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 1 *CONTENTS* **JULY 2008**

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

RAPID COMMUNICATIONS

Interdisciplinary physics

Maximum likelihood: Extracting unbiased information from complex networks *(4 pages)* . . . . . 015101(R)
Diego Garlaschelli and Maria I. Loffredo

Chaos and pattern formation

Observation-based control of rare intense events in the complex Ginzburg-Landau equation *(4 pages)* . . . . . 015201(R)
Lin Du, Qingfei Chen, Ying-Cheng Lai, and Wei Xu

Geometric phases and quantum phase transitions in open systems *(4 pages)* . . . . . 015202(R)
Alexander I. Nesterov and S. G. Ovchinnikov

Fluid dynamics

Slip coefficient in nanoscale pore flow *(4 pages)* . . . . . 015301(R)
Vlad P. Sokhan and Nicholas Quirke

Reduction of velocity fluctuations in a turbulent flow of gallium by an external magnetic field *(4 pages)* . . . . . 015302(R)
Michael Berhanu, Basile Gallet, Nicolas Mordant, and Stéphan Fauve

Limitations and failures of the Layzer model for hydrodynamic instabilities *(4 pages)* . . . . . 015303(R)
Karnig O. Mikaelian

Bifurcation of standing waves into a pair of oppositely traveling waves with oscillating amplitudes caused by a three-mode interaction *(4 pages)* . . . . . 015304(R)
A. Pinter, M. Lücke, and Ch. Hoffmann

Computational physics

Coherent structures in dissipative particle dynamics simulations of the transition to turbulence in compressible shear flows *(4 pages)* . . . . . 015701(R)
Jan-Willem van de Meent, Alexander Morozov, Ellák Somfai, Eric Sultan, and Wim van Saarloos

Copyright 2008 by The American Physical Society

(Continued)

1539-3755(200807)78:1:2;1-3

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 1 JULY 2008

ARTICLES

Interdisciplinary physics

Path integral approach to closed-form option pricing formulas with applications to stochastic volatility and interest rate models *(8 pages)* 016101
D. Lemmens, M. Wouters, J. Tempere, and S. Foulon

Breakup of propagating waves through the development of a transient unexcitable regime *(6 pages)* 016102
Vince Ruisi and Jichang Wang

Coevolutionary networks with homophily and heterophily *(7 pages)* 016103
Daichi Kimura and Yoshinori Hayakawa

Coevolutionary dynamics of opinions and networks: From diversity to uniformity *(4 pages)* 016104
Feng Fu and Long Wang

Enhancing synchronizability of weighted dynamical networks using betweenness centrality *(5 pages)* 016105
Mahdi Jalili, Ali Ajdari Rad, and Martin Hasler

Relaxation of synchronization on complex networks *(7 pages)* 016106
Seung-Woo Son, Hawoong Jeong, and Hyunsuk Hong

Evolving complex networks with conserved clique distributions *(6 pages)* 016107
Gregor Kaczor and Claudius Gros

Biclique communities *(9 pages)* 016108
Sune Lehmann, Martin Schwartz, and Lars Kai Hansen

Path-independent integrals to identify localized plastic events in two dimensions *(6 pages)* 016109
Mehdi Talamali, Viljo Petäjä, Damien Vandembroucq, and Stéphane Roux

Socioeconomic networks with long-range interactions *(9 pages)* 016110
Rui Carvalho and Giulia Iori

Bosonic reaction-diffusion processes on scale-free networks *(14 pages)* 016111
Andrea Baronchelli, Michele Catanzaro, and Romualdo Pastor-Satorras

Transient damage spreading and anomalous scaling in mortar crack surfaces *(5 pages)* 016112
Stéphane Morel, Daniel Bonamy, Laurent Ponson, and Elisabeth Bouchaud

Community detection in complex networks by dynamical simplex evolution *(7 pages)* 016113
V. Gudkov, V. Montealegre, S. Nussinov, and Z. Nussinov

Entropies of complex networks with hierarchically constrained topologies *(11 pages)* 016114
Ginestra Bianconi, Anthony C. C. Coolen, and Conrad J. Perez Vicente

