

# Program of the 2018 International Conference on Computational and Mathematical Methods in Science and Engineering

Costa Ballena, Cádiz, Spain  
July 9 – 13, 2018

- All the posters are outside (July 10 & 12).
- All the talks 20 min + questions (except Prof. Schwerdtfeger and Prof. Khalique sessions)
- Reception Desk in the first floor.
- Registration OPEN:

✓ July 8:

20:30 – 21:00

✓ July 9:

9:30 – 10:45 & 20:00 – 20:30

✓ July 10 and 11:

8:30 – 9:45 & 20:00 – 20:30

✓ July 12 and 13:

8:30 – 9:45

CMMSE-2018 CONFERENCE PROGRAM

Monday, July 9, 2018

**Registration: 9:30 – 10:45**

**Room 1: Plenary Lecture 11:00 – 11:55**

*“GPUs for High Performance Computing, Deep Learning and beyond”.*

**Manuel Ujaldón**, University of Málaga.

Chair: J. Cuenca

**Parallel Sessions: 12:00 – 14:00**

<b>Room 1:</b>	<b>HPC</b> <i>Chair: M. Pantoja</i>
<b>Prof.</b> Cámara	A Hierarchical Approach for Autotuning Linear Algebra Routines on Heterogeneous Clusters
<b>Prof.</b> Cuenca	A Parallel Simulator for the Kinematic Analysis of Multibody Systems Based on Group Equations
<b>Prof.</b> Orts Gómez	A quantum circuit for solving divisions using Grover's search algorithm
<b>Prof.</b> Belloch Rodríguez	Acceleration of a Mesh Truncation Technique for a Finite Element Electromagnetics Code
<b>Prof.</b> Pantoja	A Toolkit for Distributed Execution of Communicating Sequential Process-Style Concurrency

<b>Room 2:</b>	<b><i>From clusters to the solid state. (25 min talks)</i></b> <i>Chair: J. Cioslowski</i>
<b>Prof.</b> Woodley	Exploration of the energy landscapes of ZnO: Clusters to 1D periodic structures
<b>Prof.</b> Rodríguez García	Inequalities on the Inverse Degree Index
<b>Prof.</b> Pestana	Geometric-Arithmetic index and line graph
<b>Prof.</b> Martín- Samos	Transport through Super Atomic Molecular Orbitals?
<b>Prof.</b> Paulus	Matrix effects on embedded polyfluoride anions

## CMMSE-2018 CONFERENCE PROGRAM

<b>Room 3:</b>		<b>Computational Algebra</b> <i>Chair: Peter Alonso</i>
<b>Prof.</b>	Moreno Frias	Factorizations of the same length in numerical semigroups
<b>Prof.</b>	Tomeo	Inversion of finite and infinite comrade matrices
<b>Prof.</b>	Ceballos	Algorithm to Compute Minimal Matrix Representation of Nilpotent Lie Algebras
<b>Prof.</b>	Falcon	Computational synthesis and analysis of LED circuits based on partial magma algebras
<b>Prof.</b>	Abderraman	A superfast and stable algorithm for solving large-order k-tridiagonal linear systems

<b>Room 4:</b>		<b>Mathematical Models for Computer Science</b> <i>Chair: M. Ojeda-Aciego</i>
<b>Prof.</b>	Sanchez	A novel method for the whole set of nondominated solutions in a fully fuzzy linear programming problem with parameterized fuzzy numbers
<b>Prof.</b>	Aledo	Orbital Structure of Graph Dynamical Systems
<b>Prof.</b>	Mora Bonilla	Pruning and displaying implications from real datasets
<b>Prof.</b>	Benítez Caballero	Applications of Rough Set Theory reduction in Fuzzy Formal Concept Analysis
<b>Prof.</b>	Lobo	Characterizing the solvability of bipolar max-product fuzzy relation equations systems with the standard negation
<b>Prof.</b>	Ojeda-Aciego	Compatibility of Galois connections and powering

**LUNCH BREAK 14:00 – 16:00**

---

### Parallel Sessions 16:00 – 20:30

<b>Room 1:</b>		<b>From clusters to the solid state. (25 min talks)</b> <i>Chair: I. Hamilton</i>
<b>Prof.</b>	Garden	A combined experimental and theoretical study of the motif preference of platinum and gold nanoclusters between 55-309 atoms
<b>Prof.</b>	Golovko	Chemically synthesized metal clusters – an adventure: from fundamental studies to selected applications
<b>Prof.</b>	Cioslowski	Solitonic Natural Orbitals
<b>Prof.</b>	Smits	Ab-initio Monte Carlo melting of the noble gases
<b>Prof.</b>	Abdank-Kozubski	Atomistic simulation of interdiffusion in intermetallic nanocouples
<b>Prof.</b>	Mineva	Ordering and reactivity of Pd/Au(001) surface structures: from vacuum to CO gas

