MATHEMATICAL MODELLING IN ENGINEERING & HUMAN BEHAVIOUR 2012

September 4th-7th, 2012

Instituto de Matemática Multidisciplinar, Universidad Politécnica de Valencia, 46022 Valencia, Spain

Edificio 8G, piso 2, acceso A y C

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

Invited Speakers:

1.) **Multilevel networks: Structural properties and some applications,** ***R. Criado***, J. Flores, A. García del Amo and M. Romance (University of Rey Juan Carlos, Madrid, Spain)

2.) **Application of the finite-element method within a two-parameter regularized inversion algorithm for electrical capacitance tomography,** ***D. Hinestroza*** and Carlos Gamio (University of El Valle, Cali, Colombia)

3.) **Discrete transparent boundary conditions for the Schrödinger equation on circular domains,** A. Arnold, ***M. Ehrhardt***, M. Schulte and I. Sofronov (Bergische Universität Wuppertal, Germany)

4.) **Inverse problems using polynomial chaos,** D. Stanescu and ***B. Chen-Charpentier*** (University of Texas at Arlington, Arlington, Texas, U.S.A.)

5.) **Modelling the effects of Human Papilloma Virus in cervical cells,** ***F. J. Solis*** (Centro de Investigación en Matemática, Guanajuato, Mexico)

List of Accepted Communications (Organized by sessions):

Biomathematics (September 6th , morning session)

1) ***B. Cantó***, C. Coll and E. Sánchez, *Parametric dynamic systems as approximations to epidemic processes.*

2) ***C. Coll*** , C. C. Horvitz and R. McElderry, *Mathematical model of population growth for Florida Leafwing butterfly.*

3) J. A. Vilán, J. R. Alonso, ***P. J. García***, F. Sánchez-Lasheras, F. J. de Cos Juez and C. Díaz, *Support vector machines and multilayer perceptron networks used to evaluate the cyanotoxins presence form experimental cyanobacteria concentrations in the Trasona reservoir (Northern Spain).*

4) ***K. Romanova***, P. Císař and D. Štys, *Time-lapse microscopy in creation living cells state trajectory.*

Mathematical Models in Business (September 4th, afternoon session and September 7th, morning session)

5) L. Bayón, ***P. J. García***, J. M. Grau, M. M. Ruiz and P. M. Suárez, *An economic dispatch algorithm of combined cycle units.*

6) C. Casabán , ***R. Company*** and L. Jódar, *Numerical analysis and computing of option pricing in jump-diffusion models.*

7) F. García, ***F. Guijarro***, I. Moya and J. Oliver, *A comparison between the ARMA-GARCH-M and the backpropagation neural network in the estimation of conditional volatility and return for the Spanish Ibex-35 index.*

8) ***J. Hozman***, *Discontinuous Galerkin method for numerical solution of exotic option pricing model.*

9) J. C. J. Alcantud, ***C. R. Palmero*** and D. L. Matos, *A new exact algorithm of the Afriat's index*.

10) ***J. M. Rey***, R. G. Sanchís and F. J. Álvarez, *A time allocation model accounting for the paradox of choice.*

11) A. Pascucci, ***M. Suárez-Taboada*** and C. Vázquez, *Modeling a stock loan pricing with an obstacle problema associated to a Kolmogorov equation.*

12) J. L. Fernández, M. R. Nogueiras, ***M. Pou*** and C. Vázquez, *Drift-free simulation methods for pricing inflation and commodity derivatives.*

Mathematical Models in Engineering (September 4th and 5th, afternoon sessions)

13) ***K. Gibert***, L. Salvador-Carulla, J. Morris and S. Saxena, *A multivariate missing data imputation method based on clustering. Application to World Health Organization data.*

14) ***F. J. Marco***, J. A. López and M. J. Martínez, *Statistics and analytic compatibility to joint catalogs with a set of common ICRF defining sources.*

15) ***D. Ayala-Cabrera*** , M. Herrera, J. Izquierdo and R. Pérez-García, *Adaptive mapping routes of pipes in water supply systems using GPR and Multi-agent approach*

16) ***J. Sastre***, J. Ibáñez, E. Defez and P. A. Ruiz, *New advances on matrix exponential computation for engineering problems.*

