Room 4511) Parallel Sessions: Friday - July 12, 2019

Session 3D1

MS-005 Methods for Multi-Phase Flows

– Chairs: Dia Zeidan, A-Man Zhang

Time	ID	Title / Authors
09:00-09:20	4203	<i>Keynote:</i> Non-Equilibrium Two-Phase Flow Computations by a Mixture Model / Eric Goncalves, Dia Zeidan, Lukas van Gemmeren, Peer Ueberholz, Peter Farber, Jens Gräbel
09:20-09:40	3937	Implementation of a Conservative Cut Cell Method for the Simulation of Two-phase Cavitating Flows / Yiannis Vrionis, Konstantinos Samouchos, Kyriakos Giannakoglou
09:40-10:00	3972	The Pulsation of a Bubble Generated by an Airgun with One Open End / Shi-Ping Wang, A-Man Zhang
10:00-10:20	3864	An Efficient Multiscale Model to Simulate the Motion of Particulate Matter in the Human Airways / Zhenya Fan, David Holmes, Emilie Sauret, Mohammad Islam, Suvash Saha, Zoran Ristovski, YuanTong Gu

Session 3D2

MS-035 Modelling & Simulation for Urban and Built Environment

– Chairs: Hee Joo Poh, Harish Gopalan

Time	ID	Title / Authors
10:40-11:00	3761	<i>Keynote:</i> Revisit of Horizontal Homogeneity of Atmospheric Boundary Layer Flows / George XU, Hee Joo Poh, Harish Gopalan, Arthur Lim and Jing Lou
11:00-11:20	3674	<i>Keynote:</i> An Improved Coupled Solver in OpenFOAM for Simulation of Low Wind-Speed Flows in Built Environment / Harish Gopalan, Venugopalan Raghavan, Senthil Selvaraj, Arthur Lim
11:20-11:40	3938	Modeling and Simulating Radiative Cooling Materials for Microclimate Analysis / Gloria Pignatta, Mattheos Santamouris
11:40-12:00	4153	Modeling the Energy Performance of Retrofit Double-glazing for Office Settings in the Tropical Region / Huizhe Liu, Wee Shing Koh
12:00-12:20	3631	Comparison of Transport Methodologies on Near-field Pollutant Dispersion in Urban Environments using CFD / Clarence Tee, E.Y.K Ng, George Xu
12:20-12:40	4111	Development of Shapefile Converter for Simulation of Wind & Thermal Effects of Buildings & Trees in Built Environment with Terrain Effects / Venugopalan Srinivasa Gopala Raghavan, Harish Gopalan, Jing Lou
12:40-13:00	3840	Evaluation of a Semi-automated Photogrammetry-based Method for Geometry Creation for Urban Simulations / Chin Chun Ooi, Raymond Quek, Zhengwei Ge, Hee Joo Poh, George Xu

Session 3D3

MS-004 Multiscale Approaches Bridging Atomistic and Continuum Domains

– Chairs: Huy Do, Zihao Yang

Time	ID	Title / Authors
13:50-14:10	3723	Stochastic Multiscale Heat Transfer Analysis of Heterogeneous Materials with Multiple Random Configurations / Zihao Yang
14:10-14:30	3935	Numerical Simulation of Mechanical Behavior of Knitted Textiles at Meso- and Macro- Scales / Huy Do, Oliver Weeger, Yu Han Quek, Nathalie Ramos, Josef Kiendl, Kenneth Tracy
14:30-14:50	3712	Multi-scale Strengthening and Toughening Mechanism for Graphene Derived Layer-by-layer Materials / Jingran Liu, Huasong Qin, Yilun Liu
14:50-15:10	3722	Thermo-mechanical Coupling Model for Metallic Crystalline Materials at Micro-nano Scale / Jieqiong Zhang
15:10-15:30	4038	A Simplified a Posteriori Error Estimation for a Consistent Atomistic-to-continuum Coupling Method in 2D / Hao Wang, Mingjie Liao, Ping Lin

