

# Program of the 2019 International Conference on Computational & Mathematical Methods in Science & Engineering

Costa Ballena, Cádiz, Spain  
June 30 – July 6, 2019

- All the posters are outside (July 2 & 4).
- All the talks 20 min + questions (except Prof. Schwerdtfeger & Hamilton session, 45 min)
- Special Session in memoriam of Alexander (Prof. A. Buslaev), July 2 in the evening.
- Reception Desk in the first floor.
- Registration OPEN:

✓ June 30:

20:40 – 21:00

✓ July 1:

9:30 – 10:45 & 20:00 – 20:30

✓ July 2 & 3:

8:30 – 9:45 & 20:00 – 20:30

✓ July 4 & 5:

8:30 – 9:45

CMMSE-2019 CONFERENCE PROGRAM

Monday, July 1, 2019

**Registration: 9:30 – 10:45**

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

*“Mathematics: a useful tool in farming & ecosystems management”.*

**Ezio Venturino**, University of Torino. Italy

Chair: Bruce Wade

**Parallel Sessions: 12:00 – 14:00**

<b>Room 1:</b>		<b>Mathematical Modeling &amp; Numerical Simulation of Geophysical Flows</b>
		<i>Chair: Macias J.</i>
<b>Prof.</b>	Gallardo	On A Class of Genuinely 2D Incomplete Riemann Solvers For Hyperbolic Systems
<b>Prof.</b>	Martínez-Moreno	A Reliable Numerical Model For Flow Through Porous Media Under Cofferdams
<b>Prof.</b>	Martínez-Moreno	Network Method: A Different Approach Using The Continuity Equation in Seepage Scenarios
<b>Prof.</b>	Salhi	A Galerkin-Characteristic Unified Finite Element Method For Dispersion in Darcian Flows
<b>Prof.</b>	Macías	Multilayer-HySEA model validation for landslide generated tsunamis by granular slides

<b>Room 2:</b>		<b>Mathematical &amp; computational methods in chemistry (45 min talks)</b>
		<i>Chair: I. Hamilton</i>
<b>Prof.</b>	Sundholm	Molecules in Weak & Strong Magnetic Fields
<b>Prof.</b>	Schwerdtfeger	On The Problem of Sticky Hard Spheres
<b>Prof.</b>	Hamilton	Chirality & Magnetism For Small Gold Nanostructures
<b>Prof.</b>	Karton	A brief history of computational chemistry: Applications from molecular modelling to materials and enzymes

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<b>Room 3:</b>		<b>Computational Algebra</b> <i>Chair: Peter Alonso</i>
<b>Prof.</b>	Ceballos	A Note on (Pseudo)Digraphs Associated with Evolution Algebras
<b>Prof.</b>	Falcón	Computing Autotopism Groups of Partial Latin Rectangles: A Pilot Study
<b>Prof.</b>	Carriegos	A Proposal For Data-Driven Cybersecurity Linear Models
<b>Prof.</b>	Tomás	Tall-And-Skinny Qr Factorization with Approximate Householder Reflectors on Graphics Processors
<b>Prof.</b>	Dominguez	
<b>Prof.</b>	Ibrahim	Pattern Avoidance in Gamma-One Non Deranged Permutations

<b>Room 4:</b>		<b>Mathematical Models for Computer Science</b> <i>Chair: M. Ojeda-Aciego</i>
<b>Prof.</b>	García Zapata	Classification of Maps on A Finite Set Under Permutation
<b>Prof.</b>	Yousif	Extracting A New Fractal & Semi-Variance Attributes For Texture Images Categorization
<b>Prof.</b>	Alwan	A New Secure Image Encryption Based on Highly Sensitive Chaotic System with Optimum Intensity
<b>Prof.</b>	Muñoz	
<b>Prof.</b>	Castañeda	Rhoaso: An Automatic Early Stop Hyper-Parameter Optimization Method Towards The Use of Bipolar Fuzzy Relation Equations in Abductive Reasoning
<b>Prof.</b>	Lobo	
<b>Prof.</b>	Kashyap	Kernel Functions Based Unsupervised Clustering Techniques For Effective Analysis of High Dimensional Databases
<b>Prof.</b>	Rodriguez	Analyzing Patterns in False Documents with Formal Concept Analysis To Detect Forgers
<b>Prof.</b>	Jimenez	
<b>Prof.</b>	López	Recommendations in CDSS using Fuzzy Formal Concept Analysis

**LUNCH BREAK 14:00 – 16:00**

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**Parallel Sessions 16:00 – 20:30**

