PHYSICAL REVIEW E

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 1063-651X)

PERIODICALS
Postmaster send address changes to:
American Institute of Physics
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 67, NUMBER 6
PARTS 1 AND 2

CONTENTS

JUNE 2003

The Table of Contents is a total listing of Parts 1 and 2.

PART 1

RAPID COMMUNICATIONS

Statistical physics of soft matter

Diffusion-controlled annihilation $A+B\rightarrow 0$ with initially separated reactants: The death of an A particle island in the B particle sea *(4 pages)* . . . . . 060101(R)
Boris M. Shipilevsky

Formal solution of a class of reaction-diffusion models: Reduction to a single-particle problem *(4 pages)* . . . 060102(R)
Alan J. Bray, Satya N. Majumdar, and Richard A. Blythe

Anomalous growth of the depletion zone in the photobleaching trapping reaction *(4 pages)* . . . . . 060103(R)
Sung Hyun Park, Hailin Peng, Raoul Kopelman, Panos Argyrakis, and Haim Taitelbaum

Reaction-diffusion dynamics: Confrontation between theory and experiment in a microfluidic reactor *(4 pages)* . . . . . 060104(R)
Charles N. Baroud, Fridolin Okkels, Laure Ménétrier, and Patrick Tabeling

Granular materials

Impulse backscattering in granular beds: Introducing a toy model *(4 pages)* . . . . . 060301(R)
T. R. Krishna Mohan and Surajit Sen

Overshoot effect in the Janssen granular column: A crucial test for granular mechanics *(4 pages)* . . . . . 060302(R)
G. Ovarlez, C. Fond, and E. Clément

Biological physics

Molecular simulations of mesoscopic bilayer phases *(3 pages)* . . . . . 060901(R)
Marieke Kranenburg, Maddalena Venturoli, and Berend Smit

Kinetic pathway of the bilayered-micelle to perforated-lamellae transition *(4 pages)* . . . . . 060902(R)
H. Wang, M. P. Nieh, E. K. Hobbie, C. J. Glinka, and J. Katsaras

REGULAR ARTICLES

Statistical physics of soft matter

Is the binary hard-sphere mixture a good reference system for sterically stabilized colloids? *(12 pages)* 061101
Ph. Germain, C. Regnaut, and S. Amokrane

Copyright 2003 by The American Physical Society

1063-651X(200306)67:6:2;1-R

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 67, NUMBER 6** **JUNE 2003**

Information gain in an optical bistable system by stochastic resonance *(4 pages)* 061102
M. Misono, T. Kohmoto, M. Kunitomo, and Y. Fukuda
Dynamics of Vicsek fractals, models for hyperbranched polymers *(4 pages)* 061103
A. Blumen, A. Jurjiu, Th. Koslowski, and Ch. von Ferber
Lattice model of the early stages of the electrification of a cloud *(10 pages)* 061104
C. Nicolis, G. Nicolis, and John J. Kozak
Power law diffusion coefficient and anomalous diffusion: Analysis of solutions and first passage time *(7 pages)* 061105
Kwok Sau Fa and E. K. Lenzi
Multifractal spectra of mean first-passage-time distributions in disordered chains *(7 pages)* 061106
Pedro A. Pury and Manuel O. Cáceres
Non-Markovian stochastic Liouville equation and its Markovian representation *(11 pages)* 061107
A. I. Shushin
System with temporal-spatial noise *(5 pages)* 061108
Jing-hui Li
Analytical model for a cooperative ballistic deposition in one dimension *(9 pages)* 061109
M. Kamrul Hassan, Niels Wessel, and Jürgen Kurths
Superconducting junctions perturbed by environmental fluctuation *(5 pages)* 061110
Jing-hui Li
Asymptotic distributions of periodically driven stochastic systems *(8 pages)* 061111
Sreedhar B. Dutta and Mustansir Barma
Effective interactions between inclusions in complex fluids driven out of equilibrium *(9 pages)* 061112
Denis Bartolo, Armand Ajdari, and Jean-Baptiste Fournier
Coherent and incoherent trapping of a diffusion-assisted system in the presence of an external periodic field *(9 pages)* 061113
Tusar Bandyopadhyay and Swapan K. Ghosh
Solving the Chapman-Kolmogorov equation for a jumping process *(8 pages)* 061114
A. Kamińska and T. Srokowski
Anomalous diffusion and dielectric relaxation in an *N*-fold cosine potential *(11 pages)* 061115
W. T. Coffey, Yu. P. Kalmykov, and S. V. Titov
Gaussian factorization of hydrodynamic correlation functions and mode-coupling memory kernels *(12 pages)* 061116
Jianlan Wu and Jianshu Cao
Multiscaling of noise-induced parametric instability *(7 pages)* 061117
R. Zillmer and A. Pikovsky
Kramers problem in evolutionary strategies *(11 pages)* 061118
J. Dunkel, W. Ebeling, L. Schimansky-Geier, and P. Hänggi
Controlling oscillator coherence by delayed feedback *(7 pages)* 061119
D. Goldobin, M. Rosenblum, and A. Pikovsky

