

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:B;1-U

ARTICLES

Statistical Physics

Full-record statistics of one-dimensional random walks (<i>15 pages</i>)	064101
Léo Régnier, Maxim Dolgushev, and Olivier Bénichou	
Constants of motion characterizing continuous symmetry-broken phases (<i>17 pages</i>)	064102
Ángel L. Corps, Jorge Dukelsky, and Armando Relaño	
Evaluating extractable work of quantum batteries via entropic uncertainty relations (<i>11 pages</i>)	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 (<i>11 pages</i>)	064104
Jie Wang, Xuebin Wang, Wenli Liu, and Hao Hu	
Triadic interaction in the background of a pairwise spin-glass (<i>8 pages</i>)	064105
M. Bagherikalhor, B. Askari, and G. R. Jafari	
Short-time expansion of one-dimensional Fokker-Planck equations with heterogeneous diffusion (<i>18 pages</i>)	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 (<i>12 pages</i>)	064107
Haralambos Panagopoulos and Ettore Vicari	
Hyperuniformity classes of quasiperiodic tilings via diffusion spreadability (<i>13 pages</i>)	064108
Adam Hitin-Bialus, Charles Emmett Maher, Paul J. Steinhardt, and Salvatore Torquato	
Dynamic redundancy as a mechanism to optimize collective random searches (<i>6 pages</i>)	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 (<i>10 pages</i>)	064110
Haiting Zhang, Yifan Qian, Zhen-Xia Niu, and Qian Wang	
Integral fluctuation theorems and trace-preserving map (<i>14 pages</i>)	064111
Zhiqiang Huang (黄志强)	
Information thermodynamics of transition paths between multiple mesostates (<i>11 pages</i>)	064112
Miranda D. Louwerse and David A. Sivak	
Three-dimensional Heisenberg model with Dzyaloshinskii-Moriya interaction: A Monte Carlo study (<i>14 pages</i>)	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 (<i>16 pages</i>)	064114
Theodoros G. Tsironis and Aris L. Moustakas	
Chaotic route to classical thermalization: A real-space analysis (<i>6 pages</i>)	064115
Yue Liu and Dahai He	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E	THIRD SERIES, VOLUME 109, NUMBER 6	JUNE 2024
Irreversibility of stochastic state transitions in Langevin systems with odd elasticity (<i>11 pages</i>)		064116
Kento Yasuda		
Diffusion with a broad class of stochastic diffusion coefficients (<i>8 pages</i>)		064117
Go Uchida, Hitoshi Washizu, and Hiromi Miyoshi		
Effect of shape anisotropy on percolation of aligned and overlapping objects on lattices (<i>14 pages</i>)		064118
Jasna C. K. and V. Sasidevan		
Noisy kinetic-exchange opinion model with aging (<i>12 pages</i>)		064119
Allan R. Vieira, Jaume Llabrés, Raúl Toral, and Celia Anteneodo		
Thermodynamics of a minimal interacting heat engine: Comparison between engine designs (<i>12 pages</i>)		064120
Felipe Hawthorne, B. Cleuren, and Carlos E. Fiore		
Minimal quantum heat pump based on high-frequency driving and non-Markovianity (<i>10 pages</i>)		064121
Manuel Alamo, Francesco Petiziol, and André Eckardt		
Kardar-Parisi-Zhang universality in two-component driven diffusive models: Symmetry and renormalization group perspectives (<i>10 pages</i>)		064122
Pritha Dolai, Aditi Simha, and Abhik Basu		
Neural-network quantum-state study of the long-range antiferromagnetic Ising chain (<i>10 pages</i>)		064123
Jicheol Kim, Dongkyu Kim, and Dong-Hee Kim		
Observation of multiple attractors and diffusive transport in a periodically driven Klein-Gordon chain (<i>11 pages</i>)		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 (<i>7 pages</i>)		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 (<i>27 pages</i>)		064126
Ping Han, Guitian He, Zhenhui Huang, and Fengjia Guo		
Wave turbulence and the kinetic equation beyond leading order (<i>12 pages</i>)		064127
Vladimir Rosenhaus and Michael Smolkin		
Thermodynamic cost for precision of general counting observables (<i>20 pages</i>)		064128
Patrick Pietzonka and Francesco Coghi		
Work and efficiency fluctuations in a quantum Otto cycle with idle levels (<i>12 pages</i>)		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 (<i>10 pages</i>)		064130
Yumeng Zeng, Bozhen Zhou, and Shu Chen		
Interplay of phase segregation and chemical reaction: Crossover and effect on growth laws (<i>12 pages</i>)		064131
Shubham Thwal and Suman Majumder		
Qubit reset with a shortcut-to-isothermal scheme (<i>8 pages</i>)		064132
Hong-Bo Huang, Geng Li, and Hui Dong		

