

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Biological physics

- Theory for the bending anisotropy of lipid membranes and tubule formation 6192
C.-M. Chen

Plasma physics

- Electron magnetohydrodynamic approximations and the magnetic drift wave 6196
H. Saleem
Influence of ion temperature on Lyman- α intensity ratios 6198
J. M. A. Ashbourn

Computational physics

- Finite-volume lattice Boltzmann method 6202
Haowen Xi, Gongwen Peng, and So-Hsiang Chou

ERRATA

- Erratum: Computer simulation study of the structure of the liquid-vapor interface of mercury at 20, 100, and 200 °C [Phys. Rev. E **59**, 479 (1999)] 6206
Dmitriy S. Chekmarev, Meishan Zhao, and Stuart A. Rice

- Cumulative Author Index** 6207

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Physics of beams

- High-power electrostatic free-electron maser as a future source for fusion plasma heating: Experiments in the short-pulse regime 6058
 W. H. Urbanus, W. A. Bongers, C. A. J. van der Geer, P. Manintveld, J. Plomp, J. Pluygers, A. J. Poelman, P. H. M. Smeets, A. G. A. Verhoeven, V. L. Bratman, G. G. Denisov, A. V. Saviolov, M. Yu. Shmelyov, M. Caplan, A. A. Varfolomeev, S. V. Tolmachev, and S. N. Ivanchenkov

Classical physics, including nonlinear media

- Theory of modulational instability in Bragg gratings with quadratic nonlinearity 6064
 H. He, Awdah Arraf, C. Martijn de Sterke, P. D. Drummond, and Boris A. Malomed
- Partially coherent solitons of variable shape in a slow Kerr-like medium: Exact solutions 6079
 Adrian Ankiewicz, Wiesław Królikowski, and Nail N. Akhmediev
- Hamiltonian-versus-energy diagrams in soliton theory 6088
 Nail Akhmediev, Adrian Ankiewicz, and Roger Grimshaw
- Resonant optical tunnel effect through dielectric structures of subwavelength cross sections 6097
 Christian Girard, Alain Dereux, and Christian Joachim
- Moving lattice kinks and pulses: An inverse method 6105
 S. Flach, Y. Zolotaryuk, and K. Kladko
- Simulation of the temporal behavior of soliton propagation in photorefractive media 6116
 J. Maufof, N. Fressengeas, D. Wolfersberger, and G. Kugel
- Three-wave interaction solitons in optical parametric amplification 6122
 E. Ibragimov, A. A. Struthers, D. J. Kaup, J. D. Khaydarov, and K. D. Singer

Computational physics

- Bayesian inference analysis of ellipsometry data 6138
 N. P. Barradas, J. L. Keddie, and R. Sackin
- Rosenbluth chain cluster growth in the study of micelle self-assembly 6152
 T. Dalby and C. M. Care
- Higher-order probabilistic perceptrons as Bayesian inference engines 6161
 J. W. Clark, K. A. Gernoth, S. Dittmar, and M. L. Ristig

BRIEF REPORTS

General methods of statistical physics

- Avalanche and spreading exponents in systems with absorbing states 6175
 Miguel A. Muñoz, Ronald Dickman, Alessandro Vespignani, and Stefano Zapperi
- Generalized Landauer equation: Absorption-controlled diffusion processes 6180
 Salvador Godoy, L. S. García-Colín, and Victor Micenmacher
- Numerical test of the damping time of layer-by-layer growth on stochastic models 6184
 S. Park, H. Jeong, and B. Kahng

Liquid crystals

- Temperature difference between bulk and surface transition in freely suspended smectic films 6188
 D. Schlauf, Ch. Bahr, M. Glogarová, M. Kašpar, and V. Hamplová

