

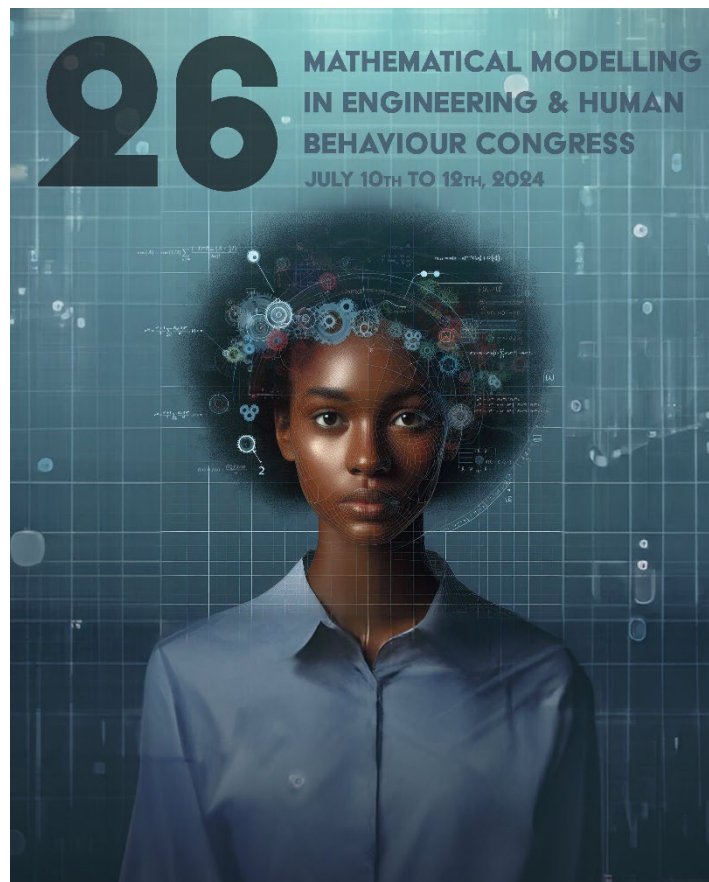
## **MATHEMATICAL MODELLING IN ENGINEERING & HUMAN BEHAVIOUR 2024**

**July 10<sup>th</sup> -12<sup>th</sup> , 2024**

ETS Informática, Rooms 1E.01, 1E.02 and 1E.03 , Building 1E,

Universitat Politècnica de València, València, Spain

Webpage: <https://imm.webs.upv.es/jornadas/2024/home.html>



### **Schedule**

- Communications: 15 min (exposition) + 5 min (for questions).
- Plenary conference: 40 min (exposition) + 20 min (questions).

## Online Rooms

All the sessions of the congress will be streamed online using Microsoft Teams. Only an internet browser is required, but the free desktop application will provide a more stable connection. All participants are welcome.

- Salón de Actos: [Link to join](#).
- Room 1E.01: [Link to join](#).
- Room 1E.02: [Link to join](#).
- Room 1E.03: [Link to join](#).

# Timetable

|       | Wednesday<br>July 10th   | Thursday<br>July 11th   | Friday<br>July 12th   |
|-------|--|---|---|
| 8:30  | Registration   |   |   |
| 9:00  | Opening  | 1E.01 - Linear Algebra<br>1E.02 - Public Health                                   | 1E.01 - Modelling in Engineering<br>1E.02 - Civil Engineering |
| 9:30  | Plenary:<br>Prof. Eduardo Souza de Corsi                       | 1E.03 - Math & Physics and Population dynamics                                    | 1E.03 - Financial Mathematics                                 |
| 10:00 |  |   |   |
| 10:30 | Coffee Break   | Coffee Break  | Coffee Break  |
| 11:00 |  | Plenary:<br>Prof. Robert E. Kooij   | 1E.01 - Modelling in Engineering<br>1E.02 - Civil Engineering |
| 11:30 |  |   | 1E.03 - Financial Mathematics                                 |
| 12:00 | 1E.01 - Uncertainty Quantification                             |   |   |
| 12:30 | 1E.02 - Math & Physics   | 1E.01 - Linear Algebra  |   |
| 13:00 | 1E.03 - Nonlinear problems and Student's Projects              | 1E.02 - Kemeny's constant and Complex networks                                    | Plenary:<br>Prof. Jordi Linares                               |
| 13:30 |  | 1E.03 - Population dynamics   |   |
| 14:00 |  |   | Closing   |
| 14:30 |  |   | Cocktail - Vino de honor                                      |
| 15:00 |  |   |   |
| 15:30 |  |   |   |
| 16:00 | Plenary:<br>Prof. Rubens Sampaio                               | 1E.01 - Linear Algebra<br>1E.02 - Civil Engineering<br>1E.03 - Nonlinear problems |   |
| 16:30 |  |   |   |
| 17:00 | 1E.01 - Public Health  | Coffee Break  |   |
| 17:30 | 1E.02 - Modelling in Engineering<br>1E.03 - Nonlinear problems | 1E.02 - Civil Engineering   |   |
| 18:00 | Coffee Break   | 1E.03 - Nonlinear problems  |   |
| 18:30 |  |   |   |
| 19:00 |  | Conference Dinner   |   |

