

PHYSICAL REVIEW LETTERS

Providing rapid publication of short reports of important fundamental research, with coverage of major advances in all aspects of physics and of developments with significant consequences across subdisciplines.

Editors

JACK SANDWEISS
GEORGE BASBAS
REINHARDT B. SCHUHMAN

Associate Editors

ROBERT GARISTO
BRANT M. JOHNSON
SAMINDRANATH MITRA

Senior Assistant Editors

JEROME MALENFANT
CHRISTOPHER WESSELBORG

Assistant Editors

MANOLIS ANTONOYIANNAKIS
SONJA DAFFER
DONAVAN HALL
SAAD E. HEBBOUL
LING MIAO
VALERIE L. MILLER
YONKO MILLEV
JOHN RIPKA
JANE THROWE
DANIEL UCKO
DENIZ VAN HEIJNSBERGEN

Consulting Editor

STANLEY G. BROWN

Adjunct Associate Editors

THOMAS DUKE
FRANK NARDUCCI

Editorial Board (Divisional Associate Editors)

JACK SANDWEISS, Chairman

Astrophysics

M. BARING, P. L. BENDER,
S. CARLIP, E. FLANAGAN, D. SCOTT

Atomic, Molecular, and Optical Physics

W. M. ITANO, J. MACEK,
P. MEYSTRE, K. MOLMER, G. NIENHUIS,
H.T.C. STOOFF, S. STRINGARI, J.E. THOMAS, M. UEDA

Biological Physics

D. CHATENAY, T. GEISEL, S.J. SCHIFF, U. SEIFERT

Chemical Physics

A. NITZAN, T. SEIDEMAN

Condensed Matter Physics

A. AUERBACH, M. BAYER,
C. W. J. BEENAKKER, J. BLOCH,
P. W. BROUWER, C. BRUDER, S. L. COOPER,
K. ENSSLIN, J. HERTZ, K. INGERSENT, J.K. JAIN,
M. B. JOHNSON, J. MACHTA, M. C. MARCHETTI,
H. J. MARIS, B. N. MILLER, L. W. MOLENKAMP,
S. NAGLER, P. G. RADAELLI, D. RAMAKER, R. RESTA,
M. F. SHLESINGER, A. J. SIEVERS, S. L. SONDHI, Y. TAKADA,
J. TRANQUADA, G. VIGNALE, G.E. VOLOVIK, F. C. ZHANG, Z. ZHANG

Fluid Dynamics

R. E. ECKE, R. PANDIT

Laser Science

J. BERGOU, P. BUCKSBAUM, M. G. RAYMER

Materials Physics

F. BESENBACHER, P. C. CANFIELD, H. IBACH,
P. NORDBLAD, J. ROBERTSON, M. D. STILES, M. A. VAN HOVE

Nuclear Physics

J. BARRETTE, D. H. BECK, G. D. DRACOLIS,
P.-H. HEENEN, V. KOCH, F. NUNES, W. WEISE

Particles and Fields

P. ARGYRES, D. BRYMAN, S. GOTTLIEB,
T. SCHAEFER, A. YU. SMIRNOV, F. ZWIRNER

Physics of Beams

F. ZIMMERMANN

Plasma Physics

R. L. DEWAR,
J. H. HARRIS, D. MEYERHOFER, D. L. NEWMAN

Polymer Physics

J. DE PABLO, J. DOUGLAS, R. G. LARSON

Foundations of Quantum Mechanics

E. MERZBACHER

Quantum Information

D. BRUSS, D. DIVINCENZO

The American Physical Society

One Physics Ellipse
College Park, MD 20740-3844

President

LEO P. KADANOFF

President-Elect

ARTHUR BIENENSTOCK

Vice-President

CHERRY A. MURRAY

Editor-in-Chief

GENE D. SPROUSE

Treasurer

and Publisher

JOSEPH W. SERENE

Executive Officer

JUDY R. FRANZ

APS Editorial Office

1 Research Road
Ridge, NY 11961-2701

Phone: (631) 591-4060

Fax: (631) 591-4141

Email: prl@aps.org

Web: <http://publish.aps.org/>

Submissions: prltex@aps.org or

<http://authors.aps.org/ESUB/>

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

Suite 1N01

2 Huntington Quadrangle

Melville, NY 11747-4502

Phone: (516) 576-2270, (800) 344-6902

Fax: (516) 349-9704

Email: subs@aps.org

Letters intended for this journal must be short and self-contained. A description of editorial Policies and Practices is published in the first January and July issues and can be found on our Web server. Instructions for manuscript preparation are given in the Information for Contributors published in the first issue of each volume and available on our Web server. Rules pertaining to allowed length and memos regarding production requirements appear at the end of some issues of the journal.

Manuscripts should be **submitted** electronically in acceptable format (see <http://authors.aps.org/ESUB/> or inquire at prltex@aps.org). If this is not possible, send one copy to the Editorial Office. Submission is a representation that the manuscript has not been published previously and is not currently under consideration for publication elsewhere. Authors should provide indexing codes according to the PACS scheme (available at <http://publish.aps.org/PACS/>). An executed APS **copyright-transfer** form (effective only on acceptance for publication) must be provided; the form is available via our Web submission server and via <http://authors.aps.org/>. To help defray editorial and production expenses, authors of published Letters are expected to pay a **publication charge** of \$730 (\$265 for a Comment or Reply). Charges are lower (\$590 for a Letter, \$210 for a Comment or Reply) for properly prepared electronic submissions. Acceptable formats are REV_{TEX} (preferred), L^AT_EX, plain T_EX, MS Word; PostScript figures. **Reprints** are offered for sale to authors.

For information about **subscription prices** and about the **online version** of the journal, see our Web server, or inquire at assocpub@aps.org. **Member** inquiries regarding **subscriptions**, renewals, address changes, missing or damaged copies, and single-copy orders should be addressed to the APS Membership Department. **Institutional subscribers** should address subscription inquiries to APS Subscription Services. For address changes please send both old and new addresses, and if possible, send the mailing label from a recent issue.

Copyright © 2007 by The American Physical Society. All rights reserved.

Physical Review Letters TM is a trademark of The American Physical Society.

Rights and Permissions: See <http://forms.aps.org/author/copyfaq.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 from the Associate Publisher, The American Physical Society, One Physics Ellipse, College Park, MD 20740-3844; email: assocpub@aps.org.

Other Use: Permission is granted to quote from the journal with the customary acknowledgment of the source. Permission must be sought from the APS Associate Publisher to reproduce a figure, table, or excerpt of an Article.

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 Letters [ISSN: 0031-9007 (print), 1079-7114 (online); CODEN PRLTAA; printed in USA] is published weekly by The American Physical Society, 1 Research Road, Ridge, NY 11961-2701.

POSTMASTER: Send address changes to Physical Review Letters, APS Subscription Services, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502. The 2007 print + online base price is \$2945. Periodicals postage rates are paid at Huntington Station, NY, and additional mailing offices.