CONGRESS ON
NUMERICAL METHODS
IN ENGINEERING

CMN 2026

PROGRAMME

GIJÓN, SPAIN

JULY 1-3, 2026

A publication of:

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

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PREFACE

On behalf of the CMN2026 organizing committee we are pleased to welcome you to Gijón for the Congress on Numerical Methods in Engineering (CMN 2026) held at Laboral Ciudad de la Cultura.

The Congress on Numerical Methods in Engineering takes place biennially and is jointly organized by the "Sociedad Española de Mecánica e Ingeniería Computacionales" (SEMNI, Spain), and the "Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional" (APMTAC, Portugal).

This conference follows the previous congress editions of Madrid (2002), Lisbon (2004), Granada (2005), Porto (2007), Barcelona (2009), Coimbra (2011), Bilbao (2013), Lisbon (2015), Valencia (2017), Guimarães (2019), Las Palmas de Gran Canaria (2022) and Aveiro (2024).

We want to express our appreciation to all members of the committees, to all thematic session organizers, to all the staff who are managing the different aspects of the Congress and to all the contributing authors and participants. We hope you will have a warm welcome to Gijón and all of you feel rewarded for your participation and contribution.

Mar Alonso Martínez
University of Oviedo, Spain

Emilio Martínez Pañeda
University of Oxford, United Kingdom

ACKNOWLEDGEMENTS

The congress organizers acknowledge the support towards the organization of the **CMN2026 Congress** to the following supporting organizations:

APMTAC
Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional

SEMNI
Sociedad Española de Mecánica e Ingeniería Computacionales

IUTA
Instituto Universitario de Tecnología Aplicada

UNIVERSIDAD DE OVIEDO

VISITA GIJÓN – CONVENTION BUREAU

SPONSORS & **EXHIBITORS**

EXHIBITOR SPONSORSHIP:

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Advanced Simulation Technologies S.L.

ORGANIZERS & **COMMITTEES**

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University of Aveiro, Portugal

Chengxiang (Rena) Yu
Universidad de Castilla-La Mancha, Spain

PLENARY **LECTURES**

Plenary lectures will be delivered by scientists of international prestige in the field of the congress

Jose M. Adam
Universitat Politècnica de València, Spain
Integrating Simulation and Experiments for Resilient Structures

Pedro M. Camanho
Universidade do Porto, Portugal
Design and analysis of composite systems across the scales: physical and data-driven models

Antonio J. Gil
Swansea University, United Kingdom
Predictive Mechanics for Soft Robotics: Multi-Scale Modelling and Data-Driven Control of Electroactive Polymers

Soledad Le Clainche Martínez
Universidad Politécnica de Madrid (UPM), Spain
Physics–Data Hybrid Models: From Modal Decompositions to Industrial Machine Learning

Fermín Luis Navarrina Martínez
University of A Coruña, Spain
Matrix Analysis of Molecular Structures: Applying Engineering Knowledge to Molecular Dynamics

Guillermo Lorenzo
Universidade da Coruña, Spain
Imaging-informed Computational Forecasts of Tumor Growth and Treatment Response

Paulo B. Lourenço
Universidade do Minho, Portugal
ERC Stand4Heritage: Numerical Methods to Keep Buildings Standing

Belén Riveiro Rodríguez
Universidad de Vigo, Spain
Bridging Physics and AI for Transport Infrastructure Assessment

By Martin Stiburek - Own work, CC BY-SA 4.0

SEMNI AWARDS

Alejandro Cornejo
Juan Carlos Simó Award 2026

Adrián Corrochano
Best Thesis Award 2025 (ex–aequo)

Antonio Huerta
Mentor Award Manuel Casteleiro 2026

Pradeep Kumar Bal
Best Thesis Award 2025 (ex–aequo)

Fermín Navarrina
SEMNI Olgeird Zienkiewicz Award 2025

LIST OF THEMATIC **SESSIONS**

TS001 Neural Networks for Solving PDEs

Organized by: Á. Omella (Universidad de Zaragoza, Spain), J. Taylor (CUNEF Universidad, Spain) and C. Uriarte (Basque Center for Applied Mathematics (BCAM), Spain)

TS002 AI and ML Techniques in Computational Mechanics

Organized by: A. GIL ANDRADE CAMPOS (Universidade de Aveiro, Spain), A. BADÍAS2 (Universidad Politécnica de Madrid, Spain), F. CHINESTA (ENSAM-ParisTech, Spain), P. DÍEZ (Universitat Politècnica de Catalunya, Spain), E. FERRER (Universidad Politécnica de Madrid, Spain), A. HUERTA (Universitat Politècnica de Catalunya, Spain), F. MONTANS (Universidad Politécnica de Madrid, Spain) and E. CUETO (Universidad de Zaragoza, Spain)

TS003 Advances in Computational Biomechanics and Mechanobiology

Organized by: J. Mora Macías (Universidad de Huelva, Spain), P. Blázquez Carmona (Universidad de Cádiz, Spain), P. Fernandes (Universidade de Lisboa, Portugal), A. Castro (Universidade de Lisboa, Portugal), J. Navarro-Jiménez (Universitat Politècnica de València, Spain) and J. Ródenas (Universitat Politècnica de València, Spain)

TS006 Particle-Based Computational Methods

Organized by: S. Idelsohn (CIMNE, Spain), J. Gimenez (CIMNE, Spain) and E. Oñate (CIMNE, Spain)

TS007 Vibration Problems in Structures

Organized by: J. Jiménez-Alonso (University of Seville, Spain), J. Naranjo-Perez (University of Seville, Spain), I. Muñoz Diaz (. Polytechnic University of Madrid, Spain) and E. Caetano (University of Porto, Portugal)

TS008 Numerical Simulation in Metal Forming: From Fundamentals to Emerging Technologies

Organized by: R. Amaral (Faculty of Engineering, University of Porto, Portugal), B. Erice (IKERBASQUE, Basque Foundation for Science, Spain), J. Mendiguren (4Mondragon Unibertsitatea, Faculty of Enginee, Spain), A. Santos (2Faculty of Engineering, University of Porto, Portugal) and M. Oliveira (CEMMPRE, Department of Mechanical Engineerin, Portugal)

TS009 Optimization, Metaheuristics and Evolutionary Algorithms in Computational and Civil Engineering

Organized by: D. Greiner (Universidad de Las Palmas de Gran Canaria, Spain), D. Ribeiro (Politecnico do Porto, Portugal) and V. Yepes (Universitat Politécnica de Valencia, Spain)

TS011 Numerical Modeling Techniques for Complex Problems in Science and Engineering (In Honor of Rafael Montenegro)

Organized by: G. Montero (ULPGC, Spain) and J. Escobar (ULPGC, Spain)

TS013 Modelling and Simulation for Additive Manufacturing

Organized by: M. Chiumenti (CIMNE/UPC, Spain) and J. Cesar de Sa (University of Porto (FEUP), Portugal)

TS014 Numerical Modeling of Welding and Processing

Organized by: N. DIALAMI (CIMNE-UPC, Spain) and M. Chiumenti (CIMNE-UPC, Spain)

TS015 Numerical Approaches for Modelling Fibre-reinforced Concrete Structures

Organized by: B. Saz (Universidad Politécnica de Madrid, Spain), J. Barros (University of Minho, Portugal) and R. Yu (Universidad de Castilla-La Mancha, Spain)

TS017 Steel and composite structures

Organized by: A. Espinós (ICITECH, Universitat Politècnica de València, Spain) and N. Lopes (RISCO, Departamento de Engenharia Civil, Univ, Portugal)

TS018 Wave Propagation and Associated Inverse Problems

Organized by: J. Segurado (IMDEA Materiales, Spain) and J. García Suárez (EPFL, Switzerland)

TS019 Computational modelling for hydrogen technologies

Organized by: A. de Jesus (Universidade do Porto, Portugal) and E. Martinez-Paneda (University of Oxford, United Kingdom)

TS021 Multi-physics modelling

Organized by: F. Montero-Chacón (Universidad Loyola Andalucía, Spain), J. Segurado (IMDEA Materials, Spain) and E. Martínez-Pañeda (University of Oxford, United Kingdom)

TS022 Phase Field Models in Engineering

Organized by: S. Jiménez Alfaro (University of Seville, Spain) and R. Darabi (Faculty of Engineering, University of Porto, Portugal)

TS023 Energy Utilization and Storage

Organized by: A. Meana-Fernández (University of Oviedo, Spain) and M. Álvarez-Rodríguez (University of Oviedo, Spain)

TS024 Numerical Methods for Fluids Engineering

Organized by: J. Fernández Oro (University of Oviedo, Spain), L. Santamaría Bertolin (University of Oviedo, Spain) and B. Pereiras García (University of Oviedo, Spain)

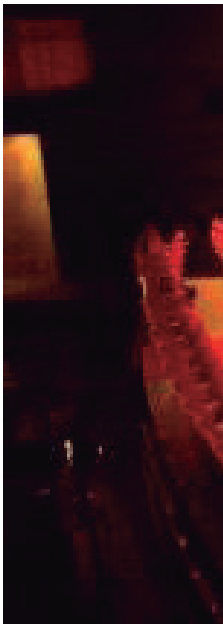
TS025 Computational Modelling and Optimization of Advanced Materials and Structures

Organized by: J. CANTE (UPC/CIMNE, Spain), O. Lloberas-Valls (UPC/CIMNE, Spain), D. Roca (UPC/CIMNE, Spain) and D. Yago (UPC/CIMNE, Spain)

TS028 Advances in Computational Constitutive Modelling

Organized by: P. Prates (Universidade de Aveiro, Portugal), J. Dias-de-Oliveira (Universidade de Aveiro, Portugal), J. Pinho-da-Cruz (Universidade de Aveiro, Portugal), R. Valente (Universidade de Aveiro, Portugal) and S. M. Tavares (Universidade de Aveiro, Portugal)

CONFERENCE **INFORMATION**



CONFERENCE VENUE

Laboral Ciudad de la Cultura is a space open to everything that happens in the world of the arts, research, and new technologies. In this unique cultural complex, different forms of culture and education coexist daily, aiming to serve and provide a meeting point for those committed to knowledge, the exchange of experiences, and innovation.

Just **30 minutes from the airport**, with excellent connections to the rest of the region and only **3 km from the historic center of Gijón/Xixón**, Laboral Ciudad de la Cultura stands out as a privileged location for hosting and organizing any type of event.

In addition to deeply rooted customs and traditions, the region offers a high-quality hotel and restaurant offering, along with significant cultural and tourist infrastructure. All of this ensures you can enjoy a pleasant stay in an authentic Natural Paradise.

HOW TO GET TO GIJÓN:

Gijón is a coastal city in northern Spain (Asturias) and is easily accessible by air, rail and road.

Below you will find practical travel information for congress participants.

BY PLANE

The nearest airport is Asturias Airport (OVD), located approximately 40-45 km from Gijón.

Flights information: Asturias Airport (AENA)

ALSA bus: www.alsa.com (approx. 45 minutes)

Taxi: Approximate fare 45–60 €

Car rental: Available at the airport

There is no train station at the airport.