<b>Room 1:</b>		<b>Mathematical &amp; computational methods in chemistry. (45 min talks)</b> <i>Chair: P. Schwerdtfeger</i>
<b>Prof.</b>	Martínez	A Unified Approach to Bounds For Topological Indices on Trees li
<b>Prof.</b>	Pestana	Relations Between Some Topological Indices & The Line Graph
<b>Prof.</b>	Datsko	Mathematical Modeling of Complex Pattern Formation in Autocatalytic Reaction-Diffusion Systems with Anomalous Diffusion

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**Prof.** Cioslowski Unoccupied Natural Orbitals in Atoms & Molecules

**Prof.** Ferreira Lqta-Qsar: A New 4D-Qsar Methodology

**Room 2:**

**HPC**

**Chair: D. Llanos**

**Prof.** Rodríguez Design, Implementation & Use Of intra-Routine Malleability in Blis

**Prof.** Costero Providing On-Demand Quality & Resources For Malleable Applications  
Hierarchical Automatic Optimization of High & Medium Level Linear Algebra Routines

**Prof.** Cámara Belloch Approaching the Use of Heterogeneous Systems For Signal Processing

**Prof.** Rodríguez Operations in Space Environments

**Prof.** Pantoja Acceleration of Radio Frequency Propagation with General Purpose GPU Computing

**Prof.** Romero Time Series Heterogeneous Co-Execution on CPU+GPU

**Prof.** Pantoja Acceleration of Mri Analysis Using Multicore & Manycore Paradigms  
Moreno High-Performance Techniques To Accelerate The Radiotherapy Planning Based on Singleobjective Evolutionary Optimization

**Prof.** Riado González- Use of Distributed Platforms To Develop Smart Cities: Citizen-Oriented Case Studiesy

**Prof.** Briones Combining Hybrid & Heterogeneous Parallelism in the Application of Hybrid Metaheuristics

CAPAP-H Network Meeting at 19:20

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<b>Room 3:</b>		<b>Bio-Mathematics</b>
<b>Chair: E. Venturino</b>		
<b>Prof.</b>	Halfar	Block Detection of Dynamical Invariants in The Data
<b>Prof.</b>	Il'Ichev	Dynamical Stability of Running Solitary Waves in Fluid-Filled Elastic Membrane Tubes
<b>Prof.</b>	Al-Rashidi	Modelling The Spread of Hcv Amongst People Who Inject Drugs
<b>Prof.</b>	Kozlov	Biodiversity & Stability of Ecosystems with Extinctions
<b>Prof.</b>	Greenhalgh	A Differential Equation Epidemic Model For Hiv/Aids Amongst Intravenous Drug Injectors with Disease Awareness
<b>Prof.</b>	Christen	Asymptotic Behavior of a Stochastic Epidemic Model Si with Linear Transmission Rate
<b>Prof.</b>	Alsakaji	Dynamics of A Delayed Predator Prey System with Stochastic Fluctuation

<b>Room 4:</b>		<b>Interpolation &amp; Approximation</b>
<b>Chair: D. Barrera</b>		
<b>Prof.</b>	Fomin	Approximate Solution of The Tsunami Run-Up on A Sloping Beach
<b>Prof.</b>	Kouibia	Filling Holes of Generalized Offset Surfaces By Biquadratic Splines
<b>Prof.</b>	Miana Sanz	Cardinal B-Splines & Convolutions
<b>Prof.</b>	Phairatchatniyom	The Modified Inertial Algorithm For Solving Split Inclusion Variational Problem
<b>Prof.</b>	Jirakitpuwapat	Quantum Renyi Entropy with Application in Image Processing
<b>Prof.</b>	Jafari	A Numerical Method For Solving Variable Order Integro-Differential Equations
<b>Prof.</b>	Yordsorn	Modified Popov'S Subgradient Extragradient Algorithm For Equilibrium Problems
<b>Prof.</b>	Sánchez Gil	A Fuzzy Dea Slacks-Based Approach

Tuesday, July 2, 2019

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

*“Mathematical Challenges Advancing Quantum Computing for Chemical Sciences”*.  
**Bert De Jong, Lawrence Berkeley National Laboratory USA.**

