



ICCM2018

9th International Conference on Computational Methods



Rome, Italy
August 6th-10th 2018

Chairman: **Patrizia Trovalusci**
(Sapienza University of Rome, Italy)

Honorary Chairman: **Gui-Rong Liu**
(University of Cincinnati, OH, USA)

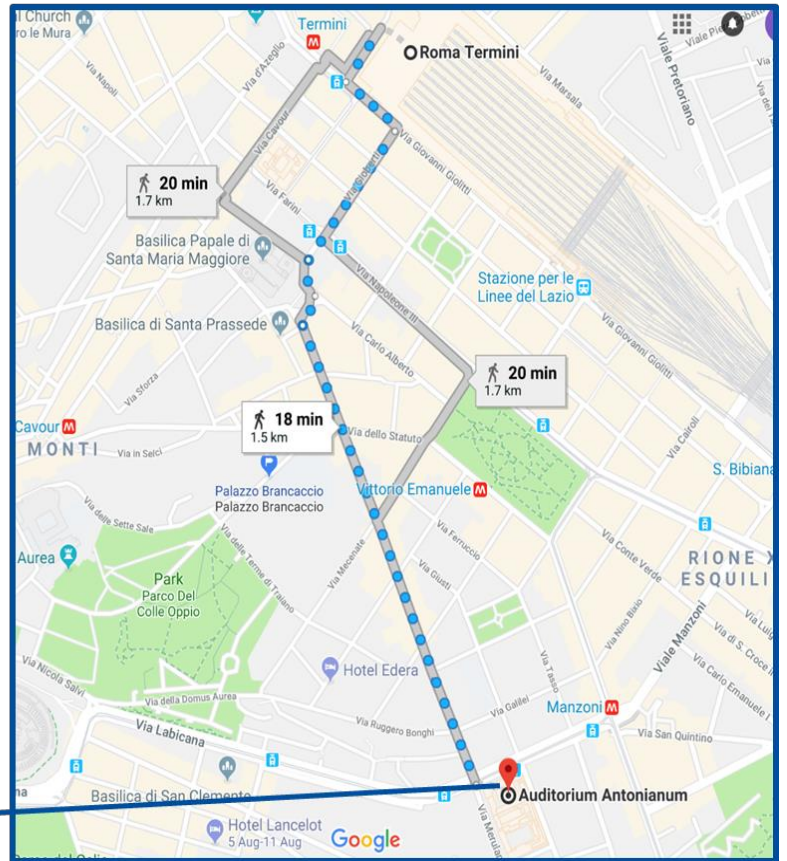
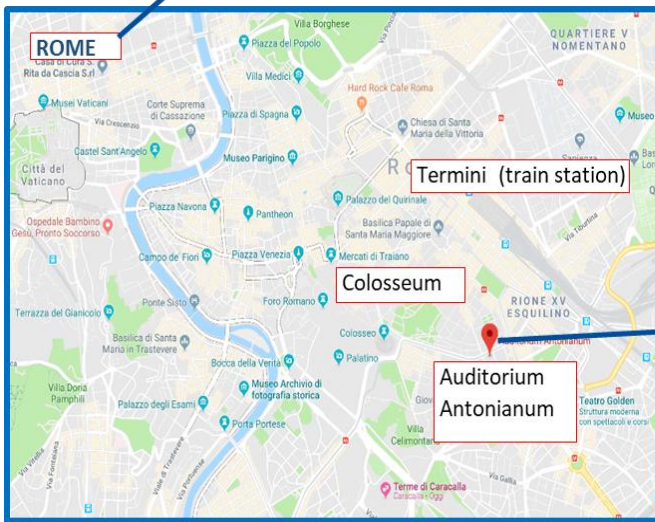
under the auspices of



SAPIENZA
UNIVERSITÀ DI ROMA
DIPARTIMENTO DI INGEGNERIA
STRUTTURALE E GEOTECNICA



AIMETA
Associazione Italiana di
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ABOUT ROME

Rome is the capital city of Italy. Rome also serves as the capital of the Lazio region. With 2,872,800 residents in 1,285 km² (496.1 sq mi) it is also the country's most populated city. It is the fourth-most populous city in the European Union by population within city limits. It is the centre of the Metropolitan City of Rome, which has a population of 4.3 million residents. Rome is located in the central-western portion of the Italian Peninsula, within Lazio (Latium), along the shores of the Tiber. The Vatican City is an independent country inside the city boundaries of Rome, the only existing example of a country within a city: for this reason Rome has been often defined as capital of two states.

