

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 1N01
2 Huntington Quadrangle
Melville, NY 11747-4502

THIRD SERIES, VOLUME 74, NUMBER 3

CONTENTS

SEPTEMBER 2006

ANNOUNCEMENT: Release of Open Access (FREE TO READ) i

PART 1: SOFT MATTER AND BIOLOGICAL PHYSICS

RAPID COMMUNICATIONS

Statistical physics

- Field theories and exact stochastic equations for interacting particle systems (*4 pages*) 030101(R)
Alexei Andreanov, Giulio Biroli, Jean-Philippe Bouchaud, and Alexandre Lefèvre

Equilibrium and linear transport properties of fluids

- Positional order and diffusion processes in particle systems (*4 pages*) 030201(R)
Hiroshi Watanabe, Satoshi Yukawa, and Nobuyasu Ito

Colloidal dispersions, suspensions, and aggregates

- Optical microscopy measurement of pair correlation functions (*4 pages*) 030401(R)
Angeles Ramírez-Saito, Clemens Bechinger, and José Luis Arauz-Lara
- Counterion release in overcharging of polyion-liposome complexes (*4 pages*) 030402(R)
F. Bordi, C. Cametti, S. Sennato, and D. Viscomi

Liquid crystals

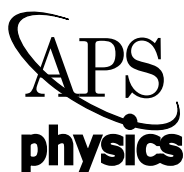
- Oriental ordering of a banana-shaped solute molecule in a nematic calamitic solvent by ^2H -NMR spectroscopy: An indication of glasslike behavior (*4 pages*) 030701(R)
Giorgio Cinacchi and Valentina Domenici
- Smectic- C_α^* -smectic- C^* phase transition and critical point in binary mixtures (*4 pages*) 030702(R)
Z. Q. Liu, S. T. Wang, B. K. McCoy, A. Cady, R. Pindak, W. Caliebe, K. Takekoshi, K. Ema, H. T. Nguyen, and C. C. Huang

Polymers

- Multiscale modeling of polymer rheology (*4 pages*) 030801(R)
Subhranil De, Jacob Fish, Mark S. Shephard, Pawel Keblinski, and Sanat K. Kumar

Biological physics

- Direct method to study membrane rigidity of small vesicles based on atomic force microscope force spectroscopy (*3 pages*) 030901(R)
N. Delorme and A. Fery



Copyright 2006 by The American Physical Society

(Continued)



1539-3755(200609)74:3;1;1-6

Single molecule Michaelis-Menten equation beyond quasistatic disorder (<i>4 pages</i>)	030902(R)
Xiaochuan Xue, Fei Liu, and Zhong-can Ou-Yang	
Stochastic synchronization in finite size spiking networks (<i>4 pages</i>)	030903(R)
Brent Doiron, John Rinzel, and Alex Reyes	
Nonequilibrium clustering of self-propelled rods (<i>4 pages</i>)	030904(R)
Fernando Peruani, Andreas Deutsch, and Markus Bär	
Nonequilibrium molecular dynamics calculation of the conductance of the KcsA potassium ion channel (<i>4 pages</i>)	030905(R)
Hendrick W. de Haan, Igor S. Tolokh, C. G. Gray, and Saul Goldman	

ARTICLES

Statistical physics

Irreversible growth of binary mixtures on small-world networks (<i>7 pages</i>)	031101
Julián Candia	
Noise-enhanced Fisher information in parallel arrays of sensors with saturation (<i>10 pages</i>)	031102
François Chapeau-Blondeau, Solenna Blanchard, and David Rousseau	
Analysis and visualization of multiply oriented lattice structures by a two-dimensional continuous wavelet transform (<i>6 pages</i>)	031103
H. M. Singer and I. Singer	
Collective coordinate control of density distributions (<i>10 pages</i>)	031104
Obioma U. Uche, Salvatore Torquato, and Frank H. Stillinger	
Systematic derivation of coarse-grained fluctuating hydrodynamic equations for many Brownian particles under nonequilibrium conditions (<i>14 pages</i>)	031105
Takenobu Nakamura and Shin-ichi Sasa	
Critical dynamics of phase transition driven by dichotomous Markov noise (<i>12 pages</i>)	031106
Katsuya Ouchi, Takehiko Horita, and Hirokazu Fujisaka	
Inhomogeneous melting in anisotropically confined two-dimensional clusters (<i>11 pages</i>)	031107
S. W. S. Apolinario, B. Partoens, and F. M. Peeters	
Thermodynamics and dynamics of the two-scale spherically symmetric Jagla ramp model of anomalous liquids (<i>10 pages</i>)	031108
Limei Xu, Sergey V. Buldyrev, C. Austen Angell, and H. Eugene Stanley	
Inflow versus outflow zero-temperature dynamics in one dimension (<i>8 pages</i>)	031109
Katarzyna Sznajd-Weron and Sylwia Krupa	
Spatial organization and evolution period of the epidemic model using cellular automata (<i>6 pages</i>)	031110
Quan-Xing Liu, Zhen Jin, and Mao-Xing Liu	
Crossover between Ising and XY-like behavior in the off-equilibrium kinetics of the one-dimensional clock model (<i>9 pages</i>)	031111
Nataschia Andrenacci, Federico Corberi, and Eugenio Lippiello	
Void percolation and conduction of overlapping ellipsoids (<i>6 pages</i>)	031112
Y. B. Yi	