Chair: Peter Schwerdtfeger

**Parallel Sessions: 10:00 – 14:00**

<b>Room 1:</b>			<b>Numerical Methods for Solving Nonlinear Problems</b>		
			<b>Chair: I. Argyros</b>		
<b>Prof.</b>	Ezquerro	A new concept of convergence for iterative methods: restricted global convergence			
<b>Prof.</b>	Romero	Solving Wiener-Hopf problems via an efficient iterative scheme			
<b>Prof.</b>	Torregrosa	Iterative Methods with Memory For Solving Nonlinear Matrix Equations			
<b>Prof.</b>	Cordero	A Fractional Newton Method with 2 <sup>nd</sup> -Order of Convergence			
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION I</b>					
<b>Room 1:</b>			<b>Processing, Modelling, &amp; Statistics //Mathematical Education</b>		
			<b>Chair: J. Moreno</b>		
<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	Supercomputer power consumption predictions using machine learning, nonlinear algorithms, and statistical methods			
<b>Prof.</b>	Martinovč	Bounding Box Computation of the 0-1 Test for Chaos			
<b>Prof.</b>	Reboredo	Price connectedness between green bond and financial markets			
<b>Prof.</b>	Al-Noor	On the Exponentiated Weibull Distribution			
<b>Prof.</b>	Valongo	Building the Continuity & The Limit Concepts			
<b>Prof.</b>	Orcos	Different Methods For Solving Problems in Advance Mathematics			

<b>Room 2:</b>			<b>HPC</b>		
			<b>Chairs: Pedro Alonso-Jordá</b>		

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<b>Prof.</b>	Espinosa	Impact of Mixed Precision in Forest Fire Spread Simulators: A Quantitative Analysis
<b>Prof.</b>	Paoletti	Scalable Recurrent Neural Network For Spectral-Spatial Classification of Hyperspectral Images
<b>Prof.</b>	Solé Farré	Analyzing Political Trends in A Multiple Political Party Environment Based on Twitter Users Interaction
<b>Prof.</b>	Cabrera Perez	Analyzing The Energy Efficiency of Parallel Applications Using The Intel Power Cap Technology
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION I</b>		
<b>Prof.</b>	Cecilia Canales	Evaluation of Different Edge-Computing Platforms For The Prediction of Low Temperatures in Agriculture
<b>Prof.</b>	Constanti nescu	Solving Large-Scale Markov Decision Processes on Low-Power Heterogeneous Platforms
<b>Prof.</b>	Pérez-Sánchez	Development & Application of Structural Bioinformatics Methods on High Performance Computing Architectures
<b>Prof.</b>	Laso García	Load Balanced Heterogeneous Parallelism For Finite Difference Problems on Image Denoising
<b>Prof.</b>	Lucas	Rate-Distortion/Complexity Analysis Between Hvc, Jem & Av1 Video Codecs

<b>Room 3:</b>		<b>Mathematical Models for Computer Science</b> <i>Chair: A. Aledo</i>
<b>Prof.</b>	Ojeda-Aciego	Relational Galois Connections Between Fuzzy T-Digraphs
<b>Prof.</b>	Rabanal	Cryptography For Big Data Environments: Current Status, Challenges & Opportunities
<b>Prof.</b>	Romance	From Google to Hashimoto: alpha-non backtracking PageRank
<b>Prof.</b>	Valverde	Non-Periodic Orbits Behavior in Graph Dynamical Systems
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION I</b>		
<b>Prof.</b>	Ruiz Cueva	Development of An Automated Learning Model Based on Multiple Variables To Forecast A Global Customers' Service Demand
<b>Prof.</b>	Khan	An Adjustable Weighted Soft Discernibility Matrix Based on Generalized Picture Fuzzy Soft Set & Its Applications in Decision Making
<b>Prof.</b>	Decastro-García	Machine Learning For Automatic Assignment of The Severity of Cybersecurity Incidents
<b>Prof.</b>	Rodriguez	Applications of Gromov Hyperbolicity To Directed Networks
<b>Prof.</b>	Aledo	Scalable Algorithms To Aggregate Weak Rankings
<b>Prof.</b>	Madrid	Toward a measure of inclusion from the index of inclusion between fuzzy sets.

<b>Room 4:</b>		<b>Integral Methods in Science &amp; Engineering</b> <i>Chair: C. Constanda</i>
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<b>Prof.</b>	Bodmann	On A Parametric Representation of The Angular Neutron Flux in The Energy Range From 1 Ev To 10 Mev
<b>Prof.</b>	Campos Velho	Damage Identification on Aerospace Structure By Hybrid Optimization Approach
<b>Prof.</b>	Gómez	Local Effects For Some Spectral Problems in Domains Surrounded By Thin Stiff & Heavy Bands
<b>Prof.</b>	Pires	Two-Phase Three-Component Flow in Porous Media: Mathematical Modeling of Dispersion Free Pressure Behavior
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION I</b>		
<b>Prof.</b>	Kleefeld	Mixed Interior Transmission Eigenvalues
<b>Prof.</b>	Pérez-Martínez	Homogenization of Spectral Problems in Linear Elasticity with Rapidly Alternating Boundary Conditions
<b>Prof.</b>	Zubik-Kowal	Design of Dynamic Iteration Schemes To Optimize Convergence Rates
<b>Prof.</b>	Harris	Modeling Cell Motion Due To Chemotaxis
<b>Prof.</b>	Lanza De Cristoforis	An Inequality For Holder Continuous Functions, in The Wake of The Work of Carlo Miranda
<b>Prof.</b>	Mikhailov	Analysis of Boundary-Domain Integral Equations For The Variable-Viscosity Compressible Robin-Stokes BVP in $L_p$ -Based Spaces.

