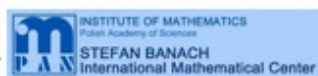


BIOMAT 2014

Stefan Banach International Mathematical Center / Institute of
Mathematics / Polish Academy of Sciences / Bedlewo, near
Poznan, Poland November, 02 - 08, 2014



President of the BIOMAT Consortium – Prof. Rubem P. Mondaini, Federal
University of Rio de Janeiro, Brazil

Co-Chair of the BIOMAT 2014 Symposium – Prof. Eduardo Massad,
University of S.Paulo, Brazil

Co-Chair of the BIOMAT 2014 Symposium – Prof. Richard Kerner, University
Pierre et Marie Curie, Paris VI, France

BIOMAT 2014 – 14th International Symposium on Mathematical and Computational Biology

Bedlewo Conference Centre of the Stefan Banach International Mathematical Centre / Institute of Mathematics / Polish Academy of Sciences, Bedlewo near Poznan, Poland, November 02-08, 2014

President of the BIOMAT Consortium – Prof. Rubem P. Mondaini, UFRJ, Rio de Janeiro, Brazil

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Co-chair of the BIOMAT 2014 Symposium – Prof. Ryszard Kerner, UPMC, Paris VI, France

8:00 - 8:30	Monday- Nov 3 Opening Session	Tuesday-Nov 4	Wednesday-Nov 5	Thursday-Nov 6	Friday-Nov 7
08:30 - 09:30	PT1 / PTT1 Tuszynski	PT4 / PTT2 Britton	PT7 Monastyrsky	PT10 Barrio	PT13 Moghadas
09:30 - 10:00	CT1 Lemarchand	CT9 Röst	CT17 Ainouz	CT24 Huergo	CT32 Jankowski
10:00 - 10:30	Coffee Break				
10:30 - 11:00	CT2 Poirrier	CT10 Kerner	CT18 Tuszynski	CT25 Morozova	CT33 Salcedo
11:00 - 12:00	PT2 Carbone	PT5 Tiuryn	PT8 Volpert	PT11 Rudnicki	PT14 Heffernan
12:00 - 12:30	CT3 Mondaini	CT11 Bianca	CT19 Apreutesei	CT26 Gozak	CT34 Acebal
12:30 - 01:30	Lunch				
01:30 - 02:00	PT3 Sivaloganathan	PT6 Massad	PT9 Cherniha	PT12 Domany	CT35 Vega
02:00 - 02:30					CT36 Sendin
02:30 - 03:00	CT4 Sadovsky	CT12 Stötzel	CT20 Didovych	CT27 Sliwka	CT37 Shakarov
03:00 - 03:30	Coffee Break				
03:30 - 04:00	CT5 Venturino	CT13 Miekisz	CT21 Lopez	CT28 Pal	CT38 Carels
04:00 - 04:30	CT6 Olivar	CT14 Zwolenski	CT22 Teresi	CT29 Protazio	CT39 Shimozako
04:30 - 05:00	CT7 Das	CT15 Delboni	CT23 Banerjee	CT30 C. Mondaini	CT40 Shitu
05:00 - 05:30	CT8 Bogdanska	CT16 Fronza	BIOMAT GA	CT31 Barbi	Closing Session
07:00 - 09:00	Grill Dinner		Conference Dinner		

PT = Plenary Talk, PTT = Plenary Tutorial Talk, CT = Contributed Talk, GA = General Assembly

Nov 03, Monday, 08:30 am – 10:00 am – 1st Session

08:30 am – 09:30 am - PT1, PTT1 –“COMPUTATIONAL DRUG DISCOVERY METHODS”- Jack Tuszynski, University of Alberta, CANADA

09:30 am - 10:00 am - CT1 – “TIME ASYMMETRY OF CROSS-CORRELATION FUNCTIONS AS A SIGNATURE OF NON-EQUILIBRIUM STEADY STATES”- Annie Lemarchand, Pierre et Marie Curie University, Paris VI, FRANCE

Chair: Rubem P. Mondaini

Nov 03, Monday, 10:30 am – 12:30 pm - 2nd Session

10:30 am – 11:00 am - CT2 – “AN AGENT-BASED MODELING FRAMEWORK TO STUDY THE BURDEN OF PERTUSSIS AND THE IMPACT OF PREVENTIVE MEASURES”- Jean-Etienne Poirrier, C. Philemotte, D. Curran, GlaxoSmithKline Vaccines, Euranova, BELGIUM

