UNIVERSITAT POLITÈCNICA DE VALÈNCIA

MATHEMATICAL MODELLING IN ENGINEERING & HUMAN BEHAVIOUR 2019

July 10th-12th, 2019

Instituto Universitario de Matemática Multidisciplinar, (*)

Universitat Politècnica de València, 46022 Valencia, Spain

Building 8G, 2º Floor, access A and C

Webpage: http://jornadas.imm.upv.es

Schedule

- Communications: 15 min (exposition) + 5 min (for questions).
- Plenary Talks: 30 min (exposition) + 5 min (for questions).

Wednesday 10th

10:00-13:00	**REGISTRATION (Venue: IMM)**	
	Parallel Session: **MATHEMATICAL MODELLING IN TRANSPORTATION & ENGINEERING** Venue: Red Cube ***Chairwoman: Teresa Real***	Parallel Session: **RANDOM MATHEMATICAL MODELS** Venue: Yellow Cube ***Chairman: Benito M. Chen-Charpentier***
15:40-16:00	**Ernesto Colomer, Inst. Matemática Multidisciplinar,** Comparison of a new maximum power point tracking based on neural network with conventional methodologies	**Regino Criado, University Rey Juan Carlos, Spain,** On Hashimoto non-backtracking matrix, pagerank and multiple networks
16:00 - 16:20	**Víctor Tomás-Andrés, Centro de Investigación en Ingeniería Mecánica, UPV,** Extension of the modal superposition method for general damping applied in railway dynamics	**Vicente Bevia, Inst. Matemática Multidisciplinar,** The key role of Liouville-Gibbs equation for solving random differential equations: Some insights and applications
16:20 - 16:40	**Juan Giner-Navarro, Centro de Investigación en Ingeniería Mecánica, UPV,** Study of the influence falling friction on the wheel/rail contact in railway dynamics	**J. V. Romero, Inst. Matemática Multidisciplinar,** Analysis of finite dimensional linear control systems subject to uncertainties via probabilistic densities
16:40 – 17:00		**L. Jódar, Inst. Matemática Multidisciplinar,** Solving numerically random hyperbolic problems
17:10 - 17:30	COFFEE BREAK	
	Parallel Session: **MATHEMATICAL MODELLING IN TRANSPORTATION & ENGINEERING** Venue: Red Cube ***Chairwoman: Julia Real***	Parallel Session: **NUMERICAL METHODS** Venue: Yellow Cube ***Chairman: Juan Ramón Torregrosa***

17:30 - 17:50	**Miriam Labrado, Inst. Matemática Multidisciplinar,** Statistical-vibratory analysis of wind turbine multipliers under different working conditions	**Ana Navarro, University Rey Juan Carlos, Spain** Probabilistic solution of a randomized first order differential equation with discrete delay
17:50-18:10	**Fran Ribes, Inst. Matemática Multidisciplinar,** Influence of different pathologies on the dynamic behaviour and against fatigue of railway steel bridges	**Neus Garrido, Inst. Matemática Multidisciplinar,** Design and convergence of a new iterative family with memory for solving nonlinear problems
18:10-18:30	**Ana Sancho, Inst. Matemática Multidisciplinar,** A predictive method for bridge Health monitoring under operational conditions	**Fabricio Cevallos, Univ. Laica Eloy Alfaro, Ecuador,** Semilocal convergence for a new Chebyshev-type method
18:30-18:50	**Michael Tung, Inst. Matemática Multidisciplinar,** Acoustics on the Poincaré Disk	**Randys R. Capdevilla, Inst. Matemática Multidisciplinar,** A new three step method for solving nonlinear systems
18:50-19:10	**Emilio Defez, Inst. Matemática Multidisciplinar,** A new matrix series expansions for the hyperbolic matrix cosine approximation	**Francisco I. Chicharro, Inst. Matemática Multidisciplinar,** Symmetry relations between dynamical planes
19:10-19:30	**Miguel Camarasa, Inst. Matemática Multidisciplinar,** Improving the efficiency of orbit determination processes	**Héctor Navarro, Universitat Politècnica de Valencia,** A multigrid method for the Cartesian grid Finite Element Method cgFEM

Thursday 11th

	Parallel Session: **MATHEMATICAL MODELS IN MEDICINE** Venue: Red Cube ***Chairman: Benito Chen-Charpentier***	Parallel Session: **POPULATION MODELS** Venue: Yellow Cube ***Chairman: Francisco Solis***
9:30–9:50	**Belén García-Mora, Inst. Matemática Multidisciplinar,** Topographic representation of cancer data using Boolean Networks	**Óscar Angulo, University of Valladolid, Spain,** Efficient natural grid method for a cell population balance model with asymmetric division
9:50-10:10	**Salvador Amigó, Universitat de València,** A personality mathematical model of placebo with or without deception: an application of the Self-Regulation Therapy	**María T. Sanz, Universitat de València, Spain,** Optimizing the demographic rates to control the dependency ratio through a genetic algorithm
10:10-10:30	**Joan Carles Micó, Inst. Matemática Multidisciplinar,** The quantum brain model	**M. A. López-Marcos, University of Valladolid, Spain,** Numerical integration of age-structured population models with finite life-span
10:30-10:50	**Álvaro López, INECO, UPV, Spain,** Comparative analysis of the efficiency of the treatment of urethral or renal lithiasis using Markov chains	**Antonio Caselles, University of Valencia, Spain,** Trying to stabilize the population and mean temperature of the world
10:50-11:00	OPENING (Venue: RED CUBE)	
11:00-11:30	COFFEE BREAK	
	Session: Plenary Talks **(Venue: RED CUBE)** **Chairman: Francisco Solis**	
11:30-12:05	**Choi-Hong Lai, University of Greenwich, UK,** Mapping musical notes to socio-political events	
12:05-12:40	**Benito Chen-Charpentier, University of Texas at Arlington, USA,** Mathematical modeling of myocardial infarction	
12:40-13:15	**Adrián Todolí, University of Valencia, Spain,** Algorithms, artificial intelligence and automated decisions about workers and the risks of discrimination	
	Session: **MATHEMATICAL MODELS IN ENGINEERING** Venue: Red Cube	

