



On the Cover

HIGHLIGHTED ARTICLES

Featured in Physics | Editors' Suggestion

Sensitivity of Ultracold Atoms to Quantized Flux in a Superconducting Ring

P. Weiss, M. Knufinke, S. Bernon, D. Bothner, L. Sárkány, C. Zimmermann, R. Kleiner, D. Koelle, J. Fortágh, and H. Hattermann

Phys. Rev. Lett. **114**, 113003 (2015) – Published 17 March 2015

Featured in Physics | Editors' Suggestion

Topological Acoustics

Zhaoju Yang, Fei Gao, Xihang Shi, Xiao Lin, Zhen Gao, Yidong Chong, and Baile Zhang

Phys. Rev. Lett. **114**, 114301 (2015) – Published 20 March 2015

Featured in Physics | Editors' Suggestion

Collapse of Surface Nanobubbles

Chon U. Chan, Longquan Chen, Manish Arora, and Claus-Dieter Ohl

Phys. Rev. Lett. **114**, 114505 (2015) – Published 19 March 2015

Featured in Physics | Editors' Suggestion

Pressure Induced Superconductivity on the border of Magnetic Order in MnP

J.-G. Cheng, K. Matsubayashi, W. Wu, J.P. Sun, F.K. Lin, J.L. Luo, and Y. Uwatoko

Phys. Rev. Lett. **114**, 117001 (2015) – Published 16 March 2015

Editors' Suggestion

Chiral Symmetry Breaking in QCD with Two Light Flavors

Georg P. Engel, Leonardo Giusti, Stefano Lottini, and Rainer Sommer

Phys. Rev. Lett. **114**, 112001 (2015) – Published 16 March 2015

Editors' Suggestion

Identification of a Previously Unobserved Dissociative Ionization Pathway in Time-Resolved Photospectroscopy of the Deuterium Molecule

Wei Cao, Guillaume Laurent, Itzik Ben-Itzhak, and C. Lewis Cocke

Phys. Rev. Lett. **114**, 113001 (2015) – Published 16 March 2015

Editors' Suggestion

Linear Magnetoresistance Caused by Mobility Fluctuations in n -oped Cd_3As_2

A. Narayanan, M.D. Watson, S.F. Blake, N. Bruyant, L. Drigo, Y.L. Chen, D. Prabhakaran, B. Yan, C. Felser, T. Kong, P.C. Canfield, and A.I. Coldea

Phys. Rev. Lett. **114**, 117201 (2015) – Published 19 March 2015

Editors' Suggestion

Optical Tracking of Anomalous Diffusion Kinetics in Polymer Microspheres

Matthew R. Foreman and Frank Vollmer

Phys. Rev. Lett. **114**, 118001 (2015) – Published 17 March 2015

Editors' Suggestion

Confinement Effects of Ion Tracks in Ultrathin Polymer Films

R. M. Papaléo, R. Thomaz, L. I. Gutierrez, V. M. de Menezes, D. Severin, C. Trautmann, D.

Tramontina, E. M. Bringa, and P. L. Grande

Phys. Rev. Lett. **114**, 118302 (2015) – Published 19 March 2015

LETTERS

General Physics: Statistical and Quantum Mechanics, Quantum Information, etc.

Berezinskii-Kosterlitz-Thouless Phase Transition in 2D Spin-Orbit-Coupled Fulde-Ferrell Superfluids

Yong Xu and Chuanwei Zhang

Phys. Rev. Lett. **114**, 110401 (2015) – Published 17 March 2015

Finite-Temperature Free Fermions and the Kardar-Parisi-Zhang Equation at Finite Time

David S. Dean, Pierre Le Doussal, Satya N. Majumdar, and Grégory Schehr

Phys. Rev. Lett. **114**, 110402 (2015) – Published 18 March 2015

Spin-Imbalanced Quasi-Two-Dimensional Fermi Gases

W. Ong, Chingyun Cheng, I. Arakelyan, and J. E. Thomas

Phys. Rev. Lett. **114**, 110403 (2015) – Published 19 March 2015

Microwave Experiments Simulating Quantum Search and Directed Transport in Artificial Graphene