CMMSE-2018 CONFERENCE PROGRAM

<b>Prof.</b> Torres	Tuning the magnetic moment of late 3d-transition-metal oxide clusters by selective mixing of the constituents
---------------------	---

<b>Room 2:</b>		<b>HPC</b>
<b>Chair: D. Llanos</b>		
<b>Prof.</b> Perez Dieguez	A Tuning Strategy for Tridiagonal System Solvers on GPU	
<b>Prof.</b> Ezzatti	Accelerating a preconditioned GMRES method in massively parallel processors	
<b>Prof.</b> Bermúdez	Accelerating Bioinspired Moving Object Detection with FPGAs and GPUs	
<b>Prof.</b> Cesar	Designing a Benchmark for Assessing the Performance of Parallel Agent-based Simulation Applications	
<b>Prof.</b> Bernabé	An updated software tool for the automatic quantification in the left ventricle myocardium hyper-trabeculation degree for Hypertrophic Cardiomyopathy patients	
<b>Prof.</b> Díaz Martín	Analytical Communication Performance Models as a Metric in the Partitioning of Data-Parallel Kernels on Heterogeneous Platforms	
CAPAP-H Network Meeting at 18:30		

<b>Room 3:</b>		<b>Bio-Mathematics</b>
<b>Chair: E. Venturino</b>		
<b>Prof.</b> Esteva	A model for yellow fever with migration	
<b>Prof.</b> Gonzalez-Olivares	A simple predation model considering cooperation among the predators	
<b>Prof.</b> Jerry	Applying Differential Game to Commercial Fishing Management	
<b>Prof.</b> Kozlov	Dynamical behavior of SIR model with co-infection of two viruses	
<b>Prof.</b> Halfar	Dynamics of Beeler-Reuter cardiac cell model	
<b>Prof.</b> Rafikov	Optimal Control Aedes Aegypti Populations by Wolbachia-based Limited Strategies	
<b>Prof.</b> Venturino	Introducing seasonality in an SIR-UV epidemic model: an application to dengue	

CMMSE-2018 CONFERENCE PROGRAM

<b>Room 4:</b> <b>Hypercomplex methods in mathematics and Applied Sciences</b>		
<b>Chair: W. Sproessig</b>		
<b>Prof.</b>	Falcão	Hypercomplex Pascal triangle and generalizations
<b>Prof.</b>	Tomaz	Matrices of connection coefficients between two number sequences characterizing certain hypercomplex polynomials
<b>Prof.</b>	Soares	On the Zeros of Coquaternionic Polynomials
<b>Prof.</b>	Bock	Rational monogenic functions in IH
<b>Room 4:</b> <b>Interpolation and Approximation</b>		
<b>Chair: D. Barrera</b>		
<b>Prof.</b>	Jung	Hyers-Ulam Stability of Lagrange's Mean Value Points in Two Variables
<b>Prof.</b>	Pasadas	Approximation of Generalized Offset Surfaces by Bicubic Splines
<b>Prof.</b>	Lamberti	Multilevel quadratic spline quasi-interpolating operators
<b>Prof.</b>	Remogna	Spline quasi-interpolating projection methods for Urysohn integral equations
<b>Prof.</b>	Barrera	Point and differential $C^1$ quasi-interpolation on type-1 meshes

Tuesday, July 10, 2018

**Room 1: Plenary Lecture 09:00 – 09:55**

*“Energy landscapes: from molecules and nanodevices to machine learning”.*  
**David J. Wales**, University of Cambridge.

Chair: Peter Schwerdtfeger

**Parallel Sessions: 10:00 – 14:00**

<b>Room 1:</b>		<b><i>From clusters to the solid state. (25 min talks)</i></b> <b><i>Chair: Peter Schwerdtfeger</i></b>
<b>Prof.</b>	Akola	CO Oxidation on AuCu Clusters: Effects of Composition and Support
<b>Prof.</b>	Hummel	Finite Temperature Coupled Cluster Methods for Extended Systems
<b>Prof.</b>	Trombach	From Energy Landscapes for Lennard-Jones clusters to the Gregory-Newton Problem
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION P-1/P-18</b>		
<b>Prof.</b>	Hamilton	A Series of Intrinsically Chiral Gold Nanocage Structures
<b>Prof.</b>	Jerabek	How Relativistic Effects Influence Chemical and Physical Properties of Gold
<b>Prof.</b>	Berger	Optical spectra and photoemission from first principles
<b>Prof.</b>	de Jong	Machine learning and quantum computing as an alternative to high-performance computing in chemical sciences
<b>Prof.</b>	Stepanova	Misfolding and Aggregation of A $\beta$ peptide: The Role of Surfaces and Fibrillary Templates