## Wednesday, July 10<sup>th</sup> - Morning

|                     |  |   |   |
|---------------------|--|---|---|
| 08:30<br>-<br>09:00 | <b>REGISTRATION AND COLLECTION OF DOCUMENTATION</b>  |   |   |
| 09:00<br>-<br>09:30 | <b>OFFICIAL INAUGURATION</b><br>Salón de Actos ETSINF<br>Building 1E<br><i>Maria Belén Picó - Vicerrectora de Investigación</i><br><i>Begoña Cantó –Organizing Committee</i><br><i>Juan Ramón Torregrosa – Scientific Committee</i><br><i>Silvia Terrasa – Directora Escola Técnica Superio Enginyeria Informàtica</i> |   |   |
| 09:30<br>-<br>10:30 | Plenary Conference: <b>Eduardo Souza de Cursi</b><br><b>Institut National des Sciences Appliquées de Rouen: Saint-Etienne-du-Rouvray, France</b><br>Uncertainty Quantification - examples, challenges and perspectives<br><u>Abstract</u><br>Salón de Actos ETSINF<br><i>Chairman: Juan Carlos</i>                     |   |   |
| 10:30<br>-<br>11:00 | <b>COFFEE BREAK</b><br><b>Cafetería La Vella</b>   |   |   |
|                     | Parallel Session:<br><br><b>UNCERTAINTY<br/>QUANTIFICATION AND<br/>MODELLING I</b><br>Room: 1E.01<br><i>Dolors Roselló</i>   | Parallel Session:<br><br><b>MATHS &amp; PHYSICS I</b><br>Room: 1E.02<br><i>Màrius Fullana</i>   | Parallel Session:<br><br><b>RECENT ADVANCES IN ITERATIVE<br/>PROCESSES FOR SOLVING<br/>NONLINEAR PROBLEMS<br/>AND STUDENT’S PROJECTS</b><br>Room: 1E.03<br><i>Juan Ramón Torregrosa</i>                       |
| 11:00<br>-<br>11:20 | <b>Hugo de la Cruz</b><br><b>School of Applied Mathematics,<br/>FGV, Brazil</b><br>Embedded stable methods for<br>the adaptive integration of stiff<br>stochastic differential equations<br><u>Abstract</u>  | <b>Luis Acedo</b><br><b>University of Extremadura</b><br>A unified mathematical model for<br>the late accelerated expansion<br>and the early Universe’s inflation<br><u>Abstract</u>                                | <b>Sukhjot Singh</b><br><b>Dr. BR Ambedkar National<br/>Institute of Technology, India</b><br>Global convergence of a fifth<br>order iterative method under<br>weaker conditions<br><u>Abstract</u>           |
| 11:20<br>-<br>11:40 | <b>María Consuelo Casabán</b><br><b>Universitat Politècnica de<br/>València</b><br>Random non-local Fisher-KPP<br>population models<br><u>Abstract</u>   | <b>José Antonio López Ortí</b><br><b>Universitat Jaume I de Castellón</b><br>Extension of certain temporal<br>transformations used in the<br>elliptic two-body problem to the<br>hyperbolic case<br><u>Abstract</u> | <b>Fiza Zafar</b><br><b>Bahauddin Zakariya University,<br/>Multan, Pakistan</b><br>A Hybrid Jarratt–Particle Swarm<br>Optimization Algorithm for<br>Nonlinear Problems and<br>Applications<br><u>Abstract</u> |