CONTENTS - Continued

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 74, NUMBER 3

SEPTEMBER 2006

Critical behavior and synchronization of discrete stochastic phase-coupled oscillators (<i>9 pages</i>)	031113
Kevin Wood, C. Van den Broeck, R. Kawai, and Katja Lindenberg	
Spectral correlations of fractional Brownian motion (<i>6 pages</i>)	031114
Tor Arne Øigård, Alfred Hanssen, and Louis L. Scharf	
Aging and intermittency in a p -spin model of a glass (<i>6 pages</i>)	031115
Paolo Sibani	
Anomalous diffusion with linear reaction dynamics: From continuous time random walks to fractional reaction-diffusion equations (<i>15 pages</i>)	031116
B. I. Henry, T. A. M. Langlands, and S. L. Wearne	
Random-energy model in random fields (<i>7 pages</i>)	031117
Luiz O. de Oliveira Filho, Francisco Alexandre da Costa, and Carlos S. O. Yokoi	
Random field Ising model on networks with inhomogeneous connections (<i>7 pages</i>)	031118
Sang Hoon Lee, Hawoong Jeong, and Jae Dong Noh	
Thermodynamic perturbation theory in fluid statistical mechanics (<i>7 pages</i>)	031119
Shiqi Zhou	
Percolation in the harmonic crystal and voter model in three dimensions (<i>7 pages</i>)	031120
Vesselin I. Marinov and Joel L. Lebowitz	
Recycled noise rectification: An automated Maxwell's daemon (<i>6 pages</i>)	031121
M. Borromeo, S. Giuseppe, and F. Marchesoni	
Fokker-Planck equation for particle growth by monomer attachment (<i>9 pages</i>)	031122
Themis Matsoukas and Yulan Lin	
Ground state overlap and quantum phase transitions (<i>6 pages</i>)	031123
Paolo Zanardi and Nikola Paunković	
Elasticity of a system with noncentral potentials (<i>12 pages</i>)	031124
Michael Murat and Yacov Kantor	
Equilibrium and linear transport properties of fluids	
Viscosity of a binary mixture: Approach to the hydrodynamic limit (<i>13 pages</i>)	031201
Mathieu G. McPhie, Peter J. Daivis, and Ian K. Snook	
Thermodynamic properties of inverse power fluids (<i>11 pages</i>)	031202
A. C. Brańka and D. M. Heyes	
Three-body interactions and solid-liquid phase equilibria: Application of a molecular dynamics algorithm (<i>5 pages</i>)	031203
Liping Wang and Richard J. Sadus	
Dynamical signatures of freezing: Stable fluids, metastable fluids, and crystals (<i>7 pages</i>)	031204
Stephen R. Williams, Peter McGlynn, Gary Bryant, Ian K. Snook, and William van Meegen	
Role of structural relaxations and vibrational excitations in the high-frequency dynamics of liquids and glasses (<i>23 pages</i>)	031205
Song-Ho Chong	

(Continued)

