PHYSICAL REVIEW E_{TM}

STATISTICAL, NONLINEAR, 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)

MARGARET MALLOY (APS Editorial Office)

JULIAN D. MAYNARD

(Pennsylvania State University)

THOMAS PATTARD

(APS Editorial Office)

ANTONIO POLITI

(University of Aberdeen)

ALEXANDER WAGNER

(North Dakota State University)

Senior Assistant Editors

MARGARET FOSTER JILL M. GARGANO

Assistant Editors

HERNAN D. ROZENFELD

Senior Editorial Assistant

TERRE ARENA

EDITORIAL BOARD

Term ending 31 December 2015

J. J. BREY Granular Materials, Nonequilibrium Statistical Mechanics R. EPSTEIN Plasma Physics M. G. ESPOSITO Statistical Physics, Thermodynamics M. D. GRAHAM Fluid Dynamics, Rheology M. KARDAR Statistical Physics R. METZLER Biological Physics, Stochastic Processes M. A. Muñoz Nonequilibrium Statistical Mechanics M. PERC Complex Systems, Networks H. PLEINER Liquid Crystals, Polymers E. SACKMANN Biological Physics T. TÉL Chaos, Dynamical Systems A. TORCINI Nonlinear Dynamics E.R. WEEKS Colloids, Complex Fluids

Term ending 31 December 2016 D. BEN-AVRAHAM Statistical Mechanics R. E. ECKE Fluid Dynamics A. Y. GROSBERG Biophysics, Polymers H HINRICHSEN Statistical Physics I. H. HUTCHINSON Plasma Physics Computational Physics, Complex Fluids D. M. KROLL 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 Colloids, Complex Fluids D. GRIER Stochastic Physics, Chemical Kinetics W. HORSTHEMKE J. KERTESZ Networks, Complex Systems -C. LAI Nonlinear Dynamics, Chaos, Complex Systems U. Schwarz Soft Matter and Biological Physics R. Stannarius Liquid Crystals, Granular Materials

P. B. WARREN Statistical and Soft Matter Physics. Systems Biology

J. YANG Solitons, Nonlinear Waves

L. TUCKERMAN

American Physical Society

SAMUEL H. ARONSON President Speaker of Council NAN PHINNEY KATE P. KIRBY Executive Officer Editor in Chief GENE D. SPROUSE

> One Physics Ellipse College Park, MD 20740-3844

> > **APS Editorial Office**

Directors

Editorial DANIEL T. KULP Journal Information Systems MARK D. DOYLE Journal Operations 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.

Fluid Dynamics

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 \$1445/article, \$900/Rapid Communication, \$330/Comment or Reply. Acceptable formats are REVTEX (preferred), LETEX, plain TEX; 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 Subscription Services at subs@aps.org. Member subscribers requiring changes, claims or additional information should contact the APS Membership Department at membership@aps.org.

Copyright © 2015 American Physical Society. All rights reserved.

Physical Review E_{TM} is a trademark of the American Physical Society.

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 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_{TM}[ISSN: 1539-3755 (print), 1550-2376 (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*_{TM}, APS Subscription Services, P.O. Box 41, Annapolis Junction, MD 20701. The 2015 print + online base price is \$4090. Periodicals postage rates are paid at College Park, MD, and additional mailing offices.