

CHAOS 2015

PROGRAM

**8th Chaotic Modeling and Simulation
International Conference**



26 – 29 May 2015

**Henri Poincaré Institute
Paris France**

Preface

8th Chaotic Modeling and Simulation International Conference

26-29 May 2015, Paris, France

It is our pleasure to welcome the guests, participants and contributors to the 8th International Conference (CHAOS2015) on Chaotic Modeling, Simulation and Applications. We support the study of nonlinear systems and dynamics in an interdisciplinary research field and very interesting applications will be presented. We intend to provide a widely selected forum to exchange ideas, methods, and techniques in the field of Nonlinear Dynamics, Chaos, Fractals and their applications in General Science and in Engineering Sciences.

The principal aim of CHAOS2015 International Conference is to expand the development of the theories of the applied nonlinear field, the methods and the empirical data and computer techniques, and the best theoretical achievements of chaotic theory as well.

Chaotic Modeling and Simulation Conferences continue to grow considerably from year to year thus making a well established platform to present and disseminate new scientific findings and interesting applications. We thank all the contributors to the success of this conference and especially the authors of this *Book of Abstracts* of CHAOS 2015.

Special thanks to the Scientific Committee, the ISAST Committee, the Conference Secretary Mary Karadima and all the members of the Secretariat.



May 2015
Christos H. Skiadas
Conference Chair

Honorary Committee

Leon O. Chua

EECS Department, University of California, Berkeley, USA
Editor of the International Journal of Bifurcation and Chaos

Gennady A. Leonov

Dean of Mathematics and Mechanics Faculty, Saint-Petersburg State
University, Russia
Member (corresponding) of Russian Academy of Science

David Ruelle

Academie des Sciences de Paris
Honorary Professor at the Institut des Hautes Etudes Scientifiques
of Bures-sur-Yvette, France

Ferdinand Verhulst

Mathematics Faculty, Utrecht, The Netherlands

International Scientific Committee

C. H. Skiadas (Technical University of Crete, Chania, Greece), Chair
H. Adeli (The Ohio State University, USA)
J.-O. Aidanpaa (Division of Solid Mechanics, Lulea University of Technology, Sweden)
N. Akhmediev (Australian National University, Australia)
M. Amabili (McGill University, Montreal, Canada)
J. Awrejcewicz (Technical University of Lodz, Poland)
E. Babatsouli (Institute of Monolingual and Bilingual Speech, Chania, Greece)
J. M Balthazar (UNESP-Rio Claro, State University of Sao Paulo, Brasil)
S. Bishop (University College London, UK)
T. Bountis (University of Patras, Greece)
Y. S. Boutalis (Democritus University of Thrace, Greece)
C. Chandre (Centre de Physique Theorique, Marseille, France)
M. Christodoulou (Technical University of Crete, Chania, Crete, Greece)
P. Commendatore (Universita di Napoli 'Federico II', Italy)
D. Dhar (Tata Institute of Fundamental Research, India)
J. Dimotikalis (Technological Educational Institute, Crete, Greece)
B. Epureanu (University of Michigan, Ann Arbor, MI, USA)
G. Fagiolo (Sant'Anna School of Advanced Studies, Pisa, Italy)
M. I. Gomes (Lisbon University and CEAUL, Lisboa, Portugal)
V. Grigoras (University of Iasi, Romania)
A. S. Hacinliyan (Yeditepe University, Istanbul, Turkey)
K. Hagan, (University of Limerick, Ireland)
L. Hong (Xi'an Jiaotong University, Xi'an, Shaanxi, China)
G. Hunt (Centre for Nonlinear Mechanics, University of Bath, Bath, UK)
T. Kapitaniak (Technical University of Lodz, Lodz, Poland)
G. P. Kapoor (Indian Institute of Technology Kanpur, Kanpur, India)
A. Kolesnikov (Southern Federal University Russia)
I. Kourakis (Queen's University Belfast)
J. Kretz (University of Music and Performing Arts, Vienna, Austria)
V. Krysko (Dept. of Math. and Modeling, Saratov State Technical University, Russia)
I. Kusbeyzi Aybar (Yeditepe University, Istanbul, Turkey)
W. Li (Northwestern Polytechnical University, China)
B. L. Lan (School of Engineering, Monash University, Selangor, Malaysia)
V J Law (University College Dublin, Dublin, Ireland)
I. Lubashevsky (The University of Aizu, Japan)
V. Lucarini (University of Hamburg, Germany)
J. A. T. Machado (ISEP-Institute of Engineering of Porto, Porto, Portugal)
W. M. Macek (Cardinal Stefan Wyszyński University, Warsaw, Poland)
P. Mahanti (University of New Brunswick, Saint John, Canada)
G. M. Mahmoud (Assiut University, Assiut, Egypt)
P. Manneville (Laboratoire d'Hydrodynamique, Ecole Polytechnique, France)
A. S. Mikhailov (Fritz Haber Institute of Max Planck Society, Berlin, Germany)
E. R. Miranda (University of Plymouth, UK)
M. S. M. Noorani (University Kebangsaan, Malaysia)
G. V. Orman (Transilvania University of Brasov, Romania)
O. Ozgur Aybar (Yeditepe University, Istanbul, Turkey)
S. Panchev (Bulgarian Academy of Sciences, Bulgaria)
G. P. Pavlos (Democritus University of Thrace, Greece)
G. Pedrizzetti (University of Trieste, Trieste, Italy)
F. Pellicano (Universita di Modena e Reggio Emilia, Italy)
D. Pestana (Lisbon University and CEAUL, Lisboa, Portugal)
S. V. Prants (Pacific Oceanological Institute of RAS, Vladivostok, Russia)
A.G. Ramm (Kansas State University, Kansas, USA)

