THE BIOLOGICAL PHYSICIST

The Newsletter of the Division of Biological Physics of the American Physical Society

Vol 3 № 4 October 2003

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In this Issue

Call for Abstracts!

Believe it or not, the next March Meeting is almost upon us! Registration information is online at the APS website at http://www.aps.org/meet/MAR04/. The deadline for abstract submission is 5 pm EST on December 1, 2003.

The DBP will have a large number of symposia and focus sessions at the March Meeting; a number of these will be held jointly with other divisions. Dr. Denis Rousseau has provided THE BIOLOGICAL PHYSICIST with a complete list of the accepted sessions. Check it out on page 5, and look for focus sessions that may fit closely with the abstract you plan to submit.

This issue of THE BIOLOGICAL PHYSICIST also brings you the announcement of an important upcoming conference on Fractals in Biology and Medicine (see page 2). And, of course, PRE Highlights.

■ SB

Fourth International Symposium on *Fractals in Biology and Medicine* Ascona, Switzerland, March 10-14, 2004

Symposium Venue

The Symposium will be held at the Centro Seminariale Monte Verità, CH-6612 Ascona, TI (near Locarno), Switzerland Ascona and the Monte Verità can be reached directly from Lugano-Agno airport, by train or car through Locarno.
Telephone: +41 91 791 01 81
Fax: +41 91 780 51 35
E-mail: reception@csf-mv.ti-edu
Detailed information on Website:
http://www.csf-mv.ethz.ch
http://www.fractals.issi.cerfim.ch

Arrival: Tuesday 9, March 2004
Departure: Sunday 14, March 2004

Scientific Goal

The main goals of the Fourth International Symposium will be: first, to highlight the potential that fractal geometry offers for elucidating and explaining the complex made-up of cells, tissues and biological organisms either in normal, abnormal and tumoral conditions. Second, to develop the concepts, questions and methods required in research on fractal biology and natural phenomena and to evidence the pitfalls of a too simplistic application of these principles in investigating topical subjects of biology and medicine. It aims to bridge the communication gap between various disciplines, to discuss present and future applications of the fractal geometry, by bringing together cellular, molecular and natural biologists, engineers, mathematicians, physicists, physicians and other scientists in an ambient favouring theinterdisciplinary vision.

The Symposium might be relevant for the industry involved in developing and applying software and methods in the fields of morphometry, quantitative image analysis, stereology, nonlinear dynamics and related topics. Industrial researchers are invited to submit papers for regular platform or poster sessions. Young participants would benefit from attending not only by listening lectures presented by expert scientists, but also by presenting their current research during platform or poster communications so that the exchange of information and ideas between different groups of researchers working in different areas of science and attracted by the fractal paradigm, will be strengthened. They are strongly encouraged to deliver a manuscript to be included in the Conference Proceedings which will be published in the new series "Mathematics and Biosciences in Interaction" by the Birkhäuser Press, Basel, Boston, Berlin. A financial support may be assigned to participants 35 years of age (at the time of conference).

Symposium Themes

Eight coherent sessions will be scheduled and tentatively headed as:

1. Fractals (spatial and temporal), power law, nonlinear dynamics, complexity, self-organization, chaos, methodology.

2. Fractals, fractal structures in biological design, angiogenesis, development, fertilization, morphogenesis, spatial-temporal tree structures, vessel branching

3. Fractals and chaos of functional complexity, metabolic and signaling pathways, biodegradation and natural environment

4. Fractals in nuclei (DNA/ chromatin organization), gene expression, proteins structures, membranes and cell organelles during growth, cell death (apoptosis, necrosis) and cancerogenesis

5 Fractal in connective tissue, epithelial-stromal tissue interface, tissue-remodeling, biopolymers

6. Fractals in brain and nervous tissues, neurosciences, muscle and cardiac tissues

7. Fractals of immunologic response and in autoimmune, aging and chronic diseases

8. Fractals in biomedical engineering, pattern recognition, radiological, sonographic and ultrasonic image analysis, visual perception

Sessions

The four-days symposium will be organized in morning sessions that will be devoted to lectures given by expert scientists on main topics and to shorter contributions. Afternoon sessions will be devoted to free platform communications and poster sessions selected among submitted abstracts.

Poster sessions will be organized in the Balint Hall on Wednesday and Friday afternoons. Posters will be left displayed during the all symposium.