<b>Room 2:</b>		<b><i>HPC</i></b> <b><i>Chairs: Pedro Alonso-Jordá</i></b>
<b>Prof.</b>	Dávila Guzmán	First Steps Towards CPU, GPU, and FPGA Parallel Execution with EngineCL
<b>Prof.</b>	Fernández-Escribano	Embedded parallel architectures based on neural networks for video encoding
<b>Prof.</b>	Luque Ruiz	Prediction of the Datasets Modelability for the Building of QSAR Classification Models by means of the Rivality Index
<b>Prof.</b>	Afonso Fumero	High Performance Code Optimizations for Mobile Devices

CMMSE-2018 CONFERENCE PROGRAM

**11:30 — 12:00 COFFEE BREAK & POSTER SESSION P-1/P-18**

<b>Prof.</b>	Cabrera	Load Balancing in iterative algorithms to improve energy efficiency with Ull Multiobjective Framework
<b>Prof.</b>	Vila	Multi-Objective Genetic Algorithm for Cloudlet Scheduling in Heterogeneous Virtual Machine Cloud Environments
<b>Prof.</b>	Rey	On the potential of variable intra-task threading in task-parallel programming models
<b>Prof.</b>	Fernández-Escribano	Simulation of the electromechanical model of a doubly-fed induction generator wind turbine using an NVIDIA GPU
<b>Prof.</b>		

**Room 3: Processing, modelling, and describing time series // Computational Finance**  
**Chair: J. Moreno // I. Arregui & L. Ortiz**

<b>Prof.</b>	Moreno Garcia	A technique based on deep learning for the detection of anomalies in time series of electricity consumption
<b>Prof.</b>	Tomčala	Acceleration of Time Series Entropy Algorithms
<b>Prof.</b>	Martinovč	Bounding Box Computation of the 0-1 Test for Chaos

**11:30 — 12:00 COFFEE BREAK & POSTER SESSION P-1/P-18**

<b>Prof.</b>	Arregui	A stochastic local volatility technique for the valuation of TARN options
<b>Prof.</b>	Gatón Bustillo	An extension of Heston SV model to stochastic interest rates
<b>Prof.</b>	Ortiz Garcia	Quantifying credit portfolio losses under multi-factor models
<b>Prof.</b>	Leitao Rodríguez	SWIFT valuation of discretely monitored arithmetic Asian options under exponential Lévy processes
<b>Prof.</b>	Cihangir Kan	Joint Reliability Importance in coherent systems with applications

**Room 4: General Session // Mathematics, Science and Engineering Education**  
**Chair: M. Lampart // A. A. Magreñán**

<b>Prof.</b>	Ramos	Homotopy Perturbation Method for solving fractional Volterra-Fredholm integro-differential equations
<b>Prof.</b>	Pérez	Control of second-order switched systems with application to DC-DC converters
<b>Prof.</b>	Martínez Pérez	Some results on lower bounds for topological indices
<b>Prof.</b>	Jebreen	On twisted sums of Shreier spaces and James- Shreier spaces

**11:30 — 12:00 COFFEE BREAK & POSTER SESSION P-1/P-18**

<b>Prof.</b>	García Gutiérrez	Stabilization of a three-cell power converter model via invariant set of switched systems
--------------	------------------	---



CMMSE-2018 CONFERENCE PROGRAM

<b>Prof.</b>	Martinez	Conformable Euler's Theorem on homogeneous functions
<b>Prof.</b>	Lampart	Motion of the double-pendulum between skew walls
-----Change of Session-----		
<b>Prof.</b>	Orcos	Different methods for solving STEM problems
<b>Prof.</b>	Sicilia Montalvo	Extended local convergence for some inexact methods with applications
<b>Prof.</b>	Sarría Martínez	Local convergence and the dynamics of a King-like two-step method with applications

**LUNCH BREAK 14:00 – 16:00**

**Room 1: Plenary Lecture 16:00 – 16:55**

*“Quantum Monte Carlo algorithms for electronic structure theory”.*  
**Ali Alavi**, Max Planck Institute for Solid State Research and U. of Cambridge.

Chair: Peter Schwerdtfeger

---

**Parallel session 17:00-20:00**

---

<b>Room 1:</b>		<b>Mathematical Modelling and simulation of Geophysical Flows</b> Chair: P. Kew
<b>Prof.</b>	Guerrero Fernández	A well-balance shallow-water model with variable pressure.
<b>Prof.</b>	Macias Sanchez	Multilayer-HySEA model validation for landslide generated tsunamis for rigid slides
<b>Prof.</b>	Morales de Luna	Recent advances in sediment transport in shallow waters
		<b>Mathematical Modelling and simulation of Fluid Flows</b> Chairs: J. Macías-Sánchez
<b>Prof.</b>	Li	Accuracy verification of a 2D adaptive mesh refinement method using backward facing step flows of low Reynolds numbers
<b>Prof.</b>	Kew	Accuracy verification of the combination of an adaptive node adding method and generalized finite difference method using 2D lid-driven cavity flow
<b>Prof.</b>	Darwish	Coupled Numeric: An all speed coupled solver for turbomachinery applications
<b>Prof.</b>	Aydin	Fundamental axisymmetric MHD creeping flows produced by a circular ring located near a plane solid slip wall
<b>Prof.</b>	Aydin	Stabilizing Sub grid FEM Solution of the Natural Convection Flow Under High Magnitude Magnetic Field on Sinusoidal Corrugated Enclosure

