PHYSICAL REVIEW E™

For editorial and subscription correspondence, please see inside front cover
(ISSN: 2470-0045)

PERIODICALS
Postmaster send address changes to:

APS Subscription Services
P.O. Box 41
Annapolis Junction, MD 20701

THIRD SERIES, VOLUME 109, NUMBER 6
PARTS A AND B

CONTENTS

JUNE 2024

The Table of Contents is a total listing of Parts A and B.
Part A consists of pages 061001–064219, and Part B pages 064301–065313.

PART A

Perspectives

Soliton gas: Theory, numerics, and experiments *(35 pages)* 061001
Pierre Suret, Stephane Randoux, Andrey Gelash, Dmitry Agafontsev, Benjamin Doyon, and Gennady El

LETTERS

Statistical Physics

Effect of disorder on phases across two-dimensional thermal melting *(5 pages)* L062101
Prashanti Jami, Pinaki Chaudhuri, Chandan Dasgupta, and Amit Ghosal

Entropic timescales of dynamic heterogeneity in supercooled liquid *(6 pages)* L062102
Vinay Vaibhav and Suman Dutta

Two rhombic ice phases from aqueous salt solutions under graphene confinement *(7 pages)* L062103
Wei Du, Yangjie Wang, Junwei Yang, and Jige Chen

Rectification of heat current in Corbino geometry *(5 pages)* L062104
Zhixing Zou, Giulio Casati, Giuliano Benenti, and Jiao Wang

Nonlinear Dynamics and Chaos

Quantum diffusion induced by small quantum chaos *(5 pages)* L062201
Hiroaki S. Yamada and Kensuke S. Ikeda

Networks and Complex Systems

Tale of two emergent games: Opinion dynamics in dynamical directed networks *(6 pages)* L062301
Yakun Wang and Bin Wu

Colloids, Complex Fluids, and Active Matter

Controlled creation of point defects in three-dimensional colloidal crystals *(6 pages)* L062601
Max P. M. Schelling and Janne-Mieke Meijer

Robustness of traveling states in generic nonreciprocal mixtures *(6 pages)* L062602
Rituparno Mandal, Santiago Salazar Jaramillo, and Peter Sollich

Critical-like slowdown in thermal soft-sphere glasses via energy minimization *(6 pages)* L062603
Kevin A. Interiano-Alberto, Peter K. Morse, and Robert S. Hoy

(Continued)

2470-0045(202406)109:6:A;1-V

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

ARTICLES

Statistical Physics

Full-record statistics of one-dimensional random walks *(15 pages)* 064101
Léo Régnier, Maxim Dolgushev, and Olivier Bénichou

Constants of motion characterizing continuous symmetry-broken phases *(17 pages)* 064102
Ángel L. Corps, Jorge Dukelsky, and Armando Relaño

Evaluating extractable work of quantum batteries via entropic uncertainty relations *(11 pages)* 064103
Meng-Long Song, Xue-Ke Song, Liu Ye, and Dong Wang

Percolation thresholds of disks with random nonoverlapping patches on four regular two-dimensional lattices *(11 pages)* 064104
Jie Wang, Xuebin Wang, Wenli Liu, and Hao Hu

Triadic interaction in the background of a pairwise spin-glass *(8 pages)* 064105
M. Bagherikalhor, B. Askari, and G. R. Jafari

Short-time expansion of one-dimensional Fokker-Planck equations with heterogeneous diffusion *(18 pages)* 064106
Tom Dupont, Stefano Giordano, Fabrizio Cleri, and Ralf Blossey

Out-of-equilibrium scaling of the energy density along the critical relaxational flow after a quench of the temperature *(12 pages)* 064107
Haralambos Panagopoulos and Ettore Vicari

Hyperuniformity classes of quasiperiodic tilings via diffusion spreadability *(13 pages)* 064108
Adam Hitin-Bialus, Charles Emmett Maher, Paul J. Steinhardt, and Salvatore Torquato

Dynamic redundancy as a mechanism to optimize collective random searches *(6 pages)* 064109
Daniel Campos and Vicenç Méndez

Excited-state quantum phase transitions and the entropy of the work distribution in the anharmonic Lipkin-Meshkov-Glick model *(10 pages)* 064110
Haiting Zhang, Yifan Qian, Zhen-Xia Niu, and Qian Wang