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Dense fluid transport for inelastic hard spheres	5895
V. Garzó and J. W. Dufty	
Asymptotic solution for solitary waves in a chain of elastic spheres	5912
Anindya Chatterjee	
Biological physics	
Noise and periodic modulations in neural excitable media	5920
J. M. G. Vilar, R. V. Solé, and J. M. Rubí	
Folding a protein by discretizing its backbone torsional dynamics	5928
Ariel Fernández	
Global stability analysis in delayed cellular neural networks	5940
Jinde Cao	
^{13}C - ^{13}C rotational resonance in a transmembrane peptide: A comparison of the fluid and gel phases	5945
Denis B. Langlais, Robert S. Hodges, and James H. Davis	
Charge optimization leads to favorable electrostatic binding free energy	5958
Erik Kangas and Bruce Tidor	
Comparison between the role of discontinuities in cardiac conduction and in a one-dimensional hardware model	5962
M. deCastro, E. Hofer, A. P. Muñuzuri, M. Gómez-Gesteira, G. Plank, I. Schafferhofer, V. Pérez-Muñuzuri, and V. Pérez-Villar	
Fractal ion-channel behavior generates fractal firing patterns in neuronal models	5970
Steven B. Lowen, Larry S. Liebovitch, and John A. White	
Unfolded <i>in vacuo</i> lysozyme folds into native, quasinaive, and compact structures	5981
Gustavo A. Arteca, I. Velázquez, C. T. Reimann, and O. Tapia	
Collective membrane motions in the mesoscopic range and their modulation by the binding of a monomolecular protein layer of streptavidin studied by dynamic light scattering	5987
Rainer Hirn, Roland Benz, and Thomas M. Bayerl	
Simplified calculation of folding energies and residue coordination numbers in random heteropolymers	5995
A. E. Carlsson	
Large-scale optimization of neuron arbors	6001
Christopher Cherniak, Mark Changizi, and Du Won Kang	
Plasma physics	
Electronic transmission properties in a mesoscopic necklace with inhomogeneous magnetic flux	6010
Zhiwen Pan, Chang-De Gong, Mak Hon Lung, and Haiqing Lin	
Dynamical properties of random charge fluctuations in a dusty plasma with different charging mechanisms	6017
S. A. Khrapak, A. P. Nefedov, O. F. Petrov, and O. S. Vaulina	
Effects of entropy inhomogeneity on density-temperature correlation in solar wind	6023
Francesco Malara, Leonardo Primavera, and Pierluigi Veltri	
Magnetic focusing and trapping of high-intensity laser-generated fast electrons at the rear of solid targets	6032
J. R. Davies, A. R. Bell, and M. Tatarakis	
Generation of ultrashort electron bunches by colliding laser pulses	6037
C. B. Schroeder, P. B. Lee, J. S. Wurtele, E. Esarey, and W. P. Leemans	
Relativistic pondermotive Hamiltonian for electrons in an intense laser field	6048
X. Li	
Hot, dense, millimeter-scale, high-Z plasmas for laser-plasma interactions studies	6053
B. H. Failor, J. C. Fernandez, B. H. Wilde, A. L. Osterheld, J. A. Cobble, and P. L. Gobby	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Effects of polymer chains on structure and dynamics of supercooled water in poly(vinyl alcohol)	5647
Yoshinori Tamai and Hideki Tanaka	
Universal surface scaling function for critical adsorption	5655
J. H. Carpenter, B. M. Law, and D. S. P. Smith	
Tubular phase of self-avoiding anisotropic crystalline membranes	5659
Mark Bowick and Alex Travesset	
Magnetic-field-induced optical transmittance in colloidal suspensions	5676
James E. Martin, Kimberly M. Hill, and Chris P. Tigges	
Molecular weight distribution and the electrorheological response for anisotropic solutions of poly(γ -benzyl-L-glutamate) induced by the convection of the electrohydrodynamic instability	5693
Katsufumi Tanaka, Akio Takahashi, Ryuichi Akiyama, and Noriyuki Kuramoto	
Wetting at nonplanar substrates: Unbending and unbinding	5697
C. Rascón, A. O. Parry, and A. Sartori	
Analytic model for the ballistic adsorption of polydisperse mixtures	5701
Romualdo Pastor-Satorras	
Nonergodicity transitions in colloidal suspensions with attractive interactions	5706
J. Bergenholtz and M. Fuchs	
Heap corrugation and hexagon formation of powder under vertical vibrations	5716
Éric Falcon, Krishna Kumar, Kapil M. S. Bajaj, and Jayanta K. Bhattacharjee	
Stability and structure of a supercooled liquid mixture in two dimensions	5721
Donna N. Perera and Peter Harrowell	
Phase diagram of highly asymmetric binary hard-sphere mixtures	5744
Marjolein Dijkstra, René van Roij, and Robert Evans	
Photoacoustic generation for a spherical absorber with impedance mismatch with the surrounding media	5772
J. M. Sun and Bernard S. Gerstman	
Off-lattice model for the phase behavior of lipid-cholesterol bilayers	5790
Morten Nielsen, Ling Miao, John H. Ipsen, Martin J. Zuckermann, and Ole G. Mouritsen	
Late stage kinetics of a phase separation induced by a cw laser wave in binary liquid mixtures	5804
J. P. Delville, C. Lalaude, S. Buil, and A. Ducasse	
Hysteresis and avalanches in two-dimensional foam rheology simulations	5819
Yi Jiang, Pieter J. Swart, Avadh Saxena, Marius Asipauskas, and James A. Glazier	