Julian Böhm, Matthieu Bellec, Fabrice Mortessagne, Ulrich Kuhl, Sonja Barkhofen, Stefan Gehler, Hans-Jürgen Stöckmann, Iain Foulger, Sven Gnutzmann, and Gregor Tanner

Phys. Rev. Lett. **114**, 110501 (2015) – Published 17 March 2015

Heralded Quantum Gates with Integrated Error Detection in Optical Cavities

J. Borregaard, P. Kómár, E. M. Kessler, A. S. Sørensen, and M. D. Lukin

Phys. Rev. Lett. **114**, 110502 (2015) – Published 17 March 2015

Connectivity is a Poor Indicator of Fast Quantum Search

David A. Meyer and Thomas G. Wong

Phys. Rev. Lett. **114**, 110503 (2015) – Published 18 March 2015

Entanglement-Based Machine Learning on a Quantum Computer

X.-D. Cai, D. Wu, Z.-E. Su, M.-C. Chen, X.-L. Wang, Li Li, N.-L. Liu, C.-Y. Lu, and J.-W. Pan

Phys. Rev. Lett. **114**, 110504 (2015) – Published 19 March 2015

Information Transmission Without Energy Exchange

Robert H. Jonsson, Eduardo Martín-Martínez, and Achim Kempf

Phys. Rev. Lett. **114**, 110505 (2015) – Published 20 March 2015

Entanglement-Enhanced Sensing in a Lossy and Noisy Environment

Zheshen Zhang, Sara Mouradian, Franco N. C. Wong, and Jeffrey H. Shapiro

Phys. Rev. Lett. **114**, 110506 (2015) – Published 20 March 2015

Exact Mapping of the Stochastic Field Theory for Manna Sandpiles to Interfaces in Random Media

Pierre Le Doussal and Kay Jörg Wiese

Phys. Rev. Lett. **114**, 110601 (2015) – Published 18 March 2015

Hyperuniformity of Critical Absorbing States

Daniel Hexner and Dov Levine

Phys. Rev. Lett. **114**, 110602 (2015) – Published 20 March 2015

Gravitation and Astrophysics

Radiation from a Collapsing Object is Manifestly Unitary

Anshul Saini and Dejan Stojkovic

Phys. Rev. Lett. **114**, 111301 (2015) – Published 17 March 2015

First Direct Limits on Lightly Ionizing Particles with Electric Charge Less than $e/6$

R. Agnese *et al.* (CDMS Collaboration)

Phys. Rev. Lett. **114**, 111302 (2015) – Published 18 March 2015

Elementary Particles and Fields

String Theory of the Regge Intercept

S. Hellerman and I. Swanson

Phys. Rev. Lett. **114**, 111601 (2015) – Published 17 March 2015

Entanglement Entropy in Galilean Conformal Field Theories and Flat Holography

Arjun Bagchi, Rudranil Basu, Daniel Grumiller, and Max Riegler

Phys. Rev. Lett. **114**, 111602 (2015) – Published 19 March 2015

Entanglement Entropy of Electromagnetic Edge Modes

William Donnelly and Aron C. Wall

Phys. Rev. Lett. **114**, 111603 (2015) – Published 20 March 2015

Enhanced Higgs Boson to $\tau^+\tau^-$ Search with Deep Learning

P. Baldi, P. Sadowski, and D. Whiteson

Phys. Rev. Lett. **114**, 111801 (2015) – Published 18 March 2015

Editors' Suggestion

Chiral Symmetry Breaking in QCD with Two Light Flavors

Georg P. Engel, Leonardo Giusti, Stefano Lottini, and Rainer Sommer

Phys. Rev. Lett. **114**, 112001 (2015) – Published 16 March 2015

Nuclear Physics

Elliptic Flow and Nuclear Modification Factor in Ultrarelativistic Heavy-Ion Collisions within a Partonic Transport Model

Jan Uphoff, Florian Senzel, Oliver Fochler, Christian Wesp, Zhe Xu, and Carsten Greiner

Phys. Rev. Lett. **114**, 112301 (2015) – Published 17 March 2015

Measurements of Double-Polarized Compton Scattering Asymmetries and Extraction of the Proton Spin Polarizabilities

P.P. Martel *et al.* (A2 Collaboration at MAMI)