17) ***J. C. García-Díaz*** and O. Trull, *Electricity demand forecasting with multiple seasonal patterns: An application to Spanish data.*

18) ***M. Herrera***, J. A. Gutiérrez-Pérez, J. Izquierdo and R. Pérez-García, *Multiview clustering to define district metered areas in a water supply network.*

19) ***M. López-Lago***, J. Collazo, J. A. Vilán and A. Segade, *Dynamic modeling of riggings of complex geometry loads.*

20) J. Martínez, ***C. Iglesias***, J. M. Matías and J. Taboada, *DAGSVM multiclass algorithm based on SVM binary classifiers with 1vsAll approach to the slate tile classification problem.*

21) ***M. Martínez***, T. Barrachina, R. Miró, S. Chiva and G. Verdú, *Evaluation of turbulence models of a CFD model for nuclear engineering purposes.*

22) ***C. Montoliu***, N. Ferrando, J. Cerdá and R. J. Colom, *Application of the level set method for the visual representation of continuous cellular automata applied in anisotropic wet etching.*

23) ***T. Náhlik***, P. Císař, J. Urban, J. Vaněk and D. Štys, *Microscope point spread function, focus and calculation of optimal microscope setup.*

24) J. Roca-Pardiñas, M. Sestelo, ***C. Ordóñez*** and S. García-Cortés, *Predicting SO_2 pollution incidents in the vicinity of a coal-fire power station using generalized additive models and bootstrapping.*

25) F. Aznar, M. Pujol, F. A. Pujol and ***R. Rizo***, *A macroscopic model for high intensity radiofrequency signal detection in swarm robotic systems.*

26) ***E. Ramos-Martínez***, M. Herrera, J. Izquierdo and R. Pérez-García, *Ensemble of multiple data mining approaches to biofilm development in drinking wáter distribution systems.*

27) ***A. Sánchez***, S. Carlos, S. Martorell and I. Martón, *An integral maintenance optimization using a Gravitational Search Algorithm (GSA). An application to onshore wind farm.*

28) A. Jimeno, F. Pujol, R. Molina, ***J. L. Sánchez-Romero*** and M. Pujol, *Trajectory-based morphological operators: a model for efficient image processing.*

29) ***A. Soler***, T. Barrachina, R. Miró, G. Verdú, A. Concejal and J. Melara, *Improvements in the decay heat model in the thermalhydraulic code TRAC-BF1.*

30) ***M. M. Tung***, *Modelling metamaterial acoustics on spacetime manifolds.*

31) ***A. Zhyrova***, T. Náhlik, P. Císař and D. Štys, *Construction the model of Belousov-Zhabotinsky reaction by means of the state trajectory creation.*

32) S. González-Pintor, ***D. Ginestar*** and G. Verdú, *Preconditioning the solution of the time dependent neutron diffusion equation by recycling Krylov subspaces.*

33) E. Ramos, A. Abarca, ***J. E. Roman***, R. Miró, T. Barrachina and G. Verdú, *Parallelization of thermohydraulic sub-channel code COBRA-TF using Krylov methods of the PETs toolkit.*

Mathematical Models in Medicine (September 5th, morning session)

34) ***J. A. Moraño***, R. J. Villanueva, L. Acedo, J. Díez-Domingo and J. Villanueva-Oller, *A Social Network model for the development of vaccination strategies against meningitis C.*

35) ***O. Angulo***, M. Adimy, J. C. López-Marcos and M. A. López-Marcos, *Numerical integration of an age-structured hematopoiesis mathematical model.*

36) ***B. García-Mora***, C. Santamaría, G. Rubio and J. L. Pontones, *Computing survival functions of the sum of two independent markov processes. An application to bladder carcinoma treatment.*

37) ***N. Irishina*** and A. Torrente, *Detection of brain stroke by microwave tomography using structural inversion and learned dictionaries.*

38) ***E. Javierre***, C. Valero, M. J. Gómez-Benito and F. J. Vermolen *Mathematical analysis of physiological and pathological wound healing. Application to diabetic foot ulcers.*

39) ***F. Reyes-Santías***, M. dos Anjos and D. Vivas, *Economical evaluation of computed tomography angiography (CTA) versus conventional angiography (CA) to diagnose Coronary ischemia.*