Community detection by signaling on complex networks *(8 pages)* 016115
Yanqing Hu, Menghui Li, Peng Zhang, Ying Fan, and Zengru Di

Chaos and pattern formation

Goos-Hänchen shift and localization of optical modes in deformed microcavities *(8 pages)* 016201
Julia Unterhinninghofen, Jan Wiersig, and Martina Hentschel

Sharp versus smooth synchronization transition of locally coupled oscillators *(4 pages)* 016202
M. Ciszak, A. Montina, and F. T. Arecchi

Partially locked states in coupled oscillators due to inhomogeneous coupling *(6 pages)* 016203
Tae-Wook Ko and G. Bard Ermentrout

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 1 JULY 2008

Irregular many-body dynamics of spinor Bose-Einstein condensates in an optical lattice *(5 pages)* 016204
Guishu Chong and F. Borondo

Avoiding escapes in open dynamical systems using phase control *(8 pages)* 016205
Jesús M. Seoane, Samuel Zambrano, Stefano Euzzor, R. Meucci, F. T. Arecchi, and Miguel A.F. Sanjuán

Saffman-Taylor streamers: Mutual finger interaction in spark formation *(6 pages)* 016206
Alejandro Luque, Fabian Brau, and Ute Ebert

Hysteresis and multiple pulsing in a semiconductor disk laser with a saturable absorber *(5 pages)* 016207
Esa J. Saarinen, Jari Lyytikäinen, and Oleg G. Okhotnikov

Effect of multiple time delays on intensity fluctuation dynamics in fiber ring lasers *(19 pages)* 016208
Anthony L. Franz, Rajarshi Roy, Leah B. Shaw, and Ira B. Schwartz

Structure of characteristic Lyapunov vectors in spatiotemporal chaos *(9 pages)* 016209
Diego Pazó, Ivan G. Szendro, Juan M. López, and Miguel A. Rodríguez

Dynamics of semiconductor lasers with external multicavities *(7 pages)* 016210
Alexander Többens and Ulrich Parlitz

Continuous wavelet transform in the analysis of burst synchronization in a coupled laser system *(7 pages)* 016211
A. Bergner, R. Meucci, K. Al Naimee, M. C. Romano, M. Thiel, J. Kurths, and F. T. Arecchi

Self-localized structures in vertical-cavity surface-emitting lasers with external feedback *(7 pages)* 016212
P. V. Paulau, D. Gomila, T. Ackemann, N. A. Loiko, and W. J. Firth

Adaptive steady-state stabilization for nonlinear dynamical systems *(6 pages)* 016213
David J. Braun

Electric-field-induced wave groupings of spiral waves with oscillatory dispersion relation *(6 pages)* 016214
Jinming Luo and Meng Zhan

Wave chaos in rapidly rotating stars *(4 pages)* 016215
François Lignières and Bertrand Georgeot

Fluid dynamics

Analytical theory of forced rotating sheared turbulence: The perpendicular case *(17 pages)* 016301
Nicolas Leprovost and Eun-jin Kim

Oscillation-induced sand ripples in a circular geometry *(5 pages)* 016302
Germain Rousseaux, Joachim Kruithof, Patrice Jenffer, and José Eduardo Wesfreid

Identification of an average temperature and a dynamical pressure in a multitemperature mixture of fluids *(7 pages)* 016303
Henri Gouin and Tommaso Ruggeri

Resonant interactions of nonlinear water waves in a finite basin *(9 pages)* 016304
Elena Kartashova, Sergey Nazarenko, and Oleksii Rudenko

Simulations of liquid nanocylinder breakup with dissipative particle dynamics *(11 pages)* 016305
A. Tiwari, H. Reddy, S. Mukhopadhyay, and J. Abraham

Radial viscous fingering in miscible Hele-Shaw flows: A numerical study *(15 pages)* 016306
Ching-Yao Chen, C.-W. Huang, Hermes Gadêlha, and José A. Miranda

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 1 JULY 2008

Stability of a jet in confined pressure-driven biphasic flows at low Reynolds number in various geometries *(13 pages)* 016307
Pierre Guillot, Annie Colin, and Armand Ajdari

Tortuosity of unsaturated porous fractal materials *(11 pages)* 016308
S. W. Coleman and J. C. Vassilicos