**LUNCH BREAK 14:00 – 16:00**

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

*“Generalized Fourier Series for Thin Plates in an Infinite Domain”.*  
**C. Constanda, University of Tulsa USA.**

Chair: Bruce Wade

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

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<b>Room 1: Trends in the analysis &amp; simulation of nonlinear partial differential equations</b>		
<b>Chairs: J. Macías-Díaz</b>		
<b>Prof.</b>	Vargas Rodriguez	Exact Solutions of Some Cylindrical Non-Linear Wave Equations with Non-Constant Coefficients Through The Trial Equation Method
<b>Prof.</b>	Jaimes-Reategui	Deterministic Coherence Resonance in A Network of Chaotic Oscillators with Frequency Mismatch

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<b>Prof.</b>	Barba Franco	On The Lagrangians & Potentials of A Two Coupled Damped Duffing Oscillators System & Their Application on Three-Node Motif Networks
<b>Prof.</b>	Tosyali	A Study on The Chaotic Solutions of Bec
<b>Prof.</b>	Tosyali	The Dynamics of Gursej Solitons
<b>Prof.</b>	Herrera Serrano	A Computationally Efficient Algorithm To Solve Some Systems of Nonlinear Fractional Partial Differential Equations
<b>Prof.</b>	Rivera	A Novel Discrete Energy Method For Super-Diffusive Wave Systems Using Grünwald Differences
<b>Prof.</b>	Gallegos	An Explicit Finite-Difference Method For Riesz Space-Fractional Reaction-Diffusion Equations

### **Room 2:**

### **Computational Statistics**

**Chair: F. Marques**

<b>Prof.</b>	Santos	Roc Curve Analysis For Classification Methodologies Based on Group Testing
<b>Prof.</b>	Caeiro	Minimum Variance Reduced Bias Estimation of Tail Related Parameters
<b>Prof.</b>	Reyes-Santias	Economical Evaluation of Computed Tomography Angiography (Cta) Versus Conventional Angiography (Ca) To Diagnose Coronary Ischemia.
<b>Prof.</b>	Barranco-Chamorro	Some New Uses of Orthogonal Polynomials in Statistical Inference
<b>Prof.</b>	Mateus	A New Class of Estimators For The Shape Parameter of A Pareto Model
<b>Prof.</b>	Nunes	Mixed Effects Anova with Stability: An Extension To Samples with Random Size
<b>Prof.</b>	Ferreira	Multivariate Accelerated Shelf-Life Testing
<b>Prof.</b>	Felgueiras	Gaussian Mixtures & Deconvolution Problems
<b>Prof.</b>	Marques	Testing The Independence of Two Sets of Random Variables For Random Size Samples

### **Room 3:**

### **Transport Systems -- Special Session in memoriam of Prof. A. Buslaev**

**Chair: M. Yashina**

<b>Prof.</b>	Yashina	Spectral Cycles & Average Velocity of Particles in Discrete Two Contours System
<b>Prof.</b>	Taddele	Information Theory & Entropy
<b>Prof.</b>	Fomina	Simulation of The Spectra of Cellular Automata of Wolfram on Hamming Spaces
<b>Prof.</b>	Moseva	Pattern Recognition Algorithms in Traffic Problems
<b>Prof.</b>	Churbanova	Simulation & Visualization of Vehicular Traffic on Road Networks Using High Performance Computing Systems
<b>Prof.</b>	Trapeznikova	An Explicit Algorithm For The Simulation of Non-Isothermal Multiphase Multicomponent Flow in A Porous Medium
<b>Prof.</b>	Al-Saidi	Secure Optical Communication Based on New 2D-Hyperchaotic Map