Among the Speakers…

S. Albeverio (Germany), F. Albregtsen (Norway), M. Buiatti (Italy), G. De Vico (Italy), N. Dioguardi (Italy), A.Einstein (U.S.A.), Hirato Kitaoka (Japan), G. Landini (UK), G.A. Losa (Switzerland), B. Mandelbrot (U.S.A.), T. Mattfeld (Germany), E. Oczeretko (Poland), T.F. Nonnenmacher (Germany), S.S. Papavasiliou (Greece), J.P. Rigaut (France), B. Sapoval (France), P.Walizewski (Poland), E.R. Weibel (Switzerland), B. West (U.S.A.)

Abstract submission

Abstracts of one or two pages (format A4) including figures and references should be submitted to the Scientific Committee by e-mail attached document (Format: PDF, Word (doc), rtf, text) until January 31, 2004. Selected abstracts will be published in a regular issue of Biology Forum, an international multidisciplinary Journal.

Abstract submission deadlines

October 31, 2003
Deadline to submit information on your participation to the Fourth Symposium with indication of the topic of your paper. *(But contact the conference organizers in case of possible deadline extension.)*

January 31, 2004
Deadline for submission of abstracts
February 7, 2004
Notification of acceptance on website

Attendance

Limited to 80-100 participants

Scientific and Organizing Committee

Prof. Dr. Gabriele A. Losa, chairman
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Prof. Dr. Ewald R.Weibel.
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e-mail: weibel@unibe.ch

Registration Fees

SFr. 130.-
The registration fee covers the access to the symposium, social events and a copy of the abstract booklet.

Hotel registration and Travel information

Hotel Centro Seminariale Monte Verità
single room + breakfast: sfr. 115.- / night
double room + breakfast: sfr. 80.- / night

Telephone: +41 91 791 01 81;
Fax: +41 91 780 51 35
e-mail: reception@csf-mv.ti-edu
Website: http://www.csf.ethz.ch
More information about Hotels:
http://www.ticino-tourism.ch

How to get there

Locarno Rail Station-Ascona terminal: bus no. 31.
From Ascona to Centro Seminariale Monte Verità: minibus service (BUXI) by Ascona Taxi, phone:+41 917917777
Location: Underground Parking, via Baraggie, walking distance from Bus Terminal.

Social events

Thursday 11 March: afternoon
Cultural visit

Thursday 11 March: 6:00 pm
Celebration of Benoît Mandelbrot's 80th Birthday

Friday 12 March: 8:30 pm
Fractal Dinner with musical entertainment at the Restaurant Monte Verità

Patronage

The Symposium will be held under the patronage of: International Society of Stereology, International Society for Diagnostic Quantitative Pathology, European Society for Analytical Cellular Pathology, Swiss National Science Foundation, Swiss Academy of Sciences, Swiss Society of Cytometry, Swiss Society of Cell Biology, Swiss Society of Microscopy, Dipartimento Istruzione, Cultura e Sport (Ufficio Studi Universitari) of the Republic of Canton Ticino, Accademia di Architettura of the University of Italian Switzerland (USI), Swiss Center for Scientific Computing, Manno, Società Ticinese di Scienze Naturali, Lugano, Institute for Scientific Interdisciplinary Study, Locarno, Research Center for Mathematics and Physics (CERFIM), Locarno

Sponsorship

Public Institutions

Dipartimento Istruzione e Cultura Ufficio Studi Universitari e Repubblica e Stato del Canton Ticino, Bellinzona; Swiss National Science Foundation, Berne; Swiss Academy of Sciences, Berne; Major and City of Locarno

Private Institutions

Cryms, Manno, information technology

INTERNATIONAL SYMPOSIUM
FRACTALS
IN BIOLOGY
AND MEDICINE
ASCONA SWITZERLAND
CENTRO SEMINARIALE
MONTE VERITÀ

MARCH MEETING: MONTREAL 2004 DBP SYMPOSIA AND FOCUS SESSIONS

This list of sessions was provided to THE BIOLOGICAL PHYSICIST *by Dr. Denis Rousseau, DBP Program Chair for the 2004 March Meeting.*

INVITED SESSIONS (SYMPOSIA)

