

NINTH WORKSHOP

"DYNAMICAL SYSTEMS APPLIED TO BIOLOGY AND NATURAL SCIENCES" (DSABNS)

FEBRUARY 7-9, 2018

UNIVERSITÀ DI TORINO, ITALY

SCIENTIFIC PROGRAM

DSABNS2018

Dipartimento di Matematica "Giuseppe Peano",
Università di Torino
Dipartimento di Matematica,
Università di Trento



Plenary talks will take place always in the largest room scheduled for each day, as follows:
Feb 7th: Room Spallanzani | Feb 8th morning: Room Spallanzani and Feb 8th afternoon: Room A | Feb 9th: Room A

FEBRUARY 7th 2018

	Room Spallanzani		Room C		Aula 1	
08:30 – 9:20	Registration in Room C					
09:20 – 9:30	Opening					
	Chair Andrea PUGLIESE					
09:40 – 10:20	Sergei PETROVSKII	Complex dynamics, regime shifts, catastrophes and long term transients in a model of plankton-oxygen dynamics under the climate change	--	--	--	--
10:20 – 11:00	Bruno BUONOMO	Modeling Biodegradation processes in composting plants: dynamics and control	--	--	--	--
11:00 – 11:30	Coffee Break					
	“Theoretical and Numerical Methods” Chair: Carlos Braumann		“Eco-Epidemiology” Chair: Horst MALCHOW		“Models for Social Behavior” Chair: Manuel MOLINA	
11:30 – 11:55	Mimmo IANNELLI	A basic model for the description of epidermis structure: well-posedness analysis, numerics and simulations	Tobia DONDÈ	Uniform persistence in a prey-predator model with disease in one population	Ugo MERLONE	Work group competition and performance dynamics
11:55 – 12:20	Oscar ANGULO	A novel numerical method for a ell dwarfism model	Pankaj Kumar TIWARI	Interactive effects of prey refuge and additional food for predator in a diffusive predator-prey system	Linnéa GYLLINGBERG	A spatial model of the evolution of social behaviour
12:20 – 14:10	Lunch					
	Chair: Natalia PETROVSKAYA					
14:15 – 14:55	Carlos BRAUMANN	Harvesting models with Allee effects in randomly varying environments	--	--	--	--
14:55 – 15:35	Mats GYLLENBERG	A universal classification and adaptive dynamics for discrete-time competitive systems via the carrying simplex	--	--	--	--
	Chair: Mimmo IANNELLI		Chair: Luis MATEUS		Chair: Yuliya KYRYCHKO	
15:40 – 16:10	Max. O. SOUZA	On the estimation of susceptible proportions in some epidemic systems	Luigi PREZIOSI	Discrete and hybrid modeling of cell aggregates	Rossana VERMIGLIO	New prospects for numerical bifurcation of non linear delay equations
16:10 – 16:40	Coffee Break					
	“Stochastic Models” Chair: Carlos BRAUMANN		“Cell dynamics and Cancer” Chair: Alberto D’ONOFRIO		“Delayed Equations” Chair: Konstantin BLYUSS	
16:40 – 17:05	Manuel MOLINA	Stochastic modeling of biological populations through branching models. Application to Black Vulture colonies	Tommaso LORENZI	A continuously structured population model of clonal selection in acute leukemias	Francesca SCARABEL	Numerical bifurcation analysis of infinite-delay equations in biology
17:05 – 17:30	Ton Viê TA	The effects of noise on multi-agent systems	Pierluigi COLLI	A phase field system related to a tumor growth model and the sliding mode control problem	Abdennasser CHEKROUN	Delayed nonclonal reaction-diffusion model for hematopoietic stem cell dynamics with Dirichlet boundary conditions
17:30 – 17:55	Farhouh KORICHI	On the existence of a periodic solution for a stochastic equation with interruption intervals	Martina CONTE	A multiscale mathematical model for glioma spread with proliferation and therapy	Yuliya KYRYCHKO	Aging transition in systems of oscillators with global distributed-delay coupling
17:55 – 18:20	Albert J MILANI	Evolution equations of von Karman Type in high space dimensions	Iulia M. BULAI	A new mathematical model for pancreatic β cells: geometric analysis of coupled bursters	Davide LIESSI	Pseudospectral methods for the stability of periodic solutions of delay equations
18:20 – 18:45	Paolo FREGUGLIA	Network structures dynamics. Some biological applications	Beti ANDONOVIC	Distance based topological indices on graphene and MWCNT samples obtained by electrolysis in molten salts	Dimitri BREDA	Pseudospectral methods for delay equations in population dynamics
19:00 – 20:00	Welcome Drinks and Poster Session					