Integral fluctuation theorems and trace-preserving map *(14 pages)* 064111
Zhiqiang Huang (黄志强)

Information thermodynamics of transition paths between multiple mesostates *(11 pages)* 064112
Miranda D. Louwerse and David A. Sivak

Three-dimensional Heisenberg model with Dzyaloshinskii-Moriya interaction: A Monte Carlo study *(14 pages)* 064113
G. Albuquerque Silva, A. R. Bergeron, J. A. Plascak, and D. P. Landau

Finite-size correction and variance of the mutual information of random linear estimation with non-Gaussian priors: A replica calculation *(16 pages)* 064114
Theodoros G. Tsironis and Aris L. Moustakas

Chaotic route to classical thermalization: A real-space analysis *(6 pages)* 064115
Yue Liu and Dahai He

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Irreversibility of stochastic state transitions in Langevin systems with odd elasticity *(11 pages)* 064116
Kento Yasuda

Diffusion with a broad class of stochastic diffusion coefficients *(8 pages)* 064117
Go Uchida, Hitoshi Washizu, and Hiromi Miyoshi

Effect of shape anisotropy on percolation of aligned and overlapping objects on lattices *(14 pages)* 064118
Jasna C. K. and V. Sasidevan

Noisy kinetic-exchange opinion model with aging *(12 pages)* 064119
Allan R. Vieira, Jaume Llabrés, Raúl Toral, and Celia Anteneodo

Thermodynamics of a minimal interacting heat engine: Comparison between engine designs *(12 pages)* 064120
Felipe Hawthorne, B. Cleuren, and Carlos E. Fiore

Minimal quantum heat pump based on high-frequency driving and non-Markovianity *(10 pages)* 064121
Manuel Alamo, Francesco Petiziol, and André Eckardt

Kardar-Parisi-Zhang universality in two-component driven diffusive models: Symmetry and renormalization group perspectives *(10 pages)* 064122
Pritha Dolai, Aditi Simha, and Abhik Basu

Neural-network quantum-state study of the long-range antiferromagnetic Ising chain *(10 pages)* 064123
Jicheol Kim, Dongkyu Kim, and Dong-Hee Kim

Observation of multiple attractors and diffusive transport in a periodically driven Klein-Gordon chain *(11 pages)* 064124
Umesh Kumar, Seemant Mishra, Anupam Kundu, and Abhishek Dhar

Compression-induced crossovers for the ground state of classical dipole lattices on a Möbius strip *(7 pages)* 064125
A. Siemens, F. A. O. Silveira, and P. Schmelcher

Semiconductor laser systems excited by multiplicative Ornstein-Uhlenbeck noise and additive sine-Wiener noise in relation to real and imaginary parts *(27 pages)* 064126
Ping Han, Guitian He, Zhenhui Huang, and Fengjia Guo

Wave turbulence and the kinetic equation beyond leading order *(12 pages)* 064127
Vladimir Rosenhaus and Michael Smolkin

Thermodynamic cost for precision of general counting observables *(20 pages)* 064128
Patrick Pietzonka and Francesco Coghi

Work and efficiency fluctuations in a quantum Otto cycle with idle levels *(12 pages)* 064129
Maron F. Anka, Thiago R. de Oliveira, and Daniel Jonathan

Exact zeros of fidelity in finite-size systems as a signature for probing quantum phase transitions *(10 pages)* 064130
Yumeng Zeng, Bozhen Zhou, and Shu Chen

Interplay of phase segregation and chemical reaction: Crossover and effect on growth laws *(12 pages)* 064131
Shubham Thwal and Suman Majumder

Qubit reset with a shortcut-to-isothermal scheme *(8 pages)* 064132
Hong-Bo Huang, Geng Li, and Hui Dong

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Transverse forces and glassy liquids in infinite dimensions *(13 pages)* 064133
Federico Ghimenti, Ludovic Berthier, Grzegorz Szamel, and Frédéric van Wijland

Statistics of quantum heat in the Caldeira-Leggett model *(13 pages)* 064134
Ze-Zhou Zhang, Qing-Shou Tan, and Wei Wu

Identifying and analyzing power-law scaling in two-dimensional image datasets *(15 pages)* 064135
Ralph Bulanadi and Patrycja Paruch

