THE BIOLOGICAL PHYSICIST

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This summer issue of THE BIOLOGICAL PHYSICIST brings you PRE and PRL Highlights, along with a special announcement from the National Science Foundation. NSF is holding a new open competition for Physics Frontiers Centers. Since proposals in the area of Biological Physics are eligible under the terms of the solicitation, this announcement should be of great interest to many DBP members. Turn to page 10 for details.

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PRL HIGHLIGHTS

Soft Matter, Biological, &
Inter-disciplinary Physics Articles from
Physical Review Letters

6 April 2007

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Semisoft Nematic Elastomers and Nematics in Crossed Electric and Magnetic Fields
Fangfu Ye, Ranjan Mukhopadhyay, Olaf Stenull, and T. C. Lubensky
Published 5 April 2007
147801

Irrational Mode Locking in Quasiperiodic Systems
Creighton K. Thomas and A. Alan Middleton
Published 6 April 2007
148001

Diverse Population-Bursting Modes of Adapting Spiking Neurons
Guido Gigante, Maurizio Mattia, and Paolo Del Giudice
Published 4 April 2007
148101

Ising-Like Model for Protein Mechanical Unfolding
A. Imparato, A. Pelizzola, and M. Zamparo
Published 6 April 2007
148102

Patterning Colloidal Films via Evaporative Lithography
Daniel J. Harris, Hua Hu, Jacinta C. Conrad, and Jennifer A. Lewis
Published 5 April 2007
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Articles published 7 Apr - 13 Apr 2007
http://scitation.aip.org/dbt/dbt.jsp?KEY=PRLTAO&Volume=98&Issue=15

Colloidal Interactions and Transport in Nematic Liquid Crystals
S. A. Tatarkova, D. R. Burnham, A. K. Kirby, G. D. Love, and E. M. Terentjev
Published 11 April 2007
157801

Unfolding of Proteins and Long Transient Conformations Detected by Single Nanopore Recording
G. Oukhaled, J. Mathé, A.-L. Biance, L. Bacri, J.-M. Betton, D. Lairez, J. Pelta, and L. Auvray
Published 9 April 2007
158101

Concentration Dependence of the Collective Dynamics of Swimming Bacteria
Andrey Sokolov, Igor S. Aranson, John O. Kessler, and Raymond E. Goldstein
Published 11 April 2007
158102

Stretching of Homopolymeric RNA Reveals Single-Stranded Helices and Base-Stacking
Yeonee Seol, Gary M. Skinner, Koen Visscher, Arnaud Buhot, and Avraham Halperin
Published 12 April 2007
158103

Thermodynamically Stable Pickering Emulsions
S. Sacanna, W. K. Kegel, and A. P. Philipse
Published 12 April 2007
158301

Symmetry Breaking of In-Plane Order in Confined Copolymer Mesophases
G. E. Stein, E. W. Cochran, K. Katsov, G. H. Fredrickson, E. J. Kramer, X. Li, and J. Wang
Published 12 April 2007

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Basin Entropy in Boolean Network Ensembles
Peter Krawitz and Ilya Shmulevich
Published 9 April 2007
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Impact of Non-Poissonian Activity Patterns on Spreading Processes
Alexei Vazquez, Balázs Rácz, András Lukács, and Albert-László Barabási
Published 10 April 2007
158702

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Rheological Observation of Glassy Dynamics of Dilute Polymer Solutions near the Coil-Stretch Transition in Elongational Flows
T. Sridhar, D. A. Nguyen, R. Prabhakar, and J. Ravi Prakash
Published 20 April 2007
167801

Molecular Theory of Physical Aging in Polymer Glasses
Kang Chen and Kenneth S. Schweizer
Published 20 April 2007
167802

Physical Basis for Membrane-Charge Selectivity of Cationic Antimicrobial Peptides
Sattar Taheri-Araghi and Bae-Yeun Ha
Published 16 April 2007
168101

Combined Effect of Pore Radius and Protein Dielectric Coefficient on the Selectivity of a Calcium Channel
Dezs Boda, Mónika Valiskó, Bob Eisenberg, Wolfgang Nonner, Douglas Henderson, and Dirk Gillespie
Published 17 April 2007
168102