1. Cutting Edge Techniques in Biological Physics (Joint with DCMP)
Symposium Organizer: **Denis L. Rousseau**
Speakers/Titles:
Syun-Ru Yeh – A cool business: trapping intermediates on the submillisecond time scale
Robert A. Austin – Sailing against the wind: sorting without diffusion
Chad A. Mirkin – Going for the gold: Using nanostructures for PCR-less detection of biomolecules
David G. Grier – Transforming mesoscopic (bio)materials with dynamic holographic optical tweezers
Stephen M. Durbin – NRVS: Synchrotron measurement of heme protein vibrational frequencies and applications to modeling functional dynamics

2. Molecular Motors and Physics of Cell Division
Symposium Organizers:
Jayanth R. Banavar and David Sharp
Speakers/Titles:
Jonathan M. Scholey – Mitosis: History and overview
David J. Sharp – Reeling-in chromosomes on spindle fibers: Roles of microtubule-destabilizing enzymes in mitotic spindle dynamics
Andrew Wilde – Regulatory mechanisms controlling mitotic spindle assembly
Jorge V. Jose – Motors and physical model of the mitotic spindle

3. The Theory of Hydrogen Transfer Reactions in Biological Systems
Symposium Organizer: **Steven D. Schwartz**
Speakers/Titles:
James T. Hynes – Infrared induced proton transfer reactions in solution
Sharon Hammes-Schiffer- Hybrid quantum-classical molecular dynamics of hydrogen Transfer Reactions in Enzymes
Jiali Gao – Balancing kinetic and thermodynamic control: The mechanism of carbocation cyclization by squalene cyclase
Charles L. Brooks III – Factors influencing hydride transfer in DHFR: Are dynamics coupled to catalysis?
Steven D. Schwartz – Symmetrically coupled vibrations and hydrogen transfer dynamics in coupled electron proton transfer system

4. From Biological to Artificial Membranes
Symposium Organizer: **Sonia E. Létant**
Speakers/Titles:
Stephen H. White – How membranes shape protein structure
Daniel Branton – Solid state nenopores:altering ion selectivity by surface modifications
Charles R. Martin – DNA and protein transport in synthetic nanotube membranes
Tejal A. Desai – Nanoporous inorganic membranes for bioseparation and drug delivery

5. Mechanics of Self-Assembled Structures (Joint with DCMP)
Symposium Organizer: **Phil Nelson**
Speakers/Titles:

Joe Rudnick – Principles of virus self-assembly
Thomas R. Powers- Theory of polymorphism of bacterial flagella
Christoph Schmidt – Mechanics of microtubules and viral capsids
Andreas Bausch – Structure of self-assembled two-dimensional spherical crystals
Rob Phillips – Finite element modeling of ciral shells and capsid packing

6. Physics of Ion Interaction with Proteins: Ion Mobility and Ion Selectivity in Channels
Symposium Organizer: **Maria Kurnikova**
Speakers/Titles:
Jayendran Rasaiah – Ion diffusion through carbon nanopres and hydrophobic channels
Rob Coalson – Modeling ion currents through protein channels
Helmut Grubmuller – Long-time scale modeling of protein channels.
Benoit Roux – Simulation of ions in Ga and KcsA channels

7. Physics and Biology of Protein-DNA Interaction
Symposium Organizer: **Ned S. Wingreen**
Speakers/Titles:
Richard Lavery - The alchemy of protein-DNA Binding
Gary Stormo – Is there a code for protein-DNA Recognition?
Anirvan Sengupta – Specificity and robustness in transcription control networks
Rahul Kulkarni – Protein-DNA coevolution

8. New Developments in Understanding Bacterial Chemotaxis
Symposium Organizer: **Herbert Levine**
Speakers/Titles:
Philippe Cluzel – Single cell measurements in bacterial chemotaxis.
Shahid Khan – Timing bacterial chemotaxis
Tuhai Tu – Heterogeneous receptor cross-talk and high gain in bacterial chemotaxis
Laure Kiessling – Synthetic multivalent ligands and probes of inter-receptor communication in bacterial chemotaxis
Hans Othmer – An integrated model for signal transduction in motor control in *E. Coli*