CMMSE-2018 CONFERENCE PROGRAM

<b>Room 2:</b>		<b>Approximation and image processing</b>
<b>Chair: A. Magreñán</b>		
<b>Prof.</b>	Magreñán	On a new method for hyperbolic conservation laws
<b>Prof.</b>	Yáñez	On a new nonlinear cell-average multiresolution scheme
<b>Prof.</b>	Amat	On a new nonlinear interpolatory subdivision scheme with good stability properties
<b>Prof.</b>	Trillo Moya	On a new nonlinear nonseparable multiresolution scheme in 2D
<b>Prof.</b>	Busquier	On some variational problems for image denoising using multiresolution schemes
<b>Prof.</b>	Ruiz-Alvarez	On the application of Lehmer means in signal and image processing
<b>Prof.</b>	Saelee	Simultaneous iterative methods for split equality common fixed point problem for asymptotically quasi-nonexpansives semigroups in Banach spaces
<b>Prof.</b>	Legaz	Some remarks on a variational method for stiff differential equations

<b>Room 3:</b>		<b>Mathematical Modeling and Computational ODE &amp; PDE</b>
<b>Chair: J. Macias Diaz</b>		
<b>Prof.</b>	Serna-Reyes	A method that preserves the dissipation of energy of a Caputo-Riesz fractional nonlinear wave equation
<b>Prof.</b>	Flores Oropeza	A note on a finite-difference solution of the hyperbolic Burgers-Fisher equation
<b>Prof.</b>	Gallegos	A numerical method for chains of anharmonic oscillators with long-range interactions
<b>Prof.</b>	Alhama	Simulation of free chloride profiles in concrete
<b>Prof.</b>	Urenda	Noisy Pais-Uhlenbeck Oscillator
<b>Prof.</b>	Macías Medina	On the analytical properties of the solutions of a semilinear non-homogeneous partial differential equation
<b>Prof.</b>	Macias-Diaz	An efficient numerical method to simulate the energy dynamics of fractional beta-Fermi-Pasta-Ulam lattices

<b>Room 4:</b>		<b>Analytical and Numerical solution of Differential Equations</b>
<b>Chair: C. Clavero</b>		
<b>Prof.</b>	De Lillo	A free boundary problem on a finite domain in nonlinear diffusion
<b>Prof.</b>	Clavero	A multi-splitting method for two-dimensional parabolic weakly coupled convection singularly perturbed systems
<b>Prof.</b>	Jafari	A numerical method to solve variable order differential equations using Operational matrix
<b>Prof.</b>	Ramos	An optimized two-step hybrid block method for solving stiff initial-value problems and its relation with Runge-Kutta methods

<b>Prof.</b>	Das Pratibhamoy	Uniformly Convergent Numerical Methods for Singularly Perturbed Mixed type Reaction Diffusion Systems with Boundary Layers
<b>Prof.</b>	Kumar	A Robust Domain Decomposition Method for Singularly Perturbed Parabolic Systems

**22:15 TRADITIONAL SHERRY DEGUSTATION at the Garden:**

**After dinner, we will taste three different types of Sherry: dry Sherry, Sweet Sherry (a dry Sherry that has been sweetened with Pedro Ximénez grapes that have been dried like raisins) and pure Pedro Ximénez. A professional cellar master will serve all the wines.**

**A renowned Spanish guitar player will act during the cocktail party**

Wednesday, July 11, 2018

**EXCURSION (Breakfasts will open at 7:00)**

- Sevilla Excursion at 8:00 at the main door
- Jerez Winery Excursion at 11:00 at the main door

**LUNCH BREAK 14:00-16:00**

**Room 1: Plenary Lecture 16:00 – 16:55**

*Fixed Point Theory in various abstract spaces and related applications.*

**Poom Kumam**, KMUTT. Thailand

Chair: J. Moreno

**Parallel session 17:00-20:00**

<b>Room 1:</b>		<b><i>New advances in statistical methodologies.</i></b>
		<b><i>Chair: F. Marques</i></b>
<b>Prof.</b>	Caeiro	A simple class of reduced bias kernel estimators of the extreme value index
<b>Prof.</b>	Barranco-Chamorro	New methods to estimate parameters in certain slash models
<b>Prof.</b>	Coelho	Non-null near-exact distributions for the likelihood ratio test statistic to test the reality of a covariance matrix
<b>Prof.</b>	Nunes	Random sample sizes in orthogonal mixed models with stability
<b>Prof.</b>	Santos	Revisiting Random Polygonal Lines Iteratively Generated on the Plane
<b>Prof.</b>	Fonseca	Prediction Intervals for Small Area Estimation with Two-Fold Nested Models
<b>Prof.</b>	Marques	Series representations for density functions of a family of distributions - application to the sum of independent Rayleigh random variables

