

EDITORIALS AND ANNOUNCEMENTS

Editorial: Amplifying the Signal

Pierre Meystre

Phys. Rev. Lett. **114**, 170001 (2015) – Published 1 May 2015

HIGHLIGHTED ARTICLES

Featured in Physics Editors' Suggestion

What is the Flavor of the Cosmic Neutrinos Seen by IceCube?

A. Palladino, G. Pagliaroli, F.L. Villante, and F. Vissani

Phys. Rev. Lett. **114**, 171101 (2015) – Published 28 April 2015



The highest energy neutrinos ever recorded have a flavor distribution of neutrinos that is consistent with the particles having a cosmic origin.

Featured in Physics Editors' Suggestion

Flavor Ratio of Astrophysical Neutrinos above 35 TeV in IceCube

M.G. Aartsen *et al.* (IceCube Collaboration)

Phys. Rev. Lett. **114**, 171102 (2015) – Published 28 April 2015



The highest energy neutrinos ever recorded have a flavor distribution of neutrinos that is consistent with the particles having a cosmic origin.

Featured in Physics Editors' Suggestion

Field-Dependent Size and Shape of Single Magnetic Skyrmions

Niklas Romming, André Kubetzka, Christian Hanneken, Kirsten von Bergmann, and Roland Wiesendanger

Phys. Rev. Lett. **114**, 177203 (2015) – Published 1 May 2015



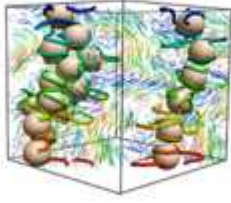
Atomic-scale imaging reveals the shape and size of a technologically interesting magnetic quasiparticle.

Featured in Physics Editors' Suggestion

Electric Field Controlled Columnar and Planar Patterning of Cholesteric Colloids

G. D'Adamo, D. Marenduzzo, C. Micheletti, and E. Orlandini

Phys. Rev. Lett. **114**, 177801 (2015) – Published 30 April 2015



An applied electric field could reconfigure the structure of colloidal defects dispersed within a liquid crystal.

Featured in Physics Editors' Suggestion

Dynamics of a Volvox Embryo Turning Itself Inside Out

Stephanie Höhn, Aurelia R. Honerkamp-Smith, Pierre A. Haas, Philipp Khuc Trong, and Raymond E. Goldstein

Phys. Rev. Lett. **114**, 178101 (2015) – Published 27 April 2015



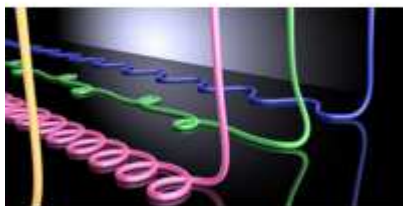
Images of an algal embryo transitioning into an adult give physicists a rare opportunity to test a mechanical model of morphogenesis.

Featured in Physics

Liquid Ropes: A Geometrical Model for Thin Viscous Jet Instabilities

P.-T. Brun, Basile Audoly, Neil M. Ribe, T. S. Eaves, and John R. Lister

Phys. Rev. Lett. **114**, 174501 (2015) – Published 30 April 2015



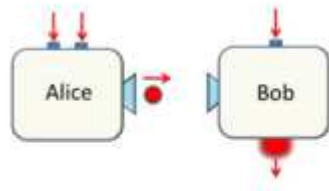
A new model can predict the patterns formed by a viscous jet falling onto a moving surface.

Editors' Suggestion

Quantum Random Access Codes Using Single d -Level Systems

Armin Tavakoli, Alley Hameedi, Breno Marques, and Mohamed Bourennane

Phys. Rev. Lett. **114**, 170502 (2015) – Published 29 April 2015



A significant gain in the success probability of recovering bits from an encoded sequence has been achieved with quantum random access codes, outperforming their classical counterparts.

Editors' Suggestion

Precision Measurement of the Proton Flux in Primary Cosmic Rays from Rigidity 1 GV to 1.8 TV with the Alpha Magnetic Spectrometer on the International Space Station

M. Aguilar *et al.* (AMS Collaboration)

Phys. Rev. Lett. **114**, 171103 (2015) – Published 30 April 2015



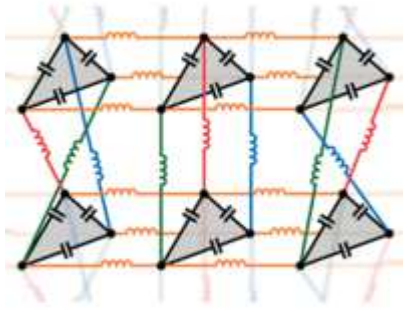
Higher accuracy measurements of the proton cosmic ray spectrum at high energies show that it deviates from the long held single power law behavior.

