

Monday July 18

8.45 - 9.15	Registration		
	Room A		Room B
9.15 - 9.30	Welcome		
	Plenary Speakers (Chair: F. Marino)		
9.30 - 10.15	<u>C. Laschi</u> Soft robotics: from bioinspired principles to model-informed design		
10.15 - 11.00	<u>A. Torcini</u> Next Generation Neural Mass Models		
11.00 - 11.20	Coffee break		
	Complex networks and applications (Chair: F. Di Patti)		Neurocybernetics (Methods) (Chairs: C. M. Sweeney-Reed, S. J. Nasuto, D. C. Soriano)
11.20 - 11.40	<u>M. Frasca</u> Network-based control of synchronization and failures in power grids	11.20 - 11.40	<u>C. M. Sweeney-Reed, S. J. Nasuto, D.C. Soriano</u> Introduction to the Neurocybernetics Minisymposium
11.40 - 12.00	<u>M. Bonnin</u> Logic gates based on nonlinear oscillators	11.40 - 12.00	<u>M. Deliano</u> Criticality and its relationship to oscillatory brain dynamics
12.00 - 12.20	<u>S. Olmi</u> Spontaneous symmetry breaking in identically coupled inhibitory neural masses with adaptation	12.00 - 12.20	<u>D. Gurnari</u> How to see in high dimensions
12.20 - 12.40	<u>J. M. Diop</u> Robustness analysis of the weighted world air transportation network through its component structure	12.20 - 12.40	<u>J. Signerska-Rynkowska</u> On Takens theorem and embedding methods
12.40 - 13.00	<u>M. Dahlmanns</u> Optimal geometry of urban transport networks	12.40 - 13.00	<u>Michał Lipiński</u> From a discrete orbit to a dynamical feature
13.00 - 14.00	Lunch		
	Complex networks and applications (Chair: G. Innocenti)		Neurocybernetics (Methods and applications) (Chairs: C. M. Sweeney-Reed, S. J. Nasuto, D. C. Soriano)
14.00 - 14.20	<u>G. Ruzzene</u> Emergence of undesired synchronisation of flexible loads in power grids with distributed frequency control	14.00 - 14.20	<u>P. Carelli</u> Accessing signatures of criticality in neuronal data using maximum entropy models
14.20 - 14.40	<u>D. Segura</u> NB-IoT latency evaluation with real measurements	14.20 - 14.40	<u>N. A. P. de Vasconcelos</u> Critical cells in the primary visual cortex
14.40 - 15.00	<u>E. M. H. Shalma</u> Optimal Practical Design and Reduced Complexity of 6G sub-Terahertz Wireless Backhaul Networks	14.40 - 15.00	<u>D. C. Soriano</u> Motor-Dependent Synaptic Balance Modulation and Critical Phenomena in the Subthalamic Nucleus: A New Framework for Adaptive Deep Brain Stimulation
15.00 - 15.20	<u>J. A. Trujillo</u> Autonomous monitoring framework for cellular networks	15.00 - 15.20	<u>M. Wairagkar</u> Ongoing long-range temporal correlations in broadband EEG and intracortical neural activity during voluntary movement
15.20 - 15.40	<u>A. Boukhriss</u> ADRC Control for a Single-Stage Photovoltaic System Connected to the Three-Phase Electrical Grid		
15.40 - 16.00	Coffee break		
	Non linear dynamics and data analysis (Chair: M. Materassi)		Neurocybernetics (Applications) (Chairs: C. M. Sweeney-Reed, S. J. Nasuto, D. C. Soriano)
16.00 - 16.20	<u>A. Aleksandrov</u> Agent-based and Logistic population growth models comparison	16.00 - 16.20	<u>C. Reichert</u> Visual spatial attention shifts decoded from the electroencephalogram enable sending of binary messages
16.20 - 16.40	<u>J. Plucar</u> Blockchain Based Platform for Sensitive Medical Data Management	16.20 - 16.40	<u>C. M. Sweeney-Reed</u> Timing of functional electrical stimulation using a brain-computer interface improves rehabilitation outcome early post-stroke
16.40 - 17.00	<u>S. Celikovskiy</u> On the equivalence of the three-link to almost linear form	16.40 - 17.00	<u>L. C. Mendes</u> Objective Evaluation of Bradykinesia Using a Serious Game
17.00 - 17.20	<u>C. Chesi</u> On reducing the topological entropy of linearized nonlinear systems	17.20 - 17.20	<u>Y. Kordi</u> Effect of sevoflurane on cardiovascular activity at maintenance and emergence from anesthesia during surgery
17.20 - 17.40	<u>M. Italia</u> A mathematical analysis of the socio-economic impacts of a patent waiver on COVID-19 vaccines		
17.40 - 18.00	<u>L. Bettini</u> Optimal initial perturbations in a boundary layer with wall actuation		
18.30	Visit to Villa Galileo and Welcome Cocktail		