Membrane Waves Driven by Actin and Myosin
R. Shlomovitz and N. S. Gov
Published 20 April 2007
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Polymer Chain Dynamics in a Random Environment: Heterogeneous Mobilities
K. Niedzwiedz, A. Wischnewski, M. Monkenbusch, D. Richter, A.-C. Genix, A. Arbe, J. Colmenero, M. Strauch, and E. Straube
Published 17 April 2007
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Manipulating Single Enzymes by an External Harmonic Force
Michael A. Lomholt, Michael Urbakh, Ralf Metzler, and Joseph Klafter
Published 19 April 2007
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Self-Sustained Spatiotemporal Oscillations Induced by Membrane-Bulk Coupling
A. Gomez-Marin, J. Garcia-Ojalvo, and J. M. Sancho
Published 20 April 2007
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Ion-Specific Anomalous Electrokinetic Effects in Hydrophobic Nanochannels
David M. Huang, Cécile Cottin-Bizonne, Christophe Ybert, and Lydéric Bocquet
Published 26 April 2007
177801

Probing Persistence in DNA Curvature Properties with Atomic Force Microscopy
J. Moukhtar, E. Fontaine, C. Faivre-Moskalenko, and A. Arneodo
Published 23 April 2007
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Dynamical Evolution of Spatiotemporal Patterns in Mammalian Middle Cortex
Steven J. Schiff, Xiaoying Huang, and Jian-Young Wu
Published 25 April 2007

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Front Propagation in Reaction-Superdiffusion Dynamics: Taming Lévy Flights with Fluctuations
D. Brockmann and L. Hufnagel
Published 27 April 2007
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Articles published 28 Apr - 4 May 2007
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Mosaic Multistate Scenario Versus One-State Description of Supercooled Liquids
Andrea Cavagna, Tomás S. Grigera, and Paolo Verrocchio
Published 30 April 2007
187801

Evolution of Growth Modes for Polyelectrolyte Bundles
Ghee Hwee Lai, Rob Coridan, Olena V. Zribi, Ramin Golestanian, and Gerard C. L. Wong
Published 30 April 2007
187802

Surface-Groove-Induced Azimuthal Anchoring of a Nematic Liquid Crystal: Berreman's Model Reexamined
Jun-ichi Fukuda, Makoto Yoneya, and Hiroshi Yokoyama
Published 4 May 2007
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Why Do Active and Stabilized Dunes Coexist under the Same Climatic Conditions?
Hezi Yizhaq, Yosef Ashkenazy, and Haim Tsoar
Published 2 May 2007
188001

Caging Dynamics in a Granular Fluid
P. M. Reis, R. A. Ingale, and M. D. Shattuck
Published 30 April 2007
188301

Swinging of Red Blood Cells under Shear Flow
Manouk Abkarian, Magalie Faivre, and Annie Viallat
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Spot Deformation and Replication in the Two-Dimensional Belousov-Zhabotinski Reaction in a Water-in-Oil Microemulsion
Theodore Kolokolnikov and Mustapha Tlidi
Published 3 May 2007
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Nonequilibrium Sedimentation of Colloids on the Particle Scale
C. Patrick Royall, Joachim Dzubiella, Matthias Schmidt, and Alfons van Blaaderen
Published 3 May 2007
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Disordering to Order: de Vries Behavior from a Landau Theory for Smectic Phases
Karl Saunders, Daniel Hernandez, Staci Pearson, and John Toner
Published 8 May 2007
197801

Saltation Transport on Mars
Eric J. R. Parteli and Hans J. Herrmann
Published 11 May 2007
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Defect Scars on Flexible Surfaces with Crystalline Order
Tamotsu Kohyama and Gerhard Gompper
Published 7 May 2007
198101

Surface Conductivity of Biological Macromolecules Measured by Nanopipette Dielectrophoresis
Richard W. Clarke, Joe D. Piper, Liming Ying, and David Klenerman
Published 9 May 2007
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Polymerization Force Driven Buckling of Microtubule Bundles Determines the Wavelength of Patterns Formed in Tubulin Solutions
Yongxing Guo, Yifeng Liu, Jay X. Tang, and James M. Valles, Jr.
Published 11 May 2007
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Disappearance of the Gas-Liquid Phase Transition for Highly Charged Colloids
A.-P. Hynninen and A. Z. Panagiotopoulos
Published 7 May 2007
198301

Encapsulation and Diffraction-Pattern-Correction Methods to Reduce the Effect of Damage in X-Ray Diffraction Imaging of Single Biological Molecules
Stefan P. Hau-Riege, Richard A. London, Henry N. Chapman, Abraham Szoke, and Nicusor Timneanu
Published 9 May 2007
198302