G. Rega (University of Rome "La Sapienza", Italy)
H. Skiadas (Hanover College, Hanover, USA)
V. Snasel (VSB-Technical University of Ostrava, Czech)
D. Sotiropoulos (Technical University of Crete, Chania, Crete, Greece)
B. Spagnolo (University of Palermo, Italy)
P. D. Spanos (Rice University, Houston, TX, USA)
J. C. Sprott (University of Wisconsin, Madison, WI, USA)
S. Thurner (Medical University of Vienna, Austria)
D. Trigiante (Universita di Firenze, Firenze, Italy)
G. Unal (Yeditepe University, Istanbul, Turkey)
A. Valyaev (Nuclear Safety Institute of RAS, Russia)
A. Vakakis (University of Illinois at Urbana-Champaign, Illinois, USA)
J. P. van der Weele (University of Patras, Greece)
M. Wiercigroch (University of Aberdeen, Aberdeen, Scotland, UK)
M. V. Zakrzhevsky (Institute of Mechanics, Riga Technical University, Latvia)

Plenary and Keynote Talks

Honorary Speech

David Ruelle

Institut des Hautes Études Scientifiques (IHES), in Bures-sur-Yvette, France

HYDRODYNAMIC TURBULENCE
AS A NONSTANDARD TRANSPORT PHENOMENON

Giovanni Gallavotti

Universita di Roma 1, "La Sapienza", Italy

Friction and Reversibility in the Lorenz 96 Model

Roger Lewandowski

University Rennes 1, France

The Kolmogorov Law of Turbulence:
What Can Rigorously Be Proved?

Edward Ott

University of Maryland, USA

Emergent Behavior in Large Systems of Coupled Oscillators

Yves Pomeau

Department of Mathematics, University of Arizona, Tucson, USA

Historical Points of the Development of Chaos Theory
in the French Perspective

Alexander G. Ramm

Mathematics Department, Kansas State University, USA

EM Wave Scattering by One and Many Small Impedance Particles of
Arbitrary Shape and Creating Materials
with a Desired Refraction Coefficient

Ferdinand Verhulst

Mathematisch Instituut, University of Utrecht, The Netherlands

The Dynamics of Hamiltonians with Non-Integrable Normal Form

James A. Yorke

Institute for Physical Science and Technology,

University of Maryland, College Park, MD, USA

Chaos in Higher Dimensions

8th Chaotic Modeling and Simulation International Conference (CHAOS2015)

May 26-29, 2015, Henri Poincaré Institute, Paris France

Program

Session / Room	Date / Time	Authors / Talk Title / Event	Authors / Talk Title / Event
Amphi Hermite	8.30-9.20	Tuesday May 26	Registration
Amphi Hermite	9.20-9:40	Opening Ceremony	
		Honorary Session on the occasion of 80th birthday of Prof. D. Ruelle (Chair: Giovanni Gallavotti)	
Amphi Hermite	9:40-10.40	David Ruelle Institut des Hautes Etudes Scientifiques of Bures-sur-Yvette, France	HYDRODYNAMIC TURBULENCE AS A NONSTANDARD TRANSPORT PHENOMENON
	10:40-11:00		Coffee Break
Amphi Hermite	11:00-12:30	Special Session: Henri Poincaré Tribute (Chair: Jean-Marc Ginoux)	
		History of nonlinear oscillations theory Historical points of the development of Chaos theory in the French perspective Poincaré's invention of topology	Jean-Marc Ginoux Yves Pomeau Ferdinand Verhulst
Amphi Hermite	12.30-13.10	Plenary Session (Chair: Bruce Hamilton) Edward Ott Institute for Research in Electronics and Applied Physics UMCP, College Park, MD University of Maryland, USA	EMERGENT BEHAVIOR IN LARGE SYSTEMS OF COUPLED OSCILLATORS
	13:10	Photograph in front of Henri Poincaré Institute	
	26.05.15:13:15-14.20		Lunch

Amphi Hermite	26.05.15:14.20- 15.00	Plenary Session (Chair: Miguel Sanjuan) James Yorke Institute for Physical Science and Technology, University of Maryland, College Park, MD, USA	Chaos in Higher Dimensions
Amphi Hermite	26.05.15:15.00- 15:30	Keynote Session (Chair: Wieslaw M. Macek) Giovanni Gallavotti Universita di Roma 1, "La Sapienza", Italy	Friction and reversibility in the Lorenz 96 Model
Amphi Hermite	26.05.15:15.30- 16:00	Keynote Session (Chair: Garegin Papoian) I.M. Moroz, R. Cropp, J. Norbury Mathematical Institute, Oxford University, UK	Chaos in an NPPZ Plankton Model
26.05.15:16.00- 16.20		Coffee Break	

SCS1	SPECIAL AND CONTRIBUTED SESSIONS SCS1
-------------	--

Amphi Hermite	26.05.15:16:20-18:00	Chair: N. Katopodes, Co-Chair: Wolfgang Kinzel	Various Cases of Nonlinear Modeling
----------------------	----------------------	---	--