Internal Combustion Engines (September 4th and 5th, afternoon session)

40) ***J. Galindo***, P. Fajardo and R. Navarro, *Compressible flow turbomachinery simulations with OpenFOAM.*

41) ***A. Gil*** and J. P. G. Galache, *A new method for the simulation of non-linear parabolic equations in cylindrical coordinates.*

42) ***S. Hoyas***, X. Margot, J. M. Mompó-Laborda, *The LES modeling of diesel injectors: the spray first instants.*

43) L. Cornolti, ***T. Lucchini***, G. Montenegro and G. D'Errico, *A comprehensive Lagrangian flame-kernel model to predict ignition in SI engines.*

44) ***R. Novella***, J. M. Pastor and J. F. Winklinger, *CFD modeling of reacting diesel sprays with tabulated detailed chemistry.*

45) ***P. Olmeda***, A. Tiseira, V. Dolz and L. M. García-Cuevas, *Uncertainties in power computations in a turbocharger test bench.*

46) R . Payri, ***J. Gimeno***, P. Martí-Aldaraví, *Improving CFD compressible segregated solvers by optimizing updates-equations sequence.*

47) ***F. Piscaglia***, A. Montorfano and A. Onorati, *Boundary conditions and subgrid scale models for LES simulation of Internal Combustion Engines.*

48) ***B. Pla***, *Modelling driving behaviour and its impact on the energy management problem in hybrid electric vehicles.*

49) F. Salvador, J. Martínez-López, ***J. V. Romero*** and M. D. Roselló, *Study of the influence of the needle eccentricity on the internal flow in diesel injector nozzles by CFD calculations.*

50) ***J. R. Serrano***, F. J. Arnau, P. Piqueras and O. García-Afonso, *Adaptation of finite difference numerical methods to the solution of governing equations in wall-flow diesel particulate filters.*

51) ***A. J. Torregrosa***, *A general reference rear-muffler model for exhaust system pre-design.*

Random Networks (September 7th, morning session)

52) J. Alberto Conejero, ***C. Jordán*** and E. Sanabria-Codesal, *Scheduling of reservations for a rent-a-car company.*

53) ***F. Moreno***, A. González and A. Valencia, *New friends in a Social Network: A formal analysis of the influence of new friends in a social network based on the PageRank method.*

54) M. Rebollo, C. Carrascosa, A. Palomares and ***F. Pedroche***, *A method to detect connected components in undirected graphs by using the RCM algorithm.*

55) ***M. Rebollo***, A. Palomares , C. Carrascosa and F. Pedroche, *Consensus networks with signed graphs to solve coherence problems.*

56) ***A. Tejeda-Gómez***, M. Sánchez-Marré and J. M. Pujol, *TweetStimuli: Discovering social influence structures based on user behaviour.*

Numerical Methods (September 4th , 5th and 6th, afternoon sessions)

57) ***L. Acedo***, *An iterative Encke's method for the determination of spacecraft's orbits.*

58) ***A. Bernal***, A. Abarca, R. Miró, T. Barrachina and G. Verdú, *Methodology to resolve the transport equation with the discrete ordinates code TORT intro KRITZ reactor.*

59) D. Černá and **V. Finěk**, *Wavelet based approach for singular perturbation problems.*

60) ***A. Falcó***, L. Hilario, N. Montés and M. C. Mora, *The proper generalized decomposition for evolution equations.*

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61) ***J. A. López***, F. J. Marco and M. J. Martínez, *A note on the use of generalized Sundman anomalies in the numerical integration of the elliptical orbital motion.*

62) ***M. A. Castro***, F. Rodríguez, J. Cabrera and J. A. Martín, *Difference schemes for time independent heat conduction models with delay.*

63) ***D. de Pereda***, S. Romero, B. Ricarte and J. Bondía, *On generalized cooperative systems an dthe computation of their solution envelopes.*

64) P. Bader, S. Blanes and ***E. Ponsoda***, *Linear quadratic methods for the optimal regulator of an unmanned air vehicle.*

65) L. Lebtahi, O. Romero and ***N. Thomé***, *{K,-1}-potent matrices and applications in image encryption.*