BY TRAIN (AVE and Long-Distance)

Gijón is served by **Gijón–Sanz Crespo Railway Station**.

RENFE (AVE / Alvia / Avlo): **www.renfe.com**

Direct and connecting services from Madrid and other major cities

Regional and commuter trains from Oviedo and other Asturian cities

Travel Discounts for Congress Participants.

How to apply your discount:

1. Go to www.renfe.com
2. Select your preferred train and fare (Basic, Elige, Elige Comfort, or Premium)
3. In the fare options dropdown, choose **"Congresses/Events".**
4. Enter the authorization number in the corresponding field. **Contact the Congress Secretariat at cmn2026_sec@cimne.upc.edu to receive the «Authorization Number»**

Important information:

The authorization code is personal and will be provided after completing your event registration.
Misuse of the code may result in cancellation of the discount.
You must carry this document (printed or on your mobile device) during your journey.
Be prepared to show it at access control and to the train staff along with your ticket.

BY BUS

Long-distance and regional bus connections are mainly operated by **ALSA**.

Bus tickets and schedules: www.alsa.com

Direct connections from Madrid, Barcelona, Bilbao and other cities

Arrival at **Gijón Bus Station**, located in the city centre

Travel Discounts for Congress Participants.

Special ALSA discounts are also available for long-distance bus services.

Use the **Promotional Code: CMN26**

Sales period: From sales date: 02/02/2026 - To sales date: 05/07/2026

Travel period: From travel date: 26/06/2026 - To travel date: 05/07/2026

To benefit from this discount, you must first register for the free loyalty program **Alsa Plus**: https://www.alsa.es/alsaplus . Once registered, log in to the Alsa website and enter the promotional code during the ticket purchase process to apply the discount.

BY CAR

From Madrid: approximately 5–6 hours via A-6 and A-66 motorways

From Asturias Airport: direct access via the A-8 motorway

The congress will take place at **Laboral Ciudad de la Cultura**, one of the most iconic cultural and architectural landmarks in Gijón.

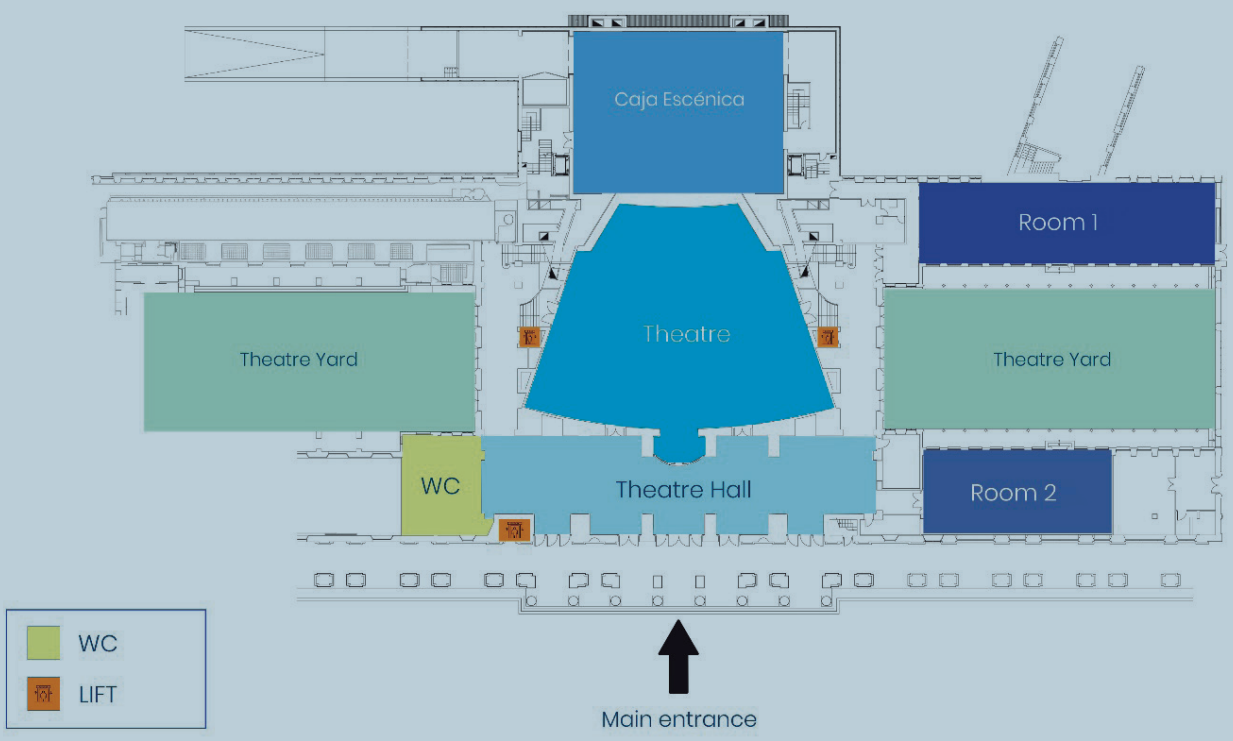
Address:
Laboral Ciudad de la Cultura
Calle Luis Moya Blanco, 261
33203 Gijón, Asturias, Spain

The venue is located approximately **10 minutes by car from the city centre** and is easily accessible by taxi, bus or private vehicle.
More information about the venue:
www.laboralciudaddelacultura.com

Practical Recommendations:

- Book flights and trains well in advance.
- Check updated schedules on official transport websites.
- Public transport from the airport is reliable and well-coordinated.

CONFERENCE **ROOMS**



HALL, THEATRE YARD, ROOM 1&2 AND CAJA ESCÉNICA

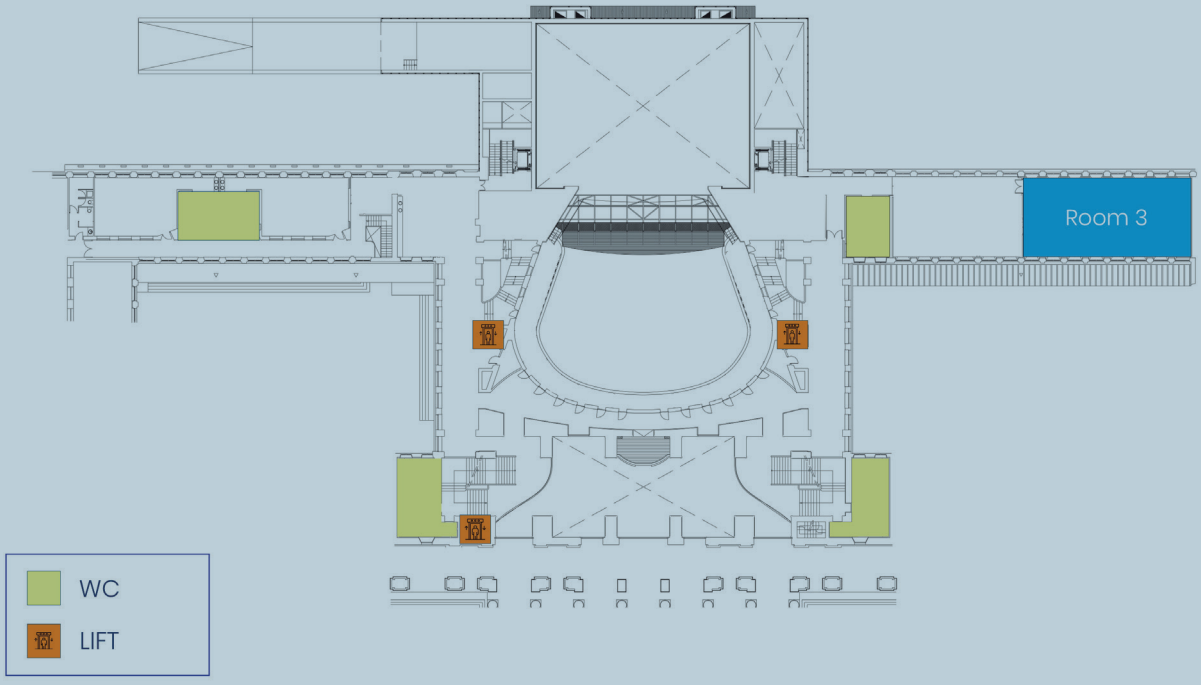
Hall - Secretariat, Poster Session, Exhibitors Area and Coffee Break Area.

Theatre Yard - Coffee Break Area.

Room 1 & 2 - Parallel Thematic Sessions.

Caja Escénica - Lunch Break Area.

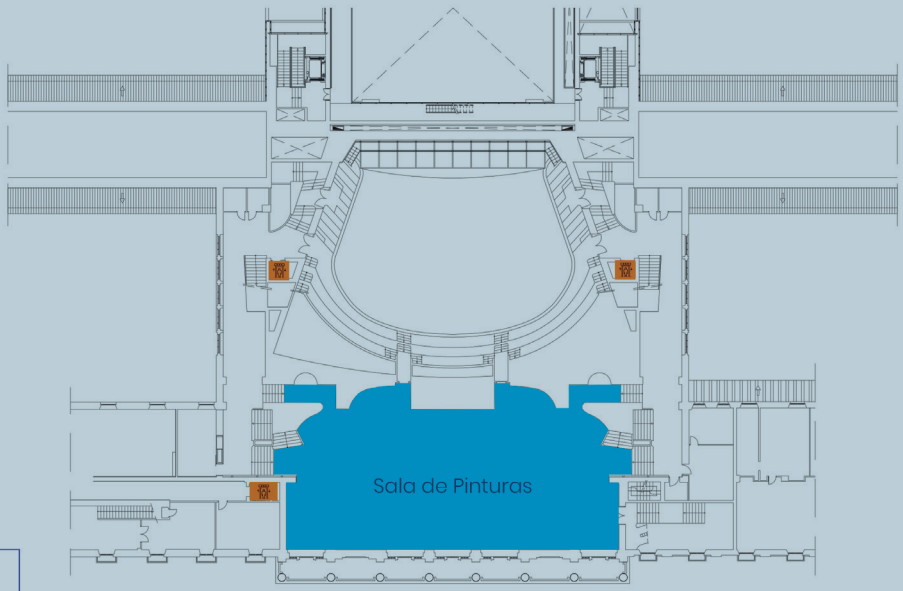
FIRST FLOOR



ROOM 3

The **Room 3**, located on the first floor, will host **parallel thematic sessions throughout the conference.**

SECOND FLOOR



WC

LIFT

SALA DE PINTURAS

The **Welcome Cocktail will take place in the Sala de** Pinturas, a unique and historic space that will offer attendees a relaxed setting to meet, network and enjoy the opening of the conference.