Granular materials

Oscillatory ductile compaction dynamics in a cylinder (<i>10 pages</i>)	031301
Lina Uri, Dag Kristian Dysthe, and Jens Feder	
Vibrational dynamics of confined granular materials (<i>10 pages</i>)	031302
Emilien Azéma, Farhang Radjaï, Robert Peyroux, Frédéric Dubois, and Gilles Saussine	
Morphologies of three-dimensional shear bands in granular media (<i>6 pages</i>)	031303
S. Fazekas, J. Török, J. Kertész, and D. E. Wolf	
Effects of bulk dissipation on the critical exponents of a sandpile (<i>11 pages</i>)	031304
Chai-Yu Lin, Chien-Fu Chen, Chi-Ning Chen, Chao-Shun Yang, and I-Min Jiang	
End-wall effects in granular tumblers: From quasi-two-dimensional flow to three-dimensional flow (<i>13 pages</i>)	031305
Nicholas A. Pohlman, Julio M. Ottino, and Richard M. Lueptow	
Effect of rolling on dissipation in fault gouges (<i>10 pages</i>)	031306
F. Alonso-Marroquín, I. Vardoulakis, H. J. Herrmann, D. Weatherley, and P. Mora	
Creeping granular motion under variable gravity levels (<i>7 pages</i>)	031307
Tim Arndt, Antje Brucks, Julio M. Ottino, and Richard M. Lueptow	
Approach to jamming in an air-fluidized granular bed (<i>12 pages</i>)	031308
A. R. Abate and D. J. Durian	
Particle-size distribution and packing fraction of geometric random packings (<i>14 pages</i>)	031309
H. J. H. Brouwers	
Capturing patterns and symmetries in chaotic granular flow (<i>11 pages</i>)	031310
Steven W. Meier, Stephen E. Cisar, Richard M. Lueptow, and Julio M. Ottino	
Precursors to avalanches in a granular monolayer (<i>5 pages</i>)	031311
T. Scheller, C. Huss, G. Lumay, N. Vandewalle, and S. Dorbolo	
Coarsening of axial segregation patterns of slurries in a horizontally rotating drum (<i>15 pages</i>)	031312
Tilo Finger, Andreas Voigt, Jörg Stadler, Heiko G. Niessen, Lama Naji, and Ralf Stannarius	

Colloidal dispersions, suspensions, and aggregates

Formation and evolution of sediment layers in an aggregating colloidal suspension (<i>11 pages</i>)	031401
Myung Han Lee and Eric M. Furst	
Hydrodynamic interactions and Brownian forces in colloidal suspensions: Coarse-graining over time and length scales (<i>29 pages</i>)	031402
J. T. Padding and A. A. Louis	
Anomalous surfactant diffusion in a living polymer system (<i>8 pages</i>)	031403
Ruggero Angelico, Andrea Ceglie, Ulf Olsson, Gerardo Palazzo, and Luigi Ambrosone	
Structure and dynamics of a nanocolloidal silica gel dispersion (<i>8 pages</i>)	031404
A. Roshi, S. Barjami, G. S. Iannacchione, D. Paterson, and I. McNulty	
Finite-element simulation of the depolarization factor of arbitrarily shaped inclusions (<i>13 pages</i>)	031405
Abdelilah Mejdoubi and Christian Brosseau	

Structured and complex fluids

Dielectric study of the antiplasticization of trehalose by glycerol (10 pages)	031501
A. Anopchenko, T. Psurek, D. VanderHart, J. F. Douglas, and J. Obrzut	
Supercooled water relaxation dynamics probed with heterodyne transient grating experiments (10 pages)	031502
Andrea Taschin, Paolo Bartolini, Roberto Eramo, and Renato Torre	
Compton scattering study of water versus ice Ih: Intra- and intermolecular structure (5 pages)	031503
K. Nygård, M. Hakala, S. Manninen, A. Andrejczuk, M. Itou, Y. Sakurai, L. G. M. Pettersson, and K. Hämäläinen	

