

Sunday, July 1

16:00PM-18:30PM

Parallel Session 3

Special Session <b>2</b>	<b>Nonlinear Evolution PDEs and Interfaces in Applied Sciences</b> Organizer(s): Gunduz Caginalp, Maurizio Grasselli, Alain Miranville	Location <b>GRC-A</b>
16:00-16:30	Franck Boyer (Aix-Marseille Universite, France) Consistent hierarchy of Cahn-Hilliard systems	Abstracts p. 7
16:30-17:00	Elisabetta Rocca (University of Milan, Italy) Degenerating PDE system for phase transitions and damage.	Abstracts p. 10
17:00-17:30	Laurence Cherfils (University of La Rochelle, France) Long-time behavior of the Caginalp system with singular potentials and dynamic boundary conditions	Abstracts p. 8
17:30-18:00	Peter Galenko (German Aerospace Center, Germany) Stability analysis and travelling fronts in the phase field crystal model	Abstracts p. 9
18:00-18:30	Gunduz Caginalp (University of Pittsburgh, USA) Phase Field Models and the Connection Between Microscopic and Macroscopic Anisotropy	Abstracts p. 7

Special Session <b>5</b>	<b>Hybrid Monte Carlo</b> Organizer(s): Elena Akhmatskaya, J. M. Sanz-Serna	Location <b>POI-C</b>
16:00-16:30	Antonio M Baptista (Universidade Nova de Lisboa, Portugal) Constant-pH molecular dynamics using stochastic titration: theory and applications	Abstracts p. 24
16:30-17:00	Jesus A Izaguirre (University of Notre Dame, USA) Hybrid Monte Carlo for Long Timestep Langevin Dynamics	Abstracts p. 25
17:00-17:30	Tony Lelievre (Ecole des Ponts ParisTech, France) Langevin dynamics with constraints	Abstracts p. 25
17:30-18:00	Charles Matthews (University of Edinburgh, Scotland) A Superconvergent Method for Configurational Sampling using Langevin Dynamics	Abstracts p. 25

Special Session <b>11</b>	<b>Advances in Classical and Geophysical Fluid Dynamics</b> Organizer(s): Madalina Petcu, Roger Temam, Shouhong Wang	Location <b>GRC-I</b>
16:00-16:30	Alain Miranville (Universite de Poitiers, France) Some equations with logarithmic nonlinear terms	Abstracts p. 50
16:30-17:00	James C Robinson (University of Warwick, England) Lower bounds on blow-up solutions of the 3D Navier-Stokes equations	Abstracts p. 50
17:00-17:30	Madalina Petcu (University of Poitiers, France) The two layers Shallow Water equations	Abstracts p. 50
17:30-18:00	Ming-Cheng Shiue (National Chiao Tung University, Taiwan) A numerical study of the boundary value problem for the shallow water equations	Abstracts p. 50

Special Session <b>13</b>	<b>Global Dynamics in Hamiltonian Systems</b> Organizer(s): Rafael de la Llave, Tere.M-Seara	Location <b>MAG-A</b>
16:00-16:30	Francisco Beron-Vera (RSMAS, University of Miami, USA) Zonal jets as transport barriers in the Earth's stratosphere	Abstracts p. 55
16:30-17:00	Alejandro Luque (Universitat de Barcelona, Spain) Extrapolation of frequencies of quasi-periodic orbits	Abstracts p. 56
17:00-17:30	Eli Shlizerman (University of Washington, USA) Dimension reduction for Hamiltonian dynamics	Abstracts p. 58
17:30-18:00	Renato C Calleja (McGill University, Canada) Theory and computation of Quasi-Periodic solutions	Abstracts p. 55

Special Session <b>14</b>	<b>Mathematical Models in Biology and Medicine</b> Organizer(s): Yang Kuang, Bingtuan Li, Jiaxu Li, Andrew Nevai	Location <b>GRC-C</b>
16:00-16:30	Sze-Bi Hsu (National Tsing-Hua University, Taiwan) A Refuge-Mediated Apparent Competition Model	Abstracts p. 61
16:30-17:00	Jianhua Wu (Shaanxi Normal University, Peoples Rep of China) Coexistence of the Unstirred Chemostat Model	Abstracts p. 65
17:00-17:30	Miranda I Teboh-Ewungkem (Lafayette College, USA) Optimization of <i>P. falciparum</i> gametocyte sex ratios via competitive and non-competitive strategies: the evolutionary implications	Abstracts p. 64
17:30-18:00	Bingtuan Li (University of Louisville, USA) Traveling Wave Solutions in Delayed Cooperative Systems	Abstracts p. 63

