PHYSICAL REVIEW E

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

PERIODICALS
Postmaster send address changes to:
APS Subscription Services
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 78, NUMBER 4 *CONTENTS* **OCTOBER 2008**

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

RAPID COMMUNICATIONS

Interdisciplinary physics

Network growth with feedback *(4 pages)* . . . . . 045101(R)
Raissa M. D'Souza and Soumen Roy

Dynamics-based scalability of complex networks *(4 pages)* . . . . . 045102(R)
Liang Huang, Ying-Cheng Lai, and Robert A. Gatenby

Chaos and pattern formation

Properties of nodal domains in a pseudointegrable barrier billiard *(4 pages)* . . . . . 045201(R)
B. Dietz, T. Friedrich, M. Miski-Oglu, A. Richter, and F. Schäfer

Resonance distribution in open quantum chaotic systems *(4 pages)* . . . . . 045202(R)
S. Nonnenmacher and E. Schenck

Fluid dynamics

Scaling of atomistic fluid dynamics simulations *(4 pages)* . . . . . 045301(R)
Kai Kadau, John L. Barber, Timothy C. Germann, and Berni J. Alder

Scattering of low-Reynolds-number swimmers *(4 pages)* . . . . . 045302(R)
G. P. Alexander, C. M. Pooley, and J. M. Yeomans

Theory for particle settling and shear-induced migration in thin-film liquid flow *(4 pages)* . . . . . 045303(R)
Benjamin P. Cook

Classical physics

Temporal changes in the lunar soil from correlation of diffuse vibrations *(4 pages)* . . . . . 045601(R)
Christoph Sens-Schönfelder and Eric Larose

Effects of size and frequency dispersion in plasmonic cloaking *(4 pages)* . . . . . 045602(R)
Andrea Alù and Nader Engheta

Local nanofluidic light sources in silicon photonic crystal microcavities *(4 pages)* . . . . . 045603(R)
Silvia Vignolini, Francesco Riboli, Francesca Intonti, Michele Belotti, Massimo Gurioli, Yong Chen, Marcello Colocci, Lucio Claudio Andreani, and Diederik S. Wiersma

Copyright 2008 by The American Physical Society

(Continued)

1539-3755(200810)78:4:2;1-K

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

ARTICLES

Interdisciplinary physics

Effects of velocity relaxation on the anomalous kinetics of a one-dimensional $A+A \rightarrow \emptyset$ reaction *(6 pages)* 046101
Wen-Shyan Sheu and Shiuan-Chuan Wang

Network quotients: Structural skeletons of complex systems *(7 pages)* 046102
Yanghua Xiao, Ben D. MacArthur, Hui Wang, Momiao Xiong, and Wei Wang

Phenomenological approach to mechanical damage growth analysis *(5 pages)* 046103
Nicola Pugno, Federico Bosia, Antonio S. Gliozzi, Pier Paolo Delsanto, and Alberto Carpinteri

Diffusive wave spectroscopy applied to the spatially resolved deformation of a solid *(9 pages)* 046104
Marion Erpelding, Axelle Amon, and Jérôme Crassous

Crack roughness in the two-dimensional random threshold beam model *(8 pages)* 046105
Phani K. V. V. Nukala, Stefano Zapperi, Mikko J. Alava, and Srdan Šimunović

Adaptive networks of trading agents *(8 pages)* 046106
Z. Burda, A. Krzywicki, and O. C. Martin

Thermal effects in static friction: Thermolubricity *(6 pages)* 046107
A. Franchini, V. Bortolani, G. Santoro, and M. Brigazzi

Consequence of reputation in an open-ended naming game *(6 pages)* 046108
Edgardo Brigatti

Accuracy of the ball-covering approach for fractal dimensions of complex networks and a rank-driven algorithm *(5 pages)* 046109
Liang Gao, Yanqing Hu, and Zengru Di

Benchmark graphs for testing community detection algorithms *(5 pages)* 046110
Andrea Lancichinetti, Santo Fortunato, and Filippo Radicchi

Scale-free topology-induced double resonance in networked two-state systems *(5 pages)* 046111
Zonghua Liu and Toyonori Munakata

Hausdorff clustering *(13 pages)* 046112
Nicolas Basalto, Roberto Bellotti, Francesco De Carlo, Paolo Facchi, Ester Pantaleo, and Saverio Pascazio

Two classes of bipartite networks: Nested biological and social systems *(9 pages)* 046113
Enrique Burgos, Horacio Ceva, Laura Hernández, R. P. J. Perazzo, Mariano Devoto, and Diego Medan