11:00 am – 12:00 pm - PT2 - “CONSERVATION AND CO-EVOLUTION: FROM SEQUENCE ANALYSIS TO PROTEIN-PROTEIN INTERACTIONS”- Alessandra Carbone, Pierre et Marie Curie University, Paris VI, FRANCE

12:00 pm – 12:30 pm – CT3 -“OPTIMAL CONTROL OF PROTEIN LANGEVIN DYNAMICS”- R.P. Mondaini, Simão C. de Albuquerque Neto, Federal University of Rio de Janeiro, BRAZIL

Chair: Jacek Tuszynski

Nov 03, Monday, 01:30 pm – 03:00 pm - 3rd Session

1:30 pm – 2:30 pm – PT3 - “MATHEMATICAL ONCOLOGY & APPLICATIONS TO CLINICAL ONCOLOGY”- Sivabal Sivaloganathan, University of Waterloo, CANADA

02:30 pm – 3:00 pm – CT4 - “VERY HIGH SYNCHRONY IN EVOLUTION OF ORGANELLES AND HOST GENOMES”- Anna L. Chernyshova, Yu. A. Putintzeva, Michael G. Sadovsky – Siberian Federal University, RUSSIA

Chair: Annie Lemarchand

Nov 03, Monday, 03:30 pm – 05:30 pm - 4th Session

03:30 pm – 4:00 pm – CT5 - “WILD HERBIVORES IN FORESTS: FOUR CASE STUDIES”- Giorgio Sabetta, Ezio Venturino, University of Torino, ITALY

04:00 pm – 4:30 pm – CT6 - “MODELING SUSTAINABLE DEVELOPMENT FOR DECISION TAKING”- D. Angulo, Gerard Olivar Tost, F. Angulo, University of Firenze, ITALY/National University of Colombia, Manizales, COLOMBIA

04:30 pm – 5:00 pm – CT7 - “EFFECT OF VIRAL DISEASE IN A DIFFUSIVE PLANKTON SYSTEM”- Nanda Das, Samares Pal, Maulana Azad College/University of Kalyani, INDIA

05:00 pm – 5:30 pm – CT8 - “MATHEMATICAL MODEL SUGGESTS A WAY TO ASSESS LOW GRADE GLIOMA MALIGNANCY” - Magdalena Bogdanska, University of Warsaw, POLAND

Chair: Richard Kerner

Nov 04, Tuesday, 08:30 am – 10:00 am - 5th Session

08:30 am – 09:30 am – PT4, PTT2 – “AN INTRODUCTION TO EVOLUTIONARY GAME THEORY”- Nick Britton, University of Bath, UK

09:30 am - 10:00 am - CT9 – “MATHEMATICAL MODELS FOR VACCINATION, WANING IMMUNITY AND IMMUNE SYSTEM BOOSTING: A GENERAL FRAMEWORK”- Maria Vittoria Barbarossa, Gergely Röst, University of Szeged, HUNGARY

Chair: Eduardo Massad

Nov 04, Tuesday, 10:30 am – 12:30 pm - 6th Session

10:30 am - 11:00 am - CT10 – “DIFFERENTIAL STOCHASTIC APPROACH TO HOMEOSTASIS”- Richard Kerner, Pierre et Marie Curie University, Paris VI, FRANCE

11:00 am - 12:00 pm - PT5 – “TRACING GENE FAMILY EVOLUTION”- Jerzy Tiuryn, University of Warsaw, POLAND

12:00 pm - 12:30 pm - CT11 – “FROM CELLULAR TO TISSUE SCALES BY ASYMPTOTIC LIMITS OF THERMOSTATED MODELS”- Carlo Bianca, A. Lemarchand, C. Dogbe, Pierre et Marie Curie University, Paris VI, University of Caen, FRANCE

Chair: Nick Britton

Nov 04, Tuesday, 01:30 pm – 03:00 pm - 7th Session

1:30 pm – 2:30 pm – PT6 - THE RISK OF INFECTIONS IMPORTATION TO A DISEASE-FREE COUNTRY BY TRAVELERS VISITING ENDEMIC COUNTRIES”- Eduardo Massad, University of São Paulo, BRAZIL