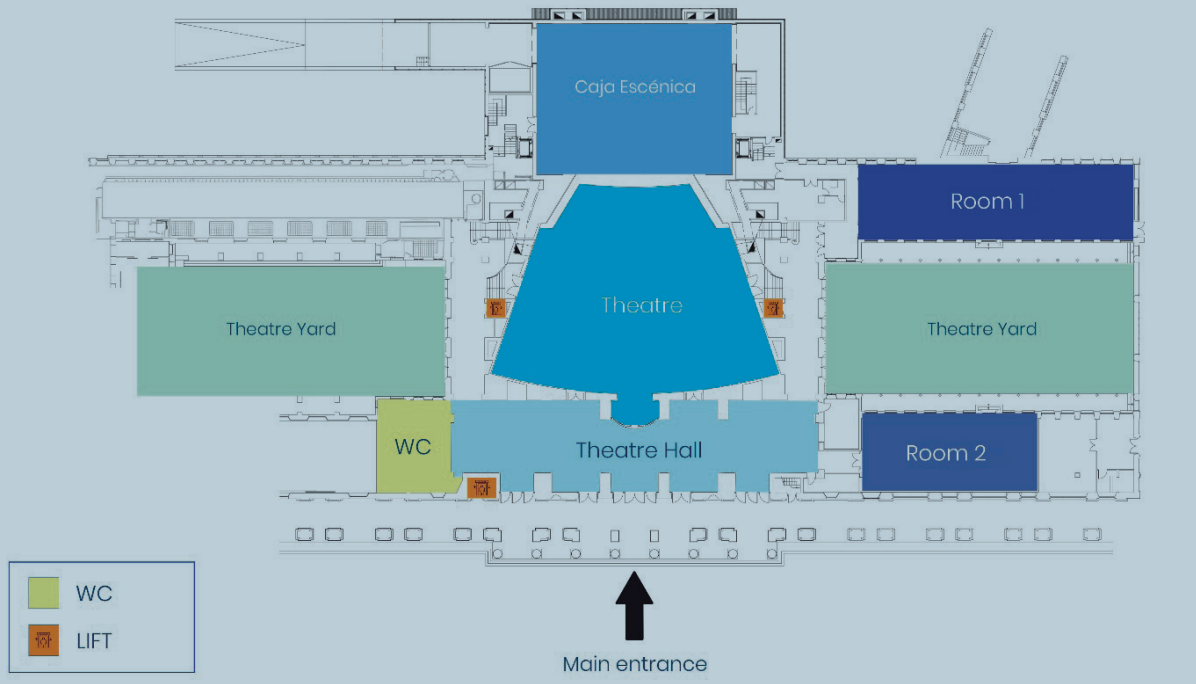
REGISTRATION

Registrations will start on **Wednesday July 1, 2026, from 8:30.**

Laboral Ciudad de la Cultura
Calle Luis Moya Blanco, 261
33203 Gijón, Asturias, Spain

*All participants are invited to register at the **Theatre Hall, at Laboral Ciudad de la Cultura,** throughout the day.*

GROUND FLOOR



Please make sure to show the confirmation email (sent a few days before the conference) with your **conference ID** at the registration desk.

If you cannot come and register on Wednesday July 1, 2026, you can also register during the following days, on Thursday July 2 and Friday July 3, 2026.

The registration process will be the same for the rest of the days. You can come to the registration desk (at the Theatre Hall) with your confirmation email and you will be able to collect your badge.

However, in order to be able to give you the best experience at the conference and to guarantee a smooth running of the organization, **we strongly advise you to register on Wednesday July 1, 2026 (from 8:30) at Theatre Hall at Laboral Ciudad de la Cultura.**

PRESENTATIONS

The technical programme of **CMN 2026** consists of **8 plenary lectures**, and **30 thematic sessions** with a total of **204 oral presentations.**

TIME

Each regular presentation is allocated **12 minutes**, with additional **3 minutes for Q&A**, while keynote talks are allocated **25 min, with 5 min for Q&A**. Times quoted include time for 1-2 questions from the floor.

EQUIPMENT

All parallel session rooms will be equipped with a PC and a PC projector.

Please bring your presentation on a USB storage device and download and save your presentation in the PC located in the meeting room where you have been allocated to present. You can do it during the coffee-break before your schedule time.

If your USB storage device does not work properly, you may alternatively connect your own laptop to the projector via HDMI.

If you have any technical problems during the sessions, you will have an assistant to help you.

Moderators of sessions will be asked to be strict on time.

RECOMMENDATIONS FOR YOUR PRESENTATION

In order to prepare your slides for oral presentation please take also into account that, because of projects available at the conference venue, it is required a **16:9 aspect** ratio.

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.

We strongly encourage speakers to go to their conference room 10 minutes before the session starts in order to upload their presentation in the room's computer and do a quick test.

Please remember that presentations are delivered in English.

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.

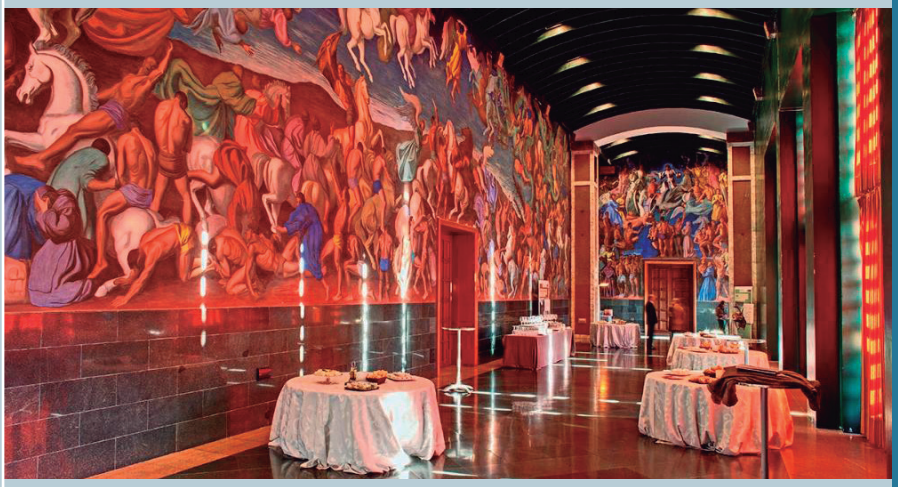
SOCIAL PROGRAMME

As part of the **CMN 2026 social programme**, all registered participants are invited to attend the Welcome Reception on Wednesday, July 1st, from 19:15 to 21:30, at the **Laboral Ciudad de la Cultura Sala Pinturas.**

The event will offer an opportunity to meet fellow attendees in an informal setting after the first day of the conference.

This event is part of the official CMN 2026 social programme and is open to all registered participants.

Welcome Reception – Wednesday, July 1st | 19:15
Venue: Laboral Ciudad de la Cultura, Sala Pinturas, Gijón
C. Luis Moya Blanco, 261, Periurbano - Rural, 33203 Gijón, Asturias



Morning Run in Gijón – Thursday, July 2nd
07:00 to 08:00 - Free activity - Venue: Municipal El Molinón

Participants are invited to join an informal Running Club session scheduled for the morning of July 2, prior to the start of the congress.

This activity is conceived as a non-competitive and recreational run, open to all attendees interested in incorporating physical activity into their congress experience. It offers an opportunity to enjoy Gijón in the early hours of the day while engaging in a healthy and social activity.

The initiative is currently subject to participant interest. Expressions of interest will allow the organization to define the final schedule, meeting point, and route.

- Informal, non-competitive activity
- Open to all levels of experience
- Final details to be confirmed based on participation

Congress Dinner – Thursday, July 2nd | 21:00
Venue: Abba Playa Gijón Hotel, Gijón
Paseo Dr. Fleming, 37, Periurbano - Rural, 33203
Gijón, Asturias

The Congress Dinner will take place on **Thursday, July 2nd**, at **21:00**, at the **Abba Playa Gijón Hotel.**

This event is part of the official CMN 2026 social programme and is open to all registered participants.

EMERGENCY CALLS

112

General Emergency Services
(medical emergencies, fire brigade, police, accidents, etc.).

061

Medical Emergencies / Ambulance Service

092

Local Police

091

National Police

985 18 14 40

Gijón Fire Department

CONFERENCE SECRETARIAT CONGRESS BUREAU

Phone: +34 93 405 46 97

Email: cmn2026_sec@cimne.upc.edu

Campus Nord UPC, Building C1 - Office C4
C/ Gran Capità, S/N 08034 Barcelona, Spain

TECHNICAL PROGRAMME **OVERVIEW**

WEDNESDAY, 1 JULY 2026

Time	Teatro Auditorium	Room 1	Room 2	Room 3
8:00-8:45	Registration			
8:45-9:15	Opening Ceremony			
9:15-10:00	Plenary Lecture - Antonio J. Gil			
10:00-11:30	Parallel Sessions			
11:30-12:00	Coffee Break			
12:00-12:45	Plenary Lecture - Paulo B. Lourenco			
12:45-13:45	Parallel Sessions			
13:45-15:00	Lunch Break			
15:00-15:45	Plenary Lecture - Pedro M Camanho			
15:45-17:15	Parallel Sessions			
17:15-17:45	Coffee Break			
17:45-19:00	Parallel Sessions			
19:15-21:00	Welcome Reception			

THURSDAY, 2 JULY 2026

Time	Teatro Auditorium	Room 1	Room 2	Room 3
8:30 - 9:00	Registration			
9:00 - 9:45	Plenary Lecture - José Adam			
9:45 - 11:15	Parallel Sessions			
11:15 - 11:45	Coffee Break			
11:45 - 13:15	Parallel Sessions			
13:15 - 14:45	Lunch Break			
14:45 - 15:30	Plenary Lecture - Belén Riveiro			
15:30 - 17:00	Parallel Sessions			
17:00 - 17:30	Coffee Break			
17:30 - 18:30	Parallel Sessions			
18:30 - 20:00	La Laboral Visit			
21:00 - 23:30	Conference Dinner (Hotel Abba Playa Gijón)			

FRIDAY, 3 JULY 2026

Time	Teatro Auditorium	Room 1	Room 2	Room 3
8:30 - 9:00	Registration			
9:00 - 9:45	Plenary Lecture - Soledad Le Clainche			
9:45 - 11:15	Parallel Sessions			
11:15 - 11:45	Coffee Break			
11:45 - 12:15	Plenary Lecture - Fermín Navarrina Martínez			
12:15 - 13:15	Parallel Sessions			
13:15 - 14:45	Lunch Break			
14:45 - 15:30	Plenary Lecture - Guillermo Lorenzo			
15:30 - 16:30	Parallel Sessions			

CMN 2026
Technical Programme

Wednesday, 01/07/2026

Wed, 01/07/2026 08:00 - 08:45 — Theatre Hall

Registration

Wed, 01/07/2026 08:45 - 09:15 — Theatre

Opening Ceremony

Wed, 01/07/2026 09:10 - 19:00 — Theatre Hall

PS - Poster Session I

Hourly TRNSYS simulation of a south-facing photovoltaic field using a reduced-order model and real meteorological data from Pico Polio (Asturias, Spain)
M. CASTRO-GARCÍA, ***Y. CENTENO-IDÁÑEZ,** S. NORNIELLA-LLANEZA, T. FERNÁNDEZ-GONZÁLEZ, T. ALONSO-SÁNCHEZ

An FFT-based solver with general boundary conditions based on Chebyshev polynomials
***J. Quecedo,** J. Segurado

