

PHYSICAL REVIEW A_{TM}

ATOMIC, MOLECULAR, AND OPTICAL PHYSICS

Editor

GORDON W. F. DRAKE
(University of Windsor)

Managing Editor

MARGARET MALLOY
(APS Editorial Office)

Associate Editors

DIRK JAN BUKMAN
(APS Editorial Office)

LEE A. COLLINS
(Los Alamos National Laboratory)

FRANCO DALFOVO
(Università di Trento)

JULIO GEA-BANACLOCHE
(University of Arkansas)

MARK HILLERY
(Hunter College)

KEITH B. MACADAM
(University of Kentucky)

FRANK NARDUCCI
(Naval Air Systems Command)

MARK SAFFMAN
(University of Wisconsin)

Senior Assistant Editors

MARGARET FOSTER
THOMAS PATTARD

Assistant Editors

JILL M. GARGANO
VALERIE L. MILLER
JIHANE MIMIH
JOANNA POPADIUK
HERNAN D. ROZENFELD

Senior Editorial Assistant

TERRE ARENA

EDITORIAL BOARD

Term ending 31 December 2011

J. S. COHEN	Theoretical Physics
T. F. GALLAGHER	Atomic and Molecular Interactions
N. LÜTKENHAUS	Quantum Information
B. C. SANDERS	Quantum Information
G. V. SHLYAPNIKOV	Matter Waves
A. S. SØRENSEN	Quantum Optics
D. S. WIERSMA	Photonic Systems, Disorder, Quantum Optics
S. YELIN	Quantum Optics

Term ending 31 December 2012

D. BLUME	Theory of Quantum Gases
M. GAARDE	Atoms in Strong Fields, Theory
D. H. JAKSCH	Cold Atoms, Quantum Information
E. LINDROTH	Atomic Theory
P. J. MOHR	Atomic Theory
J. ÜLLRICH	Atomic and Molecular Structure and Interactions

Term ending 31 December 2013

E. ANDERSSON	Quantum Information, Quantum Optics
J. A. BERGOU	Quantum Information, Quantum Optics
T. A. BRUN	Quantum Theory
S. A. GARDINER	Quantum Optics, Quantum Chaos
H. F. HOFMANN	Quantum Optics, Quantum Information
U. D. JENTSCHURA	Atomic Theory and Fundamental Physics
Z. KIS	Coherent Processes in Atomic Media
M. LEIN	Atoms and Molecules in Strong Fields
A. A. MARADUDIN	Nonlinear Optics
K. PACHUCKI	Theoretical Physics
D. PELINOVSKY	Nonlinear Optics and Soliton Theory
H. SADEGHPOUR	Atomic and Molecular Theory
J. YANG	Nonlinear Optics and Solitons
P. ZOLLER	Quantum Optics and Cold Atoms, Theory

American Physical Society

Officers

President	BARRY C. BARISH
President-Elect	ROBERT L. BYER
Vice-President	MICHAEL S. TURNER
Past President	CURTIS G. CALLAN, JR.
Editor in Chief	GENE D. SPROUSE
Treasurer and Publisher	JOSEPH W. SERENE
Executive Officer	KATE P. KIRBY

One Physics Ellipse
College Park, MD 20740-3844

APS Editorial Office

Directors

Editorial	DANIEL T. KULP
Journal Information Systems	ROBERT A. KELLY
Journal Operations	CHRISTINE M. GIACCONE

1 Research Road
Ridge, NY 11961-2701
Phone: (631) 591-4010 Fax: (631) 591-4141
Email: pra@aps.org
Web: <http://publish.aps.org/>
Submissions: prtex@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
Toll free: (800) 344-6902
Phone: (516) 576-2270 Fax: (516) 349-9704
Email: subs@aps.org

Manuscripts should be submitted electronically in acceptable format (see <http://authors.aps.org/ESUB/> or inquire at prtex@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 must be provided (effective only on acceptance for publication); the form is available via our Web submission server and via <http://authors.aps.org/>. Information for contributors may be found on our Web server or in the January and July issues.

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 \$1285/article, \$800/Rapid Communication or Brief Report, \$290/Comment or Reply. Acceptable formats are REV_TEX (preferred), L^AT_EX, plain T_EX; MS Word; PostScript figures (preferred). **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 © 2011 American Physical Society. All rights reserved.

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

Rights and Permissions: See <http://publish.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 from the Associate Publisher, 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 A_{TM} [ISSN: 1050-2947 (print), 1094-1622 (online); CODEN PLRAAN; 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 A_{TM}, APS Subscription Services, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502. The 2011 print + online base price is \$2375. Periodicals postage rates are paid at Huntington Station, NY, and additional mailing offices.