|                     |  |  |   |
|---------------------|--|--|---|
| 11:40<br>-<br>12:00 | <b>Clara Burgos Simón</b><br><b>Universitat Politècnica de València</b><br>A complete probabilistic study to the Random Fractional Legendre Differential Equation: Solution, Moments and Density<br><a href="#">Abstract</a> | <b>Guillem Gómez i Blanch</b><br><b>Universitat Politècnica de València</b><br>Diatomic Molecular Vibration in a Strong Gravitational Field<br><a href="#">Abstract</a>                      | <b>Mario Compte and Daniel García</b><br><b>Universitat Politècnica de València</b><br>Parametric case of family study<br><a href="#">Abstract</a>  |
| 12:00<br>-<br>12:20 | <b>José Valero</b><br><b>Universidad Miguel Hernández</b><br>About an stochastic differential equation with nonlocal discrete diffusion modeling life tables<br><a href="#">Abstract</a>                                     | <b>Laura Ortíz</b><br><b>Universitat Miguel Hernández</b><br>On the statistics of the degraded CMB Maps<br><a href="#">Abstract</a>  | <b>Carlos Sevilla and Manuel Sellés</b><br><b>Universitat Politècnica de València</b><br>Resolution of Nonlinear Systems with an Iterative Parametric Family<br><a href="#">Abstract</a>                        |
| 12:20<br>-<br>12:40 | <b>José Carlos R. Alcantud</b><br><b>Universidad de Salamanca</b><br>A joint Choquet index from two vectors of weights<br><a href="#">Abstract</a>   | <b>Edgar S. Carlin</b><br><b>Instituto de Astrofísica de Canarias</b><br>Reformulation of the polarized radiative transfer problem with the Magnus expansion<br><a href="#">Abstract</a>     | <b>Rubén Blesa and Eric Montalbán</b><br><b>Universitat Politècnica de València</b><br>Analysis of a two-step iterative family with a free parameter for solving nonlinear systems.<br><a href="#">Abstract</a> |
| 12:40<br>-<br>13:00 | <b>Sorina Madalina Sferle</b><br><b>Universitat Politècnica de València</b><br>Application of an extension of the random Verhulst model<br><a href="#">Abstract</a>  | <b>Ramón Serrano Montesinos</b><br><b>Universitat de València</b><br>Relativistic Positioning: the clarifying example of four static emitters<br><a href="#">Abstract</a>                    |   |
| 13:00<br>-<br>13:20 | <b>Joaquín Francisco Valencia</b><br><b>Universitat Politècnica de València</b><br>Probabilistic Analysis of Random Nonlinear Oscillators via the Equivalent Linearization Technique<br><a href="#">Abstract</a>             | <b>Javier González</b><br><b>Universitat Politècnica de València</b><br>An enhanced Gravitational Search Algorithm suited for the optimization of space missions<br><a href="#">Abstract</a> |   |
| 13:20<br>-<br>13:40 | <b>Ioan-Lucian Popa</b><br><b>"1 Decembrie 1918" University of Alba Iulia, Romania</b><br>Lyapunov Functions for Random One-Sided Systems in Terms of Nonuniform Exponential Stability<br><a href="#">Abstract</a>           | <b>Francisco Pedroche</b><br><b>Universidad Politècnica de Valencia</b><br>Towards a new method for team ranking in the Spanish football league<br><a href="#">Abstract</a>                  |   |