Experimental Observation of Structural Crossover in Binary Mixtures of Colloidal Hard Spheres
Jörg Baumgartl, Roel P. A. Dullens, Marjolein Dijkstra, Roland Roth, and Clemens Bechinger
Published 9 May 2007
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Visualizing the Strain Field in Semiflexible Polymer Networks: Strain Fluctuations and Nonlinear Rheology of F-Actin Gels
J. Liu, G. H. Koenderink, K. E. Kasza, F. C. MacKintosh, and D. A. Weitz
Published 10 May 2007
198304

Shear Zones and Wall Slip in the Capillary Flow of Concentrated Colloidal Suspensions
Lucio Isa, Rut Besseling, and Wilson C K Poon
Published 10 May 2007
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Model of Intraseasonal Oscillations in Earth's Atmosphere
Elena Kartashova and Victor S. L'vov
Published 10 May 2007
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Network Analysis of the State Space of Discrete Dynamical Systems
Amer Shreim, Peter Grassberger, Walter Nadler, Björn Samuelsson, Joshua E. S. Socolar, and Maya Paczuski
Published 8 May 2007
198701

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Contraction and Reswelling of a Polymer Chain Near the Critical Point of a Binary Liquid Mixture
Christopher A. Grabowski and Ashis Mukhopadhyay
Published 15 May 2007
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Induced Long-Range Attractive Potentials of Human Serum Albumin by Ligand Binding
Takaaki Sato, Teruyuki Komatsu, Akito Nakagawa, and Eishun Tsuchida
Published 15 May 2007
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Line Tension at Fluid Membrane Domain Boundaries Measured by Micropipette Aspiration
Aiwei Tian, Corinne Johnson, Wendy Wang, and Tobias Baumgart
Published 16 May 2007
208102

Observation of Very Narrow Linewidths in the Fluorescence Excitation Spectra of Single Conjugated Polymer Chains at 1.2 K
Florian A. Feist, Giovanni Tommaseo, and Thomas Basché
Published 15 May 2007
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Numerical Demonstration of Fluctuation Dynamo at Low Magnetic Prandtl Numbers

A. B. Iskakov, A. A. Schekochihin, S. C. Cowley, J. C. McWilliams, and M. R. E. Proctor
Published 14 May 2007
208501

Invasion Percolation and Critical Transient in the Barabási Model of Human Dynamics
A. Gabrielli and G. Caldarelli
Published 14 May 2007
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Liquid Crystals in Two Dimensions: First-Order Phase Transitions and Nonuniversal Critical Behavior
R. L. C. Vink
Published 21 May 2007
217801

Pathway of Membrane Fusion with Two Tension-Dependent Energy Barriers
Andrea Grafmüller, Julian Shillcock, and Reinhard Lipowsky
Published 23 May 2007
218101

Wormlike Chain Theory and Bending of Short DNA
Alexey K. Mazur
Published 24 May 2007
218102

Breaking the Diffraction Barrier in Fluorescence Microscopy by Optical Shelving
Stefan Bretschneider, Christian Eggeling, and Stefan W. Hell
Published 24 May 2007
218103

Anisotropic Light Diffusion: An Oxymoron?
Alwin Kienle
Published 25 May 2007
218104

Modeling Diffusion of Adsorbed Polymer with Explicit Solvent
Tapan G. Desai, Pawel Keblinski, Sanat K. Kumar, and Steve Granick
Published 21 May 2007
218301

Cracking in Drying Colloidal Films
Karnail B. Singh and Mahesh S. Tirumkudulu
Published 25 May 2007
218302

PRE HIGHLIGHTS

Biological Physics Articles from

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RAPID COMMUNICATIONS

Model for dynamical coherence in thin films of self-propelled microorganisms
Igor S. Aranson, Andrey Sokolov, John O. Kessler, and Raymond E. Goldstein
Published 2 April 2007 (*4 pages*)
040901(R)

Effects of hydration water on protein methyl group dynamics in solution
Daniela Russo, Greg L. Hura, and John R. D. Copley
Published 30 April 2007 (*3 pages*)
040902(R)

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Theoretically predicted effects of Gaussian curvature on lateral diffusion of membrane molecules
Tomoyoshi Yoshigaki
Published 2 April 2007 (*16 pages*)
041901