66) ***F. Chicharro***, A. Cordero and J. R. Torregrosa, *A comparative analysis between some iterative methods from a dynamical point of view.*

67) ***J. L. Hueso***, E. Martínez and J. Riera, *Video analysis of the bouncing ball system.*

68) ***M. Benlloch***, B. Gimeno, V. E. Boria, J. L. Hueso and E. Martínez, *Analysis of the multipactor effect in a parallel plate waveguide with multiple modulations.*

Social Models (September 5th, morning session)

69) ***E. Alberola***, M. del Líbano, E. de la Poza, I. García, L. Jódar and P. Merello, *Mathematical modelling of workaholism in Spain analyzing its economic and social impact.*

70) R. Cervelló, ***J. C. Cortés***, J. A. Moraño, A. Sánchez-Sánchez and J. Villanueva-Oller, *Modelling the academic performance in Spanish high school: an epidemiological approach with uncertainty.*

71) ***M. Alkasadi***, E. de la Poza, L. Jódar and A. Pricop, *Mathematical modelling of fitness addiction: replacing men happiness and its economic influences.*

72) I. Barrachina, ***N. Guadalajara*** and C. Sancho, *Modelling of temporary disability for anxiety disorders in Primary Health Care Centers of the Valencian Community.*

73) ***G. Ribes*** and M. Fuentes, *Influence of candidate qualities and performance of previous president in voting intention.*

74) F. Guerrero, M. Rubio, ***F. J. Santonja*** and R. J. Villanueva, *Understanding cocaine consumption in Spain using a bayesian selection model approach.*

Schedule

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

Tuesday 4th

10:00-13:00	**REGISTRATION** *Instituto Universitario de Matemática Multidisciplinar*	
	Parallel session: **Mathematical Models in Business I** **(Venue: RED CUBE)** *Chairman: B. Chen-Charpentier*	**Parallel session:** **Internal Combustion Engines I** **(VENUE: YELLOW CUBE)** *Chairman: R. Payri*
15:30-15:50	**María Suárez-Taboada (Univ. of Coruña)** *Modeling a stock loan pricing with an obstacle problema associated to a Kolmogorov equation.*	**José Galindo (CMT, UPV)**, *Compressible flow turbomachinery simulations with OpenFOAM.*
15:50 - 16:10	**Marta Pou (Univ. of Coruña),** *Drift-free simulation methods for pricing inflation and commodity derivatives.*	**Antonio Gil (CMT, UPV)**, *A new method for the simulation of non-linear parabolic equations in cylindrical coordinates.*
16:10 - 16:30	**Rafael Company (IMM, UPV),** *Numerical analysis and computing of option pricing in jump-diffusion models.*	**Federico Piscaglia (Politecnico di Milano)**, *Boundary conditions and subgrid scale models for LES simulation of Internal Combustion Engines.*
16:30 - 16:50	**Francisco Guijarro (ADE Faculty, UPV)**, *A comparison between the ARMA-GARCH-M and the backpropagation neural network in the estimation of conditional volatility and return for the Spanish Ibex-35 index.*	**Tommaso Lucchini (Politecnico di Milano)**, *A comprehensive Lagrangian flame-kernel model to predict ignition in SI engines.*
16:50-17:10		**Ricardo Novella (CMT, UPV)**, *CFD modeling of reacting diesel sprays with tabulated detailed chemistry.*
17:10-17:30		**Pablo Olmeda (CMT, UPV)**, *Uncertainties in power computations in a turbocharger test bench.*
17:30 - 18:00	COFFEE BREAK	