## Wednesday, July 10<sup>th</sup> - Afternoon

|   |  |   |  |   |
|---|--|---|--|---|
| 16:00<br>-<br>17:00   | Plenary Conference: <b>Rubens Sampaio</b><br><b>Pontifical Catholic University of Rio de Janeiro, Brasil</b><br>Modeling the stick-slip process<br><u>Abstract</u><br>Salón de Actos ETSINF<br>Chairman: Rafael Villanueva |   |  |   |
| Parallel Session: <b>INFECTIOUS DISEASES AND MATHEMATICAL MODELING IN PUBLIC HEALTH I</b><br>Room: 1E.01<br><i>Clara Burgos</i> |  |   | Parallel Session: <b>MATHEMATICAL METHODS FOR ENGINEERING PROBLEMS I</b><br>Room: 1E.02<br><i>Damián Ginestar</i>  | Parallel Session: <b>RECENT ADVANCES IN ITERATIVE PROCESSES FOR SOLVING NONLINEAR PROBLEMS II</b><br>Room: 1E.03<br><i>Alicia Cordero</i> |
| 17:00<br>-<br>17:20   | <b>Marcos Llamazares</b><br><b>Universitat Politècnica de València</b><br>Mathematical Modeling for the Window to the Brain: application of the Hybrid Digital Twins to enhance precision<br><u>Abstract</u>               | <b>David Santiago Pellicer</b><br><b>University of Zaragoza</b><br>Analysis of the rolling phenomenon of a reduced-diameter railway wheel for freight wagons, as a function of operating factors<br><u>Abstract</u> | <b>Elaine Altagracia Segura</b><br><b>Universidad Autónoma de Santo Domingo, R. Dominicana.</b><br>Inverse Matrix Estimations by Iterative Methods<br><u>Abstract</u> <b>ONLINE</b>  |   |
| 17:20<br>-<br>17:40   | <b>Benito Chen-Charpentier</b><br>A Mathematical Model of Liver Regeneration<br><u>Abstract</u> <b>ONLINE</b>  | <b>Empar Navarro Gamón</b><br><b>Universitat Politècnica de València</b><br>Study of Convolutional Neural Networks (CNNs) for Classifying and Locating Neutron Noise Perturbations.<br><u>Abstract</u>              | <b>Antmel Rodríguez Cabral</b><br><b>Instituto Tecnológico de Santo Domingo, R. Dominicana</b><br>About the stability of self-accelerating parameters in vectorial iterative methods without memory<br><u>Abstract</u> <b>ONLINE</b> |   |
| 17:40<br>-<br>18:00   | <b>Juan Carlos Orengo</b><br><b>Ponce Health Sciences University</b><br>Assessing Dengue transmission in the Southern of Puerto Rico implementing an agent-based model<br><u>Abstract</u> <b>ONLINE</b>                    | <b>Sergio Torregrosa</b><br><b>Arts et Métiers Institute of Technology, France</b><br>Surrogate Parametric Metamodel Based On Optimal Transport<br><u>Abstract</u>  | <b>Arleen Katherine Ledesma</b><br><b>Universidad Autónoma de Santo Domingo, R. Dominicana</b><br>Local convergence analysis of a fourth order family of iterative methods in Banach spaces<br><u>Abstract</u> <b>ONLINE</b>         |   |
| 18:00<br>-<br>18:30   | <b>COFFEE BREAK</b><br><b>Cafetería La Vella</b>   |   |  |   |

Thursday, July 11<sup>th</sup> - Morning

|                     | Parallel Session:<br><b>LINEAR ALGEBRA, MATRIX<br/>ANALYSIS AND APPLICATIONS</b><br>Room: 1E.01<br><i>José Mas</i>   | Parallel Session:<br><b>INFECTIOUS DISEASES AND<br/>MATHEMATICAL<br/>MODELING IN PUBLIC<br/>HEALTH II</b><br>Room: 1E.02<br><i>Clara Burgos</i>   | Parallel Session:<br><b>MATHS &amp; PHYSICS II</b><br>Room: 1E.03<br><i>Màrius Fullana</i>   |
|---------------------|--|---|--|
| 08:50<br>-<br>09:10 |  |   | <b>Shaodong Zhao</b><br><b>Universitat Politècnica de València</b><br>Resolution problem of galactic binaries in<br>LISA data<br><a href="#"><u>Abstract</u></a>                       |
| 09:10<br>-<br>09:30 | <b>José Javier Martínez</b><br><b>Universidad de Alcalá</b><br>Contributions to the dialogue<br>between Statistics and Numerical<br>Linear Algebra<br><a href="#"><u>Abstract</u></a> <b>ONLINE</b>                  | <b>Carlos Andreu-Villarraig</b><br><b>Universitat Politècnica de<br/>València</b><br>The SIRn model: coupling<br>seasonality and immunity in<br>the modeling of flu<br>transmission dynamics<br><a href="#"><u>Abstract</u></a> | <b>Salvador Mengual</b><br><b>Universitat de València</b><br><i>T</i> -model field equations: The general<br>solution<br><a href="#"><u>Abstract</u></a>                               |
| 09:30<br>-<br>09:50 | <b>Ana Marco</b><br><b>Universidad de Alcalá</b><br>Accurate bidiagonal<br>decomposition of Lupas-type<br>(p,q)-analogue of the Bernstein<br>basis and applications<br><a href="#"><u>Abstract</u></a> <b>ONLINE</b> | <b>Alicia Herrero Debón</b><br><b>Universitat Politècnica de<br/>València</b><br>A control model for an<br>indirect transmission<br>disease<br><a href="#"><u>Abstract</u></a>  | <b>Màrius Josep Fullana i Alfonso</b><br><b>Universitat Politècnica de València</b><br>On the study of PN1 cross terms in the<br>evolution of EMRIs<br><a href="#"><u>Abstract</u></a> |