CONFERENCE VENUE

ICCM2018 will be held in the **Auditorium Antonianum**, Viale Manzoni, 1 – 00185 Roma, Italy.

- Plenary Lectures will be held every day at the Auditorium.
- All other sessions will be in S. Francesco, S. Bernardino, Jacopone, Michelangelo, Caravaggio and Bernini rooms
- Conference Banquet will be at **Palazzo Brancaccio** (between Roma Termini and Auditorium Antonianum, please refer to the map on page 2 and the description on page 39).

0. Auditorium (basement, level -1)

1. S. Francesco (ground floor, level 0)

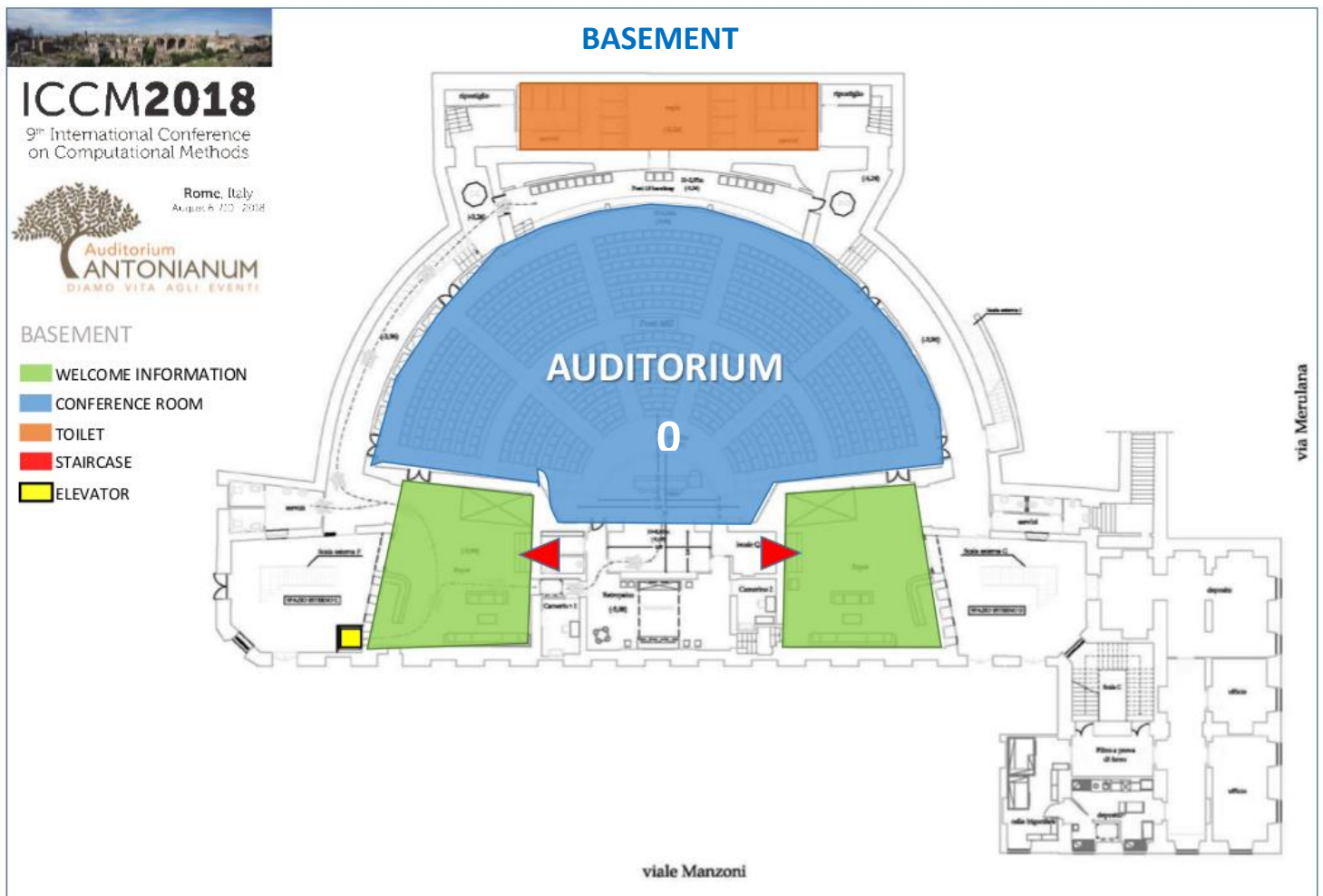
2. S. Bernardino (ground floor, level 0)