Spontaneous Bubble Formation in Laminar Multi-Phase Flow between Rotating Disks	Nikolaos D. Katopodes
Nanoscale Energy Transfer from Metallic Nanoparticles Tuning Chaos for Cancer Therapy	Bruce Hamilton
Chaos Synchronization in Nonlinear Networks with Time Delayed Couplings	Wolfgang Kinzel
Chaos and Regularity in Driven Intrinsic Josephson Junctions	André E. Botha, Yury M. Shukrinov, Mohammad R. Kolahchi
Unveiling Complexity of Church Bells Dynamics Using Experimentally Validated Hybrid Dynamical Model	Piotr Brzeski, Tomasz Kapitaniak, Przemysław Perlikowski
Analysis, Simulation and Composition Using Nonlinear Techniques	Renato Colucci

Salle 01	26.05.15:16:20-18:00	Chair: Wieslaw M. Macek	Convection - Networks
-----------------	----------------------	--------------------------------	------------------------------

Hyperchaos and Intermittency in the Generalized Lorenz Model of Hydromagnetic Convection	Wieslaw M. Macek, Marek Strumik
The Bifurcation Picture for Microscale Thermal Convection	Roger E. Khayat, Daniel Stranges, John deBruyn
Characteristics and a Lower-Dimensional Model of Chaotic Natural Convection in a Vertical, Highly Confined, Differentially Heated Fluid Layer	Zhenlan Gao, Bérengère Podvin, Anne Sergent, Shihe Xin
Analytical Experimental Results for the Intermittency Theory for Type I, II and III	Ezequiel del Rio, Sergio Elaskar
Fractional Chen Chaotic Networks	Carla M.A. Pinto, Ana R.M. Carvalho
Some remarks to risk assessments of nuclear power plants (NPP)	Alexander Valyaev, Gurgen Aleksanyan, Alexey Valyaev, Oleg Arkhipkin

26.05.15: 18.00-19.00	Welcome Reception
-----------------------	--------------------------

Wednesday May 27

SCS2

SPECIAL AND CONTRIBUTED SESSIONS SCS2

Amphi Hermite	27.05.15: 8.30-10.40	Chair: Miguel A. F. Sanjuán, Co-Chair: Paul A. Meehan	Oscillators and Chaos
		Partially Controlling Transient Chaos in the Lorenz Equations	Miguel A. F. Sanjuán
		Synchronization of Chaotic Oscillators on Hypergraphs	Andrzej Krawiecki
		Self-Organisation of Random Oscillators with Lévy Stable Distributions	Sara Moradi, Johan Anderson
		Synchronizing Chaos with a System of Harmonic Oscillators	Ali Azimi Olyaei, Christine Wu
		Anticipating Synchronization in a Chain of Chaotic Oscillators with Switching Parameters	Tatjana Pyragienė, Kestutis Pyragas
		Predicting and Simulating Chaotic Instabilities in an Inclined Furuta Pendulum	Paul A. Meehan
		Phenomenological Model for Predicting Stationary and Non-Stationary Spectra of Wave Turbulence in Vibrating Plates	Thomas Humbert
		Generalized Synchronization of Multidimensional Chaotic Systems in Terms of Symbolic CTQ-Analysis	Andrey V. Makarenko

Salle 01	27.05.15: 8.30-10.40	Chair: Marcin Molski, Co-Chair: Christophe Letellier	Fractals and Maps
		A Fractal Model of the Stimulus-Response Relationship	Marcin Molski
		The Inverse Iteration Method for Julia Sets in the 3-Dimensional Space	Dominic Rochon
		Statistical Analysis of Nearest Neighbors Leads to Robust and Reliable Estimates for Minimum Embedding Dimension	David Chelidze
		Coarse-Grainings Induced by Non-Generating Partitions of Unimodular Maps	Oliver Pfante
		Period Length Distributions of (Piecewise) Rational Maps Over Finite Fields	Natascha Neumärker
		Bandcount Adding Structure and Collapse of Chaotic Attractors in a Piecewise Linear Bimodal Map	Viktor Avrutin, Vincent Mahout, Danièle Fournier-Prunaret
		Systematic Topological Characterization of the Various Chaotic Attractors Produced by a Chua Circuit	Martin Rosalie, Christophe Letellier
		Numerical Study of Chaotic Attractors in a Family of Gumowski-Mira-Like Maps	Dumitru N. DELEANU

27.05.15: 10.40-11:00

Coffee Break

SCS3		SPECIAL AND CONTRIBUTED SESSIONS SCS3	
Amphi Hermite	27.05.15: 11.00-13.00	Chair: Francisco Beron-Vera	Coherent structures in flow data
		Large Deviations of Atmospheric Jets	Freddy Bouchet
		Relationship between Eulerian and Lagrangian Coherent Structures	George Haller
		Lagrangian Parameterization for Submesoscale Particle Transport in the Gulf of Mexico	Angelique Haza
		Lagrangian Techniques Applied to Ocean Submesoscale Dynamics	Guillaume Lapeyre
		Finite-Time Barriers to Front Propagation	John Mahoney, Kevin Mitchell
		The Significance of Coherent Material Eddies in the Ocean	Maria Josefina Olascoaga
Salle 01	27.05.15: 11.00-13.00	Chair: Vic J Law	Models, Time Series, Plasma
		Consistency of a Chaotic Model for the Collapse Phase of Magnetic Reconnection in Tokamak Plasmas	Wahb Ettoumi, Marie-Christine Firpo, Agustin F. Lifschitz, Ricardo Farengo, Hugo E. Ferrari, Pablo Garcia-Martinez
		Embedded Delay Time-Series Analysis of Atmospheric Pressure Plasma Jet Treatment of Composite Surfaces	V J Law, D P Dowling
		Analysis of Ship Manoeuvring Models Using Numerical Continuation Methods	Ed van Daalen, Jens Rademacher
		A New Robust Numerical Scheme for Nonlinear ODE Systems	Thibaut-Hugues Gallois, Léo Agelas, Thierry Soriano
		First Observation of Quasi-Chaos in Erbium Doped Fiber Ring Laser	S. Zafar Ali
		Understanding the Inner Architecture of Languages	Malcolm D. Lowe
		The Complete Bifurcation Analysis of Switching Power Converters with Feedback Delays	Dmitrijs Pikulins
		On The Design of Proportional Integral Observer for a Rotary Drilling System	Madjid KIDOUCHE, Rami RIANE
	27.05.15:13.00-14.30		Lunch
	27.05.15:14.30-15.00	Committee Meeting	
Excursion	27.05.15: 15.00-19.00		Half Day Excursion