Special Session <b>15</b>	<b>Nonlinear Evolution Equations, Inclusions and Related Topics</b> Organizer(s): Mitsuharu Otani, Tohru Ozawa, N. U. Ahmed, S. Migorski, I. I. Vrabie	Location <b>GRC-G</b>
16:00-16:30	Jorge A Esquivel-Avila (Universidad Autonoma Metropolitana, Mexico) Dynamic analysis of a nonlinear Timoshenko equation	Abstracts p. 67
16:30-17:00	Akisato Kubo (Fujita Health University, Japan) Existence and Non Existence of Solutions to Initial Boundary Value Problems for Nonlinear Evolution Equations with Strong Dissipation	Abstracts p. 68
17:00-17:30	Masahito Ohta (Tokyo University of Science, Japan) Splitting methods for semilinear evolution equations with applications to nonlinear Schrödinger equations	Abstracts p. 70
17:30-18:00	Kei Matsuura (Waseda University, Japan) Existence of time-periodic solutions for the micropolar fluid equations with the spin-vortex interaction boundary condition	Abstracts p. 69

Special Session <b>19</b>	<b>Waves and Convection</b> Organizer(s): Sam Stechmann, Leslie Smith	Location <b>REH-8</b>
16:00-16:30	Keith Juiien (University of Colorado at Boulder, USA) Low rossby number heat transport in rotating Rayleigh-Benard convection	Abstracts p. 85
16:30-17:00	Ian Grooms (New York University, USA) A Model of Convective Taylor Columns in Rotating Rayleigh-Benard Convection	Abstracts p. 85
17:00-17:30	David J Muraki (Simon Fraser University, Canada) Rossby Waves in Rotating Shallow Water on the Sphere	Abstracts p. 86
17:30-18:00	Jean-Luc Thiffeault (University of Wisconsin, Madison, USA) Bioconvection revisited	Abstracts p. 87

Special Session <b>20</b>	<b>Stochastic-Statistical Modeling of Climate</b> Organizer(s): Dimitris Giannakis, John Harlim, Andrew Majda	Location <b>REH-4</b>
16:00-16:30	John Harlim (North Carolina State University, USA) Optimal Filtering of Complex Turbulent Systems with Memory Depth through Consistency Constraints	Abstracts p. 89
16:30-17:00	Ilya Timofeyev (University of Houston, USA) Sub-sampling in Parametric Estimation of Effective Stochastic Models	Abstracts p. 91
17:00-17:30	Jonathan Weare (University of Chicago, USA) Sampling in and out of equilibrium when the tails matter	Abstracts p. 91
17:30-18:00	Radu Herbei (The Ohio State University, USA) A Bayesian approach to parameter estimation and model error quantification of stochastic models for turbulent signals	Abstracts p. 89

Special Session <b>23</b>	<b>Topological and Combinatorial Dynamics</b> Organizer(s): Lluís Alsedà, Francisco Balibrea Gallego, Piotr Oprocha	Location <b>GRC-H</b>
16:00-16:30	Tomasz J Nowicki (IBM, USA) Tiles in Convex Dynamics. Error Diffusion on Simplices: Invariant Regions, Tessalations and Acuteness	Abstracts p. 104
16:30-17:00	Francois Gautero (Université de Nice - Sophia Antipolis, France) Dynamics on tiling spaces, invariant measures and generalized Thurston semi-norm	Abstracts p. 102
17:00-17:30	Grzegorz M Swirszcz (IBM, USA) Disjunctive cuts, lattice-free sets and mixed-integer programming	Abstracts p. 105
17:30-18:00	Maria F Correia (University of Evora, Portugal) Analysis of an infinite dynamical system using substitution systems	Abstracts p. 102
18:00-18:30	Sandra Vinagre (University of Evora, Portugal) Nonlinearly perturbed heat equation: a symbolic approach	Abstracts p. 105

