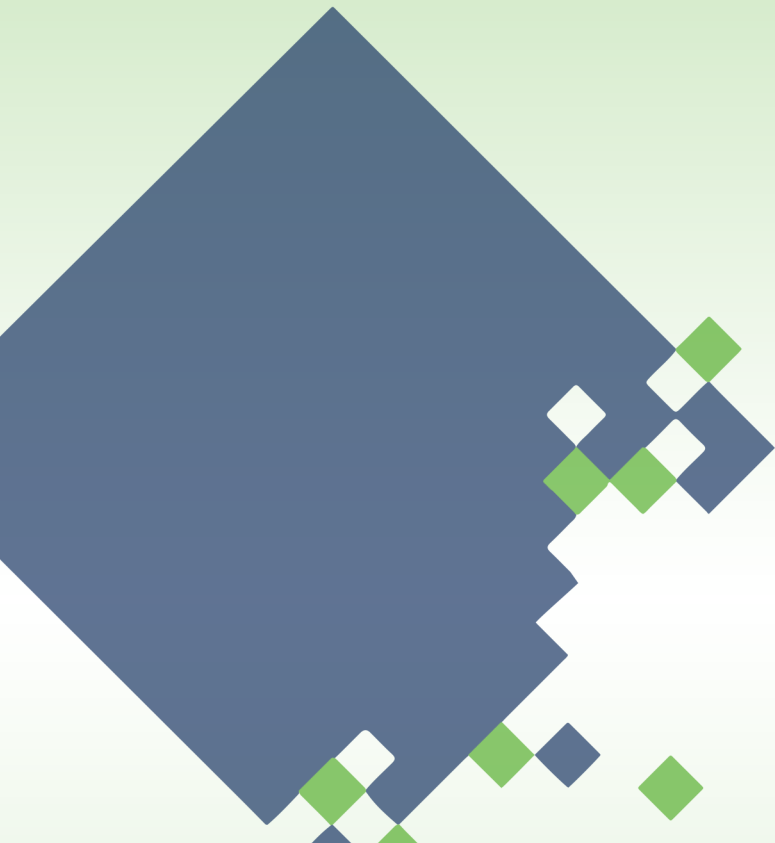


PARTICLES 2025

IX International Conference on Particle –based
Methods

October 20–22, 2025 | Barcelona, Spain

PROGRAMME





PARTICLES 2025

Barcelona, Spain, 20-22 October 2025



IACM SPECIAL INTEREST CONFERENCE

A publication of:

**International Center for Numerical
Methods in Engineering (CIMNE)**
Barcelona, Spain

CIMNE^R

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PREFACE

This volume contains the Technical Programme of the papers accepted for presentation at the **IX International Conference on Particle-Based Methods (PARTICLES 2025)** held in Barcelona from 20 to 22 October 2025.

The eight previous conferences in this series were held in Barcelona on 25-27 November 2009 and 26-28 October 2011, in Stuttgart on 18-20 September 2013, in Barcelona on 28-30 September 2015, in Hannover on 26-28 September 2017, in Barcelona on 28-30 October 2019, in Hamburg on 4-6 October 2021, in Milano on 9-11 October 2023 .

The objectives of **PARTICLES 2025** are to present and discuss the fundamental principles, the new trends and the cutting-edge features of state-of-the-art Particle Methods for solving problems in engineering and applied sciences.

Particle Methods refer to those numerical methodologies using the concept of particles either to carry the information of the deforming continuum, such as Material Point Method (MPM), Smoothed Particle Hydrodynamics (SPH), Moving Particle Simulation (MPS), Particle Finite Element Method (PFEM), and Lattice-Boltzmann Method (LBM) or to represent computationally real physical particles, like in the Discrete Element Method (DEM) and Molecular Dynamics (MD).

The conference is one of the Thematic Conferences of the European Community on Computational Methods in Applied Sciences (ECCOMAS) and a Special Interest Conference of the International Association for Computational Mechanics (IACM).

Javier Bonet, CIMNE/Technical University of Catalonia, Spain.

Massimiliano Cremonesi, Politecnico di Milano, Italy.

Alessandro Franci, CIMNE/Technical University of Catalonia, Spain.

Antonio Gil, Swansea University, United Kingdom.

PARTICLES 2025 Chairmen

ACKNOWLEDGEMENTS

The conference organizers acknowledge the support towards the organization of the PARTICLES 2025 Conference to the following organizations:

Supporting organizations



European Community on Computational
Methods in Applied Sciences (ECCOMAS)



International Association for
Computational Mechanics (IACM)



International Center for Numerical
Methods in Engineering (CIMNE)



Universitat Politècnica
de Catalunya (UPC)

Conference sponsors

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University of Catalonia,
Spain



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Cremonesi**
Politecnico di Milano,
Italy



Alessandro Franci
CIMNE/Technical
University of Catalonia,
Spain



Antonio Gil
Swansea University,
United Kingdom

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- X. Zhang, China
- J. Zhao, Hong Kong

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Spain



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Germany



Umberto Perego
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Italy



Peter Wriggers
Leibniz Universität
Hannover,
Germany



Tarek Zohdi
University of California,
Berkeley,
USA

INVITED SPEAKERS

Plenary speakers



Andrea Colagrossi

Italian National
Research Council,
Italy

**Recent Developments
of Smoothed Particle
Hydrodynamics Models
for Simulating Violent
Free-Surface Flows**



Anne Mangeney

Université Paris Cité,
France

**Wave-Induced Granular
Flow Triggering**



Kenichi Soga

University of California,
Berkeley,
United States

**Recent Advances in the
Material Point Method for
Modelling Fluids, Granular
Materials, and Coupled
Fluid–Granular Behavior**

Semi-Plenary speakers



Pilar Ariza

Universidad de Sevilla,
Spain

**Hydrogen storage in
Palladium nanoparticles**



Ali Javili

Bilkent University,
Turkey

**Nonlocal Mechanics of
Solids via Continuum-
Kinematics-Inspired
Peridynamics**



Abbas Khayyer

Kyoto University,
Japan

**Entirely Lagrangian
Meshfree Fluid-Structure
Interaction Solvers - Recent
Advances and Future
Perspectives**



**Jean-Christophe
Marongiu**

Andritz AG,
Switzerland

**Industrial Application of
SPH-ALE for Hydraulic
Turbines**



**Jean-Philippe
Ponthot**

Université de Liège,
Belgique

**The Particle Finite Element
Method for Fluid-Structure
Interactions and Multi-
Physics Problems**



Stefan Radl

TU Graz,
Austria

**Parcel Methods for Cohesive
and Interlocking Granular
Materials**

INVITED SESSIONS

IS01 Granular plasticity

F. Nicot (USMB, France), A. Wautier (INRAE, France) and F. Darve (Grenoble INP, France)

IS02 Multiphysics and Coupled Modelling with Particle Methods

J. Rojek (Institute of Fundamental Technological Resear, Poland) and T. Zohdi (University of California, Berkeley, United States)

IS03 Industrial Application of DEM & CFD-DEM

R. Weiler (BASF SE, Germany), P. Grohn (Bayer AG, Germany), C. Goniva (DCS Computing GmbH, Austria) and C. Kloss (DCS Computing GmbH, Austria)

IS04 Modeling of Manufacturing and Material Processing with Particle Methods (Including PFEM, SPH, DEM...)

J. Carbonell (CIMNE, Spain), E. Fernandez-Sanchez (University of Liège, Belgium), J. Rodriguez (University of Medellin, Colombia) and J. Ponthot (University of Liège, Belgium)

IS05 Fundamentals of DEM and CFD-DEM: Recent Advances and Challenges

S. Radl (Graz University of Technology, Austria), C. Kloss (DCS Computing GmbH, Austria) and C. Goniva (DCS Computing GmbH, Austria)

IS06 Fracture and Fragmentation with DEM

F. Kun (University of Debrecen, Hungary) and F. Wittel (ETH Zürich, Switzerland)

IS07 Meshfree and Particle Methods for Large Strain Solid Mechanics and Coupled Problems

C. Lee (University of Glasgow, United Kingdom), A. Gil (Swansea University, United Kingdom), J. Bonet (CIMNE, Spain) and E. Febrianto (University of Glasgow, United Kingdom)

IS08 Modelling Soil-Water-Structure Interaction in Geomechanics with the Material Point Method

A. Yerro (Viginia Tech, United States), F. Ceccato (Università degli Studi di Padova, Italy), G. Di Carluccio (Universitat Politècnica de Catalunya, Spain) and M. Martinelli (Deltares, Netherlands)

IS09 Recent Advances In Particle-based FSI Solvers

A. Khayyer (Kyoto University, Japan), A. Zhang (Harbin Engineering University, China), M. Liu (Peking University, China) and P. Wang (Harbin Engineering University, China)

IS10 Discrete Models For Heterogeneous Quasibrittle Materials

G. Cusatis (Northwestern University, United States), M. Alnaggar (Oak Ridge National Laboratory, United States), J. Elias (Brno University of Technology, Czechia), G. Di Luzio (Politecnico di Milano, Italy), E. Masoero (Politecnico di Milano, Italy) and G. Pijaudier-Cabot (University of Pau and the Adour Region, France)

IS11 Micro-Macro Methods for States and Transitions: From Particles to Continuum

D. Vescovi (Polimi Milano, Italy) and S. Luding (UTwente, Netherlands)

IS12 Recent Advances and Applications of the Particle Finite Element Method (PFEM)

J. Gimenez (CIMNE, Spain) and A. Franci (CIMNE, Spain)

IS13 Computational Granular Mechanics

J. Zhao (HKUST, China, Hong Kong), H. Bui (Monash University, Australia), N. Guo (Zhejiang University, China) and X. Zhang (University of Liverpool, United Kingdom)

IS14 The Material Point Method – Recent Advances

Z. Chen (University of Missouri, United States), X. Zhang (singhua University) and Y. Liang Xi'an Jiaotong University)

IS15 Particle-Based Models in Cell and Tissue Mechanobiology

J. Garcia-Aznar (Universidad de Zaragoza, Spain), J. Muñoz (UPC, Spain) and P. VanLiedekerke (Ghent University, Belgium)

IS16 Discrete and Particle Methods in Solid and Structural Mechanics

E. Campello (University of São Paulo, Brazil), L. Cheng (University of São Paulo, Brazil) and A. Gay Neto (University of São Paulo, Brazil)