3. Jacopone (ground floor, level 0)

4. Michelangelo, Room A (first floor, level 1)

5. Caravaggio, Room B (first floor, level 1)

6. Bernini, Room C (first floor, level 1)



GROUND FLOOR



ICCM2018

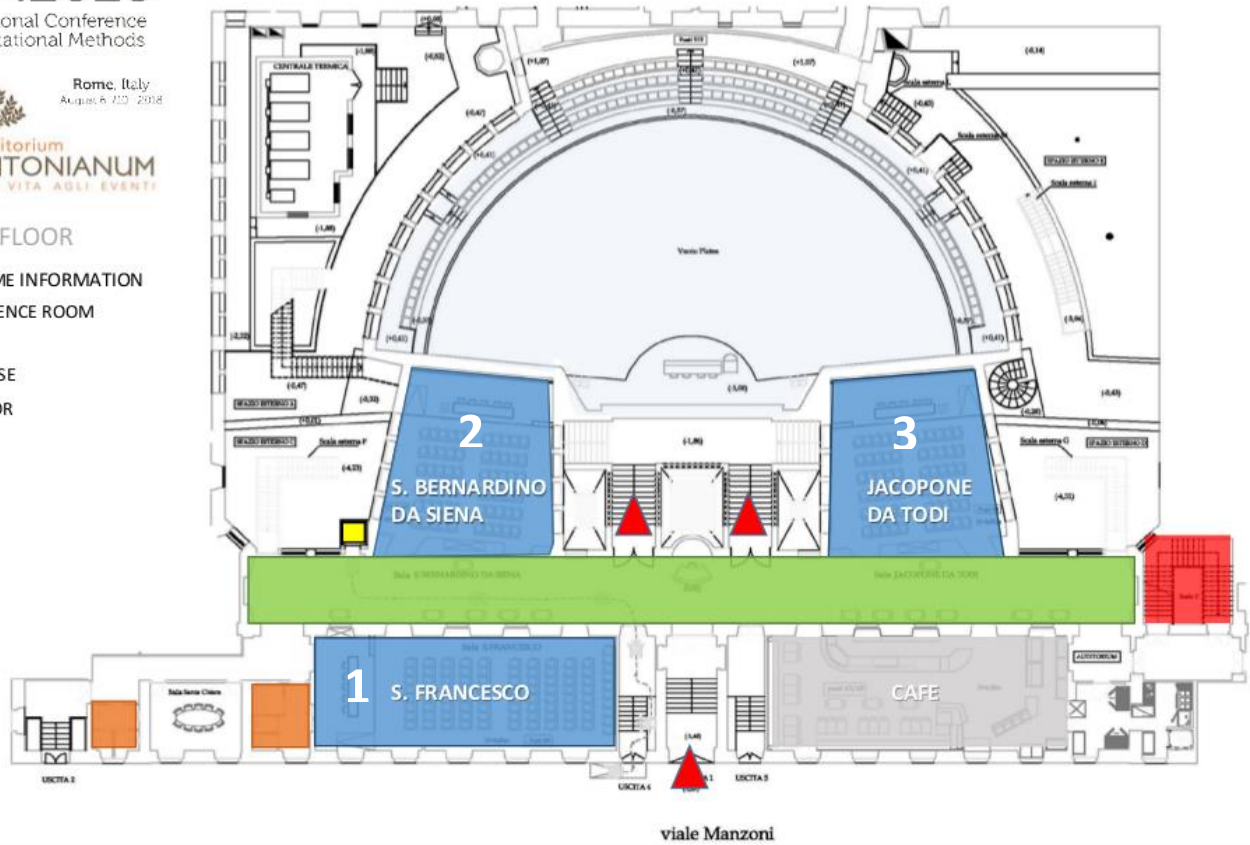
9th International Conference
on Computational Methods