Editors' Suggestion

Topological Properties of Linear Circuit Lattices

Victor V. Albert, Leonid I. Glazman, and Liang Jiang

Phys. Rev. Lett. **114**, 173902 (2015) – Published 30 April 2015



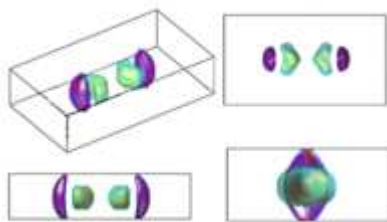
Systems with nontrivial topological properties can be constructed from electric circuits consisting of capacitors and inductors.

Editors' Suggestion

Quantum Oscillations, Thermoelectric Coefficients, and the Fermi Surface of Semimetallic WTe_2

Zengwei Zhu, Xiao Lin, Juan Liu, Benoît Fauqué, Qian Tao, Chongli Yang, Youguo Shi, and Kamran Behnia

Phys. Rev. Lett. **114**, 176601 (2015) – Published 27 April 2015



Measurements of the Fermi surface of WTe_2 demonstrate that it is nearly a perfectly compensated semimetal.

LETTERS

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

Two-Time Correlations Probing the Dynamics of Dissipative Many-Body Quantum Systems: Aging and Fast Relaxation

Bruno Sciola, Dario Poletti, and Corinna Kollath

Phys. Rev. Lett. **114**, 170401 (2015) – Published 30 April 2015

Quantum Brachistochrone Curves as Geodesics: Obtaining Accurate Minimum-Time Protocols for the Control of Quantum Systems

Xiaoting Wang, Michele Allegra, Kurt Jacobs, Seth Lloyd, Cosmo Lupo, and Masoud Mohseni

Phys. Rev. Lett. **114**, 170501 (2015) – Published 28 April 2015

Editors' Suggestion

Quantum Random Access Codes Using Single d -Level Systems

Armin Tavakoli, Alley Hameedi, Breno Marques, and Mohamed Bourennane

Phys. Rev. Lett. **114**, 170502 (2015) – Published 29 April 2015

Coherent Storage of Microwave Excitations in Rare-Earth Nuclear Spins

Gary Wolfowicz, Hannes Maier-Flaig, Robert Marino, Alban Ferrier, Hervé Vezin, John J.L. Morton, and Philippe Goldner

Phys. Rev. Lett. **114**, 170503 (2015) – Published 30 April 2015

Revealing Genuine Optical-Path Entanglement

F. Monteiro, V. Caprara Vivoli, T. Guerreiro, A. Martin, J.-D. Bancal, H. Zbinden, R. T. Thew, and N. Sangouard

Phys. Rev. Lett. **114**, 170504 (2015) – Published 1 May 2015

Many-Body Localization Implies that Eigenvectors are Matrix-Product States

M. Friesdorf, A.H. Werner, W. Brown, V.B. Scholz, and J. Eisert

Phys. Rev. Lett. **114**, 170505 (2015) – Published 1 May 2015

Entropic Description of Gas Hydrate Ice-Liquid Equilibrium via Enhanced Sampling of Coexisting Phases

Edyta Małolepsza, Jaegil Kim, and Tom Keyes

Phys. Rev. Lett. **114**, 170601 (2015) – Published 28 April 2015

Power-Recycled Weak-Value-Based Metrology

Kevin Lyons, Justin Dressel, Andrew N. Jordan, John C. Howell, and Paul G. Kwiat

Phys. Rev. Lett. **114**, 170801 (2015) – Published 29 April 2015

Linear Optical Quantum Metrology with Single Photons: Exploiting Spontaneously Generated Entanglement to Beat the Shot-Noise Limit

Keith R. Motes, Jonathan P. Olson, Evan J. Rabeaux, Jonathan P. Dowling, S. Jay Olson, and Peter P. Rohde

Phys. Rev. Lett. **114**, 170802 (2015) – Published 30 April 2015

Gravitation and Astrophysics

Featured in Physics Editors' Suggestion

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M. Aguilar *et al.* (AMS Collaboration)

Phys. Rev. Lett. **114**, 171103 (2015) – Published 30 April 2015

Spinodal Instabilities and Super-Planckian Excursions in Natural Inflation

Andreas Albrecht, R. Holman, and Benoit J. Richard

Phys. Rev. Lett. **114**, 171301 (2015) – Published 30 April 2015

Elementary Particles and Fields

Black Holes in Higher Derivative Gravity

H. Lü, A. Perkins, C.N. Pope, and K.S. Stelle

Phys. Rev. Lett. **114**, 171601 (2015) – Published 28 April 2015

Search for Long-Lived Particles in e^+e^- Collisions

J.P. Lees *et al.* (The BABAR Collaboration)

