

PHYSICAL REVIEW E

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 1539-3755)

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

THIRD SERIES, VOLUME 70, NUMBER 4

CONTENTS

OCTOBER 2004

PART 1: SOFT MATTER AND BIOLOGICAL PHYSICS

RAPID COMMUNICATIONS

Granular materials

- Crucial role of sidewalls in velocity distributions in quasi-two-dimensional granular gases (*4 pages*) 040301(R)
J. S. van Zon, J. Kreft, Daniel I. Goldman, D. Miracle, J. B. Swift, and Harry L. Swinney

Colloidal dispersions, suspensions, and aggregates

- Elasticity and clustering in concentrated depletion gels (*4 pages*) 040401(R)
S. Ramakrishnan, Y.-L. Chen, K. S. Schweizer, and C. F. Zukoski

Structured and complex fluids

- Crystal-like pattern formation in polymerization-induced phase separation (*3 pages*) 040501(R)
Yuichiro Matsushita, Hidemitsu Furukawa, and Mamoru Okada

Liquid crystals

- Fluctuations of topological disclination lines in nematic liquid crystals: Renormalization of the string model (*4 pages*) 040701(R)
D. Svenšek and S. Žumer
- Liquid crystals in random porous media: Disorder is stronger in low-density aerosils (*4 pages*) 040702(R)
D. E. Feldman and Robert A. Pelcovits

Biological physics

- Unfolding single RNA molecules by mechanical force: A stochastic kinetic method (*4 pages*) 040901(R)
Fei Liu and Zhong-can Ou-Yang

ARTICLES

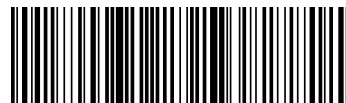
Statistical physics of soft matter

- Topological properties of the mean-field ϕ^4 model (*14 pages*) 041101
A. Andronico, L. Angelani, G. Ruocco, and F. Zamponi
- Field theory of propagating reaction-diffusion fronts (*6 pages*) 041102
C. Escudero



Copyright 2004 by The American Physical Society

(Continued)



1539-3755(200410)70:4;1-4

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 70, NUMBER 4

OCTOBER 2004

Microscopic models for dielectric relaxation in disordered systems (<i>11 pages</i>)	041103
Yuri P. Kalmykov, William T. Coffey, Derrick S. F. Crothers, and Sergey V. Titov	
Diffusion and coherence in tilted piecewise linear double-periodic potentials (<i>8 pages</i>)	041104
Els Heinsalu, Teet Örd, and Risto Tammelo	
Voronoi and void statistics for superhomogeneous point processes (<i>12 pages</i>)	041105
Andrea Gabrielli and Salvatore Torquato	
Rare event statistics in reaction-diffusion systems (<i>12 pages</i>)	041106
Vlad Elgart and Alex Kamenev	
Anomalous mobility of Brownian particles in a tilted symmetric sawtooth potential (<i>12 pages</i>)	041107
Astrid Haljas, Romi Mankin, Ako Sauga, and Eerik Reiter	
Quantitative characterization of pore-scale disorder effects on transport in “homogeneous” granular media (<i>8 pages</i>)	041108
Andrea Cortis, Youjian Chen, Harvey Scher, and Brian Berkowitz	
Equilibrium and linear transport properties of fluids	
Viscoelastic model for the dynamic structure factors of binary systems (<i>15 pages</i>)	041201
N. Anento, L. E. González, D. J. González, Y. Chushak, and A. Baumketner	
Distributions of inherent structure energies during aging (<i>4 pages</i>)	041202
Ivan Saika-Voivod and Francesco Sciortino	
Granular materials	
Local jamming via penetration of a granular medium (<i>10 pages</i>)	041301
M. B. Stone, R. Barry, D. P. Bernstein, M. D. Pelc, Y. K. Tsui, and P. Schiffer	
Colloidal dispersions, suspensions, and aggregates	
Effect of bond lifetime on the dynamics of a short-range attractive colloidal system (<i>8 pages</i>)	041401
I. Saika-Voivod, E. Zaccarelli, F. Sciortino, S. V. Buldyrev, and P. Tartaglia	
Equilibrium properties of highly asymmetric star-polymer mixtures (<i>13 pages</i>)	041402
Christian Mayer, Christos N. Likos, and Hartmut Löwen	
Statistical-mechanical theory of the overall magnetic properties of mesocrystals (<i>5 pages</i>)	041403
J. P. Huang	
Effective electrostatic interactions in suspensions of polyelectrolyte brush-coated colloids (<i>8 pages</i>)	041404
H. Wang and A. R. Denton	
Heterodyne near-field scattering: A technique for complex fluids (<i>9 pages</i>)	041405
F. Ferri, D. Magatti, D. Pescini, M. A. C. Potenza, and M. Giglio	
Statistics of bubble rearrangements in a slowly sheared two-dimensional foam (<i>11 pages</i>)	041406
Michael Dennin	
Deformation free energy and elastic description of a self-assembled system (<i>7 pages</i>)	041407
G. Barbero and L. R. Evangelista	