Rome, Italy
August 6-10, 2018

GROUND FLOOR

- WELCOME INFORMATION
- CONFERENCE ROOM
- TOILET
- STAIRCASE
- ELEVATOR
- CAFE



FIRST FLOOR



ICCM2018

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FIRST FLOOR

- CONFERENCE ROOM
- TOILET
- STAIRCASE



4. ORGANIZATION COMMITTEE

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Honorary Chairman: Professor Gui-Rong Liu, University of Cincinnati, USA

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Local Staff

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Ada Amendola, Maria Laura De Bellis, Mariella De Piano, Giorgia Di Gangi, Paolo Di Re, Cristina Gatta, Lorenzo Leonetti, Mariacarla Nocera, Marco Pepe, Marco Pingaro, Emanuele Reccia, Marialuigia Sangirardi, Valeria Settimi, Michela Talò

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Koshizuka Seiichi (Japan)	Sakai Mikio (Japan)	
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Lacarbonara Walter (Italy)	Shen Lian (USA)	
Lee Chin-Long (New Zealand)	Shioya Ryuji (Japan)	
Lee Ik-Jin (South Korea)	Shu Chang (Singapore)	
Leitao Vitor (Portugal)	Sibanda Precious (South Africa)	
Lenci Stefano (Italy)	Siegfried Schmauder (Germany)	

5. PROGRAM OVERVIEW

Overall Conference Program

ICCM2018, 6th-10th August 2018

Date	Time	Conference Program
Day 0 August 6 th (Monday)	16:00-18:00	On site Registration
	18:00-20:00	Welcome Reception
Day 1 August 7 th (Tuesday)	8:15-18:00	On Site Registration
Day 2 August 8 th (Wednesday)	8:45-18:00	
Day 3 August 9 th (Thursday)	8:45-13:00	
Day 1 August 7 th (Tuesday)	8:30-9:00	Opening Ceremony
Day 1 August 7 th (Tuesday) & Day 2 August 8 th (Wednesday)	9:00-9:45	Plenary Lecture
	9:45-10:45	Thematic Plenary Lectures
	10:45-11:15	Morning Coffee/Tea
	11:15-12:50	Parallel Sessions
	12:50-14:00	Lunch
	14:00-15:35	Parallel Sessions
	15:35-16:05	Afternoon Coffee/Tea
	16:05-18:00	Parallel Sessions
	20:00-23:00	Forums Events
Day 3 August 9 th (Thursday)	9:00-9:45	Plenary Lecture
	9:45-10:45	Thematic Plenary Lectures
	10:45-11:15	Morning Coffee/Tea
	11:15-12:50	Parallel Sessions
	12:50-14:00	Lunch
	14:00-15:35	Parallel Sessions
	15:35-16:05	Afternoon Coffee/Tea
	16:05-18:00	Parallel Sessions
	19:00-23:00	Banquet
Day 4 August 10 th (Friday)	8:30-9:00	Closing Ceremony
	9:00-11:00	Visit to <i>Sapienza</i> Campus Free discussions & meetings

