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 86, NUMBER 1 ***CONTENTS*** **JULY 2012**

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

RAPID COMMUNICATIONS

Interdisciplinary physics

Assortative and modular networks are shaped by adaptive synchronization processes *(4 pages)* . . . . . 015101(R)
Vanesa Avalos-Gaytán, Juan A. Almendral, David Papo, Satu Elisa Schaeffer, and Stefano Boccaletti

Fluid dynamics

Self-similar breakup of near-inviscid liquids *(4 pages)* . . . . . 015301(R)
J. R. Castrejón-Pita, A. A. Castrejón-Pita, E. J. Hinch, J. R. Lister, and I. M. Hutchings

Plasma physics

Origin of Lorentzian pulses in deterministic chaos *(5 pages)* . . . . . 015401(R)
J. E. Maggs and G. J. Morales

Nonlocal effect of plasma resonances on the electron energy-distribution function in microwave plasma columns *(5 pages)* . . . . . 015402(R)
O. Boudreault, S. Mattei, L. Stafford, J. Margot, M. Moisan, R. Khare, and V. M. Donnelly

ARTICLES

Interdisciplinary physics

Enhanced response of regular networks to local signals in the presence of a fast impurity *(6 pages)* 016101
Alireza Valizadeh

Explosive synchronization enhanced by time-delayed coupling *(5 pages)* 016102
Thomas Kauê Dal'Maso Peron and Francisco A. Rodrigues

Thermodynamic analysis of low-temperature carbon dioxide and sulfur dioxide capture from coal-burning power plants *(9 pages)* 016103
Charles E. Swanson, John W. Elzey, Robert E. Hershberger, Russell J. Donnelly, and John Pfotenhauer

Relationship between clustering coefficient and the success of cooperation in networks *(11 pages)* 016104
M. N. Kuperman and S. Risau-Gusman

Bayesian inference for a wave-front model of the neolithization of Europe *(13 pages)* 016105
Andrew W. Baggaley, Graeme R. Sarson, Anvar Shukurov, Richard J. Boys, and Andrew Golightly

Copyright 2012 by American Physical Society

(Continued)

1539-3755(201207)86:1:2;1-J

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Oscillatory instability in slow crack propagation in rubber under large deformation *(6 pages)* 016106
Daiki Endo, Katsuhiko Sato, and Yoshinori Hayakawa

Algorithm for parametric community detection in networks *(11 pages)* 016107
Andrea Bettinelli, Pierre Hansen, and Leo Liberti

Drift instability in the motion of a fluid droplet with a chemically reactive surface driven by Marangoni flow *(8 pages)* 016108
Natsuhiko Yoshinaga, Ken H. Nagai, Yutaka Sumino, and Hiroyuki Kitahata

Potts model based on a Markov process computation solves the community structure problem effectively *(10 pages)* 016109
Hui-Jia Li, Yong Wang, Ling-Yun Wu, Junhua Zhang, and Xiang-Sun Zhang

Solid-on-solid single-block dynamics under mechanical vibration *(6 pages)* 016110
F. Giacco, E. Lippiello, and M. Pica Ciamarra

Detecting alternative graph clusterings *(11 pages)* 016111
Supreet Mandala, Soundar Kumara, and Tao Yao

Detecting the solution space of vertex cover by mutual determinations and backbones *(12 pages)* 016112
Wei Wei, Renquan Zhang, Binghui Guo, and Zhiming Zheng

Scaling laws for impact fragmentation of spherical solids *(7 pages)* 016113
G. Timár, F. Kun, H. A. Carmona, and H. J. Herrmann

Electric-field-induced crack patterns: Experiments and simulation *(8 pages)* 016114
Tajkera Khatun, Moutushi Dutta Choudhury, Tapati Dutta, and Sujata Tarafdar

Nonconservative kinetic exchange model of opinion dynamics with randomness and bounded confidence *(7 pages)* 016115
Parongama Sen

Epidemics in networks with nodal self-infection and the epidemic threshold *(10 pages)* 016116
Piet Van Mieghem and Eric Cator

Chaos and pattern formation

Analysis of interface conversion processes of ballistic and diffusive motion in driven superlattices *(10 pages)* 016201
Thomas Wulf, Christoph Petri, Benno Liebchen, and Peter Schmelcher

Cluster and group synchronization in delay-coupled networks *(10 pages)* 016202
Thomas Dahms, Judith Lehnert, and Eckehard Schöll

