

9:00 - KEYNOTE LECTURE

Chair: Daniela Mansutti

Pattern in Turbulent Convection: the Evergreen Rayleigh-Bénard Problem
Antonello Provenzale, Jost von Hardenberg

10:00 – SS9

NONLINEAR DYNAMICS FOR ECONOMICS, FINANCE AND SOCIAL SCIENCES

Organizer: *Fabio Tramontana*

10:00 - Border Collision Bifurcations in a Piecewise Linear Duopoly Model
Laura Gardini, Davide Radi

10:20 - Dynamics of a Two-class Growth Model with Optimal Saving and Switch in Behavior

Iryna Sushko, Pasquale Commendatore, Ingrid Kubin

10:40 - Waveform Dictionaries and Gabor/wavelet Expansions in Finance

Pierluigi Vellucci

11:00 – COFFEE BREAK**11:30 – MS10**

RECENT TRENDS IN NUMERICAL METHODS FOR EVOLUTIONARY PROBLEMS

Organizers: *Sebastianno Boscarino, Giuseppe Izzo, Eleonora Messina, Jie Shen*

11:30 - Multiscale Constitutive Framework of Blood Flow: Modeling and Numerics
Giulia Bertaglia, Lorenzo Pareschi

11:50 - Non Standard Methods for Volterra Integral Equations: a Case Study in Mathematical Epidemiology

Bruno Buonomo, Eleonora Messina, Claudia Panico, Antonia Vecchio

12:10 - Structure Preserving Schemes for the Allen-Cahn Type Equations

Yongyong Cai

12:30 - Conservative and Efficient Numerical Simulation for Time-Fractional Diffusion Problems

Angelamaria Cardone, Gianluca Frasca-Caccia, Beatrice Paternoster

12:50 - Numerical Preservation of Monotonicity and Positivity of Time-stepping Methods

Inmaculada Higuera, Teo Roldan

13:10 - New Highly Stiff-stable Schemes for Linear and Nonlinear Parabolic Equations

Fukeng Huang, Jie Shen

13:30 - LUNCH TIME

15:00 – MS10

15:00 - Unconditionally Positive and Conservative Modified Patankar Linear Multistep Methods

Giuseppe Izzo, Eleonora Messina, Mario Pezzella, Antonia Vecchio

15:20 - Approximation of high-order PDEs by hyperbolic systems

David I. Ketcheson

15:40 - Numerical Analysis and Simulation for Two-phase Incompressible Flows

Xiaoli Li

16:00 - An Energetic Spectral Element in Time Method for Nonlinear Gradient Systems

Shiqin Liu, Haijun Yu

16:20 - A General Framework of Implicit High-order Schemes for Hyperbolic Systems

Gabriella Puppo, Matteo Semplice, Giuseppe Visconti

16:40 - An Asymptotic Preserving, Parallel Class of Time Discretizations for Singularly Perturbed Equations

Jochen Schuetz, Arjun Thenery Manikantan

17:00 - Explicit Runge-Kutta Schemes with Weak Stage Order and an Optimal Number of Stages

David Shirokoff, Abhijit Biswas, David Ketcheson, Steven Roberts, Benjamin Seibold

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ROOM #8

10:00 – General Session (5)

Chair: *David Pardo*

10:00 - Numerical solutions of three-dimensional elliptic partial differential equations by the method of fundamental solutions and the particle swarm optimization

Chia-Ming Fan, Fu-Li Chang, Chiung-Lin Chu

10:20 - Optimal Upgrade Policy Model for Used Product Leased with Lemon Law

Hennie Husniah, Andi Cakravastia A.R., Asep K. Spriatna, Bermawi P. Iskandar

10:40 - Equation-Oriented Process Simulation: The Simultaneous Flash

Mark Lazman

11:00 – COFFEE BREAK

11:30 – MS2

LINEAR AND NONLINEAR MODELS IN APPLIED MATHEMATICS

Organizers: *Sandra Carillo, Galina Filipuk, Federico Zullo*

11:30 - Media with Inclusions with Imperfect Transmission and Interface Potential

Micol Amar, Daniele Andreucci, Claudia Timofte

11:50 - Probabilistic analysis and simulation of a class of compartmental models via random linear differential equation systems

Vicente José Bevia, Juan Carlos Cortés, Cristina Pérez, Rafael Jacinto Villanueva

12:10 - Superconductivity vs. Nematicity: a Ginzburg-Landau approach

Juan Pablo Borgna, Mariano Fernando De Leo, Diego Fernando García Ovalle

12:30 - Nonlinear Evolution Equations of Fifth Order: Some New and Old Results

Sandra Carillo

12:50 - A Molecular Dynamics Study of the Evolving Melt Front under Gravity

Giovanni Ciccotti, Antonio Di Carlo, Mauro Ferrario, Daniela Mansutti

13:10 - On the Thermodynamics of Composition Graded Thermoelastic Solids

Vito Antonio Cimmelli

13:30 – LUNCH TIME

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ROOM #8

15:00 – MS2

15:00 - Thermal Pulse Propagation beyond the Maxwell–Cattaneo Theory: a Nonlinear Generalization

Maria Di Domenico, Antonio Sellitto, Vittorio Zampoli

15:20 - Effects of temperature-dependent parameters on the reflection of thermoelastic waves under Moore-Gibson-Thomson heat conduction

