

# FOURTH WORKSHOP

"DYNAMICAL SYSTEMS APPLIED TO  
BIOLOGY AND NATURAL SCIENCES"

13-15 FEBRUARY 2013

CMAF | LISBON UNIVERSITY

PROGRAM

**DSABNS2013**  
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13 of February 2013

08:45 – 09:30	Registration			
	Amphitheater		Room B3-01	
09:30 – 09:45	Nico Stollenwerk	Opening	-	-
Chair: Nico Stollenwerk				
09:45 – 10:45	Ira Schwartz	Disease Extinction as a Dynamical System: Stochastic controls from single to multistrain epidemics	-	-
10:45 – 11:15	Coffee Break			
	Chair: Bob Kooi		Chair: Nico Stollenwerk	
11:15 – 12:15	Bas Kooijman	Metabolic dynamics: acceleration during the life cycle of an individual	-	-
12:15 – 12:45	Tiago Domingos	Dynamic Energy Budget Theory: an Axiomatic Theory for Metabolism	Stefan Wieland	Dynamic Equilibria and Coexisting Absorbing States in Asymmetric Adaptive Voter Models
12:45 – 13:15	Gonçalo Marques	Life Engine – Modeling the individual, the population and the ecosystem using a biological engine	Peyman Ghaffari	Evolution towards critical fluctuations in a system of accidental pathogens
13:15 – 14:30	Lunch			

Plenary Talk  
 Invited talk  
 Contributed talk

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13 of February 2013

	Amphitheater		Room B3-01	
	Chair: Ezio Venturino		Chair: João Boto	
14:45 – 15:45	Nico Stollenwerk	Modelling and model evaluation on empirical data in epidemiology: dynamic noise, chaos and predictability	-	-
15:45 – 16:15	Filipe Rocha	The role of seasonality in vector-borne disease dynamics	Jose Fernando Fontanari	The diffusion approximation for template coexistence in protocells
16:15 – 16:45	Gustavo Cruz-Pacheco	Mathematical models of West Nile Virus infection	Jorge Ferreira	On a exponential decay of the solution for a stochastic coupled system of reaction-diffusion of nonlocal type
16:45 – 17:15	Coffee Break			
	Chair: Ira Schwartz			
17:15 – 18:15	Bob Kooi	Robustness of a two-strain dengue fever model with respect to asymmetry	-	-
18:30 – 19:45	DENFREE INTERNAL MEETING			

Plenary Talk  
 Invited talk  
 Contributed talk

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14 of February 2013

	Amphitheater		Room B3-01	
	Chair: Nico Stollenwerk		Chair: João Boto	
09:30 – 10:30	Rick Paul	Understanding Dengue – the need for basic epidemiological research	-	-
10:30 – 11:00	Eduardo Pessanha	Dengue in Urban Settings, the Belo Horizonte Experience	Mahmoud El-Borai	Stochastic parabolic partial differential equations and the brain cancer
11:00 – 11:30	Coffee Break			
	Chair: Bob Kooi			
11:30 – 12:00	Maira Aguiar	Descriptive and Predictive models of dengue epidemiology: an overview	-	-
12:00 – 13:00	Xavier Rodó	Resolving the interplay between climate forcing, transmission, host immunity and intervention measures in dynamic approaches to infectious diseases	-	-
13:00 – 14:30	Lunch			

Plenary Talk  
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14 of February 2013

	Amphitheater		Room B3-01	
	Chair: Ezio Venturino		Chair: Xavier Rodó	
14:30 – 15:30	Jean Clairambault	Linking PK-PD of anticancer drugs with proliferating cell population dynamic models	-	-
15:40 – 16:10	Amira Kebir	Evolutionary game theoretical model for hermaphrodite gender conflict	Carlos Dommar	An agent-based model driven by tropical rainfall to understand the spatio-temporal heterogeneity of a chikungunya outbreak
16:10 – 16:40	Adimy Mostafa	Stability and Hopf bifurcation for a cell population model with	Joseph Dureau	Capturing the impact of climate on Dengue using stochastic dynamical systems
16:40 – 17:00	Coffee Break			
	Chair: Derek Cummings			
17:00 – 18:00	Michael Deem	Evolution in the bacterial, archaeal, and jawed vertebrate immune systems	-	-
18:00 – 19:30	Drinks & Poster Session			
20:00	Workshop Dinner			

Plenary Talk  
 Invited talk  
 Contributed talk

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15 of February 2013

Amphitheater

Room B3-01

Chair: Maíra Aguiar

09:30 – 10:30	Eduardo Massad	Quantifying the Risk of Malaria from Prevalence Data	-	-
10:30 – 11:00	Coffee Break			
	Chair: Rick Paul			
11:30 – 12:00	Bernard Cazelles	Rural origin of the propagation of dengue, an urban disease, in Southeast Asia	-	-
12:00 – 13:00	Derek Cummings	Interactions between serotypes of dengue highlight epidemiological impact of cross-immunity	-	-
13:00 – 14:30	Lunch			

Plenary Talk  
Invited talk  
Contributed talk

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15 of February 2013

	Amphitheater		Room B3-01	
	Chair: Bernard Cazelles		Chair: Peyman Ghaffari	
14:30 – 15:00	Carlos Braumman	Models for population growth in a randomly varying environment and the stochastic calculus used	Paulo Aguiar	Maps in the Brain: encoding spatial information in neuronal activity
15:00 – 15:30	Sandra Lagarto	A Comparison of a bidimensional SDE and VARMA model for forecasting mortality rates	Manuel Ortigueira	Fractional? Where?
15:30 – 16:00	Jesus Artalejo	On the exact measure of the disease spread in stochastic epidemic models	Urszula Skwara	Superdiffusion and epidemiological spreading
16:00 – 16:30	Antonio Gomez-Corral	Control strategies for a stochastic model of host-parasite interaction in a seasonal environment	Ramona Marguta	Spread of infectious diseases in large geographical areas
16:30 – 17:00	Coffee Break			
	Chair: Jean Clairambault			
17:00 – 18:00	Ezio Venturino	Population models of mathematical ecogenetics	-	-
18:00 – 18:10	Closing			

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