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 83, NUMBER 2 ***CONTENTS*** **FEBRUARY 2011**

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

RAPID COMMUNICATIONS

Interdisciplinary physics

Synchronization in networks of mobile oscillators *(4 pages)* . . . . . 025101(R)
Naoya Fujiwara, Jürgen Kurths, and Albert Díaz-Guilera

Small but slow world: How network topology and burstiness slow down spreading *(4 pages)* . . . . . 025102(R)
M. Karsai, M. Kivelä, R. K. Pan, K. Kaski, J. Kertész, A.-L. Barabási, and J. Saramäki

Chaos and pattern formation

Scaling properties of weak chaos in nonlinear disordered lattices *(4 pages)* . . . . . 025201(R)
Arkady Pikovsky and Shmuel Fishman

Fluid dynamics

Anomalous scaling for Lagrangian velocity structure functions in fully developed turbulence *(4 pages)* . . . . . 025301(R)
Guo-Wei He

Rotation of a microvalve near conductive electrodes via induced-charge electrophoresis *(4 pages)* . . . . . 025302(R)
Hideyuki Sugioka

ARTICLES

Interdisciplinary physics

Optimal observation time window for forecasting the next earthquake *(5 pages)* 026101
Takahiro Omi, Ido Kanter, and Shigeru Shinomoto

Quarantine-generated phase transition in epidemic spreading *(6 pages)* 026102
C. Lagorio, M. Dickison, F. Vazquez, L. A. Braunstein, P. A. Macri, M. V. Migueles, S. Havlin, and H. E. Stanley

Extracting directed information flow networks: An application to genetics and semantics *(6 pages)* 026103
A. P. Masucci, A. Kalampokis, V. M. Eguíluz, and E. Hernández-García

Mapping the reaction dynamics in Liouville space onto a reaction coordinate space:
A first-principle-based theory *(8 pages)* 026104
Aniket Patra, Alok Samanta, and Swapan K. Ghosh

Copyright 2011 by American Physical Society

(Continued)

1539-3755(201102)83:2:2;1-2

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 83, NUMBER 2** **FEBRUARY 2011**

Mobility enhances cooperation in the presence of decision-making mistakes on complex networks *(6 pages)* 026105
Wenjian Yu

Stress intensity factor of mode-III cracks in thin sheets *(5 pages)* 026106
Yossi Cohen and Itamar Procaccia

Scaling behavior of oscillations arising in delay-coupled optoelectronic oscillators *(8 pages)* 026107
Lucas Illing, Greg Hoth, Lauren Shareshian, and Christopher May

Chaos and pattern formation

Characterization of noisy symbolic time series *(14 pages)* 026201
Christopher W. Kulp and Suzanne Smith

In-flight dissipation as a mechanism to suppress Fermi acceleration *(5 pages)* 026202
Diego F. M. Oliveira and Marko Robnik

Odd-number theorem: Optical feedback control at a subcritical Hopf bifurcation in a semiconductor laser *(7 pages)* 026203
S. Schikora, H-J. Wünsche, and F. Henneberger

Reduced representations of heterogeneous mixed neural networks with synaptic coupling *(12 pages)* 026204
Roxana A. Stefanescu and Viktor K. Jirsa

Scaling of energy spreading in strongly nonlinear disordered lattices *(4 pages)* 026205
Mario Mulansky, Karsten Ahnert, and Arkady Pikovsky

Modifications of the Takens-Ellner algorithm for medium- and high-dimensional signals *(18 pages)* 026206
Krzysztof Piotr Michalak

Excitability in optically injected semiconductor lasers: Contrasting quantum-well- and quantum-dot-based devices *(6 pages)* 026207
B. Kelleher, C. Bonatto, G. Huyet, and S. P. Hegarty

Escape behavior of quantum two-particle systems with Coulomb interactions *(14 pages)* 026208
Tooru Taniguchi and Shin-ichi Sawada