(Continued)

Characterization of polybutadiene-poly(ethyleneoxide) aggregates in aqueous solution: A light-scattering and small-angle neutron-scattering study (<i>11 pages</i>)	041408
Tobias Fuetterer, Anette Nordskog, Thomas Hellweg, Gerhard H. Findenegg, Stephan Foerster, and Charles D. Dewhurst	
When mixtures of hard-sphere-like colloids do not behave as mixtures of hard spheres (<i>8 pages</i>)	041409
Ph. Germain, J. G. Malherbe, and S. Amokrane	
Fractionation effects in phase equilibria of polydisperse hard-sphere colloids (<i>18 pages</i>)	041410
Moreno Fasolo and Peter Sollich	
Two-dimensional viscous froth model for foam dynamics (<i>13 pages</i>)	041411
N. Kern, D. Weaire, A. Martin, S. Hutzler, and S. J. Cox	
Structured and complex fluids	
Rigidity transition in polymer melts with van der Waals interaction (<i>10 pages</i>)	041501
Matthew L. Wallace, Béla Joós, and Michael Plischke	
Dynamics of shear-transformation zones in amorphous plasticity: Formulation in terms of an effective disorder temperature (<i>12 pages</i>)	041502
J. S. Langer	
Films, interfaces, and crystal growth	
Cylindrically symmetric electrohydrodynamic patterning (<i>12 pages</i>)	041601
Paru Deshpande, Leonard F. Pease III, Lei Chen, Stephen Y. Chou, and William B. Russel	
Mapping spatial persistent large deviations of nonequilibrium surface growth processes onto the temporal persistent large deviations of stochastic random walk processes (<i>5 pages</i>)	041602
M. Constantin and S. Das Sarma	
Defect formation and kinetics of atomic terrace merging (<i>13 pages</i>)	041603
Ajay Gopinathan and T. A. Witten	
Epitaxial frustration in deposited packings of rigid disks and spheres (<i>10 pages</i>)	041604
Boris D. Lubachevsky and Frank H. Stillinger	
Liquid crystals	
Liquid-crystalline Casimir effect in the presence of a patterned substrate (<i>10 pages</i>)	041701
F. Karimi Pour Haddadan, F. Schlesener, and S. Dietrich	
Growth below and above the spinodal limit: The cholesteric-nematic front (<i>12 pages</i>)	041702
P. Oswald, J. Baudry, and T. Rondepierre	
Critical linear thermal expansion in the smectic-A phase near the nematic-smectic phase transition (<i>8 pages</i>)	041703
E. Anesta, G. S. Iannacchione, and C. W. Garland	
Effect of azimuthal anchoring strength on stability in a bistable chiral splay nematic liquid crystal device (<i>4 pages</i>)	041704
Seo Hern Lee, Gi-Dong Lee, Tae-Hoon Yoon, and Jae Chang Kim	
Infrared study of orientational order parameters of a ferroelectric liquid crystal (<i>10 pages</i>)	041705
M. D. Ossowska-Chruściel, R. Korlacki, A. Kocot, R. Wrzalik, J. Chruściel, and S. Zalewski	