Sensitivity versus resonance in two-dimensional spiking-bursting neuron models
Borja Ibarz, Gouhei Tanaka, Miguel A. F. Sanjuán, and Kazuyuki Aihara
Published 3 April 2007 (*12 pages*)
041902

Laser intensity dependence of femtosecond near-infrared optoinjection
Cheng Peng, Robert E. Palazzo, and Ingrid Wilke
Published 3 April 2007 (*8 pages*)
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Stretching short biopolymers by fields and forces
Yuko Hori, Ashok Prasad, and Jané Kondev
Published 3 April 2007 (*10 pages*)
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Intracellular transport by single-headed kinesin KIF1A: Effects of single-motor mechanochemistry and steric interactions
Philip Greulich, Ashok Garai, Katsuhiro Nishinari, Andreas Schadschneider, and Debashish Chowdhury
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041905

Magnetic control of *Dictyostelium* aggregation
C. Wilhelm, C. Rivière, and N. Biais
Published 6 April 2007 (*6 pages*)
041906

Period-two cycles in a feedforward layered neural network model with symmetric sequence processing
F. L. Metz and W. K. Theumann
Published 12 April 2007 (*7 pages*)
041907

Eukaryotic promoter prediction based on relative entropy and positional information
Shuanhu Wu, Xudong Xie, Alan Wee-Chung Liew, and Hong Yan
Published 12 April 2007 (*7 pages*)
041908

Unfolding cross-linkers as rheology regulators in F-actin networks
B. A. DiDonna and Alex J. Levine
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041909

Structural-diversity-enhanced cellular ability to detect subthreshold extracellular signals
Hanshuang Chen, Jiqian Zhang, and Jianqing Liu
Published 16 April 2007 (*4 pages*)
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Patterns in inhibitory networks of simple map neurons
Borja Ibarz, José Manuel Casado, and Miguel A. F. Sanjuán
Published 19 April 2007 (*14 pages*)
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Non-Gaussian behavior of elastic incoherent neutron scattering profiles of proteins studied by molecular dynamics simulation
Atsushi Tokuhisa, Yasumasa Joti, Hiroshi Nakagawa, Akio Kitao, and Mikio Kataoka
Published 24 April 2007 (*8 pages*)
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Random fluctuations of the firing rate function in a continuum neural field model
C. A. Brackley and M. S. Turner
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Penetration depth of low-coherence enhanced backscattered light in subdiffusion regime
Hariharan Subramanian, Prabhakar Pradhan, Young L. Kim, and Vadim Backman
Published 26 April 2007 (*9 pages*)
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Diffusion-trapping model of receptor trafficking in dendrites
P. C. Bressloff and B. A. Earnshaw
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Floppy swimming: Viscous locomotion of actuated elastica
Eric Lauga
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Regularizing capacity of metabolic networks
Carsten Marr, Mark Müller-Linow, and Marc-Thorsten Hütt
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041917

Unified description of poly- and oligonucleotide DNA melting: Nearest-neighbor, Poland-Sheraga, and lattice models
Ralf Everaers, Sanjay Kumar, and Christian Simm
Published 27 April 2007 (*12 pages*)
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Orange reflection from a three-dimensional photonic crystal in the scales of the weevil *Pachyrrhynchus congestus pavonius* (Curculionidae)
Victoria Welch, Virginie Lousse, Olivier Deparis, Andrew Parker, and Jean Pol Vigneron
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Simulations of intracellular calcium release dynamics in response to a high-intensity, ultrashort electric pulse
R. P. Joshi, A. Nguyen, V. Sridhara, Q. Hu, R. Nuccitelli, S. J. Beebe, J. Kolb, and K. H. Schoenbach
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Heteropolymer sequence design and preferential solvation of hydrophilic monomers: Application of random energy model
Longhua Hu and Alexander Y. Grosberg
Published 30 April 2007 (*14 pages*)
041921

Observation of two forms of conformations in the reentrant condensation of DNA
F. T. Chien, S. G. Lin, P. Y. Lai, and C. K. Chan
Published 30 April 2007 (*4 pages*)
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BRIEF REPORTS

Nonlocal competition and front propagation in branching-coalescence systems
Yosef E. Maruvka and Nadav M. Shnerb
Published 11 April 2007 (*4 pages*)
042901

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RAPID COMMUNICATIONS

Towards neuro-memory-chip: Imprinting multiple memories in cultured neural networks
Itay Baruchi and Eshel Ben-Jacob
Published 16 May 2007 (*4 pages*)
050901(R)