Análisis numérico del proceso ECBM en capas de carbón fracturadas: efectos de la inyección de mezclas CO ?–N? sobre la producción de CH?, el almacenamiento de CO? y su viabilidad económico-financiera
***M. Soage-Quintans,** B. Fernandez-Amado, S. Andres, M. Escourido-Calvo, L. Cueto-Felgueroso

Wed, 01/07/2026 09:15 - 10:00 — Theatre

PL1 - Plenary Lecture I

Predictive Mechanics for Soft Robots: Multi-Scale Modelling and Data-Driven Control of Electroactive Polymers
***A. J. Gil**

Wed, 01/07/2026 10:00 - 11:30 — Theatre

TS023A - Energy Utilization and Storage I
Main Organizer: Prof. Andrés Meana-Fernández (University of Oviedo)
Chaired by: Prof. Andrés Meana-Fernández (University of Oviedo), Phd. Matias Alvarez-Rodriguez (University of Oviedo)

An Enhanced Direct Root Finding Method for Wall Response Factors Calculation Keynote
***F. Varela,** E. Theirs, C. González

Mesoscale modelling and experimental validation of the thermal behaviour of sustainable lightweight aggregate concrete
***A. Lezcano-Betegon,** M. Brana-Linares, M. Alonso-Martinez

Numerical Modeling of Adaptive Building Envelopes with Phase Change Materials for Thermal Energy Storage
M. Alvarez-Rodriguez, ***I. Suarez-Ramon,** M. Alonso-Martinez

Numerical model of heat transfer in a facility of vertical buried pipes
G. García-Álvarez, D. García Menéndez, ***M. Suárez-López,** A. Meana-Fernández

Toward an integrated approach to geothermal reservoirs: coupled thermo-hydro-mechanical modeling of fractured formations and pipe flow
***S. Andrés,** M. Dentz, D. Santillán, L. Cueto-Felgueroso

Wed, 01/07/2026 10:00 - 11:30 Room 1

TS011A - Numerical Modeling Techniques for Complex Problems in Science and Engineering (In Honor of Rafael Montenegro) I

Main Organizer: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)
Chaired by: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)

Numerical Modelling of Coupled Wind, Wildfire Spread and Smoke Dispersion: From Mathematical Formulation to Operational Integration

Keynote

***M. Asensio Sevilla,** J. Cascón Barbero, J. Iglesias Pérez, L. Ferragut Canals

Towards the Prediction of the Underwater Acoustic Footprint of Offshore Wind Turbines

***E. ferrer**

Data-Driven Prediction of Particulate Pollution Episodes from Low-Cost Sensor Networks in a Coastal Industrial City: Lessons from Gijón (Spain)
A. Menéndez Rubiera, A. Fernández Aybar, M. Fernández Amor, I. Rodríguez Larrad, M. Domat, ***E. González Plaza**

Coupling CFD-DPM simulation of electric vehicle fire suppression in tunnel

***J. Bielawski,** W. W?grzy?ski

Wed, 01/07/2026 10:00 - 11:30 Room 2

TS029A - Numerical Modelling and Fragility Assessment of Pre-Code Residential Building Typologies I

Main Organizer: Dr. Beatriz Zapico-Blanco (Universidad de Sevilla)
Chaired by: Dr. Beatriz Zapico-Blanco (Universidad de Sevilla)

What a numerical model of a concrete building must tell you to gain your trust Keynote

***M. Pellicer-García,** B. Zapico-Blanco

Calibration of Finite Element Models for Seismic Vulnerability Assessment of Residential Buildings Using In-Situ Dynamic Measurements

J. Fabra, N. Tarque, M. Vázquez, ***M. Pellicer-García,** B. Zapico

Dynamic Modelling of Soil-Structure Interaction in a Social Housing Building in Jerez de la Frontera

***D. Francisco-Fernández,** M. Álvarez-Fernández, M. Vázquez-Boza, B. Zapico-Blanco

Sobol-based global sensitivity analysis of uncertainties in URM seismic assessment

***D. Caicedo,** S. Karimzadeh, P. Lourenço

Integrated Macroseismic–Numerical Framework for the Seismic Response Evaluation of a Representative Pre-Code H-Shaped Residential Block in Southern Spain
S. Diánez-Santos, ***B. Zapico-Blanco**

Wed, 01/07/2026 10:00 - 11:30 Room 3

TS030A - New trends in shape and topology optimization I

Main Organizer: Prof. Enrique Nadal Soriano (Universitat Politècnica de València)
Chaired by: Prof. Enrique Nadal Soriano (Universitat Politècnica de València)

Implementación multi-enfoque de análisis modal en la optimización topológica de estructuras con restricciones en tensión de Von Mises

Keynote

***J. París,** M. Rey, I. Couceiro, L. Ramírez, F. Navarrina

A new perspective on the machine learning-based acceleration of the two level topology optimization process

R. Merli Gisbert, E. Moltó Martínez, J. Ródenas García, J. Navarro Jiménez, ***E. Nadal Soriano**

A Hierarchical Condensation Finite Element Framework for Large-Scale Topology Optimization

***V. Yanes Francisco,** F. Montáns Leal, M. Sanz Gómez, N. Kim

On the Study of the Geometrical Continuity of the Two-Level Topology Optimization Method

***R. Merli,** E. Moltó, J. Navarro, J. Ródenas, E. Nadal

Sobre el Significado de la Penalización de la Matriz de Rigidez Geométrica en Optimización Topológica con Restricciones en Pandeo Lineal
***M. Rey,** I. Couceiro, J. París, L. Ramírez, F. Navarrina

Wed, 01/07/2026 11:30 - 12:00 Theatre Hall

Coffee Break

Wed, 01/07/2026 12:00 - 12:45 Theatre

PL2 - Plenary Lecture II

ERC Stand4Heritage: Numerical Methods to Keep Buildings Standing

***P. B. Lourenco**

Wed, 01/07/2026 12:45 - 13:45 Theatre

GS001A - General Session I

Buckling of Laminated Glass Beams and Plates using Linear-Elastic Models

***M. AENLLE LOPEZ,** N. GARCÍA FERNÁNDEZ, P. FERNÁNDEZ FERNÁNDEZ

Small-on-Large finite element formulation for residual stresses in orthotropic timber members

***R. Palma**

A regularized formulation of the Neumann problem in elasticity: theory and finite element approximation

***I. Romero,** M. Kaleem, C. Gebhardt

Probabilistic Modelling Approach to Corrosion in Steel Bridges Using Bayesian Networks

***B. Barros,** S. Mammeri, A. Ghasemlou, S. Sagharichiha, B. Conde, M. Cabaleiro, O. Morales-Nápoles, B. Riveiro

Wed, 01/07/2026 12:45 - 13:45 Room 1

TS002A - AI and ML Techniques in Computational Mechanics I

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. António Andrade-Campos (University of Aveiro)

Recent advances in message-passing PDE solvers

L. Tesan, M. Iparraguirre, P. Martins, I. Alfaro, D. Gonzalez, ***E. Cueto**

Variational Graph Neural Networks For Inverse Parameter Estimation

***D. Gonzalez,** A. Muixi, B. Moya, E. Cueto

Physics-Regularized State-Space Models for Space-Time Super-Resolution of Vortex-Dominated Flows.

***K. cardona**

Increasing the efficiency of POD-like projection-based reduced-order models with plausible artificial snapshots

***P. Díez,** A. Muixí, M. Giacomini, S. Zlotnik

Wed, 01/07/2026 12:45 - 13:45 Room 2

TS011B - Numerical Modeling Techniques for Complex Problems in Science and Engineering (In Honor of Rafael Montenegro) II

Main Organizer: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)
Chaired by: Prof. María Isabel Asensio Sevilla (Universidad de Salamanca)

POD-Galerkin Reduction Models for transient, non-linear problems: application to Glioblastoma progression

***J. Sarrate,** M. Dingle, E. Sala-Lardies, N. Parés

Validación de un Modelo 3D Adaptativo de Radiación Solar a Escala Local Usando Medidas de Piranómetro y un MDE de Alta Resolución

E. Rodríguez, M. Hernández, J. García-Ferrero, M. Sánchez-Aparicio, J. Iglesias, A. Oliver-Serra, M. Santos, P. de Andrés-Anaya, J. Cascón, ***G. Montero,** A. Medina, S. Lagüela, M. Asensio, R. Montenegro

Modelo Computacional para la Optimización de la Estimulación Multipolar en Implantes Cocleares

M. Hernández, Á. Ramos de Miguel, D. Greiner Sánchez, D. Benítez Sánchez, Á. Ramos Macías, ***J. Escobar Sánchez**

Numerical Simulation of Structural Behavior under Blast Loading.

***A. Santos Yanguas,** R. Castedo Ruiz, M. Chiquito Nieto, L. López Sánchez

Wed, 01/07/2026 12:45 - 13:45 Room 3

TS006A - Particle-Based Computational Methods I

Main Organizer: Prof. Sergio Idelsohn (CIMNE)
Chaired by: Prof. Sergio Idelsohn (CIMNE)

Higher Order Fabric Tensor Characterisation in Dry Granular Flow Interacting with Rigid Barrier Using Contact Orientations

***R. Kaware,** P. Dhanai, D. Bhattacharya

Anisotropic Local Maximum-Entropy Shape Functions for Strain Localization in MPM

***M. Molinos,** B. Chandra, N. Wang, K. Soga

Addressing Remeshing-Induced Internal Variable Diffusion in Solids Using a Mixed Finite Element Approach

***N. Rossi,** I. Romero

Numerical Investigation of Granular Column Collapse Using MPM Coupled with an Energy-Consistent State-Dependent Material Model

***H. Kurugodu,** D. Bhattacharya, P. Vangla, D. Frost

Wed, 01/07/2026 13:45 - 15:00 Caja Escénica

Lunch Break

Wed, 01/07/2026 15:00 - 15:45 Theatre Hall

PL3 - Plenary Lecture III

Design and analysis of composite systems across the scales: physical and data-driven models

***P. M. Camanho**

Wed, 01/07/2026 15:45 - 17:15 Theatre

TS022A - Phase Field Models in Engineering I

Main Organizer: Dr. Sara Jiménez Alfaro (University of Seville)
Chaired by: Dr. Sara Jiménez Alfaro (University of Seville)

A phase field-based multi-physics framework to predict weld processing and failures: application to hydrogen transport pipelines Keynote
***E. Martinez-Paneda**

A damage model for predicting the fatigue life of elasto-plastic solids
***S. Jiménez Alfaro,** E. Martinez Pañeda

Anisotropy in Phase-Field Fracture via Homogenized Orientation-Dependent Degradation
***G. Villalta,** A. Ferrer, F. Otero

Fugacity-based diffuse-interface modeling of multicomponent multiphase flow through permeable media
***L. Cueto-Felgueroso,** M. Soage-Quintans, S. Velásquez-Chancí, L. Ayala

Phase-Field Methods Applied to Dynamic Fracture in Rock-like Materials
***G. Fernández Castro,** C. Betegón, E. Martínez-Pañeda

Wed, 01/07/2026 15:45 - 17:15 Room 1

TS011C - Numerical Modeling Techniques for Complex Problems in Science and Engineering (In Honor of Rafael Montenegro) III

Main Organizer: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)
Chaired by: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)