Free energy of a long, flexible, self-avoiding polymer chain in a tube	5833
Theodore W. Burkhardt and Ihnsouk Guim	
Scaling properties of maximally compact chains	5839
K. W. Foreman	
Surface fractals probed by adsorbate spin-lattice relaxation dispersion	5848
Tatiana Zavada and Rainer Kimmich	
Propagating front in an excited granular layer	5855
W. Losert, D. G. W. Cooper, and J. P. Gollub	
Electrostriction of a near-critical fluid in microgravity	5862
G. A. Zimmerli, R. A. Wilkinson, R. A. Ferrell, and M. R. Moldover	
Properties of layer-by-layer vector stochastic models of force fluctuations in granular materials	5870
M. L. Nguyen and S. N. Coppersmith	
Frictional mechanics of wet granular material	5881
Jean-Christophe Gémard, Wolfgang Losert, and Jerry P. Gollub	
Anisotropic scattering profiles of charged gels in a deformed state	5891
Y. Shiwa and M. Shibayama	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Hydrodynamic fluctuations in the Kolmogorov flow: Linear regime	5503
I. Bena, M. Malek Mansour, and F. Baras	
Testing a random phase approximation for bounded turbulent flow	5511
Mark Ulitsky, Tim Clark, and Leaf Turner	
Liquid crystals	
Photopolarimetric characterization of the transition between two turbulent states in a nematic liquid crystal film	5523
G. Strangi, C. Versace, N. Scaramuzza, D. E. Lucchetta, V. Carbone, and R. Bartolino	
Systematic approach to bicontinuous cubic phases in ternary amphiphilic systems	5528
U. S. Schwarz and G. Gompper	
Experimental test of the Warren-Langer model in nematic-isotropic planar interfaces	5542
O. A. Gomes, N. B. Viana, J. M. A. Figueiredo, and O. N. Mesquita	
Influence of substrate microrelief on the Fréedericksz transition in a thin nematic cell	5549
L. V. Mirantsev	
Quasicritical behavior of dielectric permittivity in the isotropic phase of <i>n</i> -hexyl-cyanobiphenyl in a large range of temperatures and pressures	5556
Aleksandra Drozd-Rzoska	
Looped finger transformation in frustrated cholesteric liquid crystals	5562
J. Baudry, S. Pirkel, and P. Oswald	
Dielectric and high-pressure investigations on a thermotropic cubic mesophase	5572
D. S. Shankar Rao, S. Krishna Prasad, Veena Prasad, and Sandeep Kumar	
Complex fluids, polymers, and granular materials	
Neutron reflectivity studies of critical adsorption: The correspondence between a critical adsorption profile and specular neutron reflection	5577
Jonathan R. Howse, James Bowers, Emilio Manzanares-Papayanopoulos, Ian A. McLure, and Roland Steitz	
Kinetic approach to granular gases	5582
A. Puglisi, V. Loreto, U. Marini Bettolo Marconi, and A. Vulpiani	
Reconstruction of random media using Monte Carlo methods	5596
C. Manwart and R. Hilfer	
Fractal growth of epitaxial surface clusters with elastic interaction	5600
J. Steinbrecher, H. Müller-Krumbhaar, E. Brener, C. Misbah, and P. Peyla	
Vesicles in solutions of hard rods	5606
B. Groh	
Why all crystals need not be bcc: Symmetry breaking at the liquid-solid transition revisited	5613
B. Groh and B. Mulder	
Polymer shape anisotropy and the depletion interaction	5621
Mario Triantafillou and Randall D. Kamien	
Depolarized light scattering spectroscopy of $\text{Ca}_{0.4}\text{K}_{0.6}(\text{NO}_3)_{1.4}$: A reexamination of the “knee”	5625
H. C. Barshilia, G. Li, G. Q. Shen, and H. Z. Cummins	
Steps, kinetic anisotropy, and long-wavelength instabilities in directional solidification	5629
H. P. Grimm, S. H. Davis, and G. B. McFadden	
Geometrical model for a particle on a rough inclined surface	5641
Giovani L. Vasconcelos and J. J. P. Veerman	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Calculation of relaxation rates from microscopic equations of motion	5292
Roger Haydock, C. M. M. Nex, and B. D. Simons	
Synchronizing chaos in an experimental chaotic pendulum using methods from linear control theory	5303
Sander Kaart, Jaap C. Schouten, and Cor M. van den Bleek	
Controlling chaos in low- and high-dimensional systems with periodic parametric perturbations	5313
K. A. Mirus and J. C. Sprott	
Scar and antiscar quantum effects in open chaotic systems	5325
L. Kaplan	
Simple approach to the creation of a strange nonchaotic attractor in any chaotic system	5338
J. W. Shuai and K. W. Wong	
Analytical approach for the Floquet theory of delay differential equations	5344
C. Simmendinger, A. Wunderlin, and A. Pelster	
Information operations with an excitable field	5354
Ikuko Motoike and Kenichi Yoshikawa	
Simple deterministic dynamical systems with fractal diffusion coefficients	5361
R. Klages and J. R. Dorfman	
Quantum-classical correspondence in localization of eigenstates for a system having mixed-type classical dynamics	5384
Sang Wook Kim and Hai-Woong Lee	
Efficient strategy for the occasionally proportional feedback method in controlling chaos	5393
Tsung-Hsun Yang, Shyh-Feng Chen, and Yih-Shun Gou	
Numerical statistics of power dropouts based on the Lang-Kobayashi model	5400
Josep Mulet and Claudio R. Mirasso	

