

Program of the 2017 International Conference on Computational and Mathematical Methods in Science and Engineering

Costa Ballena, Cádiz, Spain
July 4– 8, 2017

- From the reception level (lobby):
 - Rooms 1 & 2 are one floor up.
 - Rooms 3 & 4 are one floor down.
 - All the posters are outside lobby (July 5 & 7).
- All talks 20 min.
- Registration OPEN:
 - ✓ July 3: 19:45-20:45
 - ✓ July 4 and 5: 9:30 – 10:30 & 20:30 – 21:00
 - ✓ July 6: 20:30 – 21:00
 - ✓ July 7: 9:30 – 10:30
- Each night one social activity:
 - ✓ July 4: Musical Performance
 - ✓ July 5: Sherry degustation
 - ✓ July 6: Excursion
 - ✓ July 7: Flamenco Show

CMMSE-2017 CONFERENCE PROGRAM

Tuesday, July 4, 2017

Registration: 8:30 – 10:00

Room 1: Welcome to Participants & Plenary Lecture 9:15 – 10:30

A Mathematical Model for the Propagation of Bovine Tuberculosis in Wild Animals

Ezio Venturino – Univ. of Torino, Italy

Chair: N. Stollenwerk

Parallel Sessions: 10:30 – 14:00

Room 1:		Bio-Mathematics
		Chair: N. Stollenwerk
Prof.	Martins	<i>The reinfection threshold in the SIRI model</i>
Prof.	Pinto	<i>Game theory analysis in a rumor spreading model based on the SIR epidemic model</i>
Prof.	Sadyrbaev	<i>Attraction in network describing systems</i>
Prof.	Cavoretto	<i>Surface approximation of basins of attraction through RBF interpolation schemes</i>
Prof.	Liang	<i>Mathematical Modelling the Spread of Zika and Microcephaly in Brazil</i>
Prof.	Trejos	<i>Continuous and discrete models for bovine Babesiosis disease</i>
Prof.	Venturino	<i>A mathematical model for a diseased orange tree</i>
Prof.	Filipe	<i>The SHAR model and its effective infection rate: analytical results on severe versus asymptomatic infection</i>

Room 2:		Numerical Methods for Solving Non Linear Problems (15 min)
		Chair: J.R. Torregrosa
Prof.	Gutierrez	<i>An acceleration of the continuous Newton's method</i>
Prof.	Behl	<i>An optimal scheme for multiple roots of nonlinear equations with eighth-order convergence</i>
Prof.	Ezquerro	<i>Auxiliary Point on the Semilocal Convergence of Newton's Method</i>
Prof.	Rainer	<i>Ball convergence of a sixth-order Newton-like method based on means under weak conditions</i>
Prof.	Cordero	<i>Stability analysis of a parametric family of seventh-order iterative methods for solving nonlinear problems</i>
Prof.	Seladji	<i>Polyhedron Over-approximation for Complexity Reduction in Static Analysis</i>
Prof.	Trillo-Moya	<i>Curvature study for PPH reconstruction operator and applications to smoothing splines</i>
Prof.	Gupta	<i>Local convergence of a family of methods for multiple roots of nonlinear equations</i>

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Room 3:		Analytical and Numerical solution of Differential Equations
Chair: H. Ramos		
Prof.	Ramos	<i>An Almost Second Order Uniformly Convergent Solution for a Two-parameter Singularly Perturbed Problem with Discontinuous Convection Coefficient and Source Term</i>
Prof.	Dosiyev	<i>Difference method of fourth order accuracy for the Laplace equation with multilevel nonlocal conditions</i>
Prof.	Girejko	<i>On viable solutions of differential inclusions with fractional derivative without singular kernel</i>
Prof.	Silva	<i>A Quadrature-Difference Method for systems of second order Fredholm Integro-Differential Equations</i>
Prof.	Romero	<i>Computing the first probability density function of non-autonomous linear random differential equations by Karhunen-Loève expansion</i>
Prof.	Amat	<i>Approximation of polynomial Hamiltonian systems using a variational technique</i>
Prof.	Fang	<i>Multidimensional adapted RKN methods for multi-frequency oscillatory systems</i>
Prof.	Pérez	<i>Stabilization of switched systems with state-dependent switching noise</i>

Room 4:		Computational Linear & Non Linear Algebra.
Chair: Luca Bergamaschi		
Prof.	Marin	<i>Preconditioners for rank-deficient least squares problems</i>
Prof.	Martínez	<i>Spectral preconditioners for the efficient numerical solution of sequences of linear systems</i>
Prof.	Ozaki	<i>Generation of Test Matrices with Exact Singular Values for Numerical Computations</i>
Prof.	Alventosa	<i>Fast Iterative Block QR Updating</i>
Prof.	León	<i>Energy-efficient QR Factorization on FPGAs</i>
Prof.	Ogita	<i>Preconditioning of Linear Systems Using LU Factors</i>
Prof.	García Zapata	<i>Spectral Decomposition of Skew-symmetric Matrices and Partitioning of Oriented Graphs</i>
Prof.	Abderraman	<i>Linear-time solvers for linear systems with sparse and structured matrices of interest in applications</i>
Prof.	Bergamaschi	<i>A two-stage Jacobi-Davidson method with spectral preconditioners for the eigensolution of large SPD matrices</i>

