



Workshop on

Theoretical Approaches and Related Mathematical Methods
in Biology, Medicine and Environment



Scientific Programme



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THE PROGRAMME AT GLANCE

	04.04.2013	05.04.2013	06.04.2013
09:00-09:30		Filippo Castiglione <i>Bridging Computational Biology and Bioinformatics</i>	Alberto D'Onofrio <i>The pharmacodynamics of p53-targeted drug Nutlin: a hybrid stochastic model</i>
09:30-09:35		break	break
09:35-09:55		Federico Vaggi <i>Cell Polarity in Fission Yeast</i>	Giuseppe Pontrelli <i>Drug delivery in biological tissues: a semi-analytical study</i>
09:55-10:15		Deborah Lacitignola <i>Toward an environmental low-impact electroplating: mathematical and experimental study of forcing voltage effects on electrochemical growth dynamics</i>	Giorgio Guzzetta <i>Hope-Simpson's progressive immunity hypothesis explains Herpes Zoster incidence data Running head: Progressive immunity hypothesis explains Zoster</i>
10:15-10:30		Claudio Gaz <i>A population model for the pancreatic production of insulin</i>	Simone Palamara <i>Patient-specific computational generation of the Purkinje fibers network driven by clinical measurements</i>
10:30-11:00		COFFEE BREAK	COFFEE BREAK
11:00-11:20		Edoardo Beretta <i>Global stability properties for an SEIR epidemic model with two delays</i>	Laura Fumanelli <i>Inferring the Structure of Social Contacts from Demographic Data in the Analysis of Infectious Diseases Spread</i>
11:20-11:40		Bruno Buonomo <i>Nonlinear aspects of epidemic models in behavioral epidemiology</i>	Stefano Merler <i>Determinants of the Spatiotemporal Dynamics of the 2009 H1N1 Pandemic in Europe: Implications for Real-Time Modelling</i>
11:40-12:00		Eleonora Messina <i>Numerical stability theory for Volterra Integral Equations</i>	Piero Poletti <i>The impact of varicella vaccination on the epidemiology of Herpes Zoster</i>
12:00-12:15		Marco Ajelli <i>The impact of demographic changes on the epidemiology of infectious diseases</i>	Pamela Moschini <i>A semi-discrete model for the West Nile virus</i>
12:15-12:30		Luca Ferreri <i>Modeling epidemic spreading in star-like networks</i>	Manuela Ciddio <i>A spatially explicit model of endemic cholera in Bangladesh: the role of hydroclimatological forcings</i>
12:30-14:00	Registration	LUNCH	CONCLUSIONS
14:00 - 14:05	Silvio Ghilardi, Director of Department of Mathematics <i>Welcome</i>		
14:05-14:15	Vincenzo Capasso - Director of CIMAB <i>What is CIMAB?</i>	Marco Scianna <i>A measure-theoretic approach to cell migration and organization</i>	
14:15-14:20	Luigi Preziosi President of CIMAB - Coordinator SIMAI GASVA		
14:20-14:25	<i>The SIMAI working group GASVA</i>	Paola Causin <i>Mathematical modeling of retinal circulation: fundamental mechanisms and impact on retinal diseases</i>	
14:25-14:30	Break	Vincenzo Capasso <i>Randomness and Angiogenesis</i>	
14:30-14:40	Mimmo Iannelli- Alessandra Micheletti <i>To jump or not to jump: implicazioni ecologiche del salto della quaglia</i>	Break	
15:00-15:10			
15:10-15:20	Presentazione dell'Unità del Politecnico di Torino	Fabio Lamantia <i>Evolution of competition and cooperation in fish wars</i>	
15:20-15:30	Presentazione Unità dell'Università Firenze		
15:30-15:40	Presentazione Unità dell'Università Napoli	Davide Radi <i>Multi-species exploitation with evolutionary switching of</i>	
15:40-15:45	Presentazione Unità dell'Università Urbino	Serena Spina <i>A Jump Stochastic Gompertz Model for an Intermittent</i>	
15:45-15:50			
15:50-16:00	Presentazione Università dell'Università di Trento		
16:00-16:30	Coffe Break	Coffe Break	
16:30-16:40	Presentazione dell'Università IASI- CNR	Michele Piana <i>Estimation of the whole bone marrow asset in humans by integrated nuclear medicine and X-ray tomography data</i>	
16:40-16:50	Presentazione dell'Università IAC- CNR	Alberto Sorrentino <i>Sequential Monte Carlo samplers for multi-dipole estimation in Magnetoencephalography</i>	
16:50-17:00	Presentazione Unità dell' Università di Torino		
17:00-17:10	Presentazione Unità dell'Università di Milano		
17:10-17:15	Break	Cristina Campi <i>Cortical constraints for particle filtering in Magnetoencephalography</i>	
17:15-17:30	Antonio Fasano <i>Modeling High Flux Hollow Fibers Dialyzers.</i>	Thierry Nieus <i>Investigating the interplay between intrinsic and evoked</i>	
17:30-17:35		Sara Gambarino <i>A computational approach to compartmental analysis of nuclear medicine data based on maximum-likelihood: application to renal physiology</i>	
17:35-17:50	Angiolo Farina <i>A Model for Ultrafiltration in Kidney Glomeruli</i>		
17:50-17:55	Armando Bazzani <i>A Simple model for mutation dynamics in a bacteria population subject to external stress</i>		
17:55-18:05		Anna Cattani <i>FitzHugh-Nagumo to Model a Large Number of Diffusive Coupled Neurons</i>	
18:05-18:15		Elisa Benedetto <i>A non parametric estimator for neural firing rate in presence of dependent Interspike Intervals.</i>	
18:15-10:20	Chiara Givero <i>Influence of nucleus mechanical properties on cell entry into ECM channels.</i>		
18:20-18:30			
18:30-18:35	Chiara Lelli <i>A mathematical model of mechano-physiological processes regulating in vitro tissue growth</i>		
18:35-18:45			
20:00-23:00		SOCIAL DINNER - Restaurant BELLUCCIO's	



