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 79, NUMBER 1 *CONTENTS* **JANUARY 2009**

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

RAPID COMMUNICATIONS

Interdisciplinary physics

Congestion phenomena on complex networks *(4 pages)* . . . . . 015101(R)
Daniele De Martino, Luca Dall'Asta, Ginestra Bianconi, and Matteo Marsili

Chaos and pattern formation

Time-averaged properties of unstable periodic orbits and chaotic orbits in ordinary differential equation systems *(4 pages)* . . . . . 015201(R)
Yoshitaka Saiki and Michio Yamada

Synchronization of modulated traveling baroclinic waves in a periodically forced, rotating fluid annulus *(4 pages)* . . . . . 015202(R)
F. J. R. Eccles, P. L. Read, A. A. Castrejón-Pita, and T. W. N. Haine

Fluid dynamics

Evolution of the acceleration field and a reformulation of the sweeping decorrelation hypothesis in two-dimensional turbulence *(4 pages)* . . . . . 015301(R)
F. Schwander, E. Hascoët, and J. C. Vassilicos

Plasma physics

Laser-driven inertial ion focusing *(4 pages)* . . . . . 015401(R)
H. B. Zhuo, Wei Yu, M. Y. Yu, H. Xu, X. Wang, B. F. Shen, Z. M. Sheng, and J. Zhang

Classical physics

Integrable nonautonomous nonlinear Schrödinger equations are equivalent to the standard autonomous equation *(4 pages)* . . . . . 015601(R)
Anjan Kundu

ARTICLES

Interdisciplinary physics

Implications of an inverse branching aftershock sequence model *(8 pages)* 016101
D. L. Turcotte, S. G. Abaimov, I. Dobson, and J. B. Rundle

Copyright 2009 by The American Physical Society

(Continued)

1539-3755(200901)79:1:2;1-H

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 79, NUMBER 1** **JANUARY 2009**

Brownian dynamics simulations in hydrogels using an adaptive time-stepping algorithm *(6 pages)* 016102
Mats Kvarnström, Aron Westergård, Niklas Lorén, and Magnus Nydén

Multifactor analysis of multiscaling in volatility return intervals *(6 pages)* 016103
Fengzhong Wang, Kazuko Yamasaki, Shlomo Havlin, and H. Eugene Stanley

Free-electron gas in the Apollonian network: Multifractal energy spectrum and its thermodynamic fingerprints *(7 pages)* 016104
I. N. de Oliveira, F. A. B. F. de Moura, M. L. Lyra, J. S. Andrade, Jr., and E. L. Albuquerque

Higher-order large-time asymptotics for a reaction of the form $nA+mB \rightarrow C$ *(10 pages)* 016105
P. M. J. Trevelyan

Cooperation in spatial prisoner's dilemma with two types of players for increasing number of neighbors *(4 pages)* 016106
György Szabó and Attila Szolnoki

Evolution of cooperation through the heterogeneity of random networks *(8 pages)* 016107
Stephen Devlin and Thomas Treloar

Influence of dynamical condensation on epidemic spreading in scale-free networks *(6 pages)* 016108
Ming Tang, Li Liu, and Zonghua Liu

Broad lifetime distributions for ordering dynamics in complex networks *(8 pages)* 016109
R. Toivonen, X. Castelló, V. M. Eguíluz, J. Saramäki, K. Kaski, and M. San Miguel

Rate-dependent shear bands in a shear-transformation-zone model of amorphous solids *(17 pages)* 016110
M. L. Manning, E. G. Daub, J. S. Langer, and J. M. Carlson

Impact of travel patterns on epidemic dynamics in heterogeneous spatial metapopulation networks *(5 pages)* 016111
Shunjiang Ni and Wenguo Weng

Perturbation analysis of the Kuramoto phase-diffusion equation subject to quenched frequency disorder *(9 pages)* 016112
Ralf Tönjes and Bernd Blasius

