

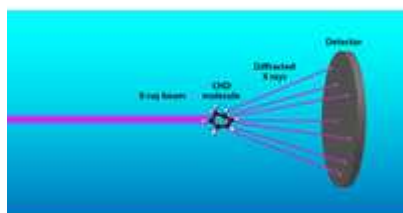
HIGHLIGHTED ARTICLES

Featured in Physics Editors' Suggestion

Imaging Molecular Motion: Femtosecond X-Ray Scattering of an Electrocyclic Chemical Reaction

M.P. Minitti, J.M. Budarz, A. Kirrander, J.S. Robinson, D. Ratner, T.J. Lane, D. Zhu, J.M. Glowacki, M. Kozina, H.T. Lemke, M. Sikorski, Y. Feng, S. Nelson, K. Saita, B. Stankus, T. Northey, J.B. Hastings, and P.M. Weber

Phys. Rev. Lett. **114**, 255501 (2015) – Published 22 June 2015



Femtosecond x-ray pulses image structural changes in a molecule.

Featured in Physics

Ultrahigh-Energy Debris from the Collisional Penrose Process

Emanuele Berti, Richard Brito, and Vitor Cardoso

Phys. Rev. Lett. **114**, 251103 (2015) – Published 26 June 2015



Particles orbiting near a spinning black hole might collide and get ejected with much more energy than previous calculations showed.

Featured in Physics

Microwave Chip-Based Beam Splitter for Low-Energy Guided Electrons

Jakob Hammer, Sebastian Thomas, Philipp Weber, and Peter Hommelhoff

Phys. Rev. Lett. **114**, 254801 (2015) – Published 23 June 2015



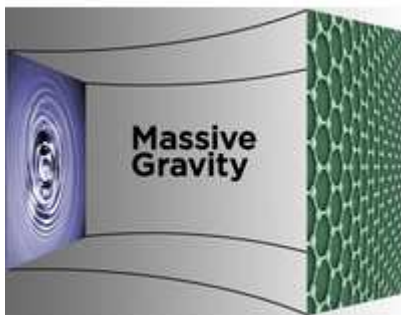
A new electron beam splitter that fits on a millimeter-sized chip could allow quantum optics experiments with free electrons.

Editors' Suggestion

Electron-Phonon Interactions, Metal-Insulator Transitions, and Holographic Massive Gravity

Matteo Baggioli and Oriol Pujolàs

Phys. Rev. Lett. **114**, 251602 (2015) – Published 23 June 2015



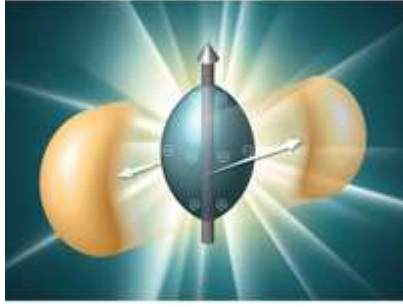
A quantum gravity holographic model can describe strongly correlated systems, in particular polaron quasiparticles, predicting a metal-insulator transition.

Editors' Suggestion

Observation of Charge Asymmetry Dependence of Pion Elliptic Flow and the Possible Chiral Magnetic Wave in Heavy-Ion Collisions

L. Adamczyk *et al.* (STAR Collaboration)

Phys. Rev. Lett. **114**, 252302 (2015) – Published 26 June 2015



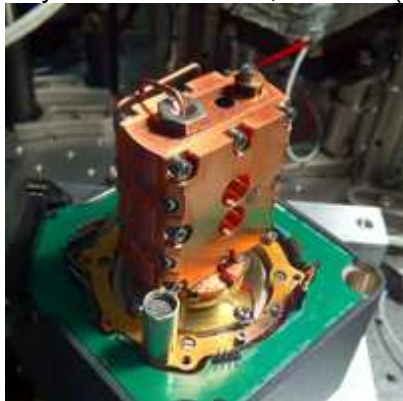
A possible signature of chiral symmetry restoration, in the form of a chiral magnetic wave in the quark-gluon plasma, has been observed in heavy-ion collisions at RHIC.

Editors' Suggestion

Laser-Frequency Stabilization Based on Steady-State Spectral-Hole Burning in $Eu^{3+}:Y_2SiO_5$

Shon Cook, Till Rosenband, and David R. Leibbrandt

Phys. Rev. Lett. **114**, 253902 (2015) – Published 23 June 2015



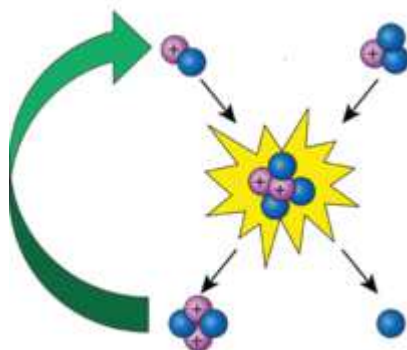
Crystals doped with rare-earth ions, and cooled to 4 K, can be optically pumped so that they are transparent over narrow frequency ranges. Using these crystals as spectral windows could allow for reliable, long-term laser frequency stabilization.