Pulsed chaos synchronization in networks with adaptive couplings *(8 pages)* 016203
Marco Winkler, Sebastian Butsch, and Wolfgang Kinzel

Dynamics of strain bifurcations in a magnetostrictive ribbon *(5 pages)* 016204
Ritupan Sarmah and G. Ananthakrishna

Chaotic phase synchronization in bursting-neuron models driven by a weak periodic force *(11 pages)* 016205
Hiroyasu Ando, Hiromichi Suetani, Jürgen Kurths, and Kazuyuki Aihara

Directed transport in a classical lattice with a high-frequency driving *(6 pages)* 016206
A. P. Itin and A. I. Neishtadt

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Wave systems with direct processes and localized losses or gains: The nonunitary Poisson kernel *(4 pages)* 016207
A. M. Martínez-Argüello, R. A. Méndez-Sánchez, and M. Martínez-Mares

Electric-field-sustained spiral waves in subexcitable media *(5 pages)* 016208
Mei-chun Cai, Jun-ting Pan, and Hong Zhang

Vibrational resonance induced by transition of phase-locking modes in excitable systems *(7 pages)* 016209
Lijian Yang, Wangheng Liu, Ming Yi, Canjun Wang, Qiaomu Zhu, Xuan Zhan, and Ya Jia

Tunneling phenomena in the open elliptic quantum billiard *(9 pages)* 016210
Hipolito Garcia-Gracia and Julio C. Gutiérrez-Vega

Phase synchronization of bursting neurons in clustered small-world networks *(12 pages)* 016211
C. A. S. Batista, E. L. Lameu, A. M. Batista, S. R. Lopes, T. Pereira, G. Zamora-López, J. Kurths, and R. L. Viana

Transition to complete synchronization and global intermittent synchronization in an array of time-delay systems *(7 pages)* 016212
R. Suresh, D. V. Senthilkumar, M. Lakshmanan, and J. Kurths

Parameter estimation through ignorance *(8 pages)* 016213
Hailiang Du and Leonard A. Smith

Quantum signatures of an oscillatory instability in the Bose-Hubbard trimer *(13 pages)* 016214
Peter Jason, Magnus Johansson, and Katarina Kirr

Finding weak directional coupling in multiscale time series *(6 pages)* 016215
A. R. Alizad-Rahvar and M. Ardakani

Anomalous transport induced by nonhyperbolicity *(5 pages)* 016216
S. R. Lopes, J. D. Szezech, Jr., R. F. Pereira, A. A. Bertolazzo, and R. L. Viana

Controlling chaos in wave-particle interactions *(7 pages)* 016217
M. C. de Sousa, I. L. Caldas, F. B. Rizzato, R. Pakter, and F. M. Steffens

Hopf bifurcation to square-wave switching in mutually coupled semiconductor lasers *(7 pages)* 016218
M. Sciamanna, M. Virte, C. Masoller, and A. Gavrielides

Fluid dynamics

Thermomagnetic convective flows in a vertical layer of ferrocolloid: Perturbation energy analysis and experimental study *(15 pages)* 016301
Sergey A. Suslov, Alexandra A. Bozhko, Alexander S. Sidorov, and Gennady F. Putin

Analytical modeling for heat transfer in sheared flows of nanofluids *(13 pages)* 016302
Claudio Ferrari, Badr Kaoui, Victor S. L'vov, Itamar Procaccia, Oleksii Rudenko, J. H. M. ten Thije Boonkkamp, and Federico Toschi

Coarsening dynamics of dewetting nanodroplets on chemically patterned substrates *(14 pages)* 016303
M. Asgari and A. Moosavi

Propulsive performance of a body with a traveling-wave surface *(5 pages)* 016304
Fang-Bao Tian, Xi-Yun Lu, and Haoxiang Luo

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Vacuum formation behind the expansion wave in a piston motion problem *(13 pages)* 016305
Satoshi Taguchi and Shigeru Takata

Anomalous dynamics of capillary rise in porous media *(6 pages)* 016306
Yulii D. Shikhmurzaev and James E. Sprittles

Fluid mechanics in fluids at rest *(20 pages)* 016307
Howard Brenner

Optimal energy-utilization ratio for long-distance cruising of a model fish *(6 pages)* 016308
Geng Liu, Yong-Liang Yu, and Bing-Gang Tong

Vortex merger and topological changes in two-dimensional turbulence *(20 pages)* 016309
Fayeza Al Sulti and Koji Ohkitani

Simulations of the kinematic dynamo onset of spherical Couette flows with smooth and rough boundaries *(7 pages)* 016310
K. Finke and A. Tilgner