CMMSE-2018 CONFERENCE PROGRAM

<b>Room 2:</b>		<b><i>From clusters to the solid state</i></b> <b><i>Chair: D. Wales (25 min talks)</i></b>
<b>Prof.</b>	Calvo	Modeling the thermal stability of core-shell Fe-Ag nanoparticles
<b>Prof.</b>	Pahl	Monte Carlo Melting Simulations of Systems with Several Degrees of Freedom
<b>Prof.</b>	Salahub	Multiscale Modelling: from Clusters to Nanoparticles in Complex Environments – insight into mechanisms for heavy oil upgrading
<b>Prof.</b>	Schwingenschlogl	Ab-initio Calculations of the Thermoelectric Properties of MXenes
<b>Prof.</b>	Schwerdtfeger	The efficient treatment of three-dimensional lattice sums
<b>Prof.</b>	Kitamura	Thermodynamics of expanded fluid metals based on the concept of clusters and solids
<b>Prof.</b>	Fournier	Using Local Variance for Noise Variance Estimation and Nonparametric Curve Fitting

<b>Room 3:</b>		<b><i>Iterative methods for linear &amp; nonlinear systems</i></b> <b><i>in large scale scientific computing</i></b> <b><i>Chair: L. Bergamaschi</i></b>
<b>Prof.</b>	Vidal Ferrándiz	A block Arnoldi method for the eigenvalue problem associated with the SPN equation
<b>Prof.</b>	Bergamaschi	A combination of full-rank and low-rank update of the constraint preconditioner for quadratic optimization
<b>Prof.</b>	D'Ambra	Applying bootstrap AMG in spectral clustering
<b>Prof.</b>	Martinez	Generalized block tuned preconditioners for sequences of shifted linear systems: application to SPD eigensolvers
<b>Prof.</b>	García Zapata	Graph Tripartition using Spectral Methods
<b>Prof.</b>	Marín Mateos-Aparicio	Preconditioners for the inexact-Newton method based on compact representation of quasi-Newton updates
<b>Prof.</b>	Vidal Gimeno	Storing Strategies of Sparse Matrices of the Neutron Diffusion Equations
<b>Prof.</b>	Carpentieri	A spectrally preconditioned and initially deflated variant of the block GMRES method

<b>Room 4:</b>		<b><i>Fixed Point Theory and related applications.</i></b> <b><i>Chair: P. Kumam</i></b>
<b>Prof.</b>	Kumam	Stable fixed points in a b-metric space
<b>Prof.</b>	Sumalai	Common fixed-point theorems via CLRg Property in complete fuzzy metric-like spaces.

## CMMSE-2018 CONFERENCE PROGRAM

<b>Prof.</b>	Kongban	Convergence and Stability of Jungck-Khan's Random Iterative Scheme for Solution of Bochner Integrability
<b>Prof.</b>	Muangchoo-in	Convergence theorems of monotone $(\alpha, \beta)$ -nonexpansive mappings for normal $s$ -iteration in ordered Banach spaces
<b>Prof.</b>	Onsod	Fixed and periodic point results for $(\mathcal{F}, h)$ -type Geraghty contractions in partial metric spaces
<b>Prof.</b>	Hong	Some surjectivity results for operators of monotone type
<b>Prof.</b>	Kim	Semilinear problems with a non-symmetric linear part
<b>Prof.</b>	Pakkaranang	Proximal point method involving hybrid iteration for solving convex minimization problem and common fixed point problem in non-positive curvature metric spaces

Thursday, July 12, 2018

**Room 1: Plenary Lecture 09:00 – 09:55**

*Backward Stability of Polynomial and Rational eigenvalue problems solved via linearization.*

**Froilán Dopico, UC3M, Madrid**

Chair: P. Alonso

**Parallel Sessions: 10:00 – 14:00**

<b>Room 1:</b>		<b>Numerical Methods for Solving Nonlinear Problems</b>
		<b>Chairs: A. Cordero &amp; J.R. Torregrosa</b>
<b>Prof.</b>	Zafar	A Class of Four Parametric With- and Without Memory Root Finding Methods
<b>Prof.</b>	Alarcon Correa	An alternative to obtain the local convergence radius of some iterative methods
<b>Prof.</b>	Garrido Saez	Anomalies in the convergence of Traub-type methods with memory
<b>Prof.</b>	Ezquerro	Domains of global convergence for Fredholm integral equations
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION P-19/P-44</b>		
<b>Prof.</b>	Rubio	Dynamics and local convergence of a family of derivative-free iterative schemes
<b>Prof.</b>	Kitkuan	Inertial viscosity forward-backward splitting algorithm for monotone inclusions with applications
<b>Prof.</b>	Torregrosa	On the computing of the inverse and Moore-Penrose inverse of complex matrices
<b>Prof.</b>	Cevallos Alarcón	Semilocal convergence of a efficient Newton-type ninth-order iterative method
<b>Prof.</b>	Chicharro López	Wide stability in a new family of optimal fourth-order iterative methods
<b>Prof.</b>	Cordero	Stability analysis of Jacobian-free Newton's iterative method