Phys. Rev. Lett. **114**, 171801 (2015) – Published 29 April 2015

Loop-hole in $K \rightarrow \pi \nu \nu^-$ Search and New Weak Leptonic Forces

Kaori Fuyuto, Wei-Shu Hou, and Masaya Kohda

Phys. Rev. Lett. **114**, 171802 (2015) – Published 29 April 2015

Atomic, Molecular, and Optical Physics

Selective Production of Rydberg-Stark States of Positronium

T.E. Wall, A.M. Alonso, B.S. Cooper, A. Deller, S.D. Hogan, and D.B. Cassidy

Phys. Rev. Lett. **114**, 173001 (2015) – Published 28 April 2015

Designing Frustrated Quantum Magnets with Laser-Dressed Rydberg Atoms

Alexander W. Glaetzle, Marcello Dalmonte, Rejish Nath, Christian Gross, Immanuel Bloch, and Peter Zoller

Phys. Rev. Lett. **114**, 173002 (2015) – Published 28 April 2015

Two-Dimensional Attosecond Electron Wave-Packet Interferometry

Xinhua Xie (谢新华)

Phys. Rev. Lett. **114**, 173003 (2015) – Published 29 April 2015

Frequency-Dependent Polarizability of Helium Including Relativistic Effects with Nuclear Recoil Terms

Konrad Piszczatowski, Mariusz Puchalski, Jacek Komasa, Bogumił Jeziorski, and Krzysztof Szalewicz

Phys. Rev. Lett. **114**, 173004 (2015) – Published 30 April 2015

Time-Reversal-Symmetric Single-Photon Wave Packets for Free-Space Quantum Communication

N. Trautmann, G. Alber, G. S. Agarwal, and G. Leuchs

Phys. Rev. Lett. **114**, 173601 (2015) – Published 27 April 2015

Quantum State Engineering with Circuit Electromechanical Three-Body Interactions

Mehdi Abdi, Matthias Pernpeintner, Rudolf Gross, Hans Huebl, and Michael J. Hartmann

Phys. Rev. Lett. **114**, 173602 (2015) – Published 28 April 2015

Photon Sorting, Efficient Bell Measurements, and a Deterministic Controlled-Z Gate Using a Passive Two-Level Nonlinearity

T. C. Ralph, I. Söllner, S. Mahmoodian, A. G. White, and P. Lodahl

Phys. Rev. Lett. **114**, 173603 (2015) – Published 30 April 2015

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Generation of Intense High-Order Vortex Harmonics

Xiaomei Zhang, Baifei Shen, Yin Shi, Xiaofeng Wang, Lingang Zhang, Wenpeng Wang, Jiancai Xu, Longqiong Yi, and Zhizhan Xu

Phys. Rev. Lett. **114**, 173901 (2015) – Published 28 April 2015

Editors' Suggestion

Topological Properties of Linear Circuit Lattices

Victor V. Albert, Leonid I. Glazman, and Liang Jiang

Phys. Rev. Lett. **114**, 173902 (2015) – Published 30 April 2015

Quantum Threshold for Optomechanical Self-Structuring in a Bose-Einstein Condensate

G. R. M. Robb, E. Tesio, G.-L. Oppo, W. J. Firth, T. Ackemann, and R. Bonifacio

Phys. Rev. Lett. **114**, 173903 (2015) – Published 1 May 2015

Attenuation of the Dynamic Yield Point of Shocked Aluminum Using Elastodynamic Simulations of Dislocation Dynamics

Beñat Gurrutxaga-Lerma, Daniel S. Balint, Daniele Dini, Daniel E. Eakins, and Adrian P. Sutton

Phys. Rev. Lett. **114**, 174301 (2015) – Published 28 April 2015

Featured in Physics

Liquid Ropes: A Geometrical Model for Thin Viscous Jet Instabilities

P.-T. Brun, Basile Audoly, Neil M. Ribe, T. S. Eaves, and John R. Lister

Phys. Rev. Lett. **114**, 174501 (2015) – Published 30 April 2015

Entropic Lattice Boltzmann Method for Multiphase Flows

A. Mazloomi M, S. S. Chikatamarla, and I. V. Karlin

Phys. Rev. Lett. **114**, 174502 (2015) – Published 1 May 2015

Plasma and Beam Physics

First High-Convergence Cryogenic Implosion in a Near-Vacuum Hohlraum

L. F. Berzak Hopkins *et al.*

Phys. Rev. Lett. **114**, 175001 (2015) – Published 29 April 2015

Intermittent Dissipation and Heating in 3D Kinetic Plasma Turbulence

M. Wan, W.H. Matthaeus, V. Roytershteyn, H. Karimabadi, T. Parashar, P. Wu, and M. Shay
Phys. Rev. Lett. **114**, 175002 (2015) – Published 30 April 2015

Condensed Matter: Structure, etc.