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E	THIRD SERIES, VOLUME 109, NUMBER 6	JUNE 2024
Transverse forces and glassy liquids in infinite dimensions (<i>13 pages</i>)		064133
Federico Ghimenti, Ludovic Berthier, Grzegorz Szamel, and Frédéric van Wijland		
Statistics of quantum heat in the Caldeira-Leggett model (<i>13 pages</i>)		064134
Ze-Zhou Zhang, Qing-Shou Tan, and Wei Wu		
Identifying and analyzing power-law scaling in two-dimensional image datasets (<i>15 pages</i>)		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 (<i>11 pages</i>)		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 (<i>22 pages</i>)		064137
Rupak Majumder, Rohitashwa Chattopadhyay, and Shamik Gupta		
Work fluctuation theorems with initial quantum coherence (<i>9 pages</i>)		064138
Gianluca Francica and Luca Dell'Anna		
Effective temperatures in nonequilibrium statistical physics (<i>4 pages</i>)		064139
J. S. Langer		
Extinction and coexistence in a binary mixture of proliferating motile disks (<i>10 pages</i>)		064140
Alejandro Almodóvar, Tobias Galla, and Cristóbal López		
Statistical physics of principal minors: Cavity approach (<i>17 pages</i>)		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 (<i>11 pages</i>)		064142
Claudio Bonati, Andrea Pelissetto, and Ettore Vicari		
Ordering kinetics in the active Ising model (<i>13 pages</i>)		064143
Sayam Bandyopadhyay, Swarnajit Chatterjee, Aditya Kumar Dutta, Mintu Karmakar, Heiko Rieger, and Raja Paul		
Aging and confinement in subordinated fractional Brownian motion (<i>10 pages</i>)		064144
Yingjie Liang, Wei Wang, and Ralf Metzler		
Semiclassical thermodynamic geometry (<i>8 pages</i>)		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 (<i>16 pages</i>)		064146
André H. A. Malavazi, Borhan Ahmadi, Paweł Mazurek, and Antonio Mandarino		
Self-phoretic oscillatory motion in a harmonic trap (<i>9 pages</i>)		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 (<i>8 pages</i>)		064148
Upendra Harbola		

(Continued)

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)

CONTENTS - *Continued*

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

Elliptic-rogue waves and modulational instability in nonlinear soliton equations (<i>20 pages</i>)	064209
Liming Ling and Xuan Sun	
Delayed self-feedback echo state network for long-term dynamics of hyperchaotic systems (<i>13 pages</i>)	064210
Xu Xu, Jianming Liu, and Eric Li	
Diffusion of noiseless active particles in a planar convection array (<i>9 pages</i>)	064211
Qingqing Yin, Jianli Liu, Yunyun Li, and Fabio Marchesoni	
Multifractal perturbations to multiplicative cascades promote multifractal nonlinearity with asymmetric spectra (<i>26 pages</i>)	064212
Madhur Mangalam and Damian G. Kelty-Stephen	
Robust design against frequency variation for amplitude death in delay-coupled oscillators (<i>12 pages</i>)	064213
Yoshiki Sugitani, Kensei Kawahara, and Keiji Konishi	
Emergence of order from chaos through a continuous phase transition in a turbulent reactive flow system (<i>15 pages</i>)	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 (<i>11 pages</i>)	064215
Irmantas Ratas and Kestutis Pyragas	
Dynamics of multidimensional fundamental and vortex solitons in random media (<i>12 pages</i>)	064216
Volodymyr M. Lashkin	
Intermittent generalized synchronization and modified system approach: Discrete maps (<i>11 pages</i>)	064217
Alexey A. Koronovskii, Olga I. Moskalenko, and Anton O. Selskii	
Singular bifurcations and regularization theory (<i>13 pages</i>)	064218
Alexander Farutin and Chaouqi Misbah	
Soliton in Bose-Einstein condensates with helicoidal spin-orbit coupling under a Zeeman lattice (<i>8 pages</i>)	064219
Pingping Fang and Ji Lin	