CMMSE-2018 CONFERENCE PROGRAM

<b>Room 2:</b>		<b><i>Applied Linear Algebra and Mathematical Applications-ALAMA.</i></b>
<b><i>Chair: J. Marín</i></b>		
<b>Prof.</b>	Franceschini	A novel AMG approach based on adaptive smoothing and prolongation for HPC
<b>Prof.</b>	Gassó	Algorithms for constructing Doubly Stochastic Matrices with the Combined Matrix (Relative Gain Array) $A \circ A^{-T}$
<b>Prof.</b>	Alonso	Almost strictly sign regular matrices and their combined matrices
<b>Prof.</b>	Zaballa	On the Jordan Structure of Diagonal Matrix Polynomials of Fixed Degree
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION P-19/P-44</b>		
<b>Prof.</b>	Carapito	Stabilization criteria of a class of switched systems
<b>Prof.</b>	Padcharoen	Augmented lagrangian method on $\ l_1\ $ - $\ l_2\ $ -TV for image restoration
<b>Prof.</b>	Carriegos	On parallel computation of centrality measures of graphs
<b>Prof.</b>	Cerdán	An inverse ILU preconditioner based on the Sherman-Morrison formula

<b>Room 3:</b>		<b><i>Computational Models in Mechanics &amp; Engineering</i></b>
<b><i>Chair: M. Dupac</i></b>		
<b>Prof.</b>	Dupac	A combined polar and Cartesian piecewise trajectory generation and analysis of a rotating manipulator
<b>Prof.</b>	Mandyly	Analysis and numerical approach for elastic materials in unilateral contact process with friction
<b>Prof.</b>	Fernandez Garcia	Characterization of a linear viscoelastic material using genetic algorithms
<b>Prof.</b>	Kosenko	Spatial Attitude Dynamics of a Satellite with Internal Masses Redistribution
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION P-19/P-44</b>		
<b>Prof.</b>	Constanda	Bending of Plates with Transverse Shear Deformation: The Robin Problem
<b>Prof.</b>	Abdul-Ameer	Frequency Induced Hydraulic Fracturing
<b>Prof.</b>	Alhama	Network model for the numerical solution of groundwater flow. Application to partially penetrating retaining structures in geotechnical engineering
<b>Prof.</b>	Alhama	Numerical simulation of seepage maps under dams with sheet piles on their ends
<b>Prof.</b>	Muñoz	Buckling design of submerged arches via shape parameterization
<b>Prof.</b>	Moura	Linear Programming applied to the Capacitated Simultaneous Delivery and Pick-up Problem
<b>Prof.</b>	Escaño	Neurofuzzy estimator with complexity reduction. A solar trough field



CMMSE-2018 CONFERENCE PROGRAM

<b>Room 4:</b> <b>Fixed Point Theory and related applications. // Estimation and control for stochastic systems: theory and applications</b> <i>Chair: P. Kumam &amp; R. Caballero &amp; J. Linares</i>		
<b>Prof.</b>	Khojasteh	New fixed-point theorems via simulation functions and their consequences in generalized metric spaces
<b>Prof.</b>	Khammahawong	On fixed point for generalized almost Hardy-Roger type $\mathcal{F}$ - $\mathcal{S}$ contraction on metric-like spaces
<b>Prof.</b>	Kumam	Proximal point algorithm for nonlinear multivalued type mappings in Hadamard spaces
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION P-19/P-41</b>		
<b>Prof.</b>	Caballero-Aguila	Centralized fusion estimation in sensor networks with random measurement matrices, noise correlation and multiple transmission failures
<b>Prof.</b>	García-Ligero	Filtering algorithm for systems with sensor gain degradation, correlated measurement noises and Markovian delayed observations
<b>Prof.</b>	Linares Pérez	Signal filtering with measurement and transmission stochastic uncertainties: multi-packet processing approach
<b>Prof.</b>	García-Garrido	State estimation problem for multi-sensor systems with correlated random state transition and measurement matrices