From noise on the sites to noise on the links: Discretizing the conserved Kardar-Parisi-Zhang equation in real space *(11 pages)* 064136
Andrea Cavagna, Javier Cristín, Irene Giardina, and Mario Veca

Kuramoto model subject to subsystem resetting: How resetting a part of the system may synchronize the whole of it *(22 pages)* 064137
Rupak Majumder, Rohitashwa Chattopadhyay, and Shamik Gupta

Work fluctuation theorems with initial quantum coherence *(9 pages)* 064138
Gianluca Francica and Luca Dell'Anna

Effective temperatures in nonequilibrium statistical physics *(4 pages)* 064139
J. S. Langer

Extinction and coexistence in a binary mixture of proliferating motile disks *(10 pages)* 064140
Alejandro Almodóvar, Tobias Galla, and Cristóbal López

Statistical physics of principal minors: Cavity approach *(17 pages)* 064141
A. Ramezanpour and M. A. Rajabpour

Strong-coupling critical behavior in three-dimensional lattice Abelian gauge models with charged N-component scalar fields and SO(N) symmetry *(11 pages)* 064142
Claudio Bonati, Andrea Pelissetto, and Ettore Vicari

Ordering kinetics in the active Ising model *(13 pages)* 064143
Sayam Bandyopadhyay, Swarnajit Chatterjee, Aditya Kumar Dutta, Mintu Karmakar, Heiko Rieger, and Raja Paul

Aging and confinement in subordinated fractional Brownian motion *(10 pages)* 064144
Yingjie Liang, Wei Wang, and Ralf Metzler

Semiclassical thermodynamic geometry *(8 pages)* 064145
L. F. Escamilla-Herrera, J. L. López-Picón, José Torres-Arenas, and Alejandro Gil-Villegas

Detuning effects for heat-current control in quantum thermal devices *(16 pages)* 064146
André H. A. Malavazi, Borhan Ahmadi, Paweł Mazurek, and Antonio Mandarino

Self-phoretic oscillatory motion in a harmonic trap *(9 pages)* 064147
Arthur Alexandre, Leah Anderson, Thomas Collin-Dufresne, Thomas Guérin, and David S. Dean

Stochastic dynamics of a non-Markovian random walk in the presence of resetting *(8 pages)* 064148
Upendra Harbola

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Scaling regimes of the one-dimensional phase turbulence in the deterministic complex Ginzburg-Landau equation *(9 pages)* 064149
Francesco Vercesi, Susie Poirier, Anna Minguzzi, and Léonie Canet

Instability in the quantum restart problem *(15 pages)* 064150
Ruoyu Yin, Qingyuan Wang, and Eli Barkai

Noise correlations behind superdiffusive quantum walks *(9 pages)* 064151
Graça R. M. de Almeida, N. Amaral, A. R. C. Buarque, and W. S. Dias

Conformal invariance and composite operators: A strategy for improving the derivative expansion of the nonperturbative renormalization group *(18 pages)* 064152
Bertrand Delamotte, Gonzalo De Polsi, Matthieu Tissier, and Nicolás Wschebor

Characterizing the conditions for indefinite growth in open chemical reaction networks *(28 pages)* 064153
Shesha Gopal Marehalli Srinivas, Francesco Avanzini, and Massimiliano Esposito

Random sequential adsorption with correlated defects: A series expansion approach *(7 pages)* 064154
G. Palacios, A. M. S. Macêdo, Sumanta Kundu, and M. A. F. Gomes

Refined bounds on energy harvesting from anisotropic fluctuations *(6 pages)* 064155
Jordi Ventura Siches, Olga Movilla Miangolarra, and Tryphon T. Georgiou

Nonlinear dielectric response in glass formers: Restoring forces and avoided spin-glass criticality *(14 pages)* 064156
Eric Bertin and François Ladieu

Nonlinear Dynamics and Chaos

Semivortex solitons and their excited states in spin-orbit-coupled binary bosonic condensates *(9 pages)* 064201
Haiming Deng, Jinqing Li, Zhaopin Chen, Yaohui Liu, Dong Liu, Chunzhi Jiang, Chao Kong, and Boris A. Malomed