IS17 Particle-Based Methods for Cemented Granular Materials

G. Casas (CIMNE, Spain) and I. De-Pouplana (UPC, Spain)

IS18 Particle-Based Methods for Natural Hazards Simulation

A. Larese (Università di Padova & TUM-IAS, Italy), M. Asai (Kyushu University, Japan), M. Cremonesi (Politecnico di Milano, Italy), A. Franci (CIMNE-UPC, Spain) and J. Gaume (ETH, Switzerland)

IS19 Advanced Particle Methods for Continuum Mechanics

M. Asai (Kyushu University, Japan), S. Koshizuka (The University of Tokyo, Japan), A. Shakibaeinia (Polytechnique Montreal, Canada) and S. Hagihara (Saga University, Japan)

IS20 Data-Driven Methods and Machine Learning for Granular Systems Across Scales and Regimes

J. Ulloa (Caltech, United States), K. Karapiperis (EPFL, Switzerland), L. Li (JHU, United States) and J. Andrade (Caltech, United States)

IS21 Particle-based Simulations in Additive Manufacturing

S. Roy (Friedrich Alexander University Erlangen, Germany), H. Xiao (University of Michigan, United States) and D. Nasato (Technical University of Munich TUM, Germany)

IS22 Coupled Approaches Between Particle And Continuum Methods For Solids Mechanics And Fluid-Structure Interaction Problems

A. Cornejo (upc, Spain), F. Zarate (CIMNE, Spain) and E. OÑATE (CIMNE, Spain)

IS23 Computational Methods in Mining, Mineral Processing and Geotechnical Applications

S. Larsson (Luleå University of Technology, Sweden), L. Tavares (Universidade Federal do Rio de Janeiro, Brazil) and A. Svanberg (Luleå University of Technology, Sweden)

IS24 Scientific Machine Learning for Granular Material Simulations Across Scales and Regimes

H. Cheng (University of Twente, Netherlands), S. Papanicolopoulos (The University of Edinburgh, United Kingdom), J. Brandstetter (Johannes Kepler University (JKU) Linz, Austria) and K. Kumar (The University of Texas at Austin, United States)

IS25 Meshfree, Peridynamics, and Particle Methods for Multi-Physics and Extreme Events Modeling

M. Hillman (Karagozian and Case, Inc., United States), J. Chen (University of California, San Diego, United States) and P. Seleson (Oak Ridge National Laboratory, United States)

IS26 Particle Transport in Multiscale Flows

S. Succi (Italy), M. Durve (Italy) and J. TUCNY

IS27 Innovations in Particle Methods: Exploring the Software Landscape

E. Lequiniou (Altair, France) and P.DADVAND (Altair, Spain)

IS28 Development and Applications of SPH Method

S. Manenti (Italy)

IS29 Particle-Lubrication Across the Scales

D. Berzi (Politecnico di Milano, Italy) and . Cross (Trinity College Dublin, Ireland)

IS30 Particle-Laden Flows

S. Idelsohn (CIMNE (UPC), Spain), J. Gimenez (CIMNE (UPC), Spain), E. Oñate (CIMNE (UPC), Spain) and M. Wang (Los Alamos National Laboratory, United States)

PRACTICAL INFORMATION

Conference Venue

The IX International Conference on Particle-based Methods (PARTICLES 2025) will be held at the Hotel NH Collection Barcelona Constanza.



Hotel NH Collection Barcelona Constanza

Address:

Carrer de Déu i Mata, 69-99
Les Corts, 08029 Barcelona
Phone number: +34 932 81 15 00

The NH Collection Barcelona Constanza is a contemporary delight in stylish white marble exuding calm elegance. The creation of Pritzker prize-winning architect Rafael Moneo, designer of the Los Angeles Cathedral, it's located in the heart of Barcelona's business district. The NH Constanza is fully equipped with the latest technology, providing top-of-the-line technical and audiovisual support.

Meeting Rooms

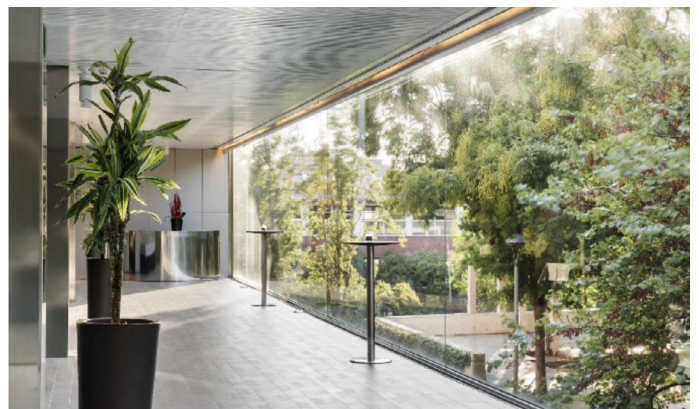
Plenary Lectures and Opening Ceremony:



Parallel Technical sessions:



Breaks and Exhibition Area:



The conference will be held in the following meeting rooms:

Barcelona Berlin Estocolmo Auditori Kursaal Los Ángeles MAIN FLOOR

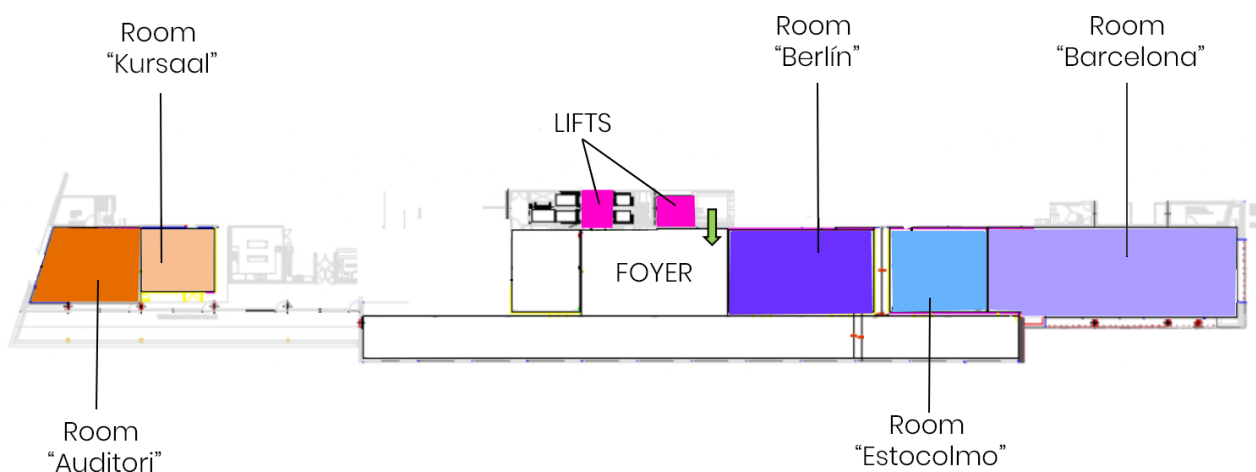
NH Collection Constanza Barcelona Hotel

Rooms map main floor



NH Collection Constanza Barcelona Hotel

Rooms map floor P1



How to get there

From the airport

- **Taxi:** It's a 20-30 minute trip and is around €30.
- **Aerobus shuttle:** Departs every 5-10 minutes from terminals 1 and 2, daily from 5:35 AM to 01:05 AM. Tickets can be purchased on the bus. Drops off at Plaça Espanya and from there take the L3 subway ride to Les Corts.
- **Bus:** Line A1 /Lines A2 to Pl Espanya stop. It's a 20 minutes trip. If you are in the city for a few days buy a T-10, Multi-person card for 10 journeys, (€10.20). It works on the metro too.

From the train station

- **From Sants Station:** Bus V7 from Av Roma-Tarragona to Constança
- **Closest metro station:** Les Corts (L3 (green) line)
- If you're in the city for a few days buy a T-10, Multi-person card for 10 journeys, (€10.20). It's cheaper than buying singles.
- Click [here](#) for a Barcelona Metro map.

Internet Access

Wireless Internet access will be available at the conference venue:

NAME: PARTICLES

PASSWORD: BARCELONA2025

Registration

Registration will open on Monday, October 20, 2025, at 8:00 and remain open throughout the congress within the Secretariat's operating hours (as well as on Tuesday, October 21 and Wednesday, October 22). It will take place at the Foyer, located in the **first floor**. Signs will direct you to the exact location.

To collect your badge, you will need to present the **confirmation email** containing your **registration code** (sent a few days before the conference) at the registration desk. Kindly ensure you have it with you, either in printed form or on your mobile device.

Please remember to **wear your conference badge at all times** during **PARTICLES 2025**. Badges are required for access to all sessions, events, and catering areas throughout the conference.

Registration Desk Hours – PARTICLES 2025

The registration desk will be open at the following times:

- **Monday, October 20:** 08:00 – 18:00
- **Tuesday, October 21:** 08:00 – 18:00
- **Wednesday, October 22:** 08.00 – 16.30

Presentations

The technical programme of PARTICLES 2025 consists of **3 plenary lectures, 6 semi-plenary lectures, and 30 invited sessions** with a total of **235 oral presentations**.

Time:

The duration of each contributed talk is **20 minutes**, while keynote lectures are allocated **40 minutes**. The above times include the Q&A sessions. Moderators of sessions will be asked to be strict on time.

Equipment:

The conference will not provide computers for presentations. Speakers are kindly requested to bring and use their own laptop. An LCD projector will be present in each room.

The connector available on the projector will be **HDMI**. You should make sure your laptop has an HDMI port designated as your default output connection. Also note that if your computer does not have an HDMI port, we kindly request you to bring your own adapter.

Please note that the organisation does not provide slide clickers or laser pointers. Presenters should bring these themselves.

Recommendations for your presentation:

- If you are using PowerPoint, we recommend you to adjust the slide size in Design->Page Setup menu and choose 16:9 ratio to ensure the compatibility in all meeting rooms except the Kursaal room, which is 4:3.
- We strongly encourage you to have a backup of your presentation on a **USB** storage device.
- There is no particular template.
- We strongly encourage speakers to go to their conference room **10 minutes before the session starts or during the coffee breaks in order to do a quick test.**

Power sockets and plug converters for electricity in Spain:

In Spain, power plugs and sockets (outlets) of **type F** are used. The standard voltage is 230 V at a frequency of 50 Hz. It is important to have an adapter in order to be able to use devices from other countries that have a different type of plug.