Parallel Session:

**LINEAR ALGEBRA, MATRIX ANALYSIS AND APPLICATIONS**

Room: 1E.01

*José Mas*

Parallel Session:

**INFECTIOUS DISEASES AND MATHEMATICAL MODELING IN PUBLIC HEALTH II**

Room: 1E.02

*Clara Burgos*

Parallel Session:

**MATHEMATICAL MODELS IN POPULATION DYNAMICS I**

Room: 1E.03

*L. M. Abia*

09:50  
-  
10:10

**Juan M. Peña**

**Universidad de Zaragoza**

Optimal properties of B-bases

Abstract

**ONLINE**

**Tomás Caraballo**

Some features about random and stochastic modeling in Epidemiology

Abstract

**Miguel A. Zavala**

**Universidad de Alcalá**

Scaling up tree growth with an analytical size-structured model to assess forest resilience under increasing aridity.

Abstract

10:10  
-  
10:30

**Nikita Kopylov**

**Universitat Politècnica de**

**València**

Efficient scaling and squaring

method for the matrix exponential

Abstract

**Cristina Pérez Diukina**

**Universitat Politècnica de**

**València**

Modeling COVID-19 Spread

in Chile: Integrating Spatial

Population Dynamics within

the SIR Framework

Abstract

**Ana Navarro Quiles**

**Universitat de València**

A spatiotemporal epidemiological model for studying disease progression in plants

Abstract

10:30  
-  
11:00

**COFFEE BREAK**  
**Cafetería La Vella**

11:00  
-  
12:00

Plenary Conference: **Robert E. Kooij**

**TU Delft, The Netherlands**

Approximations for Kemeny's Constant for Several Families of Graphs and Real-World Networks

Abstract

Salón de Actos ETSINF

*Chairman: Alicia Roca*



| Parallel Session:   |  | Parallel Session:  |  | Parallel Session:  |  |
|---|--|--|--|--|--|
| <b>LINEAR ALGEBRA, MATRIX ANALYSIS AND APPLICATIONS</b><br>Room: 1E.01<br><i>José Mas</i> |  | <b>RANDOM WALKS, KEMENY'S CONSTANT AND APPLICATIONS</b><br>Room: 1E.02<br><i>Alicia Roca</i>   |  | <b>MATHEMATICAL MODELS IN POPULATION DYNAMICS II</b><br>Room: 1E.03<br><i>M. A. López-Marcos</i> |  |
| 12:00 - 12:20   | <b>Luca Bergamaschi</b><br><b>University of Padova, Italy</b><br>Block preconditioners for double saddle point linear systems arising in coupled poromechanics<br><u>Abstract</u>              | <b>Aida Abiad</b><br><b>Eindhoven University of Technology, The Netherlands</b><br>A spectral approach to Kemeny's constant<br><u>Abstract</u>             | <b>Vera Egorova</b><br><b>Universidad de Cantabria</b><br>Random Numerical Methods for Free Boundary Models in Population Dynamics<br><u>Abstract</u>                  | <b>ONLINE</b>  |  |
| 12:20 - 12:40   | <b>Angeles Martinez Calomardo</b><br><b>University of Trieste, Italy</b><br>SVD preconditioners and Parallel-in-Time Solver for the All-at-Once Runge--Kutta Discretization<br><u>Abstract</u> | <b>María José Jiménez</b><br><b>Universitat Politècnica de Catalunya</b><br>Random Walks meet M-matrices<br><u>Abstract</u>                                | <b>Philipp Getto</b><br><b>Universidad de Castilla y La Mancha</b><br>A functional differential equation from cell biology<br><u>Abstract</u>                          |  |  |
| 12:40 - 13:00   | <b>Emilio Defez Candel</b><br><b>Universidad Politécnica de Valencia</b><br>An efficient method to compute the matrix cosine based on Chebyshev polynomials<br><u>Abstract</u>                 | <b>Àlvar Martín Llopis</b><br><b>Universitat Politècnica de Catalunya</b><br>Kemeny's constant in Schrödinger Random Walks<br><u>Abstract</u>              | <b>Jesús Martín Vaquero</b><br><b>Universidad de Salamanca</b><br>Scattering of kinks with a restriction on the sphere<br><u>Abstract</u>                              |  |  |
| Parallel Session:   |  | Parallel Session:  |  | Parallel Session:  |  |
| <b>LINEAR ALGEBRA, MATRIX ANALYSIS AND APPLICATIONS</b><br>Room: 1E.01<br><i>José Mas</i> |  | <b>COMPLEX NETWORKS GRAPHS AND APPLICATIONS</b><br>Room: 1E.02<br><i>Francisco Pedroche</i>  |  | <b>MATHEMATICAL MODELS IN POPULATION DYNAMICS</b><br>Room: 1E.03<br><i>O. Angúlo</i>             |  |
| 13:00 - 13:20   | <b>José M. Alonso</b><br><b>Universitat Politècnica de València</b><br>On the use of Euler polynomials to approximate the hyperbolic matrix cosine<br><u>Abstract</u>                          | <b>Antonio Hervás-Jorge</b><br><b>Universidad Politécnica de Valencia</b><br>Searching communities' in badly conditioned graphs (and 4)<br><u>Abstract</u> | <b>Mostafa Adimy</b><br><b>INRIA and ICJ Lyon, France</b><br>Continuous-time differential-difference models in population dynamics and epidemiology<br><u>Abstract</u> |  |  |