Generalized naming game and Bayesian naming game as dynamical systems *(7 pages)* 064202
Gionni Marchetti

Stability of twisted states in power-law-coupled Kuramoto oscillators on a circle with and without time delay *(7 pages)* 064203
Hae Seong Lee, Beom Jun Kim, and Hye Jin Park

Soliton synchronization in microresonators with a modulated pump *(8 pages)* 064204
Jorge Palacio Mizrahi, Logan Courtright, Pradyoth Shandilya, Curtis R. Menyuk, and Omri Gat

Self-learning physical reservoir computer *(9 pages)* 064205
Md Raf E Ul Shougat, XiaoFu Li, and Edmon Perkins

Quasi-one- and quasi-two-dimensional symbiotic solitons bound by dipolar interaction *(9 pages)* 064206
S. K. Adhikari

Characterization of hybrid quantum eigenstates in systems with mixed classical phase space *(10 pages)* 064207
Anant Vijay Varma, Amichay Vardi, and Doron Cohen

Generalized spectral form factor in random matrix theory *(9 pages)* 064208
Zhiyang Wei, Chengming Tan, and Ren Zhang

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Elliptic-rogue waves and modulational instability in nonlinear soliton equations *(20 pages)* 064209
Liming Ling and Xuan Sun

Delayed self-feedback echo state network for long-term dynamics of hyperchaotic systems *(13 pages)* 064210
Xu Xu, Jianming Liu, and Eric Li

Diffusion of noiseless active particles in a planar convection array *(9 pages)* 064211
Qingqing Yin, Jianli Liu, Yunyun Li, and Fabio Marchesoni

Multifractal perturbations to multiplicative cascades promote multifractal nonlinearity with asymmetric spectra *(26 pages)* 064212
Madhur Mangalam and Damian G. Kelty-Stephen

Robust design against frequency variation for amplitude death in delay-coupled oscillators *(12 pages)* 064213
Yoshiki Sugitani, Kensei Kawahara, and Keiji Konishi

Emergence of order from chaos through a continuous phase transition in a turbulent reactive flow system *(15 pages)* 064214
Sivakumar Sudarsanan, Amitesh Roy, Induja Pavithran, Shruti Tandon, and R. I. Sujith

Application of next-generation reservoir computing for predicting chaotic systems from partial observations *(11 pages)* 064215
Irmantas Ratas and Kestutis Pyragas

Dynamics of multidimensional fundamental and vortex solitons in random media *(12 pages)* 064216
Volodymyr M. Lashkin

Intermittent generalized synchronization and modified system approach: Discrete maps *(11 pages)* 064217
Alexey A. Koronovskii, Olga I. Moskalenko, and Anton O. Selskii

Singular bifurcations and regularization theory *(13 pages)* 064218
Alexander Farutin and Chaouqi Misbah

Soliton in Bose-Einstein condensates with helicoidal spin-orbit coupling under a Zeeman lattice *(8 pages)* 064219
Pingping Fang and Ji Lin

PART B

Networks and Complex Systems

Eigenvalue spectra of finely structured random matrices *(35 pages)* 064301
Lyle Poley, Tobias Galla, and Joseph W. Baron

Temporal local clustering coefficient uncovers the hidden pattern in temporal networks *(9 pages)* 064302
Bofan Chen, Guyu Hou, and Aming Li

Data-driven exploration of swarmalators with second-order harmonics *(10 pages)* 064303
R. Senthamizhan, R. Gopal, and V. K. Chandrasekar

Simple evolving random graphs *(12 pages)* 064304
P. L. Krapivsky

Robustness of Turing models and gene regulatory networks with a sweet spot *(8 pages)* 064305
Roozbeh H. Pazuki and Robert G. Endres

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Topological and spectral properties of random digraphs *(11 pages)* 064306
C. T. Martínez-Martínez, J. A. Méndez-Bermúdez, and José M. Sigarreta

Cascading failures in bipartite networks with directional support links *(17 pages)* 064307
Bo Tong, David S. Roth, and Sergey V. Buldyrev

Proliferation of unstable states and their impact on stochastic out-of-equilibrium dynamics in two coupled Kerr parametric oscillators *(9 pages)* 064308
Toni L. Heugel, R. Chitra, Alexander Eichler, and Oded Zilberberg