Special Session <b>24</b>	<b>Geometric Mechanics</b> Organizer(s): Tom Mestdag, Manuel de Leon, Frans Cantrijn, Aziz Hamdouni, Dina Razafindralandy, Jean-Claude Zambrini	Location <b>REH-5</b>
16:00-16:30	Oscar Fernandez (Wellesley College, USA) Variational Integrators for Hamiltonizable Nonholonomic Systems	Abstracts p. 107
16:30-17:00	Paula P Balseiro (Universidade Federal Fluminense, Brazil) On the geometry of nonholonomic systems	Abstracts p. 106
17:00-17:30	Leonardo J Colombo (ICMAT, Spain) On the geometry of mechanical control systems on Lie groups	Abstracts p. 107
17:30-18:00	Marin Kobilarov (California Institute of Technology, USA) Geometric control of electromagnetic docking	Abstracts p. 108

Special Session <b>25</b>	<b>Dynamics in Complex Biological Systems</b> Organizer(s): Bijoy K. Ghosh, Akif Ibragimov, Qishao Lu, Jianzhong Su	Location <b>REH-6</b>
16:00-16:30	Qishao Q Lu (Beihang Univ., Peoples Rep of China) Bursting dynamics of pancreatic beta-cells with electrical and chemical couplings	Abstracts p. 113
16:30-17:00	Jian Xu (Tongji University, Peoples Rep of China) Oscillatory Dynamics Induced by Time Delay in an Internet Congestion Control Model with a Ring Topology	Abstracts p. 116
17:00-17:30	Zhuoqin Yang (Beihang University, Peoples Rep of China) Different Bursting patterns in two-parameter bifurcation plane of fast subsystem	Abstracts p. 116

Special Session <b>28</b>	<b>Analysis and Numerics of Differential Equations and Dynamical Systems in Mathematical Fluid Mechanics</b> Organizer(s): Changbing Hu, Ning Ju, Theodore Tachim-Medj	Location <b>REH-9</b>
16:00-16:30	Daniel X Guo (University of North Carolina Wilmington, USA) Alternating Direction Second Order Method for the Navier-Stokes Equations	Abstracts p. 126
16:30-17:00	Xiaosheng Li (Florida International University, USA) Determination of viscosity in an incompressible fluid	Abstracts p. 126
17:00-17:30	Zhongming Wang (Florida International University, USA) A level set approach for dilute non-collisional fluid-particle flows	Abstracts p. 127
17:30-18:00	Wei Wang (Florida International University, USA) A high order WENO Scheme for detonation waves	Abstracts p. 127

Special Session <b>31</b>	<b>Mathematical Models of Cancer and Cancer Therapy</b> Organizer(s): Yangjin Kim	Location <b>REH-7</b>
16:00-16:30	Yi Jiang (Georgia State University, USA) Multiscale study of angiogenesis from molecule to tissue	Abstracts p. 140
16:30-17:00	Arnaud Chauviere (University of New Mexico, USA) Cell migration features in glioma growth and invasion: Mathematical modeling and analysis	Abstracts p. 137
17:00-17:30	Peter Hinow (University of Wisconsin - Milwaukee, USA) Modeling the Effects of Drug Binding on the Dynamic Instability of Microtubules	Abstracts p. 139
17:30-18:00	Harsh Jain (Mathematical Biosciences Institute, USA) A Model of Prostate Cancer Progression under Androgen Ablation Therapy	Abstracts p. 139

Special Session <b>35</b>	<b>Qualitative Theory of Nonlinear ODEs and Applications</b> Organizer(s): Fabio Zanolin	Location <b>MAG-C</b>
16:00-16:30	Alfonso Ruiz-Herrera (University of Granada, Spain) Periodic solutions and chaotic dynamics in 3D equations with applications to Lotka Volterra systems	Abstracts p. 158
16:30-17:00	Nicola Soave (University of Milano-Bicocca, Italy) Symbolic dynamics for the $N$ -centre problem at negative energies	Abstracts p. 159
17:00-17:30	Greg S Spradlin (Embry-Riddle Aeronautical University, USA) An Even Solution to a fourth-order ODE	Abstracts p. 159
17:30-18:00	Gianmaria Verzini (Politecnico di Milano, Italy) Entire Parabolic Trajectories as Minimal Phase Transitions	Abstracts p. 159