Session 3D4

MS-011 Advanced Computational Modelling of Materials with Microstructures

– Chairs: Tong Li, Wei Huang

Time	ID	Title / Authors
16:10-16:30	4034	Reaction Molecular Dynamics Simulation on the Compatibility of Epoxy Resin with Oxygen Under Impact Load / Tong Li
16:30-16:50	4171	Compaction Simulation of Continuous Fiber Composites by Homogenisation and Finite Element Analysis / Francois Trochu, Wei Huang
16:50-17:10	4179	Deformation and Fracture of Ti-Nb Alloys with a Grain Size Distribution / Vladimir Skripnyak, Natalia Skripnyak, Evgenia Skripnyak
17:10-17:30	4205	Chemical Structure and Adhesion of DLC Film with Amorphous SiC Interlayer / Xia Zhu
17:30-17:50	4017	Compressive Behaviors of Porous Graphene Aerogel and Its Application in High Performance Supercapacitor / Fei Dang

Parallel Sessions

Day 3: Room E (Room 4512) Parallel Sessions: Friday - July 12, 2019

Session 3E1

MS-016 Numerical Methods for Multiphase Fluid Flow and Heat Transfer

– Chairs: Vasily Lapin, George XU

Time	ID	Title / Authors
09:00-09:20	3896	<i>Keynote</i> : An Implicit Second Order Immersed Boundary Method / Vasily Lapin, Denis Esipov, Denis Chirkov, Dmitriy Kuranakov
09:20-09:40	4006	The Employment of Porous Media Model to Simulate Lung Microwave Ablation / Qun Nan, Xiang Gao
09:40-10:00	3769	High-Resolution Numerical Simulation of Detonation Propagation and Dead Zones in Condensed Explosives / Ma Fanjie, Ma Tianbao
10:00-10:20	4097	Study of Blood Flow Velocity in Epicardial Microwave Ablation of Atrial Fibrillation / Qun Nan, Meng Zhang

Session 3E2

MS-000 General Papers

– Chairs: Zhi-Qian Zhang, Wei Huang

Time	ID	Title / Authors
10:40-11:00	4185	<i>Keynote</i> : Data-driven automation for maritime: Focus on design appraisal and navigation planning/ Wei Chian Tan, Kie Hian Chua, Yanling Wu
11:00-11:20	4081	Optimization Research of Fertilizer Guiding Mechanism Based on the Discrete Element Method / HongJian Zhang, Yufeng Li, Jinxing Wang, Kaixing Zhang, Shuangxi Liu
11:20-11:40	3851	Investigation on the Aged, Diseased and Defected RBCs Removal Process within the Spleen, A Review / Dinushika Karandeniya
11:40-12:00	4065	A Multidisciplinary Computational Model for Durability Assessment of Ice-phobic Coating in Aerospace / Zhi-Qian Zhang
12:00-12:20	4150	On the Circular Logarithm: Uncorrelated Mathematical Models Solved in the 0 to 1 Interval / Yi-Ping Wang, Hongxuan Wang
12:20-12:40	4204	Morphological Rank-Space Segmentation of Clumped Filaments in Fluorescence Microscopy Imagery / Yongjian Yu, Jue Wang
12:40-13:00	3794	Combination of Independent Component Analysis and Singular Value Decomposition for Emotional EEG Source Localization / Wenhui Sun, Wenchao Li, Zhao Lv
	3987	An Improved Reflectance Prediction Model for Halftone Printing Dot Based on Monte Carlo Method / Honghao Liu, Kaixing Zhang, Xianxi Liu, Heow Pueh Lee