LUNCH BREAK 14:00 – 16:00

Room 1: Technical Presentation 16:00 – 16:55

Microsoft Azure – HPC in the Cloud for Research

Mike Kiernan – Microsoft & University Liverpool UK

Chair: Tomás Margalef

Parallel Sessions 17:00 – 19:00

Room 1:		Bio-Mathematics.
		Chair: E. Venturino
Prof.	Ghaffari	<i>Optimal Control with linear versus quadratic cost functions in disease prevention: From analytically treatable toy models to numerical analysis</i>
Prof.	Kaslik	<i>Dynamics of a Four-Dimensional Hypothalamic-Pituitary-Adrenal Axis Model with Distributed Delays</i>
Prof.	Paliaga	<i>On invariant manifolds of saddle points for 3D multistable models</i>
Prof.	Poskrobko	<i>On photosynthesis process with the interaction between two types of leaves</i>
Prof.	Gonzalez-Olivares	<i>A predator-prey model with a non-differentiable functional response</i>
Prof.	Stollenwerk	<i>Effective parameters, likelihoods and Bayesian model selection in application to epidemiological models: from SHAR to effective SIR models</i>
Prof.	Gonzalez-Olivares	<i>A Leslie-Gower type predation model considering double Allee effect on prey and a sigmoid functional response</i>

Room 2:		HPC (15 min)
		Chair: D. Llanos
Prof.	Belloch	<i>Evaluating sound source localization on Multi-core and Many-core platforms</i>
Prof.	Llados	<i>Efficient Consistency Library for Multiple Sequence Alignment Tools</i>
Prof.	Fumero	<i>OpenCL Code Generation for Mobile Devices</i>
Prof.	García-Bernabé	<i>Efficient Parallel Stream Compaction on an Extremely Low-Cost SDC Cluster</i>
Prof.	Puertas	<i>Enhancing Molecular Shape Comparison by a Parallel Global Evolutionary Algorithm</i>
Prof.	Ruiz	<i>High-Performance Computing for Optimizing High-Pressure Thermal Treatments in Food Processing</i>
Prof.	Díaz	<i>Rate-Distortion/Complexity Analysis of Video Compression with Capability beyond HEVC</i>
Prof.	Bonchis	<i>Improved parallel simulations for fractional-order systems using HPC</i>
Room 2: CAPAP-H4 Network Meeting		

Room 3:		Numerical Methods for Solving Non Linear Problems
		Chair: A. Cordero
Prof.	Torregrosa	<i>Memory and Dynamics for a family of King-type iterative methods</i>
Prof.	Guasp	<i>Stability study of a parametric class of iterative methods for solving nonlinear models</i>
Prof.	Magreñán	<i>An efficient optimal family of sixteenth order method for nonlinear models</i>
Prof.	Ruiz	<i>A variational approach for chemical kinetics: A case study</i>
Prof.	Zafar	<i>Optimal Iterative Methods for Finding Multiple Roots of Nonlinear Equations using Free Parameters</i>
Prof.	Teruel	<i>High order iterative methods with memory for nonlinear equations.</i>
Prof.	Legaz	<i>Computer Aided Ship Analysis using Subdivision Schemes</i>
Prof.	Kumar	<i>Convergence of a two-step iterative method for non-differentiable operators in Banach</i>

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spaces

Prof. Padcharoen *Algorithm based on splitting deblurring and denoising for image recovery*

Room 4:

Computational Linear & Non Linear Algebra.

Chair: Peter Alonso

Prof. Falcón *Computing the sets of totally symmetric and totally conjugate orthogonal partial Latin squares by means of a SAT solver*

Prof. Terao *Verification of positive definiteness using approximate inverse matrices of computed Cholesky factors*