FEBRUARY 8th 2018

Room Spallanzani		Room Lagrange		Room C		
Chair: Maíra Aguiar		--	--	--	--	
09:00 – 9:40	Konstantin BLYUSS	Dynamics of multi-stage epidemics on networks	--	--	--	
09:40 – 10:20	Ezio VENTURINO	Is TB eradication possible in India?	--	--	--	
10:20 – 11:00	Alberto D'ONOFRIO	Statistical physics of human behavior role in the spread of infectious diseases and in its mitigation	--	--	--	
11:00 – 11:30 Coffee Break						
"Epidemiology" Chair: Paul GEORGESCU		"Epidemiology" Chair: Andrea PARISI		"Vegetation Models" Chair: Ezio VENTURINO		
11:30 – 11:55	Anastasia I. LAVROVA	Pathogen-host relationship in Cavity development in tuberculosis	Heikki HAARIO	Parameter uncertainty of chaotic systems	Cecilia BERARDO	Epyphytic-endophytic interactions on the olive tree <i>Olea europaea</i>
11:55 – 12:20	Patrick STOCKER	Sporulation in <i>Bacillus subtilis</i> via quorum sensing - an ODE and coupled PDE-ODE model	Ilaria STURA	How much will you become taller?	Francesco GIANNINO	Vegetation pattern formation: system dynamics and individual-based hybrid modeling
12:20 – 12:45	--	--	Urszula SKWARA	Stochastic modeling of vector-borne diseases	Mozzamil MOHAMMED	Extended conditional persistence of plants from frugivore-mediated seed dispersal
12:45 – 14:10 Lunch						
Room A		Room Magna		Room 1		
Chair: Mats GYLLENBERG		--	--	--	--	
14:15 – 14:55	Bob W. KOOI	Non-linear stochastic predator-prey population models with mass conservation	--	--	--	
14:55 – 15:35	Jean-Christophe POGGIALE	A geometrical approach for studying a canard explosion in a predator-prey model	--	--	--	
Chair: Vincenzo CAPASSO		Chair: Pierluigi COLLI		Chair: Paula PATRÍCIO		
15:40 – 16:10	Massimo MATERASSI	Trophic webs as dynamical systems at the Institute for Complex Systems in Florence	Antoine PERASSO	How do predator/prey interactions impact the transmission dynamics of <i>Echinococcus multilocularis</i>	Rafael BRAVO	A discrete competition-epidemic model
16:10 – 16:40 Coffee Break						
"Epidemiology" Chair: Luís Mateus		"Cell Dynamics and Cancer" Chair: Luigi PREZIOSI		"Theoretical and Numerical Methods" Chair: Rafael BRAVO		
16:40 – 17:05	Paul GEORGESCU	A model of HIV transmission with interacting high risk groups and a bridge population	Andrei HALANAY	Delay differential equations model of cell evolution in acute lymphoblastic leukemia under treatment	Dimitri BREDA	Improving numerical continuation for complex delay models of structured populations
17:05 – 17:30	Andrea PARISI	Large scale epidemic spread on high resolution maps: simulating complex individual based epidemic models	Elena PIRETTO	Combination therapies and drug resistance in heterogeneous tumoral populations	Angela MARTIRADONNA	Optimal control of invasive species
17:30 – 17:55	Paula PATRÍCIO	Rational behavior and social cost for vaccination in childhood diseases	Mohamed HELAL	An impulsive model of chronic myeloid leukemia	Kiril LISICKOV	Application of artificial neural networks for studying the dynamics of the process of isolation of natural components
17:55 – 18:20	Eugene B. POSTNIKOV	Kinetics corresponding to the growth of <i>Mycobacterium tuberculosis</i> in vitro under different physical methods of identification	Malgorzata WIETESKA	Gene and hormone regulatory matrices as a tool to describe mRNA and hormone concentrations in primary cultures of bovine granulosa cells	Peyman GHAFFARI	An analytically treatable toy model using optimal control theory in case of mosquito control applied to vector borne disease preventable and reduction management
18:20 – 18:45	--	--	--	--	Ana Marija GRANCARIC	Textile treatments with a new mosquito repellents based on the natural vibroactivated zeolites and Imortella oil
20:00 Conference Dinner						