Spectral properties of the Laplacian of temporal networks following a constant block Jacobi model *(9 pages)* 064309
Zhana Kuncheva and Ognyan Kounchev

Biological Physics

Physical limits to acceleration of enzymatic reactions inside phase-separated compartments *(15 pages)* 064401
Jeremy D. Schmit and Thomas C. T. Michaels

Run-and-tumble kinematics of *Enterobacter* Sp. SM3 *(10 pages)* 064402
Silverio Johnson, Brian Freedman, and Jay X. Tang

Behavioral transition of a fish school in a crowded environment *(12 pages)* 064403
Bruno Ventéjou, Iris Magniez- -Papillon, Eric Bertin, Philippe Peyla, and Aurélie Dupont

Gramicidin A as a mechanical sensor for mixed nonideal lipid membranes *(12 pages)* 064404
Oleg V. Kondrashov and Sergey A. Akimov

Combinatorics and topological weights of chromatin loop networks *(13 pages)* 064405
Andrea Bonato, Michael Chiang, Dom Corbett, Sergey Kitaev, Davide Marenduzzo, Alexander Morozov, and Enzo Orlandini

Effective model of protein-mediated interactions in chromatin *(11 pages)* 064406
Francesco Borando and Guido Tiana

Clonal dynamics of surface-driven growing tissues *(8 pages)* 064407
Ruslan I. Mukhamadiarov, Matteo Ciarchi, Fabrizio Olmeda, and Steffen Rulands

Adhesion dynamics of Janus nanocarriers to endothelial cells: A dissipative particle dynamics study *(16 pages)* 064408
Saeed Akbarishandiz, Shaghayegh Khani, and Joao Maia

Universal characterization of epitope immunodominance from a multiscale model of clonal competition in germinal centers *(13 pages)* 064409
Federica Ferretti and Mehran Kardar

Local and extensive fluctuations in sparsely interacting ecological communities *(10 pages)* 064410
Stav Marcus, Ari M. Turner, and Guy Bunin

Unbiased estimation of sampling variance for Simpson's diversity index *(10 pages)* 064411
Andreas Tiffeau-Mayer

Unexpected large charge transfer rate mediated by adenine in twisted DNA structure *(7 pages)* 064412
Yongshun Song, Yi Gao, and Haiping Fang

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Ultrafast excitonic dynamics in DNA: Bridging correlated quantum dynamics and sequence dependence *(10 pages)* 064413
Dennis Herb, Mirko Rossini, and Joachim Ankerhold

Phase separation provides a mechanism to drive phenotype switching *(13 pages)* 064414
Lijun Hong, Zhenquan Zhang, Zihao Wang, Xiaochen Yu, and Jiajun Zhang

Polymers

Effect of shear flow on the transverse thermal conductivity of polymer melts *(10 pages)* 064501
Kotaro Oda and Shugo Yasuda

Colloids, Complex Fluids, and Active Matter

Lane formation in gravitationally driven colloid mixtures consisting of up to three different particle sizes *(12 pages)* 064601
Kay Hofmann, Marc Isele, Artur Erbe, Paul Leiderer, and Peter Nielaba

Active nematic ratchet in asymmetric obstacle arrays *(7 pages)* 064602
Cody D. Schimming, C. J. O. Reichhardt, and C. Reichhardt

Spheroid models to elaborate the broken symmetry and equivalent volume of molecules in crystalline phase *(11 pages)* 064603
Weihao Wang, Zhenghong Chen, Yang Gao, Chenhao Chen, Yang Jiao, and Shaodong Zhang

Colloidal model for nucleation and aggregation in one dimension: Accessing the interaction parameters *(10 pages)* 064604
Juan David Álvarez-Cuartas, Manuel Camargo, and Diego Luis González-Cabrera

Rescaled mode-coupling scheme for the quantitative description of experimentally observed colloid dynamics *(8 pages)* 064605
Joel Diaz Maier and Joachim Wagner

Periodic orbits, pair nucleation, and unbinding of active nematic defects on cones *(15 pages)* 064606
Farzan Vafa, David R. Nelson, and Amin Doostmohammadi

Finite-size scaling in kinetics of phase separation in certain models of aligning active particles *(10 pages)* 064607
Tanay Paul, Nalina Vadakkayil, and Subir K. Das