Devil's staircase and harmless staircase in the smectic- C_α^* phase in an electric field (4 pages)	041706
Barbara Rovšek, Mojca Čepič, and Boštjan Žekš	
Isotropic-nematic transition in liquid-crystalline elastomers: Lattice model with quenched disorder (8 pages)	041707
Jonathan V. Selinger and B. R. Ratna	
2π and π walls in antiferroelectric smectic- C_A^* and smectic-C free-standing films (6 pages)	041708
P. V. Dolganov, B. M. Bolotin, and Atsuo Fukuda	
Polymers	
Entanglements in quiescent and sheared polymer melts (12 pages)	041801
Ryoichi Yamamoto and Akira Onuki	
Increased thermal stability of a poled electro-optic polymer using high-molar-mass fractions (5 pages)	041802
Ralph P. Bertram, Nils Benter, Dirk Apitz, Elisabeth Soergel, Karsten Buse, Rainer Hagen, and Serguei G. Kostromine	
Biological physics	
Base-sequence-dependent sliding of proteins on DNA (6 pages)	041901
M. Barbi, C. Place, V. Popkov, and M. Salerno	
Stochastic models in population biology and their deterministic analogs (19 pages)	041902
A. J. McKane and T. J. Newman	
Stimulation of unidirectional pulses in excitable systems (7 pages)	041903
M. Friedman, I. E. Ovsyshcher, I. Fleidervish, E. Crystal, and A. Rabinovitch	
Delayed feedback control of collective synchrony: An approach to suppression of pathological brain rhythms (11 pages)	041904
Michael Rosenblum and Arkady Pikovsky	
Unified perspective on proteins: A physics approach (25 pages)	041905
Jayanth R. Banavar, Trinh X. Hoang, Amos Maritan, Flavio Seno, and Antonio Trovato	
Structure-function relationship of biological gels revealed by multiple-particle tracking and differential interference contrast microscopy: The case of human lamin networks (7 pages)	041906
Porntula Panorchan, Denis Wirtz, and Yiider Tseng	
Fluctuations-induced switch in the gene transcriptional regulatory system (8 pages)	041907
Quan Liu and Ya Jia	
Solvable biological evolution models with general fitness functions and multiple mutations in parallel mutation-selection scheme (12 pages)	041908
David B. Saakian, Chin-Kun Hu, and H. Khachatryan	
Effects of noise in a cortical neural model (11 pages)	041909
Maria Marinaro and Silvia Scarpetta	
Stochastic analysis of the Lotka-Volterra model for ecosystems (7 pages)	041910
G. Q. Cai and Y. K. Lin	
Developmental waves in myxobacteria: A distinctive pattern formation mechanism (11 pages)	041911
Oleg A. Igoshin, John Neu, and George Oster	

Interaction of a polar molecule with an ion channel (<i>9 pages</i>)	041912
V. Levadny, V. M. Aguilera, M. Aguilera-Arzo, and M. Belaya	

BRIEF REPORTS**Structured and complex fluids**

New nonlinear dielectric materials: Linear electrorheological fluids under the influence of electrostriction (<i>4 pages</i>)	042501
J. P. Huang	

Liquid crystals

Nanomechanics of order reconstruction in nematic liquid crystals (<i>4 pages</i>)	042701
Fulvio Bisi, Epifanio G. Virga, and Georges E. Durand	

Biological physics

Solvable null model for the distribution of word frequencies (<i>4 pages</i>)	042901
J. F. Fontanari and L. I. Perlovsky	

COMMENTS

Comment on "Jamming at zero temperature and zero applied stress: The epitome of disorder" (<i>4 pages</i>)	043301
Aleksandar Donev, Salvatore Torquato, Frank H. Stillinger, and Robert Connelly	
Reply to "Comment on 'Jamming at zero temperature and zero applied stress: The epitome of disorder'" (<i>3 pages</i>)	043302
Corey S. O'Hern, Leonardo E. Silbert, Andrea J. Liu, and Sidney R. Nagel	

PHYSICAL REVIEW E

For editorial and subscription correspondence,
please see inside front cover
(ISSN: 1539-3755)

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

THIRD SERIES, VOLUME 70, NUMBER 4

CONTENTS

OCTOBER 2004

PART 2: STATISTICAL AND NONLINEAR PHYSICS, FLUID DYNAMICS, AND RELATED TOPICS

RAPID COMMUNICATIONS

General methods of statistical physics

- Elephants can always remember: Exact long-range memory effects in a non-Markovian random walk (*4 pages*) 045101(R)
Gunter M. Schütz and Steffen Trimper

- Numerical schemes for continuum models of reaction-diffusion systems subject to internal noise (*4 pages*) . . . 045102(R)
Esteban Moro

Chaos and pattern formation

- Entanglement and chaos in a square billiard with a magnetic field (*4 pages*) 045201(R)
Marcel Novaes and Marcus A. M. de Aguiar

- First-order synchronization transition in locally coupled maps (*4 pages*) 045202(R)
P. K. Mohanty

- Chaos-induced escape over a potential barrier (*4 pages*) 045203(R)
L. Y. Chew, Christopher Ting, and C. H. Lai

- Collective phase synchronization in locally coupled limit-cycle oscillators (*4 pages*) 045204(R)
H. Hong, Hyunggyu Park, and M. Y. Choi

Fluid dynamics

- Density dependence of a Zuzria-type model for Rayleigh–Taylor bubble fronts (*4 pages*) 045301(R)
Sung-Ik Sohn