PART B

Networks and Complex Systems

Eigenvalue spectra of finely structured random matrices (<i>35 pages</i>)	064301
Lyle Poley, Tobias Galla, and Joseph W. Baron	
Temporal local clustering coefficient uncovers the hidden pattern in temporal networks (<i>9 pages</i>)	064302
Bofan Chen, Guyu Hou, and Aming Li	
Data-driven exploration of swarmalators with second-order harmonics (<i>10 pages</i>)	064303
R. Senthamizhan, R. Gopal, and V. K. Chandrasekar	
Simple evolving random graphs (<i>12 pages</i>)	064304
P. L. Krapivsky	
Robustness of Turing models and gene regulatory networks with a sweet spot (<i>8 pages</i>)	064305
Roozbeh H. Pazuki and Robert G. Endres	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 109, NUMBER 6

JUNE 2024

Topological and spectral properties of random digraphs (<i>11 pages</i>)	064306
C. T. Martínez-Martínez, J. A. Méndez-Bermúdez, and José M. Sigarreta	
Cascading failures in bipartite networks with directional support links (<i>17 pages</i>)	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 (<i>9 pages</i>)	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 (<i>9 pages</i>)	064309
Zhana Kuncheva and Ognyan Kounchev	
Biological Physics	
Physical limits to acceleration of enzymatic reactions inside phase-separated compartments (<i>15 pages</i>)	064401
Jeremy D. Schmit and Thomas C. T. Michaels	
Run-and-tumble kinematics of <i>Enterobacter</i> Sp. SM3 (<i>10 pages</i>)	064402
Silverio Johnson, Brian Freedman, and Jay X. Tang	
Behavioral transition of a fish school in a crowded environment (<i>12 pages</i>)	064403
Bruno Ventéjou, Iris Magniez- Papillon, Eric Bertin, Philippe Peyla, and Aurélie Dupont	
Gramicidin A as a mechanical sensor for mixed nonideal lipid membranes (<i>12 pages</i>)	064404
Oleg V. Kondrashov and Sergey A. Akimov	
Combinatorics and topological weights of chromatin loop networks (<i>13 pages</i>)	064405
Andrea Bonato, Michael Chiang, Dom Corbett, Sergey Kitaev, Davide Marenduzzo, Alexander Morozov, and Enzo Orlandini	
Effective model of protein-mediated interactions in chromatin (<i>11 pages</i>)	064406
Francesco Borando and Guido Tiana	
Clonal dynamics of surface-driven growing tissues (<i>8 pages</i>)	064407
Ruslan I. Mukhamadiarov, Matteo Ciarchi, Fabrizio Olmeda, and Steffen Rulands	
Adhesion dynamics of Janus nanocarriers to endothelial cells: A dissipative particle dynamics study (<i>16 pages</i>)	064408
Saeed Akbarishandiz, Shaghayegh Khani, and Joao Maia	
Universal characterization of epitope immunodominance from a multiscale model of clonal competition in germinal centers (<i>13 pages</i>)	064409
Federica Ferretti and Mehran Kardar	
Local and extensive fluctuations in sparsely interacting ecological communities (<i>10 pages</i>)	064410
Stav Marcus, Ari M. Turner, and Guy Bunin	
Unbiased estimation of sampling variance for Simpson's diversity index (<i>10 pages</i>)	064411
Andreas Tiffeau-Mayer	
Unexpected large charge transfer rate mediated by adenine in twisted DNA structure (<i>7 pages</i>)	064412
Yongshun Song, Yi Gao, and Haiping Fang	

(Continued)