Films, interfaces, and crystal growth

Phase diagram and structure of colloid-polymer mixtures confined between walls (12 pages)	031601
R. L. C. Vink, A. De Virgiliis, J. Horbach, and K. Binder	
Phase-field simulations of velocity selection in rapidly solidified binary alloys (7 pages)	031602
Jun Fan, Michael Greenwood, Mikko Haataja, and Nikolas Provatas	
Quasiwetting on spherical solid surfaces by oil-water-amphiphile mixtures (9 pages)	031603
C. García-Alcántara and C. Varea	
Arrested segregative phase separation in capillary tubes (7 pages)	031604
R. Hans Tromp and Saskia Lindhoud	
<i>In situ</i> and real-time probing of quasicrystal solidification dynamics by synchrotron imaging (6 pages)	031605
H. Nguyen Thi, J. Gastaldi, T. Schenk, G. Reinhart, N. Mangelinck-Noel, V. Cristiglio, B. Billia, B. Grushko, J. Härtwig, H. Klein, and J. Baruchel	
Influence of external flows on crystal growth: Numerical investigation (10 pages)	031606
Dmitry Medvedev, Thomas Fischaleck, and Klaus Kassner	
Capillary wave fluctuations and intrinsic widths of coupled fluid-fluid interfaces: An x-ray scattering study of a wetting film on bulk liquid (19 pages)	031607
Masafumi Fukuto, Oleg Gang, Kyle J. Alvine, and Peter S. Pershan	
Point tension in adsorption at a chemically inhomogeneous substrate in two dimensions (7 pages)	031608
P. Jakubczyk, M. Napiórkowski, and A. O. Parry	
Multiscale model for microstructure evolution in multiphase materials: Application to the growth of isolated inclusions in presence of elasticity (20 pages)	031609
Danny Perez and Laurent J. Lewis	
Structural transformations of even-numbered <i>n</i> -alkanes confined in mesopores (5 pages)	031610
P. Huber, V. P. Soprunyuk, and K. Knorr	
Crystal-melt interfacial free energies of hard-dumbbell systems (4 pages)	031611
Yan Mu and Xueyu Song	

Liquid crystals

Some aspects about the structure of the optically isotropic phase in a bent-core liquid crystal: Chiral, polar, or steric origin (6 pages)	031701
J. Martínez-Perdiguero, I. Alonso, C. L. Folcia, J. Etxebarria, and J. Ortega	
Structural study of a bent-core liquid crystal showing the B_1 - B_2 transition (6 pages)	031702
Cesar Luis Folcia, J. Etxebarria, J. Ortega, and M. B. Ros	

Pulsed addressing of a dual-frequency nematic liquid crystal (<i>7 pages</i>)	031703
N. J. Mottram and C. V. Brown	
Order parameter of elongated liquid crystal droplets: The method of retrieval by the coherent transmittance data (<i>7 pages</i>)	031704
Valery A. Loiko, Alexander V. Konkolovich, and Alexander A. Miskevich	
Competing modes of instability in an electrically driven nematic liquid crystal with a small positive dielectric anisotropy (<i>15 pages</i>)	031705
Pramoda Kumar and K. S. Krishnamurthy	
Dynamics of bulk fluctuations in a lamellar phase studied by coherent x-ray scattering (<i>4 pages</i>)	031706
Doru Constantin, Guillaume Brotons, Tim Salditt, Éric Freyssingeas, and Anders Madsen	
Optical studies on the surface-induced tilted layers in freestanding films of two no-layer-shrinkage liquid crystal compounds (<i>6 pages</i>)	031707
S. T. Wang, X. F. Han, Z. Q. Liu, B. K. McCoy, and C. C. Huang	
Bulk and surface biaxiality in nematic liquid crystals (<i>7 pages</i>)	031708
Paolo Biscari, Gaetano Napoli, and Stefano Turzi	
Charged inclusion in nematic liquid crystals (<i>10 pages</i>)	031709
Lionel Foret and Akira Onuki	
Polymers	
Entropy-induced separation of star polymers in porous media (<i>12 pages</i>)	031801
V. Blavats'ka, C. von Ferber, and Yu. Holovatch	
Colloid dynamics in semiflexible polymer solutions (<i>10 pages</i>)	031802
Ji Yeon Huh and Eric M. Furst	
Wetting phase diagrams of a polyacid brush with a triple point (<i>10 pages</i>)	031803
A. A. Mercurieva, P. Iakovlev, E. B. Zhulina, T. M. Birshtein, and F. A. M. Leermakers	
Dynamic heterogeneity in hydrogen-bonded polymers (<i>7 pages</i>)	031804
Adrian S. Muresan, Johan L. A. Dubbeldam, Holger Kautz, Michael Monkenbusch, Rint P. Sijbesma, Paul van der Schoot, and Wim H. de Jeu	
Biological physics	
Two system-size-resonance behaviors for calcium signaling: For optimal cell size and for optimal network size (<i>5 pages</i>)	031901
Zhonghuai Hou, Jiqian Zhang, and Houwen Xin	
Role of cohesion in the material description of biofilms (<i>8 pages</i>)	031902
I. Klapper and J. Dockery	
Nonlinear elasticity of an α -helical polypeptide: Monte Carlo studies (<i>11 pages</i>)	031903
Buddhapriya Chakrabarti and Alex J. Levine	
Two-angle model and phase diagram for chromatin (<i>8 pages</i>)	031904
Philipp M. Diesinger and Dieter W. Heermann	
Internal signal transmission in one-way coupled excitable system: Noise and coupling effects (<i>6 pages</i>)	031905
Qianshu Li and Xiufeng Lang	