A NURBS-Cut High-Order Hybridizable Discontinuous Galerkin Method for Incompressible Flows Keynote
A. Felipe, M. Giacomini, ***A. Huerta**

A FEM-based formulation for nanoestructures: from small molecules to proteins
***A. Fernández San Miguel,** I. Couceiro Aguiar, L. Ramírez Palacios, F. Navarrina Martínez

Un Marco Híbrido FEM-ANN para la Estimación de los Elementos Diagonales de la Matriz de Impedancia en Implantes Cocleares
***M. Hernández-Gil,** Á. Ramos, D. Greiner, D. Benitez, G. Montero, J. Escobar

BEM-FEM models for the coupled analysis of wave propagation and structural dynamics problems in engineering
J. Rodríguez Bordón, G. Álamo Meneses, R. Quevedo Reina, C. Medina López, R. Toledo Quintana, A. González Rodríguez, C. Romero Sánchez, E. Rodríguez Galván, B. Benítez Suárez, S. González Jiménez, Ó. Ramón Turner, F. García del Pino, L. Padrón Hernández, J. Aznárez González, ***O. Maeso Fortuny**

Numerical and Experimental Assessment of CFRP-Timber Interface Debonding Using Cohesive Zone Modeling and Full-Field Strain Measurements
***R. Bravo Pareja,** C. Cruz Rodríguez, J. Lorenzana Fernández, F. Rescalvo Fernández, M. Portela Barral, M. Guaita, A. Gallego Molina

Wed, 01/07/2026 15:45 - 17:15 Room 2

TS007A - Vibration Problems in Structures I

Main Organizer: Dr. Javier Fernando JImínez-Alonso (University of Seville)
Chaired by: Dr. Carlos Martín de la Concha Renedo (Univerisdad Politécnica de Madrid, ETSI Caminos, Canales y Puertos)

Influence of bond-slip mechanisms on the force degradation of external bonded post-tensioning tendons
***C. M. C. Renedo,** B. Vecino, I. Muñoz Díaz

Mode Shape Rotations in Model Correlation: Numerical and Experimental Validation
***N. García-Fernández,** P. Fernández, M. Aenlle

A Framework for Dynamic Correlation and Tuning of Multi-Fidelity Structural FEMs in Space Missions
***H. Rubio-Arnaldo,** A. García-Pérez, M. Chimeno-Manguán, E. Roibás-Millán

Assessing railway vibrations in portal frame railway bridges
J. Chordà Monsonís, ***E. Moliner Cabedo,** A. Romero Ordóñez, P. Galvín Barrera, M. Martínez Rodrigo

Numerical Modeling of Modal Coupling in Induced-Current Vibration Damping
***M. Mauraza,** F. Cortés, M. Elejabarrieta

Wed, 01/07/2026 15:45 - 17:15 Room 3

TS019A - Computational modelling for hydrogen technologies I

Main Organizer: Prof. Emilio Martinez-Pañeda (University of Oxford)
Chaired by: Prof. Emilio Martinez-Pañeda (University of Oxford)

On the calibration of ductile Phase Field models for Hydrogen Embrittlement in pipeline steels based on fracture tests Keynote
***A. Díaz,** R. Rodríguez-Aparicio, Á. Gómez-Ovalle, I. Cuesta, J. Alegre

A Unified Multiphysics Phase-Field Framework for Hydrogen-Assisted Fatigue Fracture in Metallic Materials
***R. Darabi,** S. Yang, E. Azinpour, A. Reis, A. de Jesus, J. Cesar de Sa

Can External Defects Compromise the Structural Safety of Hydrogen Transmission Pipelines?
***R. Das,** B. Bezensek, E. Martínez-Pañeda

Seasonal Hydrogen Storage in Salt Caverns: Numerical Modelling of Cyclic Operation and Long-term Integrity
***B. Fernández Amado,** M. Soage Quintáns, J. París López, I. Colominas Ezponda, J. Mosquera Feijoó, L. Cueto-Felgueroso Landeira

Crystal Plasticity Based Phase Field Modelling of Hydrogen Assisted Fracture in Polycrystals for Large Deformations
***O. Aslan,** C. Camalan, E. Martinez-Paneda

Wed, 01/07/2026 17:15 - 17:45 Theatre Hall

Coffee Break

Wed, 01/07/2026 17:45 - 19:00 Theatre

TS002B - AI and ML Techniques in Computational Mechanics II

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. Esteban Ferrer (Universidad Politécnica de Madrid), Prof. Elias Cueto (Universidad de Zaragoza)

Can Transformers help in modelling non-Markovian phenomena?

***P. Urdeitx,** F. Chinesta, E. Cueto

Physically guided generative adversarial networks for shell design

***R. Lourenço,** I. Alfaro, B. Moya, E. Cueto

Towards Structure-Preserving Deep Learning for Welding: A GENERIC-based Graph Network Approach

***D. Canales,** B. Ronquillo, A. Duran-Rosal, D. González, E. Cueto

Manifold-Adaptive Empirical Cubature for Hyper-Reduction in Nonlinear Multiscale Methods

***J. HERNÁNDEZ,** S. ARES DE PARGA, R. ROSSI, E. SOUDAH

A Method for Obtaining Dispersion Diagrams Suitable for Training Surrogate Models

F. Montáns, ***I. Martínez-Terés,** F. San Millán, J. García-Martínez, P. Pflueger, K. Bhat

Wed, 01/07/2026 17:45 - 19:00 Room 1

TS018A - Wave Propagation and Associated Inverse Problems I

Main Organizer: Dr. Joaquin Garcia-Suarez (EPFL)
Chaired by: Dr. Joaquin Garcia-Suarez (EPFL)

Recovering inlet flow rate waveform in 1D arterial networks through adjoint-based optimization

***L. Sánchez-Fuster,** J. Murillo, J. Gracia

Combining tempering and surrogate modelling in geophysical Bayesian inversions

***M. Amaya,** S. Zlotnik, P. Diez

Automatic hp-adaptive strategies for the Cartesian grid Discontinuous Galerkin Method solving transient hyperbolic problems

H. Navarro-García, E. Nadal, J. Ródenas, ***J. Navarro-Jiménez**

Layered Railway Track Models: Refuting the Two Commonly Adopted Critical Velocity Paradigms

***Z. Dimitrovova**

A digital twin of ultrasound propagation experiments in polycrystalline specimens: Microstructural Effects

***M. Larrea,** J. Camacho, J. Segurado

Wed, 01/07/2026 17:45 - 18:22 Room 2

TS021A - Multi-physics modelling I

Main Organizer: Dr. Francisco Montero-Chacón (Universidad Loyola Andalucía)
Chaired by: Prof. Javier Segurado Escudero (Universidad Politécnica de Madrid // IMDEA Materials Institute), Dr. Ángel de Jesús Valverde González (Universidad Loyola Campus Sevilla)

Fully-Coupled Chemo-Thermo-Mechanical Modelling Framework for High Temperature Oxidation of Thermal Barrier Coating System

***M. Jalili,** J. Segurado

Numerical modelling of swelling and fracture events in thermoresponsive hydrogels

***Á. Valverde González,** P. Olivares-Rodríguez, J. Reinoso Cuevas, B. Dortdivanlioglu

A computational framework to predict the spreading of Alzheimer's disease

***A. Vazquez-Palomo,** C. Betegón, J. Weickenmeier, E. Martínez-Pañeda

Wed, 01/07/2026 17:45 - 19:00 Room 3

TS003A - Advances in Computational Biomechanics and Mechanobiology I

Main Organizer: Dr. Juan Mora Macías (Universidad de Huelva)
Chaired by: Prof. Paulo Fernandes (IDMEC, Instituto Superior Técnico, Universidade de Lisboa), Dr. Pablo Blázquez-Carmona (Escuela Superior de Ingeniería, Universidad de Cádiz)

Equivalent trabecular structure from clinical CT scans through structural and mechanosensory based procedures **Keynote**

J. Gutiérrez-Gil, J. Navarro-Jiménez, ***J. Ródenas,** R. Merli, E. Nadal

Validation of the formulas for Mechanical Power in children and proposal of the concept "Effective Mechanical Power"

***M. Ferrón-Vivó,** A. Baza-Del-Amo, A. Martínez-Millana, A. Pedrosa, F. Paziencia, V. Modesto-i-Alapont, M. Rupérez

Modelling woven bone stiffness: a computational image-based approach applied to osteoporotic distraction callus

***E. Reina-Romo,** J. Toscano-Angulo, P. Blázquez-Carmona, J. Mora-Macías

Automated Framework for Vertebral Structure Assessment from Medical Imaging under Metastatic Conditions

***B. Gandia Vañó,** J. Navarro Jimenez, E. Arana, E. Nadal Soriano, J. Ródenas García

Wed, 01/07/2026 18:22 - 19:00 Room 2

TS024A - Numerical Methods for Fluids Engineering I

Main Organizer: Prof. Jesus Manuel Fernández Oro (10899473A)
Chaired by: Prof. Jesus Manuel Fernández Oro (10899473A)

Fluid-structure Interaction of Offshore Wind Turbines

***L. Vigara,** I. Couceiro, L. Ramírez, P. Ouro

A posteriori space error indicator for the finite element approximation of the incompressible flow equation based on the variational multiscale concept

***J. Sekhavati,** I. Martínez-Suárez, S. Ahmed Khan, J. Baiges, R. Codina

Wed, 01/07/2026 19:15 - 21:00 Sala de Pinturas

Welcome Reception

Thursday, 02/07/2026

Thu, 02/07/2026 08:30 - 09:00 — Theatre Hall

Registration

Thu, 02/07/2026 09:00 - 09:45 — Theatre

PL4 - Plenary Lecture IV

Integrating Simulation and Experiments for Resilient Structures

***J. M. Adam**

Thu, 02/07/2026 09:00 - 18:30 — Theatre Hall

PS - Poster Session II

Thu, 02/07/2026 09:45 - 11:15 — Theatre

TS017A - Steel and composite structures I

Main Organizer: Dr. Ana Espinós Capilla (Universitat Politècnica de València)
Chaired by: Dr. Ana Espinós Capilla (Universitat Politècnica de València), Prof. Nuno Lopes (University of Aveiro)

Resistência ao fogo de vigas metálicas em I sujeitas a encurvadura lateral com distribuição não uniforme de temperaturas na secção

***N. Lopes,** P. Vila Real

Fire performance of concrete encased steel columns: effects of size and steel ratio

***J. LI,** D. Medall, A. Espinós, M. Romero

Análise térmica numérica da proteção ao fogo de vigas secundárias metálicas em ligações a elementos principais

***R. Bola,** N. Lopes, P. Vila Real

Análise Numérica de Colunas de Aço de Alta Resistência Enformadas a Frio

***A. Martins,** R. Gonçalves, N. Peres

Accuracy Assessment of Current Codes for Rectangular Ultra-High-Strength CFST Slender Columns under Eccentric Loading