02:30 pm – 3:00 pm – CT12 - “EXPLORATION OF DIFFERENT WAVE PATTERNS IN A MODEL OF THE BOVINE ESTROUS CYCLE BY FOURIER ANALYSIS”- Claudia Stötzel, R. Ehrig, H.M.T. Boer, J. Plöntzke, S. Röblitz, Zuse Institute Berlin, GERMANY/ Animal Breeding and Genomics Centre, THE NETHERLANDS

Chair: Jerzy Tiuryn

Nov 04, Tuesday, 03:30 pm – 05:30 pm - 8th Session

03:30 pm – 4:00 pm – CT13 - “TIME DELAYS IN STOCHASTIC MODEL OF SELF-REPRESSING GENE”- Jacek Miekisz, University of Warsaw, POLAND

04:00 pm – 4:30 pm – CT14 - “PHENOTYPIC EVOLUTION OF SEXUAL POPULATIONS”- Pawel Zwolenski, Institute of Mathematics, Polish Academy of Sciences, Warsaw, POLAND

04:30 pm – 5:00 pm – CT15 - “MATHEMATICAL MODELING OF THE EFFECT OF QUORUM SENSING IN BACTERIOCIN PRODUCTION BY LACTIC ACID BACTERIA INTERACTING WITH *LISTERIA MONOCYTOGENES*”- Roberta R. Delboni, Hyun M. Yang, State University of Campinas, BRAZIL

05:00 pm – 5:30 pm – CT16 - “IN SILICO SYSTEM FOR EARLY DIAGNOSIS OF DIABETES MELLITUS COMPLICATIONS BY USING DYNAMIC PUPILLOMETRY AND HEART RATE VARIABILITY”- Carlos F. Fronza, Jefferson L. B. Marques, J. Anselmo, Federal University of Santa Catarina, BRAZIL

Chair: Alessandra Carbone

Nov 05, Wednesday, 08:30 am – 10:00 am – 9th Session

08:30 am – 09:30 am – PT7, –“TOPOLOGY OF CELL MEMBRANES”- E.I. Katz, Michael I. Monastyrsky, Landau Institute for Theoretical Physics/ Institute of Theoretical and Experimental Physics, RUSSIA

09:30 am - 10:00 am - CT17 – “ON A MULTISCALE ANALYSIS OF A MICRO-MODEL OF HEAT TRANSFER IN BIOLOGICAL TISSUES”- Abdelhamid Ainouz, University of Sciences and Technology Houari Boumediene, ALGERIA

Chair: Jacek Miekisz

Nov 05, Wednesday, 10:30 am – 12:30 pm – 10th Session

10:30 am - 11:00 am - CT18 – “ALGEBRAIC AND TOPOLOGICAL INDICES OF MOLECULAR PATHWAY NETWORKS IN HUMAN CANCERS”- Peter Hinow, Edward A. Rietman, Jack Tuszyński, University of Wisconsin, Tufts University, USA/ University of Alberta, CANADA

11:00 am - 12:00 pm - PT8 – “MULTI-SCALE MODELLING IN CELL DYNAMICS”- M. Banerjee, M. Benmir, Vitaly Volpert, Indian Institute of Technology Kampur, INDIA/ University Hassan II of Casablanca, MAROC/ University of Lyon I, FRANCE

12:00 pm - 12:30 pm - CT19 – “AN INVASIVE SPECIES CONTROL PROBLEM”- Narcisa Apreutesei, Technical University of Iasi, ROMANIA

Chair: Gergely Röst

Nov 05, Wednesday, 01:30 pm – 03:00 pm - 11th Session

1:30 pm – 2:30 pm – PT9 - “SYMMETRY BASED METHODS FOR CONSTRUCTING EXACT SOLUTIONS OF THE DIFFUSIVE LOTKA-VOLTERRA SYSTEM”- Roman Cherniha, University of Nottingham, UK

02:30 pm – 3:00 pm – CT20 - “A (1+2)- DIMENSIONAL KELLER-SEGEL MODEL: LIE SYMMETRY AND EXACT SOLUTIONS FOR THE CAUCHY PROBLEM”- Roman Cherniha, Maksym Didovych, University of Nottingham, UK/National Academy of Science of Ukraine, UKRAINE

Chair: Vitaly Volpert

Nov 05, Wednesday, 03:30 pm – 05:00 pm - 12th Session

03:30 pm – 4:00 pm – CT21 - “DYNAMICAL MODELS OF CRIMINALITY: THE NEW FRONTIER OF MATHEMATICAL APPLICATIONS TO PSYCHOLOGY AND THE SOCIAL SCIENCES”- Luis Fernandez Lopez, Eduardo Massad, University of São Paulo, BRAZIL