Phys. Rev. Lett. **114**, 112501 (2015) – Published 19 March 2015

Atomic, Molecular, and Optical Physics

Editors' Suggestion

Identification of a Previously Unobserved Dissociative Ionization Pathway in Time-Resolved Photospectroscopy of the Deuterium Molecule

Wei Cao, Guillaume Laurent, Itzik Ben-Itzhak, and C. Lewis Cocke

Phys. Rev. Lett. **114**, 113001 (2015) – Published 16 March 2015

Coherent Excitation Transfer in a Spin Chain of Three Rydberg Atoms

Daniel Barredo, Henning Labuhn, Sylvain Ravets, Thierry Lahaye, Antoine Browaeys, and Charles S. Adams

Phys. Rev. Lett. **114**, 113002 (2015) – Published 19 March 2015

Featured in Physics Editors' Suggestion

Sensitivity of Ultracold Atoms to Quantized Flux in a Superconducting Ring

P. Weiss, M. Knufinke, S. Bernon, D. Bothner, L. Sárkány, C. Zimmermann, R. Kleiner, D. Koelle, J. Fortágh, and H. Hattermann

Phys. Rev. Lett. **114**, 113003 (2015) – Published 17 March 2015

Proposal for an Optomechanical Microwave Sensor at the Subphoton Level

Keye Zhang, Francesco Bariani, Ying Dong, Weiping Zhang, and Pierre Meystre

Phys. Rev. Lett. **114**, 113601 (2015) – Published 16 March 2015

Master-Slave Locking of Optomechanical Oscillators over a Long Distance

Shreyas Y. Shah, Mian Zhang, Richard Rand, and Michal Lipson

Phys. Rev. Lett. **114**, 113602 (2015) – Published 17 March 2015

Nearly Deterministic Bell Measurement for Multiphoton Qubits and its Application to Quantum Information Processing

Seung-Woo Lee, Kimin Park, Timothy C. Ralph, and Hyunseok Jeong

Phys. Rev. Lett. **114**, 113603 (2015) – Published 18 March 2015

Multipartite Entangled Spatial Modes of Ultracold Atoms Generated and Controlled by Quantum Measurement

T.J. Elliott, W. Kozłowski, S.F. Caballero-Benitez, and I.B. Mekhov

Phys. Rev. Lett. **114**, 113604 (2015) – Published 19 March 2015

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Adiabatic Soliton Laser

Anastasia Bednyakova and Sergei K. Turitsyn

Phys. Rev. Lett. **114**, 113901 (2015) – Published 18 March 2015

Isotropically Polarized Speckle Patterns

Mikolaj K. Schmidt, Javier Aizpurua, Xavier Zambrana-Puyalto, Xavier Vidal, Gabriel Molina-Terriza, and Juan José Sáenz

Phys. Rev. Lett. **114**, 113902 (2015) – Published 20 March 2015

Featured in Physics Editors' Suggestion

Topological Acoustics

Zhaoju Yang, Fei Gao, Xihang Shi, Xiao Lin, Zhen Gao, Yidong Chong, and Baile Zhang

Phys. Rev. Lett. **114**, 114301 (2015) – Published 20 March 2015

Thermal Boundary Layer Equation for Turbulent Rayleigh–Bénard Convection

Olga Shishkina, Susanne Horn, Sebastian Wagner, and Emily S.C. Ching

Phys. Rev. Lett. **114**, 114302 (2015) – Published 20 March 2015

Experimental Verification of Overlimiting Current by Surface Conduction and Electro-Osmotic Flow in Microchannels

Sungmin Nam, Inhee Cho, Joonseong Heo, Geunbae Lim, Martin Z. Bazant, Dustin Jaesuk Moon, Gun Yong Sung, and Sung Jae Kim