Ultrafast excitonic dynamics in DNA: Bridging correlated quantum dynamics and sequence dependence (<i>10 pages</i>)	064413
Dennis Herb, Mirko Rossini, and Joachim Ankerhold	
Phase separation provides a mechanism to drive phenotype switching (<i>13 pages</i>)	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 (<i>10 pages</i>)	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 (<i>12 pages</i>)	064601
Kay Hofmann, Marc Isele, Artur Erbe, Paul Leiderer, and Peter Nielaba	
Active nematic ratchet in asymmetric obstacle arrays (<i>7 pages</i>)	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 (<i>11 pages</i>)	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 (<i>10 pages</i>)	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 (<i>8 pages</i>)	064605
Joel Diaz Maier and Joachim Wagner	
Periodic orbits, pair nucleation, and unbinding of active nematic defects on cones (<i>15 pages</i>)	064606
Farzan Vafa, David R. Nelson, and Amin Doostmohammadi	
Finite-size scaling in kinetics of phase separation in certain models of aligning active particles (<i>10 pages</i>)	064607
Tanay Paul, Nalina Vadakkayil, and Subir K. Das	
Real-space local self-motion of protonated and deuterated water (<i>6 pages</i>)	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 (<i>16 pages</i>)	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 (<i>19 pages</i>)	064610
Shunsuke Yabunaka and Youhei Fujitani	
Discovering dynamic laws from observations: The case of self-propelled, interacting colloids (<i>16 pages</i>)	064611
Miguel Ruiz-Garcia, C. Miguel Barriuso G., Lachlan C. Alexander, Dirk G. A. L. Aarts, Luca M. Ghiringhelli, and Chantal Valeriani	

(Continued)

CONTENTS - Continued

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, Guillaume 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)

Solid Mechanics

Dislocation random walk under cyclic deformation (<i>10 pages</i>)	065001
Atsushi Kubo, Emi Kawai, Takashi Sumigawa, Hiroyuki Shima, and Yoshitaka Umeno	
Slow dynamic elasticity at short times (<i>12 pages</i>)	065002
SangMin Lee and Richard L. Weaver	
Non-Debye to Debye spectral shift in solid solutions of orientationally disordered crystals (<i>7 pages</i>)	065003
Abhishek K. Singh	

Fluid Dynamics

Dynamo action driven by precessional turbulence (<i>8 pages</i>)	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 (<i>9 pages</i>)	065102
Danail Obreschkow	
Insights on phase speed and the critical Reynolds number of falling films (<i>7 pages</i>)	065103
Arghya Samanta	
Molecular dynamics study of the sonic horizon of microscopic Laval nozzles (<i>18 pages</i>)	065104
Helmut Ortmayer and Robert E. Zillich	
Precipitation-induced filament pattern of injected fluid controlled by a structured cell (<i>11 pages</i>)	065105
Shunsuke Tanaka, Kojiro Otoguro, Miyuki Kunihiro, Hiroki Ishikawa, and Yutaka Sumino	
Propulsion of a three-sphere microrobot in a porous medium (<i>10 pages</i>)	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 (<i>10 pages</i>)	065107
Marco Zecchetto, Ricardo P. Xavier, Miguel A. C. Teixeira, and Carlos B. da Silva	
Poles, shocks, and tygers: The time-reversible Burgers equation (<i>22 pages</i>)	065108
Arunava Das, Pinaki Dutta, and Vishwanath Shukla	
Dual residence time for droplets to coalesce with a liquid surface (<i>9 pages</i>)	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 (<i>22 pages</i>)	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 (<i>7 pages</i>)	065202
Seth E. Kreher, Christopher L. Rousculp, Bruno S. Bauer, Trevor M. Hutchinson, Aidan W. Klemmer, Charles E. Starrett, and Edmund P. Yu	

(Continued)

CONTENTS - Continued

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. Colaītis, 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 Hirotsawa	

(Continued)

CONTENTS - *Continued*

PHYSICAL REVIEW E

THIRD SERIES, VOLUME 109, NUMBER 6

JUNE 2024

Stochastic density functional theory combined with Langevin dynamics for warm dense matter (<i>15 pages</i>)	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 (<i>35 pages</i>)	065305
Ying Chen, Xi Liu, Zhenhua Chai, and Baochang Shi	
Three-dimensional lattice Boltzmann model with self-tuning equation of state for multiphase flows (<i>21 pages</i>) . . .	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 (<i>15 pages</i>)	065307
Indranil Nayak, Fernando L. Teixeira, Dong-Yeop Na, Mrinal Kumar, and Yuri A. Omelchenko	
Impact of random nanoscale roughness on gas-scattering dynamics (<i>14 pages</i>)	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 (<i>14 pages</i>)	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 (<i>12 pages</i>)	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 (<i>9 pages</i>)	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 (<i>5 pages</i>)	065312
Siu A. Chin	
Copypcat perceptron: Smashing barriers through collective learning (<i>12 pages</i>)	065313
Giovanni Catania, Aurélien Decelle, and Beatriz Seoane	