Mini-Symposium (MS) Titles and Organizers

MS	Mini-symposium (MS) Title	Organizers
MS-100	General Papers	Patrizia Trovalusci, Sapienza University of Rome Gui-Rong Liu, University of Cincinnati
MS-000	Theory and Formulation for Novel Computational Methods	Gui-Rong Liu, University of Cincinnati
MS-001	Multiscale and Multiphysics Modeling for Complex Materials (MMCM11)	Patrizia Trovalusci, Sapienza University of Rome Nicholas Fantuzzi, University of Bologna Maria Laura De Bellis, University of Salento Martin Ostoj-Starzewski, University of Illinois at Urbana-Champaign
MS-002	Multiscale Modeling and Simulation of Advanced Materials and Structures	Quan Bing Eric Li, Teesside University
MS-003	Computational Modeling of Damage and Failure in Materials and Structures	Tinh Quoc Bui, Tokyo Institute of Technology Sohichi Hirose, Tokyo Institute of Technology Satoyuki Tanaka, Hiroshima University
MS-004	Particle Based Methods	Zhen Chen, Dalian University of Technology / University of Missouri Yan Liu, Tsinghua University Xiong Zhang, Tsinghua University
MS-005	Recent Advances in Meshfree and Particle Methods	Bin Chen, Xi'an Jiaotong University Seiichi Koshizuka, University of Tokyo Moubin Liu, Peking University
MS-006	Large Scale Coupled Problems and Related Topics	Hiroshi Kanayama, Japan Women's University Lijun Liu, Japan Science and Technology Agency, ACT-I Masao Ogino, Nagoya University Ryuji Shioya, Toyo University
MS-007	Fracture Mechanics and Structural Integrity	Yinghua Liu, Tsinghua University
MS-008	Computational Multiphase and Complex Flows	Yi-Ju Chou, National Taiwan University Yang-Yao Niu, Tamkang University Feng Xiao, Tokyo Institute of Technology Fuling Yang, National Taiwan University
MS-009	Micro-Nano Mechanics of Materials: Theory, Simulation and Experiment	Hengan Wu, University of Science and Technology of China
MS-010	Reduced Order Models and Computational Methods for Multiphysics Simulation	Jian Yao, Chongqing University
MS-011	Modelling of Lightweight Composites Subjected to Extreme Loading Conditions	Zhongwei Guan, University of Liverpool
MS-012	Methods for Multi-Phase Flows	Dia Zeidan, German Jordanian University Lucy Zhang, Rensselaer Polytechnic Institute / Tianjin University of Science & Technology
MS-013	Computational Modeling in Biomedical Applications	Xianqiao Wang, University of Georgia
MS-014	Mechanical Behavior of Low-Dimensional Materials and Nanomaterials	Shaohua Chen, Beijing Institute of Technology

MS-015	Computational Methods in Fluid Engineering	Songying Chen, Shandong University
MS-016	Smoothed Finite Element Methods and Related Techniques	Yuki Onishi, Tokyo Institute of Technology
MS-017	Numerical Modelling of Fires and Solid Combustion	Zhao Tian, University of Adelaide
MS-018	Computational Marine Hydrodynamics	Wan Decheng, Shanghai Jiao Tong University
MS-019	Modelling of Failures of Composites	Zheng-Ming Huang, Tongji University
MS-020	Advanced Computational Methods for Soft Matters and Machines	Hua Li, Nanyang Technological University
MS-021	Wave Propagation in Linear and Nonlinear Media	Pawel Packo, AGH - University of Science and Technology
MS-022	Methods of Approximate Calculations of Statically Indeterminate Systems	Janusz Rębielak, Cracow University of Technology
MS-023	Epidemic Mathematical and Computational Models and their Optimal Control	Nasser Sweilam, Cairo University
MS-024	High Performance and High Resolution Simulation of Complex Engineering Problems	Rong Tian, Institute of Applied Physics and Computational Mathematics
MS-025	Structural Optimization Methods and Applications	Hongling Ye, Beijing University of Technology
MS-026	Computational Methods for Uncertainty Quantification	Chenfeng Li, Swansea University
MS-027	Stochastic Simulation and Dynamic Reliability Analysis of Geological and Geotechnical Problems	Yu Huang, Tongji University
MS-028	Data-driven Computational Structural Mechanics of Existing and Damaged Structures	Eleni Chatzi, ETH Zürich Vincenzo Gattulli, Sapienza University of Rome Costas Papadimitriou, University of Thessaly Keith Worden, The University of Sheffield
MS-029	Finite Element Model Updating and Model Validation	Jian Zhang, Jiangsu University
MS-030	Computation Design and Dynamics of Lattice Metamaterials	Ada Amendola, University of Salerno Gerardo Carpentieri, University of Salerno
MS-031	State-of-the-Art Modeling on Discrete Element Simulation	Kun Luo, Zhejiang University Mikio Sakai, The University of Tokyo Chuan-Yu Wu, University of Surrey
MS-032	Modeling of Fracture and Fragmentation of Solids under Dynamic Loading: Deterministic & Probabilistic Approaches	Alexander Gerasimov, Tomsk State University Sergey Zelepugin, Tomsk State University