Tuesday July 19

	Room A		Room B
	Plenary Speakers (Chair: R. Meucci)		
9.15 - 10.00	<u>S. Donati</u> Complexity at Increasing Levels of Feedback in Diode Laser		
10.00 - 10.45	<u>J. M. Ginoux</u> Minimal Universal Model for Chaos and Generalized Multistability in a Laser		
10.45 - 11.10	Coffee break		
	Engineering Algorithms in Complex Systems (Chairs: I. Zelinka, J. Plucar, L. Skanderova, A. Adamatzky, N. V. Kuznetsov)		Neuromorphic Photonics (Chairs: B. Romeira, A. Hurtado)
11.10 - 11.30	<u>Z. K. Oplatková</u> Mining Top-K High Utility Itemset Using Bio-Inspired Algorithms	11.10 - 11.30	<u>C. Mesaritis</u> Bayesian Training in Photonic Neuromorphic Meshes
11.30 - 11.50	<u>M. Pluhacek</u> Inner Dynamic of Particle Swarm Optimization Interpreted by Complex Network Analysis	11.30 - 11.50	<u>K. Ludge</u> Delay-based Reservoir Computing: Role of Timescales and Memory for Optimizing Performance
11.50 - 12.10	<u>D. Davendra</u> Chaotic Ant Lion Optimization Algorithm	11.50 - 12.10	<u>A. Hurtado</u> Neuromorphic Photonic Computing with Vertical-Cavity Surface-Emitting Lasers
12.10 - 12.30	<u>V. Dodonov</u> Optimal allocation of resources in a three-sector dynamical model of an economy: analytical approach and evolutionary algorithms	12.10 - 12.30	<u>S. Barbay</u> Neuromorphic processing in delay-coupled and spatially coupled micropillar lasers
12.30 - 13.30	Lunch		