Dynamics of a large ring of coupled active and inactive oscillators *(11 pages)* 026209
Hiroaki Daido

Exploring the dynamics of conjugate coupled Chua circuits: Simulations and experiments *(8 pages)* 026210
Tanu Singla, Nitin Pawar, and P. Parmananda

Fluid dynamics

Prediction of strong-shock structure using the bimodal distribution function *(7 pages)* 026301
Maxim A. Solovchuk and Tony W. H. Sheu

Three-dimensional observation of an immiscible polymer blend subjected to a step electric field under shear flow *(8 pages)* 026302
Hiroshi Orihara, Yuki Nishimoto, Kohei Aida, and Yang Ho Na

Dynamical mechanism of the liquid film motor *(7 pages)* 026303
Zhong-Qiang Liu, Ying-Jun Li, Guang-Cai Zhang, and Su-Rong Jiang

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 83, NUMBER 2** **FEBRUARY 2011**

Strong upstream flow characteristics in the formation of rivulets *(8 pages)* 026304
Jonathan Kok Keung Lye, Adrian Neild, and Tuck Wah Ng

Self-similar accelerative propagation of expanding wrinkled flames and explosion triggering *(6 pages)* 026305
V'yacheslav Akkerman, Chung K. Law, and Vitaly Bychkov

How water droplets evaporate on a superhydrophobic substrate *(6 pages)* 026306
Hanneke Gelderblom, Álvaro G. Marín, Hrudya Nair, Arie van Houselt, Leon Lefferts, Jacco H. Snoeijer, and Detlef Lohse

Experiments on the morphology of icicles *(6 pages)* 026307
Antony Szu-Han Chen and Stephen W. Morris

Simple model for vibration-translation exchange at high temperatures: Effects of multiquantum transitions on the relaxation of a N_2 gas flow behind a shock *(11 pages)* 026308
A. Aliat, P. Vedula, and E. Josyula

Analysis of porosity distribution of large-scale porous media and their reconstruction by Langevin equation *(7 pages)* 026309
G. Reza Jafari, Muhammad Sahimi, M. Reza Rasaei, and M. Reza Rahimi Tabar

Determination of the effective gas diffusivity of a porous composite medium from the three-dimensional reconstruction of its microstructure *(12 pages)* 026310
Arganthaël Berson, Hae-Won Choi, and Jon G. Pharoah

Plane Poiseuille flow of a rarefied gas in the presence of strong gravitation *(10 pages)* 026311
Toshiyuki Doi

Analytical derivation of tortuosity and permeability of monosized spheres: A volume averaging approach *(8 pages)* 026312
Mohammad Mehdi Ahmadi, Soheil Mohammadi, and Ali Nemati Hayati

Plasma physics

Experimental evidence of nonthermal acceleration of relativistic electrons by an intensive laser pulse *(6 pages)* 026401
Y. Kuramitsu, N. Nakanii, K. Kondo, Y. Sakawa, Y. Mori, E. Miura, K. Tsuji, K. Kimura, S. Fukumochi, M. Kashihara, T. Tanimoto, H. Nakamura, T. Ishikura, K. Takeda, M. Tampo, R. Kodama, Y. Kitagawa, K. Mima, K. A. Tanaka, M. Hoshino, and H. Takabe

Second sum rule for the hot plasma permittivity *(4 pages)* 026402
V. B. Bobrov, V. Ya. Mendeleyev, S. N. Skovorod'ko, and S. A. Trigger

Variational-average-atom-in-quantum-plasmas (VAAQP) code and virial theorem: Equation-of-state and shock-Hugoniot calculations for warm dense Al, Fe, Cu, and Pb *(22 pages)* 026403
R. Piron and T. Blenski

Quantum molecular dynamics simulations of transport properties in liquid and dense-plasma plutonium *(10 pages)* 026404
J. D. Kress, James S. Cohen, D. P. Kilcrease, D. A. Horner, and L. A. Collins

