

PHYSICAL REVIEW E

covering statistical, nonlinear, biological, and soft matter physics

Editor

ELI BEN-NAIM

(Los Alamos National Laboratory)

Managing Editor

DIRK JAN BUKMAN

(APS Editorial Office)

Associate Editors

ALEX ARENAS

(Universitat Rovira i Virgili)

RALF BUNDSCHUH

(The Ohio State University)

RONALD DICKMAN

(Universidade Federal de Minas Gerais)

BRUNO ECKHARDT

(Philipps-Universität Marburg)

HENRIK FLYVBJERG

(Technical University of Denmark - DTU)

ANTAL JÁKLI

(Kent State University)

BRANT M. JOHNSON

(Brookhaven National Laboratory)

JULIAN D. MAYNARD

(Pennsylvania State University)

THOMAS PATTARD

(APS Editorial Office)

ANTONIO POLITI

(University of Aberdeen)

HERNAN D. ROZENFELD

(APS Editorial Office)

ALEXANDER WAGNER

(North Dakota State University)

Senior Assistant Editors

MARGARET FOSTER

JILL M. GARGANO

Assistant Editors

KATIUSCIA CASSEMIRO

JUAN-JOSÉ LIÉTOR-SANTOS

YUJUN WANG

Senior Editorial Assistant

TERRE ARENA

EDITORIAL BOARD

Term ending 31 December 2016

D. BEN-AVRAHAM	Statistical Mechanics
R. E. ECKE	Fluid Dynamics
A. Y. GROSBERG	Biophysics, Polymers
H. HINRICHSSEN	Statistical Physics
I. H. HUTCHINSON	Plasma Physics
D. M. KROLL	Computational Physics, Complex Fluids
A. KUDROLLI	Granular Matter, Nonlinear Dynamics
M. P. MARDER	Fracture and Friction, Pattern Formation
F. RITORT	Biophysics, Nonequilibrium Phenomena, Disordered Systems
R. RUBINSTEIN	Turbulence
D. L. SHEPELYANSKY	Classical and Quantum Chaos
J. M. YEOMANS	Soft and Active Matter, Computational Physics

Term ending 31 December 2017

P. C. BRESSLOFF	Biophysics, Neuroscience, Nonlinear Phenomena
B. DERRIDA	Statistical Physics, Disordered Systems
D. GAUTHIER	Quantum Chaos
D. GRIER	Colloids, Complex Fluids
W. HORSTHEMKE	Stochastic Physics, Chemical Kinetics
J. KERTESZ	Networks, Complex Systems
Y.-C. LAI	Nonlinear Dynamics, Chaos, Complex Systems
U. SCHWARZ	Soft Matter and Biological Physics
R. STANNARIUS	Liquid Crystals, Granular Materials
L. TUCKERMAN	Fluid Dynamics
P. B. WARREN	Statistical and Soft Matter Physics, Systems Biology
J. YANG	Solitons, Nonlinear Waves

Term ending 31 December 2018

J. J. BREY	Granular Materials, Nonequilibrium Statistical Mechanics
R. EPSTEIN	Plasma Physics
M. G. ESPOSITO	Statistical Physics, Thermodynamics
L. R. EVANGELISTA	Liquid Crystals, Complex Fluids
M. D. GRAHAM	Fluid Dynamics, Rheology
M. KARDAR	Statistical Physics
R. METZLER	Biological Physics, Stochastic Processes
M. PERC	Complex Systems, Networks
H. RUBINSZTEIN-DUNLOP	Quantum Physics, Biological Physics
E. SACKMANN	Biological Physics
A. TORCINI	Chaos, Nonlinear Dynamics
E. R. WEEKS	Colloids, Complex Fluids

American Physical Society

<i>President</i>	HOMER NEAL
<i>Speaker of Council</i>	NAN PHINNEY
<i>Chief Executive Officer</i>	KATE P. KIRBY
<i>Publisher</i>	MATTHEW SALTER

One Physics Ellipse
College Park, MD 20740-3844

APS Editorial Office

Directors

<i>Editorial</i>	DANIEL T. KULP
<i>Journal Information Systems</i>	MARK D. DOYLE
<i>Journal Operations</i>	CHRISTINE M. GIACCONE

1 Research Road
Ridge, NY 11961-2701
Phone: (631) 591-4050
Email: pre@aps.org

Web: <http://journals.aps.org/>
Submissions: <http://authors.aps.org/Submissions/>

Member Subscriptions:

APS Membership Department

One Physics Ellipse
College Park, MD 20740-3844
Phone: (301) 209-3280 Fax: (301) 209-0867
Email: membership@aps.org

Institutional Subscriptions:

APS Subscription Services

P.O. Box 41
Annapolis Junction, MD 20701
Toll free: (888) 339-9655
Phone: (301) 617-7809 Email: subs@aps.org

Manuscripts should be **submitted** electronically in acceptable format (see <http://authors.aps.org/Submissions/>). Submission is a representation that the manuscript has not been published previously and is not currently under consideration for publication elsewhere. An executed **APS copyright-transfer** form must be provided (effective only on acceptance for publication). Information for Contributors and a description of editorial Policies and Practices can be found at <http://journals.aps.org/pre/authors>.

To help defray editorial and production expenses, authors of manuscripts which are not submitted in acceptable electronic format are expected to pay a **publication charge** of \$1490/article, \$930/Rapid Communication, \$340/Comment or Reply. Acceptable formats are REVTeX (preferred), L^AT_EX, plain T_EX; MS Word; PostScript figures (preferred). **Reprints** are offered for sale to authors.

For additional information regarding the online version of this journal, please visit: <http://journals.aps.org/pre>. Institutional subscribers requesting address changes, filing claims, or requesting additional information, please contact the APS Services at subs@aps.org. Member subscribers requiring changes, claims or additional information should contact the APS Membership Department at membership@aps.org.

Copyright © 2016 American Physical Society. All rights reserved.

*Physical Review E*TM is a trademark of the American Physical Society, registered in the United States, Canada, European Union and Japan.

Rights and Permissions: <http://journals.aps.org/copyrightFAQ.html>

Copying: No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the written permission of the publisher, except as stated below. Single copies of individual articles may be made for private use or research. Authorization is given to copy articles beyond the use permitted by Sections 107 and 108 of the U.S. Copyright Law, provided the copying fee of \$25.00 per copy per article is paid to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA.

Reproduction of an entire article in a reprint collection, or for advertising or promotional purposes, or republication in any form requires permission from APS. Permission must be sought via the Copyright Clearance Center (CCC) RightsLink system. To request permission to republish, refer to the Reuse and Permissions link that can be found on each APS article page and provide the requested information.

Other Use: Permission is granted to quote from the journal with the customary acknowledgment of the source. Permission must be sought using the Copyright Clearance Center (CCC) RightsLink system. To request permission to reproduce a figure, table, or excerpt of an article refer to the Reuse and Permissions link that can be found on each APS article page and provide the requested information. Authorization for private use or research does not extend to systematic or multiple reproduction, to copying for promotional purposes, to distribution in any format, or to republication in any form. In all such cases, specific permission from APS must be obtained.

Physical Review E [ISSN: 2470-0045 (print), 2470-0053 (online); CODEN PLEEE8; printed in USA] is published monthly by the American Physical Society, 1 Research Road, Ridge, NY 11961-2701.

POSTMASTER: Send address changes to *Physical Review E*, APS Subscription Services, P.O. Box 41, Annapolis Junction, MD 20701. The 2016 print + online base price is \$4330. Periodicals postage rates are paid at College Park, MD, and additional mailing offices.