Editors' Suggestion

Alpha Heating and Burning Plasmas in Inertial Confinement Fusion

R. Betti, A.R. Christopherson, B.K. Spears, R. Nora, A. Bose, J. Howard, K.M. Woo, M.J. Edwards, and J. Sanz

Phys. Rev. Lett. **114**, 255003 (2015) – Published 26 June 2015

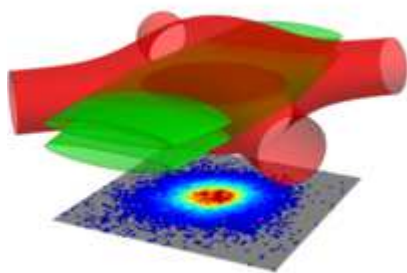


Alpha particles would need to provide 50 kJ of heating to achieve a burning plasma regime - where more energy is released by the fusion reactions than is absorbed by the fuel - at the National Ignition Facility.

Editors' Suggestion

Connecting Berezinskii-Kosterlitz-Thouless and BEC Phase Transitions by Tuning Interactions in a Trapped Gas

Richard J. Fletcher, Martin Robert-de-Saint-Vincent, Jay Man, Nir Navon, Robert P. Smith, Konrad G.H. Viebahn, and Zoran Hadzibabic
Phys. Rev. Lett. **114**, 255302 (2015) – Published 26 June 2015

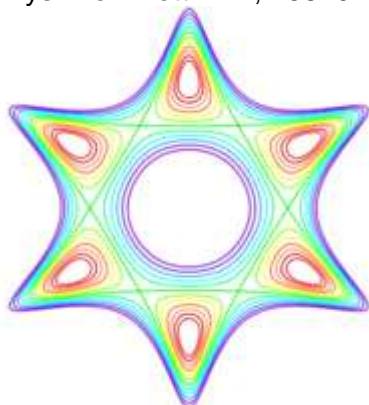


A harmonically trapped atomic gas can transition from a BKT superfluid to a Bose-Einstein condensate by reducing the interaction strength between the atoms.

Editors' Suggestion

Gapped Surface States in a Strong-Topological-Insulator Material

A.P. Weber, Q.D. Gibson, Huiwen Ji, A.N. Caruso, A.V. Fedorov, R.J. Cava, and T. Valla
Phys. Rev. Lett. **114**, 256401 (2015) – Published 23 June 2015

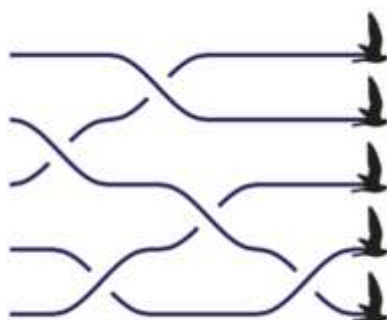


Topological-crystalline-insulators and strong-topological-insulator phases of matter can be present in a single system. This is demonstrated using photoelectron spectroscopy measurements and band structure calculations.

Editors' Suggestion

Braiding a Flock: Winding Statistics of Interacting Flying Spins

Jean-Baptiste Caussin and Denis Bartolo
Phys. Rev. Lett. **114**, 258101 (2015) – Published 23 June 2015



Individual birds flying in a flock do not fly in straight lines, but weave in and out of each other. Topological invariant braiding statistics shows that this weaving has a coherent rotation: the birds create a braid.

LETTERS

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

Multiple Observers Can Share the Nonlocality of Half of an Entangled Pair by Using Optimal Weak Measurements

Ralph Silva, Nicolas Gisin, Yelena Guryanova, and Sandu Popescu
Phys. Rev. Lett. **114**, 250401 (2015) – Published 22 June 2015

Necessary and Sufficient Condition for Quantum State-Independent Contextuality

Adán Cabello, Matthias Kleinmann, and Costantino Budroni
Phys. Rev. Lett. **114**, 250402 (2015) – Published 24 June 2015

Contextuality in Phase Space

Ali Asadian, Costantino Budroni, Frank E. S. Steinhoff, Peter Rabl, and Otfried Gühne
Phys. Rev. Lett. **114**, 250403 (2015) – Published 24 June 2015