Equilibrium and linear transport properties of fluids

Scaling behavior for the pressure and energy of shearing fluids *(3 pages)* 061201
Jialin Ge, B. D. Todd, Guangwen Wu, and Richard J. Sadus
Fast heat transfer calculations in supercritical fluids versus hydrodynamic approach *(11 pages)* 061202
V. S. Nikolayev, A. Dejoan, Y. Garrabos, and D. Beysens
Direct excess entropy calculation for a Lennard-Jones fluid by the integral equation method *(6 pages)* 061203
N. Jakse and I. Charpentier

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Granular materials

Anomalous acoustic reflection on a sliding interface or a shear band *(12 pages)* 061301
C. Caroli and B. Velický

Granular clustering in a hydrodynamic simulation *(4 pages)* 061302
Scott A. Hill and Gene F. Mazenko

Model for dense granular flows down bumpy inclines *(11 pages)* 061303
Michel Y. Louge

Hydrodynamics and transport coefficients for dilute granular gases *(19 pages)* 061304
Nikolai Brilliantov and Thorsten Pöschel

Wave propagation in a dynamic system of soft granular materials *(10 pages)* 061305
Shusaku Harada, Shu Takagi, and Yoichiro Matsumoto

Colloidal dispersions, suspensions, and aggregates

Dynamics of colloidal suspensions of ferromagnetic particles in plane Couette flow: Comparison of approximate solutions with Brownian dynamics simulations *(8 pages)* 061401
Patrick Ilg, Martin Kröger, Siegfried Hess, and Andrey Yu. Zubarev

Dynamic and static properties of the concentrated micellar solution and gel phase of a triblock copolymer in water *(9 pages)* 061402
Helmut Lindner, Günther Scherf, and Otto Glatter

Aging and nonlinear rheology in suspensions of polyethylene oxide–protected silica particles *(9 pages)* 061403
Caroline Derec, Guylaine Ducouret, Armand Ajdari, and François Lequeux

Brownian dynamics simulations of aging colloidal gels *(15 pages)* 061404
Rodolphe J. M. d'Arjuzon, William Frith, and John R. Melrose

Crystallization kinetics of polydisperse colloidal hard spheres: Experimental evidence for local fractionation *(11 pages)* 061405
S. Martin, G. Bryant, and W. van Megen

Scaling behavior of diffusion and reaction processes in percolating porous media *(5 pages)* 061406
M. H. A. S. Costa, A. D. Araújo, H. F. da Silva, and J. S. Andrade Jr.

Particle aggregation with simultaneous surface growth *(11 pages)* 061407
Pablo Mitchell and Michael Frenklach

Structured and complex fluids

Competition between crystallization and gelation: A local description *(13 pages)* 061501
Narendra M. Dixit and Charles F. Zukoski

Dynamics of bound and free water in an aqueous micellar solution: Analysis of the lifetime and vibrational frequencies of hydrogen bonds at a complex interface *(10 pages)* 061502
Subrata Pal, Sundaram Balasubramanian, and Biman Bagchi

Velocity fluctuations in a steadily sheared model foam *(16 pages)* 061503
Ian K. Ono, Shubha Tewari, Stephen A. Langer, and Andrea J. Liu

Electronic changes due to thermal disorder of hydrogen bonds in liquids: Pyridine in an aqueous environment *(7 pages)* 061504
Eudes E. Fileti, Kaline Coutinho, Thaciana Malaspina, and Sylvio Canuto

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Dielectric response in dilute lyotropic lamellar and sponge phases of a nonionic surfactant *(10 pages)* 061505
Daisuke Mizuno, Takuji Nishino, Yasuyuki Kimura, and Reinosuke Hayakawa
Asymmetric fluid criticality. I. Scaling with pressure mixing *(21 pages)* 061506
Young C. Kim, Michael E. Fisher, and G. Orkoulas

Films, interfaces, and crystal growth

Formation of nanostructured copper filaments in electrochemical deposition *(9 pages)* 061601
Sheng Zhong, Yuan Wang, Mu Wang, Min-Zhe Zhang, Xiao-Bo Yin, Ru-Wen Peng, and Nai-Ben Ming
Measurement of freezing point depression of water in glass capillaries and the associated ice front shape *(9 pages)* 061602
Zhihong Liu, Ken Muldrew, Richard G. Wan, and Janet A. W. Elliott
Wetting behavior of associating binary mixtures at attractive walls: A lattice Monte Carlo study *(11 pages)* 061603
A. Patrykiejew, L. Salamacha, S. Sokołowski, and O. Pizio
Polar head group interactions in mixed Langmuir monolayers *(8 pages)* 061604
P. Viswanath and K. A. Suresh
Dynamics of solid growth under a gravitational field: Influence of the formation of a diffusive layer *(8 pages)* 061605
Marcos F. Castez, Bárbara Blum, Roberto C. Salvarezza, and Hernán G. Solari