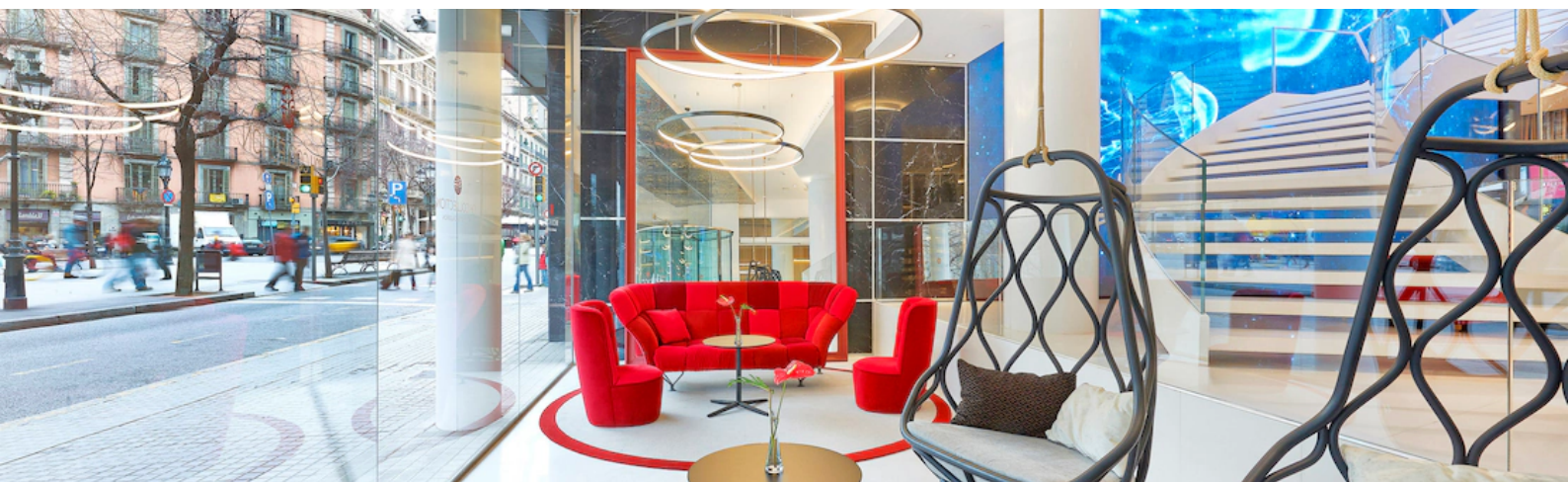
Social Programme

Welcome Cocktail

The Welcome Reception will be held on **Monday, October 20**, at the **Conference Venue (Hotel NH Barcelona Constanza)** from **19:00 to 20:00**.

Banquet Dinner

The Banquet Dinner will take place on **Tuesday, October 21**, at **Hotel NH Gran Hotel Calderón (Rambla Catalunya, nº 26, Barcelona)** at **20.30**.



Hotel NH Gran Hotel Calderón

Located within the Quadrant D'Or, a minutes' walk of the city center's major landmarks, such as Casa Batlló, Casa Milà, La Sagrada Família, and shopping districts, on the site of the original Teatro Calderón, you will feel completely immersed in the spirit of Barcelona at the five star **NH Collection Barcelona Gran Hotel Calderón**.

Both the theater and the hotel were designed by the same architect: Josep Rodríguez Lloveras, a subject of Puig i Cadafalch (a father of Catalan Modernism design).

Additionally, during the conference, we will be offering **coffee breaks as well as lunch Breaks** from October 20 to October 22.

Emergency Calls

Below are important safety and emergency numbers to be aware of in case you need assistance or information while in Barcelona:

- **General emergencies:** 112
- **Ambulance and medical emergencies:** 061
- **Fire department:** 080
- **Local police (Guardia Urbana):** 092
- **Regional police (Mossos d'Esquadra):** 088
- **National police:** 091

TECHNICAL PROGRAMME OVERVIEW

	Monday 20/10/2025	Tuesday 21/10/2025	Wednesday 22/10/2025
8:00	Registration ⌚ 08:00 - 09:30 📍 Foyer	Registration ⌚ 08:00 - 09:00 📍 Foyer	Registration ⌚ 08:00 - 09:00 📍 Foyer
9:00	Opening	Plenary Lecture II - Anne Mangeney ⌚ 09:00 - 09:45	Semi-Plenary Sessions ⌚ 09:00 - 11:00
10:00	Plenary Lecture I - Kenichi Soga ⌚ 10:00 - 10:45	Plenary Lecture III - Andrea Colagrossi ⌚ 09:45 - 10:30	
	Coffee Break	Coffee Break	Coffee Break
11:00			
12:00	Technical Sessions ⌚ 11:15 - 13:15	Technical Sessions ⌚ 11:00 - 13:00	Technical Sessions ⌚ 11:30 - 13:30
13:00	Lunch Break ⌚ 13:15 - 14:15 📍 Foyer	Lunch Break ⌚ 13:00 - 14:00 📍 Foyer	Lunch Break ⌚ 13:30 - 14:30 📍 Foyer
14:00	Technical Sessions ⌚ 14:15 - 16:15	Technical Sessions ⌚ 14:00 - 16:00	Technical Sessions ⌚ 14:30 - 16:30
15:00			
16:00	Coffee Break	Coffee Break	
17:00	Technical Sessions ⌚ 16:45 - 18:45	Technical Sessions ⌚ 16:30 - 18:00	
18:00			
19:00	Welcome Cocktail ⌚ 19:00 - 20:00 📍 Foyer		
20:00			
21:00		Conference Dinner ⌚ 20:30 - 22:00	
22:00			

DAY 1

Monday 20th October

OPENING SESSION | 09:30h - 10:00h

📍 Barcelona

🕒 09:30h - 10:00h

PLENARY SESSION | 10:00h - 10:45h

📍 Barcelona

🕒 10:00h - 10:45h

PL1 Plenary Lecture I

Kenichi Soga (University of California)

Chaired by: Prof. Antonio Gil (Swansea University)

- Recent Advances in the Material Point Method for Modelling Fluids, Granular Materials, and Coupled Fluid–Granular Behavior
K. Soga *

TECHNICAL SESSIONS | 11:15h - 13:15h

📍 Barcelona

🕒 11:15h - 13:15h

IS19A Advanced Particle Methods for Continuum Mechanics I

Main Organizer: Prof. Mitsuteru Asai (Kyushu University, Japan)

Chaired by: Prof. Seiichi Koshizuka (The University of Tokyo, Japan)

- Accurate Two-phase Flow Simulation Using a Particle Method with New Discretization Schemes Incorporating Interface Discontinuities **T. Matsunaga *** Keynote
- Evaluation of a Gap Model for Improving Gas-Phase Calculations in MPS Simulations of a Liquid Ring Pump **Z. Yang ***, K. Shibata, T. Takanashi, S. Sapkota, N. Yasuda
- Upwind Moving Least Squares for Solving Convection-Dominated Partial Differential Equations with Meshfree Methods **S. Faraji Gargari ***, Z. Huang, D. Karssenberg
- Improvement of Wall Boundary Treatment using Velocity-Pressure Monolithic SPH Fluid Analysis Algorithm **S. Okano ***, D. Morikawa, L. Ge, M. Asai
- Moving Particle Simulation of Droplet Breakup Coupled with Immersed Body Method **H. Tsujimura ***, K. Kubota

📍 Berlin

🕒 11:15h - 13:15h

IS02A Multiphysics and Coupled Modelling with Particle Methods I

Main Organizer: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

Chaired by: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

- A Lattice-Particle Model for the Simulation of Calendering Process and Characterization of Na-ion Battery Electrodes Á. Valverde-González, D. Gonzalez, **F. Montero-Chacón ***
- A Numerical Investigation of Granular Structure Influences on Battery Performances using Material Point Discrete Element Method **A. Tabak Cevit ***, Y. Jiang
- Coupled DPD-SPH Framework for Simulating Non-Newtonian Polymer Melt Behavior under Complex Flows Using LHMM **E. Patiño-Nariño ***, N. Moreno, M. Ellero
- Computational Analysis of Carbon-Neutral Biofuels Co-Firing in a Rotary Kiln **S. Saberi ***, C. Spijker, M. Gruber, I. Kofler
- Phase-Field Multi-Physics Simulation of Grain Fragmentation with Material Point Method **G. Kobayashi ***, M. Asai, S. Sakane, T. Takaki
- Thermo-Electro-Mechanical Discrete Element Model of Field-Assisted Sintering **J. Rojek ***, F. Nisar, S. Nosewicz, K. Kaszyca, M. Chmielewski

📍 Estocolmo

🕒 11:15h - 13:15h

IS13A Computational Granular Mechanics I

Main Organizer: Prof. Jidong Zhao (Hong Kong University of Science and Technology, Hong Kong, China)

Chaired by: Prof. Jidong Zhao (Hong Kong University of Science and Technology, Hong Kong, China)

- Continuum Modeling of Cohesive-Frictional Granular Flow with Material Point Method **Keynote**
B. Chandra *, K. Kamrin
- A Particle-Cell Hybrid (PCH) Method for Modelling Granular Flow Problems
M. Rabinezhad *, Y. Zhang, X. Zhang
- Continuum Modelling of Impacts on/of Granular Masses: Constitutive Modelling Issues
M. Zerbi *, P. Marvaggio, C. di Prisco
- A Computational Framework for Bridging Discrete and Continuum Mechanics in Quasi-Static Granular Systems
Y. Jiang *
- An Efficient Approach for Continuum-Discrete Multiscale Simulations of Densely Packed Granular Materials in the Presence of Thermal Expansion
R. Rangel *, J. Gimenez, H. Cheng, E. Oñate, A. Franci

📍 Kursaal

🕒 11:15h - 13:15h

IS04A Modeling of Manufacturing and Material Processing with Particle Methods (Including PFEM, SPH, DEM...) I

Main Organizer: Prof. Jean Philippe Ponthot (University of Liège, Belgium)

Chaired by: Dr. Josep Maria Carbonell (CIMNE, Spain), Prof. Jean Philippe Ponthot (University of Liège, Belgium)

- Towards Accelerated Multi-Scale Modelling of Wet Granulation Processes using Coarse-Grained DEM and Graph Network Analysis
R. Saghaian Larijani *, S. Luding, V. Magnanimo
- Structural Analysis of Confined Catalyst Beds: A DEM and X-ray Tomography Approach
L. Cayla Arianer *, E. Serris, S. Martin
- Taking into Consideration of Particle Size Distribution in Compacting Analysis of Green Sand using Discrete Element Method
T. Shimomae *, F. Kondo, Y. Maeda
- Coupling a DEM Model and a Homogeneous Markov Chain to Accelerate Powder Mixing Simulation
N. Chachia *, G. Dumazer, H. Berthiaux, E. Serris, C. Gatumel
- DEM Simulation of a Briquetting Press: A Case Study on Process Optimization
L. Fedalto *, R. Ruiz, L. Del Cid
- Characterization of Wood Powder Properties: A DEM-Based Calibration with Rotating Drum Experiments
R. Khazem *, J. Colin, J. Casalinho, H. Shi, D. Schott, F. Puel

📍 Auditori

🕒 11:15h - 13:15h

IS20A Data-driven methods and machine learning for granular systems across scales and regimes I

Main Organizer: Prof. Jose Andrade (California Institute of Technology, United States)
Dr. Hongyang Cheng (University of Twente, The Netherlands).