Conformations of confined biopolymers
Frederik Wagner, Gianluca Lattanzi, and Erwin Frey
Published 31 May 2007 (*4 pages*)
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ARTICLES

Kinetics of viral self-assembly: Role of the single-stranded RNA antenna
Tao Hu and B. I. Shklovskii
Published 1 May 2007 (*4 pages*)
051901

Functional modulation of power-law distribution in visual perception
Masanori Shimono, Takashi Owaki, Kaoru Amano, Keiichi Kitajo, and Tsunehiro Takeda
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Construction and application of the weighted amino acid network based on energy
Xiong Jiao, Shan Chang, Chun-hua Li, Wei-zu Chen, and Cun-xin Wang
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Generalized rate-code model for neuron ensembles with finite populations
Hideo Hasegawa
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Monte Carlo simulations of flexible polyelectrolytes inside viral capsids with dodecahedral charge distribution
Daniel George Angelescu and Per Linse
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Modeling multicomponent reactive membranes
Olga Kuksenok and Anna C. Balazs
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Function constrains network architecture and dynamics: A case study on the yeast cell cycle Boolean network
Kai-Yeung Lau, Surya Ganguli, and Chao Tang
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Measurements of the hysteresis in unzipping and rezipping double-stranded DNA
K. Hatch, C. Danilowicz, V. Coljee, and M. Prentiss
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Preservation of information in a prebiotic package model
Daniel A. M. M. Silvestre and José F. Fontanari
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Clustering coefficients of protein-protein interaction networks
Gerald A. Miller, Yi Y. Shi, Hong Qian, and Karol Bomsztyk
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Stability analysis of a hybrid cellular automaton model of cell colony growth
P. Gerlee and A. R. A. Anderson
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Two-center-multipole expansion method: Application to macromolecular systems
Ilia A. Solov'yov, Alexander V. Yakubovich, Andrey V. Solov'yov, and Walter Greiner
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Spatiotemporal complexity of a ratio-dependent predator-prey system
Weiming Wang, Quan-Xing Liu, and Zhen Jin
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Angular velocity variations and stability of spatially explicit prey-predator systems
Refael Abta and Nadav M. Shnerb
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051914

Brownian dynamics simulation of the effect of histone modification on nucleosome structure
Wei Li, Shuo-Xing Dou, Ping Xie, and Peng-Ye Wang
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Applying a potential across a biomembrane: Electrostatic contribution to the bending rigidity and membrane instability
Tobias Ambjörnsson, Michael A. Lomholt, and Per Lyngs Hansen
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Spatiotemporal learning in analog neural networks using spike-timing-dependent synaptic plasticity
Masahiko Yoshioka, Silvia Scarpetta, and

Maria Marinaro
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Statistical geometric affinity in human brain electric activity
A. Chornet-Lurbe, J. A. Oteo, and J. Ros
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Field-theoretic approach to fluctuation effects in neural networks
Michael A. Buice and Jack D. Cowan
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Individual-based predator-prey model for biological coevolution: Fluctuations, stability, and community structure
Per Arne Rikvold and Volkan Sevim
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Insights into thermophilic archaebacterial membrane stability from simplified models of lipid membranes
Charles H. Davis, Huifen Nie, and Nikolay V. Dokholyan
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Self-consistent field theory of two-component phospholipid membranes
Nan Zheng, J. Geehan, and M. D. Whitmore
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Patterns of phase-dependent spiral wave attenuation in excitable media
M. A. de la Casa, F. J. de la Rubia, and Plamen Ch. Ivanov
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Amplification in the auditory periphery: The effect of coupling tuning mechanisms
K. A. Montgomery, M. Silber, and S. A. Solla
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Transitions between multistable states as a model of epileptic seizure dynamics
Daisuke Takeshita, Yasuomi D. Sato, and Sonya Bahar
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DBP COMMITTEE ANNOUNCEMENT

DBP Committee Rosters

Program Committee:

Chair: **James Glazier** (1-year term, expires March 2008)
Co-Chair: **Dean Astumian** (1-year term, expires March 2008)
Workshop Chair: **Stephen Quake** (1-year term, expires March 2008)
Secretary-Treasurer: **Shirley Chan** (4-year term, expires March 2008)

Members:

Chao Tang (2-year term, expires March 2008)
Réka Albert (2-year term, expires March 2009)
Jin Wang (2-year term, expires March 2009)

Nomination Committee:

Chair: **Marilyn Gunner** (1-year term, expires March 2008)