CONTENTS - Continued

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 74, NUMBER 3

SEPTEMBER 2006

Bottleneck-induced transitions in a minimal model for intracellular transport (<i>13 pages</i>)	031906
Paolo Pierobon, Mauro Mobilia, Roger Kouyos, and Erwin Frey	
Static and dynamic correlations in a charged membrane (<i>10 pages</i>)	031907
Wokyung Sung, Eunju Choi, and Yong Woon Kim	
Limits of high-order perturbation theory in time-domain optical mammography (<i>13 pages</i>)	031908
B. Wassermann	
Breaking bonds in the atomic force microscope: Theory and analysis (<i>5 pages</i>)	031909
Felix Hanke and Hans Jürgen Kreuzer	
Stochastic model of protein receptor trafficking prior to synaptogenesis (<i>6 pages</i>)	031910
Paul C. Bressloff	
Phase-model analysis of coupled neuronal oscillators with multiple connections (<i>8 pages</i>)	031911
Dong-Uk Hwang, Sang-Gui Lee, Seung Kee Han, and Hyungtae Kook	
Irreversible growth model for virus capsid assembly (<i>17 pages</i>)	031912
Stephen D. Hicks and C. L. Henley	
Effect of Gd^{3+} on the colloidal stability of liposomes (<i>7 pages</i>)	031913
Juan Sabín, Gerardo Prieto, Simona Sennato, Juan M. Ruso, Roberta Angelini, Federico Bordi, and Félix Sarmiento	
Mechanism of smart baroreception in the aortic arch (<i>5 pages</i>)	031914
G. C. Kember, J. A. Armour, and M. Zamir	
Theory of self-assembly of microtubules and motors (<i>15 pages</i>)	031915
Igor S. Aranson and Lev S. Tsimring	
Quantitative evaluation of linear and nonlinear methods characterizing interdependencies between brain signals (<i>16 pages</i>)	031916
Karim Ansari-Asl, Lotfi Senhadji, Jean-Jacques Bellanger, and Fabrice Wendling	
Singular perturbation analysis of the pore creation transient (<i>9 pages</i>)	031917
John C. Neu and Wanda Krassowska	
Gap junctions destroy persistent states in excitatory networks (<i>8 pages</i>)	031918
Bard Ermentrout	
Tail-induced attraction between nucleosome core particles (<i>11 pages</i>)	031919
F. Mühlbacher, H. Schiessel, and C. Holm	
Driven lattice gas of dimers coupled to a bulk reservoir (<i>13 pages</i>)	031920
Paolo Pierobon, Erwin Frey, and Thomas Franosch	
Codability criterion for picking proteinlike structures from random three-dimensional configurations (<i>4 pages</i>)	031921
Hai-Bo Cao, Cai-Zhuang Wang, Drena Dobbs, Yungok Ihm, and Kai-Ming Ho	
Coexistence of tonic firing and bursting in cortical neurons (<i>7 pages</i>)	031922
Flavio Fröhlich and Maxim Bazhenov	

BRIEF REPORTS

Statistical physics

Exact moments in a continuous time random walk with complete memory of its history (<i>4 pages</i>)	032101
Francis N. C. Paraan and J. P. Esguerra	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 74, NUMBER 3

SEPTEMBER 2006

Polymers

- Equilibrium conformation of polymer chains with noncircular cross section (*4 pages*) 032801
Shumin Zhao, Shengli Zhang, Zhenwei Yao, and Lei Zhang

Biological physics

- Strong far-field coherent scattering of ultraviolet radiation by holococcolithophores (*4 pages*) 032901
R. Quintero-Torres, J. L. Aragón, M. Torres, M. Estrada, and L. Cros