	Chairman: Benito Chen-Charpentier	
15:40-16:00	**J. Gutiérrez, Inst. Matemática Multidisciplinar,** Modelling the impulse of a nuclear thermal rocket in a spacecraft flyby	
16:00-16:20	**David Martínez-Rodríguez, Inst. Matemática Multidisciplinar,** Comparison between DKGA and grammar surrogated model applied to CEC2005 optimization benchmark	
16:20 - 16:40	**María Jovani, University CEU Cardenal Herrera,** Multivariate gaussian model for diagnosticate the pathologies in automated systems	
16:40 - 17:00	**Vicente F. Candela, University of Valencia,** Multichannel fractional Laplacian model for blind deconvolution	
17:00 - 17:30	COFFEE BREAK	
	Parallel Session: **NUMERICAL MODELS & APPLICATIONS** Venue: Red Cube ***Chairwoman: Alicia Cordero***	Parallel Session: **MATHEMATICAL MODELS IN EPIDEMILOGY** Venue: Yellow Cube ***Chairman: Francisco Solis***
17:30 - 17:50	**Ferrán Fuster, Inst. Matemática Multidisciplinar,** Numerical Solution of American Option Pricing Problems Under Stochastic Volatility	**Abraham J. Arenas, University of Córdoba, Colombia,** Characteristic of the numerical solution of a new HIV model with delay using non-standard finite difference schemes
17:50-18:10	**José Antonio López-Ortí, University Jaume I, Spain,** Definition of a new anomaly for the study of Keplerian motion	**Gilberto González-Parra, New Mexico Tech, USA,** A nonstandard finite difference scheme to solve a viral diffusion mathematical model
18:10-18:30	**Amanda Carreño, ISIRYM, UPV,** Adaptive modal methods to integrate the neutron diffusion equation	**Sofía Sorbet, INECO, UPV, Spain,** Modelling of drug treatments in epileptic patients with Markov models
18:30-18:50	**María A. Castro, University of Alicante, Spain,** Nonstandard finite difference schemes for coupled delay differential models	**Javier Leonardo González, Universidad del Rosario, Colombia,** Predicting healthcare cost of diabetes using Deep machine learning models
18:50-19:10	**Ángel A. Magreñán, University of La Rioja, Spain,** Accessibility of Newton's method under mild differentiability conditions	**Rafael Villanueva, Inst. Matemática Multidisciplinar,** Network computational model to estimate the effectiveness of the influenza vaccine *a posteriori*

19:10-19:30		**Andrea Salandin, UPV, Spain,** An integer linear programming approach to check the embodied CO_2 emissions of the opaque part of a façade

Friday 12th

	Session: **MATHEMATICAL MODELS IN WATER ENGINEERING & DECISION-MAKING ALGORITHMS** Venue: RED CUBE ***Chairman: Joaquín Izquierdo***	**Session:** **MATHEMATICAL MODELS IN BUSINESS & SOCIOLOGY** Venue: YELLOW CUBE ***Chairman: Rafael Company***
9:20-9:40	**Silvia Carpitella, Università degli Studi di Palermo, Italy,** Updating the OSPF routing protocol for communication networks by optimal decision-making over the k-shortest path algorithm	**Albert Avinyó, University of Girona, Spain,** A new mathematical strategy for urban burglary prevention
9:40 - 10:00	**Joaquín Izquierdo, IMM,** Efficient sampling of pairwise comparisons in decisión-making	**Jorge Herrera, Complutense University of Madrid, Spain,** Differential love games
10:00-10:20	**Idel Montalvo, Ingeniousware GmbH, Germany,** Optimal placement of quality sensors in water distribution systems	**Clara Burgos, Inst. Matemática Multidisciplinar,** A heuristic approach to optimize berth allocation problem
10:20-10:40	**Bruno Brentan, Federal University of Minas Gerais, Brasil,** A multi-objective and multi-criteria approach for district metered area design: water operation and quality analysis	**Lourdes Gómez-Valle, University of Valladolid, Spain,** The role of the market price of risk in the freight derivative prices
10:40-11:00	**Manuel Luna, University of Cantabria, Spain,** A fuzzy approach to bio-economic modelling and multi-criteria decision making on aquaculture	**David Aleja, University Rey Juan Carlos, Spain,** On non-bracktracking pagerank: computational structure and applications
11:00-	COFFEE BREAK	

11:30	
	Session: Plenary Talks Venue: RED CUBE ***Chairman: Joan C. Micó***
11:30-12:05	**Salvador Climent, University of Valencia,** Econometric methodology applied to financial systems
12:05-12:40	**Francisco J. Solis, CIMAT, Guanajuato, Mexico,** Mathematical models of pathogen interactions with the immune system
12:40-13:00	**Elena de la Poza, Universitat Politècnica de València, UPV,** Mathematical modelling of the political corruption in Spain
LUNCH OF THE CONFERENCE	