Transition between an exothermic chemical wave front and a generic flame *(6 pages)* 016309
G. Dumazer, M. Leda, B. Nowakowski, and A. Lemarchand

Dispersion of heavy particle sets in isotropic turbulence using kinematic simulation *(17 pages)* 016310
A. Abou El-Azm Aly and F. Nicolleau

Non-Bragg resonance of surface water waves in a trough with periodic walls *(6 pages)* 016311
Yumeng Xiao, Zhiyong Tao, Weiyu He, and Xinlong Wang

Non-self-similar, partial, and robust collapse of four point vortices on a sphere *(8 pages)* 016312
Takashi Sakajo

Anomalous scaling and intermittency in three-dimensional synthetic turbulence *(18 pages)* 016313
Carlos Rosales and Charles Meneveau

Breakup of a supported drop of a viscous conducting liquid in a uniform electric field *(11 pages)* 016314
F. J. Higuera

Sivashinsky equation for corrugated flames in the large-wrinkle limit *(11 pages)* 016315
Guy Joulin and Bruno Denet

Nonlinear chemoconvection in the methylene-blue–glucose system: Two-dimensional shallow layers *(15 pages)* 016316
A. J. Pons, O. Batiste, and M. A. Bees

Onset of chaotic advection in open flows *(5 pages)* 016317
J. J. Benjamin Biemond, Alessandro P. S. de Moura, György Károlyi, Celso Grebogi, and Henk Nijmeijer

Plasma physics

Patterns of sound radiation behind pointlike charged obstacles in plasma flows *(9 pages)* 016401
P. Guio, W. J. Miloch, H. L. Pécseli, and J. Trulsen

Evolution of anisotropic turbulence in nonlinear magnetic reconnection *(6 pages)* 016402
M. Onofri and F. Malara

Dynamics of a dense laboratory plasma jet investigated using soft x-ray laser interferometry *(9 pages)* 016403
Jonathan Grava, Michael A. Purvis, Jorge Filevich, Mario C. Marconi, Jorge J. Rocca, James Dunn, Stephen J. Moon, and Vyacheslav N. Shlyaptsev

Unphysical kinetic effects in particle-in-cell modeling of laser wakefield accelerators *(17 pages)* 016404
Estelle Cormier-Michel, B. A. Shadwick, C. G. R. Geddes, E. Esarey, C. B. Schroeder, and W. P. Leemans

Formation of a cylindrical dust void in a plasma crystal due to a potential bump *(5 pages)* 016405
Yu Zhang, Xiaogang Wang, and Jinyuan Liu

Neoclassical simulation of tokamak plasmas using the continuum gyrokinetic code TEMPEST *(11 pages)* 016406
X. Q. Xu

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 1 JULY 2008

Formation and relaxation of rovibrationally excited H_2 molecules due to plasma-surface interaction *(8 pages)* 016407
O. Gabriel, D. C. Schram, and R. Engeln

Classical physics

Superluminal tunneling of microwaves in smoothly varying transmission lines *(6 pages)* 016601
A. B. Shvartsburg, M. Marklund, G. Brodin, and L. Stenflo

Experimental study of acoustical memory in lithium niobate *(6 pages)* 016602
Dao Zhou, Xiaozhou Liu, and Xiufen Gong

Nonlinear Schrödinger equation with random Gaussian input: Distribution of inverse scattering data and eigenvalues *(7 pages)* 016603
Pavlos Kazakopoulos and Aris L. Moustakas

Transmission-line analysis of ε-near-zero–filled narrow channels *(10 pages)* 016604
Andrea Alù, Mário G. Silveirinha, and Nader Engheta

Negative refractive index of metallic cross-I-shaped pairs: Origin and evolution with pair gap width *(5 pages)* 016605
Y. G. Ma, X. C. Wang, and C. K. Ong

Modulated waves and pattern formation in coupled discrete nonlinear *LC* transmission lines *(13 pages)* 016606
Fabien II Ndzana, Alidou Mohamadou, Timoléon C. Kofané, and Lars Q. English

Complex flow and reflection of evanescent waves from a nanometer-sized hole in a cylindrical waveguide *(15 pages)* 016607
T. I. Kuznetsova and V. S. Lebedev