9. Interacting Biological Agents in Experiment and Theory
Symposium Organizer: **Anke Ordemann**
Speakers/Titles:
Herbert Levine – Self-organization during dictyostelium amoeba aggregation
Ai Nihongi – Small aquatic animals sensing their environment: feeding, mating, and predator avoidance
John Toner – Fish gotta swim, birds gotta fly, I gotta do Feynman graphs 'til I die: a continuum theory of flocking
Chad Topaz – Dynamics of a two-dimensional continuous model for swarming
Lutz Schimansky-Grier – The theory of swarming active Brownian particles

10. Teaching Biological Physics
Symposium Organizer: **Phil Nelson**
Speakers/Titles:
Ray Goldstein – A laboratory course in Biological Physics
Robijn Bruinsma – A first-year physics course with a biophysical emphasis.
Joe Howard – Bio2010, The National Academy of Sciences report on life-sciences education: The role of physics
Steven Vogel – Teaching biological physics to non-physics majors via comparative biomechanics
Phil Nelson – An upper-level course on biological physics

11. Mechanics of Biological Cells and Cytoskeleton Protein Networks (Joint with DCMP)
Symposium Organizer: **H. Daniel Ou-Yang**
Speakers/Titles:
Alex J. Levine – Affine vs. nonaffine deformation in cytoskeletal networks

Margaret Gardel – Elasticity of composite actin networks
John C. Crocker – Micromechanics of the cytoskeleton controlled by cross-link self-assembly
H. Daniel Ou-Yang – Biomechanics and intracellular dynamics of vascular entothelial cells
Linda Hirst – Filamentous actin skin-layer membranes with novel morphologies

12. Physical Modeling of DNA Microarrays
Symposium Organizer: **Yuhai Tu**
Speakers/Titles:
Glenn Held – Modeling of DNA microarray data using physical properties of hybridization
John Santa Lucia Jr. – Progress toward 3D structure prediction of DNA and RNA.
Stephen Laderman – Molecular models underlying and sensitive and specific determination of copy number changes in the human genome and transcriptome
Felix Naef – Simple physical midels for accurate oligonucleotide arrays
R. Stephen Bekiranov – Use of Langmuir adsorption isotherms to predict response in oligonucleotide microarrays

13. Structure and Dynamics of Complex Networks (Joint with DCMP)
Symposium Organizer: **Eivind Almaas**
Speakers/Titles:
Steven Strogatz – Synchronization on complex networks
Albert Laszlo Barabasi – Power laws and hierarchy in biological networks
Mark Neuman - Mixing patterns and community structure in networks
Stuart A. Kauffman – Boolean logic networks as a paradigm for developmental dynamics
Michael C. Mackey – Mathematical models in gene regulation

14. Ion Containing Polymers (Joint with DPOLY)
Symposium Organizer: **Ralph Colby**
Speakers/Titles:
Gerald Manning - Electrostatics and DNA mechanics.
Cyrus Safinya – Supramolecular assembly of biological molecules.
Andrea Chow – Electrophoresis of ion containing polymers in microfluidic applications
Michel Armand – Polymer electrolytes: dichotomy between liquid-like disorder and point defects in crystals
Carols Marques – Self-assembly of single-charged diblock copolymers

15. Development of Detectors/Sensors for Imaging Applications (Joint with FIAP)
Symposium Organizer:
Srezana Bogdanovich
Speakers/Titles:
Erik Tkaczyk – X-ray amorphous silicon detectors for medical and industrial imaging
Xi-Cheng Zhang – Recent development of terahertz wave tomographic imaging
Ravi Saraf – Large area nanodevice for tressure and texture imaging
Otto Gregory – IR sensors for imaging and health monitoring applications
Robert Street - Direct conversion detectors for medical imaging

16. Laser Ablation of Biological and Polymeric Materials (Joint with FIAP)
Symposium Organizer:
Frederick Pinkerton
Speakers/Titles:
Rangaswamy Sriniva – Twenty years of ablative photodecomposition
Thomas Lippert – Chemical and spectroscopic aspects of polymer ablation: Special features and novel directions
Barbara Garrison – Photochemical ablation of organic solids
Douglas Chrisey – Cell-by-cell fabrication of biological systems by laser forward transfer

FOCUS SESSIONS

A. Physics in Physiology I
Symposium Organizer: **Plamen Ch. Ivanov**
Speakers/Titles:
Leon Glass – Paroxysmal starting and stopping of reentrant waves in tissue culture
Peter Jung – Dressed neurons: modeling and tripartite synapse