Phys. Rev. Lett. **114**, 114501 (2015) – Published 16 March 2015

Equilibrium Electroconvective Instability

I. Rubinstein and B. Zaltzman

Phys. Rev. Lett. **114**, 114502 (2015) – Published 16 March 2015

Nodal Analysis of Nonlinear Behavior of the Instability at a Fluid Interface

M.-C. Renoult, C. Rosenblatt, and P. Carles

Phys. Rev. Lett. **114**, 114503 (2015) – Published 18 March 2015

Resolving the Paradox of Oceanic Large-Scale Balance and Small-Scale Mixing

R. Marino, A. Pouquet, and D. Rosenberg

Phys. Rev. Lett. **114**, 114504 (2015) – Published 18 March 2015

Featured in Physics Editors' Suggestion

Collapse of Surface Nanobubbles

Chon U. Chan, Longquan Chen, Manish Arora, and Claus-Dieter Ohl

Phys. Rev. Lett. **114**, 114505 (2015) – Published 19 March 2015

Multiple Transitions in Rotating Turbulent Rayleigh–Bénard Convection

Ping Wei, Stephan Weiss, and Guenter Ahlers

Phys. Rev. Lett. **114**, 114506 (2015) – Published 20 March 2015

Plasma and Beam Physics

Demonstration of Nonlinear-Energy-Spread Compensation in Relativistic Electron Bunches with Corrugated Structures

Feichao Fu, Rui Wang, Pengfei Zhu, Lingrong Zhao, Tao Jiang, Chao Lu, Shengguang Liu, Libin Shi, Lixin Yan, Haixiao Deng, Chao Feng, Qiang Gu, Dazhang Huang, Bo Liu, Dong Wang, Xingtao Wang, Meng Zhang, Zhentang Zhao, Gennady Stupakov, Dao Xiang, and Jie Zhang
Phys. Rev. Lett. **114**, 114801 (2015) – Published 20 March 2015

Terahertz Acoustics in Hot Dense Laser Plasmas

Amitava Adak, A. P. L. Robinson, Prashant Kumar Singh, Gourab Chatterjee, Amit D. Lad, John Pasley, and G. Ravindra Kumar
Phys. Rev. Lett. **114**, 115001 (2015) – Published 17 March 2015

Effective Critical Electric Field for Runaway-Electron Generation

A. Stahl, E. Hirvijoki, J. Decker, O. Embréus, and T. Fülöp
Phys. Rev. Lett. **114**, 115002 (2015) – Published 17 March 2015

Generalized Magnetofluid Connections in Relativistic Magnetohydrodynamics

Felipe A. Asenjo and Luca Comisso
Phys. Rev. Lett. **114**, 115003 (2015) – Published 17 March 2015

Condensed Matter: Structure, etc.

Observing Chiral Superfluid Order by Matter-Wave Interference

T. Kock, M. Ölschläger, A. Ewerbeck, W.-M. Huang, L. Mathey, and A. Hemmerich
Phys. Rev. Lett. **114**, 115301 (2015) – Published 19 March 2015

Polaronic Atom-Trimer Continuity in Three-Component Fermi Gases

Yusuke Nishida
Phys. Rev. Lett. **114**, 115302 (2015) – Published 20 March 2015

Element-Specific X-Ray Phase Tomography of 3D Structures at the Nanoscale

Claire Donnelly, Manuel Guizar-Sicairos, Valerio Scagnoli, Mirko Holler, Thomas Huthwelker, Andreas Menzel, Ismo Vartiainen, Elisabeth Müller, Eugenie Kirk, Sebastian Gliga, Jörg Raabe, and Laura J. Heyderman
Phys. Rev. Lett. **114**, 115501 (2015) – Published 16 March 2015

Breaking of Symmetry in Graphene Growth on Metal Substrates

Vasilii I. Artyukhov, Yufeng Hao, Rodney S. Ruoff, and Boris I. Yakobson
Phys. Rev. Lett. **114**, 115502 (2015) – Published 16 March 2015

Hydrogen-Induced Rupture of Strained Si–O Bonds in Amorphous Silicon Dioxide

Al-Moatasem El-Sayed, Matthew B. Watkins, Tibor Grasser, Valery V. Afanas'ev, and Alexander L. Shluger
Phys. Rev. Lett. **114**, 115503 (2015) – Published 18 March 2015

Fragmentation of Fractal Random Structures

Eren Metin Elçi, Martin Weigel, and Nikolaos G. Fytas
Phys. Rev. Lett. **114**, 115701 (2015) – Published 20 March 2015

Emergent Rhombus Tilings from Molecular Interactions with M -fold Rotational Symmetry