	Parallel session: **Numerical Methods I** **(Venue: RED CUBE)** *Chairman: J. L. Hueso*	**Parallel session: Mathematical Models in Engineering I** **(Venue: YELLOW CUBE)** *Chairman: J. Izquierdo*
18:00 - 18:20	**José Antonio López (Univ. Jaume I of Castellón)**, *A note on the use of generalized Sundman anomalies in the numerical integration of the elliptical orbital motion.*	**David Ayala-Cabrera (IMM, UPV)**, *Adaptive mapping routes of pipes in water supply systems using GPR and Multi-agent approach.*
18:20-18:40	**Francisco Chicharro (IMM, UPV)**, *A comparative analysis between some iterative methods from a dynamical point of view.*	**Manuel Herrera (IMM, UPV)**, *Multiview clustering to define district metered areas in a water supply network.*
18:40-19:00	**José Luis Hueso (IMM, UPV)**, *Video analysis of the bouncing ball system.*	**Eva Ramos-Martínez (IMM, UPV)**, *Ensemble of multiple data mining approaches to biofilm development in drinking wáter distribution systems.*
19:20-19:40	**M. Benlloch (ITEAM UPV)** *Analysis of the multipactor effect in a parallel plate waveguide with multiple modulations.*	**Karina Gibert (Polytechnic University of Catalunya)**, *A multivariate missing data imputation method based on clustering. Application to World Health Organization data.*

Wednesday 5th

	Plenary Session (Venue: RED CUBE) *Chairman: F. J. Solis*	
9:35-10:10	**Doris Hinestroza (Univ. of El Valle, Colombia)**, *Inverse problems using polynomial chaos.*	
	Parallel Session: Mathematical Models in Medicine **(Venue: RED CUBE)** *Chairman: R. Villanueva*	**Parallel Session: Social Models** **(Venue: YELLOW CUBE)** *Chairman: E. de la Poza*
10:10 - 10:30	**José Antonio Moraño (IMM, UPV)**, *A Social Network model for the development of vaccination strategies against meningitis C.*	**Elvira Alberola (ADE, UPV)**, *Mathematical modeling of workaholism in Spain: analyzing its economic and social impact.*
10:30-10:50	**Óscar Angulo (Univ. of Valladolid)**, *Numerical integration of an age-structured hematopoiesis mathematical model.*	**Juan Carlos Cortés (IMM, UPV)**, *Modelling the academic performance in Spanish high school: an epidemiological approach with uncertainty.*
11:00-11:30	COFFEE BREAK	
	Parallel Session: Mathematical Models in Medicine **(Venue: RED CUBE)** *Chairman: R. Villanueva*	**Parallel Session: Social Models** **(Venue: YELLOW CUBE)** *Chairman: E. de la Poza*
11:30-11:55	**Belén García-Mora (IMM, UPV)**, *Computing survival functions of the sum of two independent Markov processes. An application to bladder carcinoma treatment.*	**Mohammed Alkasadi (IMM, UPV)**, *Mathematical modeling of fitness addiction: replacing men happiness and its economic influences.*
11:55-12:20	**Natalia Irishina (Univ. Carlos III de Madrid)**, *Detection of brain stroke by microwave tomography using structural inversion and learned dictionaries.*	**Natividad Guadalajara (ADE, UPV)**, *Modelling of temporary disability for anxiety disorders in Primary Health Care Centers of the Valencian Community.*
12:20-12:45	**Etelvina Javierre (Centro Universitario de la Defensa, Spain)**, *Mathematical analysis of physiological and pathological wound healing. Application to diabetes foot ulcers.*	**Gabriela Ribes (ADE, UPV)**, *Influence of candidate qualities and performance of previous president in voting intention.*
12:45-	**Francisco Reyes-Santías (Univ.**	**Francisco Javier Santonja**