MS-033	Multiscale Modelling of Damage and Fracture in Quasi-brittle Materials	Jianying Wu, South China University of Technology Zhenjun Yang, Zhejiang University Rena C. Yu, University of Castilla-La Mancha
MS-034	Advanced Computational Methods for Strain Localization, Damage and Fracture in Porous Media	Carlo Callari, University of Molise
MS-035	Mechanics of Nanocomposites	Walter Lacarbonara, Sapienza University of Rome Giovanni Formica, University of Roma Tre Michela Talò, Sapienza University of Rome
MS-036	Advanced Modelling of Composite Materials and Structures	Francesco Tornabene, University of Bologna Nicholas Fantuzzi, University of Bologna Michele Baccocchi, University of Bologna Rossana Dimitri, University of Salento
MS-037	Multi-scale/Mesoscale Modeling of Granular Materials Based on Discrete or Coupled Discrete-Continuum Methods	Xikui Li, Dalian University of Technology Yuntian Feng, Swansea University Shunying Ji, Dalian University of Technology Qinglin Duan, Dalian University of Technology Jidong Zhao, Hong Kong University of Science and Technology
MS-038	Modelling of Plasticity, Damage and Fracture	Shyue-Yuh Leu, China University of Science and Technology Liguo Zhao, Loughborough University
MS-039	Computational Methods in Nonlinear Dynamics Problems	Valeria Settimi, Sapienza University of Rome Jaroslaw Latalski, Lublin University of Technology
MS-040	Recent Advances in Nanocomposites and Green Materials: Theory, Computational aspects and Experiments	Raffaele Barretta, University of Naples Federico II Francesco Fabbrocino, Pegaso Telematic University Francesco Marotti de Sciarra, University of Naples Federico II Pietro Russo, Institute for Polymers, Composites and Biomaterials (IPCB) – CNR
MS-041	Numerical Methods in Smart Structures and Structronic Systems	Mu Fan, Nanjing University of Aeronautics and Astronautics Yujie Guo, Nanjing University of Aeronautics and Astronautics Hornsen Tzou, Nanjing University of Aeronautics and Astronautics
MS-042	Recent Advances in High-performance Finite Element Method	Song Cen, Tsinghua University Yan Shang, Nanjing University of Aeronautics and Astronautics Mingjue Zhou, Zhejiang University of Technology
MS-043	Computational Methods for Masonry Structures	Daniela Addessi, Sapienza University of Rome Antonio Gesualdo, University of Naples Federico II Elio Sacco, University of Naples Federico II Michela Monaco, University of Campania