Computational physics

Generalized local equilibrium in the cascaded lattice Boltzmann method *(5 pages)* 016701
Pietro Asinari

Analytic solution for a higher-order lattice Boltzmann method: Slip velocity and Knudsen layer *(6 pages)* 016702
Seung Hyun Kim and Heinz Pitsch

Comparison of phase-field models for surface diffusion *(17 pages)* 016703
Clemens Gugenberger, Robert Spatschek, and Klaus Kassner

Lattice Boltzmann method for simulation of compressible flows on standard lattices *(7 pages)* 016704
Nikolaos I. Prasianakis and Iliya V. Karlin

Hydrodynamics beyond Navier-Stokes: The slip flow model *(14 pages)* 016705
Wahyu P. Yudistiawan, Santosh Ansumali, and Iliya V. Karlin

Transport coefficients of off-lattice mesoscale-hydrodynamics simulation techniques *(12 pages)* 016706
Hiroshi Noguchi and Gerhard Gompper

BRIEF REPORTS

Interdisciplinary physics

Enhancement of cooperation in highly clustered scale-free networks *(4 pages)* 017101
Salvatore Assenza, Jesús Gómez-Gardeñes, and Vito Latora

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 78, NUMBER 1 JULY 2008

Chaos and pattern formation

Identifying system structure from controlled steady-state responses *(4 pages)* 017201
Dongchuan Yu and Fang Liu

Probing remnants of invariants to mediate energy exchange in highly chaotic many-dimensional systems *(4 pages)* 017202
Hiroshi Teramoto and Tamiki Komatsuzaki

Experimental observation of ragged synchronizability *(4 pages)* 017203
P. Perlikowski, B. Jagiello, A. Stefanski, and T. Kapitaniak

Fluid dynamics

Modeling shock waves in an ideal gas: Combining the Burnett approximation and Holian's conjecture *(4 pages)* 017301
Yi-guang He, Xiu-zhang Tang, and Yi-kang Pu

Quantitative modeling of bubble competition in Richtmyer-Meshkov instability *(4 pages)* 017302
Sung-Ik Sohn

Wave-number dependence of the transitions between traveling and standing vortex waves and their mixed states in the Taylor-Couette system *(4 pages)* 017303
A. Pinter, M. Lücke, and Ch. Hoffmann

Computational physics

Two-dimensional oscillator in time-dependent fields: Comparison of some exact and approximate calculations *(4 pages)* 017701
O. Chuluunbaatar, A. A. Gusev, S. I. Vinitsky, V. L. Derbov, A. Galtbayar, and T. Zhanlav

Wall boundary conditions in the lattice Boltzmann equation method for nonideal gases *(4 pages)* 017702
Taehun Lee and Lin Liu

ERRATA

Publisher's Note: Entangled dynamics of a stiff polymer [Phys. Rev. E **77**, 060904 (2008)] *(1 page)* . . . . . 019901(E)
Felix Höfling, Tobias Munk, Erwin Frey, and Thomas Franosch

Erratum: Coexistence of amplitude and frequency modulations in intracellular calcium dynamics [Phys. Rev. E **77**, 030903(R) (2008)] *(1 page)* . . . . . 019902(E)
Maurizio De Pittà, Vladislav Volman, Herbert Levine, Giovanni Pioggia, Danilo De Rossi, and Eshel Ben-Jacob

Erratum: Easily adaptable complexity measure for finite time series [Phys. Rev. E **77**, 066215 (2008)] *(1 page)* . . . . . 019903(E)
Da-Guan Ke (柯大观) and Qin-Ye Tong (童勤业)

Erratum: Global entangling properties of the coupled kicked tops [Phys. Rev. E **70**, 066216 (2004)] *(1 page)* . . . . . 019904(E)
Rafał Demkowicz-Dobrzański and Marek Kuś

Publisher's Note: Patterns of sound radiation behind pointlike charged obstacles in plasma flows [Phys. Rev. E **78**, 016401 (2008)] *(1 page)* . . . . . 019905(E)
P. Guio, W. J. Miloch, H. L. Pécseli, and J. Trulsen