



UNIVERSITAT
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Instituto Universitario
de Matemática Multidisciplinar

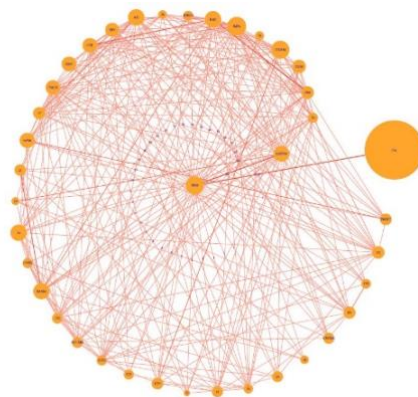
MATHEMATICAL MODELLING IN ENGINEERING & HUMAN BEHAVIOUR 2021

July 14th-16th, 2021

ETS Informática, Rooms 1E0.1 and 1E.02 , Building 1E,

Universitat Politècnica de València, 46022 Valencia, Spain

Webpage: <https://jornadas.imm.upv.es/2021/home.html>



Schedule

- Communications: 15 min (exposition) + 5 min (for questions).
- Plenary Talks: 25 min (exposition) + 5 min (for questions).
- Invited conferences: 45 min (exposition) + 15 min (questions).

Wednesday, July 14th - Morning

09:00 - 10:00	REGISTRATION AND COLLECTION OF DOCUMENTATION ETS Informàtica, Building 1E, link to map	
10:00 - 10:30	OFFICIAL INAUGURATION Exmo. José Esteban Capilla Roma Rector Magnífico de la Universitat Politècnica de València D ^a . Daniela Gil Salom Subdirectora de l'Escola Tècnica Superior d'Enginyeria Informàtica D. Antonio Hervás Jorge Director del Instituto Universitario de Matemática Multidisciplinar D. Juan Ramón Torregrosa Presidente del comité organizador y científico del MME&HB 2021	
10:30 - 11:00	COFFEE BREAK Cafetería La Vella	
	Parallel Session: MATHEMATICAL MODELS IN MEDICINE Room: 1E0.1 <i>Rafael Villanueva</i>	Parallel Session: MATHEMATICAL MODELS IN ENGINEERING Room: 1E0.2 <i>Damián Ginestar</i>
11:00 - 11:20	Alicia Herrero Debón Universitat Politècnica de València The effect of the memory on the spread of a disease through the environment <u>Abstract</u>	Javier Llopis Ballester Ford Spain Valencia & Credit Petri Nets to modelize production lines based on miniterms <u>Abstract</u>
11:20 - 11:40	Sorina Madalina Universitat Politècnica de València Solving random non-homogeneous linear second-order difference equations: Theory and Simulations <u>Abstract</u>	Antonio Lacasa Corral Ford Spain Valencia & Credit Dynamic Gaussian mixtures to modelize and correct the Scan-Time in PLC's. Application in Miniterm 4.0 <u>Abstract</u>

11:40 - 12:00	<p>Carlos Andreu-Villarraig Universitat Politècnica de València</p> <p>Evolution of the resistance of the bacterium <i>Acinetobacter baumannii</i> to the antibiotic colistin in the population of the city of Valencia. An approach using an agent-based model Abstract</p>	<p>Javier Martínez Torres University of Vigo</p> <p>Application of artificial intelligence to ship defense against radio frequency guided missiles using decoys Abstract</p>
12:00 - 12:20	<p>Xiomara Isabel Escobar Carrera Universitat Politècnica de València</p> <p>Mathematical modelling of kidney disease stages in patients diagnosed with diabetes mellitus II Abstract</p>	<p>Antoni Vidal Ferràndiz Universitat Politècnica de València</p> <p>A frequency-domain neutron noise analysis using the simplified spherical harmonics equations Abstract</p>
12:20 - 12:40	<p>Elena López Navarro Universitat Politècnica de València</p> <p>Probabilistic evolution of the bladder cancer growth considering transurethral resection Abstract</p>	<p>Eugenio Doñaque Universidad de Vigo</p> <p>Tourism-related placeness feature extraction from social media data using Machine Learning models Abstract</p>
12:40 - 13:00	<p>Francisco Reyes-Santias Universidad de Vigo</p> <p>Prognostic model of cost / effectiveness in the therapeutic pharmacy treatment of lung cancer in a university hospital: discriminant analysis and logit Abstract</p>	<p>Eva M. Sánchez-Orgaz Florida Universitaria</p> <p>Acoustic modelling of large aftertreatment devices with multimodal incident sound fields Abstract</p>