FEBRUARY 9th 2018

Room A		Room Magna		Room Lagrange		
Chair: Jean-Christophe POGGIALE		--	--	--	--	
09:40 – 10:20	Vincenzo CAPASSO	A mathematical model for malaria transmission with asymptomatic carriers and two age groups in the human population	--	--	--	
10:20 – 11:00	Maíra AGUIAR	Dengvaxia: age as surrogate for serostatus in vaccine induced risk	--	--	--	
11:00 – 11:30	Coffee Break					
“Epidemiology” Chair: Maíra AGUIAR		“Ecology” Chair: Sergei PETROVSKII		“General Session” Chair: Ilaria STURA		
11:30 – 11:55	Constantinos SIETTOS	Across epidemic scales: modeling, numerical analysis, forecasting and control	Gabriela MARINOSCHI	A nonlinear population dynamics equation with stochastic demographic rates	Elisa SOVRANO	Indefinite nonlinear weight problems in population genetics
11:55 – 12:20	Gabriel DIMITRIU	Local sensitivity analysis of a co-infection model of malaria and cholera diseases	Cinzia SORESINA	Cross-diffusion predator-prey models arising by time-scale arguments	Ilaria STURA	RBF-PSO method estimating prostate cancer growth
12:20 – 12:45	--	--	Lucia RUSSO	Gradual changes changes and sudden shifts in ecosystems with human interactions: a nonlinear dynamical approach	J. Leonel ROCHA	Allee's effect bifurcation in a 2D exponential diffeomorphism
12:45 – 14:10	Lunch					
Chair: Bob W. KOOI		--	--	--	--	
14:15 – 14:55	Nico STOLLENWERK	On the probability of dengue vaccine induced risk: methodological and computational aspects	--	--	--	
14:55 – 15:35	Andrea PUGLIESE	Can we infer the routs of infection transmission from incidence data?	--	--	--	
Chair: Bob W. KOOI		Chair: Sergei PETROVSKII		Chair: Ezio VENTURINO		
15:40 – 16:10	Piero MANFREDI	Herpes zoster: exogenous boosting, progressive immunity and the dilemma of mass varicella immunization	Natalia PETROVSKAYA	Classification of spatial patterns arising in spatio-temporal dynamics of invasive species	Michele PIANA	Parametric imaging of glucose metabolism in biological tissues
16:10 – 16:40	Coffee Break					
“Population Competition in Trophic Webs” Chair: Carlos BRAUMANN		“Epidemiology” Chair: Max SOUZA		“Eco-Epidemiology” Chair: Paolo FREGUGLIA		
16:40 – 17:05	Atheeta CHING	The carrying simplex in non-competitive populations	Connell McCLUSKEY	An SEI model with age structure and immigration	Amar SHA	An Eco-epidemiological model with fear induced in prey population
17:05 – 17:30	Merlin C. KOEHNKE	Stationary fronts in competition-diffusion models	Raquel FILIPE	The SHAR model and its effective infection rate: analytical results on severe vs asymptomatic infection	Dibyendu S. MANDAL	A predator-pest model with additional food to the predator: an application to pest control
17:30 – 17:55	--	--	Luís MATEUS	Prediction and predictability in population biology	Sandro BERTOLINO	How modeling improves management of introduced species
Chair: Ezio Venturino		--	--	--	--	
18:00 – 18:30	Horst MALCHOW	Competition in variable environments	--	--	--	
18:30 – 18:45	Closing					