|                     |  |   |   |
|---------------------|--|---|---|
| 13:20<br>-<br>13:40 | <b>Andrés M. Encinas</b><br><b>Universitat Politècnica de Catalunya - EEBE</b><br>On the spectrum of Jacobi almost-Toeplitz matrices.<br>Application to Jacobi bisymmetric matrices<br><u>Abstract</u> | <b>Fatima Zohra Lachachi</b><br><b>University of Alicante</b><br>Mean field and pair approximation analyses of a semiarid vegetation model<br><u>Abstract</u> <b>ONLINE</b> | <b>Davide Liessi</b><br><b>University of Udine</b><br>Practical approximation of Lyapunov exponents of population models<br><u>Abstract</u> |
| 13:40<br>-<br>14:00 | <b>Begoña Cantó Colomina</b><br><b>Universitat Politècnica de València</b><br>Doubly quasi-stochastic and strictly checkerboard matrices of order 3<br><u>Abstract</u>                                 | <b>Ezio Venturino</b><br><b>Universita' di Torino</b><br>On possible invasion mechanisms of migrant species<br><u>Abstract</u>  |   |

## Thursday, July 11th - Afternoon

| Parallel Session:   |  | Parallel Session:  |  | Parallel Session:   |               |
|---|--|--|--|---|---------------|
| <b>LINEAR ALGEBRA, MATRIX ANALYSIS AND APPLICATIONS</b><br>Room: 1E.01<br><i>José Mas</i> |  | <b>MATHEMATICAL MODELING IN CIVIL ENGINEERING I</b><br>Room: 1E.02<br><i>Julia I. Real</i>   |  | <b>RECENT ADVANCES IN ITERATIVE PROCESSES FOR SOLVING NONLINEAR PROBLEMS II</b><br>Room: 1E.03<br><i>Francisco Chicharro</i>  |               |
| 16:00 - 16:20   | <b>José Mas Marí</b><br><b>Universitat Politècnica de València</b><br>Preconditioning least squares problems with V-AISM<br><a href="#">Abstract</a>             | <b>Ferney Gómez</b><br><b>Universitat Politècnica de València</b><br>Disease detection system for olive trees using unmanned aerial vehicles (drones)<br><a href="#">Abstract</a>  |  | <b>Julissa Hermelinda Jerezano</b><br><b>Universitat Politècnica de València</b><br>An optimal scheme for finding multiple roots free of derivatives<br><a href="#">Abstract</a>  | <b>ONLINE</b> |
| 16:20 - 16:40   | <b>José Marín</b><br><b>Universitat Politècnica de València</b><br>Randomized approximate inverse preconditioning<br><a href="#">Abstract</a>                    | <b>Alejandro Marco</b><br><b>Universitat Politècnica de València</b><br>Continuous monitoring system for the safe storage and use of hydrogen in hydrogenators<br><a href="#">Abstract</a>   |  | <b>Neus Garrido Saez</b><br><b>Universitat Politècnica de València</b><br>Dynamical study of a family for solving nonlinear equations with multiple roots<br><a href="#">Abstract</a>   |               |
| 16:40 - 17:00   | <b>Álvaro Samperio</b><br><b>Universidad de Valladolid</b><br>Statistical guarantees in the sparse recovery of an electrical network<br><a href="#">Abstract</a> | <b>Anabel Arias</b><br><b>IDVIA 2020 Horizonte 2020</b><br>Innovative and intelligent technology for in situ early diagnosis and prediction of concrete carbonation progress for predictive maintenance of bridges<br><a href="#">Abstract</a> |  | <b>Renso V. Rojas-Hiciano</b><br><b>Pontificia Universidad Católica Madre y Maestra, R. Dominicana</b><br>A Class of Maximally Efficient Sixth-Order Iterative Schemes for Systems of Nonlinear Equations<br><a href="#">Abstract</a> | <b>ONLINE</b> |
| 17:00 - 17:30   | <b>COFFEE BREAK</b><br><b>Cafetería La Vella</b>   |  |  |   |               |
| 17:30 - 17:50   |  | <b>Juan Ramón Sánchez</b><br><b>Universitat Politècnica de València</b><br>System for detection and prediction of the phenomenon of brittleness in the natural gas transmission network combined with hydrogen<br><a href="#">Abstract</a>     |  | <b>José Alberto Reyes</b><br><b>Instituto Tecnológico de Santo Domingo, R. Dominicana</b><br>Stability Analysis of a New Fourth-Order Optimal Iterative Scheme Jarratt-Type<br><a href="#">Abstract</a>                               | <b>ONLINE</b> |
| 17:50 -   |  | <b>Guillermo Alandí</b>  |  |   |               |