**LUNCH BREAK 14:00-16:00**

**Parallel Sessions: 16:00 – 19:00**

<b>Room 1:</b> <b>Uncertainty Quantification and Mathematical Modelling</b> <i>Chairs: J. C. Cortés &amp; R. Villanueva</i>		
<b>Prof.</b>	Cortés	On the computation of the probability density function of the damped pendulum random differential equation
<b>Prof.</b>	Burgos Simón	A procedure to predict the short-term glucose level in a diabetic patient which captures the uncertainty of the data.
<b>Prof.</b>	Santamaría Navarro	Modeling Survival function in Bladder Cancer. Computing the Sum of Two Concatenated Markov Processes.
<b>Prof.</b>	Jornet Sanz	Uncertainty quantification for parabolic equations on a bounded domain
<b>Prof.</b>	Romero Bauset	Solving stochastic boundary heat model using the Finite difference method under mean square convergence
<b>Prof.</b>	Romero Bauset	Solving the Random Pielou Logistic Equation with the Random Variable Transformation Technique
<b>Prof.</b>	Trucchia	The role of the environment in front propagation
<b>Prof.</b>	Villanueva	Evolution and prediction with uncertainty of the bladder cancer of a patient using a dynamic model
<b>Prof.</b>	Santamaría	A Flowgraph Model for Non Muscle Invasive Bladder Carcinoma

CMMSE-2018 CONFERENCE PROGRAM

<b>Room 2: Computational Statistics // General Session</b>		
<b>Chair: J.C. Reboredo // A. Buslaev- M. Yashina.</b>		
<b>Prof.</b>	Argüeso	Logarithmic cumulants for parameter estimation in galaxy distributions
<b>Prof.</b>	Reyes-Santías	On hospital beds and the size of surgery waiting lists: a simulation analysis
<b>Prof.</b>	Roldán	On some properties and applications of a new fuzzy ranking methodology
<b>Prof.</b>	Teodoro	Individual Prolife and Academic Success: A Case Study
<b>Prof.</b>	Reboredo	Twitter sentiment impact on renewable energy stocks
-----Change of session -----		
<b>Prof.</b>	Fomina	Computer Simulation of the Spectra of Cellular Automata of Wolfram on Hamming Spaces
<b>Prof.</b>	Buslaev	On Flow Spectra in ContourBlockChain
<b>Prof.</b>	Pavlovsky	Mathematical models of swarm aspects in traffic flows
<b>Prof.</b>	Gutierrez	Time Valuation in an Optimal Therapy Model for Chronic Myeloid Leukemia

<b>Room 3: Lie Symmetry and Conservation Laws for Nonlinear Differential Equations and Applications (15 min talks)</b>		
<b>Chair: C. Khalique, M Gandarias and M. S. Bruzón</b>		
<b>Prof.</b>	Khalique	A variational formulation approach to a combined KdV–negative-order KdV equation
<b>Prof.</b>	Recio	Conservation laws of a (2+1)-dimensional thin film equation
<b>Prof.</b>	Márquez Lozano	Exact solutions of a one-dimensional viscoelasticity model
<b>Prof.</b>	Ruiz Serván	Involutive pairs of $\lambda$ -symmetries for nth-order ODEs
<b>Prof.</b>	de la Rosa	Lie symmetry analysis of the (2+1)-dimensional KdV equation with variable coefficients
<b>Prof.</b>	Bruzón	Conservation laws for a generalized seventh order KdV equation
<b>Prof.</b>	Camacho	Symmetries and Conservation laws for a GSW Equation
<b>Prof.</b>	Rosa	Symmetries of the classical Burgers-Fisher equation
<b>Prof.</b>	Garrido	Symmetries, solutions and conservation laws for the (2+1) filtration-absorption model
<b>Prof.</b>	Chulián	Symmetry analysis for a generalized Fisher equation with density-space-dependent diffusion
<b>Prof.</b>	Anco	Common errors in finding exact solutions and conservation laws of differential equations

## CMMSE-2018 CONFERENCE PROGRAM

<b>Room 4:</b>		<b>Mathematical Modeling and Computational ODE &amp; PDE</b>
		<b>Chair: Jorge Macias</b>
<b>Prof.</b>	Medina Guevara	Opinion dynamics of indoctrination
<b>Prof.</b>	Vargas Rodriguez	Some novel nonlinear phenomena in fractional wave equations in multiple dimensions
<b>Prof.</b>	Piña- Villalpando	Supratransmission in nonlinear fractional wave systems
<b>Prof.</b>	Loginova	About Multiplicity of Solutions for 2D Problem of Field Optical Bistability
<b>Prof.</b>	Pérez	A bounded and efficient method to solve nonlinear diffusion-reaction equations with Caputo-Riesz derivatives
<b>Prof.</b>	Alhama	Study of the influence of different expressions for the calculation of bound chlorides in reinforced concrete

22:30 FLAMENCO SHOW.