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<b>Prof.</b>	Kuteynikov	Modeling of Infection Propagation Processes on Buslaev Regular Contour Networks
<b>Prof.</b>	Gorodnichev	Machine Learning To Detect The Dangerous Movement
<b>Prof.</b>	Tatashev	Stationary State Probabilities & Reversibility of Discrete System on Contour
<b>Prof.</b>	Dotkulova	Methods for evaluating a testing system for analyzing the behavioral characteristics of drivers

<b>Room 4:</b>		<b>Analytical &amp; Numerical solution of Differential Equations</b> <i>Chair: C. Clavero</i>
<b>Prof.</b>	Podila	A Numerical Scheme For A Weakly Coupled System of Singularly Perturbed Delay Differential Equations on An Adaptive Mesh
<b>Prof.</b>	Kumar	A Discrete Schwarz Waveform Relaxation Method For Singularly Perturbed Parabolic Reaction-Diffusion Problems
<b>Prof.</b>	Sekhar	Numerical Simulation of MHD flow around a sphere considering induced magnetic field in the entire domain
<b>Prof.</b>	Wade	Operator Splitting with Some Exponential Time Differencing Schemes For Reaction-Diffusion Systems
<b>Prof.</b>	Bui	Boundary Treatment For Smoothed Particle Hydrodynamics Method with Implicit Surfaces
<b>Prof.</b>	Castro	Commutator-free Magnus Propagators for Quantum-Classical Molecular Dynamics
<b>Prof.</b>	Clavero	A Uniformly Convergent Scheme To Solve 2D Parabolic Singularly Perturbed Systems of Reaction-Diffusion Type with Multiple Diffusion Parameters
<b>Prof.</b>	Jaworska	Solving Nonlinear Boundary Value Problems by the Multipoint Meshless Method

### **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 3, 2019

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

- Gibraltar Excursion at 8:00 at the main door.  
(Before leaving Participants will be provided with a bag of food and drink to take in Gibraltar. Participants who opt for free time at the hotel will have their food at the hotel.)

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.**

Thursday, July 4, 2019

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

*Iterative processes for nonlinear problems: from Newton to nowadays*  
**Alicia Cordero, M. Hernández-Verón, J. R. Torregrosa**

Chair: Bruce Wade

**Parallel Sessions: 10:00 – 14:00**

<b>Room 1:</b>		<b>Numerical Methods for Solving Nonlinear Problems</b>
		<b>Chairs: J.R. Torregrosa</b>
<b>Prof.</b>	Argyros	Extended & Unified Local Convergence of K-Step Solvers For Equations with Applications
<b>Prof.</b>	Martínez-Moreno	A Numerical Tool To Solve Non-Linear Soil Consolidation Scenarios Including Viscous Deformation Effects
<b>Prof.</b>	Martínez-Moreno	Network Models For Non-Linear Soil Consolidation Problems with Constitutive Relations & Deformations Hypotheses of Different Nature
<b>Prof.</b>	Garrido Saez	On The Improvement of The Order of Iterative Methods For Nonlinear Systems By Means of Memory
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION II</b>		
<b>Prof.</b>	Moysi	On The Local Convergence & The Dynamics of An Eighth-Order Method For Solving Nonlinear Equations
<b>Prof.</b>	Arora	A Novel Scheme Having Seventh-Order Convergence For Nonlinear Systems
<b>Prof.</b>	Maraju Chicharro	Local Convergence of Parameter Based Method Having Six & Eighth Order of Convergence
<b>Prof.</b>	López	Iterative Methods Based on Different Means
<b>Prof.</b>	Magreñan	A New Technique For Studying The Convergence of Newton's Method Solver with Applications
<b>Prof.</b>	Bakirova	Solving Nonlinear Boundary Value Problem with Parameter For A Loaded Differential Equation
<b>Prof.</b>	Bergamaschi	Recent advances in low-rank corrections of preconditioners for sequences of linear systems

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<b>Room 2:</b>		<b>PDE &amp; Mathematical Applications</b> <i>Chair: J. Macías Díaz</i>
<b>Prof.</b>	Vargas Rodriguez	A Numerical Model For Hyperbolic Diffusive Systems in Population Dynamics: Efficiency & Pattern Formation
<b>Prof.</b>	Hendy	A Fully-Discrete Scheme For After-Effectuated Multi-Term Time-Space Fractional Advection-Diffusion Equations
<b>Prof.</b>	Martinez-Jimenez	An Efficient Energy-Preserving Discrete Model For A Fractional Klein-Gordon-Zakharov System
<b>Prof.</b>	Macias-Diaz	Existence of Solutions & Simulation of A Conservative Fractional Klein-Gordon-Zakharov System
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION II</b>		
<b>Prof.</b>	Macias-Diaz	A Discrete Monotone Iterative Method For Fractional Advection-Diffusion Equations with Nonlinear Reaction
<b>Prof.</b>	Urenda-Cázares	A Mathematical Model That Combines Chemotherapy & Oncolytic Virotherapy As An Alternative Treatment Against Cancer
<b>Prof.</b>	Casas	A Numerical Study on Electrohydrodynamic Droplet Interactions: Coalescence & Break-Up
<b>Prof.</b>	Loginova	Conservative Finite-Difference Scheme For Computer Simulation of Contrast 3D Spatial-Temporal Structures Induced By Laser Pulse in Semiconductor