Stephen Whitelam, Isaac Tamblyn, Juan P. Garrahan, and Peter H. Beton
Phys. Rev. Lett. **114**, 115702 (2015) – Published 20 March 2015

Significant Reduction of Lattice Thermal Conductivity by the Electron-Phonon Interaction in Silicon with High Carrier Concentrations: A First-Principles Study

Bolin Liao, Bo Qiu, Jiawei Zhou, Samuel Huberman, Keivan Esfarjani, and Gang Chen
Phys. Rev. Lett. **114**, 115901 (2015) – Published 18 March 2015

Nature of Long-Range Order in Stripe-Forming Systems with Long-Range Repulsive Interactions

Alejandro Mendoza-Coto, Daniel A. Stariolo, and Lucas Nicolao
Phys. Rev. Lett. **114**, 116101 (2015) – Published 17 March 2015

Modifying the Interlayer Interaction in Layered Materials with an Intense IR Laser

Yoshiyuki Miyamoto, Hong Zhang, Takehide Miyazaki, and Angel Rubio
Phys. Rev. Lett. **114**, 116102 (2015) – Published 19 March 2015

Condensed Matter: Electronic Properties, etc.

Polariton Z Topological Insulator

A.V. Nalitov, D.D. Solnyshkov, and G. Malpuech
Phys. Rev. Lett. **114**, 116401 (2015) – Published 16 March 2015

Effects of Low-Energy Excitations on Spectral Properties at Higher Binding Energy: The Metal-Insulator Transition of VO₂

Matteo Gatti, Giancarlo Panaccione, and Lucia Reining
Phys. Rev. Lett. **114**, 116402 (2015) – Published 20 March 2015

Exciton versus Free Carrier Photogeneration in Organometal Trihalide Perovskites Probed by Broadband Ultrafast Polarization Memory Dynamics

ChuanXiang Sheng, Chuang Zhang, Yaxin Zhai, Kamil Mielczarek, Weiwei Wang, Wanli Ma, Anvar Zakhidov, and Z. Valy Vardeny
Phys. Rev. Lett. **114**, 116601 (2015) – Published 18 March 2015

Real-Space Calculation of the Conductivity Tensor for Disordered Topological Matter

Jose H. García, Lucian Covaci, and Tatiana G. Rappoport
Phys. Rev. Lett. **114**, 116602 (2015) – Published 19 March 2015

Topological Kondo Effect in Transport through a Superconducting Wire with Multiple Majorana End States

Oleksiy Kashuba and Carsten Timm
Phys. Rev. Lett. **114**, 116801 (2015) – Published 16 March 2015

Coherent Terahertz Control of Vertical Transport in Semiconductor Heterostructures

O. Vänskä, I. Tittonen, S.W. Koch, and M. Kira
Phys. Rev. Lett. **114**, 116802 (2015) – Published 16 March 2015

Topological Spinon Semimetals and Gapless Boundary States in Three Dimensions

Robert Schaffer, Eric Kin-Ho Lee, Yuan-Ming Lu, and Yong Baek Kim
Phys. Rev. Lett. **114**, 116803 (2015) – Published 17 March 2015

Featured in Physics Editors' Suggestion

Pressure Induced Superconductivity on the border of Magnetic Order in MnP

J.-G. Cheng, K. Matsubayashi, W. Wu, J.P. Sun, F.K. Lin, J.L. Luo, and Y. Uwatoko
Phys. Rev. Lett. **114**, 117001 (2015) – Published 16 March 2015

Detection of an Unconventional Superconducting Phase in the Vicinity of the Strong First-Order Magnetic Transition in CrAs Using As⁷⁵-Nuclear Quadrupole Resonance

Hisashi Kotegawa, Shingo Nakahara, Rui Akamatsu, Hideki Tou, Hitoshi Sugawara, and Hisatomo Harima
Phys. Rev. Lett. **114**, 117002 (2015) – Published 20 March 2015

Editors' Suggestion

Linear Magnetoresistance Caused by Mobility Fluctuations in n-Doped Cd₃As₂

A. Narayanan, M.D. Watson, S.F. Blake, N. Bruyant, L. Drigo, Y.L. Chen, D. Prabhakaran, B. Yan, C. Felser, T. Kong, P.C. Canfield, and A.I. Coldea
Phys. Rev. Lett. **114**, 117201 (2015) – Published 19 March 2015