Predictive protocol of flocks with small-world connection pattern *(11 pages)* 016113
Hai-Tao Zhang, Michael Z. Q. Chen, and Tao Zhou

Role of second trials in cascades of information over networks *(7 pages)* 016114
C. de Kerchove, G. Krings, R. Lambiotte, P. Van Dooren, and V. D. Blondel

Superlinear scaling for innovation in cities *(5 pages)* 016115
Samuel Arbesman, Jon M. Kleinberg, and Steven H. Strogatz

Chaos and pattern formation

Using synchronism of chaos for adaptive learning of time-evolving network topology *(10 pages)* 016201
Francesco Sorrentino and Edward Ott

Synchronization of semiconductor lasers with coexisting attractors *(8 pages)* 016202
F. R. Ruiz-Oliveras and A. N. Pisarchik

Density and correlation functions of vortex and saddle points in open billiard systems *(12 pages)* 016203
R. Höhmann, U. Kuhl, H.-J. Stöckmann, J. D. Urbina, and M. R. Dennis

Poincaré recurrences and transient chaos in systems with leaks *(12 pages)* 016204
Eduardo G. Altmann and Tamás Tél

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 79, NUMBER 1** **JANUARY 2009**

Determining role of Krein signature for three-dimensional Arnold tongues of oscillatory dynamos *(6 pages)* 016205
Oleg N. Kirillov, Uwe Günther, and Frank Stefani

Nonlinear dynamics of finite perturbation: Collapse and revival of spatial patterns *(8 pages)* 016206
Pushpita Ghosh, Shrabani Sen, and Deb Shankar Ray

Chaotic transport in deterministic sine-Gordon soliton ratchets *(10 pages)* 016207
P. Müller, F. G. Mertens, and A. R. Bishop

Scattering a pulse from a chaotic cavity: Transitioning from algebraic to exponential decay *(11 pages)* 016208
James A. Hart, Thomas M. Antonsen, Jr., and Edward Ott

Bifurcation analysis of a periodically forced relaxation oscillator: Differential model versus phase-resetting map *(20 pages)* 016209
H. Croisier, M. R. Guevara, and P. C. Dauby

Dynamics of blinking vortices *(9 pages)* 016210
Anton Daitche and Tamás Tél

Phase-response curves of coupled oscillators *(6 pages)* 016211
Tae-Wook Ko and G. Bard Ermentrout

Defect-mediated turbulence in the Belousov-Zhabotinsky reaction *(4 pages)* 016212
Chun Qiao, Hongli Wang, and Qi Ouyang

Phase-space approach to directional switching in semiconductor ring lasers *(9 pages)* 016213
L. Gelens, G. Van der Sande, S. Beri, and J. Danckaert

Robust entrainment phenomena of oscillations by delay time in the photosensitive Oregonator model *(6 pages)* 016214
Wei Bao, Zan Li, Lu-Qun Zhou, and Zhuo Gao

Distribution of resonances in the quantum open baker map *(5 pages)* 016215
Juan M. Pedrosa, Gabriel G. Carlo, Diego A. Wisniacki, and Leonardo Ermann

Convective instabilities in horizontally propagating vertical chemical fronts *(4 pages)* 016216
Gábor Schuszter, Tamara Tóth, Dezső Horváth, and Ágota Tóth

Control of wave packet spreading in nonlinear finite disordered lattices *(6 pages)* 016217
Rodrigo A. Vicencio and Sergej Flach

Fluid dynamics

Analytical solution for inviscid flow inside an evaporating sessile drop *(10 pages)* 016301
Hassan Masoud and James D. Felske

Numerical study of large-scale vorticity generation in shear-flow turbulence *(8 pages)* 016302
Petri J. Käpylä, Dhrubaditya Mitra, and Axel Brandenburg

Hydrodynamics of superfluids confined in blocked rings and wedges *(13 pages)* 016303
Chandan Dasgupta and Oriol T. Valls