Plasma physics

- Generation of a double shock driven by laser (*4 pages*) 045401(R)
A. Benuzzi-Mounaix, M. Koenig, G. Huser, B. Faral, N. Grandjouan, D. Batani, E. Henry,
M. Tomasini, T. A. Hall, and F. Guyot



Copyright 2004 by The American Physical Society

(Continued)



1539-3755(200410)70:4;1-4

ARTICLES

General methods of statistical physics

Totally asymmetric simple exclusion process with Langmuir kinetics (20 pages)	046101
A. Parmeggiani, T. Franosch, and E. Frey	
Drop spreading on heterogeneous substrates via Monte Carlo simulations (7 pages)	046102
Nina Pesheva and Joël De Coninck	
Effect of charge-density fluctuations on the order-disorder transition in the lattice restricted primitive models of electrolytes (12 pages)	046103
A. Ciach	
Functional characterization of linear delay Langevin equations (12 pages)	046104
Adrián A. Budini and Manuel O. Cáceres	
Nonequilibrium statistical mechanics of anharmonic crystals with self-consistent stochastic reservoirs (5 pages)	046105
Emmanuel Pereira and Ricardo Falcao	
Magnetic and backbone exponents of the percolation and Ising models in three dimensions (6 pages)	046106
Youjin Deng and Henk W. J. Blöte	
Crack-microcrack interactions in dynamical fracture (7 pages)	046107
Eran Bouchbinder, David Kessler, and Itamar Procaccia	
Solution of a statistical mechanics model for pulse formation in lasers (10 pages)	046108
Omri Gat, Ariel Gordon, and Baruch Fischer	
Bug propagation and debugging in asymmetric software structures (5 pages)	046109
Damien Challet and Andrea Lombardoni	
Characteristics of the limit cycle of a reciprocating quantum heat engine (13 pages)	046110
Tova Feldmann and Ronnie Kosloff	
Constrained tricritical Blume-Capel model in three dimensions (11 pages)	046111
Youjin Deng and Henk W. J. Blöte	
Criterion for universality-class-independent critical fluctuations: Example of the two-dimensional Ising model (9 pages)	046112
Maxime Clusel, Jean-Yves Fortin, and Peter C. W. Holdsworth	
Friction and second-order phase transitions (9 pages)	046113
Mario Einax, Michael Schulz, and Steffen Trimper	
Critical adsorption and Casimir torque in wedges and at ridges (15 pages)	046114
G. Palágyi and S. Dietrich	
Reverse engineering of linking preferences from network restructuring (7 pages)	046115
Gergely Palla, Illés Farkas, Imre Derényi, Albert-László Barabási, and Tamás Vicsek	
Random walk and trapping processes on scale-free networks (7 pages)	046116
Lazaros K. Gallos	
Dynamics of the two-dimensional gonihedric spin model (11 pages)	046117
D. Espriu and A. Prats	
Non-Poisson dichotomous noise: Higher-order correlation functions and aging (9 pages)	046118
P. Allegrini, Paolo Grigolini, Luigi Palatella, and Bruce J. West	

Supremacy distribution in evolving networks (<i>4 pages</i>)	046119
Janusz A. Hołyst, Agata Fronczak, and Piotr Fronczak	
Properties of foreshocks and aftershocks of the nonconservative self-organized critical Olami-Feder-Christensen model (<i>13 pages</i>)	046120
Agnès Helmstetter, Stefan Hergarten, and Didier Sornette	
Effects of quenched randomness induced by car accidents on traffic flow in a cellular automata model (<i>7 pages</i>)	046121
Xian-qing Yang, Yu-qiang Ma, and Yue-min Zhao	
Constraints on collective density variables: Two dimensions (<i>9 pages</i>)	046122
Obioma U. Uche, Frank H. Stillinger, and Salvatore Torquato	
Anomalous power law distribution of total lifetimes of branching processes: Application to earthquake aftershock sequences (<i>8 pages</i>)	046123
A. Saichev and D. Sornette	
Spectral density analysis of nonlinear hysteretic systems (<i>12 pages</i>)	046124
Mihai Dimian and Isaak D. Mayergoyz	
Optimizing transport in a homogeneous network (<i>5 pages</i>)	046125
Marc Durand and Denis Weaire	
Scale-free trees: The skeletons of complex networks (<i>5 pages</i>)	046126
Dong-Hee Kim, Jae Dong Noh, and Hawoong Jeong	
Maximum entropy and Bayesian data analysis: Entropic prior distributions (<i>12 pages</i>)	046127
Ariel Caticha and Roland Preuss	
Similarity-based cooperation and spatial segregation (<i>8 pages</i>)	046128
Arne Traulsen and Jens Christian Claussen	
Facilitated spin models in one dimension: A real-space renormalization group study (<i>12 pages</i>)	046129
Stephen Whitelam and Juan P. Garrahan	
Harmonic oscillators in the Nosé-Hoover environment (<i>7 pages</i>)	046130
V. L. Golo, V. I. N. Salnikov, and K. V. Shaitan	
Phase transition in conservative diffusive contact processes (<i>6 pages</i>)	046131
Carlos E. Fiore and Mário J. de Oliveira	
Characteristics of vehicular traffic flow at a roundabout (<i>8 pages</i>)	046132
M. Ebrahim Fouladvand, Zeinab Sadjadi, and M. Reza Shaebani	
Effect of disorder strength on optimal paths in complex networks (<i>6 pages</i>)	046133
Sameet Sreenivasan, Tomer Kalisky, Lidia A. Braunstein, Sergey V. Buldyrev, Shlomo Havlin, and H. Eugene Stanley	
Harmonic quantum heat devices: Optimum-performance regimes (<i>6 pages</i>)	046134
N. Sánchez-Salas and A. Calvo Hernández	
Path integrals and fluctuations in irreversible thermodynamics (<i>9 pages</i>)	046135
A. J. McKane and F. Vázquez	