Chaired by: Prof. Jose Andrade (California Institute of Technology, United States)

IS24 and IS20 have been merged

- Interaction Networks in Soft Matter Systems: From Topology to Material Response **Keynote**
L. Kondic *
- Thermodynamics-Informed Machine Learning with Interpretable Internal Variables
K. Karapiperis *
- Bayesian Parameter Estimation for Transient Granular Flow Simulations
H. Cheng *
- A Data-Driven Tool for Uncertainty Quantification in the Calibration Process
G. Tranquillini *, P. Kieckhefen, L. Kropfinger, P. Grohn, J. Khinast, T. Forgber
- Particle Methods and Neural Networks: A Unified Approach to Computational Modelling
A. Alexiadis *

📍 Los Ángeles

🕒 11:15h - 13:15h

IS03A Industrial Application of DEM & CFD-DEM I

Main Organizer: Dr. Rouven Weiler (BASF SE, Germany)

Chaired by: Dr. Rouven Weiler (BASF SE, Germany), Dr. Christoph Goniva (DCS Computing GmbH, Austria)

- DEM and CFD-DEM Modeling: Current Capabilities, Limitations, and Industrial Applications
C. Goniva *, R. Togni, M. Kwakkel, M. Niemann, C. Kloss
- Influence of Material Properties and Process Parameters on Residence Time Distribution in a Tablet Feed Frame: A Numerical Study
T. Forgber *, G. Tranquillini, P. Grohn, P. Kieckhefen, L. Kropfinger, J. Khinast
- Modelling Feed Pile Formation in a Reducing Electric Furnace (REF)
S. Tavakoli *, J. Wijnker, G. Keetels, D. Schott
- Scale-up Study of the Residence Time in a Screw Conveyor
A. Hippolyte *, S. Martin, E. Capelli, E. Beaunac, A. Ndiaye, A. Selmi, O. Bonnefoy
- Simulation-Guided Design of a Ternary Powder Bin Blending Process
B. Benque *, B. Schmid, J. Khinast

Barcelona

14:15h - 16:15h

IS19B Advanced Particle Methods for Continuum Mechanics II

Main Organizer: Prof. Mitsuteru Asai (Kyushu university, Japan)

Chaired by: Prof. Ahmad Shakibaeinia (Polytechnique Montreal, Canada)

- Generalized Vertical Coordinate Transformation for efficient SPH computation
S. Fujioka *, K. Tsuji, N. Mitsume, M. Asai
- Numerical Analysis of Water Wave Pressure on a Ship's Hull Using the Multi-Resolution Particle Method
N. Yamasaki *, K. Shibata
- A Multiresolution Vortex Particle-Mesh Method for the Simulation of Incompressible Flows
P. Balty *, G. Poncelet, M. Duponcheel, P. Chatelain
- Adaptive Meshless Simulations of Fluid Flow and Heat Transfer
N. Bartwal *, M. Padmanabha, J. Kuhnert, P. Suchde
- Simulation of a 2D Vertical Jet by Smoothed Particle Hydrodynamics within an OceanWave3D Wave Field
T. Kanehira *, S. Draycott, B. Rogers, P. Stansby
- Smoothed Particle Hydrodynamics for Fast Dynamics: From Displacement-Based Formulations to First-Order Conservation Laws
P. Refachinho de Campos *, C. Hean Lee, A. J. Gil, J. Bonet

Estocolmo

14:15h - 16:15h

IS13B Computational Granular Mechanics II

Main Organizer: Prof. Jidong Zhao (Hong Kong University of Science and Technology, Hong Kong, China)

Chaired by: Dr. Xue Zhang (University of Liverpool, United Kingdom)

- Investigations Regarding the Influence of Particle Shape on the Numerical Simulation of Air Pluviation using the DEM Method
N. Heim *, S. Henke
- Orientation Distribution of Cylindrical Particles in Random Packed Beds: Experimental and Numerical Insights
P. Niegodajew *, A. Durajski, M. Marek
- Experiments and Simulations of Pyramidal Particle Flows in Rotating Drums
M. Mahmoud *, A. Pol, L. Amarsid, K. Lamoph, V. Richefeu, J. Delenne, S. Mora
- Effect of Particle Size Distribution and Particle Shape on the Uniformity of Stress and Strain in Direct Shear Testing using DEM
E. Hemid *, V. Dimitriadi, J. Bernal-Sanchez, D. Barreto
- Effect of Particle Morphology on the Dense and Loose State Packing of Granular Materials
K. Anusree *, G. Latha
- Geometric Cohesion and 3D Friction in Column Collapses of Non-Convex Particles Clusters Using Non-Smooth Contact Dynamics
S. Yans *, M. Henry, J. Lambrechts, V. Legat

Berlin

14:15h - 16:15h

IS02B Multiphysics and Coupled Modelling with Particle Methods II

Main Organizer: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

Chaired by: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

- Meshfree Air-Water-Sand Flow Modelling in Pelton Turbines
P. Suchde *, I. Michel
- Numerical Calculation Model for MR Fluid Behavior in Magnetic Field
S. Tsujimoto *, T. Kikugawa, K. Hirata, F. Miyasaka, S. Kamada, Y. Hanajima, S. Taniguchi, P. Ramadhan, N. Kaito
- Computational Modelling of Thixotropic Multiphase Fluids
A. Espinosa Moreno *, N. Moreno Chaparro, M. Ellero
- Boundary Treatment for Meshfree RANS Turbulence Models
M. Padmanabha *

Auditori

14:15h - 16:15h

IS20B Data-driven methods and machine learning for granular systems across scales and regimes II

Main Organizer: Prof. Jose Andrade (California Institute of Technology, United States)

Chaired by: Prof. Jose Andrade (California Institute of Technology, United States)

IS24 and IS20 have been merged

- NeuralDEM - modern machine learning techniques for CFD-DEM **Keynote**
B. Alkin, **T. Kronlachner ***, S. Papa, S. Pirker, T. Lichtenegger, J. Brandstetter
- Data-Driven Large-Step Simulations of Transport in Particulate Multiphase Flows
T. Lichtenegger *, J. Brandstetter
- Surrogate Modelling of Non-Newtonian Free-Surface Flows with NeuralPFEM
F. Lanteri *, M. Cremonesi
- Accelerating SPH Simulations in LS-DYNA with Graph Network Simulator (GNS)
S. Matsumi *, T. Hata, R. Hashimoto, Y. Shimazu, R. Sekizuka
- Adapting Graph Neural Networks for Granular Flow with Varying Material Properties
N. Manoharan *, H. Iqbal, K. Kumar

Kursaal

14:15h - 16:15h

IS04B Modeling of Manufacturing and Material Processing with Particle Methods (Including PFEM, SPH, DEM...) II

Main Organizer: Prof. Jean Philippe Ponthot (University of Liège, Belgium)

Chaired by: Prof. Jean Philippe Ponthot (University of Liège, Belgium),
Dr. Josep Maria Carbonell (CIMNE, Spain)

- Particle Finite Element Method based modelling of Additive Manufacturing **Keynote**
J. Olatunbosun , M. Schewe , T. Bartel , **A. Menzel ***
- Particle Simulation of Blowhole Forming Process in Gas Metal Arc Welding
M. Miwa * , H. Komen , M. Tanaka , Y. Tanabe , Y. Matsuo , K. Hyoma , K. Inose
- Simulations of Grain Particle Rearrangement in Semi-Solid Metals by Multi-Phase-Field Lattice Boltzmann Model
N. Yamanaka * , S. Sakane , T. Takaki

Los Angeles

14:15h - 16:15h

IS03B Industrial Application of DEM & CFD-DEM II

Main Organizer: Dr. Rouven Weiler (BASF SE, Germany)

Chaired by: Dr. Christoph Goniva (DCS Computing GmbH, Austria),
Dr. Rouven Weiler (BASF SE, Germany)

- Efficient Heat Exchange and Radiation Simulations using Coarse-Grained CFD-DEM
M. Mitterlindner , M. Niemann , C. Goniva , D. Louw , P. Kieckhefen , M. Salehi , **S. Radl ***
- Coarse-Grained CFD-DEM for Industrial Fluidized Beds: Accuracy and Challenges
J. Grabowski * , V. Brandt , N. Jurtz , H. Kruggel-Emden , M. Kraume
- Coarse Grained DEM Optimisation of an Industrial Nauta Mixer
B. Füvesi * , K. Imole , C. van der Sande , P. van der Wel , S. Luding , R. Saghaffan Larijani , V. Magnanimo
- Influence of Powder Properties on CMT Performance- a DEM Study
M. Trogrlic * , P. Liu , P. Boehling , D. Jajcevic , J. G. Khinast , P. Doshi , M. Moreno-Benito , J. Pasko Brandon , D. O. Blackwood , S. Lathorp
- Discrete Element Method Study of Thermal Efficiency in Micro-Concentrated Solar Power Systems
M. Khalili * , H. Rati
- Modelling the Influence of Capsules on the Behaviour of Asphalt Mixtures
G. Câmara * , R. Micaelo , N. Azevedo

TECHNICAL SESSIONS | 16:45h - 18:45h

Barcelona

16:45h - 18:45h

IS19C Advanced Particle Methods for Continuum Mechanics III

Main Organizer: Prof. Mitsuteru Asai (Kyushu university, Japan)