Session 3E3

MS-043 Computational Fluid Structure Interaction and Application

– Chairs: Wenquan Wang, Guiyong Zhang

Time	ID	Title / Authors
13:50-14:10	4083	<i>Keynote</i> : A Review on Immersed Boundary Methods for Fluid-Structure Interaction / Wenquan Wang
14:10-14:30	3978	<i>Keynote</i> : Improved Lattice Boltzmann Flux Solver and Its Applications to Naval and Ocean Engineering / Guiyong Zhang, Haoran Yan, Chang Shu, Shuangqiang Wang
14:30-14:50	4072	D-SPH and S-PIM Coupled Method for Fluid-structure Interaction Problems / Guiyong Zhang, Taian Hu, Shuangqiang Wang, Yanzeng Deng
14:50-15:10	4106	OpenFOAM Implementation of Immersed Boundary Method to Simulate Fluid-solid Interaction Problems / Magu Raam Prasaad R, Ajit Kumar, Santanu Mitra
15:10-15:30	3800	Extension of the Immersed Boundary Method in OpenFOAM to Simulate Flow-induced Motion / Hui Feng, Peter Alan Todd, Heow Pueh Lee
15:30-15:50	3820	An Efficient Finite-volume Algorithm for Fluid-structure Thermo-mechanical Analysis / Branislav Basara, Zoran Zunic, Jooyoung Hahn, Sanjin Saric

Session 3E4

MS-043 Computational Fluid Structure Interaction and Application

– Chairs: Wenquan Wang, Guiyong Zhang

Time	ID	Title / Authors
16:10-16:30	3652	Hemodynamic investigation of aortic aneurysm after stent graft with slits treatment / ChiWei Ong, Fei Xiong, Foad Kabinejadian, Yen Ngoc Nguyen, Gideon Praveen Kumar, FangSen Cui, Gongfa Chen, Pei Ho, Hwa Liang Leo
16:30-16:50	3636	Three-dimensional Computer Reconstruction of the Airway- and the Vascular Systems of the Lung of the Domestic Fowl, Gallus Gallus Variant Domesticus / John Maina, Jeremy Woodward, Yolanda Ramonisi, Reatlegile Mashiteng, Lolo Moka
16:50-17:10	3622	Blood Flow Simulation of Left Ventricle and Aorta with Translation Motion / Masashi Yamakawa, Yuto Yoshimi, Shinichi Asao, Kyohei Tajiri
17:10-17:30	3649	3D Nonlinear Random Vibrations of Cable-moored Offshore Floating Structures Under Wave Excitation / Kun Wang, Guo-Kang Er, Zhihui Zhu, Vai Pan Iu

Parallel Sessions

Day 3: Room F (Room 4611) Parallel Sessions: Friday - July 12, 2019

Session 3F1

MS-017 Advanced Computational Methods for Soft Matter and Machine

– Chairs: Hua Li, Isamu Riku

Time	ID	Title / Authors
09:00-09:20	3700	<i>Keynote:</i> Control of Small Particle Movement at a 90-degree Corner with Optimized Energy Consumption / Xingyu Zhang, Hua Li
09:20-09:40	3898	<i>Keynote:</i> Study on the Change of Entangling Structure of Molecular Chains During the Tensional and Swelling Process of Elastomeric Gel / Isamu Riku
09:40-10:00	3653	Numerical Simulation on Multi-stimuli Responsive Behaviors of Photo-sensitive Hydrogel / Xiao Chen, Hua Li, Yong Lam
10:00-10:20	3708	A Multiphysics Model to Characterize the Mechanism of the Movement of Mimosa Pudica / Yifeng Wang, Hua Li

