# PHYSICAL REVIEW LETTERS

Publishing short, high-quality reports of the most influential developments and transformative ideas in the full arc of fundamental, applied and interdisciplinary physics research.

Lead Editor

HUGUES CHATÉ

**Chief Editor** 

ROBERT GARISTO

Senior Editors

ABHISHEK AGARWAL

SERENA DALENA

SAMINDRANATH MITRA

Senior Associate Editors

ROCIO CORTES

KEVIN DUSLING

DONAVAN HALL

STOJAN REBIC

Associate Editors

AGNESE CURATOLO

OLGA DUDKO

NIKHIL KARTHIK

FRANK NARDUCCI

MARTIN RODRIGUEZ-VEGA

SHARMILA SHIRODKAR

ALESSANDRO VILLAR

RAPHAEL VOITURIEZ

KYLE WELCH

**Consulting Editors** 

VALERIO LUCARINI

ENRICO RAMIREZ-RUIZ

Lead Technical Editor

VALERIE I. MILLER

EDITORIAL BOARD (Divisional Associate Editors)

Astrophysics: D. HOOPER, S. REDDY, T. SLATYER

Atomic, Molecular, and Optical Physics: L. DAVIDOVICH, J. J. GARCIA-RIPOLI, E.J. MUELLER, M. PARISH, G. REMPE, P. TREUTLEIN, M. VRAKKING, S. YELIN, R. ZAMBRINI

Biological Physics: N. BRENNER, M. MURRELL, T.O. SHARPEE,

C. SYKES

Chemical Physics: J.I. JUARISTI, S. MAIER, K. PERNAL

Computational Physics: A. GEORGES

Condensed Matter Physics: A. ALTLAND, A. BLACK-SCHAFFER, C. CAZORLA, Y. CHEN, A.L. CHERNYSHEV, P. DAI, G.A. FIETE, A. PARAMEKANTI, P. RINKE, F. RONNING, N. SAMARTH, E. SHIMSHONI, J. SINOVA, C. TIMM, E. TUTUC, D.

VANDEMBROUCQ, K. YANG

Energy Research and Applications: M. BEARD

Fluid Dynamics: A. PUMIR, L. RAMOS, E. WEEKS, K-Q. XIA

Gravitational Physics: B.S. SATHYAPRAKASH

Laser Science: D.D. YAVUZ

Materials Physics: N. BARRETT, S. DONG, E. ERTEKIN, Z-Y. LIU,

I. PONOMAREVA. S. REZENDE

Nuclear Physics: R. AVERBECK, H. ELFNER, C. MANUEL, P.

PETRECZKY, D. VRETENAR, M.WADA, A. WUOSMAA

Particles and Fields: N. BELL, M. DIEHL, D. KABAT, T. KOVÁCS,

G. LANDSBERG, E. NARDI

Physics of Beams: S. COUSINEAU
Physics of Climate: P. GENTINE

Plasma Physics: D. DUBIN, W.W. HEIDBRINK, M. HOSHINO, A.

MACCHI, A. POUQUET, M. ZEPF

Polymer Physics: K. DALNOKI-VERESS, X. MAO, D.J. READ, F.

SCHMID

Foundations of Quantum Mechanics: A.N. JORDAN, H. NHA

Quantum Information: R. CHAVES, J. DZIARMAGA, B. KRAUS, D.

LIDAR, C-Y. LU, X. MA

Soft Matter: T.B. LIVERPOOL, K. MARTENS, F.

PACHECO-VÁZQUEZ, A. WURGER

Statistical Physics and Nonlinear Dynamics: A. BARRAT, M. ESPOSITO. P. GRASSBERGER. S. PONCE DAWSON, S-I. SASA.

 $I.M.\,SOKOLOV,\,J.\,TAILLEUR,\,Y.\,TU,\,P.\,ZHANG$ 

Email: prl@aps.org

Web: https://journals.aps.org

Submissions:

https://authors.aps.org/ Submissions

### **American Physical Society**

Chief Executive Officer JONATHAN A. BAGGER
Editor in Chief RANDALL D. KAMIEN

Editor in Chief RANDALL D. KAMIEN
Chief Publications Officer RACHEL BURLEY

Director of Publishing JEFF LEWANDOWSKI

Chief Information Officer MARK D. DOYLE

one information officer

Executive Editor JESSICA THOMAS

Director, Editorial and Publication

Operations CHRISTINE M. GIACCONE

One Physics Ellipse College Park, MD 20740-3844

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

P.O. Box 41 Annapolis Junction, MD 20701 Toll free: (888) 339-9655 Phone: (301)617-7809

Email: subs@aps.org

### Copyright © 2024 American Physical Society. All rights reserved.

 $Physical\ Review\ Letters ^{\text{TM}} is\ a\ trademark\ of\ the\ American\ Physical\ Society,\ registered\ in\ the\ United\ States,\ Canada,\ European\ Union\ and\ Japan.$ 

## Rights and Permissions: https://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 Aptara's SciPris<sup>™</sup>platform. To request permission to republish, refer to the Reuse and Permissions link that can be found (online) 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 Aptara's SciPris™platform. 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 Letters [ISSN: 0031-9007 (print), 1079-7114 (online); CODEN PRLTAO; printed in USA] is published weekly by the American Physical Society, 100 Motor Parkway, Suite 110, Hauppauge, NY 11788.