PART B

Note to Reader	i
--------------------------	---

Classical fluids

Marangoni convection on an inhomogeneous substrate	5407
Kausik S. Das and Jayanta K. Bhattacharjee	
Dispersion of passive particles by a quasi-two-dimensional turbulent flow	5412
I. M. Sokolov and R. Reigada	
Nature of the energy transfer process in compressible turbulence	5417
F. Bataille and Ye Zhou	
Time-dependent geometry and energy distribution in a spiral vortex layer	5427
J. R. Angilella and J. C. Vassilicos	
Frozen wave induced by high frequency horizontal vibrations on a CO ₂ liquid-gas interface near the critical point	5440
R. Wunenburger, P. Evesque, C. Chabot, Y. Garrabos, S. Fauve, and D. Beysens	
Parametrically excited surface waves: Two-frequency forcing, normal form symmetries, and pattern selection	5446
Mary Silber and Anne C. Skeldon	
Velocity structure functions, scaling, and transitions in high-Reynolds-number Couette-Taylor flow	5457
Gregory S. Lewis and Harry L. Swinney	
Chemical or biological activity in open chaotic flows	5468
György Károlyi, Aron Péntek, Zoltán Toroczkai, Tamás Tél, and Celso Grebogi	
Variational principle for the Navier-Stokes equations	5482
R. R. Kerswell	
Experimental observations of bubble response and light intensity near the threshold for single bubble sonoluminescence in an air-water system	5495
D. Felipe Gaitan and R. Glynn Holt	

(Continued)

CONTENTS - Continued

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Up and down cascade in a dynamo model: Spontaneous symmetry breaking	5112
E. M. Blanter, C. Narteau, M. G. Shnirman, and J.-L. Le Mouél	
Analytical approach to time lag in binary nucleation	5124
P. Demo, Z. Kožisek, and R. Šašík	
Onsager-Casimir reciprocity relation for the gyrothermal effect with polyatomic gases	5128
Felix Sharipov	
Kinetic roughening in electrodisolution of copper	5133
Atsushi Iwamoto, Tatsuo Yoshinobu, and Hiroshi Iwasaki	
Quantum stochastic resonance in symmetric systems	5137
Igor Goychuk and Peter Hänggi	
Stochastic resonance in extended bistable systems: The role of potential symmetry	5142
S. Bouzat and H. S. Wio	
Self-organized growth model for a driven interface in random media	5150
Kwangho Park and In-Mook Kim	
Steady-state cracks in viscoelastic lattice models	5154
David A. Kessler and Herbert Levine	
Problems with the definition of renormalized Hamiltonians for momentum-space renormalization transformations	5165
Aernout C. D. van Enter and Roberto Fernández	
Binary data corruption due to a Brownian agent	5172
T. J. Newman and Wannapong Triampo	
Ising spin glass with arbitrary spin beyond the mean field theory	5187
K. Walasek, K. Lukierska-Walasek, and M. Wodawski	
Spiral drift and core properties	5192
M. Wellner, A. M. Pertsov, and J. Jalife	
Chaos and nonlinear dynamical systems	
Universal level dynamics of complex systems	5205
Pragya Shukla	
Dynamical delocalization in one-dimensional disordered systems with oscillatory perturbation	5214
Hiroaki Yamada and Kensuke S. Ikeda	
Traces and determinants of strongly stochastic operators	5231
C. P. Dettmann	
Surrogates for finding unstable periodic orbits in noisy data sets	5235
Kevin Dolan, Annette Witt, Mark L. Spano, Alexander Neiman, and Frank Moss	
Double autoresonance in two-dimensional dynamical systems	5242
U. Rokni and L. Friedland	
Preference of attractors in noisy multistable systems	5253
Suso Kraut, Ulrike Feudel, and Celso Grebogi	
Universal behavior in the parametric evolution of chaotic saddles	5261
Ying-Cheng Lai, Karol Życzkowski, and Celso Grebogi	
Stabilization of unstable steady states and periodic orbits in an electrochemical system using delayed-feedback control	5266
P. Parmananda, R. Madrigal, M. Rivera, L. Nyikos, I. Z. Kiss, and V. Gáspár	
Phase space localization and matrix element distributions in systems with mixed classical phase space	5272
Bernhard Mehlig, Kirsten Müller, and Bruno Eckhardt	
Trapped to free: A mechanism to spatiotemporal chaos	5278
Kaifen He	
Multiphase patterns in periodically forced oscillatory systems	5285
Christian Elphick, Aric Hagberg, and Ehud Meron	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 59, NUMBER 5