Prof. Tomeo *Inversion of infinite reduced Hessenberg matrices and operators*

Prof. Nuñez *Graded contractions of filiform Lie algebras*

Prof. Ceballos *(Pseudo)digraphs and Leibniz algebra isomorphisms*

22:30 MUSICAL PERFORMANCE

The musicians interact with the public in **English & Spanish**

Wednesday, July 5, 2017

Room 1: Technical Presentation 09:00 – 09:55

Running Quantum Algorithms on a Quantum Processor

Francisco J Galvez Ramirez, IBM Software

Chair: Pedro Alonso-Jordá

Parallel Sessions: 10:00 – 14:00

Room 1:		HPC. (15 min) / Mathematical Models on Transport.
		Chair: Pedro Alonso-Jordá
Prof.	P. Sanjuan	<i>Efficient parallel implementation of Active-Set Newton Algorithm for Non-Negative Sparse Representations</i>
Prof.	M. Simarro	<i>Parallel SUMIS Soft Detector for MIMO Systems on Multicore</i>
Prof.	M. Paoletti	<i>Yinyang K-means clustering for hyperspectral image analysis</i>
Prof.	M. Haut	<i>Cloud implementation of logistic regression for hyperspectral image classification</i>
Prof.	L. Parrilla	<i>Hardware implemented ECC co-processor for High-Performance Cryptographic Servers</i>
Prof.	Cortes	<i>A Multi-physics Forest Fire Spread Model on Multi-core Systems</i>
Prof.	Calvo Cruz	<i>A parallel genetic algorithm for continuous and pattern-free heliostat field optimization</i>
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-1/P-19		
Prof.	R. Nozal	<i>Towards co-execution of massive data-parallel OpenCL kernels on CPU and Intel Xeon Phi</i>
Prof.	Paraschiv	<i>Texture orientation detection over parallel architectures: a qualitative overview</i>
Prof.	Buslaev	<i>Mathematical Analysis and Flows on Contour Networks</i>
Prof.	Sicilia	<i>Selection and optimized sizing methodology of logistics associated with hydrogen systems</i>
Prof.	Roanes-Lozano	<i>Determining the Best Routes on Dual Gauge Railway Networks using Graphs</i>
Prof.	Moreno	<i>A proposal for computing congestion from trajectories</i>

Room 2:		Estimation and control for stochastic systems: theory and applications (10:00h-12:40h) / Interpolation & Approximation. (12:40-14:00)
		Chair: R. Caballero / R. Cavoretto
Prof.	J. Linares	<i>Centralized fusion estimation with random one-step delays and non-consecutive packet dropouts in transmission</i>
Prof.	García-Ligero	<i>Recursive filtering algorithm from observations with delays modeled by finite state Markov chains</i>
Prof.	García	<i>Distributed fusion filtering for multi-sensor systems with correlated random parameter</i>

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<i>matrices and noises</i>		
Prof.	Frías	<i>Nonparametric wavelet-based estimation from strongly spatially correlated data</i>
Prof.	Caballero	<i>Multi-sensor distributed fusion filtering from observations with different random transmission failures</i>
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-1/P-19		
Prof.	Remogna	<i>Numerical solution of surface integral equations based on spline quasi-interpolation</i>
Prof.	Bizzarri	<i>Triangular PN patches subject to surface-area constraints</i>
Prof.	Zucker	<i>Approximation for the BWC Problem</i>
Prof.	Lavicka	<i>Branching pieces of rational skins from polynomial MOS patches</i>
Prof.	Chaturanta but	<i>Accelerated POD least-squares approach for missing data reconstruction</i>
Prof.	Mennouni	<i>Kantorovich method to solve an integral equation arising from a problem in mathematical biology</i>
Prof.	Cavoretto	<i>An efficient technique for the interpolation on compact triangulations</i>

Room 3:		
General Session I. / Hypercomplex methods in Applied Science		
Chair: M. Lampart / Klaus Gürlebe		
Prof.	Markakis and Mr. Douris	<i>Hopf and homoclinic bifurcation of a new SEIRS epidemic model</i>
Prof.	Halfar	<i>Dynamics of the FK3V cardiac cell model</i>
Prof.	Bourdon	<i>Stoichiometric Network Analysis (SNA) in Reaction Networks Yielding Spontaneous Mirror Symmetry Breaking in Prebiotic Atmosphere</i>
Prof.	Almeida	<i>Scrap Optimization in an Aluminum Extrusion Industry</i>
Prof.	Lampart	<i>Double-pendulum with both-sided stops simulation analysis</i>
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-1/P-19		
Prof.	Brandibur	<i>Stability analysis of two-component incommensurate fractional-order systems and applications to the FitzHugh-Nagumo model</i>
Prof.	_____	<i>_____ change of session _____</i>
Prof.	Malonek	<i>On Vietoris' number sequence and combinatorial identities with quaternions</i>
Prof.	Bernstein	<i>Quasi-monogenic functions</i>
Prof.	Hitzer	<i>General one-sided Clifford Fourier transform, convolution products in the spatial and frequency domains, and auto-correlation theorems</i>
Prof.	De Schepper	<i>A Cauchy formula for hermitian and quaternionic monogenics</i>
Prof.	Morais	<i>Quaternionic Mathieu functions for the heat-conduction equation in elliptical confocal coordinates</i>

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Room 4:

Multivariate Representations For Discrete And Continuous Mathematical Objects

Chair: Metin Demiralp

Prof.		Probabilistic evolution theory for explicit autonomous ordinary differential
	Gozukirmizi	equations: recursion of squarified telescope matrices and optimal space extension
Prof.		Digital Image Sequence Processing via a New Decomposition Method: Tridiagonal
	Gündoğar	Folmat Enhanced Multivariance Products Representation (TFEMPR)
Prof.		Separate Node Ascending Derivatives Expansion (SNADE) on a Sequence of Nodes
	Bodur	Alternating Between Two Values
Prof.		Recursion Based Sensitivity Coefficient Determination for Probabilistic Evolution
	Kirkin	Theoretical (PREVTH) Solutions to Explicit Autonomous Ordinary Differential
		Equations
Prof.		A Probabilistic Evolution Theoretical (PREVTH) Approach to Quantum Evolver
	Kalay	Dynamical Equations for Singular Hamiltonians: Fluctuationlessness Approximation
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-1/P-19		
Prof.		Initial Wavefunction Construction for Probabilistic Evolution Theoretical (PREVTH)
	Kalay	Evolver Dynamics via PREVTH Parameters and Initial Wave Function Optimization
Prof.		Probabilistic Evolution Theoretical Formulation of Anharmonic Symmetric Quantum
	Bayat Özdemir	Oscillator by Using Quantum Evolver Dynamics
Prof.		Tridiagonal Kernel Enhanced Multivariance Products Representation (TKEMPR) for
	Okan	Univariate Linear Operators: Continuous Singular Value Decomposition
Prof.		Function Approximation via Contour Integration and Tridiagonal Kernel Enhanced
	Gürvit	Multivariance Products Representation (TKEMPR)
Prof.		Padé Approximants to Conicality Based Probabilistic Evolution Theory (PREVTH)
	Tataroğlu	Solutions: Two Classical Particles Systems Interacting via Central Forces
Prof.		Function Approximation via Contour Integration and Tridiagonal Kernel Enhanced
	Baykara	Multivariance Products Representation (TKEMPR), both Applied to the Remainder
		Term of Taylor Expansion, Expressed in Integral Form

LUNCH BREAK 14:00 – 16:00

Room 1: Plenary Lecture 16:00 – 17:00

Accurate solution of Schrodinger Equation for electron on spheres

Peter Gill - Australian National University (ANU) Australia

Chair: Peter Schwerdtfeger

Parallel Sessions 17:00 – 20:00

Room 1:		<i>New advances in statistical methodologies.</i>
Chair: Felipe Marques		
Prof.	Felgueiras	On Variance Equality for Gaussian Mixtures
Prof.	Hamedani	Characterizations of Probability Distribution Through Sub-Independence Max-Sub-Independence and Conditional Sub-Independence
Prof.	Santos	On a sufficient condition for commutative orthogonal block structure
Prof.	Nunes	Random sample sizes in one-way fixed effects models
Prof.	Neves	Computational procedures for parameter estimation in extremes: a review
Prof.	Martins	Glutamate dehydrogenase enzyme immunoassays: a meta-analysis with a Bayesian approach
Prof.	Santos	Binary classification based on a quantitative variable - an accuracy comparison by simulation
Prof.	Fonseca	Inference in models with two-layer block compound symmetry covariance structure
Prof.	Burrage	Unlocking datasets by calibrating populations of models to data density: a study in atrial electrophysiology
Prof.	Marques	Expansions of ratios of gamma functions – an application to the distribution of the likelihood ratio test statistic used to test the equality of several covariance matrices

Room 2:		<i>Rank structured matrices: recent developments and new perspectives.</i>
Chair: Luca Gemignani		
Prof.	Gemignani	Rational Interpolation, Newton Correction and Zero-Finding Methods
Prof.	Boito	Efficient Solution of Shifted Quasiseparable Systems and Applications
Prof.	Novati	Some notes on the convergence of GMRES for compact operator equations
Prof.	Aurentz	A Fast and Stable Square Root Free Unitary QR Algorithm
Prof.	Massei	Numerical quasiseparable preservation in matrix functions
Prof.	Robol	Solving large scale quasiseparable Lyapunov equations
Prof.	Eidelman	Improved bisection eigenvalue method for band symmetric Teoplitz matrices
Prof.	Carapito	A class of matrices having a set of block diagonal Lyapunov solutions satisfying \mathcal{R} -contractivity

Room 3:		<i>Mathematical Modeling and Computational PDE</i>
Chair: Tim Sheng		
Prof.	Bashirov	Bigeometric Complex Calculus
Prof.	Gavete	Solving second order non-linear parabolic pde's using generalized finite difference method (GFDM)
Prof.	Ureña	An improved h-adaptive method with different applications for the generalised finite differences method in 2D and 3D
Prof.	Salete	Wave propagation through linear viscoelastic media using the Generalized Finite

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		Difference Method
Prof.	Clavero	<i>An efficient numerical method for 2D systems of singularly perturbed parabolic reaction-diffusion equations</i>
Prof.	Abdul-Ameer	Long Gas Pipeline Mathematical Modelling
Prof.	Loginova	Conservative finite-difference scheme for the 2D problem of femtosecond laser pulse interaction with kink structure of high absorption in semiconductor
Prof.	Guardasoni	Energetic BEM for soft and hard scattering of 2D damped waves by open arcs
Prof.		