Thursday May 28

SCS4

SPECIAL AND CONTRIBUTED SESSIONS SCS4

Amphi Hermite	28.05.15: 8.30-10.50	Chair: Yves Pomeau, Co-Chair: Roger Lewandowski	Chaos- Oscillations - Optics
		The Relaxation Oscillations Paradigm, Classical Setting and Modern Extensions	Yves Pomeau
		History of Coupling the Equation for the Turbulent Kinetic Energy with the Navier-Stokes Equations through Eddy Viscosities	Roger Lewandowski
		Parhelic-like Circle and Chaotic Light Scattering	Adriana Pedrosa Biscaia Tufaile, Alberto Tufaile
		Hyperbolic Prism, Poincaré Disk and Foams	Alberto Tufaile, Adriana Pedrosa Biscaia Tufaile
		Transition of Transient Behaviour Due to Exceptional Point	Dong-Uk Hwang
		Nonlinear Oscillation in Current-Mode-Controlled dc/ac Inverter	Hiroyuki Asahara, Takuji Kousaka
		A pass through Chaos, patterns and solitons in Nonlinear Optics	Martine Le Berre

Salle 201	28.05.15: 8.30-10.50	Chair: Ihor Lubashevsky	Dynamics of Human Systems
		Noise-Sustained Chaos in Systems Mimicking Human Behavior	Ihor Lubashevsky
		Stochastic Dynamics of Human-Controlled Systems: The Case of Inverted Pendulum Balancing	Arkady Zgonnikov, Ihor Lubashevsky
		Striation Model of the Population Growth of the Earth	Vladimir G. Zhulego, Artem A. Balyakin
		Implications of Chaos Theory in Management Science	Jessica Galacgac, Amarjit Singh
		Brain Functionality via Complex Systems Theory	Gabriel Crumpei, Alina Gavriluț, Maricel Agop, Irina Crumpei
		Sudden Death and Turbulence	Guillaume Attuel, Oriol Pont, Binbin Xu, Hussein Yahia
		Comparison of Nonlinear Dynamics of Parkinsonian and Essential Tremor	Olga E. Dick
		The Health Status of a Population: Some Interesting Findings	Christos H. Skiadas

28.05.15: 10.50-11.10

Coffee Break

SCS5	SPECIAL AND CONTRIBUTED SESSIONS SCS5
-------------	--

Amphi Hermite	28.05.15: 11.10-13.00	Chair: Linda E. Reichl, Co-Chair: Garegin Papoian	Pattern Formation - Maps
		Localized Patterns of Sand Ripples Generated By Steady Flows: Experimental and Theoretical Study	Anthony Auzerais, Armelle Jarno, Ilexander Ezersky, François Marin
		Temporary Stabilization of Periodic Unstable Orbits in a Discrete Bouncer System Using Patterns of H-ranks	Mantas Landauskas, Tadas Telksnys, Minvydas Ragulskis
		Pattern Formation in Acto-Myosin Networks	Garegin Papoian
		The Chaotic Dynamics of 2D and 3D HOCl above Dissociation	L.E. Reichl, Y-D Lin, A. Barr, C. Jung
		Chaos and Periodic Solutions in a Dynamic Monopoly Model	Bashir Al-Hdaibat, Willy Govaerts, Niels Neiryck

Salle 201	28.05.15: 11.10-13.00	Chair: Sergey V. Prants	Chaotic Flows
		Hyperbolicity in the Ocean	S.V. Prants, V.V. Budyansky, M.YU. Uleysky
		Relative Dispersion and Turbulence in the Southwestern Atlantic Ocean from Lagrangian Data	Stefano Berti, Francisco Alves Dos Santos
		Chaotic Mixing Across a Meandering Oceanic Current	Tatyana S. Krasnopolskaya, GertJan F. van Heijst
		Nonlinear Impacting Oscillations of a Simply Supported Pipe Conveying Pulsating Fluid Subjected to Distributed Motion Constraints	Yikun Wang, Qiao Ni, Min Tang, Yangyang Luo, Hao Yan, Lin Wang
		Turbulent Prandtl Number in a Model of Passive Vector Advection	Richard Remecky, Eva Jurcisinova, Marian Jurcisin, Peter Zalom