Session 3F2

MS-017 Advanced Computational Methods for Soft Matter and Machine

– Chairs: Hua Li, Isamu Riku

MS-032 Concurrent Multiscale Modeling from Electrons to Finite Elements

– Chairs: Qiang Cao

Time	ID	Title / Authors
10:40-11:00	3988	<i>Invited:</i> Adverse Structural and Biochemical Effects of Alport Syndrome-related Missense Mutations on Collagen IV / Jingjie Yeo, Yimin Qiu, GangSeob Jung, Markus J. Buehler, David L. Kaplan
11:00-11:20	4163	<i>Invited:</i> Central Spot Pattern Formation Under Enhanced Marangoni Effect / Duan Fei, Junheng Ren
11:20-11:40	3936	Application of Varying Order B-splines Discretization for Accurate Peeling Computations / Sachin Singh Gautam, Vishal Agrawal, Saipraneeth Gouravaraju
11:40-12:00	4152	Detection and Classification of Defects in Selective Laser Melted 316L Stainless Steel Based on Convolutional Neural Network / Kewei Chen, Hua Li
12:00-12:20	4165	Numerical Investigations on the Onset of Nucleate Boiling for Submerged Liquid Impingement Flow / Simiao Fan, Fei Duan
12:20-12:40	4040	<i>Keynote:</i> Mechanical Properties of Twisted Bilayer Graphene / Qiang Cao
12:40-13:00	4025	Tensile Characteristic of CNT-reinforced Copper Nanocomposite / Pengjie Wang

Session 3F3

MS-044 Advances in Damage and Failure Mechanics

– Chairs: Leong Hien Poh, Zbigniew Pater

Time	ID	Title / Authors
13:50-14:10	3648	<i>Keynote:</i> Determining the Critical Value of Damage for C45 Grade Steel with Rotary Compression in a Channel / Zbigniew Pater
14:10-14:30	4044	Localizing Gradient Damage Model with Micro-inertia for Dynamic Fracture / Leong Hien Poh, Zhao Wang, Amit Shedbale, Sachin Kumar
14:30-14:50	4184	Phase Field Modeling of Brittle Fracture Simulation on the Cell-based Smooth Finite Element Framework / Wei Huang, Yu-E Ma
14:50-15:10	3824	J-integral Decomposition Approach for 3-D Elasto-Plastic Fatigue Crack Growth Simulations / Manish Kumar, Indra Vir Singh, Bhanu Kumar Mishra
15:10-15:30	3696	Modelling Twin and Grain Boundary Interactions in Nanocrystalline Materials: Phase Field Study / Jakub Mikula, Tong-Earn Tay, Rajeev Ahluwalia, Siu Sin Quek
15:30-15:50	3946	In-plane and Out-of-plane Compressive Mechanical Properties of Nomex Honeycombs Based on Simulation / Zhejun Feng

Session 3F4

MS-044 Advances in Damage and Failure Mechanics

– Chairs: Leong Hien Poh, Zbigniew Pater

MS-014 Modeling on Composite Failures

– Chairs: Leong Hien Poh, Zbigniew Pater

Time	ID	Title / Authors
16:10-16:30	4130	Wrinkle Generation Mechanism During Rotary-Draw Bending Forming / Xia Zhu
16:30-16:50	3628	Physics, Geometric, Material Model, and Experimental Considerations for Exploding Wire Simulation Validation / Christopher Garasi
16:50-17:10	3814	An intermediately-homogenized electromechanical peridynamic model for damage and fracture in composites / Ziguang Chen, Yuntai Hu, Florin Bobaru