Liquid crystals

Dielectric shape dispersion and biaxial transitions in nematic liquid crystals *(7 pages)* 061701
André M. Sonnet, Epifanio G. Virga, and Georges E. Durand
Isotropic-nematic phase equilibria in the Onsager theory of hard rods with length polydispersity *(19 pages)* 061702
Alessandro Speranza and Peter Sollich
Generalized lattice Boltzmann algorithm for the flow of a nematic liquid crystal with variable order parameter *(10 pages)* 061703
C. M. Care, I. Halliday, K. Good, and S. V. Lishchuk
Enhanced chirality by adding achiral molecules into the chiral system *(5 pages)* 061704
E. Gorecka, M. Čepič, J. Mieczkowski, M. Nakata, H. Takezoe, and B. Žekš
Correlations in the isotropic phases of chiral liquid crystals: The role of helicity modes *(11 pages)* 061705
L. Longa, M. Cieśla, and H.-R. Trebin
Raman investigation of stable and metastable states of 4-octyl-4′-cyanobiphenyl confined in porous silica matrices *(12 pages)* 061706
C. Fehr, P. Dieudonné, J. L. Sauvajol, and E. Anglaret
Orientational ordering and chiral symmetry breaking in organic monolayers composed of disklike mesogenic molecules: Molecular theory and computer simulations *(15 pages)* 061707
Mikhail A. Osipov and Joachim Stelzer
Modulated structures of flexoelectric origin in nematic liquid crystals *(8 pages)* 061708
G. Barbero and I. Lelidis
Poisson-bracket approach to the dynamics of nematic liquid crystals *(11 pages)* 061709
H. Stark and T. C. Lubensky
Splay-bend periodic deformation in nematic liquid crystal slabs *(5 pages)* 061710
G. Barbero, I. Lelidis, and A. K. Zvezdin

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Polymers

Early-stage compositional segregation in polymer-blend films *(6 pages)* 061801
H. Wang, J. F. Douglas, S. K. Satija, R. J. Composto, and C. C. Han
Scaling laws of creep rupture of fiber bundles *(8 pages)* 061802
Ferenc Kun, Raul Cruz Hidalgo, Hans J. Herrmann, and Károly F. Pál
Monte Carlo simulations of polyampholyte-polyelectrolyte complexes: Effect of charge sequence and strength of electrostatic interactions *(15 pages)* 061803
Junhwan Jeon and Andrey V. Dobrynin
Soliton molecules in trapped vector nonlinear Schrödinger systems *(4 pages)* 061804
Víctor M. Pérez-García and Vadym Vekslerchik
Anomalous bending of a polyelectrolyte *(10 pages)* 061805
Roya Zandi, Joseph Rudnick, and Ramin Golestanian
Diffusion in a generalized Rubinstein-Duke model of electrophoresis with kinematic disorder *(13 pages)* 061806
Richard D. Willmann, Gunter M. Schütz, and Kavita Jain
Computer simulation study on the swelling of a polyelectrolyte gel by a Stockmayer solvent *(7 pages)* 061807
Z.-Y. Lu and R. Hentschke

Biological physics

Distance, dissimilarity index, and network community structure *(8 pages)* 061901
Haijun Zhou
Stability analysis of a delayed Hopfield neural network *(7 pages)* 061902
Shangjiang Guo and Lihong Huang
Quasiequilibrium unfolding thermodynamics of a small protein studied by molecular dynamics simulation with an explicit water model *(11 pages)* 061903
Jihua Wang, Zhiyong Zhang, Haiyan Liu, and Yunyu Shi
Stochastic model for heart-rate fluctuations *(7 pages)* 061904
Tom Kuusela, Tony Shepherd, and Jarmo Hietarinta
Folding behaviors of lattice model proteins with three kinds of contact potentials *(8 pages)* 061905
Meng Qin, Jun Wang, Yi Tang, and Wei Wang
Fluctuating reaction rates and their application to problems of gene expression *(8 pages)* 061906
Tatsuo Shibata
Protein crystals and charged surfaces: Interactions and heterogeneous nucleation *(7 pages)* 061907
R. P. Sear
Rotational magnetic endosome microrheology: Viscoelastic architecture inside living cells *(12 pages)* 061908
C. Wilhelm, F. Gazeau, and J.-C. Bacri
Analytical solution of a generalized Penna model *(8 pages)* 061909
J. B. Coe and Y. Mao
Neuromorphometric characterization with shape functionals *(7 pages)* 061910
Marconi Soares Barbosa, Luciano da Fontoura Costa, and Esmerindo de Sousa Bernardes
Effect of backleak in nephron dynamics *(4 pages)* 061911
P. G. Kevrekidis and N. Whitaker
Conformational rigidity in a lattice model of proteins *(9 pages)* 061912
Olivier Collet
Repeats and correlations in human DNA sequences *(7 pages)* 061913
Dirk Holste, Ivo Grosse, Stephan Beirer, Patrick Schieg, and Hanspeter Herzel
Direct imaging of domains in the $L_{\beta'}$ state of 1,2-dipalmitoylphosphatidylcholine bilayers *(5 pages)* 061914
C.-W. Lee, R. S. Decca, S. R. Wassall, and J. J. Breen
Electronic neuron within a ganglion of a leech (*Hirudo medicinalis*) *(8 pages)* 061915
J. Aliaga, N. Busca, V. Minces, G. B. Mindlin, B. Pando, A. Salles, and L. Sczcupak