28.05.15: 13.00-14.15	Lunch
-----------------------	--------------

Amphi Hermite	28.05.15: 14.15-15.00	Plenary Session (Chair: D. Sotiropoulos) Ferdinand Verhulst Mathematisch Instituut, University of Utrecht, Netherlands	The	The dynamics of Hamiltonians with non-integrable normal form
Amphi Hermite	28.05.15: 15.00-15.40	Plenary Session (Chair: F. Verhulst) Roger Lewandowski Institut de Recherche Mathématiques de Rennes, University Rennes 1, France		The Kolmogorov Law of turbulence: what can rigorously be proved?
Amphi Hermite	28.05.15: 15.40-16.20	Plenary Session (Chair: Linda E. Reichl) Alexander Ramm Mathematics Department, Kansas State University, USA		EM wave scattering by one and many small impedance particles of arbitrary shape and creating materials with a desired refraction coefficient
	28.05.15: 16.20-16.40			Coffee Break

SCS6		SPECIAL AND CONTRIBUTED SESSIONS SCS6	
Amphi Hermite	28.05.15: 16.40-18.00	Chair: Jean-Marc Ginoux	Dynamical Systems
		Canards existence in 3D & 4D	Jean-Marc Ginoux & Jaume Llibre
		On a Circuit Model with 4-Dimensional Canards	Kiyoyuki Tchizawa
		Localization of Domains with Complex Dynamics for Systems of Various Types	Alexander P. Krishchenko, Anatoly N. Kanatnikov
		Assessing Observability of Complex Systems by Using Nonlinear Symbolic Coefficients	Christophe Letellier, Ezequiel Bianco-Martinez, Murilo S. Baptista
		An Approach on Information from Topological View	Gabriel Crumpei, Alina Gavrilut, Maricel Agop, Irina Crumpei
		Statistics of Chaos	David C. Ni
Salle 201	28.05.15: 16.40-18.00	Chair: Oleh Omel'chenko	Emergent dynamics and control
		Cancelling Synchronization in Bistable Oscillatory Networks	Kestutis Pyragas, Irmantas Ratas
		Controlling Unstable Chaos in Systems of Coupled Oscillators	Oleh Omel'chenko
		Control of Synchronization by Weak Spaced Stimulation	Oleksandr V. Popovych, Markos N. Xenakis, Peter A. Tass
		Chimera States: Robustness, the Impact of Local Dynamics and Time Delay	Iryna Omelchenko
		Stabilization of Unstable Orbits of Smooth Maps with Chaotic Dynamics	Alexey Solyanik
28.05.15: 20.00-23.00		Farewell Dinner	

Friday May 29

SCS7

SPECIAL AND CONTRIBUTED SESSIONS SCS7

Amphi Hermite	29.05.15: 8.30-10.30	Chair: Gabriel V. Orman, Co-Chair: Vladimir L. Kalashnikov	Stochastic
		Stochastic Calculations for Fibre Raman Amplifiers with Randomly Varying Birefringence	Vladimir L. Kalashnikov, Sergey Sergeev
		From Chaotic Motion to Brownian Motion: A Survey and Some Connected Problems	Gabriel V. Orman, Irinel Radomir
		Non-Relativistic Versus Relativistic Low-Speed Momentum Diffusion	Shiuan-Ni Liang, Boon Leong Lan
		Wavelet Based Hidden Markov Method for Quantifying Self-Organization and Complexity	Milan Rajkovic, Milos Milovanovic
		New Robust Mean Square Stability of Discrete-Time Stochastic Hybrid Systems with Interval Time-Varying Delays	Grienggrai Rajchakit
		Empirical probability function for Lyapunov exponents	Clément Goulet, Dominique Guégan, Philippe de Péretti
		A Transitional Chaos	Marek Berezowski
		A Discrete Time Model for Ideal Gases	Ricardo López-Ruiz

Salle 05	29.05.15: 8.30-10.30	Chair: Nada Jevtic	Chaotic Systems and Time Series
		Study of the Elastic Enhancement Factor and the Power Spectra, for Partially Chaotic and Chaotic Systems	Michał Ławniczak, Małgorzata Białous, Vitalii Yunko, Szymon Bauch, Leszek Sirko
		How Irreversibility Was Lost in Classical Mechanics and how it's Returned	V.M. Somsikov
		Correlations between Hurst Exponent and maximal Lyapunov Exponent for some conservative dynamical systems	Mariusz Tarnopolski
		Qualitative and Quantitative Study of a New Hyper Chaotic System and its Generalized Function Prospective Synchronization	Priyambada Tripathi
		Kepler Space Telescope Data – A Vehicle for Nonlinear Time Series Analysis Development	N. Jevtic, F. Jiang, M. Ashton, P. Stine
		Permutation, Linear Combination and Complexity of Short Time Series	Zoran Rajilic
		Presence of Long Range Correlations in Local Field Potential Recordings from Mice Reared in Environmental Enrichment	Angelo Di Garbo, F. Vallone, A. Cintio, M. Mainardi, M. Caleo
		Adaptive Control of Aerospace Systems at Stage Separation	Olga Kreerenko, Evgeny Kreerenko