Real-space local self-motion of protonated and deuterated water *(6 pages)* 064608
Yuya Shinohara, Takuya Iwashita, Masahiro Nakanishi, Wojciech Dmowski, Chae Woo Ryu, Douglas L. Abernathy, Daisuke Ishikawa, Alfred Q. R. Baron, and Takeshi Egami

Chemical herding as a multiplicative factor for top-down manipulation of colloids *(16 pages)* 064609
Mark N. McDonald, Douglas R. Tree, and Cameron K. Peterson

Thermo-osmosis of a near-critical binary fluid mixture: A general formulation and universal flow direction *(19 pages)* 064610
Shunsuke Yabunaka and Youhei Fujitani

Discovering dynamic laws from observations: The case of self-propelled, interacting colloids *(16 pages)* 064611
Miguel Ruiz-Garcia, C. Miguel Barriuso G., Lachlan C. Alexander, Dirk G. A. L. Aarts, Luca M. Ghiringhelli, and Chantal Valeriani

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Macroscopic dynamics of ferromagnetic smectic-*A (10 pages)* 064612
Harald Pleiner and Helmut R. Brand

Space-resolved dynamic light scattering within a millimeter-sized drop: From Brownian diffusion to the swelling of hydrogel beads *(17 pages)* 064613
Matteo Milani, Ty Phou, Guillame Prevot, Laurence Ramos, and Luca Cipelletti

Liquid Crystals

Polymer-dispersed liquid-crystal coatings for ultrasound visualization: Experiment and theory *(9 pages)* 064701
O. Trushkevych, V. Reshetnyak, M. Turvey, and R. S. Edwards

Topological defects as nucleation points of the nematic-isotropic phase transition in liquid crystal shells *(12 pages)* 064702
Yucen Han, Jan Lagerwall, and Apala Majumdar

Trapping of isotropic droplets by disclinations in nematic liquid crystals controlled by surface anchoring and elastic constant disparity *(16 pages)* 064703
Nilanthi P. Haputhanthrige, Sathyanarayana Paladugu, Maxim O. Lavrentovich, and Oleg D. Lavrentovich

Films and Interfaces

Modeling patchy saturation of fluids in nanoporous media probed by ultrasound and optics *(11 pages)* 064801
Boris Gurevich, Michel M. Nzikou, and Gennady Y. Gor

Dynamical force measurements for contacting soft surfaces upon steady sliding: Fixed-depth tribology *(10 pages)* 064802
Cheng-En Tsai and Jih-Chiang (JC) Tsai

Granular Materials

Rheology of granular particles immersed in a molecular gas under uniform shear flow *(16 pages)* 064901
Rubén Gómez González, Moisés García Chamorro, and Vicente Garzó

Rotational inertia-induced glassy transition in chiral particle systems *(10 pages)* 064902
Bao-quan Ai, Rui-xue Guo, Chun-hua Zeng, and Ya-feng He

Interaction between two large particles in a dry granular shear flow *(16 pages)* 064903
Nathalie Fraysse, Umberto D'Ortona, and Nathalie Thomas

Considerations on the relaxation time in shear-driven jamming *(9 pages)* 064904
Lucas Hedström and Peter Olsson

Estimating random close packing density from circle radius distributions *(11 pages)* 064905
David J. Meer, Isabela Galoustian, Julio Gabriel de Falco Manuel, and Eric R. Weeks

Discharge of rice-shaped particles from a monolayer flat-bottom silo *(9 pages)* 064906
Muhammad Ahmed Hanif, Devaraj van der Meer, and Diego Maza

Air drag controls the runout of small laboratory landslides *(6 pages)* 064907
Rory T. Cerbus, Ludovic Brivady, Thierry Faug, and Hamid Kellay

Drag force regime in dry and immersed granular media *(8 pages)* 064908
Jiayu Lin, Tao Zhao, and Mingjing Jiang

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Solid Mechanics

Dislocation random walk under cyclic deformation *(10 pages)* 065001
Atsushi Kubo, Emi Kawai, Takashi Sumigawa, Hiroyuki Shima, and Yoshitaka Umeno

Slow dynamic elasticity at short times *(12 pages)* 065002
SangMin Lee and Richard L. Weaver