Chaired by: Prof. Takuya Matsunaga (The University of Tokyo, Japan)

- Assessment of Aircraft Formation Flight Safety via High-Fidelity Vortex Particle-Mesh Simulations
O. Van Kerm * , M. Duponcheel , D. Caprace , P. Chatelain
- Analysis of Complex Flow on Steel Plates in the Cooling Process Using MPS Method
N. Yamasaki *
- Wave Behavior caused by Ladle Pouring and Plunger Advancing in Aluminum Alloy Die Casting using Particle-Based SPH Method
Y. Seo * , F. Itakura , Y. Maeda , A. Hasuno , Y. Mochida
- Influence of Surface Tension Model and Dynamic Contact Angle Model in MPS Method on Prediction Accuracy of Water Flow Velocity on a Vertical Wall
K. Nakajima * , T. Koyama , S. Koshizuka
- Roughness Parameter in Simulations of Droplet Sliding and Water Flow on Wall Surface Using Moving Particle Semi-Implicit Method
T. Kushiya * , S. Koshizuka , T. Koyama , K. Nakajima
- A Hybrid Discrete Element – Finite Element Model for Simulations of Large Elastic-Plastic Particles Deformation and Breakage
A. Potapov *

Berlin

16:45h - 18:45h

IS02C Multiphysics and Coupled Modelling with Particle Methods III

Main Organizer: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

Chaired by: Prof. Jerzy Rojek (Polish Academy of Sciences, Poland)

- Chemical Surface Treatment Simulations for Complex Parts using LBM
T. Van Hoof * , J. Vanhumbeek , A. François
- Fluid-Rigid Body Simulation for Seawall Block Collapse using Moving Particle Hydrodynamics (MPH)
K. Haneda * , K. Shibata , T. Mizuno , T. Nishihata , H. Yanagisawa , H. Deguchi , M. Kondo , R. Yokoyama
- Numerical Analysis of Spar Upending Behavior of Spar-Type Offshore Wind Turbine by Particle Method
M. Li * , K. Shibata , K. Haneda , Z. Yang , H. Yanagisawa , T. Mizuno , H. Deguchi , T. Nishihata
- Adaptive Refinement and spatially fixed boundaries in the context of particle-position-based PFEM
T. Carvalho , **R. Sanches ***
- Investigation of Aerodynamic Characteristic Changes in Electric Wires During Snow Accretion Using a Particle-Based Method
M. Wu * , S. Fujimura , M. Yamamoto

Estocolmo

16:45h - 18:45h

IS11 Micro-Macro Methods for States and Transitions: From Particles to Continuum

Main Organizer: Prof. Stefan Luding (University of Twente, Netherlands, Netherlands)

Chaired by: Dr. Dalila Vescovi (Politecnico di Milano, Italy), Prof. Stefan Luding (University of Twente, Netherlands, Netherlands)

- Generalized Constitutive Laws of Oriented Granular Gas **B. Nadler *** Keynote
- Pressure-Controlled Granular Shear Flows between Bumpy Planes
D. Vescovi *, A. de Wijn, G. Cross, D. Berzi
- Particle-resolved FEM Simulations to Study Bulk Elastic Properties of a Porous Coating in Battery Anodes
H. Lin *, B. Lewerich, E. Knobbe, A. Latz
- Continuum Modeling and analysis of the Fluidized Layer of Granular Materials in Rotating Drums
H. Oba, **M. Otsuki ***
- Micro-Macro Methods: States and Transitions from Particles to Continuum
S. Luding *, D. Vescovi

Kursaal

16:45h - 18:45h

IS30A Particle-laden flows I

Main Organizer: Prof. Sergio Idelsohn (CIMNE, Spain)

Chaired by: Prof. Sergio Idelsohn (CIMNE, Spain), Prof. Eugenio Oñate (CIMNE/UPC, Spain)

- Experimental Validation and Efficiency Analysis of Density-Based Particle-Sorting Microfluidic Devices
A. Sala *, G. Casas, E. Oñate
- Fast Prediction of Electrostatic Powder Coating Sprays with a Moving Source
J. Gimenez *, E. Oñate, S. Idelsohn
- A Particle Finite Element Approach to Model Sediment Transport and Granular Flows
S. Martini *, M. Cremonesi
- Particle Dynamics in low-Reynolds-number Fluids under General Geometries
W. Lu, **X. Jiang ***, J. de Pablo
- Particle Transport in Small- And Large-Scale Rotor Flows: Effects of Induction and Stokes Number
F. Caccia *, A. Guardone

Auditori

16:45h - 18:45h

IS20C Data-driven methods and machine learning for granular systems across scales and regimes III

Main Organizer: Prof. Jose Andrade (California Institute of Technology, United States)

Chaired by: Prof. Jose Andrade (California Institute of Technology, United States)

IS24 and IS20 have been merged

- Incremental Reduced-Order Modeling of Smoothed Particle Hydrodynamics
E. Di Costanzo *, N. Kühl, J. Marongiu, T. Rung
- Equation-Driven Reduced Order Modeling for Lagrangian Free Surface Flow
G. Matono *, M. Nishio
- MOR than DEM: Model Order Reduction for Discrete Element Simulations
T. Plath *, T. Weinhardt, S. Rave, A. Thornton
- Hybrid Machine-Learning / Semi-Empirical Terramechanics Model Trained using Data from Particle-based Method
E. Karpman, **J. Kovacs ***, M. Teichmann

Los Ángeles

16:45h - 18:45h

IS03C Industrial Application of DEM & CFD-DEM III

Main Organizer: Dr. Rouven Weiler (BASF SE, Germany)

Chaired by: Dr. Philipp Grohn (Bayer AG, Germany), Dr. Christoph Goniva (DCS Computing GmbH, Austria)

- Numerical Wear Models in Granular Material Simulations: Implementation, Benchmarking and Comparison
M. Motall *, T. Vuherer, T. Lerher
- Improvements in the Prediction of Product Size Distribution under Confinement Condition of the Tavares Breakage Model Embedded in EDEM
V. Rodriguez *, M. Celigueta, C. Labra, L. Tavares
- Numerical and Experimental Investigation of Thermal Pre-Treatment for Lithium-Ion Battery Recycling
E. Barros de Souza *, C. Spijker, D. Maxim
- DEM Simulation of Rice Milling in a Planar Shear-Constriction Geometry
J. Bilotto *, C. Zemerli, R. Vonlanthen, J. Molinari

DAY 2

Tuesday 21st October

PLENARY SESSIONS | 09:00h - 10:30h

Barcelona

09:00h - 09:45h

PL2 Plenary Lecture II

Anne Mangeney (Université Paris Cité (UPC))

Chaired by: Massimiliano Cremonesi (Politecnico di Milano, Italy)

- Wave-Induced Granular Flow Triggering
A. Mangeney *

Barcelona

09:45h - 10:30h

PL3 Plenary Lecture III

Andrea Colagrossi (Italian National Research Council)

Chaired by: Massimiliano Cremonesi (Politecnico di Milano, Italy)

- Recent Developments of Smoothed Particle Hydrodynamics Models for Simulating Violent Free-Surface Flows
A. Colagrossi *

TECHNICAL SESSIONS | 11:00h - 13:00h

Barcelona

11:00h - 13:00h

IS19D Advanced Particle Methods for Continuum Mechanics IV

Main Organizer: Prof. Mitsuteru Asai (Kyushu University, Japan)

Chaired by: Prof. Mitsuteru Asai (Kyushu university, Japan)

- ML-Based Enhancement of Particle Methods for Continuum Modeling **Keynote**
A. Shakibaeinia *, N. Mehranfar, M. Jandaghian
- Coupling of an Eulerian near-wall solver and a Vortex Particle-Mesh method for the simulation of 2D moving bodies
Y. Marchal *, P. Billuart, M. Duponcheel, G. Winckelmans, P. Chatelain
- Numerical Simulations of Colliding Rings Using PEPC-DVH, the 3D Extension of Diffused Vortex Hydrodynamics
D. Durante *, S. Marrone, D. Brommel, R. Speck
- A Second-Order Volumetric Boundary Condition for the Lattice-Boltzmann Method
K. Hoefnagel *, F. de Prenter, S. Hulshoff, D. Casalino
- Impact of Particle Shape and Flow Dynamics on the Dissolution of Solid Particles Using Volume of Solid Method
M. Hassanpour *, S. Haeri, A. Attili, S. Tibos

Berlin

11:00h - 13:00h

IS01A Granular plasticity I

Main Organizer: Prof. Francois Nicot (USMB, France)

Chaired by: Prof. Francois Nicot (USMB, France), Dr. Antoine Wautier (INRAE, France)

- Thermomechanical Response of Frozen Granular Materials Based on a Viscoelastic-Damage Model for Ice Bonds
F. Sahragard, **M. Pouragha ***, M. Rayhani
- Mitigating Grain Breakage in a Uniform Grain Size Distribution: Insights from Experiments and Elastoplastic Modelling
H. Loubane *, A. Daouadji
- Granular Plasticity Control from Subtle Changes in Microstructure Geometry: the Fine Grain Infiltration Technique
A. Wautier *, F. Chen, A. Hegde, N. Benahmed, F. Nicot, P. Philippe
- Multiscale Modeling of Granular Materials: from Discrete Mesoscale Physics to Continuum Constitutive Models
A. Li *, A. Wautier, F. Nicot, M. Pouragha, C. Carvajal

📍 Estocolmo

🕒 11:00h - 13:00h

IS13C Computational Granular Mechanics III

Main Organizer: Prof. Jidong Zhao (Hong Kong University of Science and Technology, Hong Kong, China, Hong Kong)

Chaired by: Dr. Hongyang Cheng (University of Twente, Netherlands)

- Mitigating Wall-Induced Ordering in Randomly Packed Beds through Sinusoidal Wall Corrugation
M. Marek *, M. Wilczyński, A. Durajski, P. Niegodajew
- Stella.jl: Fast, Open-Source, Modern CPU-GPU DEM Solver
A. Nicusan, D. Werner, J. Sykes, J. Grogan, **B. Jenkins ***, K. Windows-Yule
- Comparative Analysis of Stress Models for Bulk Solids in Silos: Implications for Pellet Integrity and Industrial Applications
A. Moreno-Villa *, J. Gómez-Zuluaga, A. Torres-Ospina, F. Ruiz-Restrepo, N. Guarán-Zapata
- Settling Process of Single and Multi-Particles in a Fluid by Means of Direct Numerical Simulations
I. Haloui *