29.05.15: 10:30-10:50

Coffee Break

SCS8		SPECIAL AND CONTRIBUTED SESSIONS SCS8	
Amphi Hermite	29.05.15: 10.50-12:10	Chair: Shunji Kawamoto	Physico-Chemical
		Low-Dimensional Deterministic Chaos in Thermally-Induced Physical Aging of As ₁₀ Se ₉₀ Glass Studied With Nonlinear Time-Series Method	Oleh I. Shpotyuk, Avadis S. Hacınlyan, Valentina Balitska, Yani Skarlatos, Andrzej Kozdras, I. Kusbeyzi Aybar, O. Ozgur Aybar
		Investigation of the Phase Transformation Disorder-Order in the Alloy NiAl Equiatomic Composition with Stepwise Cooling	Starostenkov M. D., Chaplygin P.A., Chaplygina A.A.
		Nonlinear Dynamics of Two-Dimensional Chaos Map and Fractal Set for Snow Crystal	Nguyen H. Tuan Anh, Dang Van Liet, Shunji Kawamoto
		Nonlinear Self-organization Dynamics of a Metabolic Process of the Glycolysis	Valeriy I. Grytsay, Iryna V. Musatenko
		Coexistence states of chemostat model with diffusion	Yianling Li and Jianhua Wu
Salle 05	29.05.15: 10.50-12:10	Chair: Beatrice Venturi	Chaotic solutions in non linear economic models
		Randomness in the Dynamics of a Deterministic Continuous Two Sector Endogenous Growth Model	Giovanni Bella, Paolo Mattana, Beatrice Venturi
		Variable Elasticity of Substitution in the Diamond Model: Dynamics and Comparisons	Francesca Grasseti, Cristiana Mammana, Elisabetta Michetti
		Sunspots and Hopf Bifurcations in Economic Financial Models	Beatrice Venturi, Alessandro Pirisinu
		Aerosols: The Condition of Dust Desert Sahara's Over the Southern Europe District	Dimitrios Dellaportas, Anna Alexandratou
		Strange Behaviour of Binomial Distribution Family Applied to Online Ratings Data	Yiannis Dimotikalis

Amphi Hermite	29.05.15: 12:10-13:30	Chair: Yiannis Dimotikalis		Neural
		Anti-Synchronization of Chaotic Systems with Adaptive Neuro-Fuzzy Inference System	Uğur Erkin Kocamaz, Yılmaz Uyaroğlu	
		Control of Chaotic Finance System using Artificial Neural Networks	Uğur Erkin Kocamaz, Yılmaz Uyaroğlu, Gültekin Çağıl, Harun Taşkın, and Zeynep Çağıl	
		Control of a Simple Chaotic Flow having a Line Equilibrium by means of a Single Passive Controller	Yılmaz Uyaroğlu, Uğur Erkin Kocamaz	
		Experimenting Chaos with Chaotic Training Boards	Recai KILIÇ, Nimet KORKMAZ	
		Resonance Phenomena in a Nonlinear Neuronal Circuit	M. Bordet, S. Morfu, P. Marquié	
		Synchronization of Chaotic Cellular Neural Networks in Small-World Topology	Soriano-Sánchez A.G., Platas-Garza M.A., López-Gutiérrez R.M., Cruz-Hernández C., Posadas-Castillo C.	

Salle 05	29.05.15: 12:10-13:30	Chair: Lequan Min		Chaos - Encryption
		Study of a Kind of Discrete Chaotic Systems with One Line Equilibrium and Application in Image Encryption with Avalanche Effects	Lequan Min, Kai Li, E. Chen, Zongting Zhang, Xiao Jia, Gang Yang, Danling Wang	
		Study of a Kind of Bidirectional Discrete Chaotic Generalized Synchronization Systems without Equilibria and Application in Image Encryption with Avalanche Effects	Lequan Min, Xiuping Yang, Danling Wang	
		Information Security of the Chaotic Communication Systems	Mykola Kushnir, Sergii Galyuk, Petro Ivanyuk, Dmytro Vovchuk	
		Entropy Analysis with Lyapunov Exponents for Random Number Generators	Fatih Özkaynak, Ahmet Bedri Özer	
		A Generalized Stability Theorem for Discrete-time Non-autonomous Chaos System with Applications	Danling Wang, Mei Zhang, Xue Wang, Lequan Min	
		Capacitance Matching Using Adaptive Synchronization of Chua's Circuit: SPICE Simulations and Experiment	Valentin Siderskiy, Vikram Kapila	

29.05.15: 13.30-14.30 **Lunch**

SCS9			SPECIAL AND CONTRIBUTED SESSIONS SCS9		
Amphi Hermite	29.05.15: 14.30-16.00		Chair: Andre E. Botha	Chaos Theory, Cases and Applications	
		Chaos in coupled Josephson junctions		Yury M. Shukrinov, Andre E. Botha, Mohammad R. Kolahchi	
		Electro-Hydrodynamic Stability of Electrified Jet		Paresh Chokshi, Dharmansh	
		Linearization of an Invertible Bounded Iteration in \mathbb{R}^d		G. Cirier	
		Lagrangian Chaos in Two-Dimensional Confined Oscillatory Convection		Yohann DUGUET, Ludomir OTESKI, Luc Pastur	
		The Unusual Transitions to Deterministic Chaos in Some Dynamic Systems		Aleksandr Yu. Shvets, Vasiliy O. Sirenko	
Salle 05	29.05.15: 14.30-16:00		Chair: Valeriy S. Abramov	Systems Theory and Micro-Nano Systems	
		Particle Transport in a Micro-Pump		Philippe Beltrame	
		The Vector Model of Nonlinear Fractal Oscillators in the Multilayer Nanosystem		Valeriy S. Abramov	
		Nanotraps and Self-organization Based on Bulk Fractal Structures in the Multilayer Nanosystem		Olga P. Abramova, Sergey V. Abramov	
		The Spectral Chaos in a Layered Dielectric Spherical Centered Resonator		Zoya E. Eremenko, Ekaterina S. Kuznetsova, Luka D. Shostenko, Yury V. Tarasov, Igor N. Volovichev	
		Chaos or Cycles of Large Periods?		Irina N. Pankratova, Pavel A. Inchin	
28.05.15: 16.00-16.20			Coffee Break		