MAY 1999

Exact stationary state for an asymmetric exclusion process with fully parallel dynamics	4899
Jan de Gier and Bernard Nienhuis	
Transport in the XX chain at zero temperature: Emergence of flat magnetization profiles	4912
T. Antal, Z. Rácz, A. Rákos, and G. M. Schütz	
Critical exponents for diluted resistor networks	4919
O. Stenull, H. K. Janssen, and K. Oerding	
Generalized quantum Langevin equations from the forward-backward path integral	4931
Kazuhiro Tsusaka	
Cluster-approximation mean-field theory of a class of cellular automaton models	4939
Bo-tao Zhang and Cheng-hong Liu	
Stochastic multiplicative processes with reset events	4945
Susanna C. Manrubia and Damián H. Zanette	
Dynamic behavior of driven interfaces in models with two absorbing states	4949
Sungchul Kwon, WonMuk Hwang, and Hyunggyu Park	
Chord-distribution functions of three-dimensional random media: Approximate first-passage times of Gaussian processes	4953
A. P. Roberts and S. Torquato	
Robustness of scale invariance in models with self-organized criticality	4964
Osame Kinouchi and Carmen P. C. Prado	
Noise stabilization of self-organized memories	4970
M. L. Pavinelli, S. N. Coppersmith, L. P. Kadanoff, S. R. Nagel, and S. C. Venkataramani	
Superadditive correlation	4983
B. G. Giraud, John M. Heumann, and Alan S. Lapides	
Monte Carlo simulation of an antiferromagnetic Ising model at two competing temperatures	4992
B. C. S. Grandi and W. Figueiredo	
Critical properties of the three-dimensional equivalent-neighbor model and crossover scaling in finite systems . . .	4997
Erik Luijten	
Cyclostationarity and stochastic resonance in threshold devices	5009
Pierre-Olivier Amblard and Steeve Zozor	
Trapping reactions for mobile particles and a trap in the laboratory frame	5021
A. D. Sánchez	
Multidimensional advection and fractional dispersion	5026
Mark M. Meerschaert, David A. Benson, and Boris Bäumer	
Temperature dependence of facet ridges in crystal surfaces	5029
Douglas Davidson and Marcel den Nijs	
Wave front for a reaction-diffusion system and relativistic Hamilton-Jacobi dynamics	5040
Sergei Fedotov	
Mechanical and Langevin thermostats: Gulton staircase problem	5045
Toyonori Munakata	
Avalanches in breakdown and fracture processes	5049
Stefano Zapperi, Purusattam Ray, H. Eugene Stanley, and Alessandro Vespignani	
Emergence of order in textured patterns	5058
Gemunu H. Gunaratne, Anuradha Ratnaweera, and K. Tennekone	
Canonical phase-space approach to the noisy Burgers equation: Probability distributions	5065
Hans C. Fogedby	
Critical adsorption on curved objects	5081
A. Hanke and S. Dietrich	
Dynamic states of a continuum traffic equation with on-ramp	5101
H. Y. Lee, H.-W. Lee, and D. Kim	

(Continued)