|                     |   |
|---------------------|---|
| 18:10               | <p><b>Universitat Politècnica de València</b><br/> System for detecting pathologies in wind turbines by means of use of digital and artificial intelligence techniques<br/> <a href="#">Abstract</a></p>  |
| 18:10<br>-<br>18:30 | <p><b>Laura Andrés</b><br/> <b>Universitat Politècnica de València</b><br/> Integral system for the auscultation, diagnosis and predictive maintenance of railway tracks based on inertial techniques and GNSS georeferencing<br/> <a href="#">Abstract</a></p> |

|                     |                                 |
|---------------------|---------------------------------|
| 19:30<br>-<br>23:00 | <p><b>CONFERENCE DINNER</b></p> |
|---------------------|---------------------------------|

Friday, July 12<sup>th</sup> – Morning

|                     | Parallel Session:<br><b>MATHEMATICAL METHODS FOR<br/>ENGINEERING PROBLEMS II</b><br>Room: 1E.01<br><i>Damián Ginestar</i>   | Parallel Session:<br><b>MATHEMATICAL MODELING IN<br/>CIVIL ENGINEERING I</b><br>Room: 1E.02<br><i>Julia I. Real</i>  | Parallel Session:<br><b>FINANCIAL MATHEMATICS I</b><br>Room: 1E.03<br><i>Julia Martínez and<br/>M<sup>a</sup> Lourdes Gómez</i>   |
|---------------------|---|--|---|
| 8:50<br>-<br>9:10   |   | <b>Salvador Mateo</b><br><b>Universitat Politècnica de València</b><br>Dam's predictive maintenance<br>system based on it's twin-model<br>development<br><a href="#">Abstract</a>                  |   |
| 9:10<br>-<br>9:30   |   | <b>Polina Batalova</b><br><b>Universitat Politècnica de València</b><br>Street furniture with high resistance<br>to marine environment and<br>aesthetic finish<br><a href="#">Abstract</a>         |   |
| 9:30<br>-<br>9:50   | <b>Francisco J. Navarro González</b><br><b>Universidad de Alicante</b><br>Use of guided genetic algorithms<br>in optimization problems<br><a href="#">Abstract</a>  | <b>Jorge Pavón</b><br><b>IDVIA 2020 Horizonte 2020</b><br>New system for the diagnosis of<br>fouling and corrosion in heat<br>exchangers using the Digital Twin<br><a href="#">Abstract</a>        | <b>Lourdes Gómez-Valle</b><br><b>Universidad de Valladolid</b><br>Pricing Forward Freight<br>Agreement contracts with time-<br>delay stochastic processes<br><a href="#">Abstract</a> |
| 9:50<br>-<br>10:10  | <b>Roberta Lima</b><br><b>Pontifícia Universidade Católica<br/>do Rio de Janeiro, Brasil</b><br>The hybrid time scales of an<br>electromechanical system<br><a href="#">Abstract</a>  | <b>Julia I. Real</b><br><b>Universitat Politècnica de València</b><br>System for the optimization of<br>irrigation water intended for<br>gardens from its Digital Twin<br><a href="#">Abstract</a> | <b>Raquel Balbás</b><br><b>University Complutense of<br/>Madrid</b><br>Optimal combinations of<br>derivative securities<br><a href="#">Abstract</a>                                   |
| 10:10<br>-<br>10:30 | <b>Bruno Brentan</b><br><b>Federal University of Minas<br/>Gerais, Belo Horizonte, Brazil</b><br>Complex Network Theory and<br>Multi-criteria Analysis applied to<br>risk assessment in water<br>distribution systems<br><a href="#">Abstract</a> | <b>Javier Maldonado</b><br><b>IDVIA 2020 Horizonte 2020</b><br>Structural health monitoring of<br>bridge infrastructures using single-<br>pass SAR data<br><a href="#">Abstract</a>                | <b>Jorge Herrera</b><br><b>Universidad CEU-San Pablo</b><br>Sustainability of a romantic<br>relationship via computational<br>differential games modeling<br><a href="#">Abstract</a> |