B. Physics in Physiology II
Symposium Organizer: **Martin Huber**
Speakers/Titles:
Bela Suki – Statistical physics approaches to respiratory dynamics and lung structure
J.J. Collins – Noise-enhanced sensorimotor function

C. Structure and Dynamics of Four-way DNA Junctions (Holliday junctions)
Symposium Organizer: **Otto F. Sankey**
Speakers/ Titles:
Taekjip Ha – Single molecule fluorescence study of Holliday junction branch migration: One step at a time
Yuri Lyubchenko – Structure and dynamics of four-way junctions revealed by single-molecule AFM

D. Materials Physics Problems in Structural Genomics (Joint with DMP)
Symposium Organizer: **Robert E. Thorne**
Speakers/Titles:
Aleksey Lomakin – Liquid-solid transition in nuclei of protein crystals
Alexander J. Malkin – Scanning probe microscopy in the visualization of biological ultrastructures: from macromolecular crystals to human pathogens

E. Synchronization and Phase Resetting in the Nervous System
Symposium Organizer: **Peter A. Tass**
Speakers/ Titles:
Alexander Neiman – Phase resetting in the electroreceptor afferents of paddlefish
Peter Tass - Tomographic synchronization and phase resetting analysis of the human brain with magnetoencephalography

F. The Use of Neutron and X-ray Reflectivity Studies of Thin Films of Biophysical Interest
Symposium Organizer: **Sunil K. Sinha**
Speakers/Titles:
Jaroslaw Majewski – Studies of biomembranes at solid-liquid interfaces
Ka Yee C. Lee – Aggregation of beta-amyloid under model lipid membranes

G. Molecular Biology and Computation
Symposium Organizer: **Terence Hwa**
Speakers/Titles:
Ron Weiss – Engineering cells with computation and signal processing
Terence Hwa – Combinatorial control of gene expression from simple molecular interactions

H. Physics of Ion Interaction with Proteins
Symposium Organizer: **Maria Kurnikova**
Speakers/Titles:
Dirk Gillespie – DFT approaches to ion channel selectivity
Timothy A. Cross – NMR experiment to assess ion channel flexibility and ion binding

I. Cochlear Physics
Symposium Organizer:
J. Leo van Hemmen
Speakers/Titles:
A. J. Hudspeth – Experiments of a mechanical amplifier in the ear
Frank Julicher – Active amplification by critical oscillators in hearing

J. Stretching of Proteins
Symposium Organizer:
Jayanth R. Banavar
Speakers/Titles: **Dave Thirumalai** – Probing the energy landscape of proteins using mechanical unfolding experiments

Marek Ceiplak – Mechanical stretching and contact order of proteins

K. Acoustic Methods for Studying Bio-organic Thin Films
Symposium Organizer: **Ilya Reviakine**
Speakers/Titles:
Diethelm Johannsmann – Determination of viscoelastic parameters based on QCM measurements on many overtones
Curtis W. Frank – Measurements to study supported lipid bilayer formation resulting from vesicle fusion

L.
Ab Initio Approaches to Electronic Structure and Dynamics of Proteins
Symposium Organizer: **Jorge H. Rodriguez**
Speakers/Titles:
Jorge H. Rodriguez – Ab initio electronic structure of antiferromagnetic metal centers in proteins
Todd J. Martinez – Ab initio excited state dynamics of the photoactive yellow protein chromophore

M.
Modeling and Simulation of Biomolecules
Symposium Organizer: **Jorge H. Rodriguez**
Speakers/Titles:
Harold Sheraga – Physics-based ab initio global optimization of potential energy to compute protein structure
William A.Goddard – Ab initio prediction of the structure of G-protein coupled receptors

N.
Pattern Formation: From Single Particles to Waves and Swarms
Symposium Organizer: **Frank Moss**
Speakers/Titles:
Kenneth Showalter – Stability and control of unstable propagating waves
Anke Ordemann – Vortex-swarming in zooplankton: experiments and theory

O. Biochemical Networks I (Joint with GSNP)
Symposium Organizer: Ray Goldstein
Speakers/Titles:
Chao Tang – Global dynamical properties of the yeast cell cycle network
Ping Ao – Quantitative analysis of the stability of lysogenic state in Phage Lambda

P. Neutron Scattering and Biomimetic Materials (Joint with CAP)
Symposium Organizer: **John Katsaras**
Speakers/Titles:
John H. Root – Neutron scattering: A powerful and versatile methodology for research on bio, soft and nanophase materials
John Katsaras – Small-single neutron scattering and spontaneous formation of unilamellar vesicles: potential vehicles for drug delivery

Q. Organismal Biomechanics
Symposium Organizer: **Ray Goldstein**
Speakers/Titles:
Jane Wang – Falling paper, flapping flight, and making a virtual insect.