***D. Hernandez Figueirido,** V. Albero, A. Piquer, M. Roig, C. Ibañez, H. Saura

Vierendeel Mechanism of Steel Cellular Beams in Fire

***L. Silva,** L. Mesquita, N. Lopes

Thu, 02/07/2026 09:45 - 11:15 — Room 1

TS002C - AI and ML Techniques in Computational Mechanics III

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. Francisco Javier Montáns Leal (Universidad Politécnica de Madrid)

Scientific Machine Learning Enabled Digital Twin for Virtual Sensing in Aerospace Structural Health Monitoring Keynote

***F. Di Fiore,** S. Ariyaratnam, M. Ermacora, L. Mainini

A neural network machine-learning approach for characterising hydrogen trapping parameters from TDS experiments

***N. Marrani,** T. Hageman, E. Martinez-Paneda

Graph Neural Networks for Arbitrary Auxetic Metamaterials

***I. Alfaro,** R. Lourenço, E. Cueto

Computer Vision-Augmented Digital Twins for Real-Time Sloshing via Structure-Preserving Deep Learning

***A. Tierz,** I. Alfaro, D. González, E. Cueto

Coupling Data and Physical Information to Learn Hidden Structures with a Reliability-Aware Perspective

***J. Ayensa-Jiménez,** R. Muñoz-Sierra, M. Doblaré

Thu, 02/07/2026 09:45 - 11:15 Room 2

TS021B - Multi-physics modelling II

Main Organizer: Dr. Francisco Montero-Chacón (Universidad Loyola Andalucía)
Chaired by: Prof. Javier Segurado Escudero (Universidad Politécnica de Madrid // IMDEA Materials Institute), Dr. Ángel de Jesús Valverde González (Universidad Loyola Campus Sevilla)

Multiphysics Modelling of Environmentally Assisted Degradation **Keynote**

***S. Kovacevic,** E. Martinez-Paneda

Optimal Partial Similarity in Stirred Tank Reactors: A Data-Driven Approach.

***Á. Ibáñez,** S. Izquierdo, M. de Corato

On the Role of Crack Electrolyte Infiltration in the Degradation and Performance of Battery Active Particles

***S. Luza-Vega,** Y. Zhao, E. Martínez-Pañeda

Physics-Based Global Optimization of Two-Dimensional Drift–Diffusion Semiconductor Models

***P. Ferrada,** E. Garijo, C. Portillo, B. Ivorra

Physically-Based multiscale modelling for materials manufacturing by design

***D. Gonzalez,** F. Montero-Chacon, A. Valverde-Gonzalez

Thu, 02/07/2026 09:45 - 11:15 Room 3

TS003B - Advances in Computational Biomechanics and Mechanobiology II

Main Organizer: Dr. Juan Mora Macías (Universidad de Huelva)
Chaired by: Prof. Jose Manuel Navarro Jimenez (Universitat Politècnica de València)

On the optimal structure of porous scaffolds for bone repair **Keynote**

***P. R. Fernandes**

Design and numerical evaluation of Voronoi tessellation-based scaffolds for the treatment of trabecular bone defects

J. Revuelta-Sosa, A. Grela-Maldonado, ***P. Blázquez-Carmona**

The Role of Infection Focus Shape in Determining Infection Spread in Epithelial Monolayers: Computational Insights

R. Aparicio-Yuste, L. Hundsdorfer, B. Vélez, E. Bastounis, ***M. Gómez Benito**

Sobre la influencia del tipo de contacto en la evaluación biomecánica del pie humano mediante modelos de elementos finitos

***J. Bayod,** N. Mancera, A. Vidal-Lesso

An imaging?based immersed isogeometric framework for organ?level forecasting of prostate cancer growth

***F. Figueiras,** C. Wu, J. Yung, M. Abdelmalik, J. Ward, A. Venkatesan, T. Hughes, G. Lorenzo

Thu, 02/07/2026 11:15 - 11:45 Theatre Hall

Coffee Break

Thu, 02/07/2026 11:45 - 13:15 Theatre

TS002D - AI and ML Techniques in Computational Mechanics IV

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. Elias Cueto (Universidad de Zaragoza)

Enhanced Data-Driven HLLC Riemann Solver

***X. Nogueira,** L. Ramos, I. Couceiro, L. Ramírez

Application of Artificial Intelligence Algorithms in the Design and Optimization of the Bottom Bending Process

R. Dionísio, A. Marques, T. Parreira, D. Neto, ***A. Pereira**

From Differential ML to Composite Architectures: Advancing Data ?Driven Simulation of Water Supply Systems

***A. Andrade-Campos,** J. Cação, S. Mota, M. Brás, A. Reis

A Physics-Based Discriminant Framework for Cerebral Occlusion Localization from Doppler Data

***A. Argilaga,** A. Sen, S. Avril, D. Vicente, M. Aguirre

Graph Neural Network–Based Member Failure Detection in Truss Bridges

***S. Mammeri,** A. Ghasemlou, S. Sagharichiha, B. Barros, B. Riveiro

Deep Reinforcement Learning for Surrogate Models of Optimised Topologies in Parameterised Flow Problems

***P. Gabarrell,** M. Giacomini, A. Huerta

Thu, 02/07/2026 11:45 - 13:15 Room 1

TS003C - Advances in Computational Biomechanics and Mechanobiology III

Main Organizer: Dr. Juan Mora Macías (Universidad de Huelva)
Chaired by: Dr. Pablo Blázquez-Carmona (Escuela Superior de Ingeniería, Universidad de Cádiz)

Patient-specific calibration of AAA wall and ILT properties using MRI and biaxial experimental validation Keynote

G. Caruso, M. Martínez, ***E. Peña**

A Comparative Analysis of the Mechanical Properties of Aortic Aneurysms Samples Across Different Pathologies

***M. Cilla,** A. Guala, L. Dux-Santoy, G. Teixido, M. Martínez, J. Rodríguez Palomares, E. Peña

Modelling and simulation of blood flow and strain of leaflets in the mitral valve and MitraClip implantation

A. Casero, ***P. Navas,** J. Goicolea

Influence of Infarct Size on Ventricular Filling: A Computational Study of Myocardial Wall Stiffening

***C. Aparicio,** N. Rodríguez, J. Aldazabal, M. Mazo, J. Paredes

Multi-axial calibration and cross-validation of the GOH model in porcine pulmonary arteries: Impact of radial and compression data

***J. Peña,** M. Martínez, E. Peña

Thu, 02/07/2026 11:45 - 13:15 Room 2

TS021C - Multi-physics modelling III

Main Organizer: Dr. Francisco Montero-Chacón (Universidad Loyola Andalucía)
Chaired by: Prof. Javier Segurado Escudero (Universidad Politécnica de Madrid // IMDEA Materials Institute), Dr. Ángel de Jesús Valverde González (Universidad Loyola Campus Sevilla)

FE and FFT Numerical Frameworks for Stochastic Modeling of Fracture in Heterogeneous Battery Materials Keynote

***E. Roque,** G. Zarzoso, F. Montero-Chacón, J. Segurado

Efficient Solvers for Fluid-mediated Impact of Soft Solids

***J. García Suárez**

Reduced-Order Modeling Framework for Bayesian Inversion of Large-Scale Problems

***M. Shahzaib,** P. D?ez, S. Zlotnik, A. Muixi, M. Amaya

A Physics-Informed Neural Network Approach to Multiphysics Continuum Modeling of Cancer Growth via Chemo-Mechanical Coupling

***C. Taboada,** P. Navas, M. Molinos

Thermal behaviour analysis of photovoltaic support structures: A numerical approach

J. Sousa, C. Amaral, ***F. Arrais**

Thu, 02/07/2026 11:45 - 13:15 Room 3

TS017B - Steel and composite structures II

Main Organizer: Dr. Ana Espinós Capilla (Universitat Politècnica de València)
Chaired by: Dr. Ana Espinós Capilla (Universitat Politècnica de València), Prof. Nuno Lopes (University of Aveiro)

A geometrically exact finite element for tapered I-beams

***R. Gonçalves**

Estudio numérico del comportamiento a flexión bajo situación de incendio de vigas híbridas sostenibles acero-madera con conectores desmontables

***P. Mora Moscoso,** A. Espinós, M. Romero

Benchmarking OpenSees Model Against Experimental Results for Axial Behaviour of CFST Columns

***V. Albero,** D. Hernández-Figueirido, A. Piquer, M. Roig-Flores, C. Ibáñez, H. Saura

Numerical Study on the Thermo-mechanical Response of Slender Steel-reinforced Concrete-filled Tubular Columns Under Fire Conditions

***D. Medall,** A. Espinós, M. Romero

Simplified models for joining hollow sections with self-drilling screws

A. dos Santos Garcia, ***J. Gracia Rodríguez,** C. López-Colina Pérez, M. Serrano López, I. García García

Thu, 02/07/2026 13:15 - 14:45 Caja Escénica

Lunch Break

Thu, 02/07/2026 14:45 - 15:30 Theatre

PL5 - Plenary Lecture V

Bridging Physics and AI for Transport Infrastructure Assessment

***B. Riveiro Rodriguez**

Thu, 02/07/2026 15:30 - 17:00 Theatre

TS003D - Advances in Computational Biomechanics and Mechanobiology IV

Main Organizer: Dr. Juan Mora Macías (Universidad de Huelva)
Chaired by: Dr. Juan José Ródenas García (Universitat Politècnica de València.), Prof. Jose Manuel Navarro Jimenez (Universitat Politècnica de València)

A new family of inverse formulations to recover residual stresses from standardized tests **Keynote**

***J. Sanz-Herrera,** A. Goriely

Computational Study of the Effects of Crosslink Loss and Altered Fibril Orientation on the Mechanics of the Articular Cartilage Collagen Network

***E. Núñez-Ortega,** J. Sanz-Herrera, E. Gaffney, C. Brown, E. Reina-Romo

An efficient computational framework in Julia involving beams, solid and shell elements for endovascular surgery applications

***M. Aguirre,** B. Bisighini, A. Argilaga, M. Shankar Yadav, N. Nama, S. Avril

A Deep Learning Approach for Automated Mesh Generation of the Achilles Tendon Based on Morphological Parameters: A Preliminary Study

***Á. Heras Sádaba,** E. Hernández Alhambra, J. Grasa Orús, B. Calvo Calzada

Impact of Aging on Tendon Viscoelasticity: A Numerical Simulation Study

***M. Corral-Barricarte,** B. Calvo, A. Pérez-Ruiz, E. Bejarano, J. Grasa

Thu, 02/07/2026 15:30 - 17:00 Room 1

TS002E - AI and ML Techniques in Computational Mechanics V

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. Elias Cueto (Universidad de Zaragoza)

Bayesian Calibration of Steel Creep Model with ACBICI **Keynote**

***Y. Liu,** C. Schenk, I. Romero

Extension of GENERIC Informed Neural Network (GINN) to Transient Rheometry

***I. Garcia-Beristain,** D. Nieto Simavilla, M. Ellero

Learning the Behavior of Isotropic and Anisotropic Elastomers from a Mnimum Set of Experimental Data

J. Benitez, M. Sanz, I. Ben-Yelun, ***F. Montáns**

Bridging Physical Interpretability and Data-Driven Efficiency for History-Dependent ROM via SPILS-Net