Andalusian Style: singing, guitar playing, dance, vocalizations, handclapping and finger snapping

**The organization invites a drink during the show, please pick up your ticket during the show.**

Friday, July 13, 2018

10:00 – 12:50

### Room 1:

- **Consideration of proposals for: Plenary lectures, Special sessions, of the next year conference.**
- **Qatar proposal to host next year CMMSE. Call for organizing committee. Study of the other locations in Europe.**
- **CMMSE journal. Call for editors & special issues.**

**All suggestions are welcome: please contact J. Vigo-Aguiar**

**POSTER SESSION**

**Tuesday 10, P-1/P-18 & Thursday 12, P-19/P-44**

**The posters will be presented during coffee breaks.**

*Poster format: approx. A0 (841mm x 1188mm)*

---

- P-1. Alonso-Jordá** A Pipeline for the QR Update in Digital Signal Processing
- P-2. Bosque** Analysis of load balancing methods over offload model in Intel Xeon Phi.
- P-3. Peinado** Fast Taylor polynomial evaluation for the matrix cosine.
- P-4. López Granado** Frame level parallel approach for next JEM video standard.
- P-5. Blanco Heras** GPU computation of Attribute Profiles for Remote Sensing Image Classification.
- P-6. Sanchez-Romero** High Performance Parallel Implementation of Optimization Algorithms: a Manycore GPU Approach for comparison between TLBO and Jaya.
- P-7. Ortega Lopez** Computing optimal policies in Perishable Inventory Control using Value Iteration.
- P-8. Migallón** Shared Memory Parallel Jaya Algorithm
- P-9. Llanos Ferraris** Towards a Multi-device Version of the HYFMGPU Algorithm for Hyperspectral Scenes Registration.
- P-10. Orduña Huertas** A New Approach for the Visualization of DNA Methylation Results.
- P-11. Torres** Endohedral metal super-atoms M@Si<sub>16</sub> as new functional materials for applications like hydrogen storage.
- P-12. Ranilla** Experiments Testing the Commutativity of Finite-Dimensional Algebras with a Quantum Adiabatic Algorithm.
- P-13. Suarez** Influence of enzyme production dynamics on the optimal control of a linear unbranched chemical process.

## CMMSE-2018 CONFERENCE PROGRAM

- P-14. Perez** A New Approach for the Visualization of DNA Methylation
- P-15. Ferreira** Classroom activities to understand randomness.
- P-16. Montoro** Online score-informed source separation in polyphonic mixtures using instrument spectral patterns
- P-17. Calvo-Jurado** A Brinkman law in the homogenization of the stationary Navier-Stokes system in a random porous medium.
- P-18. Jiménez-López** On the Linear Processing of  $C^\mu$ -Proper Quaternion Random Signals from Delayed Observations
- P-19. Behl** Convergence of a Stirling-like method for fixed points in Banach spaces
- P-20. Escribano** Hessenberg matrices and compact perturbations of forward shift.
- P-21. Jaimes-Reategui** Noise induce intermittent oscillations death in the synergetic model.
- P-22. Gamez** Numerical iteration method for nonlinear partial Volterra integro--differential equations.
- P-23. Oya** An RKHS Approach to Quaternion Gaussian Signal Discrimination.
- P-24. Garralda-Guillem** Direct and Inverse Perturbed Mixed Variational Problems
- P-25. Berenguer** Minimax Inequalities under Weak Convexity Hypotheses.
- P-26. Ruiz Galán** Minimax Theorems with Boundedness and Applications.
- P-27. Arcos** Population Empirical Likelihood Estimation in Dual Frame Surveys.
- P-28. Vera-Candeas** Score identification based on audio-to-score alignment: complexity considerations.
- P-29. Álvarez Bermejo** Signal Processing for Neurofeedback to Evaluate Learning Tasks in children suffering from ADHD.
- P-30. Rueda** Treating nonresponse in estimation of the distribution function.
- P-31. González Rodelas** Approximation of fuzzy functions by fuzzy interpolating bicubic splines.
- P-32. López Ortí** A Mathematica package to compute the product of spherical harmonics.

## CMMSE-2018 CONFERENCE PROGRAM

- P-33. Pertegal-Felices** Didactics of Mathematics Profile of Multimedia Engineering Students.
- P-34. Navascués** A generalization of Fourier interpolation.
- P-35. Navarro** On the numerical integration of a planetary ring.
- P-36. Castillo-Gutiérrez** Confidence bands in Normal Q-Q Plots based on the asymptotic distribution of the order statistics
- P-37. Olmo-Jiménez** EM algorithm for an extension of the Waring distribution
- P-38. Elsohaly** Stochastic Volterra Difference Problem Using Lyapunov functionals construction under  $k.k^2$  and  $k.k^4$ .
- P-39. Ibañez** A spline-based functional study of dielectric current dependence on resistive memories
- P-40. Teodoro** Numerical Algorithms to Solve Some Mixed Type Functional Differential Equations.
- P-41. Alshomrani** Ball convergence for a family of eighth-order iteration functions under hypotheses only of the first-order derivative
- P-42. Saleh** An optimal reconstruction of Chebyshev-Halley type methods for nonlinear equations having multiple zeros.
- P-43. Ramos** Homotopy Perturbation Method for solving fractional Volterra-Fredholm integro-differential equations.
- P-44. Ramos** On some discrete forms of the Euler-Lagrange equation.