Chaos and pattern formation

Thermodynamics from three-dimensional many-body fragmentation simulations on a cellular automaton model (14 pages)	046201
A. Lejeune and J. Perchang	
Canonical maps near separatrix in Hamiltonian systems (20 pages)	046202
S. S. Abdullaev	
Fractalization route to strange nonchaotic dynamics (9 pages)	046203
Sandip Datta, Ramakrishna Ramaswamy, and Awadhesh Prasad	
Numerical simulations of two-dimensional magnetic domain patterns (7 pages)	046204
E. A. Jagla	
Stability borders of feedback control of delayed measured systems (5 pages)	046205
Jens Christian Claussen	
Explicit spectral formulas for scaling quantum graphs (16 pages)	046206
Yu. Dabaghian and R. Blümel	
Defects and spatiotemporal disorder in a pattern of falling liquid columns (15 pages)	046207
Philippe Brunet and Laurent Limat	
Dynamical characterization of chaotic itinerancy in a three-mode laser subjected to frequency-shifted optical feedback (8 pages)	046208
Yoshihiko Miyasaka, Kenju Otsuka, Tsuyoshi Maniwa, and Jing-Yuan Ko	
Chaos from Hopf bifurcation in a fluid flow experiment (5 pages)	046209
J. Langenberg, G. Pfister, and J. Abshagen	
Bifurcation analysis in an associative memory model (9 pages)	046210
Masaki Kawamura, Ryuji Tokunaga, and Masato Okada	
Synchronization of chaotic oscillators due to common delay time modulation (4 pages)	046211
Won-Ho Kye, Muhan Choi, M. S. Kurdoglyan, Chil-Min Kim, and Young-Jai Park	
Generalized Berry conjecture and mode correlations in chaotic plates (4 pages)	046212
Alexei Akolzin and Richard L. Weaver	
Estimation of delay in coupling from time series (12 pages)	046213
Laura Cimponeriu, Michael Rosenblum, and Arkady Pikovsky	
Modulation frequency response of a bistable system with noise (7 pages)	046214
Bob Nagler, Guy Verschaffelt, Michael Peeters, Jan Albert, Irina Veretennicoff, Jan Danckaert, Giovanni Giacomelli, and Francesco Marin	
Diffraction and spectral statistics in systems with a multilevel scatterer (14 pages)	046215
A. Matzkin and T. S. Monteiro	
Dynamics of semiconductor lasers with bidirectional optoelectronic coupling: Stability, route to chaos, and entrainment (11 pages)	046216
Raúl Vicente, Shuo Tang, Josep Mulet, Claudio R. Mirasso, and Jia-Ming Liu	
Detecting dynamical changes in time series using the permutation entropy (7 pages)	046217
Yinhe Cao, Wen-wen Tung, J. B. Gao, V. A. Protopopescu, and L. M. Hively	
Phenomenological model for symmetry breaking in a chaotic system (6 pages)	046218
A. Y. Abul-Magd and M. H. Simbel	