04:00 pm – 4:30 pm – CT22 - “COMPARING SHAPE TRAJECTORIES OF BIOLOGICAL SOFT TISSUES IN THE SIZE-AND-SHAPE”- V. Varano, S. Gabriele, Luciano Teresi, I. Dryden, P.E. Puddu, C. Torromeo, Paolo Piras, University Roma Tre, University La Sapienza, Roma, Italy/University of Nottingham, UK

04:30 pm – 5:00 pm – CT23 - “ RICH DYNAMICS OF HEPATITIS C VIRAL INFECTION WITH LOGISTIC PROLIFERATION”- Sandip Banerjee, Indian Institute of Technology Roorkee, INDIA

Chair: Seyed Moghadas

Nov 06, Thursday, 08:30 am - 10:00 am – 13th Session

08:30 am – 09:30 am – PT10, –“ DYNAMICS OF Z-RING FORMATION IN LIPOSOMES”- Rafael A. Barrio, C. Varea, T. Alarcon, C.B. Picallo, A. Hernandez-Machado, National Autonomous University of Mexico, MEXICO/ University of Barcelona, SPAIN

09:30 am - 10:00 am - CT24 – DYNAMIC SCALING ANALYSIS OF IN VITRO AND IN SILICO CELL CULTURES”- Maria Ana C. Huergo, B. Moglia, E.V. Albano, N. Guisoni, National University of La Plata, ARGENTINA

Chair: Michael I. Monastyrsky

Nov 06, Thursday, 10:30 am - 12:30 pm – 14th Session

10:30 am - 11:00 am - CT25 – “GEOMETRY OF MORPHOGENESIS”- Nadya Morozova, Robert Penner, Institut des Hautes Études Scientifiques, FRANCE

11:00 am - 12:00 pm - PT11 – “APPLICATIONS OF PIECEWISE DETERMINISTIC MARKOV PROCESSES IN MODELING OF GENE EXPRESSION”- Ryszard Rudnicki, University of Silesia, Katowice, POLAND

12:00 pm - 12:30 pm - CT26 – “NEW NON-UNIFORM STEADY STATE SOLUTIONS OF A MATHEMATICAL MODEL FOR FLUID-GLUCOSE-ALBUMIN TRANSPORT IN PERITONEAL DIALYSIS”- Roman Cherniha, Kateryna Gozak, University of Nottingham, UK/National University of Kyiv-Mohyla Academy, UKRAINE

Chair: Rafael A. Barrio

Nov 06, Thursday, 01:30 pm – 03:00 pm - 15th Session

1:30 pm - 2:30 pm - PT12 – “PATHWAY-BASED PERSONALIZED ANALYSIS OF CANCER”- Eytan Domany, Weizmann Institute of Science, Rehovot, ISRAEL

02:30 pm – 3:00 pm – CT27 - “ MARKOV CHAINS AS A TOOL MEASURING EFFECTIVENESS OF A PSYCHOTHERAPY PROCESS”- Piotr Sliwka, Witold Simon, S. Cardinal Wyszynski University/Institute of Psychiatry and Neurology, Warsaw, POLAND

Chair: Ryszard Rudnicki

Nov 06, Thursday, 03:30 pm – 05:30 pm - 16th Session

03:30 pm – 4:00 pm – CT28 - “CATASTROPHIC REGIME SHIFTS IN CORAL REEFS UNDER INVASION AND OVERFISHING”- Joydeb Bhattacharyya, Samares Pal, University of Kalyani, INDIA

04:00 pm – 4:30 pm – CT29 - “IMPLEMENTATION OF A SPATIALLY EXPLICIT INDIVIDUAL BASED MODEL APPLIED TO THE REPLANTING OF NATIVE SPECIES FROM NORTHERN BRAZIL: A CASE STUDY APPLIED TO THE PARICÁ SPECIES”- João M.B. Protázio, J. S. Protázio, P.C. dos Santos, R.M. Pereira, Federal University of Pará, BRAZIL

04:30 pm – 5:00 pm – CT30 – “COMPARISON OF THE ROBUSTNESS OF ENTROPY MEASURES FOR PROTEIN DOMAIN FAMILIES”- R.P. Mondaini, Cecilia F. Mondaini, Edgar A.G.G. do Amaral, Federal University of Rio de Janeiro, BRAZIL