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Classification of short human exons and introns based on statistical features *(7 pages)* 061916
Yonghui Wu, Alan Wee-Chung Liew, Hong Yan, and Mengsu Yang
Theoretical model for motility and processivity of two-headed molecular motors *(13 pages)* 061917
Ryo Kanada and Kazuo Sasaki
Stochastic resonance in pattern recognition by a holographic neuron model *(6 pages)* 061918
R. Stoop, J. Buchli, G. Keller, and W.-H. Steeb

BRIEF REPORTS

Statistical physics of soft matter

Solvable aggregation model with monomer annihilation *(4 pages)* 062101
Jianhong Ke and Zhenquan Lin
Air parcel random walk and droplet spectra broadening in clouds *(3 pages)* 062102
K. S. Turitsyn
Calculation of the wetting parameter from a cluster model in the framework of nanothermodynamics *(3 pages)* 062103
V. García-Morales, J. Cervera, and J. Pellicer
Dispersive anomalous diffusive transport in ratchets with long-range correlated spatial disorder *(4 pages)* . . . 062104
Lei Gao, Xiaoqin Luo, Shiqun Zhu, and Bambi Hu

Granular materials

Critical phenomenon of granular flow on a conveyor belt *(3 pages)* 062301
Bao De-Song, Zhang Xun-Sheng, Xu Guang-Lei, Pan Zheng-Quan, Tang Xiao-Wei, and Lu Kun-Quan

Colloidal dispersions, suspensions, and aggregates

Rapid settling of a colloidal gel *(4 pages)* 062401
C. Derec, D. Senis, L. Talini, and C. Allain
Slow fluctuations in enhanced Raman scattering and surface roughness relaxation *(4 pages)* 062402
D. B. Lukatsky, G. Haran, and S. A. Safran
Test of mean-field equations for two types of hard-sphere systems by a Brownian-dynamics simulation and a molecular-dynamics simulation *(4 pages)* 062403
Michio Tokuyama, Hiroyuki Yamazaki, and Yayoi Terada

Biological physics

Long- and short-time analysis of heartbeat sequences: Correlation with mortality risk in congestive heart failure patients *(4 pages)* 062901
P. Allegrini, R. Balocchi, S. Chillemi, P. Grigolini, P. Hamilton, R. Maestri, L. Palatella, and G. Raffaelli

COMMENTS

Comment on ‘‘Classical density functional theory of freezing in simple fluids: Numerically induced false solutions’’ *(3 pages)* 063501
Chandan Dasgupta and Oriol T. Valls
Reply to ‘‘Comment on ‘Classical density functional theory of freezing in simple fluids: Numerically induced false solutions’ ’’ *(3 pages)* 063502
M. Valera, F. J. Pinski, and D. D. Johnson

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Comment on ''Performance of different synchronization measures in real data: A case study on electroencephalographic signals'' *(3 pages)* 063901
R. B. Duckrow and A. M. Albano

Reply to ''Comment on 'Performance of different synchronization measures in real data: A case study on electroencephalographic signals' '' *(2 pages)* 063902
R. Quian Quiroga, A. Kraskov, T. Kreuz, and P. Grassberger

PART 2

RAPID COMMUNICATIONS

General methods of statistical physics

Third-neighbor correlators of a one-dimensional spin-$\frac{1}{2}$ Heisenberg antiferromagnet *(4 pages)* . . . . . 065101(R)
Kazumitsu Sakai, Masahiro Shiroishi, Yoshihiro Nishiyama, and Minoru Takahashi

Reaction kinetics in confined geometries: Lonely adatoms in space *(4 pages)* . . . . . 065102(R)
Joachim Krug

Universal finite-size scaling functions with exact nonuniversal metric factors *(4 pages)* . . . . . 065103(R)
Ming-Chya Wu, Chin-Kun Hu, and N. Sh. Izmailian