Wednesday, July 14th - Afternoon

15:30 - 16:00	<p>Plenary Talk: Silvia Jerez Galiano Centro de Investigación Matemática, CIMAT, México</p> <p>Temporal mathematical modeling of nasal microbiota dynamics with viral pathogens Abstract</p> <p>Room: 1E.01</p>
16:00 - 16:30	<p>Plenary Talk: Francisco Solís Lozano Centro de Investigación Matemática, CIMAT, México</p> <p>Analysis of mechanisms of repulsion Abstract</p> <p>Room: 1E.01</p>

16:30 - 17:00	COFFEE BREAK Cafetería La Vella	
	Parallel Session: ALGORITHMS AND APPLICATIONS Room: 1E0.1 <i>Gregorio Rubio</i>	Parallel Session: DATA SCIENCE PROJECTS Room: 1E0.2 <i>Alberto Conejero</i>
17:00 - 17:20	Carlos Velásquez Universidad de Alicante Analysis of a reinterpretation of gray models applied to measuring laboratory equipment uncertainties Abstract	A. Ibáñez, M. Obrador, L. Pérez, S. Viana. Universitat Politècnica de València Analysis of cryptocurrency behaviour compared with stock markets Abstract
17:20 - 17:40	M. Rubio-Chavarría Universitat Politècnica de València A graph-based algorithm for the inference of Boolean networks Abstract	M. Carbonell , G. Ferrando, J. Maté , N. Romero, F. García, L. Zhou Universitat Politècnica de València A population-based study of COVID-19 risk factors association alongside patient's survival prediction and the potential biases in machine learning. Abstract
17:40 - 18:00	Felipe Monsalve Universitat Politècnica de València A realistic proposal to considerably improve the energy footprint and energy efficiency of a standard house of social interest in Chile Abstract	Álvaro Mazcuñán and Miquel Marín Universitat Politècnica de València Costomize — Predicting stores visitors. Abstract
18:00 - 18:20	Juan Francisco Gómez González Universitat Oberta de Catalunya An overview of simheuristics in transportation Abstract	Jordi Caravaca, Mario Carmona, Ángela Mira, Cristina Portilla y Pablo Riera. Laittet project. Abstract

Thursday, July 15th - Morning

Parallel Session: NUMERICAL METHODS I Room: 1E0.1 <i>Juan Ramón Torregrosa</i>		Parallel Session: PARTIAL DIFFERENTIAL EQUATIONS AND DECISION MAKING Room: 1E0.2 <i>Roberto Ku</i>	
08:30 - 08:50	Fiza Zafar Bahauddin Zakariya University, Pakistan An Optimal Eighth Order Derivative-Free Scheme for Multiple Roots of Non-linear Equations Abstract	ONLINE	
08:50 - 09:10	Emilio Defez Universitat Politècnica de València On the Numerical Simulation of Harmonic Oscillators on the Lattice Abstract	María Consuelo Casabán Bartual Universitat Politècnica de València Solving random free boundary problems of Stefan type Abstract	
09:10 - 09:30	Paula Triguero Navarro Universitat Politècnica de València New schemes with memory for solving nonlinear problems Abstract	Tomás Caraballo Universidad de Sevilla Dynamics of non-local partial differential equations with memory Abstract	
09:30 - 09:50	Neus Garrido Sáez Universidad Internacional de La Rioja Stability comparison of self-accelerating parameter approximation on one-step iterative methods. Abstract	Joaquín Izquierdo Universitat Politècnica de València Contingency plan selection under interdependent risks Abstract	
09:50 - 10:10	Raudys R. Capdevila Universitat Politècnica de València A new class of iterative methods for solving nonlinear systems with a Kalitkin-Ermankov type second step Abstract	Silvia Carpitella Czech Academy of Sciences Improved pairwise comparison transitivity using strategically selected reduced information Abstract	
10:10 - 10:30	José Javier Padilla Catholic University of Murcia (UCAM) Computationally efficient iterative methods for solving nonlinear equations Abstract	Victoria Muerza University of Zaragoza Multicriteria decision making modeling for international distribution center location Abstract	ONLINE
10:30 - 11:00	COFFEE BREAK Cafetería La Vella		