Experimental study of spatiotemporally localized surface gravity water waves *(7 pages)* 016311
A. Chabchoub, N. Akhmediev, and N. P. Hoffmann

Instabilities in the Rayleigh-Bénard-Eckart problem *(11 pages)* 016312
H. Ben Hadid, W. Dridi, V. Botton, B. Moudjed, and D. Henry

Breakdown of chiral symmetry during saturation of the Tayler instability *(8 pages)* 016313
Alfio Bonanno, Axel Brandenburg, Fabio Del Sordo, and Dhrubaditya Mitra

Role of surface shape on boundary slip and velocity defect *(4 pages)* 016314
Ali Dinler, Robert W. Barber, David R. Emerson, Stefan K. Stefanov, and Kamil Orucoglu

Nonperturbative renormalization group study of the stochastic Navier-Stokes equation *(16 pages)* 016315
Carlos Mejía-Monasterio and Paolo Muratore-Ginanneschi

Temperature and intensity of sonoluminescence radiation in sulfuric acid *(6 pages)* 016316
A. Moshaii, M. A. Hoseini, S. Gharibzadeh, and A. Tavakoli-Anaraki

Horizontal flow and capillarity-driven redistribution in porous media *(13 pages)* 016317
F. Doster, O. Hönig, and R. Hilfer

Ion-conserving Poisson-Boltzmann theory *(5 pages)* 016318
Hideyuki Sugioka

Role of rough surface topography on gas slip flow in microchannels *(8 pages)* 016319
Chengbin Zhang, Yongping Chen, Zilong Deng, and Mingheng Shi

Upscaling energy concentration in multifrequency single-bubble sonoluminescence with strongly degassed sulfuric acid *(6 pages)* 016320
Damián Dellavale, Ludmila Rechiman, Juan Manuel Rosselló, and Fabián Bonetto

Spatially uniform microflows induced by thermoviscous expansion along a traveling temperature wave: Analogies with electro-osmotic transport *(9 pages)* 016321
Debashis Pal and Suman Chakraborty

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Hot spots in density fingering of exothermic autocatalytic chemical fronts *(9 pages)* 016322
T. Gérard, T. Tóth, P. Grosfils, D. Horváth, A. De Wit, and A. Tóth

Thermalization and free decay in surface quasigeostrophic flows *(11 pages)* 016323
Tomas Teitelbaum and Pablo D. Mininni

Ferrohydrodynamic evaluation of rotational viscosity and relaxation in certain ferrofluids *(8 pages)* 016324
Rajesh Patel

Enhanced and reduced heat transport in turbulent thermal convection with polymer additives *(13 pages)* 016325
Ping Wei (韦萍), Rui Ni (倪睿), and Ke-Qing Xia (夏克青)

Plasma physics

Nonviscous motion of a slow particle in a dust crystal under microgravity conditions *(7 pages)* 016401
D. I. Zhukhovitskii, V. E. Fortov, V. I. Molotkov, A. M. Lipaev, V. N. Naumkin, H. M. Thomas, A. V. Ivlev, M. Schwabe, and G. E. Morfill

Magnetic moment nonconservation in magnetohydrodynamic turbulence models *(13 pages)* 016402
S. Dalena, A. Greco, A. F. Rappazzo, R. L. Mace, and W. H. Matthaeus

Stimulated scattering of electromagnetic waves carrying orbital angular momentum in quantum plasmas *(5 pages)* 016403
P. K. Shukla, B. Eliasson, and L. Stenflo

Dimensional transitions in small Yukawa clusters *(8 pages)* 016404
A. Radzvilavičius, O. Rancova, and E. Anisimovas

Transient slowing down relaxation dynamics of the supercooled dusty plasma liquid after quenching *(6 pages)* . . . 016405
Yen-Shuo Su, Chong-Wai Io, and Lin I

Electron-ion energy partition when a charged particle slows in a plasma: Results *(5 pages)* 016406
Lowell S. Brown, Dean L. Preston, and Robert L. Singleton Jr.

Electron-ion energy partition when a charged particle slows in a plasma: Theory *(22 pages)* 016407
Lowell S. Brown, Dean L. Preston, and Robert L. Singleton Jr.