05:30 pm – 5:30 pm – CT31 - “*IN SILICO* MANIPULATION OF SINGLE DNA MOLECULES AND DNA-PROTEIN ASSEMBLIES”- Maria Barbi, University Pierre et Marie Curie, Paris VI, FRANCE

Chair: Eytan Domany

Nov 07, Friday, 08:30 am – 10:00 pm – 17th Session

08:30 am – 09:30 am – PT13, –“ WHAT IS THE OPTIMAL LEVEL OF INFORMATION DISSEMINATION DURING AN EPIDEMIC?”- Marek Laskowski, Preeti Dubey, Murray E. Alexander, Seyed Moghadas York University, University of Winnipeg, CANADA /Birla Institute of Technology & Science, INDIA

09:30 am - 10:00 am - CT32 – “CLUSTERING INFLUENZA H3N2 SEQUENCES”- Hanna Jankowski, Jane Heffernan, Xuan Li, Steven Wang, York University, CANADA

Chair: Luis Fernandez Lopez

Nov 07, Friday, 10:30 am – 12:30 pm – 18th Session

10:30 am - 11:00 am - CT33 – “A SPECTRAL SIMILARITY MEASURE BETWEEN TIME SERIES APPLIED TO IDENTIFY PROTEIN - PROTEIN INTERACTIONS”- Gladys Elena Salcedo, A.M. Montoya, A.F. Arenas University of Quindio, COLOMBIA

11:00 am – 12:00 pm – PT14 - “ A METHOD FOR CLUSTERING HEMAGGLUTININ INFLUENZA PROTEIN SEQUENCES”- X. Li, Hanna Jankowski, X. Wang, Jane M. Heffernan, York University, CANADA

12:00 pm - 12:30 pm - CT34 – “TOWARDS THE FORECASTING OF THE INFESTATION LEVEL BY DENGUE VECTORS BASED ON METEOROLOGICAL FORECAST”- F.S. Cordeiro, L.B.Barsante, B.S. Carvalho, R.T.N. Cardoso, A.E. Eiras, José L. Acebal, Federal Centre of Technological Education of Minas Gerais, Federal University of Minas Gerais, BRAZIL

Chair: Roman Cherniha

Nov 07, Friday, 01:30 pm – 03:00 pm – 19th Session

1:30 pm – 2:00 pm – CT35 - “THEORETICAL DISPERSAL KERNELS FOR FLESHY FRUITED PLANT SPECIES DISPERSED BY BIRDS”- Salvador L. Vega, W.C. Ferreira Jr, Federal University of Santa Maria/State University of Campinas, BRAZIL

02:00 pm – 2:30 pm – CT36 - “AN IMPROVED STOCHASTIC PROXIMITY EMBEDDING TO PROTEIN STRUCTURE DETERMINATION”- Ivan S. Sendin, I.B. Vale, M.A. Batista, Federal University of Uberlandia, Federal University of Goias, BRAZIL.

02:30 pm – 3:00 pm – CT37 - “ON AN EQUATION FOR REGULATORY MECHANISMS OF LIVING SYSTEMS”- A.B. Hidirova, Alisher R. Shakarov University of Information Technologies, Tashkent, UZBEKISTAN

Chair: Sandip Banerjee

Nov 07, Friday, 03:30 pm – 05:00 pm – 20th Session

03:30 pm – 4:00 pm – CT38 - “ ENTROPY OF PROTEIN NETWORKS IN MALIGNANT CELLS OF BREAST CANCER AND THERAPEUTIC TREATMENT”- N. Carels, T.M. Tilli, J.A. Tuszynski, Oswaldo Cruz Foundation BRAZIL/ University of Alberta, CANADA

04:00 pm – 4:30 pm – CT39 - “ZONOTIC VISCERAL LEISHMANIASIS: A NOVEL MODEL INVOLVING DYNAMIC INTERACTIONS OF HUMANS, DOGS AND SANDFLIES” - Helio Junji Shimozaoko, Jianhong Wu, Eduardo Massad University of São Paulo, BRAZIL/ York University, CANADA

04:30 pm – 5:00 pm – CT40 - “DYNAMICAL ANALYSIS OF A DELAY MODEL OF VIRAL INFECTION IN PHYTOPLANKTON POPULATION” - Hassan A. Shitu, University of Pretoria, SOUTH AFRICA

Chair: Maria Barbi