Turing pattern formation in a two-layer system: Superposition and superlattice patterns (<i>5 pages</i>)	046219
Igal Berenstein, Milos Dolnik, Lingfa Yang, Anatol M. Zhabotinsky, and Irving R. Epstein	
Dynamical epidemic suppression using stochastic prediction and control (<i>7 pages</i>)	046220
Ira B. Schwartz, Lora Billings, and Erik M. Bollt	
Spiral wave dynamics under feedback control derived from a variety of sensory domains (<i>6 pages</i>)	046221
On-Uma Kheowan, Supichai Kantrasiri, Prapin Wilairat, Ulrich Storb, and Stefan C. Müller	
Spatiotemporal chaos stimulated by transverse Hopf instabilities in an optical bilayer system (<i>7 pages</i>)	046222
P. V. Paulau, I. V. Babushkin, and N. A. Loiko	
Dynamics of stick-slip in peeling of an adhesive tape (<i>12 pages</i>)	046223
Rumi De, Anil Maybhate, and G. Ananthakrishna	
Advection diffusion in nonchaotic closed flows: Non-Hermitian operators, universality, and localization (<i>12 pages</i>)	046224
M. Giona, V. Vitacolonna, S. Cerbelli, and A. Adrover	
Fluid dynamics	
Forward and backward laser-guided motion of an oil droplet (<i>4 pages</i>)	046301
Sergei Rybalko, Nobuyuki Magome, and Kenichi Yoshikawa	
Coarsening in the buoyancy-driven instability of a reaction-diffusion front (<i>5 pages</i>)	046302
Martin Böckmann and Stefan C. Müller	
Spontaneous acoustic emission of a corrugated shock wave in the presence of a reflecting surface (<i>21 pages</i>)	046303
J. G. Wouchuk and J. López Cavada	
Diffusion of passive scalar in a finite-scale random flow (<i>7 pages</i>)	046304
Alexander A. Schekochihin, Peter H. Haynes, and Steven C. Cowley	
Relations between Lagrangian models and synthetic random velocity fields (<i>21 pages</i>)	046305
Piero Olla and Paolo Paradisi	
Phenomenological model of weakly damped Faraday waves and the associated mean flow (<i>18 pages</i>)	046306
José M. Vega, Sten Rüdiger, and Jorge Viñals	
Roughness and growth in a continuous fluid invasion model (<i>8 pages</i>)	046307
Inbal Hecht and Haim Taitelbaum	
Magnetic Soret effect: Application of the ferrofluid dynamics theory (<i>6 pages</i>)	046308
Adrian Lange	
Influence of boundary slip on the optimal excitations in thermocapillary driven spreading (<i>11 pages</i>)	046309
Jeffrey M. Davis and Sandra M. Troian	
Nonlinear theory of a “shear-current” effect and mean-field magnetic dynamos (<i>15 pages</i>)	046310
Igor Rogachevskii and Nathan Kleeorin	
Shell model for rotating turbulence (<i>6 pages</i>)	046311
Y. Hattori, R. Rubinstein, and A. Ishizawa	
Plasma physics	
Collective electromagnetic modes for beam-plasma interaction in the whole k space (<i>15 pages</i>)	046401
A. Bret, M.-C. Firpo, and C. Deutsch	