Experiment on a confined electrically driven vortex pair *(14 pages)* 016304
R. Klein, A. Pothérat, and A. Alferenok

Matrix exponential-based closures for the turbulent subgrid-scale stress tensor *(9 pages)* 016305
Yi Li, Laurent Chevillard, Gregory Eyink, and Charles Meneveau

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 79, NUMBER 1** **JANUARY 2009**

Dynamics of sonoluminescing bubbles within a liquid hammer device *(8 pages)* 016306
Raúl Urteaga, Pablo Luis García-Martínez, and Fabián J. Bonetto

Bubble-bubble interaction: A potential source of cavitation noise *(7 pages)* 016307
Masato Ida

Miscible viscous fingering induced by a simple $A+B \rightarrow C$ chemical reaction *(10 pages)* 016308
T. Gérard and A. De Wit

Probability distribution of power fluctuations in turbulence *(5 pages)* 016309
M. M. Bandi, Sergei G. Chumakov, and Colm Connaughton

Plasma physics

Radiative heating of plastic-tamped aluminum foil by x rays from a foam-buffered hohlraum *(6 pages)* 016401
Jiyan Zhang, Jiamin Yang, Yan Xu, Guohong Yang, Yaonan Ding, Jun Yan, Jianmin Yuan, Yongkun Ding, Zhijian Zheng, Yang Zhao, and Zhimin Hu

Alternative ion-ion pair-potential model applied to molecular dynamics simulations of hot and dense plasmas: Al and Fe as examples *(6 pages)* 016402
Yong Hou and Jianmin Yuan

Modeling of surface-wave discharges with cylindrical symmetry *(18 pages)* 016403
L. L. Alves, S. Letout, and C. Boisse-Laporte

Single-particle spectral function for the classical one-component plasma *(11 pages)* 016404
C. Fortmann

Dynamic polarization and energy dissipation for charged particles moving in magnetized two-component plasmas *(7 pages)* 016405
Zhang-Hu Hu, Yuan-Hong Song, and You-Nian Wang

Bulk heating of solid-density plasmas during high-intensity-laser plasma interactions *(5 pages)* 016406
P. M. Nilson, W. Theobald, J. F. Myatt, C. Stoeckl, M. Storm, J. D. Zuegel, R. Betti, D. D. Meyerhofer, and T. C. Sangster

Modeling energy dependence of the inner-shell x-ray emission produced by femtosecond-pulse laser irradiation of xenon clusters *(6 pages)* 016407
Timothy C. Berkelbach, James Colgan, Joseph Abdallah, Jr., Anatoly Ya. Faenov, Tatiana A. Pikuz, Yuji Fukuda, and Koichi Yamakawa

Local-field-correction effects on the electron response functions and on the electrical conductivity in a hydrogen plasma *(8 pages)* 016408
K. Bennadji, M.-M. Gombert, and A. Bendib

Ionization and equation of state of dense xenon at high pressures and high temperatures *(6 pages)* 016409
Q. F. Chen, L. C. Cai, Y. J. Gu, and Y. Gu

Integrability criterion for lowering of ionization potentials and formulation of the solution of the inverse problem of constructing consistent thermodynamic functions of nonideal plasmas *(5 pages)* 016410
Mofreh R. Zaghloul

Equation of state of classical Coulomb plasma mixtures *(6 pages)* 016411
Alexander Y. Potekhin, Gilles Chabrier, and Forrest J. Rogers

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 79, NUMBER 1** **JANUARY 2009**

X-ray emission current scaling experiments for compact single-tungsten-wire arrays at 80-nanosecond implosion times *(15 pages)* 016412
Michael G. Mazarakis, Michael E. Cuneo, William A. Stygar, Henry C. Harjes, Daniel B. Sinars, Brent M. Jones, Christopher Deeney, Eduardo M. Waisman, Thomas J. Nash, Kenneth W. Struve, and Dillon H. McDaniel