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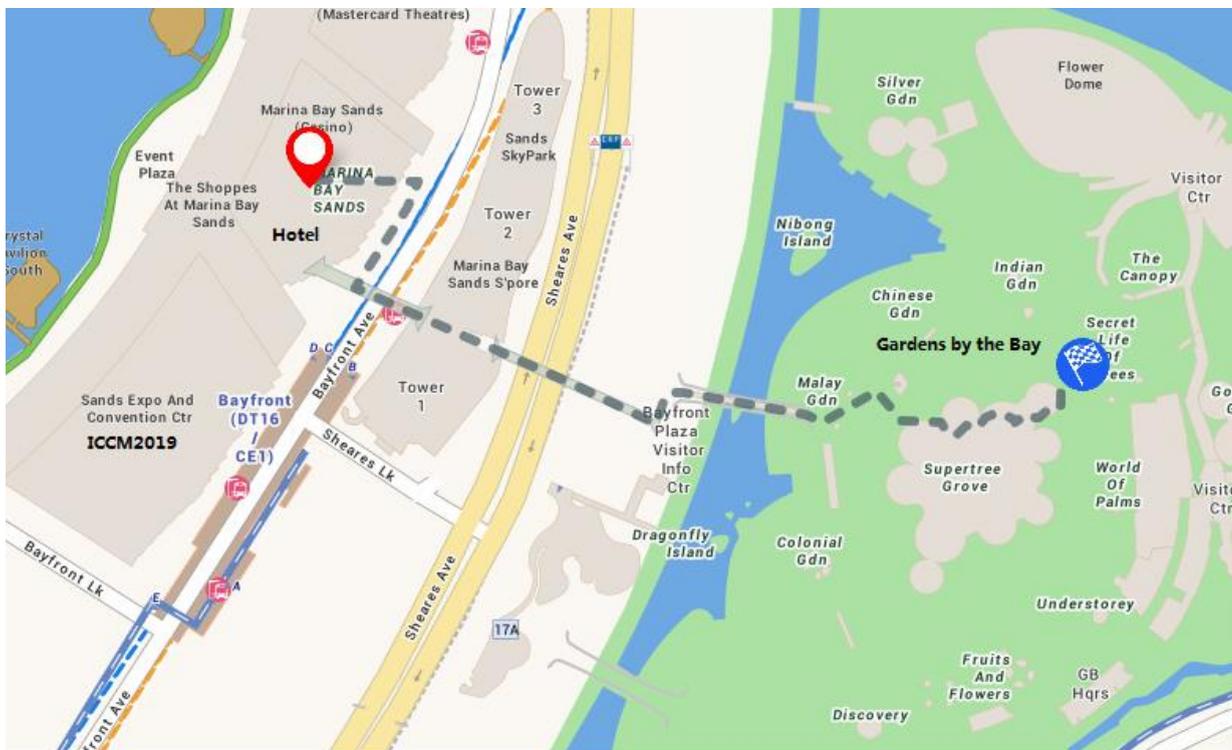
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VISITING GARDEN BY THE BAY

Each registered participant is given a pre-paid ticket that are good for visiting the Singapore Gardens by the Bay. This ticket is valid from the 9th to 14th of July 2019, and some detailed descriptions can be found at (<https://www.gardensbythebay.com.sg>).



You may visit at your convenience during the open hours. It is just a short walk distance away from our ICCM2019 conference hotel - Marina Bay Sands.



Other attractions include Resorts World Sentosa (Universal Studios Singapore, S.E.A. Aquarium, Adventure Cove Waterpark, Dolphin Island etc.) and Botanic Gardens (The only tropical garden as UNESCO World Heritage Site. Free admission). You may find more information online or by contacting your travel agent.

Singapore

The Little Red Dot

The Republic of Singapore is an island city-state on the southern tip of the Malay peninsula. The country has an area of 722.5km² and a population of 5.6 million. After gaining independence from Great Britain in 1963, Singapore transformed itself from a developing to a developed country within a generation. Today, it is a hub for international trade, finance and innovation.

Marina Bay Sands

Marina Bay Sands is an integrated resort, incorporating a hotel, convention-exhibition center, mall, museum, and theatres. Opened in 2011, the resort has earned its place on the iconic skyline of Marina Bay. It is notable for its unique architecture, especially its 340-meter SkyPark spanning and overhanging its three main towers.



Climate

Singapore has a tropical rainforest climate. The temperature remains consistently hot and humid throughout the year. Monsoon seasons which happen twice each year. The Northeast Monsoon which occurs from mid-November to early March and the Southwest Monsoon season which occurs from June to September. Periods between monsoon seasons receive less rain and wind.

Public Transport

Singapore's public transportation system is recognized as one of the best in the world. Options include public buses, taxis and trains (MRT and LRT). Public trains and buses can be accessed by obtaining an EZ-link card, which makes concessions cheaper and quicker.

Ride sharing app like Grab is available in Singapore as alternatives to traditional taxis. Ride sharing apps can access a pool of civilian as well as connected taxi drivers.