Scale-free networks as entropy competition *(10 pages)* 046114
Antonio Sanchirico and Mauro Fiorentino

Adaptive clustering algorithm for community detection in complex networks *(6 pages)* 046115
Zhenqing Ye, Songnian Hu, and Jun Yu

Chaos and pattern formation

Eckhaus instability and homoclinic snaking *(16 pages)* 046201
A. Bergeon, J. Burke, E. Knobloch, and I. Mercader

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

Rectified oscillatory motion of the self-ordered front under zero-mean ac force: Role of symmetry of the rate function *(11 pages)* 046202
R. Bakanas

Refined fiber laser model *(10 pages)* 046203
Will Ray, Kurt Wiesenfeld, and Jeffrey L. Rogers

Transition to chaotic scattering: Signatures in the differential cross section *(6 pages)* 046204
Adriane B. Schelin, Alessandro P. S. de Moura, and Celso Grebogi

Riemannian geometry of Hamiltonian chaos: Hints for a general theory *(17 pages)* 046205
Monica Cerruti-Sola, Guido Ciraolo, Roberto Franzosi, and Marco Pettini

Onset of wavy vortices in Taylor-Couette flow with imperfect reflection symmetry *(9 pages)* 046206
J. Abshagen and G. Pfister

Control of scroll-wave turbulence using resonant perturbations *(13 pages)* 046207
S. W. Morgan, I. V. Biktasheva, and V. N. Biktashev

Soft wall effects on interacting particles in billiards *(9 pages)* 046208
H. A. Oliveira, C. Manchein, and M. W. Beims

Control-based method to identify underlying delays of a nonlinear dynamical system *(9 pages)* 046209
Dongchuan Yu, Mattia Frasca, and Fang Liu

Optimal weighted networks of phase oscillators for synchronization *(10 pages)* 046210
Takuma Tanaka and Toshio Aoyagi

Entanglement and the generation of random states in the quantum chaotic dynamics of kicked coupled tops *(12 pages)* 046211
Collin M. Trail, Vaibhav Madhok, and Ivan H. Deutsch

Complexity of quantum states and reversibility of quantum motion *(15 pages)* 046212
Valentin V. Sokolov, Oleg V. Zhirov, Giuliano Benenti, and Giulio Casati

Rare events and their impact on velocity diffusion in a stochastic Fermi-Ulam model *(8 pages)* 046213
A. K. Karlis, F. K. Diakonos, V. Constantoudis, and P. Schmelcher

Rhythmic oscillation and dynamic instability of micrometer-size phase separation under continuous photon flux by a focused laser *(4 pages)* 046214
Koichiro Sadakane, Hiroyuki Kitahata, Hideki Seto, and Kenichi Yoshikawa

Transition from longitudinal to transversal patterns in an anisotropic system *(9 pages)* 046215
Martin May, Wolfgang Schöpf, Ingo Rehberg, Alexei Krekhov, and Agnes Buka

Generalized synchronization of chaos in autonomous systems *(6 pages)* 046216
O. Alvarez-Llamoza and M. G. Cosenza

Coupling design for a long-term anticipating synchronization of chaos *(4 pages)* 046217
Kestutis Pyragas and Tatjana Pyragienė

Synchronization properties of coupled semiconductor lasers subject to filtered optical feedback *(8 pages)* 046218
Miguel C. Soriano, Flavio Ruiz-Oliveras, Pere Colet, and Claudio R. Mirasso

Fluid dynamics

Higher-order effects in rarefied channel flows *(11 pages)* 046301
Henning Struchtrup and Manuel Torrilhon

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

Ergodicity of ideal Galerkin three-dimensional magnetohydrodynamics and Hall magnetohydrodynamics models *(7 pages)* 046302
S. Servidio, W. H. Matthaeus, and V. Carbone

Localization and spectral phase transition in an open advecting-diffusing three-dimensional Stokes flow *(9 pages)* 046303
M. Giona and S. Cerbelli

Multidirectional sorting modes in deterministic lateral displacement devices *(9 pages)* 046304
Brian R. Long, Martin Heller, Jason P. Beech, Heiner Linke, Henrik Bruus, and Jonas O. Tegenfeldt

Subcritical instabilities in a convective fluid layer under a quasi-one-dimensional heating *(12 pages)* 046305
M. A. Miranda and J. Burguete

Depletion of horizontal pair diffusion in strongly stratified turbulence: Comparison with plane two-dimensional flows *(15 pages)* 046306
F. Nicolleau, K.-S. Sung, and J. C. Vassilicos

Effect of particle-particle collision in decaying homogeneous and isotropic turbulence *(10 pages)* 046307
Nan Gui, JianRen Fan, and Kefa Cen