13:10	**of Santiago and Univ. of Vigo)**, *Economical evaluation of computed tomography angiography (CTA) versus conventional angiography (CA) to diagnose coronary ischemia.*	**(Univ. of Valencia)**, *Understanding cocaine consumption in Spain using a Bayesian selection model approach.*
	Parallel Session: Mathematical Models in Engineering II **(Venue: RED CUBE)** *Chairman: M. Ehrhardt*	**Parallel Session: Internal Combustion Engines** **(Venue: YELLOW CUBE)** *Chairman: S. Hoyas*
15:30 - 15:50	**Damián Ginestar (IMM, UPV)**, *Preconditioning the solution of the time dependent neutron diffusion equation by recycling Krylov subspaces.*	**Jaime Gimeno (CMT, UPV)**, *Improving CFD compressible segregated solvers by optimizing updates-equations sequence.*
15:50 - 16:10	**José Enrique Roman (DSIC, UPV)**, *Parallelization of thermohydraulic sub-channel code COBRA-TF using Krylov methods of the PETs toolkit.*	**Sergio Hoyas (CMT, UPV)**, *The LES modeling of diesel injectors: the spray first instants.*
16:10- 16:30	**Francisco José Marco (Univ. Jaume I of Castellón)**, *Statistics and analytic compatibility to joint catalogs with a set of common ICRF defining sources.*	**Benjamín Pla (CMT, UPV)**, *Modelling driving behaviour and its impact on the energy management problem in hybrid electric vehicles.*
16:30- 16:50	**Jorge Sastre (ITEAM, UPV)**, *New advances on matrix exponential computation for engineering problems.*	**José Vicente Romero (IMM, UPV)**, *Study of the influence of the needle eccentricity on the internal flow in diesel injector nozzles by CFD calculations.*
16:50- 17:10	**Juan Carlos García-Díaz (Operations Research and Quality Dept., UPV)**, *Electricity demand forecasting with multiple seasonal patterns: An application to Spanish data..*	**José Ramón Serrano (CMT, UPV)**, *Adaptation of finite difference numerical methods to the solution of governing equations in wall-flow diesel particulate filters.*
17:10- 17:30	**Marcos López-Lago (Univ. of Vigo)**, *Dynamic modeling of riggings of complex geometric loads.*	**Antonio José Torregrosa (CMT, UPV)**, *A general reference rear-muffler model for exhaust system pre-design.*
17:30 - 18:00	COFFEE BREAK	

	Parallel Session: Mathematical Models in Engineering II **(Venue: RED CUBE)** *Chairman: F. J. Solis*	**Parallel Session: Numerical Methods II** **(Venue: YELLOW CUBE)** *Chairman: F. Pedroche*
18:00 - 18:20	**Carla Iglesias (Univ. of Vigo)**, *DAGSVM multiclass algorithm based on SVM binary classifiers with 1vsAll approach to the slate tile classification problem.*	**Álvaro Bernal (ISIRYM, UPV)**, *Methodology to resolve the transport equation with the discrete ordinates code TORT intro KRITZ reactor.*
18:20- 18:40	**Mónica Martínez (ISIRYM, UPV)**, *Evaluation of turbulence models of a CFD model for nuclear engineering purposes.*	**Vaclav Finěk (Tecnhical Univ. of Liberec, Czech Republic)**, *Wavelet based approach for singular perturbation problems.*
18:40- 19:00	**Carles Montoliu (I3M, UPV)** *Application of the level set method for the visual representation of continuous cellular automata applied in anisotropic wet etching.*	**Antonio Falcó (Univ. CEU Cardenal Herrera, Valencia)**, *The proper generalized decomposition for evolution equations.*
19:00- 19:20	**Tomáš Náhlik (University of South Bohemia, Czech Republic),** *Microscope point spread function, focus and calculation of optimal microscope setup.*	**María Ángeles Castro (Univ. of Alicante)**, *Difference schemes for time independent heat conduction models with delay.*

Thursday 6th

	Plenary Session (Venue: RED CUBE) *Chairman: J. C. Cortés*	
9:30-10:05	**Benito Chen-Charpentier (Univ. of Texas at Arlington, U. S. A.)**, *Inverse problems using polynomial chaos.*	
10:05-10:40	**Francisco Javier Solis (CIMAT, Guanajuato, Mexico)**, *Modelling the effects of Human Papilloma Virus in cervical cells.*	
	Session: Biomathematics **(Venue: RED CUBE)** *Chairman: O. Angulo*	
10:10 - 10:30	**Begoña Cantó (IMM, UPV)**, *Parametric dynamic systems as approximations to epidemic processes.*	
10:30-10:50	**Carmen Coll (IMM, UPV)**, *Mathematical model of population growth for Florida Leafwing butterfly.*	
11:00-11:30	COFFEE BREAK	
	Session: Biomathematics **(Venue: RED CUBE)** *Chairman: C. Coll*	
11:30-12:00	**Paulino García-Nieto (University of Vigo)**, *Support vector machines and multilayer perceptron networks used to evaluate the cyanotoxins presence from experimental cyanobacteria concentrations in the Trasona reservoir (Northern Spain).*	
12:00-12:30	**Karina Romanova (University of South Bohemia, Czech Republic)**, *Time-lapse microscopy in creation living cells state trajectory.*	
	Parallel Session: Mathematical Models in Engineering II **(Venue: RED CUBE)** *Chairman: D. Hinestroza*	**Parallel Session: Numerical Methods III** **(Venue: YELLOW CUBE)** *Chairman: S. Blanes*
15:30-16:00	**Celestino Ordoñez (University of Vigo)**, *Predicting SO_2 pollution incidents in the vicinity of a coal-fire power station using generalized additive models and bootstrapping.*	**Diego de Pereda (AI2, UPV)**, *On generalized cooperative systems and the computation of their solution envelopes.*

