

PHYSICAL REVIEW D

PARTICLES, FIELDS, GRAVITATION, AND COSMOLOGY

Editors

ERICK J. WEINBERG D. L. NORDSTROM

Associate Editors

URS M. HELLER ROBERT D. PISARSKI

Senior Assistant Editor

RASHMI RAY

Assistant Editor

ANSAR FAYYAZUDDIN

Senior Editorial Assistant

MARIA POKO

EDITORIAL BOARD

Term ending 31 December 2010

TAO HAN
DONALD MAROLF
A. J. S. SMITH

Term ending 31 December 2011

LAURENT LELLOUCH
MIKHAIL SHIFMAN
WILLIAM G. UNRUH
ERIK VERLINDE

Term ending 31 December 2012

ANDREAS ALBRECHT
STEVEN DETWEILER
DAM THANH SON

American Physical Society

Officers

President CURTIS G. CALLAN, JR.
President-Elect BARRY C. BARISH
Vice-President ROBERT L. BYER
Past President CHERRY A. MURRAY
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) 591-4040 Fax: (631) 591-4141
Email: prd@aps.org
Web: <http://publish.aps.org/>
Submissions: prdtex@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 prdtex@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 \$1235/article, \$770/Rapid Communication or Brief Report, \$280/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 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 © 2010 by The American Physical Society. All rights reserved.

Physical Review D™ 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 D Particles, Fields, Gravitation, and Cosmology [ISSN: 1550-7998 (print), 1550-2368 (online); CODEN PRVDAQ; printed in USA] is published twice a month by The American Physical Society, 1 Research Road, Ridge, NY 11961-2701.

POSTMASTER: Send address changes to Physical Review D, APS Subscription Services, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502. The 2010 print + online base price is \$3910. Periodicals postage rates are paid at Huntington Station, NY, and additional mailing offices.