Dynamics of crossover from a chaotic to a power-law state in jerky flow *(4 pages)* . . . . . 065104(R)
M. S. Bharathi and G. Ananthakrishna

Linear and nonlinear response in the aging regime of the one-dimensional trap model *(4 pages)* . . . . . 065105(R)
E. M. Bertin and J.-P. Bouchaud

Chaos and pattern formation

Erosion patterns in a sediment layer *(4 pages)* . . . . . 065201(R)
Adrian Daerr, Peter Lee, José Lanuza, and Éric Clément

Tunable Lyapunov exponent in inverse magnetic billiards *(4 pages)* . . . . . 065202(R)
Zoltán Vörös, Tamás Tasnádi, József Cserti, and Péter Pollner

Nonlinear hydrodynamics and turbulence

Oscillations of a solid sphere falling through a wormlike micellar fluid *(4 pages)* . . . . . 065301(R)
Anandhan Jayaraman and Andrew Belmonte

Anomalous pressure in fluctuating shear flow *(4 pages)* . . . . . 065302(R)
Hirofumi Wada and Shin-ichi Sasa

Classical physics, including nonlinear media and photonic materials

Nonlinearity of a metamaterial arising from diode insertions into resonant conductive elements *(4 pages)* . . . 065601(R)
M. Lapine, M. Gorkunov, and K. H. Ringhofer

Out-of-plane propagation of elastic waves in two-dimensional phononic band-gap materials *(4 pages)* . . . . . 065602(R)
M. Wilm, A. Khelif, S. Ballandras, V. Laude, and B. Djafari-Rouhani

Influence of spatial correlations on the lasing threshold of random lasers *(4 pages)* . . . . . 065603(R)
Michael Patra

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

REGULAR ARTICLES

General methods of statistical physics

Linear Glauber model *(8 pages)* 066101
Mário J. de Oliveira
Sandpile models and random walkers on finite lattices *(8 pages)* 066102
Yehiel Shilo and Ofer Biham
Relaxation and metastability in a local search procedure for the random satisfiability problem *(18 pages)* 066103
Guilhem Semerjian and Rémi Monasson
Solving satisfiability problems by fluctuations: The dynamics of stochastic local search algorithms *(15 pages)* 066104
Wolfgang Barthel, Alexander K. Hartmann, and Martin Weigt
Vortex description of the first-order phase transition in the two-dimensional Abelian-Higgs model *(5 pages)* 066105
Luís M. A. Bettencourt and Greg J. Stephens
Tree networks with causal structure *(8 pages)* 066106
P. Bialas, Z. Burda, J. Jurkiewicz, and A. Krzywicki
Simple model for directed networks *(7 pages)* 066107
Luis G. Morelli
Yang-Lee zeros of the two- and three-state Potts model defined on ϕ^3 Feynman diagrams *(7 pages)* 066108
Luiz C. de Albuquerque and D. Dalmazi
Algorithm of the finite-lattice method for high-temperature expansion of the Ising model in three dimensions *(6 pages)* 066109
Hiroaki Arisue and Toshiaki Fujiwara
Friction between two weakly adhering boundary lubricated surfaces in water *(16 pages)* 066110
C. Drummond, J. Israelachvili, and P. Richetti
Avalanche exponents and corrections to scaling for a stochastic sandpile *(5 pages)* 066111
R. Dickman and J. M. M. Campelo
Generalized van der Waals theory for the thermodynamic properties of square-well fluids *(5 pages)* 066112
J. Largo and J. R. Solana
Microstructure and velocity of field-driven Ising interfaces moving under a soft stochastic dynamic *(8 pages)* 066113
Per Arne Rikvold and M. Kolesik
Exact finite-size corrections of the free energy for the square lattice dimer model under different boundary conditions *(14 pages)* 066114
N. Sh. Izmailian, K. B. Oganesyan, and Chin-Kun Hu
Phase transition in the *ABC* model *(8 pages)* 066115
M. Clincy, B. Derrida, and M. R. Evans
Bulk and surface critical behavior of the three-dimensional Ising model and conformal invariance *(8 pages)* 066116
Youjin Deng and Henk W. J. Blöte
Localization of shocks in driven diffusive systems without particle number conservation *(6 pages)* 066117
V. Popkov, A. Rákos, R. D. Willmann, A. B. Kolomeisky, and G. M. Schütz
Self-organized critical neural networks *(5 pages)* 066118
Stefan Bornholdt and Torsten Röhl
Experimental evidence, numerics, and theory of vibrational resonance in bistable systems *(7 pages)* 066119
J. P. Baltanás, L. López, I. I. Blechman, P. S. Landa, A. Zaikin, J. Kurths, and M. A. F. Sanjuán
Universality of the thermodynamic Casimir effect *(11 pages)* 066120
Daniel Dantchev, Michael Krech, and S. Dietrich