Non-Debye to Debye spectral shift in solid solutions of orientationally disordered crystals *(7 pages)* 065003
Abhishek K. Singh

Fluid Dynamics

Dynamo action driven by precessional turbulence *(8 pages)* 065101
Vivaswat Kumar, Federico Pizzi, George Mamatsashvili, André Giesecke, Frank Stefani, and Adrian J. Barker

From cavitation to astrophysics: Explicit solution of the spherical collapse equation *(9 pages)* 065102
Danail Obreschkow

Insights on phase speed and the critical Reynolds number of falling films *(7 pages)* 065103
Arghya Samanta

Molecular dynamics study of the sonic horizon of microscopic Laval nozzles *(18 pages)* 065104
Helmut Ortmayer and Robert E. Zillich

Precipitation-induced filament pattern of injected fluid controlled by a structured cell *(11 pages)* 065105
Shunsuke Tanaka, Kojiro Otoguro, Miyuki Kunihiro, Hiroki Ishikawa, and Yutaka Sumino

Propulsion of a three-sphere microrobot in a porous medium *(10 pages)* 065106
Chih-Tang Liao, Andrew Lemus, Ali Gürbüz, Alan C. H. Tsang, On Shun Pak, and Abdallah Daddi-Moussa-Ider

Generalized scaling laws for the irrotational motions bordering a turbulent region *(10 pages)* 065107
Marco Zecchetto, Ricardo P. Xavier, Miguel A. C. Teixeira, and Carlos B. da Silva

Poles, shocks, and tygers: The time-reversible Burgers equation *(22 pages)* 065108
Arunava Das, Pinaki Dutta, and Vishwanath Shukla

Dual residence time for droplets to coalesce with a liquid surface *(9 pages)* 065109
Ting-Heng Hsieh, Wei-Chi Li, and Tzay-Ming Hong

Plasma Physics

Impact of mid-*Z* gas fill on dynamics and performance of shock-driven implosions at the OMEGA laser *(22 pages)* 065201
M. Gatu Johnson, P. J. Adrian, B. D. Appelbe, A. J. Crilly, C. J. Forrest, V. Yu. Glebov, L. M. Green, B. M. Haines, N. V. Kabadi, G. Kagan, B. D. Keenan, J. Kunimune, C. K. Li, O. M. Mannion, R. D. Petrasso, F. H. Séguin, H. W. Sio, C. Stoeckl, G. D. Sutcliffe, W. T. Taitano, and J. A. Frenje

Sensitivity of magnetohydrodynamic simulations of Joule-heated conductors to the vaporization curve in equations of state *(7 pages)* 065202
Seth E. Kreher, Christopher L. Rousculp, Bruno S. Bauer, Trevor M. Hutchinson, Aidan W. Klemmer, Charles E. Starrett, and Edmund P. Yu

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Direct laser acceleration: A model for the electron injection from the walls of a cylindrical guiding structure *(9 pages)* 065204
P. Valenta, D. Maslarova, R. Babjak, B. Martinez, S. V. Bulanov, and M. Vranić

Generation of attosecond gigawatt soft x-ray pulses through coherent Thomson backscattering *(11 pages)* 065205
Qianyi Ma, Jiaxin Liu, Zhuo Pan, Xuezhi Wu, Huangang Lu, Zhenan Wang, Yuhui Xia, Yuekai Chen, Kyle G. Miller, Xinlu Xu, and Xueqing Yan

Shock wave formation in radiative plasmas *(13 pages)* 065206
F. Garcia-Rubio, V. Tranchant, E. C. Hansen, A. Reyes, R. Tabassum, H. U. Rahman, P. Ney, E. Ruskov, and P. Tzeferacos

Solid-to-plasma transition of polystyrene induced by a nanosecond laser pulse within the context of inertial confinement fusion *(11 pages)* 065207
R. Liotard, B. Canaud, A. Pineau, A. Sollier, E. Lescoute, A. Colaïtis, and G. Duchateau

Self-compression of laser pulses induced by asymmetric self-phase modulation aided by backward Raman scattering in periodic density-modulated plasma *(8 pages)* 065208
Jiajun Li, Hanchen Xue, Zhaohua Wang, Xianzhi Wang, Jiawen Li, Yingfeng Li, Guodong Zhao, and Zhiyi Wei