📍 Auditori

🕒 12:00h - 13:00h

IS21 Particle-based Simulations in Additive Manufacturing

Main Organizer: Dr. Sudeshna Roy (Friedrich Alexander University Erlangen, Germany)

Chaired by: Dr. Sudeshna Roy (Friedrich Alexander University Erlangen, Germany), Dr. Daniel Schiochet Nasato (Chair of process systems engineering, Technical University of Munich, Germany)

- The Role of Shape in Powder-Based Additive Manufacturing: Effects on Powder Spreading, Blade Performance, and Final Part Quality
D. Schiochet Nasato *, H. Briesen
- Spreadability of Metal Powders: Combining Powder Characterization and DEM Simulations
A. Neveu *, B. Jenkins, F. Francqui, G. Lumay
- Simulation of Particle-Based Post-Processing for Additive Manufacturing: Towards Granular Approaches Applicable at Industrial Scale
K. Marchais *, B. Fedi

📍 Auditori

🕒 11:00h - 12:00h

IS07 Meshfree and Particle Methods for Large Strain Solid Mechanics and Coupled Problems

Main Organizer: Dr. Chun Hean Lee (University of Glasgow, United Kingdom)

Chaired by: Prof. Antonio Gil (Swansea University, United Kingdom), Dr. Chun Hean Lee (University of Glasgow, United Kingdom)

- An improved ISPH-TLSPH FSI solver with a Riemann-based fluid-structure acceleration formulation
T. Gotoh *, A. Khayyer, H. Gotoh
- An Efficient Mesh-free Structural Solver for Large-strain Elastoplasticity, Structural Damage, and Fracture Based on Total Lagrangian Smoothed Particle Hydrodynamics
J. Kim *, E. Kim
- An upwind Smoothed Particle Hydrodynamics algorithm for large strain viscoelastic solids
C. Lee *, A. Gil, T. Jaugielavicius, T. Richardson, J. Bonet

📍 Kursaal

🕒 11:00h - 13:00h

IS30B Particle-laden flows II

Main Organizer: Prof. Sergio Idelsohn (CIMNE, Spain)

Chaired by: Dr. Juan Marcelo Gimenez (CIMNE, Spain), Prof. Sergio Idelsohn (CIMNE, Spain)

- Methodological Approach for Understanding Particle Transport. Case Study: Analyzing Influential Factors and Comparing Simulation Software
C. Müssig *, A. Kabat vel Job, S. Knorr, H. Meyer, D. Wiest
- Description of Air-Droplet Flow in the Problem of Aircraft Icing Modeling
S. Aleksieienko *, Z. Sazanishvili, V. Nekrasov
- Particle-Fluid-Particle Stress: an Important New Physics for Disperse Multiphase Flows
M. Wang *
- Fully Resolved CFD-DEM Simulations for Suspensions
S. Hassanzadeh Saraei *, B. Peters
- Numerical Study of Relationship between Relative Viscosity of Suspensions with Size-Dispersed Particles and Reynolds Number
T. Nitta *, T. Fukui

Los Angeles

11:00h - 12:00h

IS22 Coupled Approaches Between Particle And Continuum Methods For Solids Mechanics And Fluid-Structure Interaction Problems

Main Organizer: Prof. Alejandro Cornejo (UPC - CIMNE, Spain)

Chaired by: Prof. Alejandro Cornejo (UPC - CIMNE, Spain)

- Enhanced Model for the Deposition of Pathogens in Antimicrobial Nanocoated Surfaces (MIRIA EU Project)
I. Bellanato *, A. Benito Clemente , P. Royo
- Multi-coupling of Particle and Continuum Numerical Methods for Modelling Wave Generation, Propagation and Impact Against Civil Structures
A. Cornejo *, A. Franci , M. Masó , A. Montanino , E. Oñate
- Integrated Experimental-Numerical Analysis of HTPB Propellant Casting Optimization and Droplet Dynamics
Z. Guo *, X. fu

Los Angeles

12:00h - 13:00h

IS26 Particle Transport in Multiscale Flows

Main Organizer: Mr. Sauro Succi (Center for Life Nano-Neuro, Italy)

Chaired by: Mr. Sauro Succi (Center for Life Nano-Neuro, Italy)

- Impact of Outlet Boundary Condition Schemes for the Lattice Boltzmann Method Regarding the Stefan Phase-Change Problem
I. Talão Martins *, L. Cabezas Gómez , P. Fariñas Alvarinho
- Turbulent Flow Simulation with High-Order Regularized Lattice Boltzmann Method Using D3Q27
B. Yan dos Anjos , G. Choaire , **L. Hegele ***
- Computer Vision Tool for Particle/Droplet Tracking
M. Durve *, S. Succi

TECHNICAL SESSIONS | 14:00h - 16:00h

Barcelona

14:00h - 16:00h

IS06A Fracture and Fragmentation with DEM I

Main Organizer: Prof. Kun Ferenc (University of Debrecen, Hungary)

Chaired by: Prof. Kun Ferenc (University of Debrecen, Hungary)

- Investigation of Sand Particle Crushing Using X-Ray Microtomography and DEM Modelling **J. Wang *** Keynote
- Cone Crusher DOE and Surrogate Model-Based Optimization Using DEM with Cohesive Zone Fracture Bonded Element Model
J. Quist *, V. Tojaga , M. Evertsson , F. Edelvik
- A Grain-Scale Model for Temperature and Moisture Dependent Material Behavior of Clay-bearing Sandstone
Y. Wang *, F. Wittel
- 3D DEM Investigation Into the Liquefaction Characteristics of Highly Crushable Pumice Sand
S. Bahmani *, R. Orense
- Prediction of the Influence of Microcracking on the Thermomechanical Properties of Polycrystalline Ceramic Materials Using a Multiscale Discrete Element Modeling Approach
D. André *, H. Ranganathan , M. Mouiyaa , M. Huger , R. Soth , C. Wöhrmeyer

Berlin

14:00h - 16:00h

IS01B Granular plasticity II

Main Organizer: Prof. Francois Nicot (USMB, France)

Chaired by: Dr. Antoine Wautier (INRAE, France), Prof. Francois Nicot (USMB, France)

- Particle Orientation Patterns and Volumetric Strain Mechanisms in Clayey Materials
M. Ma , H. Naoui , F. Bennai , **M. Hattab ***
- Exploring Clay Microstructure: A FIB-SEM Approach for 3D Reconstruction of Particles
F. Bennai *, M. Hattab
- Unsaturated Soils from a Micro-Mechanical Perspective
N. Younes *, O. Millet , R. Wan , A. Wautier , F. Nicot
- Influence of Contact Friction and Particle Shape on Rotational Dissipation
M. Winkelmann *, V. Magnanimo , S. Papanicolopoulos , S. Luding

Estocolmo

14:00h - 16:00h

IS18A Particle-Based Methods for Natural Hazards Simulation I

Main Organizer: Organizer: Prof. Antonia Larese (University of Padua, Italy)
Chaired by: Prof. Antonia Larese (University of Padua, Italy), Prof. Mitsuteru Asai (Kyushu university, Japan)

- A Material Point Method with Critical State $\mu(I)$ -Rheology for Alpine Mass Movements **Keynote**
J. Gaume *, L. Blatny, M. Kohler, M. Kyburz, H. Vicari, P. Wissmann
- A Depth-Averaged Material Point Method for Cohesive Granular Flows
J. Kammholz *, L. Blatny, L. Guillet, J. Gaume
- Modelling Liquefaction-Induced Large Deformations with a Two-Point MPM Framework for Unsaturated Soils
Y. Higo *, Y. Takegawa, F. ZHU, D. Uchiyama
- MPM Simulation of Impact Forces of Landslides and Debris Flows on Protective Structures
A. Katili *, V. Singer, R. Wüchner, A. Larese
- Coupling SPH Method and Discontinuous Deformation Analysis: Improvement and Application for Multiphase Geohazards
C. Li *, G. Wang

Kursaal

14:00h - 16:00h

IS14A The Material Point Method – Recent Advances I

Main Organizer: Prof. Zhen Chen (University of Missouri, United States)
Chaired by: Prof. Zhen Chen (University of Missouri, United States), Dr. Duan Zhang (Los Alamos National Laboratory, United States)

- Interpreting the GIMP method as Petrov-Galerkin Eulerian-Lagrangian Finite Element – Observations, Theory and Experiments **Keynote**
M. Berzins *
- Consistency Issues and Their Resolution in Material Point Methods
D. Zhang *, K. Perez, J. Waters, P. Barclay
- Displacement–Volumetric Strain Mixed MPM-DDA Method and Its Application to Excavator Bucket Excavation Simulation
A. Okagawa *, R. Hashimoto, Y. Shimazu, R. Sekizuka, T. Doi
- Digital Twin Modelling of Architected Structures via MPM
Z. Chen *

Auditori

14:00h - 16:00h

IS23A Computational Methods in Mining, Mineral Processing and Geotechnical Applications I

Main Organizer: Dr. Simon Larsson (Luleå University of Technology, Sweden)
Chaired by: Dr. Simon Larsson (Luleå University of Technology, Sweden), Prof. Luis Marcelo Tavares (Federal University of Rio de Janeiro (UFRJ), Brazil)

- Implementation and Practical Application of a Breakage Model in DEM **Keynote**
L. Tavares *
- Discrete Element and Dynamic Scale Modelling of a Transfer Chute Design: Theory Basis and Validation of Technique
L. Del Cid *
- Statistical Modelling of Particle Fracture for DEM Simulations
E. Olsson *, L. Suarez, M. Etikan
- A Study of Geogrid Stabilisation of Granular Soil Using a DEM Unit Model
H. Geng *, J. Morrissey, K. Zamara, J. Kawalec, J. Ooi
- Power Distribution of various Rotor Configurations in a Vertical Stirred Mill determined with DEM
M. Denzel *, F. Wang, A. Boylston, R. Soutar-Dawson

Los Angeles

14:00h - 16:00h

IS27A Innovations in Particle Methods: Exploring the Software Landscape I

Main Organizer: Mr. Eric Lequiniou (Altair, France)
Chaired by: Mr. Eric Lequiniou (Altair, France), Dr. Carlos Labra (Altair, Spain)