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Dielectric breakdown model for composite materials *(6 pages)* 066121
F. Peruani, G. Solovey, I. M. Irurzun, E. E. Mola, A. Marzocca, and J. L. Vicente
Memory effects and nonequilibrium transport in open many-particle quantum systems *(10 pages)* 066122
Irena Knezevic and David K. Ferry

Chaos and pattern formation

Dynamical aspects of quantum entanglement for weakly coupled kicked tops *(11 pages)* 066201
Hiroshi Fujisaki, Takayuki Miyadera, and Atushi Tanaka
Coherence resonance and polymodality in inhibitory coupled excitable oscillators *(7 pages)* 066202
E. I. Volkov, M. N. Stolyarov, A. A. Zaikin, and J. Kurths
Chaos and the quantum phase transition in the Dicke model *(22 pages)* 066203
Clive Emary and Tobias Brandes
Local dimension and finite time prediction in spatiotemporal chaotic systems *(5 pages)* 066204
Gerson Francisco and Paulsamy Muruganandam
Level spacing statistics of classically integrable systems: Investigation along the lines of the Berry-Robnik approach *(8 pages)* 066205
H. Makino and S. Tasaki
Dynamics of a stochastic oscillator in an excitable chemical reaction system *(4 pages)* 066206
Kenji Miyakawa, Takayuki Tanaka, and Hironobu Isikawa
Patterns in a quasiconfocal optical parametric oscillator *(5 pages)* 066207
M. Le Berre, E. Ressayre, and A. Tallet
$\mathcal{R}$-matrix theory of driven electromagnetic cavities *(10 pages)* 066208
F. Beck, C. Dembowski, A. Heine, and A. Richter
Wavy and rough cracks in silicon *(7 pages)* 066209
Robert D. Deegan, Shilpa Chheda, Lisa Patel, M. Marder, Harry L. Swinney, Jeehoon Kim, and Alex de Lozanne
Comparative study of embedding methods *(13 pages)* 066210
C. J. Cellucci, A. M. Albano, and P. E. Rapp
Riemann zeros, prime numbers, and fractal potentials *(5 pages)* 066211
Brandon P. van Zyl and David A. W. Hutchinson
Different time scales in wave function intensity statistics *(4 pages)* 066212
D. A. Wisniacki, F. Borondo, E. Vergini, and R. M. Benito
Semiclassical trace formulas for noninteracting identical particles *(27 pages)* 066213
Jamal Sakhr and Niall D. Whelan
Delay dynamics of semiconductor lasers with short external cavities: Bifurcation scenarios and mechanisms *(11 pages)* 066214
T. Heil, I. Fischer, W. Elsäßer, B. Krauskopf, K. Green, and A. Gavrielides
Measure synchronization in coupled φ^4 Hamiltonian systems *(8 pages)* 066215
Xingang Wang, Meng Zhan, C.-H. Lai, and Hu Gang
Oscillatory and rotatory synchronization of chaotic autonomous phase systems *(8 pages)* 066216
Bambi Hu, Grigory V. Osipov, Hong-Liu Yang, and Jürgen Kurths
Emergence of patterns in driven and in autonomous spatiotemporal systems *(6 pages)* 066217
M. G. Cosenza, M. Pineda, and A. Parravano
Detectability of nondifferentiable generalized synchrony *(8 pages)* 066218
Nikolai F. Rulkov and Valentin S. Afraimovich
Translational and nontranslational motion of perturbed Turing patterns *(8 pages)* 066219
Vladimir K. Vanag and Irving R. Epstein
Constructive effects of noise in homoclinic chaotic systems *(9 pages)* 066220
C. S. Zhou, J. Kurths, E. Allaria, S. Boccaletti, R. Meucci, and F. T. Arecchi

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Spatial synchronization of regular optical patterns *(13 pages)* 066221
R. Neubecker and O. Jakoby
Dynamics of FitzHugh-Nagumo excitable systems with delayed coupling *(15 pages)* 066222
Nikola Burić and Dragana Todorović