Dispersion of helically corrugated waveguides: Analytical, numerical, and experimental study (8 pages)	046402
G. Burt, S. V. Samsonov, K. Ronald, G. G. Denisov, A. R. Young, V. L. Bratman, A. D. R. Phelps, A. W. Cross, I. V. Konoplev, W. He, J. Thomson, and C. G. Whyte	
Spatially averaged model of complex-plasma discharge with self-consistent electron energy distribution (12 pages)	046403
I. Denysenko, M. Y. Yu, K. Ostrikov, and A. Smolyakov	
Plasma electric microfield distribution with the triplet correlation contribution: High-frequency component at a neutral point (8 pages)	046404
Askar Davletov and Marie-Madeleine Gombert	
Relativistic kinetic theory of pitch angle scattering, slowing down, and energy deposition in a plasma (11 pages)	046405
J. Robiche and J. M. Rax	
Active and passive Brownian motion of charged particles in two-dimensional plasma models (14 pages)	046406
Jörn Dunkel, Werner Ebeling, and Sergey A. Trigger	
Radiation reaction in fusion plasmas (6 pages)	046407
R. D. Hazeltine and S. M. Mahajan	
Terahertz radiation from oscillating electrons in laser-induced wake fields (7 pages)	046408
Li-Hua Cao, Wei Yu, Han Xu, Chun-Yang Zheng, Zhan-Jun Liu, Bin Li, and A. Bogaerts	
Intrinsic trapping of stochastic sheared magnetic field lines (9 pages)	046409
M. Negrea, I. Petrisor, and R. Balescu	
Propagation of intense short laser pulses in a gas of atomic clusters (12 pages)	046410
Ayush Gupta, T. M. Antonsen, Jr., and H. M. Milchberg	
Temperature-dependent quantum pair potentials and their application to dense partially ionized hydrogen plasmas (17 pages)	046411
A. V. Filinov, V. O. Golubnychiy, M. Bonitz, W. Ebeling, and J. W. Dufty	
Transport properties of partially ionized and unmagnetized plasmas (19 pages)	046412
Thierry E. Magin and Gérard Degrez	
Flux-matching theory of particle charging (9 pages)	046413
A. A. Lushnikov and M. Kulmala	
Ion acceleration from the shock front induced by hole boring in ultraintense laser-plasma interactions (4 pages)	046414
H. Habara, K. L. Lancaster, S. Karsch, C. D. Murphy, P. A. Norreys, R. G. Evans, M. Borghesi, L. Romagnani, M. Zepf, T. Norimatsu, Y. Toyama, R. Kodama, J. A. King, R. Snavely, K. Akli, B. Zhang, R. Freeman, S. Hatchett, A. J. MacKinnon, P. Patel, M. H. Key, C. Stoeckl, R. B. Stephens, R. A. Fonseca, and L. O. Silva	
Micron-sized particle-charge measurements in an inductive rf gas-discharge plasma using gravity-driven probe grains (6 pages)	046415
V. E. Fortov, O. F. Petrov, A. D. Usachev, and A. V. Zobnin	
Physics of beams	
Self-excitation of microwave oscillations in plasma-assisted slow-wave oscillators by an electron beam with a movable focus (9 pages)	046501
Yu. P. Bliokh, G. S. Nusinovich, A. G. Shkvarunets, and Y. Carmel	

Integration of the Lorentz-Dirac equation: Interaction of an intense laser pulse with high-energy electrons (5 pages)	046502
James Koga	

Classical physics, including nonlinear media and photonic materials

Relation between time reversal focusing and coherent backscattering in multiple scattering media: A diagrammatic approach (12 pages)	046601
Julien de Rosny, Arnaud Tourin, Arnaud Derode, Bart van Tiggelen, and Mathias Fink	
Filamentation of femtosecond light pulses in the air: Turbulent cells versus long-range clusters (15 pages) . . .	046602
S. Skupin, L. Bergé, U. Peschel, F. Lederer, G. Méjean, J. Yu, J. Kasparian, E. Salmon, J. P. Wolf, M. Rodriguez, L. Wöste, R. Bourayou, and R. Sauerbrey	
Negative group velocity and group delay in left-handed media (6 pages)	046603
J. F. Woodley and M. Mojahedi	
Solitary surface acoustic waves (15 pages)	046604
C. Eckl, A. S. Kovalev, A. P. Mayer, A. M. Lomonosov, and P. Hess	
Photonic band gap enhancement in frequency-dependent dielectrics (15 pages)	046605
Ovidiu Toader and Sajeev John	
Time development of a persistent hole burning in multiple-scattering media (10 pages)	046606
Makoto Tomita, Kentarou Ono, and Shuho Tatsuno	
Role of wave interaction of wires and split-ring resonators for the losses in a left-handed composite (6 pages)	046607
C. R. Simovski and B. Sauviac	
Propagation in and scattering from a matched metamaterial having a zero index of refraction (12 pages)	046608
Richard W. Ziolkowski	
Modeling the impact of imperfections in high-index-contrast photonic waveguides (9 pages)	046609
M. Skorobogatiy	
Criteria for the experimental observation of multidimensional optical solitons in saturable media (7 pages) . . .	046610
Yi-Fan Chen, Kale Beckwitt, Frank W. Wise, and Boris A. Malomed	
Dynamics of acoustically levitated disk samples (11 pages)	046611
W. J. Xie and B. Wei	
Localization of classical waves in weakly scattering two-dimensional media with anisotropic disorder (5 pages)	046612
Gregory Samelsohn and Valentin Freilikher	
Generation and nonlinear dynamics of X waves of the Schrödinger equation (12 pages)	046613
Claudio Conti	
Beam stabilization in the two-dimensional nonlinear Schrödinger equation with an attractive potential by beam splitting and radiation (7 pages)	046614
Brenton John leMesurier, Peter Leth Christiansen, Yuri B. Gaididei, and Jens Juul Rasmussen	
Defect modes and transmission properties of left-handed bandgap structures (6 pages)	046615
Ilya V. Shadrivov, Nina A. Zharova, Alexander A. Zharov, and Yuri S. Kivshar	
Low-frequency spatial dispersion in wire media (8 pages)	046616
C. R. Simovski and P. A. Belov	