Two-dimensional state in driven magnetohydrodynamic turbulence *(9 pages)* 026405
Barbara Bigot and Sébastien Galtier

(Continued)

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 83, NUMBER 2** **FEBRUARY 2011**

Volkov solutions for relativistic quantum plasmas *(5 pages)* 026406
J. T. Mendonça and A. Serbeto

Classical physics

Radar illusion via metamaterials *(6 pages)* 026601
Wei Xiang Jiang and Tie Jun Cui

Fresnel integrals and irreversible energy transfer in an oscillatory system with time-dependent parameters *(12 pages)* 026602
Agnessa Kovaleva, Leonid I. Manevitch, and Yuriy A. Kosevich

Scattering of a matter-wave single soliton and a two-soliton molecule by an attractive potential *(9 pages)* 026603
S. M. Al-Marzoug, S. M. Al-Amoudi, U. Al Khawaja, H. Bahlouli, and B. B. Baizakov

Exact traveling-wave and spatiotemporal soliton solutions to the generalized (3+1)-dimensional Schrödinger equation with polynomial nonlinearity of arbitrary order *(4 pages)* 026604
Nikola Z. Petrović, Milivoj Belić, and Wei-Ping Zhong

Resonant emission of solitons from impurity-induced localized waves in nonlinear lattices *(8 pages)* 026605
Gaokun Yu, Xinlong Wang, and Zhiyong Tao

Transmission of evanescent wave modes through a slab of negative-refractive-index material *(4 pages)* 026606
David A. de Wolf

Computational physics

Near- and far-field scattering from arbitrary three-dimensional aggregates of coated spheres using parallel computing *(14 pages)* 026701
Lars Boyde, Kevin J. Chalut, and Jochen Guck

Lattice-Boltzmann method combined with smoothed-profile method for particulate suspensions *(7 pages)* 026702
Saeed Jafari, Ryoichi Yamamoto, and Mohamad Rahnama

Burnett-Cattaneo continuum theory for shock waves *(8 pages)* 026703
Brad Lee Holian, Michel Mareschal, and Ramon Ravelo

Atomistic modeling of metal surfaces under electric fields: Direct coupling of electric fields to a molecular dynamics algorithm *(11 pages)* 026704
F. Djurabekova, S. Parviainen, A. Pohjonen, and K. Nordlund

Unconditionally gradient-stable computational schemes in problems of fast phase transitions *(11 pages)* 026705
Vladimir Lebedev, Alena Sysoeva, and Peter Galenko

Statistically reconstructing continuous isotropic and anisotropic two-phase media while preserving macroscopic material properties *(11 pages)* 026706
M. A. Davis, S. D. C. Walsh, and M. O. Saar

Lattice Boltzmann method on quadtree grids *(10 pages)* 026707
Yu Chen, Qinjun Kang, Qingdong Cai, and Dongxiao Zhang

(Continued)

PHYSICAL REVIEW E THIRD SERIES, VOLUME 83, NUMBER 2 FEBRUARY 2011

BRIEF REPORTS

Chaos and pattern formation

Ring intermittency near the boundary of the synchronous time scales of chaotic oscillators *(4 pages)* 027201
Maxim O. Zhuravlev, Alexey A. Koronovskii, Olga I. Moskalenko, Alexey A. Ovchinnikov, and Alexander E. Hramov

Classical physics

Class of solvable nonlinear oscillators with isochronous orbits *(4 pages)* 027601
R. Iacono and F. Russo

ERRATA

Publisher's Note: Phase diagram and critical behavior of a forest-fire model in a gradient of immunity [Phys. Rev. E **83**, 011125 (2011)] *(1 page)* . . . . . 029901(E)
Nara Guisoni, Ernesto S. Loscar, and Ezequiel V. Albano

Publisher's Note: Burnett-Cattaneo continuum theory for shock waves [Phys. Rev. E **83**, 026703 (2011)] *(1 page)* . . . . . 029902(E)
Brad Lee Holian, Michel Mareschal, and Ramon Ravelo