Crack Front Dynamics: The Interplay of Singular Geometry and Crack Instabilities

Itamar Kolvin, Gil Cohen, and Jay Fineberg

Phys. Rev. Lett. **114**, 175501 (2015) – Published 1 May 2015

Condensed Matter: Electronic Properties, etc.

Computation of the Correlated Metal-Insulator Transition in Vanadium Dioxide from First Principles

Huihuo Zheng and Lucas K. Wagner

Phys. Rev. Lett. **114**, 176401 (2015) – Published 27 April 2015

Temperature-Induced Spontaneous Time-Reversal Symmetry Breaking on the Honeycomb Lattice

Wei Liu and Alexander Punnoose

Phys. Rev. Lett. **114**, 176402 (2015) – Published 30 April 2015

Editors' Suggestion

Quantum Oscillations, Thermoelectric Coefficients, and the Fermi Surface of Semimetallic WTe_2

Zengwei Zhu, Xiao Lin, Juan Liu, Benoît Fauqué, Qian Tao, Chongli Yang, Youguo Shi, and Kamran Behnia

Phys. Rev. Lett. **114**, 176601 (2015) – Published 27 April 2015

Probing Dirac Fermion Dynamics in Topological Insulator Bi_2Se_3 Films with a Scanning Tunneling Microscope

Can-Li Song, Lili Wang, Ke He, Shuai-Hua Ji, Xi Chen, Xu-Cun Ma, and Qi-Kun Xue

Phys. Rev. Lett. **114**, 176602 (2015) – Published 28 April 2015

Chiral Tunneling of Topological States: Towards the Efficient Generation of Spin Current Using Spin-Momentum Locking

K.M. Masum Habib, Redwan N. Sajjad, and Avik W. Ghosh

Phys. Rev. Lett. **114**, 176801 (2015) – Published 27 April 2015

Electronic Properties of Molecules and Surfaces with a Self-Consistent Interatomic van der Waals Density Functional

Nicola Ferri, Robert A. DiStasio, Jr., Alberto Ambrosetti, Roberto Car, and Alexandre Tkatchenko

Phys. Rev. Lett. **114**, 176802 (2015) – Published 27 April 2015

Subdecoherence Time Generation and Detection of Orbital Entanglement in Quantum Dots

F. Brange, O. Malkoc, and P. Samuelsson

Phys. Rev. Lett. **114**, 176803 (2015) – Published 28 April 2015

Electron Spin Polarization by Isospin Ordering in Correlated Two-Layer Quantum Hall Systems

L. Tiemann, W. Wegscheider, and M. Hauser

Phys. Rev. Lett. **114**, 176804 (2015) – Published 28 April 2015

Composite Fermions with a Warped Fermi Contour

M.A. Mueed, D. Kamburov, Yang Liu, M. Shayegan, L.N. Pfeiffer, K.W. West, K.W. Baldwin, and R. Winkler

Phys. Rev. Lett. **114**, 176805 (2015) – Published 29 April 2015

Geometric Quantum Noise of Spin

Alexander Shnirman, Yuval Gefen, Arijit Saha, Igor S. Burmistrov, Mikhail N. Kiselev, and Alexander Altland

Phys. Rev. Lett. **114**, 176806 (2015) – Published 30 April 2015

Tuning Localized Transverse Surface Plasmon Resonance in Electricity-Selected Single-Wall Carbon Nanotubes by Electrochemical Doping

Toru Igarashi, Hideki Kawai, Kazuhiro Yanagi, Nguyen Thanh Cuong, Susumu Okada, and Thomas Pichler

Phys. Rev. Lett. **114**, 176807 (2015) – Published 1 May 2015

Random Flips of Electric Field in Microwave-Induced States with Spontaneously Broken Symmetry

S.I. Dorozhkin, V. Umansky, L.N. Pfeiffer, K.W. West, K. Baldwin, K. von Klitzing, and J.H. Smet

Phys. Rev. Lett. **114**, 176808 (2015) – Published 1 May 2015

Electronic Properties of BaFe_2As_2 upon Doping and Pressure: The Prominent Role of the As p Orbitals