Members:

Michael Deem (APS-Appointee, 1-year term, expires March 2008)
Deborah Fygenson (2-year term, expires March 2008)
Gerhard Hummer (2-year term. expires March 2008)
Robert Austin (2-year term, expires March 2009)
Brian Salzberg (2-year term, expires March 2009)

JOB AD

FACULTY POSITION IN BIOLOGICAL PHYSICS

To continue the growth of its Biological Physics initiative, the Department of Physics at Carnegie Mellon University (http://info.phys.cmu.edu) invites applications from candidates for a tenure-track junior faculty position. We seek outstanding candidates in soft condensed matter that use physics-based experimental techniques to study phenomena of biological significance between the molecular and the cellular length scale. We are searching broadly. Areas of particular but not exclusive interest include membrane-related biological processes such as lipid membrane structure and dynamics; protein association with membranes; membrane electrostatics; transport phenomena and membrane reorganization. Carnegie Mellon and the Physics Department value strong interdisciplinary interactions, so preference will be given to candidates and research areas likely to interact synergistically with some of the many other groups in biology, biophysics, biotechnology, computational biology and biomedicine at Carnegie Mellon, the University of Pittsburgh and the University of Pittsburgh School of Medicine. Interviews will begin in Sept. 2007, but applications will be accepted until the position is filled. Interested individuals should send a resume, research and teaching plans, as well as lists of publications, invited talks and references to:

Biological Physics Search Committee, Department of Physics,

Carnegie Mellon University, Pittsburgh, PA 15213.

Electronic submission in PDF format to BiolPhys@phys.cmu.edu is encouraged.

Carnegie Mellon University encourages applications from underrepresented groups and is committed to equal employment and affirmative action.

HUMAN FRONTIER SCIENCE PROGRAM

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2008 POSTDOCTORAL FELLOWSHIPS IN THE LIFE SCIENCES

The Human Frontier Science Program (HFSP) supports basic research in the life sciences with emphasis on novel, innovative, and interdisciplinary approaches that involve scientific exchange across national boundaries. The dynamic fields at the interface of biological and physical sciences open up new approaches to understand the mechanisms of living organisms. This indicates a clear need for participation of scientists from outside the life sciences to reveal the structures and networks that characterize the living state. Therefore the HFSP supports postdoctoral investigators who explore new areas within the life sciences or who, in the cross-disciplinary program, use their expertise in chemistry, physics, mathematics, engineering or computer science to bear on a biological question. Two types of fellowships are available:

Long-Term Fellowships

For applicants with a PhD degree in the life sciences who are expected to **broaden their horizon and to move into a new research area** that is **different from their doctoral studies or previous postdoctoral training**. Applicants that propose a significant departure from their previous research are viewed favorably.

Cross-Disciplinary Fellowships

For applicants with a PhD degree in physics, chemistry, mathematics, engineering or computer sciences who wish to **gain research experience in the life sciences by proposing a significant change in discipline.** While previous expertise should be reflected in the project, applicants are expected to be exposed to new techniques and literature.

Important deadlines:

Compulsory pre-registration for password: **16 August 2007**

Submission of applications: **30 August 2007**

The online submission system will become available in summer 2007 on the HFSP web site.

Nationals from one of the HFSPO supporting countries can apply to work in any country, while other nationals can apply for training only in a supporting country. Current supporting members are: *Australia, Canada, the European Union, France, Germany, India, Italy, Japan, the Republic of Korea, New Zealand, Switzerland, the United Kingdom, and the United States of America*.

Applicants must be within 3 years after receiving their doctoral degree. The program provides initial support for postdoctoral training in another country by means of an individual stipend (~150K USD over 3 years) that is composed of a living allowance and funds for research and travel. Fellows can apply for 3 months paid parental leave and receive a contribution towards the cost of child care. As a rule, fellows who choose to return to their home country can defer their final year for up to two years and are invited to apply for a **Career Development Award** (currently 300K USD over 3 years) to establish themselves as independent young investigators. HFSP requires the maintenance of stipends for research scholars and has the policy that its fellowship stipend cannot be subject to mandatory deductions for social security contributions. Applications from female PhD recipients are encouraged.

Short-Term Fellowships

Short-Term Fellowships are intended for researchers early in their careers who already hold a PhD and provide up to 3 months of support to **learn techniques in a new area of research or establish new collaborations in another country.** Applications are accepted throughout the year.

Ad # _____