MS-044	Recent Advances in Numerical Methods for Heat and Mass Transfer Problems	Precious Sibanda, University of KwaZulu-Natal
MS-045	Limit Analysis and Non-Smooth Contact Dynamics of Masonry Structures	Francesco Portioli, University of Naples Federico II Emanuele Reccia, Sapienza University of Rome Lorenzo Leonetti, University of Calabria Patrizia Trovalusci, Sapienza University of Rome
MS-046	Advanced Computational Methods in Underwater Acoustics	Wei Li, Huazhong University of Science and Technology
MS-047	Methods for Structural Problems with Particular Attention for Meshfree Methods	Antonina Pirrotta, University of Palermo / University of Liverpool
MS-048	Computational Geomechanics	Majid Manzari, The George Washington University
MS-049	Computational Methods for Acoustic Metamaterials, Sensors and MEMS/NEMS Devices	Feng Jin, Xi'an Jiaotong University
MS-050	Stochastic Modeling and Uncertainties in Computational Mechanics of Materials	Yan Li, California State University, Long Beach
MS-051	Multiscale Modelling of Advanced Materials and Structures	Chunhui Yang, Western Sydney University
MS-052	Computational Models for Multiscale/Multiphysics of Extreme Heat Flux Materials	Nasr Ghoniem, University of California at Los Angeles Yue Huang, University of California, Los Angeles Fabio Cismonti, EuroFusion
MS-053	Computational Modeling and Experimental Characterization of Soft Tissues	Jabareen Mahmood, Technion Israel Institute of Technology
MS-054	Microstructure-Based Computational Models of Materials Fatigue	Zaiser Michael, Friedrich-Alexander Universität Erlangen-Nürnberg Sandfeld Stefan, TU Bergakademie Freiberg
MS-055	Fractional Computational and Mathematical Models for Advanced Material Behavior	Massimiliano Zingales, University of Palermo Giuseppe Failla, University of Reggio Calabria Francesco Paolo Pinnola, University of Salento
MS-056	Computational Marine Hydrodynamics	Lu Zou, Shanghai Jiao Tong University Jianhua Wang, Shanghai Jiao Tong University Decheng Wan, Shanghai Jiao Tong University

MS-057	Advances on Engineering Computations and Design Optimization	Zhen Luo, The University of Technology, Sydney (UTS) Qinghua Qin, Australian National University; Henan University of Technology
MS-058	Multiscale Computational Modelling in Biomechanics and Mechanobiology	Alessio Gizzi, University Campus Bio-Medico of Rome Cristina Falcinelli, University Campus Bio-Medico of Rome Michele Marino, Leibniz Universität Hannover Anna Pandolfi, Polytechnic University of Milan Giuseppe Vairo, University of Rome - Tor Vergata Marcello Vasta, University "G. D' Annunzio" of Chieti-Pescara
MS-059	Advanced Methods for Engineering Challenges in Fracture Mechanics	Stella Brach, California Institute of Technology Marco Paggi, IMT School of Advanced Studies Giuseppe Vairo, University of Rome - Tor Vergata
MS-060	Polygonal, Polyhedral and Virtual Element for Advanced Applications	Edoardo Artioli, University of Rome Tor Vergata Marco Pingaro, Sapienza University of Rome Patrizia Trovalusci, Sapienza University of Rome
MS-061	Data-Driven Methods and Applications in Computational Mechanics and Materials	Wenjing Ye, Hong Kong University of Science and Technology
MS-062	Impact of Computational Methods on Architectural Design and Theories	Anna Irene Del Monaco, Sapienza University of Rome Elena Mele, Federico II University of Naples Patrizia Trovalusci, Sapienza University of Rome
MS-063	Uncertainty Quantification and Structural Reliability Analysis	Chao Jiang, Hunan University

Note: PL: Plenary Lecture; TPL: Thematic Plenary Lecture; MS: Mini-Symposium

DAY 1: Tuesday, 7 August 2018, Room Caravaggio (first floor)

Session 1.1E: Chair: *Catalin R. Picu*

MS-035/MS-040/MS-100 Mechanics of Nanocomposites / Recent Advances in Nanocomposites and Green Materials: Theory, Computational Aspects and Experiments / General Papers