SCS10 SPECIAL AND CONTRIBUTED SESSIONS SCS10			
Amphi Hermite	29.05.15: 16.20-17:30	Chair: Dimitrios Sotiropoulos, Co-Chair: Panayotis G. Michaelides	Bifurcation - Control
		Reachable Sets for a Class of Nonlinear Control Systems with Uncertain Initial States	Tatiana F. Filippova, Oxana G. Matviychuk, Sergey M. Makarov
		Self-Controlled Chaos in Spatially Extended Systems	Jacob Halatek, Erwin Frey
		Two Parametric Bifurcation in LPA Model	Veronika Hajnová, Lenka Přibyllová
		The Effect of Disordered Slip on the Frequency Spectrum of Far-Field Earthquake Ground Motion	Dimitrios Sotiropoulos
		Spatio-Temporal Dynamics Originated by Interacting Reaction Diffusion Systems	Jorge Carballido-Landeira, Igal Berenstein, Anne De Wit
		A Non-Linear Post-Keynesian Goodwin-Type Endogenous Model of the Cycle for the USA	Konstantinos N. Konstantakis, Panayotis G. Michaelides, Theodore Mariolis
		Hamiltonian Chaos and Einstein-Yang-Mills-Higgs Equations in the Statistical Physics	Muhammad Yusuf
Salle 05	29.05.15: 16.20-17:30	Chair: Avadis S. Hacinliyan	Chaotic Models and Applications
		Generalization of Time Delayed Feedback Control	Ali Azimi Olyaei, Christine Wu
		Scale Invariant Model of Statistical Mechanics and Quantum Nature of Space, Time, and Dimension	Siavash H. Sohrab
		Attractors in Natural Convection in a Cavity	Sabiha Aklouche-Benouaguef, Belkacem Zeghmati
		On Reliable Convergent Long-Term Simulations of Chaotic Dynamic Systems	Shijun Liao
		Smoothing Discontinuities in Predator Prey Models	Engin Kandiran, Avadis S. Hacinliyan
		On a Class of Maps Containing Complicated Dynamics	Reza Mazrooei-Sebdani
PS	29.05.15: 17:10-17:30	POSTER SESSION (The list is at the end of the program)	POSTER SESSION
	29.05.15: 17.30-18:00	Closing Ceremony	
Excursion	30.05.15	Saturday May 30 (9:00-17:00)	Full Day Excursion in Versailles and Giverny Gardens

PS	Poster Titles	Poster Authors
	Comparison of the Methods Fuzzy-Piragas and Fuzzy-PID for Chaos Control in Electric Circuits	Adriano Rodrigues Neto, Giovanni Guimarães Rodrigues, Everthon de Souza Oliveira
	Estimation of the Machining Stability in a Milling Process by the Composite Multiscale Entropy Approach	Marek Borowiec, Rafal Rusinek
	Magnetoplasma dynamic Thruster (MPDT) in Aerospace Industry "Some Innovative Results"	Ali I Al Mussa
	Stability of the Plasma Rotations in Tokamak Plasmas	Umur Daybelge, Cuma Yarim
	Numerical Study of the Dynamic Behavior of an Air Conditioning with a Muti Confined Swirling Jet	Roudane Mohamed
	Peculiarities of Parametric Resonances in Cross-Waves	Tatyana S. Krasnopolskaya, Evgeniy D. Pechuk
	On a Nonlinear Viscoelastic Problem Governed by Lamé operator	MEFLAH Mabrouk, AIDI Mohamed
	Bifurcation Analysis of Limit Cycles and Fixed Points for Natural Circulation in Nuclear Reactors	Vikas Pandey, Suneet Singh
	Modeling and Numerical Simulation of Atmospheric Dispersion of Pollutant Application Software: ALOHA, PHAST	A.TAMERABET, B.TOUAHER, N. SAHRAOUI
	Time Series Prediction by Chaotic Modeling Using Neural Network	Zouaoui Chikr Elmezouar, Mostapha Hbibeche
	Normal Form and Chaos in Resonant HOPF–HOPF Bifurcation	Dmitriy Yu. Volkov, Ksenia V. Galunova
	Synergetic Control of Motion of Variable-Mass Body in the Field of Gravity Force	Evgeniy Kreerenko
	An Analysis Study on Role of Chaos in Symmetric Encryption Algorithm	Fatih Özkaynak, A. Bedri Özer
	An Efficient and Robust Image Encryption Algorithm Based On Quasigroup and Chaos	Vinod Patidar, N. K. Pareek, G. Purohit
	Operator-Differential Riccati Equation in the Hilbert Space	Pokutnyi Oleksander Oleksiyovich
	Development and Base Ideas of Fractals Radio Systems and Fractal Radio Elements Conception	Alexander A. Potapov, Alexey A. Potapov
	Inversive Generator of the Second Order for the Sequence of PRN's	Sergey Varbanets
	A Cairns-Gurevich Equation for Soliton in Plasma Expansion into Vacuum	K. Annou, D. Bara, D. Bennaceur-Doumaz
	Generation of Chaotic Attractor with Multi-Scrolls from Complex Logistic Map	K. Bouallegue
	Solitons in Laser-Plasma Interaction	Annou Karima
	The Role of 2-D Chaotic Map for Optimization Global	Tayeb Hamaizia
	Analysis and Circuit Implementation for the Fractional-Order Chen system	Hongyan Jia, Qian Tiao, Wei Xue
	Complex Dynamics and Rout to Chaos in Modified Stretch Twist Fold (STF) Flow	Muhammad Aqeel
	Conductivity in Helicoidal DNA Wires	S. Behnia, S. Fathizadeh
	A New Dynamical Control Scheme to Control of Abnormal Synthetic ECG Signals	S. Behnia, J. Ziaei
	Enhancement of Phased Array Ultrasonic Signal in Composite Materials Using TMST Algorithm	BENAMMAR Abdessalem, DRAI Redouane, KECHIDA Ahmed, DRIS Lyamine, CHIBANE Farid
	Bifurcation in an Induction Motor Drives	Krishnendu Chakrabarty, Urmila Kar
	Statistics of Narrow Wave Packets on Decorated Graphs	V.L. Chernyshev