Spin Crossover in Ferropericlyase from First-Principles Molecular Dynamics

E. Holmström and L. Stixrude

Phys. Rev. Lett. **114**, 117202 (2015) – Published 19 March 2015

Many-Body Localization in Imperfectly Isolated Quantum Systems

Sonika Johri, Rahul Nandkishore, and R.N. Bhatt

Phys. Rev. Lett. **114**, 117401 (2015) – Published 16 March 2015

Evidence for Room Temperature Electric Polarization in RMn_2O_5 Multiferroics

V. Balédent, S. Chattopadhyay, P. Fertey, M.B. Lepetit, M. Greenblatt, B. Wanklyn, F.O. Saouma, J.I. Jang, and P. Foury-Leylekian

Phys. Rev. Lett. **114**, 117601 (2015) – Published 16 March 2015

Submillisecond Hyperpolarization of Nuclear Spins in Silicon

Felix Hoehne, Lukas Dreher, David P. Franke, Martin Stutzmann, Leonid S. Vlasenko, Kohei M. Itoh, and Martin S. Brandt

Phys. Rev. Lett. **114**, 117602 (2015) – Published 17 March 2015

Magnetic Origin of Giant Magnetoelectricity in Doped Y-type

Hexaferrite $Ba_{0.5}Sr_{1.5}Zn_2(Fe_{1-x}Al_x)_{12}O_{22}$

Woo-Suk Noh, Kyung-Tae Ko, Sae Hwan Chun, Kee Hoon Kim, Byeong-Gyu Park, Jae-Young Kim, and Jae-Hoon Park

Phys. Rev. Lett. **114**, 117603 (2015) – Published 19 March 2015

Polymer, Soft Matter, Biological, and Interdisciplinary Physics

Forming a Cube from a Sphere with Tetratic Order

O.V. Manyuhina and M.J. Bowick

Phys. Rev. Lett. **114**, 117801 (2015) – Published 19 March 2015

Editors' Suggestion

Optical Tracking of Anomalous Diffusion Kinetics in Polymer Microspheres

Matthew R. Foreman and Frank Vollmer

Phys. Rev. Lett. **114**, 118001 (2015) – Published 17 March 2015

Highly Nonlinear Wave Propagation in Elastic Woodpile Periodic Structures

E. Kim, F. Li, C. Chong, G. Theocharis, J. Yang, and P.G. Kevrekidis

Phys. Rev. Lett. **114**, 118002 (2015) – Published 17 March 2015

Perceptrons with Hebbian Learning Based on Wave Ensembles in Spatially Patterned Potentials

T. Espinosa-Ortega and T.C.H. Liew

Phys. Rev. Lett. **114**, 118101 (2015) – Published 18 March 2015

Electrohydrodynamics Near Hydrophobic Surfaces

S.R. Maduar, A.V. Belyaev, V. Lobaskin, and O.I. Vinogradova

Phys. Rev. Lett. **114**, 118301 (2015) – Published 19 March 2015

Editors' Suggestion

Confinement Effects of Ion Tracks in Ultrathin Polymer Films

R.M. Papaléo, R. Thomaz, L.I. Gutierrez, V.M. de Menezes, D. Severin, C. Trautmann, D.

Tramontina, E.M. Bringa, and P.L. Grande

Phys. Rev. Lett. **114**, 118302 (2015) – Published 19 March 2015

Refraction of Scroll-Wave Filaments at the Boundary Between Two Reaction-Diffusion Media

Christian W. Zemlin, Freny Varghese, Marcel Wellner, and Arkady M. Pertsov

Phys. Rev. Lett. **114**, 118303 (2015) – Published 20 March 2015

COMMENTS

Comment on “How the Result of a Single Coin Toss Can Turn Out to be 100 Heads”

Aharon Brodutch

Phys. Rev. Lett. **114**, 118901 (2015) – Published 18 March 2015

Ferrie and Combes Reply:

Christopher Ferrie and Joshua Combes

Phys. Rev. Lett. **114**, 118902 (2015) – Published 18 March 2015