<b>Room 3:</b>		<b>Computational Optimization &amp; Networks</b> <i>Chair: M. Dupac</i>
<b>Prof.</b>	Abubakar	Cayley Graphs of $\Gamma_1$ -Non-Deranged Permutations
<b>Prof.</b>	Criado	A line graph approach of eigenvector centrality
<b>Prof.</b>	Roldán	A fuzzy Delphi consensus method based on a fuzzy ranking
<b>Prof.</b>	Martins	Low Prevalence Rate Estimation
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION II</b>		
<b>Prof.</b>	Chand	Quantum $\alpha$ -Fractal Approximation
<b>Prof.</b>	Fomin	Inverse Problem of Obtaining Thermo-physical Properties of Contacting Solids
<b>Prof.</b>	Shariatmadar	Linear Programming Under $\epsilon$ -Contamination Uncertainty
<b>Prof.</b>	Roldán	Multi-criteria decision making involving uncertain information via fuzzy ranking & fuzzy aggregation functions
<b>Prof.</b>	Abubakar	A Descent Modified Three-Term Conjugate Gradient Projection Algorithm & Its Global Convergence with Applications To Signal Recovery

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<b>Room 4:</b>		<b>Fixed Point Theory &amp; related applications.</b> <i>Chair: P. Kumam</i>
<b>Prof.</b>	Mohammed	New Approach To Find Multi- Fractal Dimension
<b>Prof.</b>	Muangchoo	A New Hybrid Iterative Method For Solving Mixed Equilibrium Problem & A Fixed Point Problem For A Bregman Relatively Nonexpansive Mapping
<b>Prof.</b>	Pakkaranang	Superiorization Methodology & Perturbation Resilience of Inertial Proximal Gradient Algorithm with Application To Signal Recovery
<b>11:30 — 12:00 COFFEE BREAK &amp; POSTER SESSION II</b>		
<b>Prof.</b>	Yordsorn	Modified Popov'S Subgradient Extragradient Algorithm For Equilibrium Problems
<b>Prof.</b>	Kitkuan	The Halpern-Type Approximation Three Operator Splitting Method For Convex Minimization Problems & Its Applications
<b>Prof.</b>	Yusuf	Fixed Point Results on Quantum Operations Using Trace Distance

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

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

*Algorithms for convex minimization problems with convergence analysis with Applications*

**Poom Kumam, TaCS Center & KMUTT -- Thailand**

Chair: Bruce Wade

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**Parallel Sessions: 17:00 – 19:30**

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<b>Room 1:</b>		<b>Numerical Methods for Solving Nonlinear Problems</b> <i>Chairs: A. Cordero</i>
<b>Prof.</b>	Datsko	New Explicit High-Order One-Step Methods For Singular Initial-Value Problems
<b>Prof.</b>	Khammaha wong	On The Convergence of Splitting Algorithm For Mixed Equilibrium Problems on Hadamard Manifolds
<b>Prof.</b>	Chun	A General Class of Optimal Eighth-Order Derivative Free Methods For Nonlinear Equations
<b>Prof.</b>	Sarría	Local Convergence of Fourth & Fifth Order Parametric Family of Iterative Methods in Banach Spaces
<b>Prof.</b>	Martínez	A Reliable Treatment To Solve Nonlinear Fredholm Integral Equations with Non-Separable Kernel

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<b>Prof.</b>	Ayoub	Analytical Discrete Hodge Operator For Discrete Exterior Calculus
<b>Prof.</b>	Argyros	An Iteration Function Having Optimal Eighth-Order of Convergence For Multiple Zeros & Local Convergence
<b>Prof.</b>	Jumabayev	New General Solutions To Ordinary Differential Equations & Their Applications in Solving Boundary Value Problems

