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
STANLEY G. BROWN
GENE L. WELLS

Associate Editors

BRANT M. JOHNSON
REINHARDT B. SCHUHMANN

Senior Assistant Editor

JEROME MALENFANT

Assistant Editors

ROBERT GARISTO
SAMINDRANATH MITRA
CHRISTOPHER WESSELBORG

Assistants to the Editors

SAAD E. HEBBOUL
MARIE KAPLAN
PAUL K. SHERARD

Senior Editorial Assistant

JILL M. GARGANO

Adjunct Associate Editors

FREDERICK MACKINTOSH
M. MUTHUKUMAR

Editorial Board *(Divisional Associate Editors)*

JACK SANDWEISS, *Chairman*

Astrophysics S. P. BOUGHN, J. L. FRIEDMAN, C. THOMPSON

Atomic, Molecular, and Optical Physics E. ARIMONDO, J. DALIBARD, M. R. FLANNERY, R. A. HOLT, M. LEWENSTEIN

Biological Physics P. M. CHAMPION, R. E. GOLDSTEIN, M. WORTIS

Chemical Physics B. J. BERNE, S. T. CEYER

Condensed Matter Physics I. AFFLECK, I. BAR-JOSEPH, W. E. BRON, M. BÜTTIKER, M. H. W. CHAN, J. M. D. COEY, R. COMPTON, G. CRABTREE, E. DAGOTTO, A. L. FETTER, S. M. GIRVIN, L. GLAZMAN, G. GREST, D. A. HUSE, M. V. KLEIN, S. W. KOCH, S. MAZUMDAR, M. PEPPER, M. SCHEFFLER, M. STONE, D. STROUD, J. L. THOLENCE, J. M. VAN RUITENBEEK, P. WÖLFLE

Fluid Dynamics P. G. DE GENNES, U. FRISCH, H. SWINNEY

High Polymer Physics K. KREMER, E. L. THOMAS

Laser Science K. C. KULANDER, J. C. MILLER

Materials Physics R. ALLENSPACH, N. C. BARTELT, G. COMSA, W. F. EGELHOFF, JR., S. M. SHAPIRO, J. A. VENABLES, A. ZANGWILL

Nuclear Physics N. AUERBACH, P. BRAUN-MUNZINGER, U. HEINZ, D. S. KOLTUN, I. Y. LEE, R. SCHUMACHER

Particles and Fields R. S. CHIVUKULA, R. GUPTA, R. HEUER, I. KLEBANOV, P. G. LANGACKER, G. STERMAN

Physics of Beams K.-J. KIM

Plasma Physics H. BERK, A. HIROSE, T. JOHNSTON, R. LOVELACE

Foundations of Quantum Mechanics P. EBERHARD

Quantum Information C. H. BENNETT

The American Physical Society
One Physics Ellipse
College Park, MD 20740-3844

President JAMES S. LANGER
President-Elect GEORGE H. TRILLING
Vice-President WILLIAM F. BRINKMAN
Editor-in-Chief MARTIN BLUME
Treasurer and Publisher THOMAS J. MCILRATH
Executive Officer JUDY R. FRANZ

APS Editorial Office
1 Research Road, Box 9000
Ridge, NY 11961-9000
Phone: (516) 591-4060
Fax: (516) 591-4141
Email: prl@aps.org
Web: http://publish.aps.org/
Submissions: prltex@aps.org or http://publish.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

Nonmember Subscriptions:

AIP Circulation & Fulfillment
Suite 1NO1
2 Huntington Quadrangle
Melville, NY 11747-4502
Phone: (516) 576-2270, (800) 344-6902
Fax: (516) 349-9704
Email: subs@aip.org

Letters intended for this Journal must be short and self-contained. A description of editorial Policies and Practices is published annually in the first July issue. 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 may be **submitted** electronically if in appropriate format (see http://publish.aps.org/ESUB/ or inquire at prltex@aps.org). Alternatively, send four copies 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 on our Web server, via ftp to aps.org in the /pub/pacs directory, and in print from the Editorial Office). A signed APS **copyright-transfer** form (effective only on acceptance for publication) must be provided; the form appears at the end of the 18 October 1999 issue of *Physical Review Letters* and is available on our Web server. *After* publication, **payment** of a fee of $550 for each Letter and $200 for each Comment or Reply is requested from the authors to defray editorial and production expenses; for properly prepared electronic submissions, the fees requested are $380 and $130, respectively. Acceptable formats are REVTeX (preferred), LaTeX, Harvmac, Plain TeX; PostScript figures. **Reprints** are offered for sale to authors. **Proofs** are normally sent 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, microfilm, and single-copy orders should be addressed to the APS Membership Department. **Nonmembers** should address subscription inquiries to the AIP Circulation and Fulfillment Division. For address changes please send both old and new addresses, and if possible, include an address stencil imprint from the mailing wrapper of a recent issue; allow six weeks advance notice. The general subscription price is $2445 (nonmember, U.S. and possessions, January-December 2000).

Copyright 2000 by The American Physical Society

Permission to quote excerpts or to reprint any figures or tables should be obtained directly from an author. The American Physical Society for its part hereby grants permission to quote excerpts and reprint up to 25 figures and/or tables from its journals with acknowledgment of the sources. Requests for permission to reprint in one publication more than 25 figures and/or tables from the totality of APS journals must be made in writing to the Associate Publisher (see address below). A $10.00 fee per figure and/or table in excess of 25 will be charged. **Individual** teachers, students, researchers, and libraries in nonprofit institutions acting for them are permitted to make hard copies of articles for use in teaching or research, provided such copies are not sold. **Copying of articles for sale** by document delivery services or suppliers, or beyond the free copying allowed above, is permitted against payment of a copying fee. The current copying fee is $15.00, per article, per copy. Express permission of APS is not required, except for purposes stated below, provided that the fee is paid through the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923. Contact the CCC for information on how to report copying and remit payments. **Reproduction** in a reprint collection, or for advertising or promotional purposes, or republication in any form requires permission of one of the authors and a license from APS. Such a license must be sought from Barbara Hicks, Associate Publisher, The American Physical Society, One Physics Ellipse, College Park, MD 20740-3844. Permission of the author must be sought and obtained from him or her directly.

Physical Review Letters (ISSN: 0031-9007; CODEN PRLTAO; printed in USA) is published weekly by The American Physical Society, 1 Research Road, Box 9000, Ridge, NY 11961-9000. Periodicals postage rates are paid at Huntington Station, NY, and additional mailing offices.

POSTMASTER: Send address changes to Physical Review Letters, Circulation and Fulfillment Department, AIP, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502.