April 4, 2013 - Afternoon

12:30-14:00 Registration

CHAIRMAN: Giovanni Naldi

14:00 - 14:05 **Silvio Ghilardi**, Director of Department of Mathematics
Welcome

14:05-14:15 **Vincenzo Capasso**, - Director of CIMAB
What is CIMAB?

14:15-14:25 **Luigi Preziosi**, President of CIMAB - Coordinator SIMAI GASVA
The SIMAI working group GASVA

14:25-14:30 Break

14:30-15:10 **Mimmo Iannelli - Alessandra Micheletti**
To jump or not to jump: implicazioni ecologiche del salto della quaglia
Presentazione dell'Unità del Politecnico di Torino

15:10-15:20 Presentazione Unità dell'Università Firenze

15:20-15:30 Presentazione Unità dell'Università Napoli

15:30-15:40 Presentazione Unità dell'Università Urbino

15:40-15:50 Presentazione Unità dell'Università di Trento

16:00-16:30 Coffe Break

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16:40-16:50 Presentazione dell'Università IAC- CNR

16:50-17:00 Presentazione Unità dell' Università di Torino

17:00-17:10 Presentazione Unità dell'Università di Milano

17:10-17:15 Break

CHAIRMAN: Gian Italo Bischi

17:15-17:35 **Antonio Fasano**
Modeling High Flux Hollow Fibers Dialyzers.

17:35-17:55 **Angiolo Farina**
A Model for Ultrafiltration in Kidney Glomeruli

17:55-18:15 **Armando Bazzani**
A Simple model for mutation dynamics in a bacteria population subject to external stress

17:15:18:30 **Chiara Givero**
Influence of nucleus mechanical properties on cell entry into ECM channels.