Room 4:

Multivariate Representations for Discrete And Continuous Mathematical Objects (50 min) / Computational Methods for Optimization

Chair: Metin Demiralp / J. Aledo

Prof.	Demiralp	Multivariate Representations for Discrete And Continuous Mathematical Objects conclusion and future work.(50 min.) change of session
Prof.	Aledo	Approaching the Rank Aggregation Problem by Local Search-based Metaheuristics
Prof.	Arana-Jiménez	Nondominated solutions in a fully fuzzy linear programming problem
Prof.	Padcharoen	Algorithms for accretive operators with applications to convex minimization problem
Prof.	Roselló Ferragud	Some results about randomized binary Markov chains: Theory and computing
Prof.	Gutierrez Diez	Time valuation in cancer optimal therapies: a study of chronic myeloid leukemia

22:15 SHERRY DEGUSTATION at the Garden:

After dinner, We will taste 3 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. All the wines will be served by a professional cellar master.

A speech about Wolfgang will close this event

Thursday, July 6, 2017

8:00—14:00 Excursion

(Breakfast opens at 7:15 for participants)

Room 1: Plenary Lecture 16:00 – 17:00

Beltrami equation and its operators in hypercomplex analysis and some remarks on a subclass of quasi-conformal mappings

Wolfgang Sproessig Germany

Chair: H. Malonek

Parallel Sessions 17:00 – 20:00

Room 1:		Hypercomplex methods in Applied Sciences
		Chair: H. Malonek
Prof.	Kravchenko	Transmutation operators: construction and applications
Prof.	Alkan	Decomposition of the generating functions for the generalized Bernoulli polynomials
Prof.	Brackx	Radial and Angular Derivatives of Special Classes of Distributions
Prof.	Hommel	Elementary discrete holomorphic functions
Prof.	Cacao	Matrices related to orthogonal hypercomplex polynomial systems
Prof.	Simsek	Remarks and observations on (q-) Bernstein Basis functions
Prof.	Bock	On monogenic functions with line singularities
Prof.	Bisconti	Existence theorems and weak attractors for quasicrystal dynamics with non-linear gyroscopic effects

Room 2:		Recent trends in the analysis and computations of nonlinear PDE
		Chair: Tim Sheng
Prof.	Macias-Díaz	An energy method for nonlinear Riesz space-fractional wave equations
Prof.	Gallegos	A structure-preserving computational method in the simulation of the dynamics

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		of cancer growth with radiotherapy
Prof.	Vargas-Rodríguez	Traveling-wave solutions of a generalized damped wave equation with time-dependent coefficients through the trial equation method
Prof.	Ayala	A stochastic mathematical model of pre-diagnostic glioma growth based on blood glucose levels
Prof.	Macias-Díaz	A numerical method to simulate the dynamics of nonlinear hysteresis in a fractional beta-Fermi-Pasta-Ulam lattice
Prof.	Macias-Díaz	A finite-difference method that preserves the dissipation of energy of a fractional sine-Gordon equation
Prof.	Belhamadia	Alternation Direction Implicit Method for the Aliev-Panfilov Monodomain Model

Room 3:

Computational Finance & Economics.

Chair: Iñigo Arregui and Luis Ortiz-Gracia

Prof.	Koleva	A Numerical Study of a Semi linear Parabolic System of Optimal Regime-Switching
Prof.	Vulkov	Fast Numerical Method for Solving Delta Greek for Non-linear Option Pricing Models
Prof.	Arregui	Numerical methods for nonlinear option pricing models with variable transaction costs
Prof.	Suárez Taboada	New numerical methods for PDE models related to pricing and expected lifetime of an extraction project
Prof.	Guardasoni	Numerical Pricing of Geometric Asian Options with Barriers
Prof.	Tangman	A Legendre-Laguerre Spectral Approximation for European Options Under the Time Fractional Black-Scholes Model
Prof.	Ortiz Gracia	Stochastic liquidity horizon in market risk
Prof.	Millán	Nash equilibria and negotiation with quadratic functions
Prof.	Leitao	The data-driven COS method

Room 4:

Numerical Methods in Mathematics and Mechanics

Chair: Mihai Dupac

Prof.	Dupac	3D trajectory generation for rotating extensible manipulators using zenithal gnomonic projection and polar piecewise interpolants
Prof.	Chugaynova	Special discontinuities in models of continuum mechanics
Prof.	Constanda	The Neumann Problem for Bending of Elastic Plates
Prof.	El Mokhtari	Non uniform quasi-interpolation for solving nonlinear Fredholm integral equations of the second kind
Prof.	Jalili	Augmenting Complex Networked Systems under Improved Pinning Controllability Condition
Prof.	Il'ichev	Stability of running localized waves in fluid-filled elastic membrane tubes: weakly nonlinear approach
Prof.		