Shock-ignition effect in indirect-drive inertial confinement fusion approach *(6 pages)* 065209
S. Yu. Gus'kov and G. A. Vergunova

Phase-space entropy cascade and irreversibility of stochastic heating in nearly collisionless plasma turbulence *(24 pages)* 065210
Michael L. Nastac, Robert J. Ewart, Wrick Sengupta, Alexander A. Schekochihin, Michael Barnes, and William D. Dorland

Compression and acceleration of ions by ultrashort, ultraintense azimuthally polarized light *(9 pages)* 065211
Da-Chao Deng and Hui-Chun Wu

Melting curve of two-dimensional Yukawa systems predicted by isomorph theory *(8 pages)* 065212
Nichen Yu, Dong Huang, and Yan Feng

Exact dispersion relation of the quantum Langmuir wave *(8 pages)* 065213
Tian-Xing Hu, Dong Wu, Z. M. Sheng, and J. Zhang

Reexamining the Stark width and shift of He II Paschen-α: Studies using laser-induced plasma, Thomson scattering, and computer simulations *(8 pages)* 065214
Krzysztof Dzierżęga, Franciszek Sobczuk, Tomasz Krehlik, and Evgeny Stambulchik

Computational Physics

Optimal schedules for annealing algorithms *(15 pages)* 065301
Amin Barzegar, Firas Hamze, Christopher Amey, and Jonathan Machta

Simulating dynamics of ellipsoidal particles using lattice Boltzmann method *(14 pages)* 065302
Sumesh P. Thampi, Kevin Stratford, and Oliver Henrich

Direct CALPHAD coupling phase-field model: Closed-form expression for interface composition satisfying equal diffusion potential condition *(13 pages)* 065303
Takumi Morino, Machiko Ode, and Shoichi Hirosawa

(Continued)

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).

PHYSICAL REVIEW E **THIRD SERIES, VOLUME 109, NUMBER 6** **JUNE 2024**

Stochastic density functional theory combined with Langevin dynamics for warm dense matter *(15 pages)* 065304
Rebecca Efrat Hadad, Argha Roy, Eran Rabani, Ronald Redmer, and Roi Baer

Macroscopic finite-difference scheme and modified equations of the general propagation multiple-relaxation-time lattice Boltzmann model *(35 pages)* 065305
Ying Chen, Xi Liu, Zhenhua Chai, and Baochang Shi

Three-dimensional lattice Boltzmann model with self-tuning equation of state for multiphase flows *(21 pages)* . . . 065306
Rongzong Huang, Qing Li, and Yu Qiu

Accelerating particle-in-cell kinetic plasma simulations via reduced-order modeling of space-charge dynamics using dynamic mode decomposition *(15 pages)* 065307
Indranil Nayak, Fernando L. Teixeira, Dong-Yeop Na, Mrinal Kumar, and Yuri A. Omelchenko

Impact of random nanoscale roughness on gas-scattering dynamics *(14 pages)* 065308
Yichong Chen, Livio Gibelli, and Matthew K. Borg

Efficient computational model of the in-flow capturing of magnetic nanoparticles by a cylindrical magnet for cancer nanomedicine *(14 pages)* 065309
Barbara Wirthl, Vitaly Wirthl, and Wolfgang A. Wall

Discrete unified gas kinetic scheme for the solution of electron Boltzmann transport equation with Callaway approximation *(12 pages)* 065310
Meng Lian, Chuang Zhang, Zhaoli Guo, and Jing-Tao Lü

Chebyshev polynomial approach to Loschmidt echo: Application to quench dynamics in two-dimensional quasicrystals *(9 pages)* 065311
Niaz Ali Khan, Shihao Ye, Ziheng Zhou, Shujie Cheng, and Gao Xianlong

Simple proof that there is no sign problem in path integral Monte Carlo simulations of fermions in one dimension *(5 pages)* 065312
Siu A. Chin

Copycat perceptron: Smashing barriers through collective learning *(12 pages)* 065313
Giovanni Catania, Aurélien Decelle, and Beatriz Seoane

The editors and referees of PRE find these papers to be of particular interest, importance, or clarity. Please see our Announcement Phys. Rev. E 89, 010001 (2014).