Classical physics

Singular solutions of a modified two-component Camassa-Holm equation *(13 pages)* 016601
Darryl D. Holm, Lennon Ó Náraigh, and Cesare Tronci

Near-field probes using double and single negative media *(10 pages)* 016602
Muhammed S. Boybay and Omar M. Ramahi

Ultrashort focused electromagnetic pulses *(5 pages)* 016603
Daniel an der Brügge and Alexander Pukhov

Antisymmetric resonant mode and negative refraction in double-ring resonators under normal-to-plane incidence *(6 pages)* 016604
P. Ding, E. J. Liang, L. Zhang, Q. Zhou, and Y. X. Yuan

Spontaneous symmetry breaking in coupled parametrically driven waveguides *(12 pages)* 016605
Nir Dror and Boris A. Malomed

Controlling soliton excitations in Heisenberg spin chains through the magic angle *(7 pages)* 016606
Jing Lu (卢竞), Lan Zhou (周兰), Le-Man Kuang (匡乐满), and C. P. Sun (孙昌璞)

Computational physics

Lattice Boltzmann model for nonlinear convection-diffusion equations *(13 pages)* 016701
Baochang Shi and Zhaoli Guo

Lattice Boltzmann modeling of multicomponent diffusion in narrow channels *(11 pages)* 016702
Seung Hyun Kim, Heinz Pitsch, and Iain D. Boyd

Counting solutions for the *N*-queens and Latin-square problems by Monte Carlo simulations *(4 pages)* 016703
Cheng Zhang and Jianpeng Ma

Simulation of buoyancy-driven flows in a vertical cylinder using a simple lattice Boltzmann model *(8 pages)* 016704
Sheng Chen, Jonas Tölke, and Manfred Krafczyk

Perturbation theory without diagrams: The polaron case *(16 pages)* 016705
R. Rosenfelder

Validation of multicomponent lattice Boltzmann equation simulations using theoretical calculations of immiscible drop shape *(8 pages)* 016706
I. Halliday, T. J. Spencer, and C. M. Care

Anomalies of liquid water at low temperature due to two types of hydrogen bonds *(4 pages)* 016707
Yusong Tu and Haiping Fang

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 79, NUMBER 1 JANUARY 2009

BRIEF REPORTS

Fluid dynamics

Hot spots revealed by simultaneous experimental measurement of the two-dimensional concentration and temperature fields of an exothermic chemical front during finger-pattern formation *(4 pages)* 017301
P. Grosfils, F. Dubois, C. Yourassowsky, and A. De Wit

Classical physics

Numerical studies of a low-loss and broad-pass-band single-sided-structure left-handed metamaterial *(4 pages)* 017601
Jianhong Lv, Baorong Yan, Minghai Liu, and Xiwei Hu

Computational physics

Interface matching method for solving surface plasmon modes with damping in plasmonic crystals *(4 pages)* 017701
Ruey-Lin Chern

ERRATA

Erratum: Quantum stress in chaotic billiards [Phys. Rev. E **77**, 066209 (2008)] *(1 page)* . . . . . 019901(E)
Karl-Fredrik Berggren, Dmitrii N. Maksimov, Almas F. Sadreev, Ruven Höhmann, Ulrich Kuhl, and Hans-Jürgen Stöckmann

Publisher's Note: Higher-order large-time asymptotics for a reaction of the form $nA+mB\rightarrow C$ [Phys. Rev. E **79**, 016105 (2009)] *(1 page)* . . . . . 019902(E)
P. M. J. Trevelyan

Erratum: Barchan dunes in two dimensions: Experimental tests for minimal models [Phys. Rev. E **78**, 021304 (2008)] *(1 page)* . . . . . 019903(E)
Christopher Groh, Andreas Wierschem, Nuri Aksel, Ingo Rehberg, and Christof A. Kruelle