Friday, July 7, 2017

Room 1: Plenary Lecture 09:00 – 09:55*On Numerical Stabilities of a Decomposed Compact Method for Highly Oscillatory Nanophotonical and Metamaterials Applications***Tim Sheng – Baylor University, USA***Chair: J. Macias-Díaz***Parallel Sessions: 10:00 – 14:00**

Room 1:		Mathematics meets Chemistry (30 min talks)
Chair: Ian Hamilton		
Prof.	Otto Ori	Topological Effects in 1-Pentagon Carbon Nanocones. Migrating Faces and Magic sizes
Prof.	Schwerdtfeger	From Graphene to Graphyne, Fullerenes, Fulleroids, Gaudienes and their Golden Duals
Prof.	Cioslowski	One-electron densities of freely rotating Wigner molecules
Prof.	Loos	Dressing the electron-nucleus cusp in single-determinant wave functions
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-20/P-40		
Prof.	Pahl	Lattice Sums (Lennard-Jones Ingham Coefficients) for Cubic and Hexagonal Lattices
Prof.	Cerruela García	An Ensemble Approach for in silico Prediction of Ames Mutagenicity

Room 2:		Recent trends in the analysis and computations of nonlinear PDE
Chair: J. Macias-Díaz		
Prof.	Portillo	High order in space and time discretization for the numerical solution of anisotropic wave equations
Prof.	Duque	Hermite finite element method for nonlinear Black-Scholes equation governing European options
Prof.	Reguera	Looking for efficiency when avoiding order reduction in nonlinear problems with Strang splitting
Prof.	Egorova	Wildland fire propagation modelling: fire-spotting parametrisation and energy balance
Prof.	Marusic- Paloka	Effective fluid flow through corrugated pipe and the Darcy-Weisbach law
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-20/P-40		
Prof.	Tomasiello	Finite-time consensus of uncertain multi-agent systems
Prof.	Spadoni	A comparison in numerical solution of Richards equation
Prof.	Chávez	A positive and linear approach to solve some nonlinear fractional diffusion-reaction equations
Prof.	Meral	Numerical Solution of a Cancer Invasion Model Using DRBEM and FDM

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Room 3: Statistical Modeling and Applications / Fixed Point Theory in various abstract spaces and related applications.		
Chair: Dolores Jiménez / P. Kumam		
Prof.	Barranco Chamorro	Some statistical approaches to deal with change and confusion matrices obtained from spatial data
Prof.	Shmerling	Acceptance Tail Method for Sampling from Unimodal Distributions
Prof.	Alba-Fernández	A test for the homogeneity of confusion matrices
Prof.	Gerassis Davite	Decision making modelling process to optimize the power unit maintenance in mining excavators
Prof.	Jimenez-Gamero	Null distribution approximations for a class of statistics for testing independence
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-20/P-40		
Prof.	Chuensupantharat	Some Caristi's fixed point theorem in partial ordered metric spaces endowed with graph
Prof.	Roldan López	Fixed point theorems by combining Jleli and Samet's, and Branciari's inequalities
Prof.	Martinez-Moreno	Convergence and stability of a modification of Jungck-Ishikawa iteration sequence
Prof.	Martinez	<i>Cyclic codes as function field codes</i>

Room 4: Processing, modelling, and describing time series		
Chair: Juan Moreno García		
Prof.	Martinovič	Low memory computation algorithm of recurrence plot of recurrence plots for long time series
Prof.	De la Cal	An study on the distances of an extension of the SMOTE algorithm for Time Series
Prof.	Enciso	Closed sets enumeration: a logical approach
Prof.	Medina	Multi-adjoint object-oriented concept lattices in the resolution of multi-adjoint relation equations
Prof.	Ojeda	Relation-based Galois-connections: towards the residual of a relation
11:40 — 12:10 COFFEE BREAK & POSTER SESSION P-20/P-40		
Prof.	Rubio-Manzano	Automatic generation of textual reports from thermal comfort data by using a statistical procedure
Prof.	Romero	Linguistic Description of Behaviors based on Fuzzy Deformable Prototypes. A Study Case using Time Tracking logs
Prof.	Rodríguez-Benitez	Analysis of time series from H264/AVC compressed domain for video summarization
Prof.	Rosado	Measuring distance between subsequences in temporal series, for pattern recognition using particle swarm optimization
Prof.		

LUNCH BREAK 14:00-16:00

Parallel Sessions 16:00 – 20:00

Room 1:		Mathematics meets chemistry (30 min talks)
Chair: Peter Schwerdtfeger		
Prof.	Avery	Solving wave equations on fullerene surfaces
Prof.	Hamilton	Helical Gold Nanorod and Chiral Gold Nanocage Structures
Prof.	Martínez Pérez	New Lower Bounds for the Geometric Arithmetic index
Prof.	Rodríguez García	On the first general Zagreb index