16:00-16:30	**Ramón Rizo (Univ. of Alicante)**, *A macroscopic model for high intensity radiofrequency signal detection in swarm robotic systems.*	**Enrique Ponsoda (IMM,UPV)**, *Linear quadratic methods for the optimal regulator of an unmanned air vehicle.*
16:30-17:00	**Ana Sánchez (Dept. of Statistics and Operational Research, UPV)**, *An integral maintenance optimization using a Gravitational Search Algorithm (GSA). An application to onshore wind farm.*	**Néstor Thome (IMM, UPV)**, *{K,-1}-potent matrices and applications in image encryption.*
17:00-17:30	**José Luis Sánchez Romero (Univ. of Alicante)**, *Trajectory-based morphological operators: a model for efficient image processing.*	**Luis Acedo (IMM, UPV)**, *An iterative Encke's method for the determination of spacecraft's orbits.*
17:30 - 18:00	COFFEE BREAK	
	Parallel Session: Mathematical Models in Engineering II **(Venue: RED CUBE)** *Chairman: M. Ehrhardt*	**Parallel Session: Mathematical Models in Business II** **(Venue: YELLOW CUBE)** *Chairman: R. Company*
18:00 - 18:20	**Amparo Soler (ISIRYM, UPV)**, *Improvements in the decay heat model in the thermalhydraulic code TRAC-BF1.*	**Jiří Hozman (Tech. Univ. of Liberec, Czech Republic)**, *Discontinuous Galerkin method for numerical solution of exotic option pricing model.*
18:20 - 18:40	**Michael Tung (IMM, UPV)**, *Modelling metamaterial acoustics on Spacetime manifolds.*	**Carlos Palmero (University of Valladolid)**, *A new exact algorithm of the Afriat's index.*
18:40-19:00	**Anna Zhyrova (University of South Bohemia, Czech Republic)**, *Construction the model of Belousov-Zhabotinsky reaction by means of the state trajectory creation .*	**José Manuel Rey (University of Rey Juan Carlos, Spain)**, *A time allocation model accounting for the paradox of choice.*
19:00-19:20		**Paulino García-Nieto (Univ. of Oviedo),** *An economic dispatch algorithm of combined cycle units.*

Friday 7th

	Plenary Session (Venue: RED CUBE) *Chairman: F. Pedroche*
9:00-9:35	**Regino Criado (University of Rey Juan Carlos)**, *Multilevel networks: Structural properties and some applications.*
9:35-10:10	**Matthias Ehrhardt (Bergische Universität Wuppertal)**, *Discrete transparent boundary conditions for the Schrödinger equation on circular domains.*
	Session: Random Networks **(Venue: RED CUBE)** *Chairman: R. Criado*
10:10 - 10:35	**Cristina Jordán (IMM, UPV)**, *Scheduling of reservations for a rent-a-car company.*
10:35 - 11:00	**Francisco Pedroche (IMM, UPV)**, *A method to detect connected components in undirected graphs by using the RCM algorithm.*
11:00-11:30	COFFEE BREAK
	Session: Random Networks **(Venue: RED CUBE)** *Chairman: F. Pedroche*
11:30-12:00	**Francisco Moreno (National University of Colombia)**, *New friends in a social network: A formal analysis of the influence of new friends in a social network based on the PageRank method.*
12:00-12:30	**Miguel Rebollo (DSIC, UPV)**, *Consensus networks with signed graphs to solve coherence problems.*
12:30-13:00	**Arturo Tejeda (Polytechnic University of Catalunya)**, *tweetStimuli: Discovering social influence structures based on user behaviour.*
LUNCH OF THE CONFERENCE	