11:00 - 12:00	<p style="text-align: center;">Invited Conference: Rosa Donat Universitat de València Adaptive Approximation at Work Abstract Room 1E.01</p>	
<p style="text-align: center;">Parallel Session: NUMERICAL METHODS II Room 1E.01 <i>Alicia Cordero</i></p>		<p style="text-align: center;">Parallel Session: RANDOM DIFFERENTIAL EQUATIONS I Room 1E.02 <i>Tomás Caraballo</i></p>
12:00 - 12:20	<p>Óscar Angulo Universidad de Valladolid Numerical integration of an age-structured model of cell dynamics Abstract</p>	<p>Sandra Elizabeth Delgadillo Alemán Universidad Autónoma de Aguascalientes Full probabilistic analysis of random first-order linear differential equations with Dirac delta impulses appearing in control Abstract</p>
12:20 - 12:40	<p>Christian Cobollo Universitat Politècnica de València On a Ermakov–Kalitkin scheme based family of fourth order Abstract</p>	<p>Roberto Ku Carrillo Universidad Autónoma de Aguascalientes Probabilistic analysis of a class of linear random differential equations with periodic harvesting and migration Abstract</p>
12:40 - 13:00	<p>Ángel Alberto Magreñán Universidad de La Rioja A significant improvement of a family of Secant-type methods Abstract ONLINE</p>	<p>Clara Burgos Simón Universitat Politècnica de València Solving random fractional second-order linear equations via the mean square Laplace transform Abstract</p>
13:00 - 13:20	<p>Marlon Ernesto Moscoso Martínez Universitat Politècnica de València Introducing a new parametric family for solving nonlinear systems of equations Abstract ONLINE</p>	<p>Ana Moscardó García Universitat Politècnica de València Probabilistic analysis of the random logistic differential equation with stochastic jumps Abstract</p>
13:20 - 13:40	<p>Giro Candelario Instituto Tecnológico de Santo Domingo Conformable fractional iterative methods for solving nonlinear problems Abstract ONLINE</p>	<p>José Vicente Romero Universitat Politècnica de València The random variable transformation method to solve randomized first-order linear control difference equations Abstract</p>

Thursday, July 15th - Afternoon

16:00 - 16:30	Plenary Talk: Benito Chen-Charpentier University of Texas at Arlington Modeling one species population growth with delay <u>Abstract</u> Room: 1E.01		ONLINE
Parallel Session: MATHEMATICAL MODELS IN HUMAN BEHAVIOUR AND OTHER LIVING ORGANISMS Room: 1E.01 <i>Antonio Hervás</i>		Parallel Session: RANDOM DIFFERENTIAL EQUATIONS II Room: 1E.02 <i>Juan Carlos Cortés</i>	
16:30 - 16:50	Antonio Hervás Universidad Politècnica de València A procedure for detection of border communities using convolution techniques <u>Abstract</u>	Marc Jornet Universitat Jaume I Some techniques for solving the random Burgers' equation. <u>Abstract</u>	
16:50 - 17:10	Joan Carles Micó Universidad Politècnica de Valencia Advances in the physical approach of personality dynamics <u>Abstract</u>	Julia Calatayud Universitat Jaume I Modeling excess weight in Spain by using deterministic and random differential equations <u>Abstract</u>	
17:10 - 17:40	COFFEE BREAK Cafetería La Vella		
17:40 - 18:00	Daniel Pérez Palau Universidad Internacional de la Rioja On the dynamics of a predator-prey metapopulation on two patches <u>Abstract</u>	Vicente José Bevia Universidad Politècnica de Valencia Density-based uncertainty quantification in a generalized Logistic-type model <u>Abstract</u>	
18:00 - 18:20	Fatima Zohra Lachachi Universidad de Alicante Stability, bifurcations, and recovery from perturbations in a mean-field semiarid vegetation model with delay <u>Abstract</u>	Pablo Martínez Rodríguez Universitat Politècnica de València Modelling with a mixed jump-diffusion process the noise periodic signals: Methodology and application <u>Abstract</u>	