Room 2:		Fixed Point Theory in various abstract spaces and related applications.
Chair: Juan Martínez Moreno		
Prof.	Khojasteh	On quasi-contractive multi-valued mappings' open problem in complete metric spaces
Prof.	Phiangsungnoen	Fuzzy fixed point theorems for (β_M, ψ, ξ) fuzzy contractive mappings
Prof.	Kumam	Fixed Point Approach to Solution Existence of Differential Equations
Prof.	Sombut	Common fixed point theorems of Pre $\check{\mathbf{s}}$ - \ast -algebra type in \mathcal{C}^{\ast} -algebra-valued metric spaces
Prof.	Kongban	Common Random Fixed Point Theorems for Weakly Compatible Mapping via Implicit Relation in Cone Random Metric Spaces
Prof.	Simões	Hyers-Ulam and Hyers-Ulam-Rassias Stability of a Class of Integral Equations on Finite Intervals
Prof.	Sumalai	Coupled coincidence and coupled common fixed point theorems on a fuzzy metric space with a graph
Prof.	Seangwattana	A generalized strong Borwein-Preiss variational principle in a complete metric space
Prof.	Mongkolkeha	Optimal approximate solution for optimization problems via best proximity point theorem and variational principle in generalized distance functions

Room 3:		Statistical Modeling and Applications / General Session II.
Chair: M. V. Alba-Fernández / J. Valverde		
Prof.	Reboredo	Multivariate conditional quantile dependence between energy prices and clean energy stock returns
Prof.	Olmo-Jiménez	A Gaussian biparametric model for over- and underdispersed count data
Prof.	Correia	LPG Demand Forecast using time series and multivariate linear regression models
Prof.	Borges	Modeling CA15-3 longitudinal progression in patients with breast cancer recurrence
Prof.	Reyes-Santías	Estimating hospital production functions through flexible regression models
Prof.	_____	_____ change of session _____
Prof.	Sir	Smooth Cubic Pythagorean Hodograph Splines
Prof.	López-Ortí	A consistent second order theory about the equilibrium figures of rotating celestial bodies

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Room 4:		Computational methods for fluid flow.
		Chair: J. Bergada
Prof.	Zhang	Lattice Boltzmann Method for Flow and Heat Transfer in Periodic Systems
Prof.	Kanetsuki	Efficient local smoothed particle hydrodynamics with precomputed patches
Prof.	Aydin	DRBEM Solutions of the Direct and Inverse Formulations of Cauchy Problem for the Magneto-hydrodynamic Duct Flow
Prof.	Guler Eroglu	Variational Multiscale Proper Orthogonal Decomposition with Modular Regularization
Prof.	Taboada-Vázquez	A new LES model using nonlinear viscosity
Prof.	Baghaei	Fluidic actuator performance variation via internal dimensions modifications
Prof.	Soria	Numerical Investigations of Synthetic Jet Actuators
Prof.	Bergada	Parametric Analysis of Active Flow Control using Steady Suction and Steady Blowing

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.

Saturday, July 8, 2017

Parallel Sessions: 9:30 – 14:00

Room 1:		Lie Symmetry Analysis and Conservation Laws for Nonlinear D.E.
		Chair: M. L. Gandarias & M. S. Bruzón
Prof.	Kaya	Group analysis method for fractional differential equation
Prof.	Rosa	Lie Symmetries for a generalized fourth order nonlinear wave equation
Prof.	Camacho Moreno	Symmetry analysis for a generalized dissipative Dullin-Gottwald-Holm equation with arbitrary coefficients
Prof.	Garrido	Nonclassical symmetries, potential symmetries and conservation laws of the generalized Drinfeld -Sokolov equations
Prof.	De La Rosa	On a generalized variable-coefficient Gardner equation with forcing term
Prof.	Recio	Conservation laws and symmetries for a generalized Rosenau-RLW equation
Prof.	Gandarias	Equivalence transformations and symmetry analysis for a generalized Fisher equation
Prof.	Bruzón	On the similarity solutions and conservation laws of the Cooper-Shepard-Sodano equation

Room 2:		New Trends on Boundary Value Problems
		Chair: Feliz Minhós
Prof.	Minhós	On third order generalized periodic impulsive problems
Prof.	Frigon	Existence and multiplicity results for systems of first order differential equations
Prof.	Enguica	Positive solutions for second order BVP's with sign changing Green's functions
Prof.	Sadyrbaev	Note on resonant problems
Prof.	Saavedra	Existence of solutions for a nonlinear simply supported beam equation
Prof.	Fernández Tojo	Differential systems with reflection and matrix invariants
Prof.	López Somoza	Existence of unbounded solutions of IVPs with phi-Laplacian

Room 3:		Non Newtonian Calculus. / Education Research in Mathematics and Engineering
		Chair: Fernando Córdova-Lepe
Prof.	Bashirov	Bigeometric Complex Calculus
Prof.	Córdova-Lepe	Linearity and its algebra in the bi-geometrical context
Prof.	Pavez	Introductory elements for the development of a multiplicative statistic
_____ change of session _____		
Prof.	Sarría	New tool to teach advanced mathematics
Prof.	Orcos	Holographic tools for cell division contents learning
Prof.	Arís	The importance of robotics in early childhood education: first step of an intervention proposal using BeeBots