V. Balédent, F. Rullier-Albenque, D. Colson, J.M. Ablett, and J.-P. Rueff

Phys. Rev. Lett. **114**, 177001 (2015) – Published 30 April 2015

Constraining Quantum Critical Dynamics: $(2+1)D$ Ising Model and Beyond

William Witczak-Krempa

Phys. Rev. Lett. **114**, 177201 (2015) – Published 28 April 2015

Kondo Breakdown in Topological Kondo Insulators

Victor Alexandrov, Piers Coleman, and Onur Erten

Phys. Rev. Lett. **114**, 177202 (2015) – Published 28 April 2015

Featured in Physics Editors' Suggestion

Field-Dependent Size and Shape of Single Magnetic Skyrmions

Niklas Romming, André Kubetzka, Christian Hanneken, Kirsten von Bergmann, and Roland Wiesendanger

Phys. Rev. Lett. **114**, 177203 (2015) – Published 1 May 2015

Distinct Trivial Phases Protected by a Point-Group Symmetry in Quantum Spin Chains

Yohei Fuji, Frank Pollmann, and Masaki Oshikawa

Phys. Rev. Lett. **114**, 177204 (2015) – Published 1 May 2015

Thermally Mediated Mechanism to Enhance Magnetoelectric Coupling in Multiferroics

C.-M. Chang, B.K. Mani, S. Lisenkov, and I. Ponomareva

Phys. Rev. Lett. **114**, 177205 (2015) – Published 1 May 2015

Shortcut to Adiabaticity in the Lipkin-Meshkov-Glick Model

Steve Campbell, Gabriele De Chiara, Mauro Paternostro, G. Massimo Palma, and Rosario Fazio

Phys. Rev. Lett. **114**, 177206 (2015) – Published 1 May 2015

Visualizing the Mixed Bonding Properties of Liquid Boron with High-Resolution X-Ray Compton Scattering

J.T. Okada, P.H.-L. Sit, Y. Watanabe, B. Barbiellini, T. Ishikawa, Y.J. Wang, M. Itou, Y. Sakurai, A.

Bansil, R. Ishikawa, M. Hamaishi, P.-F. Paradis, K. Kimura, T. Ishikawa, and S. Nanao

Phys. Rev. Lett. **114**, 177401 (2015) – Published 28 April 2015

Polymer, Soft Matter, Biological, and Interdisciplinary Physics

Featured in Physics Editors' Suggestion

Electric Field Controlled Columnar and Planar Patterning of Cholesteric Colloids

G. D'Adamo, D. Marenduzzo, C. Micheletti, and E. Orlandini

Phys. Rev. Lett. **114**, 177801 (2015) – Published 30 April 2015

Fraction of Clogging Configurations Sampled by Granular Hopper Flow

C.C. Thomas and D.J. Durian

Phys. Rev. Lett. **114**, 178001 (2015) – Published 28 April 2015

Granular Segregation Driven by Particle Interactions

C. Lozano, I. Zuriguel, A. Garcimartín, and T. Mullin

Phys. Rev. Lett. **114**, 178002 (2015) – Published 1 May 2015

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Dynamics of a Volvox Embryo Turning Itself Inside Out

Stephanie Höhn, Aurelia R. Honerkamp-Smith, Pierre A. Haas, Philipp Khuc Trong, and Raymond E. Goldstein

Phys. Rev. Lett. **114**, 178101 (2015) – Published 27 April 2015

Anomalous Diffusion in Fractal Globules

M. V. Tamm, L. I. Nazarov, A. A. Gavrilov, and A. V. Chertovich

Phys. Rev. Lett. **114**, 178102 (2015) – Published 30 April 2015

Multistable Jittering in Oscillators with Pulsatile Delayed Feedback

Vladimir Klinshov, Leonhard Lücken, Dmitry Shchapin, Vladimir Nekorkin, and Serhiy Yanchuk

Phys. Rev. Lett. **114**, 178103 (2015) – Published 30 April 2015

Generalized Minimal Principle for Rotor Filaments

Hans Dierckx, Marcel Wellner, Olivier Bernus, and Henri Verschelde

Phys. Rev. Lett. **114**, 178104 (2015) – Published 30 April 2015

ERRATA

*Erratum: Completing the Picture for the Smallest Eigenvalue of Real Wishart Matrices [Phys. Rev. Lett. **113**, 250201 (2014)]*

G. Akemann, T. Guhr, M. Kieburg, R. Wegner, and T. Wirtz

Phys. Rev. Lett. **114**, 179901 (2015) – Published 30 April 2015