Thursday, July 15th - Online Session

Parallel Online Session:	
MATHEMATICAL MODELS IN CIVIL ENGINEERING	
Online Room	
<i>Teresa Real</i>	
09:00 - 09:20	Miriam Labrado Universitat Politècnica de València Application of a twin model for the monitoring of the Alamillo cable-stayed bridge in Seville. Abstract ONLINE
09:20 - 09:40	Mateo González IDVIA Ingeniería Integrated management tool for Chile's bridge network maintenance based on deterioration predictive models. Abstract ONLINE
09:40 - 10:00	Ernesto Colomer Universitat Politècnica de València Application of the WRF model for air quality control in an open pit mine in Chile. Abstract ONLINE
10:00 - 10:20	Alejandro Lamaignere IDVIA Ingeniería Application of a monitoring system based on the use of a digital twin model for bridge diagnostics and structure assesment after singular events. Malleco viaduct. Abstract ONLINE
10:20 - 10:40	Julia Real Universitat Politècnica de València New low cost real-time system for monitoring pavement condition and to design plans for predictive maintenance. Abstract ONLINE
10:40 - 11:10	COFFEE BREAK
11:10 - 11:30	Eliseo Gómez Catholic University of Murcia (UCAM) Relative research contributions towards railways superstructure quality determination from the vehicles inertial response. Abstract ONLINE
11:30 - 11:50	Laura Andrés Catholic University of Murcia (UCAM) Relative research contributions towards the application and materialization of the Wenner four-pin method on concrete curing. Abstract ONLINE

Friday, July 16h - Morning

Parallel Session: MATRICES Room: 1E.01 <i>José Mas</i>		Parallel Session: IMAGE PROCESSING & SPATIAL TRAJECTORIES Room: 1E.02 <i>Joaquín Izquierdo</i>	
09:30 -	Begoña Cantó Colomina Universitat Politècnica de València Construction of totally nonpositive matrices associated with a triple negatively realizable	09:30 -	Vicente Candela University of Valencia A nonlinear color image model discriminating geometric and chromatic features
09:50	Abstract	09:50	Abstract
09:50 -	Emilio Defez Candel Universidad Politècnica de València Accurate approximation of the hyperbolic matrix cosine using Bernoulli matrix polynomials.	09:50 -	Samuel Morillas Gómez Universitat Politècnica de València Using STRESS to compute the agreement between computed image quality means and observer scores: advantages and open issues
10:10	Abstract	10:10	Abstract
10:10 -	Maria Mora Universidad Politècnica de València A Laplacian approach to the Greedy Rank-One Algorithm for a class of linear systems.	10:10 -	Sheila Torres Universitat Politècnica de València Mathematical Modeling about Migration in Spain: Causes, magnitude and consequences
10:30	Abstract	10:30	Abstract
10:30 -	COFFEE BREAK		
11:00	Cafetería La Vella		
11:00 -	María Luisa Nolé Universitat Politècnica de València Optimization of the cognitive processes involved in the learning of university students in a virtual classroom.	11:00 -	José Tatay Sangüesa Universitat Politècnica de València Study of Impulsive Orbital Trajectories using Multiobjective Optimization
11:20	Abstract	11:20	Abstract
	ONLINE		
11:20 -	Francisco Pedroche Universitat Politècnica de València Subdirect sums of matrices. Definitions, methodology and known results.	11:20 -	José Antonio López Ortí Universidad Jaume I de Castellón Analysis of a symmetric family of anomalies to study the elliptical two-body problem with special emphasis in the semifocal case.
11:40	Abstract	11:40	Abstract
11:40 -	Regino Criado Herrero Universidad Rey Juan Carlos A new mathematical structure with applications to computational linguistics and specialized text translation.	11:40 -	Màrius Josep Fullana i Alfonso Universitat Politècnica de València Some advances in Relativity Positioning Systems.
12:00	Abstract	12:00	Abstract

12.00 - 13.00	<p>Invited Conference: Rafael Bru Universitat Politècnica de València</p> <p>Combined matrices and conditioning <u>Abstract</u></p> <p>Room: 1E.01</p>
	<p>CLOSING OF THE CONGRESS</p>

14:00	<p>LUNCH OF THE CONFERENCE</p> <p>Cafeteria La Vella</p>
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