13.30 - 14.00	Poster Session (Hybrid)			
	A. Barucci Exploring the complexity of African populations variability with Machine Learning			
	S. Summa Exoskeleton in stepping on even and compliant surface			
	I. Delfino Raman microspectroscopy and multivariate analysis in radiobiology: Study of the effects of X-ray irradiation on neuroblastoma cells			
	G. D'Elia Comparing Calibration Update Techniques for Concept Drift Mitigation: A Low-Cost NO2 Sensors Air Quality Monitoring Application			
	J. Ihrens Assessing the Complexity of DC-System Simulations			
	S. Jakovlev Investigation of Impact-Detection Methodology for Smart Shipping Containers via Time-Series Acceleration Signal Processing Techniques			
	M. Lafhe Distance between movies using Multilayer Network Laplacian Spectra Descriptor			
	A. Yassin Analyzing the Statistical Backbone Filtering Techniques on the Air Transportation Network			
	Engineering Algorithms in Complex Systems (Chairs: I. Zelinka, J. Plucar, L. Skanderova, A. Adamatzky, N. V. Kuznetsov)			Neuromorphic photonics (Chairs: B. Romeira, A. Hurtado)
14.00 - 14.20	D. Davendra Crosshair Optimizer		14.00 - 14.20	S. Yanchuk Deep neural networks using a single neuron: folded-in-time architecture using feedback-modulated delay loops
14.20 - 14.40	R. Matousek Stabilization of Higher Periodic Orbits of Chaotic Maps using Permutation-selective Objective Function		14.20 - 14.40	R. Stabile SOA-based Photonic Integrated Deep Neural Networks
14.40 - 15.00	T. Kadavy Exploring clustering in SOMA		14.40 - 15.00	B. Romeira Neuromorphic NanoLEDs
15.00 - 15.20	T. Alexeeva Forecasting and stabilizing chaotic regimes in two macroeconomic models: interaction of AI technologies and time-delay control methods		15.00 - 15.20	X. Porte Neural network computing with large-area lasers
15.20 - 15.40	Coffee break			
	Laser dynamics, nonlinear and quantum optics (Chair: R. Meucci)			Nonlinear dynamics, control and data analysis (Chair: G. Innocenti)
15.40 - 16.00	S. Barbay Extreme events prediction with imperfect data from a spatiotemporally chaotic system		15.40 - 16.00	M. C. De Simone Multibody Modeling for the Design of an Autonomous Rover for Precision Agriculture Applications in Developing Countries
16.00 - 16.20	A. Lapucci Enhancing the Power in the Bucket (PIB) in Coherent Laser Beam Combining		16.00 - 16.20	P. M. Mariano Nonlinear oscillators with memory: solutions with the same period of perturbations
16.20 - 16.40	K. Tamersit High-Performance Detection of Toxic Gases Using a New Microsensor based on Graphene Field-Effect Transistor		16.20 - 16.40	E. Manzoni Mimicking the Complex Human Circulatory System via a Custom Hydro-mechanical Pulse Duplicator
			16.40 - 17.00	A. Di Garbo Dynamics of interneurons in the presence of a sodium channel mutation
			17.00 - 17.20	S. Summa Bioinspired controller for a robotic knee orthosis
			17.20 - 17.40	S. Mohammadi Mining Intraday Electricity Market Trades
20.00	Social Dinner			
Wednesday July 20				
Room A			Room B	
	Laser dynamics, nonlinear and quantum optics (Chair: F. Marino)			Remote monitoring (Chairs: R. Meucci, E. Pugliese, M. Locatelli)
9.10 - 9.30	J. A. Roversi On the effect of the number of photons on the generation and transfer of entangled states between toroidal cavities via a chain of artificial atoms		9.10 - 9.30	A. Mitillo Modern solutions for Remote SHM
9.30 - 9.50	K. Tamersit High photosensitivity in band-to-band tunneling regime of carbon nanotube field-effect phototransistor: Numerical investigation		9.30 - 9.50	N. Signorini Seismic monitoring in the Tuscany region
9.50 - 10.10	M. Castelluzzo Experimental evidence of a nonlinear dynamics in a two-level non-autonomous laser model		9.50 - 10.10	M. Locatelli Infrastructure remote monitoring in Tuscany
10.10 - 10.30	Coffee break			
	Machine Learning (Chairs: L. Giambagli, L. Chicchi)			Remote monitoring (Chairs: R. Meucci, E. Pugliese, M. Locatelli)
10.30 - 10.50	A. Aminji A Machine Learning Based Model for Monitoring of Composite Drilling Tools During Assembly Production Using Laser Profiler Data		10.30 - 10.50	G. Lacanna Integrating modal analysis and seismic interferometry for structural dynamic identification and soil-structure interaction
10.50 - 11.10	A. Croza Detecting fake news using machine learning and reasoning in Description Logics		10.50 - 11.10	Y. Giambastiani Web scraping technology for a dynamics analysis of tree crown streamlining, in relationship with wind and meteorological data
11.10 - 11.30	A. Lorusso Predictive maintenance and Structural Health Monitoring via IoT system		11.10 - 11.30	M. C. De Simone A Methodology for The Design of Dynamic Absorbers for Structural Mitigation of Steel Buildings
11.30 - 11.50	S. Mohammadi A Machine Learning Approach for Prosumer Management in Intraday Electricity Markets		11.30 - 11.50	E. Bocchi An adaptive modal filter for tracking frequency variation in the operating condition
11.50 - 12.10	D. Sun Attention-based Dependability Prediction for Industrial Wireless Communication Systems		11.50 - 12.10	M. Betti A quality based OMA framework for data-driven SHM of heritage buildings
12.30	Lunch			