<b>Room 2:</b>		<b>Mathematical Modeling &amp; Computational ODE &amp; PDE</b> <i>Chair: Jorge Macias</i>
<b>Prof.</b>	Nagyová	Dynamics of The Belousov-Zhabotinsky Reaction Model Revised
<b>Prof.</b>	Rilwan	Avoidance of Contact & Pursuit in A Differential Game Problem
<b>Prof.</b>	Uzal	On Attractors For Impulsive Dynamical Systems
<b>Prof.</b>	Skakauskas	Solvability of A Model For Catalytic Reactions Proceeding Over Inhomogeneous Surfaces
<b>Prof.</b>	Borisut	Nonlocal Riemann-Liouville Fractional Integral Condition & Nonlinear Caputo Fractional Differential Equation
<b>Prof.</b>	Lampart	Collisions of A Constrained Body on A Moving Belt
<b>Prof.</b>	Reyes	On The Conformable Fractional Logistic Models
<b>Prof.</b>	Simonenko	Modeling the behavior of screw piles in heterogeneous soils subject to construction loads with mesh free RBF method

<b>Room 3:</b>		<b>Lie Symmetry &amp; Conservation Laws for Nonlinear Differential Equations &amp; Applications</b> <i>Chair: M. S. Bruzón</i>
<b>Prof.</b>	Chulián	Symmetries & Solutions For A Fisher Equation with A Proliferation Term Involving Tumor Development
<b>Prof.</b>	Márquez	Conservation Laws & Symmetry Analysis For A Quasi-Linear Strongly-Damped Wave Equation
<b>Prof.</b>	Suazo	On Explicit & Numerical Solutions For Partial Differential Equations with Variable Coefficients: Fisher-Kpp, Burgers & Telegraph Type Equations.
<b>Prof.</b>	Garrido	(3+1) Kadomtsev-Petviashvili-Boussinesq Equation: Symmetries, Solutions & Conservation Laws
<b>Prof.</b>	Recio	Symmetry Analysis of A Generalized P-Laplacian Equation with Gradient-Dependent Diffusivity
<b>Prof.</b>	Sáez	Lie Symmetry Analysis & Conservation Laws For A Generalized (2+1)-Dimensional Nonlinear Evolution Equations
<b>Prof.</b>	De La Rosa	On A Variable-Coefficient (3+1)-Dimensional Kp Equation
<b>Prof.</b>	Bruzon	Symmetries, Conservation Laws & Potential Systems For A Buckley-Leverett Equation



CMMSE-2019 CONFERENCE PROGRAM

<b>Room 4:</b>		<b>Numerical PDE &amp; Mathematical Modelling</b>
<i>Chair: M. Dupac.</i>		
<b>Prof.</b>	Trucchia	Uncertainty Quantification & Sensitivity Analysis For Macro & Meso-Scale Factors in Fire-Spotting Generated Fires.
<b>Prof.</b>	Mandyly	Analysis & Numerical Approach For Electro-Elastic Body in Frictional Contact Process
<b>Prof.</b>	Touma	Finite Volume Methods For Pollutants Transport in Shallow Water Equations
<b>Prof.</b>	Sahoo	An Improved Finite Difference Method For Lid-Driven Cavity Flow Problem
<b>Prof.</b>	Abood	On Pseudo - Projective Curvature Tensor of Nearly Cosymplectic Manifold
<b>Prof.</b>	Touma	Finite Volume Methods For Pollutants Transport in Shallow Water Equations
<b>Prof.</b>	Dupac	Mathematical Based Control Method & Performance Analysis of A Novel Hydromechatronics Driving System Micro-Independent Metering
<b>Prof.</b>	Das	A Parameter Uniform Defect-Correction Method For Two Dimensional Singularly Perturbed Convection Diffusion Problems

Friday, July 5, 2019

10:00 – 12:50

**Room 1:**

- **Excursion to Morocco (It will be confirmed based on the number of applicants after the deadline of registration)**
- **Consideration of proposals for: Plenary lectures, Special sessions, of the next year conference.**
- **CMS journal. Call for editors & special issues.**