Time	ID	Title / Authors
11:15-11:35	3062	KEYNOTE: Modeling and Simulation of Mechanical Damping in Nanocomposites / Giovanni Formica
11:35-11:50	3143	Impact Damage Behavior of Basalt Fibers Composite Laminates: Comparison Between Thermoplastic and Thermosetting Matrix / Ilaria Papa , Valentina Lopresto, Pietro Russo
11:50-12:05	3284	Natural Fiber Composites Subjected to Low Velocity Impacts: Experimental and Analytical Approach / Simonetta Boria , Carlo Santulli, Elena Raponi, Fabrizio Sarasini, Jacopo Trillò
12:05-12:20	3532	Use of Natural Fibrous Lime Mortar for Improving the Out of Plane Lateral Resistance of Masonry / Francesco Fabbrocino, Federico Cecchini , Pietro Russo, Francesca Nanni
12:20-12:35	3084	Prediction of the Glass Transition Temperature of Polymer Systems / Jong Hak Kim
12:35-12:50	3125	INVITED: Interfacial Sliding-driven Hysteresis in Polymer/carbon Nanotube Nanocomposites / Michela Talò , Walter Lacarbonara, Giovanni Formica, Giulia Lanzara

Session 1.2E Chairs: *Vincenzo Gattulli, Yan Li*

MS-050/MS-043/MS-003/MS-100/MS-057 Stochastic Modeling and Uncertainties in Computational Mechanics of Materials / Computational Methods for Masonry Structures / Computational Modeling of Damage and Failure in Materials and Structures / General Papers / Advances on Engineering Computations and Design Optimization

Time	ID	Title / Authors
14:00-14:20	3511	KEYNOTE: A Multiscale Framework to Quantify the Competing Failure Mechanisms in Metal Matrix Composites / Yan Li
14:20-14:35	3329	INVITED: Rock Mounted Iconic Lighthouses Under Extreme Wave Impacts: Limit Analysis and Discrete Element Method / Athanasios Pappas , Dina D'Ayala, Alessandro Antonini, Alison Raby
14:35-14:50	3328	INVITED: 2016-2017 Central Italy Earthquake: Seismic Assessment of "Pietro Capuzi" School in Visso (Marche) / Chiara Ferrero , Paulo B. Lourenço, Chiara Calderini
14:50-15:05	3584	Timber Shear Walls: Numerical Assessment of the Equivalent Viscous Damping / Giorgia Di Gangi
15:05-15:20	3030	Mode Shapes Complexity for Damage Identification of Structures Experiencing Plasticization / Fabrizio Iezzi , Claudio Valente
15:20-15:35	3378	Approximation of the parallel robot working area using the method of nonuniform covering / Larisa Alexandrovina Rybak , Mikhail Anatolyevich Posypkin, Alexander Leonidovich Usov, Dmitry Ivanovich Malyshev

Session 1.3E Chairs: *Jose Andrade, Kun Luo*

MS-031/MS-000 State-of-the-art Modeling on Discrete Element Simulation / Theory and Formulation for Novel Computational Methods

Time	ID	Title / Authors
16:05-16:25	3396	KEYNOTE: Discrete Element Modeling for Industrial Multi-phase Flows / Mikio Sakai
16:25-16:45	3331	Numerical Study on Solid-liquid Separation in a Stirred Vessel / Kotaro Tamura , Mikio Sakai
16:45-17:05	3449	DEM Modelling of Normal Impact of Wet Particles / Chuan-Yu Wu , Ling Zhang
17:05-17:20	3055	Hydrodynamics and heat transfer validation of a coarse grained particle method in a bubbling fluidized bed / Junjie Lin, Kun Luo , Shuai Wang, Chenshu Hu, Jianren Fan
17:20-17:40	3029	Development of an Implicit Algorithm for Drag Force Term in an Euler-Lagrange Approach, Yuki Mori , Mikio Sakai
17:40-18:00	3054	KEYNOTE: DEM-based method study of steam biomass gasification in a fluidized bed reactor / Shuai Wang, Kun Luo , Liyan Sun, Chenshu Hu, Junjie Lin, Jianren Fan