Lattice Boltzmann study of convective drop motion driven by nonlinear chemical kinetics *(10 pages)* 046308
K. Furtado, C. M. Pooley, and J. M. Yeomans

Dynamics of capillary absorption of droplets by carbon nanotubes *(6 pages)* 046309
D. Schebarchov and S. C. Hendy

Lifetime statistics in transitional pipe flow *(10 pages)* 046310
Tobias M. Schneider and Bruno Eckhardt

Polymer flexibility and turbulent drag reduction *(6 pages)* 046311
J. J. J. Gillissen

Spatiotemporal instability of a confined capillary jet *(7 pages)* 046312
M. A. Herrada, A. M. Gañán-Calvo, and P. Guillot

Spectral lines of OH radicals and Na atoms in sonoluminescence *(6 pages)* 046313
Yu An and Chaohui Li

Lattice-Boltzmann simulation of two-dimensional flow over two vibrating side-by-side circular cylinders *(12 pages)* 046314
Yousheng Xu, Yang Liu, Yong Xia, and Fengmin Wu

Thermal convection in mixtures with an inversion of the separation ratio *(12 pages)* 046315
B. Huke, H. Pleiner, and M. Lücke

Instability of electro-osmotic channel flow with streamwise conductivity gradients *(10 pages)* 046316
J. Jobim Santos and Brian D. Storey

Influence of the dispersive and dissipative scales α and β on the energy spectrum of the Navier-Stokes $\alpha\beta$ equations *(10 pages)* 046317
Xuemei Chen and Eliot Fried

Plasma physics

Improvement of energy-conversion efficiency from laser to proton beam in a laser-foil interaction *(6 pages)* 046401
Y. Nodera, S. Kawata, N. Onuma, J. Limpouch, O. Klimo, and T. Kikuchi

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

Analytical model of particle charging in plasmas over a wide range of collisionality *(6 pages)* 046402
Marco Gatti and Uwe Kortshagen

Non-Gaussian statistics and superdiffusion in a driven-dissipative dusty plasma *(10 pages)* 046403
Bin Liu, J. Goree, and Yan Feng

Coronal hydrodynamics of laser-produced plasmas *(10 pages)* 046404
A. Aliverdiev, D. Batani, R. Dezulian, T. Vinci, A. Benuzzi-Mounaix, M. Koenig, and V. Malka

Rotation of a strongly magnetized hydrogen plasma column determined from an asymmetric Balmer-β spectral line with two radiating distributions *(11 pages)* 046405
A. E. Shumack, V. P. Veremiyenko, D. C. Schram, H. J. de Blank, W. J. Goedheer, H. J. van der Meiden, W. A. J. Vijvers, J. Westerhout, N. J. Lopes Cardozo, and G. J. van Rooij

Theoretical analysis and simulations of strong terahertz radiation from the interaction of ultrashort laser pulses with gases *(7 pages)* 046406
Min Chen, Alexander Pukhov, Xiao-Yu Peng, and Oswald Willi

Spectrally resolved and Rosseland and Planck mean opacities of iron plasmas at temperatures above 100 eV: A systematic study *(10 pages)* 046407
Gao Cheng and Zeng Jiaolong

Dispersive properties of a magnetized degenerate electron gas *(17 pages)* 046408
Jeanette I. Weise

Classical physics

Electromagnetic interactions between a fast electron beam and metamaterial cloaks *(7 pages)* 046601
Jinying Xu, Yunxia Dong, and Xiangdong Zhang

Qualitative and quantitative analysis of stability and instability dynamics of positive lattice solitons *(16 pages)* 046602
Y. Sivan, G. Fibich, B. Ilan, and M. I. Weinstein

Explosive dynamics and localization of wave triads in a coupled magnetoelastic system *(4 pages)* 046603
V. Preobrazhensky, O. Bou Matar, and P. Pernod

Radiationless energy exchange in three-soliton collisions *(10 pages)* 046604
Sergey V. Dmitriev, Panayotis G. Kevrekidis, and Yuri S. Kivshar

Accelerating Airy wave packets in the presence of quadratic and cubic dispersion *(6 pages)* 046605
Ioannis M. Besieris and Amr M. Shaarawi

Absence of a consistent classical equation of motion for a mass-renormalized point charge *(12 pages)* 046606
Arthur D. Yaghjian

Analytical formulation for soliton-potential dynamics *(8 pages)* 046607
Kurosh Javidan

Reduction of superintegrable systems: The anisotropic harmonic oscillator *(6 pages)* 046608
Miguel A. Rodríguez, Piergiulio Tempesta, and Pavel Winternitz