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| 10:30<br>-<br>11:00 | <b>COFFE BREAK</b><br><b>Cafetería La Vella</b>  |   |  |
|                     | Parallel Session:<br><b>MATHEMATICAL METHODS FOR ENGINEERING PROBLEMS II</b><br>Room: 1E.01<br><i>Damián Ginestar</i>  | Parallel Session:<br><b>MATHEMATICAL MODELING IN CIVIL ENGINEERING I</b><br>Room: 1E.02<br><i>Julia I. Real</i>   | Parallel Session:<br><b>FINANCIAL MATHEMATICS II</b><br>Room: 1E.03<br><i>Julia Martínez and M<sup>a</sup> Lourdes Gómez</i>   |
| 11:00<br>-<br>11:20 | <b>Danilo Di Miceli</b><br><b>University of Palermo</b><br>Multi-criteria risk analysis for railway vehicle maintenance<br><u>Abstract</u> <b>ONLINE</b>   | <b>Adrán Miralles</b><br><b>Universitat Politècnica de València</b><br>novel integrated system for the inspection of train wheels capable of detecting both the wear level and other local defect on the wheel tread<br><u>Abstract</u> | <b>Jorge M. Alves-Antunes</b><br><b>University of Valladolid</b><br>A digital twin for financial trading using news headlines: An application to the Dow Jones average index.<br><u>Abstract</u>                                     |
| 11:20<br>-<br>11:40 | <b>Alejandro Sanz Sanchez</b><br><b>Institute of Instrumentation for Molecular Imaging (I3M)</b><br>Phantom generation for Neural Networks<br><u>Abstract</u>                                    | <b>Reynaldo Cabezas</b><br><b>IDVIA 2020 Horizonte 2020</b><br>Innovative platform to develop and establish short supply chains through integration with smart tools for on-tree citrus assessment and dynamic price<br><u>Abstract</u> | <b>Gregorio Serna</b><br><b>Universit of Alcalá</b><br>Time-Varying Expected Returns, Conditional Skewness and Bitcoin Return Predictability<br><u>Abstract</u>  |
| 11:40<br>-<br>12:00 | <b>Juan A. Aledo</b><br><b>Universidad de Castilla-La Mancha</b><br>Solving the puzzle game ICOXTREM<br><u>Abstract</u>  | <b>Gonzalo Muinelo</b><br><b>Universitat Politècnica de València</b><br>Integral control system for building works based on an Augmented Reality device<br><u>Abstract</u>  | <b>Eliseo Navarro</b><br><b>Universidad de Alcalá</b><br>Impact of COVID-19 by sex and age on two countries 2020-2022. The cases of Mexico and Spain and its impact on mortality risk for life insurance products<br><u>Abstract</u> |
| 12:00<br>-<br>12:20 | <b>Antoni Vidal-Ferràndiz</b><br><b>Universitat Politècnica de València</b><br>A restarted proper orthogonal decomposition method to integrate the neutron diffusion equation<br><u>Abstract</u> | <b>Juan A. Puchol</b><br><b>Universitat Politècnica de València</b><br>Design and development of an auscultation system for the prevention of deformations in pavements and roundabouts<br><u>Abstract</u>                              |  |

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| 12:20<br>-<br>13:20 | Plenary Conference: <b>Jordi Linares</b><br><b>Universitat Politècnica de València, Spain</b><br><i>Enhancing Efficiency in Mathematical Research with<br/> Generative AI: Tools and Techniques</i><br><u>Abstract</u><br>Salón de Actos ETSINF<br><i>Chairwoman: Begoña Cantó</i> |
| 13:20<br>-<br>13:40 | <b>CLOSING OF THE CONGRESS</b>   |
| 13:40               | <b>COCKTAIL / VINO DE HONOR</b>  |

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