Breaking of upper hybrid oscillations in the presence of an inhomogeneous magnetic field *(6 pages)* 016408
Chandan Maity, Nikhil Chakrabarti, and Sudip Sengupta

Effects of nonthermal ions and polarization force on dust-acoustic waves in a density-varying dusty plasma *(4 pages)* 016409
M. Asaduzzaman and A. A. Mamun

Residual Bernstein-Greene-Kruskal-like waves after one-dimensional electron wave breaking in a cold plasma *(6 pages)* 016410
Prabal Singh Verma, Sudip Sengupta, and Predhiman Kaw

Flow shear stabilization of rotating plasmas due to the Coriolis effect *(8 pages)* 016411
J. W. Haverkort and H. J. de Blank

Classical physics

Negative-order Korteweg–de Vries equations *(20 pages)* 016601
Zhijun Qiao and Engui Fan

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Mathieu function solutions for photoacoustic waves in sinusoidal one-dimensional structures *(9 pages)* 016602
Binbin Wu and Gerald J. Diebold

Computational physics

Matrix algorithm for solving Schrödinger equations with position-dependent mass or complex optical potentials *(9 pages)* 016701
Johann Förster, Alejandro Saenz, and Ulli Wolff

Scarring of Dirac fermions in chaotic billiards *(8 pages)* 016702
Xuan Ni, Liang Huang, Ying-Cheng Lai, and Celso Grebogi

Grand-canonical Monte Carlo method for Donnan equilibria *(5 pages)* 016703
S. A. Barr and A. Z. Panagiotopoulos

Method to solve integral equations of the first kind with an approximate input *(11 pages)* 016704
Victor D. Efros

Effect of the forcing term in the multiple-relaxation-time lattice Boltzmann equation on the shear stress or the strain rate tensor *(11 pages)* 016705
Zhenhua Chai and T. S. Zhao

Radiative or neutron transport modeling using a lattice Boltzmann equation framework *(7 pages)* 016706
H. Bindra and D. V. Patil

Box-covering algorithm for fractal dimension of complex networks *(5 pages)* 016707
Christian M. Schneider, Tobias A. Kesselring, José S. Andrade Jr., and Hans J. Herrmann

High-order thermal lattice Boltzmann models derived by means of Gauss quadrature in the spherical coordinate system *(27 pages)* 016708
Victor Eugen Ambruş and Victor Sofonea

Forcing scheme in pseudopotential lattice Boltzmann model for multiphase flows *(9 pages)* 016709
Q. Li (李庆), K. H. Luo, and X. J. Li (李秀娟)

Self-learning metabasin escape algorithm for supercooled liquids *(8 pages)* 016710
Penghui Cao, Minghai Li, Ravi J. Heugle, Harold S. Park, and Xi Lin

Broadband computation of the scattering coefficients of infinite arbitrary cylinders *(5 pages)* 016711
Cédric Blanchard, Brahim Guizal, and Didier Felbacq

Microscale boundary conditions of the lattice Boltzmann equation method for simulating microtube flows *(5 pages)* 016712
Lin Zheng, Zhaoli Guo, and Baochang Shi

BRIEF REPORTS

Classical physics

Modulational instability of a modified Gross-Pitaevskii equation with higher-order nonlinearity *(4 pages)* 017601
Xiu-Ying Qi and Ju-Kui Xue

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 86, NUMBER 1** **JULY 2012**

Computational physics

Addendum to "Event-chain Monte Carlo algorithms for hard-sphere systems" *(3 pages)* 017701
Etienne P. Bernard and Werner Krauth

ERRATA

Publisher's Note: Coarsening of elastically stressed, strongly anisotropic driven thin films
[Phys. Rev. E **85**, 061605 (2012)] *(1 page)* . . . . . 019901(E)
Peng Zhou, Steven Wise, Xiangrong Li, and John Lowengrub

Erratum: Impact of site dilution and agent diffusion on the critical behavior of the majority-vote model
[Phys. Rev. E **85**, 041147 (2012)] *(2 pages)* . . . . . 019902(E)
Nuno Crokidakis and Paulo Murilo Castro de Oliveira

Publisher's Note: Redefining electrical double layer thickness in narrow confinements:
Effect of solvent polarization [Phys. Rev. E **85**, 051508 (2012)] *(1 page)* . . . . . 019903(E)
Siddhartha Das, Suman Chakraborty, and Sushanta K. Mitra

Erratum: Nonperturbative renormalization group for the Kardar-Parisi-Zhang equation:
General framework and first applications [Phys. Rev. E **84**, 061128 (2011)] *(2 pages)* . . . . . 019904(E)
Léonie Canet, Hugues Chaté, Bertrand Delamotte, and Nicolás Wschebor