18:30-18:45 **Chiara Lelli**
A mathematical model of mechano-physiological processes regulating in vitro tissue growth



April 5, 2013 - Morning

CHAIRMAN: Vincenzo Capasso

09:0-09:30

Filippo Castiglione

Bridging Computational Biology and Bioinformatics

09:30-09:35

Break

CHAIRMAN: Bruno Buonomo

09:35-09:55

Federico Vaggi

Cell Polarity in Fission Yeast

09:55-10:15

Deborah Lacitignola

Toward an environmental low-impact electroplating: mathematical and experimental study of forcing voltage effects on electrochemical growth dynamics

10:15-10:30

Claudio Gaz

A population model for the pancreatic production of insuline

10:30-11:00

COFFEE BREAK

CHAIRMAN: Vincenzo Capasso

11:00-11:20

Edoardo Beretta

Global stability properties for an SEIR epidemic model with two delays

11:20-11:40

Bruno Buonomo

Nonlinear aspects of epidemic models in behavioral epidemiology

11:40-12:00

Eleonora Messina

Numerical stability theory for Volterra Integral Equations

12:00-12:15

Marco Ajelli

The impact of demographic changes on the epidemiology of infectious diseases

12:15-12:30

Luca Ferreri

Modeling epidemic spreading in star-like networks

12:30-14:00

LUNCH



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April 5, 2013
Afternoon

CHAIRMAN: Luigi Preziosi

- 14:00 - 14:20 **Marco Scianna**
A measure-theoretic approach to cell migration and organization
- 14:20-14:40 **Paola Causin**
Mathematical modeling of retinal circulation: fundamental mechanisms and impact on retinal diseases
- 14:40-15:00 **Vincenzo Capasso**
Randomness and Angiogenesis
- 15:00-15:30 **Fabio Lamantia**
Evolution of competition and cooperation in fish wars
- 15:30-15:40 **Davide Radi**
Multi-species exploitation with evolutionary switching of harvesting strategies
- 15:45-16:00 **Serena Spina**
A Jump Stochastic Gompertz Model for an Intermittent Treatment in Cancer Growth
- 16:00-16:30 Coffe Break
- 16:30-16:50 **Michele Piana**
Estimation of the whole bone marrow asset in humans by integrated nuclear medicine and X-ray tomography data
- 16:50-17:10 **Alberto Sorrentino**
Sequential Monte Carlo samplers for multi-dipole estimation in Magnetoencephalography
- 17:10-17:30 **Cristina Campi**
Cortical constraints for particle filtering in Magnetoencephalography
- 17:30-17:50 **Thierry Nieus**
Investigating the interplay between intrinsic and evoked activities in cultured neuronal networks by dimensional reduction techniques
- 17:50-18:05 **Sara Gambarino**
A computational approach to compartmental analysis of nuclear medicine data based on maximum-likelihood: application to renal physiology
- 18:05-18:20 **Anna Cattani**
FitzHugh-Nagumo to Model a Large Number of Diffusive Coupled Neurons
- 18:20-18:35 **Elisa Benedetto**
A non parametric estimator for neural firing rate in presence of dependent Interspike Intervals.
- 20:00-23:00 SOCIAL DINNER - Restaurant BELLUCCIO's



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April 6, 2013
Morning

CHAIRMAN: Alberto Gandolfi

- 09:00-09:30 **Alberto D'Onofrio**
The pharmacodynamics of p53-targeted drug Nutlin: a hybrid stochastic model
- 09:30-09:35 break
- 09:35-09:55 **Giuseppe Pontrelli**
Drug delivery in biological tissues: a semi-analytical study
- 09:55-10:15 **Giorgio Guzzetta**
Hope-Simpson's progressive immunity hypothesis explains Herpes Zoster incidence data
Running head: Progressive immunity hypothesis explains Zoster
- 10:15-10:30 **Simone Palamara**
Patient-specific computational generation of the Purkinje fibers network driven by clinical measurements
- 10:30-11:00 COFFEE BREAK
- CHAIRMAN: Andrea Pugliese**
- 11:00-11:20 **Laura Fumanelli**
Inferring the Structure of Social Contacts from Demographic Data in the Analysis of Infectious Diseases Spread
- 11:20-11:40 **Stefano Merler**
Determinants of the Spatiotemporal Dynamics of the 2009 H1N1 Pandemic in Europe: Implications for Real- Time Modelling
- 11:40-12:00 **Piero Poletti**
The impact of varicella vaccination on the epidemiology of Herpes Zoster
- 12:00-12:15 **Pamela Moschini**
A semi-discrete model for the West Nile virus
- 12:15-12:30 **Manuela Ciddio**
A spatially explicit model of endemic cholera in Bangladesh: the role of hydroclimatological forcings
- 12:30-14:00 **CONCLUSIONS**