Special Session <b>45</b>	<b>Stochastic and Deterministic Dynamical Systems, and Applications</b> Organizer(s): Tomas Caraballo, Jose Valero Cuadra, Maria Garrido-Atienza	Location <b>GRC-B</b>
16:00-16:30	Carmen Calvo-Jurado (Universidad de Extremadura, Spain) Asymptotic behavior of linear elliptic problems with Dirichlet conditions on random varying domains	Abstracts p. 191
16:30-17:00	David J Simpson (The University of British Columbia, Canada) The Effects of Noise on Sliding Motion	Abstracts p. 194
17:00-17:30	Bixiang Wang (New Mexico Tech, USA) Sufficient and Necessary Criteria for Existence of Pullback Attractors for Non-compact Random Dynamical Systems	Abstracts p. 194

Special Session <b>49</b>	<b>Growth Models and Interface Dynamics</b> Organizer(s): Alexander Nepomnyashchy, Tatiana Savin, Amy Novick-Cohen	Location <b>PAL-CC</b>
16:00-16:30	Martin E Glicksman (Florida Institute of Technology, USA) Capillary-mediated pattern branching	Abstracts p. 207
16:30-17:00	Matthew Elsey (Courant Institute - New York University, USA) Diffusion-Generated Motion Algorithms for Multiphase Curvature Motion	Abstracts p. 207
17:00-17:30	Amy Novick-Cohen (Technion, Israel) Coarsening and the deep quench obstacle problem	Abstracts p. 208
17:30-18:00	Alexander Nepomnyashchy (Technion - Israel Institute of Technology, Israel) Stationary solutions of the convective Cahn-Hilliard equation	Abstracts p. 208
18:00-18:30	Petr Plechac (University of Delaware, USA) Born-Oppenheimer approximation and accuracy of molecular dynamics	Abstracts p. 209

Special Session <b>63</b>	<b>Infinite Dimensional Dynamics and Applications</b> Organizer(s): James C. Robinson, Yuncheng You	Location <b>PAL-A</b>
16:00-16:30	Witold Sadowski (University of Warsaw, Poland) 3D Navier-Stokes equations: numerical verification of regularity for bounded sets of initial data	Abstracts p. 248
16:30-17:00	Marco Sammartino (University of Palermo, Italy) Separation and bifurcation phenomena for flows interacting with a boundary	Abstracts p. 248
17:00-17:30	Nick Sharples (University of Warwick, England) On representatives of solutions and those properties independent of the chosen representative.	Abstracts p. 248
17:30-18:00	Mikolaj Sierzega (University of Warwick, England) Global existence for the critical semilinear heat equation	Abstracts p. 248

Special Session <b>64</b>	<b>Analysis of PDEs and Particle Systems: From Life Sciences, Economics and Materials Science</b> Organizer(s): Toyohiko Aiki, Nobuyuki Kenmochi, Adrian Muntean	Location <b>POI-D</b>
16:00-16:30	Maria D'orsogna (California State University at Northridge, USA) Stochastic nucleation and growth of particle clusters	Abstracts p. 250
16:30-17:00	Razvan C Fetecau (Simon Fraser University, Canada) Swarm dynamics and equilibria for a nonlocal aggregation model	Abstracts p. 251
17:00-17:30	Joep Evers (Eindhoven University of Technology, Netherlands) Global effect of local anisotropic interactions in crowd dynamics	Abstracts p. 250
17:30-18:00	Yusuke Murase (Meijo University, Japan) Mathematical modeling for brewing process of Sake and its analysis	Abstracts p. 252

Special Session <b>67</b>	<b>Applied Analysis and Dynamics in Engineering and Sciences</b> Organizer(s): Thomas C Hagen, Janos Turi	Location <b>POI-A</b>
16:00-16:30	Marian Bocea (Loyola University Chicago, USA) Models for growth of heterogeneous sandpiles via Mosco convergence	Abstracts p. 254
16:30-17:00	Brenton LeMesurier (College of Charleston, USA) Conservative time discretization of large, stiff Hamiltonian systems, applied to models of molecular chains and nonlinear optics	Abstracts p. 256
17:00-17:30	Byungik Kahng (University of North Texas at Dallas, USA) Non-linear Discrete-time Singularly-disturbed Control Dynamical Systems and their Steady State Sets	Abstracts p. 256
17:30-18:00	Jigarkumar S Patel (The University of Texas at Dallas, USA) Computational Study of a Dynamic Contact Problem	Abstracts p. 257