R. Cellular Biomechanics
Symposium Organizer: **Ray Goldstein**
Speakers/Titles:
Nyles Charon – Spirochete motility and morphology
Juliet Lee – Keratocyte motility

S. Electrostatics in Complex and Biological Fluids (Joint with GSNP, DPOLY)
Symposium Organizer:
Monica Olvera de la Cruz
Speakers/Titles:
Ronald Netz – Electrostatically driven complexation.
Francis Rondelez – Interactions of long DNA chains with charged surfaces: Entropy, conformations and applications

PRE HIGHLIGHTS

AUGUST 2003
Biological Physics Articles from Physical Review E
(Statistical, Nonlinear, and Soft Matter Physics)
Volume 68, Number 2, Articles (02xxxx)
http://ojps.aip.org/dbt/dbt.jsp?KEY=PLEEE8&Volume=68&Issue=2

RAPID COMMUNICATIONS

Balancing at the border of instability
Luc Moreau and Eduardo Sontag
Published 22 August 2003 (4 pages)
020901(R)

Antispirals in an artificial tissue of oscillatory cells
Henrik Skødt and Preben Graae
SørensenPublished 29 August 2003 (4 pages)
020902(R)

ARTICLES

Perturbation model to predict the effect of spatially varying absorptive inhomogeneities in diffusing media
S. De Nicola, R. Esposito, and M. Lepore
Published 1 August 2003 (10 pages)
021901

Theoretical predictions for spatial covariance of the electroencephalographic signal during the anesthetic-induced phase transition: Increased correlation length and emergence of spatialself-organization
Moira L. Steyn-Ross, D. A. Steyn-Ross, J. W. Sleigh, and D. R. Whiting
Published 7 August 2003 (18 pages)
021902

Models of spatial and orientational self-organization of microtubules under the influence of gravitational fields
S. Portet, J. A. Tuszynski, J. M. Dixon, and M. V. Sataric
Published 11 August 2003 (9 pages)
021903

Statistical mechanical approaches to models with many poorly known parameters
Kevin S. Brown and James P. Sethna
Published 12 August 2003 (9 pages)
021904

Dielectric boundary force and its crucial role in gramicidin
Boaz Nadler, Uwe Hollerbach, and R. S. Eisenberg
Published 13 August 2003 (9 pages)
021905

Rectification efficiency of a Brownian motor
Daisuke Suzuki and Toyonori Munakata
Published 15 August 2003 (6 pages)
021906

Kinesin motion in the absence of external forces characterized by interference total internal reflection microscopy
Giovanni Cappello, Mathilde Badoual, Albrecht Ott, Jacques Prost, and Lorenzo Busoni
Published 15 August 2003 (7 pages)
021907

Metachronal waves for deterministic switching two-state oscillators with hydrodynamic interaction
M. Cosentino Lagomarsino, P. Jona, and B. Bassetti
Published 18 August 2003 (9 pages)
021908

Two-vibron bound states in -helix proteins: The interplay between the intramolecular anharmonicity and the strong vibron–phonon coupling
V. Pouthier
Published 18 August 2003 (15 pages)
021909

Totally asymmetric exclusion process with extended objects: A model for protein synthesis
Leah B. Shaw, R. K. P. Zia, and Kelvin H. Lee
Published 18 August 2003 (17 pages)
021910

Modeling DNA structure, elasticity, and deformations at the base-pair level
Boris Mergell, Mohammad R. Ejtehadi, and Ralf Everaers
Published 20 August 2003 (15 pages)
021911

Fokker-Planck perspective on stochastic delay systems: Exact solutions and data analysis of biological systems
T. D. Frank, P. J. Beek, and R. Friedrich
Published 22 August 2003 (10 pages)
021912