Electromagnetic transparency by coated spheres with radial anisotropy *(11 pages)* 046609
L. Gao, T. H. Fung, K. W. Yu, and C. W. Qiu

Random input problem for the nonlinear Schrödinger equation *(12 pages)* 046610
Stanislav A. Derevyanko and Jaroslaw E. Prilepsky

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

Computational physics

Simulation of two- and three-dimensional dense-fluid shear flows via nonequilibrium molecular dynamics: Comparison of time-and-space-averaged stresses from homogeneous Doll's and Sllod shear algorithms with those from boundary-driven shear *(14 pages)* 046701
Wm. G. Hoover, Carol G. Hoover, and Janka Petravic

Perturbational formulation of principal component analysis in molecular dynamics simulation *(11 pages)* 046702
Yohei M. Koyama, Tetsuya J. Kobayashi, Shuji Tomoda, and Hiroki R. Ueda

Lattice Boltzmann model for incompressible axisymmetric flows *(8 pages)* 046703
Sheng Chen, Jonas Tölke, Sebastian Geller, and Manfred Krafczyk

Variational method for estimating the rate of convergence of Markov-chain Monte Carlo algorithms *(12 pages)* 046704
Fergal P. Casey, Joshua J. Waterfall, Ryan N. Gutenkunst, Christopher R. Myers, and James P. Sethna

Optimal modification factor and convergence of the Wang-Landau algorithm *(8 pages)* 046705
Chenggang Zhou (周成钢) and Jia Su (苏佳)

Hydrodynamic interactions for single dissipative-particle-dynamics particles and their clusters and filaments *(12 pages)* 046706
Wenxiao Pan, Dmitry A. Fedosov, George Em Karniadakis, and Bruce Caswell

Characteristic nonreflecting boundary conditions for open boundaries in lattice Boltzmann methods *(7 pages)* 046707
Salvador Izquierdo and Norberto Fueyo

Nonreflecting boundaries for ultrasound in fluctuating hydrodynamics of open systems *(14 pages)* 046708
R. Delgado-Buscalioni and A. Dejoan

Interaction potential for atomic simulations of conventional high explosives *(8 pages)* 046709
Andrew J. Heim, Niels Grønbech-Jensen, Edward M. Kober, Jerome J. Erpenbeck, and Timothy C. Germann

Molecular dynamics simulations of detonation instability *(6 pages)* 046710
Andrew J. Heim, Niels Grønbech-Jensen, Edward M. Kober, and Timothy C. Germann

Lattice Boltzmann simulation of catalytic reactions *(8 pages)* 046711
S. Arcidiacono, J. Mantzaras, and I. V. Karlin

Improved path integration method for estimating the intrinsic viscosity of arbitrarily shaped particles *(11 pages)* 046712
Marc L. Mansfield and Jack F. Douglas

Temporal coarse-graining of microscopic-lattice kinetic Monte Carlo simulations via τ leaping *(7 pages)* 046713
D. G. Vlachos

BRIEF REPORTS

Interdisciplinary physics

Simple reaction-diffusion population model on scale-free networks *(4 pages)* 047101
An-Cai Wu, Xin-Jian Xu, J. F. F. Mendes, and Ying-Hai Wang

Distribution of the largest event in the critical epidemic-type aftershock-sequence model *(3 pages)* 047102
David Vere-Jones and Jiancang Zhuang

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 4 OCTOBER 2008

Quantitative description of realistic wealth distributions by kinetic trading models *(4 pages)* 047103
Nelson Lammoglia, Víctor Muñoz, José Rogan, Benjamín Toledo, Roberto Zarama, and Juan Alejandro Valdivia

Chaos and pattern formation

Experimental evidence of wave chaos from a double slit experiment with water surface waves *(4 pages)* 047201
Yunfei Tang, Yifeng Shen, Jiong Yang, Xiaohan Liu, Jian Zi, and Baowen Li

Fluid dynamics

Amplitude equation and long-range interactions in underwater sand ripples in one dimension *(4 pages)* 047301
Teis Schnipper, Keith Mertens, Clive Ellegaard, and Tomas Bohr

COMMENTS

Comment on "Properties of highly clustered networks" *(2 pages)* 048101
Istvan Z. Kiss and Darren M. Green

ERRATA

Publisher's Note: Thermodynamics of two lattice ice models in three dimensions [Phys. Rev. E **78**, 041113 (2008)] *(1 page)* . . . . . 049901(E)
Chizuru Muguruma, Yuko Okamoto, and Bernd A. Berg