Ab-Initio Study of the Mechanical and Thermal Properties of the Cubic CsBeF3	K. Hamaida, M. Harmel, M. Bouslama
First Principals Calculations of Structural and Optoelectronic Properties of Cubic Fluoroperovskite CsMgF3	M. Harmel
Convergence Analysis of Fuzzy Spline Interpolation with Application in Fredholm Integral Equation	Jafarzadeh Yousef
Master-Slave Synchronization of Chaotic Systems via Inverse Model Approach	Leonid M. Lyubchyk
Modelling the Quantitative Precipitation of Heavy Metals by JAVA- SCRIPT Language Using Hartinger and Braun Data	Nabil Sahraoui
The Universal Concept of Chaos	Alexander V. Sosnitsky
Desynchronization in Circadian Clocks	Ling Yang
Synergetics in Vortex Motion	V. G. Zadorozhniy
Time-Dependent Property of Aluminum Alloy Modeled by Fractional Calculus Law	Wei Zhang, Xiaoliang Wang, Yuanping Li, Alexander A. Potapov
Generative Chaotic Complexity in Musical Timing through the Concept of Microrhythm	Edmar Soria, Roberto Cabezas
Second Observation of Quasi-Chaos in Erbium Doped Fiber Ring Laser	S. Zafar Ali
Nonlocal Maps: Chaos and Integrability	Alexey Okulov
Composite Chaotic Multiattractors with Changeable Structure	Vadim Prokopenko
Non-Uniform Composite Chaotic Multiattractors	Vadim Prokopenko
A New Behavior of Chaotic Attractors	Nahed AOUF, Nader BELGITH, Kais BOUALLEGUE, Mohsen MACHOUT
Effective Nonlinear Dynamics of Two and Three Vortices in Bose-Einstein Condensates in the Trap "Beyond Thomas-Fermi Regime"	Doniyor Babajanov, Katsuhiko Nakamura
Application of the Dynamic Data Analysis in the Real Time Monitoring of High Dam Body Behaviour	Teimuraz N. Matcharashvili, Tamaz L. Chelidze, Natalya N. Zhukova
Spiking in Laser with Time-Dependent Delayed Feedback	Elena V. Grigorieva, Sergey A. Kaschenko
Analysis and Comparison of Two Oscillatory Feedback Control Schemes for Stabilizing Equilibrium Points	Verónica E. Pastor, Graciela A. González
Dynamics and Hopf Bifurcation in Delayed Predator-Prey Model with Modified Leslie-Gower and Beddington-DeAngelis Functional Response	Yafia Radouane
Analysis and Control of Chaotic Response of an Electro-Static MEMS Resonator with Quintic Stiffness	Naser Elmi, Hossein Kheiri
Analysis and Control of Chaotic Response of an Electro-Static Fractional Order MEMS Resonator	Naser Elmi, Hossein Kheiri, Mohammad Javidi
Predictive Chaos Control for the 1D-map of Action Potential Duration	Mounira Kesmia, Soraya Boughaba, Sabir Jaquir
Universal Scenario of Transition to Chaos in All Kinds of Nonlinear Differential Equations	Nikolai Magnitskii
Hyperchaos Set by Fractal Processes System	Salah NASR, Kais BOUALLEGUE, Hassen MEKKI

Resonant Ensembles of Stationary Quasi-Harmonic Waves in Phononic Crystal	Svetlana Nikitenkova, Dmitry Kovriguine
Special Relativity from Observer's Mathematics Point of View	Boris Khots, Dmitriy Khots
Effect of Coupling Length on Transmission Coefficient of Semiconductor Waveguides	Latef M. Ali, Seifan H. Ali
Multiswitching Synchronization of 5D Hyperchaotic System	S. O. Ogundipe, U. E. Vincent, J. A. Laoye, R.K. Odunaike
Features of Multi-Fractal Structure of the High-Attitude Lightning Discharges in the Ionosphere: Elves, Jets, Sprites	Alexander A. Potapov
Fractals and Scaling in the Radar: A Look from 2015	Alexander A. Potapov
Conditions of Tectonic Fault Sliding Transition to Chaos	S. Turuntaev, A. Kamay, A. Ostapchuk
On The Dynamics of Kopel's Cournot Duopoly Model	J. Cánovas, M. Muñoz-Guillermo
Chaotic Motion of Ball in a Vessel – Doubly Transient Chaos	Peter Nagy, Péter Tasnádi