- A Brief Overview of Opportunities and Challenges of SPH Simulation in Industrial Applications
M. Gestrich *, N. Tofighi, G. Lee
- Altair Radioss & OpenRadioss: Bridging Industry Strength and Open-Source Innovation for SPH Simulations
E. Lequiniou *, B. Maurel
- Numerical Stability and Accuracy of High-Velocity Impact SPH Simulations in OpenRadioss
H. Li *, T. Hirschler, S. Roth
- Smoothed-Particle Hydrodynamics Post-Processing & Visualization Using ParaView: a Survey
L. Gombert *, F. Mazen
- MESHFREE – A Generalized Continuum Mechanics Approach for Industrial Applications
C. Sanghavi *, I. Michel, P. Suchde, J. Kuhnert

Barcelona

16:30h - 18:00h

IS06B Fracture and Fragmentation with DEM II

Main Organizer: Prof. Kun Ferenc (University of Debrecen, Hungary)

Chaired by: Prof. Jianfeng Wang (City University of Hong Kong, China, Hong Kong)

- Masonry Dam Structural Assessment Using Discrete Element-Based Particle Modelling
A. Nuno *, I. Cismasiu, F. Pinho, M. Braga Farinha
- A Neural Network based Framework to Model Particle Rebound and Fracture
A. Schwarz *, P. Kopper, A. Beck
- Fragmentation Processes Under Isotropic Compression
F. Kun *, A. Husztek, G. Pál
- Adaptive Time Step and Solver for Discrete Element Method - Beam Bond Model
R. Varga *, M. Čermák

Estocolmo

16:30h - 18:00h

IS18B Particle-Based Methods for Natural Hazards Simulation II

Main Organizer: Prof. Antonia Larese (University of Padua, Italy)

Chaired by: Prof. Johan Gaume (ETH Zürich, Switzerland), Prof. Massimiliano Cremonesi (Politecnico di Milano, ITALY, Italy)

- An Enhanced Multiphase SPH Method Incorporating Visco-Inertial Rheology for Cascading Landslide-Tsunami Simulation
Y. Ma *, M. Asai
- Multi-scale SPH method for simulating tsunami propagation caused by submarine landslides
D. Morikawa *, M. Asai, F. Dourado
- SPH Simulation of Lava Flow with Plastic Surface Skin
S. Tomita *, T. Sato, S. Murakami, J. Yoshikawa, M. Sugimoto, H. Komen, M. Shigeta

Kursaal

16:30h - 18:00h

IS14B The Material Point Method – Recent Advances II

Main Organizer: Prof. Zhen Chen (University of Missouri, United States)

Chaired by: Prof. Martin Berzins (University of Utah, United States), Dr. Duan Zhang (Los Alamos National Laboratory, United States)

- A Two-Point Two-Phase Critical State Material Point Method for Geophysical Mass Flows
M. Juel *, H. Vicari, C. Yu, C. Jiang, J. Gaume
- Development of a Julia-Powered Toolkit for Material Point Method
K. Nakamura *
- A New Stabilized Mixed MPM Framework for Incompressible Viscoplastic Fluids
L. Moreno *, R. Wuechner, A. Larese

Berlin

16:30h - 18:00h

IS25 Meshfree, Peridynamics, and Particle Methods for Multi-Physics and Extreme Events Modeling

Main Organizer: Dr. Mike Hillman (Karagozian and Case Inc., United States)

Chaired by: Dr. Mike Hillman (Karagozian and Case Inc., United States), Prof. Jiun-Shyan Chen (University of California, San Diego, United States)

- A Neural Network-enriched Reproducing Kernel Particle Method for Modeling Localization and Fracture
J. Chen *, J. Baek, Y. Wang
- Continuum Kinematics-Inspired Peridynamics for Transverse Isotropy
J. Stadler *, A. De Villiers, A. Javili, G. Limbert, A. McBride, P. Steinmann
- What Are the Optimal Support Parameters in Meshfree Methods, and How Can We Compute Them?
M. Hillman *, Y. Wang, J. Magallanes, J. Chen

Auditori

16:30h - 18:00h

IS23B Computational Methods in Mining, Mineral Processing and Geotechnical Applications II

Main Organizer: Dr. Simon Larsson (Luleå University of Technology, Sweden)

Chaired by: Prof. Luis Marcelo Tavares (Federal University of Rio de Janeiro (UFRJ), Brazil), Dr. Simon Larsson (Luleå University of Technology, Sweden)

- Numerical and Experimental Analysis of Lunar Regolith Transport in Vibrating Pipes
P. Watson *, S. Bonnieu, A. Anwar, M. Lappa
- Coupled CFD-DEM Analysis of the Failure Mechanism of Sandy Bed Soils Due to Pipeline Leaks
S. Avendaño *, Y. Niño

Los Ángeles

16:30h - 18:00h

IS27B Innovations in Particle Methods: Exploring the Software Landscape II

Main Organizer: Mr. Eric Lequiniou (Altair, France)

Chaired by: Dr. Carlos Labra (Altair, Spain), Mr. Eric Lequiniou (Altair, France)

- A Bond Model for Fibers with Bifurcations and Heterogeneities: from Elasticity to Diverse Failure Modes
C. Labra *, M. Celigueta
- Auto-Tuning Dynamically Rebuilding Containers for Particle Simulations
M. Mishra *, S. Newcome, H. Bungartz
- Algorithm Selection for Discrete Element Method Simulations
S. Newcome *, M. Mishra, H. Bungartz

DAY 3

Wednesday 22nd October

SEMI-PLENARY SESSIONS | 09:00h - 11:00h

Barcelona

09:00h - 09:40h

Semi-Plenary Lecture

Stefan Radl

Chaired by: Prof. Kenichi Soga (United States)

- Parcel Methods for Cohesive and Interlocking Granular Materials
S. Radl *

Barcelona

09:40h - 10:20h

Semi-Plenary Lecture

Pilar Ariza

Chaired by: Prof. Kenichi Soga (United States)

- Hydrogen storage in Palladium nanoparticles
P. Ariza *

Barcelona

10:20h - 11:00h

Semi-Plenary Lecture

Ali Javili

Chaired by: Prof. Kenichi Soga (United States)

- Nonlocal Mechanics of Solids via Continuum-Kinematics-Inspired Peridynamics
A.Javili *

Berlin

09:00h - 09:40h

Semi-Plenary Lecture

Abbas Khayyer

Chaired by: Prof. Andrea Colagrossi (CNR-INM, Italy)

- Entirely Lagrangian Meshfree Fluid-Structure Interaction Solvers - Recent Advances and Future Perspectives
A. Khayyer *

Berlin

09:40h - 10:20h

Semi-Plenary Lecture

Jean Philippe Ponthot

Chaired by: Prof. Andrea Colagrossi (CNR-INM, Italy)

- The Particle Finite Element Method for Fluid-Structure Interactions and Multi-Physics Problems
J. Ponthot *

Berlin

10:20h - 11:00h

Semi-Plenary Lecture

Jean-Christophe Marongiu

Chaired by: Prof. Andrea Colagrossi (CNR-INM, Italy)

- Smoothed Particle Hydrodynamics at ANDRITZ: Long-Term Development, Industrial Applications, and Research Advances
J.C. Marongiu *, M. Rentschle

Barcelona

11:30h - 13:30h

IS12A Recent Advances and Applications of the Particle Finite Element Method (PFEM) I

Main Organizer: Dr. Juan Marcelo Gimenez (CIMNE, Spain)

Chaired by: Dr. Alessandro Franci (CIMNE/ UPC, Spain), Dr. Juan Marcelo Gimenez (CIMNE, Spain)

- Realistic Modeling of Soil-Root Interactions in Geomechanics Using G-PFEM **Keynote**
J. Carbonell *, N. Climent , L. Monforte , M. Arroyo
- CPTu interpretation based on PFEM simulations
L. Monforte *, L. Hauser , S. Collico , M. Arroyo , A. Gens
- Numerical Simulation of Pile Driving Using the Geotechnical Particle Finite Element Method
D. León-Vanegas *, L. Monforte , M. Arroyo
- A Modified Particle Finite Element Method (PFEM) Ensuring Mass Conservation
X. Zhang *, Y. Zhang , M. Rabinezhad
- A coupled two-phase two-layer SPFEM formulation for water-soil dynamic problems
W. Yuan *, M. Liu

Estocolmo

11:30h - 13:30h

IS08A Modelling Soil-Water-Structure Interaction in Geomechanics with the Material Point Method I

Main Organizer: Dr. Alba Yerro (Virginia Tech, United States)

Chaired by: Dr. Pietro Marveggio (Politecnico di Milano, Italy), Dr. Alba Yerro (Virginia Tech, United States)

- MPM Modelling of Earthquake-induced Landslides Including Thermal Effects
T. Zhang *, L. Lemus , N. Pinyol Puigmartí , G. Di Carluccio
- Two-Phase Material Point Method for Simulating Liquefaction-Induced Large Deformations in Sandy Soils
J. Kurima *, B. Chandra , K. Soga
- A Coupled MPM-VOF Method for Seepage Failure of Saturated Ground
R. Hashimoto *, O. Riki , Y. Higo
- Higher order hydromechanical MPM to simulate runout in brittle soils
A. Alsardi , **A. Yerro ***, C. Long

Berlin

11:30h - 13:30h

IS09A Recent Advances In Particle-based FSI Solvers I

Main Organizer: Dr. Abbas Khayyer (Kyoto University, Japan)

Chaired by: Prof. Andrea Colagrossi (CNR-INM , Italy), Dr. Peng-Nan Sun (Sun Yat-sen University, China)

- A multi-resolution SPH-PD method for simulating fluid-structure interactions with large deformations and fractures **Keynote**
P. Sun *, G. Liang
- Numerical Modelling of Hydroelastic FSI Using DualSPHysics: Recent Developments and Future Directions
S. Capasso *, B. Tagliaferro , I. Martínez-Estévez , J. O'Connor , J. Domínguez , A. Crespo , G. Viccione , M. Gómez-Gesteira , B. Rogers , C. Altomare
- Interaction Between Underwater Explosion Bubbles and Perforated Structure Based on Riemann-SPH Method
X. Fang , P. Wang , **S. Wang ***
- A Coupled EISPH-TLSPH Method for Simulating Thermo-Fluid-Structure Interaction in Practical Engineering Applications
J. Kim *, H. Yoo , E. Kim
- Investigation of Fluid-Structure Interaction in Shaped Charge Underwater Explosions Using an Improved Riemann-SPH Method
X. Fang , **P. Wang ***, A. Zhang