Manushi Gupta

15:40 - Pinned Flexible Polymer under Oscillatory Linear Flow

Antonio Lamura

16:00 - Fractal Mixtures for heat draining

Maria Rosaria Lancia

16:20 - About the Zeros of the Lommel Functions

Federico Zullo

17:00 – TC MMSEP Meeting

10:00 – MS6

MULTIVARIATE APPROXIMATION: NUMERICAL METHODS AND APPLICATIONS

Organizers: *Costanza Conti, Stefano De Marchi, Elisa Francomano*

10:00 - Bivariate spline quasi-interpolants on criss-cross triangulations for the approximation of piecewise smooth functions

Francesc Aràndiga, Paola Lamberti, Sara Remogna

10:20 - Nonlinear quartic quasi-interpolating splines to approximate piecewise smooth functions

Francesc Aràndiga, Paola Lamberti, Sara Remogna

10:40 - MultiComponent Signals Interference Detection Exploiting HP-splines
Frequency Parameter

*Vittoria Bruni, Rosanna Campagna, Domenico Vitulano***11:00 – COFFEE BREAK****11:30 – MS6**

11:30 - Time-frequency interpolation of wavelet scattering coefficients for signal classification

Vittoria Bruni, Francesca Pelosi, Domenico Vitulano

11:50 - Predictive modelling of soil microbiota growth using PINN

Cuomo Salvatore, De Rosa Mariapia, Bottino Alessandro, Ruggeri Annachiara, Mango Dea M.L., Pace Roberta, Schiano Di Cola Vincenzo

12:10 - On the numerical solution of some elliptic PDEs with Neumann boundary conditions through multinode Shepard method

Francesco Dell'Accio, Filomena Di Tommaso, Elisa Francomano

12:30 - Simple Strategies for Approximating Scattered Data and Functions

Stefano De Marchi

12:50 - Multilevel and Progressive Iterative Methods for Approximation and Numerical Integration

Elena Fornaca, Paola Lamberti

13:10 - Deep Mapping Techniques for Solving Time-Fractional PDEs Containing Crack and/or Corner Singularities

*Hyunju Kim, Jeonseo Lee, Taehyung Kim, Bongsoo Jang***13:30 – LUNCH TIME**

15:00 – MS6

15:00 - A Collocation Method for the Space-time Fractional Diffusion Problem
Chiara Sorgentone, Francesca Pitolli, Enza Pellegrino

15:20 – MS11

RECENT TRENDS ON NUMERICS OF SINGULARLY PERTURBED DIFFERENTIAL EQUATIONS

Organizer: *Natesan Srinivasan*

15:20 - A direct discontinuous Galerkin finite element method for two parameter singular perturbation problems.

Gautam Singh

15:40 - A Novel Fully-Implicit FMM for 2D Singularly Perturbed Semilinear Parabolic PDEs with Non-homogeneous Boundary Data

Narendra Singh Yadav, Kaushik Mukherjee

16:00 - Richardson Extrapolation Technique for Singularly Perturbed Degenerate Parabolic PDEs with Two Parameters

Natesan Srinivasan, Mrityunjoy Barman, Anirban Majumdar

16:20 - The Local Discontinuous Galerkin Method for Two Singularly Perturbed Convection-Diffusion Problems with Exponential and Characteristic Layers

Martin Stynes, Yao Cheng

16:40 - A Weak Galerkin Method for a Third-order Singularly Perturbed Reaction-diffusion Problem

Suayip Toprakseven, Natesan Srinivasan

10:00 – MS12

SINGLE-SCALE AND MULTI-SCALE MODELLING: APPLICATIONS TO ECOLOGY, CELL BIOLOGY AND MEDICINE

Organizers: *Raluca Eftimie, Zeina Masry, Antoine Perasso, Ezio Venturino*

10:00 - Enhanced Forecasting of Biomass-toxicity-water Models Using Numerical Simulations

Mudassar Abbas, Francesco Giannino, Francesco Calabro

10:20 - A New Numerical Solution for an Age-Structured Population Model with Infinite Life Span

Luis María Abia, Oscar Angulo, Juan Carlos López-Marcos, Miguel Ángel López-Marcos

10:40 - Phenotype Divergence and Cooperation in Isogenic Multicellular and in Cancer

Frank Ernesto Alvarez, Jean Clairambault

11:00 – COFFEE BREAK**11:30 – MS12**

11:30 - Stochastic Modeling of Biological Oscillations: the Circadian Rhythm Model

Alberto Maria Bersani, Alessandro Borri, Gabriella Mavelli, Pasquale Palumbo

11:50 - Evolution of Populations Structured by Dietary Diversity and Starvation: Cross-diffusion Systems

Elisabetta Brocchieri

12:10 - Modeling metastatic tumor evolution, numerical resolution and growth prediction

Iulia Martina Bulai

12:30 - Fractional Diffusive Fisher equation

Clemente Cesarano

12:50 – SS13

TRIANGULATIONS, MESHING AND APPLICATION

Organizers: *Miguel Padron, Jose Pablo Suarez Rivero*

12:50 - Near Equilateral Tetrahedra and the Convergence into Less Than 37 Similarity Classes

Miguel Angel Padron, Agustin Rafael Trujillo, Jose Pablo Suarez

13:10 - Compact and Efficient Data Structure for the Study of LEB of Tetrahedra

Jose Pablo Suarez Rivero, Miguel Angel Padrón, Agustín Trujillo, María Pilar Abad

13:30 – LUNCH TIME

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ROOM #5

15:00 – General Session (6)

CANCELLED