Electromagnetic energy and energy flows in photonic crystals made of arrays of parallel dielectric cylinders (7 pages)	046617
Chao-Hsien Kuo and Zhen Ye	

Spatial speckle characterization by Brownian motion analysis (8 pages)	046618
Steve Guyot, Marie-Cécile Péron, and Eric Deléchelle	

Computational physics

Optimizing the ensemble for equilibration in broad-histogram Monte Carlo simulations (5 pages)	046701
Simon Trebst, David A. Huse, and Matthias Troyer	

Finite-difference lattice Boltzmann model with flux limiters for liquid-vapor systems (9 pages)	046702
V. Sofonea, A. Lamura, G. Gonnella, and A. Cristea	

Iterative eigenvalue method using the Bloch wave operator formalism with Padé approximants and absorbing boundaries (8 pages)	046703
Georges Jolicard, David Viennot, John P. Killingbeck, and Jean-Marc Zucconi	

Fitness threshold accepting over extremal optimization ranks (6 pages)	046704
Karl Heinz Hoffmann, Frank Heilmann, and Peter Salamon	

Threshold values, stability analysis, and high- q asymptotics for the coloring problem on random graphs (17 pages)	046705
Florent Krzakala, Andrea Pagnani, and Martin Weigt	

BRIEF REPORTS**General methods of statistical physics**

Stochastic dynamics and the dynamic phase transition in thin ferromagnetic films (4 pages)	047101
Hyunbum Jang, Malcolm J. Grimson, and Thomas B. Woolf	

Low-frequency character of the Casimir force between metallic films (4 pages)	047102
J. R. Torgerson and S. K. Lamoreaux	

Fluid dynamics

Ultrabright cavitation luminescence generation and its time-resolved spectroscopic characterization (4 pages)	047301
Qi-Dai Chen, Li-Min Fu, Xi-Cheng Ai, Jian-Ping Zhang, and Long Wang	

Classical physics, including nonlinear media and photonic materials

Modified spontaneous emission from a two-dimensional photonic crystal (3 pages)	047601
Yong Zeng, Xiaoshuang Chen, and Wei Lu	

Nonlinearity from geometric interactions: A case example (4 pages)	047602
P. G. Kevrekidis, V. V. Konotop, B. A. Malomed, and A. R. Bishop	

Photon tunneling in composite layers of negative- and positive-index media (4 pages)	047603
Kyoung-Youm Kim	

Hamiltonian averaging for solitons with nonlinearity management (3 pages)	047604
D. E. Pelinovsky, P. G. Kevrekidis, D. J. Frantzeskakis, and V. Zharnitsky	

COMMENTS

Comment on “Calculation of ionization balance and electrical conductivity in nonideal aluminum plasma” (1 page)	048401
Mofreh R. Zaghloul	
Reply to “Comment on ‘Calculation of ionization balance and electrical conductivity in nonideal aluminum plasma’ ” (2 pages)	048402
Deok-Kyu Kim and Inho Kim	
Comment I on “Resonant and antiresonant frequency dependence of the effective parameters of metamaterials” (1 page)	048601
Ricardo A. Depine and Akhlesh Lakhtakia	
Comment II on “Resonant and antiresonant frequency dependence of the effective parameters of metamaterials” (2 pages)	048602
A. L. Efros	
Reply to Comments on “Resonant and antiresonant frequency dependence of the effective parameters of metamaterials” (1 page)	048603
T. Koschny, P. Markoš, D. R. Smith, and C. M. Soukoulis	

ERRATA

Erratum: Diffusion in correlated random potentials, with applications to DNA [Phys. Rev. E 69 , 061903 (2004)] (1 page)	049901(E)
Michael Slutsky, Mehran Kardar, and Leonid A. Mirny	
Erratum: Bulk inhomogeneous phases of anisotropic particles: A fundamental measure functional study of the restricted orientations model [Phys. Rev. E 69 , 061712 (2004)] (1 page)	049902(E)
Yuri Martínez-Ratón	
Publisher’s Note: Ising fluids in an external magnetic field: An integral equation approach [Phys. Rev. E 69 , 061506 (2004)] (1 page)	049903(E)
I. P. Omelyan, I. M. Mryglod, R. Folk, and W. Fenz	

Cumulative Author Index	i
-------------------------------	---