Nonlinear hydrodynamics and turbulence

Applicability of the hodograph method for the problem of long-scale nonlinear dynamics of a thin vortex filament near a flat boundary *(9 pages)* 066301
V. P. Ruban
Statistical anisotropy of magnetohydrodynamic turbulence *(4 pages)* 066302
Wolf-Christian Müller, Dieter Biskamp, and Roland Grappin
Quasi-two-dimensional turbulence in shallow fluid layers: The role of bottom friction and fluid layer depth *(9 pages)* 066303
H. J. H. Clercx, G. J. F. van Heijst, and M. L. Zoeteweij
Mixing of a continuous flow of two fluids due to unsteady flow *(11 pages)* 066304
R. A. Truesdell, P. V. Vorobieff, L. A. Sklar, and A. A. Mammoli
Model flames in the Boussinesq limit: The effects of feedback *(10 pages)* 066305
N. Vladimirova and R. Rosner
Turbulent wakes of fractal objects *(8 pages)* 066306
Adrian Staicu, Biagio Mazzi, J. C. Vassilicos, and Willem van de Water
Phase-field model for Marangoni convection in liquid-gas systems with a deformable interface *(10 pages)* . . . 066307
Rodica Borcia and Michael Bestehorn
Thermocapillary-buoyancy convection in a shallow cavity heated from the side *(14 pages)* 066308
V. M. Shevtsova, A. A. Nepomnyashchy, and J. C. Legros
Analysis of the early stage of coalescence of helium drops *(6 pages)* 066309
Humphrey J. Maris
Strong universality in forced and decaying turbulence in a shell model *(9 pages)* 066310
Victor S. L'vov, Rubén A. Pasmanter, Anna Pomyalov, and Itamar Procaccia
Linear stability analysis in a liquid layer with a surface velocity gradient *(5 pages)* 066311
Jarosław Białecki and Janusz A. Hołyst

Plasma physics

Radiation resonance emission from steep overcritical plasma profiles illuminated by femtosecond laser pulses *(6 pages)* 066401
R. Ondarza
Monte Carlo sampling of negative-temperature plasma states *(28 pages)* 066402
John A. Krommes and Sharadini Rath
Screening of dust grains in a weakly ionized gas: Effects of charging by plasma currents *(5 pages)* 066403
O. Bystrenko and A. Zagorodny
Charge of a macroscopic particle in a plasma sheath *(5 pages)* 066404
A. A. Samarian and S. V. Vladimirov
Collisional versus collisionless resonant and autoresonant heating in laser-cluster interaction *(6 pages)* 066405
I. Kostyukov and J.-M. Rax
Large-aspect-ratio limit of neoclassical transport theory *(16 pages)* 066406
S. K. Wong and V. S. Chan
Modeling the effect of dust on the plasma parameters in a dusty argon discharge under microgravity *(10 pages)* 066407
M. R. Akdim and W. J. Goedheer

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Wave dispersion relations in two-dimensional Yukawa systems *(6 pages)* 066408
Yanhong Liu, Bin Liu, Yanping Chen, Si-Ze Yang, Long Wang, and Xiaogang Wang

Physics of beams

Properties of the ultrashort gain length, self-amplified spontaneous emission free-electron laser in the linear regime and saturation *(5 pages)* 066501
A. Murokh, R. Agustsson, M. Babzien, I. Ben-Zvi, L. Bertolini, K. van Bibber, R. Carr, M. Cornacchia, P. Frigola, J. Hill, E. Johnson, L. Klaisner, G. Le Sage, M. Libkind, R. Malone, H-D. Nuhn, C. Pellegrini, S. Reiche, G. Rakowsky, J. Rosenzweig, R. Ruland, J. Skaritka, A. Toor, A. Tremaine, X. Wang, and V. Yakimenko

Classical physics, including nonlinear media and photonic materials

Theoretical study of photonic band gaps in woodpile crystals *(18 pages)* 066601
Boris Gralak, Michiel de Dood, Gérard Tayeb, Stefan Enoch, and Daniel Maystre

Driven kinks in the anharmonic Frenkel-Kontorova model *(14 pages)* 066602
O. M. Braun, Hong Zhang, Bambi Hu, and J. Tekic

Envelope solitons of acoustic plate modes and surface waves *(14 pages)* 066603
Andreas P. Mayer and Alexander S. Kovalev

Pulsed light beams in vacuum with superluminal and negative group velocities *(9 pages)* 066604
Miguel A. Porras, Isabel Gonzalo, and Alessia Mondello

Stability analysis of spatiotemporal cnoidal waves in cubic nonlinear media *(10 pages)* 066605
Victor A. Aleshkevich, Alexey A. Egorov, Yaroslav V. Kartashov, Victor A. Vysloukh, and Anna S. Zelenina

Phonon avalanches in paramagnetic impurities with spin $S=\frac{1}{2}$ *(10 pages)* 066606
Alexander A. Zabolotskii

Multisoliton propagation in a linear granular chain *(4 pages)* 066607
Jongjin Lee, Sangdo Park, and Insuk Yu

Discrete gap breathers in a diatomic Klein-Gordon chain: Stability and mobility *(14 pages)* 066608
Andrey V. Gorbach and Magnus Johansson

Acoustical propagation in a prefractal waveguide *(9 pages)* 066609
Vincent Gibiat, Ana Barjau, Kaelig Castor, and Etienne Bertaud du Chazaud

Dynamics of dielectric breakdown paths *(18 pages)* 066610
Jeffrey Boksiner and P. L. Leath