Auditori

11:30h - 13:30h

IS29A Particle-Lubrication across the Scales I

Main Organizer: Prof. Diego Berzi (Politecnico di Milano, Italy)

Chaired by: Prof. Diego Berzi (Politecnico di Milano, Italy)

- Nanoparticles as Next-Generation Lubricant Additives: Performance and Challenges
F. Dassenoy *
- Patterned Surface Contact for Macro Scale Engineering Superlubricity
A. Sinnott *, G. Cross
- Revealing the Role of Structure in Tribo-Particle Lubricants to Achieve Superlubricity
A. Gupta , **P. Schall ***
- A Novel Experimental Technique for the Investigation of Lubrication Against Wear of Microparticles
A. Uluca *, D. Gay Gomez , G. Cross
- In-Operando Visualization for Colloid-Based Lubrication
P. Zubieta-Laborde *, F. Dubreuil , M. De Barros Bouchet

Kursaal

11:30h - 13:30h

IS05 Fundamentals of DEM and CFD-DEM: Recent Advances and Challenges

Main Organizer: Prof. Stefan Radl (Graz University of Technology, Austria)

Chaired by: Prof. Stefan Radl (Graz University of Technology, Austria), Dr. Christoph Goniva (DCS Computing GmbH, Austria)

- Powder Flow Characterization and Discrete Element Model Calibration using Flow Patterns around Obstacles
C. Bierwisch *, A. Goorabjiripoor, A. Baab, M. Fuchs, T. Najuch
- Calibration of DEM Parameters for Polypropylene Powder Using Schulze Ring Shear Tester: An Efficient Upscaled Computational Approach
S. Mahdavy *, A. Zharbossyn, D. Barletta, M. Poletto, V. Magnanimo, S. Luding, L. Orefice
- Interplay between Uncertainty and Interlocking in DEM simulations
L. Maier *, M. Mitterlindner, S. Radl
- Performance-Portable Aspherix: Scaling DEM Simulations Across CPUs and GPUs
M. Kwakkel *, C. Goniva, C. Kloss
- Investigating Piping Erosion during Suction Bucket Installations using Fully-Resolved LBM-DEM Simulations
S. Kemmler *, P. Cuéllar, A. Artinov, M. Baeßler, H. Köstler

Los Angeles

11:30h - 13:30h

IS28A Development and Applications of SPH Method I

Main Organizer: Prof. Sauro Manenti (Università di Pavia, Italy)

Chaired by: Prof. Sauro Manenti (Università di Pavia, Italy)

- Simulating Turbulent Flows With Synthetic Inflow Turbulence Using Smoothed Particle Hydrodynamics
M. Goebel *, N. Buerkle, G. Chaussonnet, R. Koch, H. Bauer
- A Comparative Study of a Conventional and Modern Transport-Velocity SPH Scheme in a Reactive Mass Transfer Problem
K. Muthukumar *, C. Ates, N. Bürkle, M. Wicker, R. Koch, H. Bauer
- Advances in Numerical Modeling of Atomization with Smoothed Particle Hydrodynamics
N. Bürkle *, M. Wicker, M. Göbel, R. Koch, H. Bauer
- WCSPH Modelling of Non-Linear Waves with Interactions
S. Manenti *, N. Salis, S. Todeschini
- Choice of the Kernel Function in ISPH for Simulating the Waves Interaction on Coastal Defence Structures
A. Belemkadem *, A. Beaudoin, C. Mimeau
- Point Cloud Quality for Meshfree Collocation Methods
M. Abdolazadeh *, O. Davydov, I. Michel, P. Suchde

TECHNICAL SESSIONS | 14:30h - 16:30h

Barcelona

14:30h - 16:30h

IS12B Recent Advances and Applications of the Particle Finite Element Method (PFEM) II

Main Organizer: Dr. Juan Marcelo Gimenez (CIMNE, Spain)

Chaired by: Dr. Juan Marcelo Gimenez (CIMNE, Spain), Dr. Alessandro Franci (CIMNE/UPC, Spain)

- 3D Mesh Adaptation for Free Surface Flows using PFEM
T. Leyssens *, M. Henry, N. Tihon, J. Lambrechts, J. Remacle
- A Complete Particle Finite Element Method Pipeline On The GPU
N. Tihon *, T. Leyssens, M. Henry, J. Lambrechts, J. Remacle
- Reduced Order Modelling for Free-Surface Fluid Flows with the Particle Finite Element Method
M. Beckermann *, A. Barbarulo, M. Cremonesi
- A Space-Time PFEM Approach with Fixed Inflow/Outflow Boundaries
D. Moreira *, T. Carvalho, R. Sanches
- Particle Finite Element Method for bubble dynamics
M. Henry *, T. Leyssens, N. Tihon, J. Lambrechts, V. Legat

Berlin

14:30h - 16:30h

IS09B Recent Advances In Particle-based FSI Solvers II

Main Organizer: Dr. Abbas Khayyer (Kyoto University, Japan)

Chaired by: Dr. Abbas Khayyer (Kyoto University, Japan), Dr. Pingping Wang (Harbin Engineering University, China)

- Particle Methods for Modeling Deforming and Non-Deforming Fluid-Structure Interaction Problems
D. Kolukisa, S. Ramezanzadeh, M. Ozbulut, **M. Yildiz ***
- Three-Dimensional Modeling of Debris Flow-Turbidity Currents Transition and FSI Processes with SPH Method
D. Feng *
- Coupling DualSPHysics+ with a Deep Reinforcement Learning Framework for Active Flow Control
Y. Zhan *, M. Luo, A. Khayyer
- Lagrangian-Eulerian Stabilized Collocation Method and Its Applications in Fluid-Structure Interaction Problems
Z. Qian *, M. Liu, L. Wang
- A GPU-Accelerated SPH Framework for Patient-Specific Simulations of Vascular Fluid-Structure Interactions
Y. Lu *, M. Liu, C. Zhu
- An Enhanced Numerical Wave Tank for Wave Interaction with Floating Flexible Structure Based on DualSPHysics+
M. Luo *, Y. Zhan, A. Khayyer

Estocolmo

14:30h - 16:30h

IS08B Modelling Soil-Water-Structure Interaction in Geomechanics with the Material Point Method II

Main Organizer: Dr. Alba Yerro (Virginia Tech, United States)

Chaired by: Dr. Alba Yerro (Virginia Tech, United States), Dr. Gaia Di Carluccio (Universitat Politècnica de Catalunya, Spain)

- Numerical Diffusion and Countermeasures in the Stabilized MPM Based on Implicit u-p Formulation
M. Nakaya *, Y. Higo, R. Hashimoto
- Comparison of Two Stabilisation Techniques for an Implicit MPM Formulation with Quadrilateral Elements
C. Rodríguez Lugo *, L. Prada-Sarmiento, C. Grandas Tavera, T. Wichtmann
- MPM Simulations of Debris Flow Impact Forces on Bridge Piers
P. Marveggio *, M. Zerbi, C. di Prisco
- Numerical Simulation of Conductor Casing Driving in Fully Saturated Clay Soil
B. Ramos Barboza *, M. Tenório, J. Melo, K. Guerra, J. Santos, E. Lima Junior, F. Cutrim, R. Dias

Kursaal

14:30h - 15:30h

IS17 Particle-Based Methods for Cemented Granular Materials

Main Organizer: Dr. Guillermo Casas (CIMNE, Spain)

Chaired by: Dr. Guillermo Casas (CIMNE, Spain)

- Discrete Element Modeling of Biocemented Sand: Impact of Microscopic Calcite Characteristics on Macroscopic Properties
C. Shang *, A. Martinez, J. T. DeJong, G. Casas, M. Celigueta
- A Standardized Particle Packing Generation Framework for the Simulation of Cemented Granular Materials with the DEM
C. Shang, **G. Casas ***, M. Celigueta
- Simulating Interparticular Forces in Cementitious Media Using the Discrete Particle Method
F. Wiese *, R. Sposito, A. Kustermann, T. Stengel

Auditori

14:30h - 16:30h

IS29B Particle-Lubrication across the Scales II

Main Organizer: Prof. Diego Berzi (Politecnico di Milano, Italy)

Chaired by: Prof. Peter Schall (University of Amsterdam, Netherlands)

- Crystallization in load-controlled shearing flows of monosized spheres
D. Berzi *, D. Vescovi
- Vibrating Shear Flows between Bumpy Planes
M. Gianetti *, D. Berzi, D. Vescovi
- Conformal Core-Shell Carbon Coatings deposited in a Rotational CVD Reactor
S. Schlosser *, N. Galfe, P. Zubieta-Laborde, Z. Gholamvand, G. Cross, M. De Barros Bouchet, C. Ó Coileáin, G. Duesberg
- A Theoretical Study on Friction of Macroscale Patterned Surfaces: Implications for Structural Superlubricity
V. Ho *
- Understanding the Viscosity of Complex Fluids, especially Polar Fluids, Based on Hard Spheres
A. de Wijn *
- The Effect of Innovative Phyllosilicate-Based Additives on Tribological Performance of Bearings and Gears
S. Bill *

Kursaal

15:30h - 16:30h

IS16 Discrete and Particle Methods in Solid and Structural Mechanics

Main Organizer: Prof. Eduardo de Moraes Barreto Campello (University of São Paulo, Brazil)

Chaired by: Prof. Eduardo de Moraes Barreto Campello (University of São Paulo, Brazil)

- Fragmentation and Demolition Simulation using Particle Systems
D. Solanillas *, J. Kovecses
- Improving the Combined DEM-Discrete Fresh Concrete Approach for Modeling 3D Concrete Printing **Keynote**
V. Avancini, O. Quintana-Ruiz, **E. Campello ***

IS28B Development and Applications of SPH Method II

Main Organizer: Prof. Sauro Manenti (Università di Pavia, Italy)

Chaired by: Prof. Sauro Manenti (Università di Pavia, Italy)

- A Parallel Multi-resolution Particle Generation Method for Arbitrary Complex Geometry
X. Yang , **Z. Nie *** , Y. Dai , Z. Ji
- A Comparison Between SPH and Hybrid Multiphase VOF Models for Simulating Gearbox Lubrication
F. Sarret * , K. Wechsler , D. Papoulias , M. Farih
- Design of a Micro-Robot Simulator Modelling Capillary Forces Using SPH Method
L. Casanova Sánchez * , A. Barbot , J. Dequidt , G. Laurent

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