***A. Börst,** P. Díez, S. Zlotnik, F. Cavaliere, G. Curtosi, X. Larráyoz

A DeepONet Framework for Cardiac Electrophysiology Simulation

E. Sainz, L. Tesán, ***P. Martins**

Thu, 02/07/2026 15:30 - 16:45 Room 2

TS015A - Numerical Approaches for Modelling Fibre-reinforced Concrete Structures I

Main Organizer: Dr. Rena C. Yu (Universidad de Castilla-La Mancha)
Chaired by: Dr. Rena C. Yu (Universidad de Castilla-La Mancha)

Micro-scale analysis of intralaminar failure in composites: On the interplay between bulk and interface fracture mechanisms

***M. Monteiro,** G. Gonçalves, I. Lopes, M. Carvalho

Analysis of indirect tensile tests and three-point bending tests of UHPFRC by means of numerical simulations using a cohesive model

***B. Sanz,** J. Planas, J. Sancho

Numerical modelling of punching shear fracture of FRC slabs using a cohesive crack approach with trilinear softening

***F. Suárez,** J. Gálvez, J. García

Deformational and Cracking Behaviour of Elevated SFRC Flat Slab Including Time Dependent Phenomena

***A. Ventura-Gouveia,** J. Barros, V. Cunha

Fatigue Life Evaluation in Cementitious Materials using Probabilistic Bayesian Modelling Approaches

A. De La Rosa, ***R. Yu,** G. Ruiz López

Thu, 02/07/2026 15:30 - 17:00 Room 3

TS019B - Computational modelling for hydrogen technologies II

Main Organizer: Prof. Emilio Martinez-Pañeda (University of Oxford)
Chaired by: Prof. Emilio Martinez-Pañeda (University of Oxford)

Advanced simulation technologies for hydrogen combustion for aircraft propulsion

***D. Mira,** C. García-Guillamón, E. Fortes, E. Pérez-Sánchez

A Coupled Continuum Mechanics Approach to Hydrogen Embrittlement and Fracture

***D. Cachulo,** A. M.P. de Jesus, L. Malcher, R. Amaro

Mechanistic Approach to Crystal Plasticity and Hydrogen Embrittlement Based on First Principles

***A. Tabanera Manzanares,** E. Martínez Pañeda

Chemomechanics of Solids Applied to Metal–Hydrogen Systems

***F. Duda,** F. Forte Neto, A. Huespe, E. Fried

Influence of Interlayers on the Stability of Salt Caverns in Stratified Formations

***L. Collazo Puñal,** M. Soage Quintáns, J. París López, I. Colominas Ezponda, L. Cueto-Felgueroso Landeira

Elastoplastically accommodated hydride formation and delayed cracking modeling using a phase-field framework

***A. Montoya,** S. Lucarini, E. Martínez-Pañeda

Thu, 02/07/2026 16:45 - 17:00 Room 2

TS025B - Computational Modelling and Optimization of Advanced Materials and Structures II

Main Organizer: Dr. JUAN CARLOS CANTE (CIMNE / UPC)
Chaired by: Dr. David Roca (CIMNE / UPC), Dr. JUAN CARLOS CANTE (CIMNE / UPC)

Towards a Multi-Scale Digital Twin of Composite Laminate Strengths

***I. Lopes,** C. Furtado, J. Ferreira, G. Guillamet, J. Esteves, L. Rodrigues, P. Camanho

Thu, 02/07/2026 17:00 - 17:30 Theatre Hall

Coffee Break

Thu, 02/07/2026 17:30 - 18:30 Theatre

TS031A - Computational Methods for Metal Additive Manufacturing I

Main Organizer: Prof. Diogo Neto (University of Coimbra)
Chaired by: Prof. Diogo Neto (University of Coimbra)

Calibration of Inherent Strain used in L-PBF Part-Scale Modelling using a Numerical–Experimental Distortion Fitting

***D. Neto,** R. Leal, B. Marques, A. Pereira, M. Oliveira, L. Menezes

A Computational Framework for Inclination-Aware Process Parameter Mapping in PBF-LB/M

***D. Giannetto,** S. Ghouse, N. Rodriguez-Florez, S. Ruiz de Galarreta

Scalable numerical strategy for the thermo-mechanical simulation of multi- laser additive manufacturing processes

***M. Caicedo-Silva,** M. Chiumenti, J. Baiges, C. Moreira

Simulation-Driven Qualification of High-Value Components for Repair and Remanufacturing via Direct Energy Deposition

***C. Moreira,** M. Chiumenti, J. Baiges, H. Venghaus, M. Caicedo

Thu, 02/07/2026 17:30 - 18:30 Room 1

TS009A - Optimization, Metaheuristics and Evolutionary Algorithms in Computational and Civil Engineering I

Main Organizer: Prof. David Juan Greiner Sánchez (Universidad de Las Palmas de Gran Canaria)
Chaired by: Prof. David Juan Greiner Sánchez (Universidad de Las Palmas de Gran Canaria)

Optimized Design of Composite Cellular Beams: A Comparative Environmental and Structural Assessment

É. Alves, M. Brandão, L. Yepes-Bellver, M. Kripka, ***V. Yepes**

Mejorando la Focalización de Estimulación Multipolar en Simulación Computacional de Implantes Cocleares mediante Algoritmos Evolutivos

***D. Greiner,** M. Hernández-Gil, Á. Ramos-de-Miguel, E. Rodríguez, G. Montero, J. Escobar

Machine Learning–Based Surrogate Optimization of Buckling Delayed Shear Link Dissipators

***J. Irazábal,** J. Ramírez, J. González, L. Lázaro, F. Rastellini, G. Bozzo, L. Bozzo

A Noise-robust Multi-fidelity Strategy for Parametric Surrogate Models

***M. Giacomini,** B. Kent, L. Tamellini, A. Huerta

Thu, 02/07/2026 17:30 - 18:30 Room 2

TS011D - Numerical Modeling Techniques for Complex Problems in Science and Engineering (In Honor of Rafael Montenegro) IV

Main Organizer: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)
Chaired by: Prof. Gustavo Montero (Universidad de Las Palmas de Gran Canaria)

The Meccano Technique: Beyond Meshes and Methods

***J. Cascón,** J. Escobar, G. Montero, A. Oliver, E. Rodríguez

Simulación de los efectos de la inyección de gases no convencionales en el transporte de gas natural

***A. López-Benito,** F. Elorza, L. Gutiérrez-Pérez

The Meccano Method for Adaptive Triangulation of 2D Regions with Automatic Topology Identification

G. Socorro-Marrero, ***A. Oliver-Serra,** R. Montenegro

A degradative-erosive integrated framework for computing the evolution of porosity and mechanical properties under dynamic conditions in bioresorbable polymeric scaffolds.

***J. Abdelfatah Ndioubnane,** R. Paz Hernández, M. Monzón Verona, G. Winter Althaus

Thu, 02/07/2026 17:30 - 18:00 Room 3

TS022B - Phase Field Models in Engineering II

Main Organizer: Dr. Sara Jiménez Alfaro (University of Seville)
Chaired by: Dr. Sara Jiménez Alfaro (University of Seville)

Coupled Phase-Field and Diffusion Modeling of Hydrogen-Assisted Fatigue in Welded Pipeline Steels

***S. Yang,** R. Darabi, A. Reis, A. de Jesus

Effective toughness estimation by FFT based phase field fracture

***J. Segurado,** G. Zarzoso, P. Aranda

Thu, 02/07/2026 18:30 - 20:00

Guided tours - Laboral Ciudad de la Cultura

Thu, 02/07/2026 21:00 - 23:30

Conference Dinner (Hotel Abba Playa Gijón)

Friday, 03/07/2026

Fri, 03/07/2026 08:30 - 09:00 — Theatre Hall

Registration

Fri, 03/07/2026 09:00 - 09:45 — Theatre

PL6 - Plenary Lecture VI

Physics-Data Hybrid Models: From Modal Decompositions to Industrial Machine Learning

***S. Le Clainche Martinez**

Fri, 03/07/2026 09:00 - 16:00 — Theatre Hall

PS - Poster Session III

Fri, 03/07/2026 09:45 - 11:15 — Theatre

TS001A - Neural Networks for Solving PDEs I

Main Organizer: Dr. Ángel Javier Omella (Universidad de Zaragoza)
Chaired by: Dr. Carlos Uriarte (BCAM - Basque Center for Applied Mathematics), Dr. David Pardo Zubiaur (University of the Basque Country (UPV/EHU))

Neural Semi-Lagrangian Hyperbolic Kinetic Relaxation for solving Parametric Systems of Balance Laws

***L. Ávila León,** M. Castro Díaz, V. Michel-Dansac, E. Frank

A theoretical analysis on the inversion of matrices via Neural Networks designed with Strassen algorithm

***G. Romera**

Controlling Bias and Variance when Integrating Neural Networks for Solving PDEs

J. Taylor, ***D. Pardo**

Physics-Informed Multitask Neural Networks for solving Parametric Partial Differential Equations: Is Explicit Specialization necessary?

***J. Rivera,** J. Del Ser

Neural Network First-Order Least-Squares for Elliptic Transmission Problems

***A. Duque-Salazar,** P. Sepúlveda, C. Uriarte, J. Taylor, D. Pardo

r-Adaptive Deep Learning for solving PDEs via First-Order Least Squares and Differentiable Triangular Meshing

***Á. Omella,** J. González-Sieiro, T. Teijeiro, D. Pardo

Fri, 03/07/2026 09:45 - 10:30 — Room 1

TS014A - Numerical Modeling of Welding and Processing I

Main Organizer: Dr. Narges Dialami (UPC-CIMNE)
Chaired by: Dr. Narges Dialami (UPC-CIMNE)

A Computational Framework for Surrogate Modeling of Friction Stir Welding

***G. Lorenz,** N. Dialami, H. Venghaus, I. Castañar Perez, M. Chiumenti

Fri, 03/07/2026 09:45 - 11:15 — Room 2

TS024B - Numerical Methods for Fluids Engineering II

Main Organizer: Prof. Jesus Manuel Fernández Oro (10899473A)
Chaired by: Prof. Jesus Manuel Fernández Oro (10899473A)

An iterative procedure for coupling barotropic gradients and wind-driven currents in non-Newtonian semi-enclosed basins

***V. Llorente,** E. Solanes, M. Díez-Minguito, E. Padilla

Numerical Analysis of Cavitating Pump Dynamics: Decoupling Impeller-Volute and Cavity-Induced Unsteadiness

***A. Pardo-Vigil,** A. Pandal, J. González

Behaviour of ENATE discretization scheme for convection diffusion problems in the case of extreme values of Péclet number

***A. Pascau,** V. Llorente

GPU Acceleration of a Sharp-Interface Immersed Boundary Method for Complex Engineering and Biological Flows

***J. Seo,** S. Kumar, R. Mittal

CFD modeling of the flow patterns in a water storage tank

***R. Peón García,** J. Parrondo Gayo, R. Barrio Perotti, R. Espina Valdes, E. Blanco Marigorta, C. Santolaria Morros, P. Garcia Regodeseves

Computational modeling of multiphase flow in deformable porous media applied to magma migration

