

# PHYSICAL REVIEW B<sub>TM</sub>

## CONDENSED MATTER AND MATERIALS PHYSICS

*Editor*

LAURENS W. MOLENKAMP

*Managing Editor*

ANTHONY M. BEGLEY

*Associate Editors*

ALEXIOS KLIRONOMOS      ROBERT M. KONIK

*Senior Assistant Editors*

SUSAN H. FARRANT      SARMA KANCHARLA

BRADLEY RUBIN

*Assistant Editors*

ATHANASIOS CHANTIS      HARI DAHAL      LUIGI LONGOBARDI      ASHOT MELIKYAN      VICTOR VAKARYUK

*Senior Editorial Assistant*

MARIE RUPOLO

### EDITORIAL BOARD

ANDREA ALU	F. ARYASETIAWAN	R. BERNDT	IMMANUEL FELIX BLOCH
CHE-TING CHAN	ANDREY V. CHUBUKOV	TOMASZ DIETL	KRISTEN A. FICHTHORN
MANFRED FIEBIG	AKIRA FURUSAKI	FRANCISCO GUINEA	MARK S. HYBERTSEN
PAUL J. KELLY	TSUYOSHI KIMURA	KARYN LE HUR	A. I. LICHTENSTEIN
JOCHEN MANNHART	NADYA MASON	I. I. MAZIN	TYREL MCQUEEN
FREDERIC MILA	Y. MISHIN	JOEL E. MOORE	CHRIS PALMSTROM
JUKKA P. PEKOLA	PETER SCHIFFER	I.F. SILVERA	YAROSLAV TSERKOVNYAK
ROSER VALENTI	GERRIT VAN DER LAAN	LIEVEN VANDERSYPEN	MARTIN WEGENER
QI-KUN XUE			

#### American Physical Society

*President* SAMUEL H. ARONSON  
*Speaker of Council* NAN PHINNEY  
*Executive Officer* KATE P. KIRBY  
*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) 591-4020  
Email: prb@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](mailto: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](mailto: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/prb/authors>.

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 REV<sub>TEX</sub> (preferred), L<sub>TEX</sub>, plain T<sub>EX</sub>; 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/prb>. Institutional subscribers requesting address changes, filing claims, or requesting additional information, please contact the APS Subscription Services at [subs@aps.org](mailto:subs@aps.org). Member subscribers requiring changes, claims or additional information should contact the APS Membership Department at [membership@aps.org](mailto:membership@aps.org).

**Copyright © 2015 American Physical Society. All rights reserved.**

*Physical Review B<sub>TM</sub>* 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 B<sub>TM</sub>* [ISSN: 1098-0121 (print), 1550-235X (online); CODEN PRBMDO; printed in USA] is published four times a month by the American Physical Society, 1 Research Road, Ridge, NY 11961-2701.

**POSTMASTER:** Send address changes to *Physical Review B<sub>TM</sub>*, APS Subscription Services, P.O. Box 41, Annapolis Junction, MD 20701. The 2015 print + online base price is \$8195. Periodicals postage rates are paid at College Park, MD, and additional mailing offices.