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Room 4:		<i>Flow Control Active-Passive / Metaheuristics in science and engineering</i>
		<i>Chair: J. Bergada / A. Tallón</i>
Prof.	An Bo	Square cylinder with passive flow control
Prof.	Bergada	NACA 2412 performance modification via using AFC.
Prof.	Rodríguez	Boundary layer flow control using synthetic jets on the flow over a NACA 0012 airfoil
Prof.	Tallón	Feature selection by means of genetic algorithms
Prof.	Sánchez	Deep Learning for Variable-Length Handwritten Word Prediction

In the Garden: POSTER SESSION
Posters will be presented during coffee breaks.
Poster format: approx. A0 (841mm x 1188mm)

Wednesday 5 June, Posters P 1 - P 19.

- P-1.** Ruiz Galán Recent Convex Tools for Nonlinear Programming
- P-2.** Garralda A Minimax Approach for the Study of Constrained Variational Equations
- P-3.** Numerical two dimensional modelling of PIN diode using finite different time domain
Labiod
- P-4.** Labiod Two-dimensional numerical modeling of submicrometer SiGe HBT transistors
- P-5.** Márquez Lozano Lie symmetries and Conservation laws for the viscous Cahn-Hilliard equation
- P-6.** López Ramos An Active Attack on CLIQUES
- P-7.** Llanos Analysis of OpenACC Performance Using Different Block Geometries
- P-8.** Migallón A parallel multi-step Power method for computing PageRank
- P-9.** Peinado A Fast Implementation of Matrix Trigonometric Functions Sine and Cosine
- P-10.** High Performance Parallel Implementation of the Jaya Optimization Algorithm: a Manycore GPU Approach
Migallón
- P-11.** GPU Classification for Hyperspectral Images based on Convolutional Neural Networks
B. Heras
- P-12.** Martínez Heterogeneous CPU Plus GPU Tile-Based Approach for HEVC
- P-13.** Orduña Enabling the Use of Fish Tank Virtual Reality Systems with Curved Monitors
- P-14.** Alonso Scaling Probabilistic Record Linkage on Multicore and Multi-GPU Systems
- P-15.** Ortega HPC Tool for Multidimensional Scaling
- P-16.** Díaz A Distributed and Flexible Platform for Large-Scale Data Storage in HPC Systems
- P-17.** Alonso Pivoting strategies and almost strictly sign regular matrices
- P-18.** Ranilla Improving Energy Efficiency in Virtual Data Centers: A real-world case study
- P-19.** Mathematical model for predicting the biomass growth of
Córdova-Lepe Mytilus chilensis (Hupe 1954) in suspension cultures

Friday 7 June, posters 20-41.

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|--------------|-----------------------|---|
| P-20. | Navascués | Two dimensional approximation of Jackson type |
| P-21. | Barrera | Hermite interpolation by many-knot cubic splines: error analysis |
| P-22. | Estudillo
Martínez | Influence of plotting positions on the Michael's acceptance regions in a Normal Q-Q Plot |
| P-23. | Suarez | General Analytical Laws for Metabolic Pathways |
| P-24. | Calvo-Jurado | Effects of a polynomial field prescribed in an unbounded domain with an elliptical isolated inhomogeneity |
| P-25. | Mora | High-Performance Paradigm for Digital Transform Processing |
| P-26. | Rueda García | Randomized response estimation in multiple frames surveys |
| P-27. | Martínez | A specialized lazy learner for time series forecasting |
| P-28. | Alvarez Bermejo | Efficient image based analysis of fruit surface: optimization of post-harvest costs. |
| P-29. | Ranilla Cortina | Zero Forcing in Maximal Outerplanar Graphs |
| P-30. | Muñoz Montoro | Discovering the composition of audio files by Audio-to-MIDI alignment |
| P-31. | Su | Variational Structure of a Class of Fractional Hamiltonian Systems and Its Applications |
| P-32. | Gamez | Numerical approximation for the mixed two-dimensional nonlinear Volterra-Fredholm integral equations |
| P-33. | Berenguer | Biorthogonal systems and their applications to nonlinear two-dimensional integral equations |
| P-34. | Ibáñez | A spline quasi-interpolation method to obtain the reset voltage in Resistive RAMs in Charge-Flux domain |
| P-35. | Navarro | Computation of periodic orbits in a three level trophic chain model |
| P-36. | Martínez
Puertas | Calibration estimator for Head Count Index |

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- P-37.** Wuttanachamsri Mucus Velocity in Human Lungs
- P-38.** Tallón Modelling neural networks
- P-39.** Aguilar An approach for ranking fuzzy numbers using finite fuzzy numbers and its application in Economics
- P-40.** Sánchez Deep Learning for Digit Sequence Length Estimation
- P-41.** Das Parameter Uniform Numerical Approximation of the Solution of A System of Reaction Diffusion Problems involving A Small Perturbation Paramete