Special Session <b>72</b>	<b>Special Methods for Solving Systems of Non-linear Differential Equations and their Applications to Sciences and Engineering</b> Organizer(s): Mufid Abudiab	Location <b>MAG-B</b>
16:00-16:30	Diane L Denny (Texas A&M University-Corpus Christi, USA) A unique positive solution to a system of nonlinear elliptic equations	Abstracts p. 273
16:30-17:00	Seunghyeon Baek (Korea University, Korea) A spatio-temporal model for tumor-immune interaction and siRNA treatment	Abstracts p. 272
17:00-17:30	Habibolla Latifizadeh (Shiraz University of Technology, Iran) The qualitative study on a new special analytical method for solving wide classes of Non-linear Differential Equations-Reality, potential	Abstracts p. 273

Special Session <b>73</b>	<b>Mathematical Models for Upwelling Ocean Currents and Related Phenomena</b> Organizer(s): David Rivas, Sherry Scott, Anna Ghazaryan	Location <b>REH-1</b>
16:00-16:30	Andrew J Willmott (National Oceanography Centre, England) Geostrophic adjustment in a polar basin	Abstracts p. 277
16:30-17:00	Grace M Maze (University of Miami, USA) The connection between the Loop Current excursions and the Florida Red Tides	Abstracts p. 276
17:00-17:30	Yonggang Liu (University of South Florida, USA) Seasonality of the circulation on the West Florida Shelf	Abstracts p. 276
17:30-18:00	Sherry E Scott (Marquette University, USA) Individual trajectory complexity methods & an upwelling flow example	Abstracts p. 277

Special Session <b>79</b>	<b>Numerical Methods based on Homogenization and on Two-Scale Convergence</b> Organizer(s): Emmanuel Frenod	Location <b>POI-B</b>
16:00-16:30	Lei Zhang (Shanghai Jiaotong University, Peoples Rep of China) Numerical homogenization with non-separable scales	Abstracts p. 297
16:30-17:00	Sever Hirstoaga (INRIA Nancy Grand-Est & IRMA Strasbourg, France) Two-Scale Asymptotic-Preserving Particle-in-Cell method for a Vlasov-Poisson system	Abstracts p. 296
17:00-17:30	Seck Diaraf (LMDAN, UCAD, Senegal) Location Problems by shape and topological optimization	Abstracts p.

Contributed Session <b>02</b>	<b>ODEs and Applications</b> Chair(s): Zhaosheng Feng	Location <b>REH-3</b>
16:00-16:20	Duane Chin-Quee (Florida Institute of Technology, USA) Existence and Uniqueness of Linear Functional Differential Equations with Anticipation	Abstracts p. 313
16:20-16:40	Zhazira K Kadirbayeva (Institute of Mathematics MES of Kazakhstan, Kazakhstan) Criterion of well-posed solvability of linear semi-periodical boundary value problem for system of loaded hyperbolic equations	Abstracts p. 314
16:40-17:00	Enrique Ponce (University of Sevilla, Spain) Limit cycle existence and uniqueness in elementary piecewise linear continuous systems	Abstracts p. 315
17:00-17:20	Scott Kelly (University of North Carolina at Charlotte, USA) Constrained Mechanics and Idealized Models for Aquatic Locomotion	Abstracts p. 314
17:20-17:40	Andrew G Smith (University of Queensland, Australia) Diffusion approximations for Metapopulation Models	Abstracts p. 316



Contributed Session <b>07</b>	<b>Scientific Computation and Numerical Algorithms</b> Chair(s): Paula Kemp	Location <b>REH-2</b>
16:00-16:20	Elif Demirci (Ankara University, Turkey) A method to solve fractional differential equations	Abstracts p. 323
16:20-16:40	Katharine F Gurski (Howard University, USA) Constructing extensions of nonstandard finite difference schemes	Abstracts p. 323
16:40-17:00	Brian E Moore (University of Central Florida, USA) Conformal Conservation Laws and Geometric Integration for Damped Hamiltonian PDEs	Abstracts p. 324
17:00-17:20	Purnima K Pandit (The M. S. University of Baroda, India) Fully Fuzzy Systems of Linear Equations	Abstracts p. 325
17:20-17:40	Juan-Carlos Diaz-Martin (University of Extremadura, Spain) Complexity Analysis of a Winding Number Algorithm by Iterated Function Methods	Abstracts p. 323
17:40-18:00	Runchang Lin (Texas A&M International University, USA) A Discontinuous Galerkin Least-Squares Finite Element Method for Solving Fisher's Equation	Abstracts p. 324
18:00-18:20	Paula A Kemp (MSU, USA) On Functions having the Fixed Point Property	Abstracts p. 324