Multifractal and correlation analyses of protein sequences from complete genomes
Zu-Guo Yu, Vo Anh, and Ka-Sing Lau
Published 22 August 2003 (10 pages)
021913

Spatiotemporal dynamics of optical molecular motors
Edeltraud Gehrig and Ortwin Hess
Published 22 August 2003 (10 pages)
021914

Sparks and waves in a stochastic fire-diffuse-fire model of Ca2+ release
S. Coombes and Y. Timofeeva
Published 25 August 2003 (8 pages)
021915

Coherent states of Gompertzian growth
Marcin Molski and Jerzy Konarski
Published 25 August 2003 (7 pages)
021916

Spiral wave stability in cardiac tissue with biphasic restitution
O. Bernus, H. Verschelde, and A. V. Panfilov
Published 26 August 2003 (6 pages)
021917

Characterization of flow reduction properties in an aneurysm due to a stent
Miki Hirabayashi, Makoto Ohta, Daniel A. Rüfenacht, and Bastien Chopard
Published 26 August 2003 (6 pages)
021918

Slow switching in a population of delayed pulse-coupled oscillators
Hiroshi Kori
Published 28 August 2003 (8 pages)
021919

Firing statistics of a neuron model driven by long-range correlated noise
J. W. Middleton, M. J. Chacron, B. Lindner, and A. Longtin
Published 28 August 2003 (8 pages)
021920

Structure, dynamics, and energetics of water at the surface of a small globular protein: A molecular dynamics simulation
Shubhra Ghosh Dastidar and Chaitali Mukhopadhyay
Published 28 August 2003 (9 pages)
021921

Nonuniform corticothalamic continuum model of electroencephalographic spectra with application to split-alpha peaks
P. A. Robinson, R. W. Whitehouse, and C. J. Rennie
Published 28 August 2003 (10 pages)
021922

Stability of negative-image equilibria in spike-timing-dependent plasticity
Alan Williams, Patrick D. Roberts, and Todd K. Leen
Published 29 August 2003 (14 pages)
021923

Compressing inverse lyotropic systems: Structural behavior and energetics of dioleoyl phosphatidyl ethanolamine
Michela Pisani, Theyencheri Narayanan, Giordano M. Di Gregorio, Claudio Ferrero, Stephanie Finet, and Paolo Mariani
Published 29 August 2003 (11 pages)
021924

Interplay of chemotaxis and chemokinesis mechanisms in bacterial dynamics
Maria R. D'Orsogna, Marc A. Suchard, and Tom Chou
Published 29 August 2003 (10 pages)
021925

COMMENTS

Comment on "Molecular gyroscopes and biological effects of weak extremely low-frequency magnetic fields" (Phys. Rev. E 65, 051912 (2002))
J. C. Gill
Published 20 August 2003 (3 pages)
023901

Reply to "Comment on `Molecular gyroscopes and biological effects of weak extremely low-frequency magnetic fields'"
V. N. Binhi
Published 20 August 2003 (3 pages)
023902

SEPTEMBER 2003
Biological Physics Articles from Physical Review E

(Statistical, Nonlinear, and Soft Matter Physics)
Volume 68, Number 3, Articles (02xxxx)
http://ojps.aip.org/dbt/dbt.jsp?KEY=PLEEE8&Volume=68&Issue=3

RAPID COMMUNICATIONS

Prisoners' dilemma in real-world acquaintance networks: Spikes and quasiequilibria induced by the interplay between structure and dynamics
Petter Holme, Ala Trusina, Beom Jun Kim, and Petter Minnhagen
Published 22 September 2003 (4 pages)
030901(R)

ARTICLES

Direct observation of the effective bending moduli of a fluid membrane: Free-energy cost due to the reference-plane deformations
Yoshihiro Nishiyama
Published 3 September 2003 (9 pages)
031901

Competition between interchain and intrachain phase segregation
T. Iwaki and K. Yoshikawa
Published 8 September 2003 (7 pages)
031902

Dynamics of DNA in vitro evolution with Mnt-repressor: Simulations and analysis
Yufeng Yang, Hongli Wang, and Qi Ouyang
Published 9 September 2003 (8 pages)
031903

Increase in error threshold for quasispecies by heterogeneous replication accuracy
Kazuhiro Aoki and Mitsuru Furusawa
Published 10 September 2003 (6 pages)
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