Tunneling as a stochastic process: A path-integral model for microwave experiments *(5 pages)* 066611
A. Ranfagni, R. Ruggeri, D. Mugnai, A. Agresti, C. Ranfagni, and P. Sandri

Cnoidal wave patterns in quadratic nonlinear media *(6 pages)* 066612
Yaroslav V. Kartashov, Victor A. Vysloukh, and Lluis Torner

Computational physics

Piecewise linear emulator of the nonlinear Schrödinger equation and the resulting analytic solutions for Bose-Einstein condensates *(7 pages)* 066701
Stavros Theodorakis

Monte Carlo studies of three-dimensional O(1) and O(4) ϕ^4 theory related to Bose-Einstein condensation phase transition temperatures *(10 pages)* 066702
Xuepeng Sun

Improved bounce-back methods for no-slip walls in lattice-Boltzmann schemes: Theory and simulations *(10 pages)* 066703
M. Rohde, D. Kandhai, J. J. Derksen, and H. E. A. Van den Akker

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 67, NUMBER 6 JUNE 2003

Guided simulated annealing method for optimization problems *(6 pages)* 066704
C. I. Chou, R. S. Han, S. P. Li, and Ting-Kuo Lee
Stochastic rotation dynamics. I. Formalism, Galilean invariance, and Green-Kubo relations *(11 pages)* 066705
T. Ihle and D. M. Kroll
Stochastic rotation dynamics. II. Transport coefficients, numerics, and long-time tails *(17 pages)* 066706
T. Ihle and D. M. Kroll
Theory and applications of an alternative lattice Boltzmann grid refinement algorithm *(7 pages)* 066707
Alexandre Dupuis and Bastien Chopard
Cellular automaton model for the simulation of laser dynamics *(8 pages)* 066708
J. L. Guisado, F. Jiménez-Morales, and J. M. Guerra
Explicit finite-difference lattice Boltzmann method for curvilinear coordinates *(12 pages)* 066709
Zhaoli Guo and T. S. Zhao
Bead-Fourier path integral molecular dynamics *(11 pages)* 066710
Sergei D. Ivanov, Alexander P. Lyubartsev, and Aatto Laaksonen
Lattice Boltzmann method for simulations of liquid-vapor thermal flows *(6 pages)* 066711
Raoyang Zhang and Hudong Chen

BRIEF REPORTS

General methods of statistical physics

Lattice gas simulation of experimentally studied evacuation dynamics *(4 pages)* 067101
Dirk Helbing, Motonari Isobe, Takashi Nagatani, and Kouhei Takimoto
Avoiding boundary effects in Wang-Landau sampling *(2 pages)* 067102
B. J. Schulz, K. Binder, M. Müller, and D. P. Landau
Autoregressive processes with anomalous scaling behavior: Applications to high-frequency variations of a stock market index *(4 pages)* 067103
Christian Dose, Markus Porto, and H. Eduardo Roman
Additive generalization of the Boltzmann entropy *(4 pages)* 067104
Alexander N. Gorban, Iliya V. Karlin, and Hans Christian Öttinger

Chaos and pattern formation

Breaking time reversal in a simple smooth chaotic system *(3 pages)* 067201
Steven Tomsovic, Denis Ullmo, and Tatsuro Nagano
Elimination of spiral chaos by periodic force for the Aliev-Panfilov model *(3 pages)* 067202
Hidetsugu Sakaguchi and Takefumi Fujimoto
T-shaped coincidence detector as a band filter of chemical signal frequency *(4 pages)* 067203
J. Gorecka and J. Gorecki

Nonlinear hydrodynamics and turbulence

Extension of the pole decomposition for the multidimensional Burgers equation *(3 pages)* 067301
U. Frisch and M. Mineev-Weinstein

Classical physics, including nonlinear media and photonic materials

Transmission measurements in wedge-shaped absorbing samples: An experiment for observing negative refraction *(4 pages)* 067601
M. Sanz, A. C. Papageorgopoulos, W. F. Egelhoff Jr., M. Nieto-Vesperinas, and N. García

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 67, NUMBER 6** **JUNE 2003**

COMMENTS

Comment on ''Cellular automata model simulating traffic interactions between on-ramp and main road'' *(2 pages)* 068101

Ding-wei Huang and Wei-neng Huang

Reply to ''Comment on 'Cellular automata model simulating traffic interactions between on-ramp and main road' '' *(2 pages)* 068102

Rui Jiang, Qing-Song Wu, and Bing-Hong Wang

Reply to ''Comment on 'Power-law correlations in the southern-oscillation-index fluctuations characterizing El Niño' '' *(3 pages)* 068201

M. Ausloos and K. Ivanova

ERRATA

Erratum: Exponential stability and periodic solutions of neural networks with continuously distributed delays [Phys. Rev. E **67**, 011902 (2003)] *(1 page)* 069901

Shangjiang Guo and Lihong Huang

Cumulative Author Index i