***N. Hosseinian,** J. Afonso, S. Zlotnik, A. García-González

Fri, 03/07/2026 09:45 - 11:15 Room 3

TS025A - Computational Modelling and Optimization of Advanced Materials and Structures I

Main Organizer: Dr. JUAN CARLOS CANTE (CIMNE / UPC)
Chaired by: Dr. David Roca (CIMNE / UPC), Dr. JUAN CARLOS CANTE (CIMNE / UPC)

Machine Learning-Driven Multiscale Modelling of Shock-Absorbing Hyper-Elastic Metamaterials

***D. Abad Gómez,** J. Cante Terán, O. Lloberas Valls, D. Yago Llamas, J. Oliver Olivella

A Cellular Automata Adaptation of the FLASH-CAT Model for Prediction of Cable Tray Fire Propagation

***D. Lázaro,** M. Lázaro, M. Jiménez, E. Morgado, D. Alvear

Data-driven homogenization of nonlinear lattice metamaterials via Gaussian Process surrogates

***D. Yago,** D. Abad, O. Lloberas-Valls, J. Oliver, J. Cante

Advances in multiscale modelling of magnetoelastic phenomena

***P. Nieves,** S. Arapan, I. Korniienko, A. Fraile, R. Iglesias, D. Legut

Analysis of Channel Flow Instabilities Interacting with Phononic Subsurface (Psub) using a novel Variational Formulation

***B. Fuentes Ortega,** D. Roca Cazorla, S. González Horcas, J. Cante Terán

Multiscale Analysis Of Multilayered Bending Flat Shells: Proof of Concept of The 2D+ Approach

J. Triclot, ***O. Lloberas-Valls**

Fri, 03/07/2026 10:30 - 11:15 Room 1

TS008A - Numerical Simulation in Metal Forming: From Fundamentals to Emerging Technologies I

Main Organizer: Dr. Joseba Mendiguren (MONDRAGON UNIBERTSITATEA)
Chaired by: Dr. Joseba Mendiguren (MONDRAGON UNIBERTSITATEA)

Numerical Modelling and Analysis of Analytical Limits in Large Interference-Fit Coaxial Cylinders

***E. Saenz de Argandoña,** A. Zabala, J. Mendiguren, X. Telleria, N. Otegi, I. LLavori

Numerical and Experimental Analysis of Necking Instability in Metallic Sheets under Superimposed Stretch-Bending Loading

***A. Martínez-Donaire,** D. Abedul, D. Palomo, E. Sáenz de Argandoña, B. Erice, C. Vallelano, J. Mendiguren

Load Control Versus Displacement Control in Frictional Sliding Contact Between a Deformable Body and a Rigid Rough Surface

***R. Wojciechowski,** M. Oliveira, D. Neto

Modelling the plastic behaviour of high-strength tubes applied in the rotary draw bending

***M. Oliveira,** D. Neto, A. Pereira, C. Leitão, A. Khalfallah, L. Menezes

Material and Tooling Effects in the Rotary Draw Tube Bending Process

C. Souto, ***R. L. Amaral,** D. Cruz, P. Oliveira, A. Reis

Fri, 03/07/2026 11:15 - 11:45 Theatre Hall

Coffee Break

Fri, 03/07/2026 11:45 - 12:15 Theatre

PL7 - Plenary Lecture VII

Matrix Analysis of Molecular Structures: Applying Engineering Knowledge to Molecular Dynamics

***F. Navarrina,** A. Fernández-San Miguel, L. Edreira, L. Ramírez, I. Couceiro, A. Soage, J. París, X. Nogueira, A. Peón, B. Rodiño, I. Colominas, M. Casteleiro

Fri, 03/07/2026 12:15 - 13:15 Theatre

TS001B - Neural Networks for Solving PDEs II

Main Organizer: Dr. Ángel Javier Omella (Universidad de Zaragoza)
Chaired by: Dr. Ángel Javier Omella (Universidad de Zaragoza), Dr. David Pardo Zubiaur (University of the Basque Country (UPV/EHU))

A minimum-residual multiscale Galerkin framework with applications on h- and r-adaptivity using neural networks

***C. Uriarte,** V. Calo

RUNNs: Ritz--Uzawa Neural Networks for Solving Variational Problems

***P. Herrera,** I. Muga, J. Taylor, C. Uriarte, K. Van Der Zee, D. Pardo

Multi-Integral Importance Sampling for the Deep Ritz method

***X. Otxandorena,** M. Croci, D. Pardo

Neural Networks with Built-In Regularity for Parametric Transmission Problems

***S. Baharlouei,** J. Taylor, D. Pardo

Fri, 03/07/2026 12:15 - 12:45 Room 1

TS013A - Modelling and Simulation for Additive Manufacturing I

Main Organizer: Prof. Michele Chiumenti (CIMNE/UPC)
Chaired by: Prof. Michele Chiumenti (CIMNE/UPC)

Thermomechanical Simulations of Additive Manufacturing Proceses with Temperature-Dependent Material Properties

***M. Kaleem,** N. Rossi, I. Romero

Efficient Spatial and Temporal Reduction Methods for Part-Scale LPBF Additive Manufacturing Simulation

***M. Chiumenti,** C. Moreira, M. Slimani

Fri, 03/07/2026 12:15 - 13:15 Room 2

TS028A - Advances in Computational Constitutive Modelling I

Main Organizer: Prof. Pedro Prates (University of Aveiro)
Chaired by: Prof. Pedro Prates (University of Aveiro), Eng. J. Pinho-da-Cruz (Universidade de Aveiro)

Constitutive modelling and experimental calibration of finite strain thermo-electro-viscoelasticity: A thermodynamic approach implemented in Julia

***M. Masó,** R. Ortigosa, J. Martínez-Frutos, A. García-González, J. Bonet

A finite Strain Elastic-Corrector Rate Formulation for Void Growth Models

***M. Zhang,** G. Vadillo, F. Montáns

Investigating Particle Breakage in Crushable Granular Media using a Deviatoric Isotropic Hardening Model

***R. Kaware,** H. Kurugodu, D. Bhattacharya

Beyond Data Volume: Improving Machine Learning-Based Calibration of the CPB'06 Yield Criterion

A. Silva, D. Mitreiro, A. Pereira, ***P. Prates**

Fri, 03/07/2026 12:15 - 13:15 Room 3

GS001B - General Session II

Finite Element Analysis of Mandibular Alignment

***Z. Fernández-Muñiz,** T. Cobo, L. Menéndez-García, A. M. Iacob, M. Braña Linares, J. del Coz Díaz

A Flexible Coupling Strategy for Incompatible Meshes: A Structural-Arlequin Approach

***D. Portillo,** N. Rossi, I. Romero

Extension of the Linelet Preconditioner to higher-order Meshes

***J. Vicente Porres,** A. Quintanas-Corominas, G. Houzeaux

Residual-Based 3D Gravity Inversion Using Prolate Spheroidal and Prismatic Parameterizations

***R. Escudero González,** Z. Fernández-Muñiz, A. Bernardo-Sánchez, J. Fernández-Martínez

Fri, 03/07/2026 12:45 - 13:15 Room 1

TS014B - Numerical Modeling of Welding and Processing II

Main Organizer: Dr. Narges Dialami (UPC-CIMNE)
Chaired by: Dr. Narges Dialami (UPC-CIMNE)

Surrogate Modeling for Thermo-Mechanical FE Simulation of Laser Welding Distortion in Sheet Metals

***S. Seydel,** M. Afrasiabi, M. Bambach

Comparative analysis of the thermomechanical response in force- and position-controlled Friction Stir based processing operations

***D. Silva,** D. Rodrigues, D. Andrade, C. Leitão

Fri, 03/07/2026 13:15 - 14:45 Caja Escénica

Lunch Break

Fri, 03/07/2026 14:45 - 15:30 Theatre

PL8 - Plenary Lecture VIII

Imaging-informed computational forecasts of tumor growth and treatment response

***G. Lorenzo**

Fri, 03/07/2026 15:30 - 16:30 Theatre

TS002F - AI and ML Techniques in Computational Mechanics VI

Main Organizer: Prof. Elias Cueto (Universidad de Zaragoza)
Chaired by: Prof. Elias Cueto (Universidad de Zaragoza)

Accelerating Numerical Simulations in CFD by Model Reduction and Scientific Machine Learning Keynote

***G. Rozza**

From Graphs to Topology: Learning PDE Dynamics on Meshes

***L. Tesán,** D. González, P. Martins, E. Cueto

Generative Design of Funicular Shells via Physics-Guided Diffusion: A Hybrid PI-DDPM Architecture

***P. Martínez-Huertas,** D. Ariza-García, D. Canales, I. Alfaro, R. Lourenço, D. González, E. Cueto

Fri, 03/07/2026 15:30 - 16:30 Room 1

GS001C - General Session III

Carbon Nanotube Reinforced Auxetic Functionally Graded Beams: A Clustering Analysis of Mechanical Responses

M. Loja, J. Barbosa, ***A. Carvalho,** I. Barbosa

Adaptive and Transdimensional Parametrization in Probabilistic Inversion

***A. Dols,** M. Amaya, P. Díez, S. Zlotnik

Development of Cutting Tools using a Numerical Model of the Machining Processes

***D. Fernandes,** M. Oliveira, D. Neto, L. Menezes

A Wachspress-Based Transfinite Formulation to Exactly Enforce Dirichlet Boundary Conditions on Convex Polygonal Domains in Physics-Informed Neural Networks

***N. Sukumar**

Fri, 03/07/2026 15:30 - 16:30 Room 2

TS024C - Numerical Methods for Fluids Engineering III

Main Organizer: Prof. Jesus Manuel Fernández Oro (10899473A)
Chaired by: Prof. Jesus Manuel Fernández Oro (10899473A)

Practical Application of Numerical Methods to Vertical Axis Wind Turbines

L. Suárez Fernández, ***L. Santamaría Bertolín,** M. García Díaz, J. Fernández Oro

Numerical Evaluation of Equivalent Permeability in Heterogeneous Fractures using High-Resolution Flow Simulations

***J. Fernández-Fidalgo,** S. Andrés, A. Soage, L. Cueto-Felgueroso

Extension of the DMST Aerodynamic Model Including Lateral Velocity Effects on Vertical-Axis Wind Turbines

***J. Fernández Oro,** L. Santamaría Bertolín, L. Suárez Fernández, A. Pandal Blanco, K. Argüelles Díaz

Fri, 03/07/2026 15:30 - 16:30 Room 3

TS030B - New trends in shape and topology optimization II

Main Organizer: Prof. Enrique Nadal Soriano (Universitat Politècnica de València)
Chaired by: Dr. Juan José Ródenas García (Universitat Politècnica de València.)

Shape Derivative in Constrained Optimization Problems via an Accelerated Null-Space Algorithm

***J. Torres,** G. Allaire

Integrating Manufacturing Constraints in Topology Optimization for Additive Manufacturing

***J. Postigo Martín,** A. Garaigordobil Jiménez, R. Ansola Loyola

Bound-Enforcement Techniques for Variational Phase-Field Topology Optimization

***E. Bell-Navas**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