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

**POSTER SESSION I -- Tuesday 2**  
**POSTER SESSION II -- Thursday 4,**

**The posters will be presented during coffee breaks.**  
*Poster format: approx. A0 (841mm x 1188mm)*

**POSTER SESSION I: Tuesday 2:**

<b>P-1. Prof</b>	Moreno	Exploring Distributed Deep Network Training Accuracy & Performance on Heterogeneous Clusters
<b>P-2. Prof</b>	Bosque	Improving Load Balancing in Heterogeneous Clusters with Task Migration
<b>P-3. Prof</b>	Vidal	Multicore & GPU Implementations of Fhals Algorithm For NMF
<b>P-4. Prof</b>	Dolz	Convolutional Neural Networks For Estimating The Performance of The Sparse Matrix-Vector Multiplication
<b>P-5. Prof</b>	Blanco Heras	Exploring The Registration of Remote Sensing Images Using Hsi-Kaze in Graphical Units
<b>P-6. Prof</b>	Boratto	3D Seismic Modeling on Multi-GPU Collectives with NCCL
<b>P-7. Prof</b>	Orduña Huertas	A Comparison Study of Wavelet Transforms For Detecting Dna Differentially Methylated Regions
<b>P-8. Prof</b>	Martín Garzón	An Unrelated Parallel Machine Scheduling of An Active Microrheology Problem
<b>P-9. Prof</b>	Muñoz-Montoro	Multichannel Extension For Score-Informed Source Separation Using Instrument Spectral Patterns
<b>P-10. Prof</b>	Muñoz-Montoro	A New Definition of The Distortion Matrix For An Audio-To-Score Alignment System
<b>P-11. Prof</b>	Llanos	Coarse-Grain Load Distribution in Heterogeneous Computing
<b>P-12. Prof</b>	Alonso	Computing Matrix Functions By Matrix Bernoulli Series
<b>P-13. Prof</b>	Bernabé	An Evaluation of The Software Tool For The Automatic Quantification in The Left Ventricle Myocardium Hyper-Trabeculation Degree For Hypertrophic Cardiomyopathy Patients
<b>P-14. Prof</b>	Díaz	Reliable Fast Multidatcenter Data Storage
<b>P-15. Prof</b>	Cores Prado	Redesigning The Blast Algorithm To Achieve High-Throughput & Full-Scalability Using Spark & Cassandra.
<b>P-16. Prof</b>	Ferreira	Revisiting Statistical Manifolds
<b>P-17. Prof</b>	Alruwaili	Numerical Approximation To The Stationary Solutions in Yip'S Formulation of The Regularized Ericksen'S Bar Model.
<b>P-18. Prof</b>	Ramos	Homotopy Perturbation Method For Solving Fractional Volterra Integro-Differential Equations of First Kind

**POSTER SESSION II: Thursday 4:**

<b>P-19. Prof</b>	Bartolome	Easymodel: User-Friendly Tool For Building & Analysis of Simple Mathematical Models in Systems Biology
<b>P-20. Prof</b>	Christen	Quasi-Stationary Distribution of The Continuous Time Branching Process with Logistic Growth
<b>P-21. Prof</b>	Ferreira	Dengue'S Dmd Model
<b>P-22. Prof</b>	Navascués	Cubic Spline Fractal Solutions of Two-Point Boundary Value Problems
<b>P-23. Prof</b>	Suárez	Analytical Solution of Enzyme Reaction Equations in An Irreversible Linear Pathway
<b>P-24. Prof</b>	Ibáñez Pérez	A New Approximation-Based Functional Approach To Model Resistive Switching Memristors For Neuromorphic Applications
<b>P-25. Prof</b>	Barrera Rosillo	Do Gaussian Quadrature Formulas For Splines Produce Better Results Than Polynomials Formulas When Used in Combination with The Nyström Method
	Castillo-	To Numerically Solve Fredholm Integral Equations of The Second Kind?
<b>P-26. Prof</b>	Gutiérrez	Influence of Plotting Positions on Confidence Bands Based in The Exact Distribution of The Order Statistics in Normal Q-Q Plots
<b>P-27. Prof</b>	Rueda	Optimal Quantile Estimators Based on Calibration
<b>P-28. Prof</b>	Olmo-Jiménez	An R Package For Complex Pearson Distributions
	Alba-	
<b>P-29. Prof</b>	Fernández	Model Selection Based on Penalized Phi-Divergences For Multinomial Data
<b>P-30. Prof</b>	Alonso	Algorithmic Characterization of Pentadiagonal ASSR Matrices
<b>P-31. Prof</b>	Navarro	Escaping Orbits in The N-Body Ring Problem
		Solving A Coupled System of Singularly Perturbed 1D-Parabolic
<b>P-32. Prof</b>	Ramos	Reaction-Convection-Diffusion Equations with Discontinuous Source Terms
		An Alternative Method To Construct A Consistent Second Order Theory About
<b>P-33. Prof</b>	López Ortí	The Equilibrium Figures of Rotating Celestial Bodies
<b>P-34. Prof</b>	Behl	Efficient high order iterative scheme for large nonlinear systems with dynamics
<b>P-35. Prof</b>	Calvo-Jurado	Effective properties of pavements reinforced with geosynthetic materials