How Statistical Forces Depend on the Thermodynamics and Kinetics of Driven Media

Urna Basu, Christian Maes, and Karel Netočný
Phys. Rev. Lett. **114**, 250601 (2015) – Published 26 June 2015

Gravitation and Astrophysics

Unscreening Modified Gravity in the Matter Power Spectrum

Lucas Lombriser, Fergus Simpson, and Alexander Mead
Phys. Rev. Lett. **114**, 251101 (2015) – Published 24 June 2015

First Direct Measurement of $C_{12}(C_{12,n})Mg_{23}$ at Stellar Energies

B. Bucher *et al.*
Phys. Rev. Lett. **114**, 251102 (2015) – Published 25 June 2015

Featured in Physics

Ultrahigh-Energy Debris from the Collisional Penrose Process

Emanuele Berti, Richard Brito, and Vitor Cardoso
Phys. Rev. Lett. **114**, 251103 (2015) – Published 26 June 2015

Elementary Particles and Fields

Equilibration Rates in a Strongly Coupled Nonconformal Quark-Gluon Plasma

Alex Buchel, Michal P. Heller, and Robert C. Myers
Phys. Rev. Lett. **114**, 251601 (2015) – Published 23 June 2015

Editors' Suggestion

Electron-Phonon Interactions, Metal-Insulator Transitions, and Holographic Massive Gravity

Matteo Baggioli and Oriol Pujolàs
Phys. Rev. Lett. **114**, 251602 (2015) – Published 23 June 2015

Absence of Quantum Time Crystals

Haruki Watanabe and Masaki Oshikawa
Phys. Rev. Lett. **114**, 251603 (2015) – Published 24 June 2015

Casimir Energy of Confining Large N Gauge Theories

Gökçe Başar, Aleksey Cherman, David A. McGady, and Masahito Yamazaki
Phys. Rev. Lett. **114**, 251604 (2015) – Published 26 June 2015

Nuclear Physics

Axial Current Generation by P -Odd Domains in QCD Matter

Ioannis Iatrakis, Shu Lin, and Yi Yin
Phys. Rev. Lett. **114**, 252301 (2015) – Published 23 June 2015

Editors' Suggestion

Observation of Charge Asymmetry Dependence of Pion Elliptic Flow and the Possible Chiral Magnetic Wave in Heavy-Ion Collisions

L. Adamczyk *et al.* (STAR Collaboration)
Phys. Rev. Lett. **114**, 252302 (2015) – Published 26 June 2015

Low-Lying Structure of Ar₅₀ and the N=32 Subshell Closure

D. Steppenbeck, S. Takeuchi, N. Aoi, P. Doornenbal, M. Matsushita, H. Wang, Y. Utsuno, H. Baba, S. Go, J. Lee, K. Matsui, S. Michimasa, T. Motobayashi, D. Nishimura, T. Otsuka, H. Sakurai, Y. Shiga, N. Shimizu, P.-A. Söderström, T. Sumikama, R. Taniuchi, J.J. Valiente-Dobón, and K. Yoneda

Phys. Rev. Lett. **114**, 252501 (2015) – Published 25 June 2015

Atomic, Molecular, and Optical Physics

Results of a Direct Search Using Synchrotron Radiation for the Low-Energy Th₂₂₉ Nuclear Isomeric Transition

Justin Jeet, Christian Schneider, Scott T. Sullivan, Wade G. Rellergert, Saed Mirzadeh, A.

Cassanho, H.P. Jenssen, Eugene V. Tkalya, and Eric R. Hudson

Phys. Rev. Lett. **114**, 253001 (2015) – Published 23 June 2015

PT-Symmetry-Breaking Chaos in Optomechanics

Xin-You Lü, Hui Jing, Jin-Yong Ma, and Ying Wu

Phys. Rev. Lett. **114**, 253601 (2015) – Published 26 June 2015

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Tunable Circularly Polarized Terahertz Radiation from Magnetized Gas Plasma

W.-M. Wang, P. Gibbon, Z.-M. Sheng, and Y.-T. Li

Phys. Rev. Lett. **114**, 253901 (2015) – Published 23 June 2015

Editors' Suggestion

Laser-Frequency Stabilization Based on Steady-State Spectral-Hole Burning in Eu₃₊:Y₂SiO₅

Shon Cook, Till Rosenband, and David R. Leibbrandt

Phys. Rev. Lett. **114**, 253902 (2015) – Published 23 June 2015

Plasma and Beam Physics

Featured in Physics

Microwave Chip-Based Beam Splitter for Low-Energy Guided Electrons

Jakob Hammer, Sebastian Thomas, Philipp Weber, and Peter Hommelhoff

Phys. Rev. Lett. **114**, 254801 (2015) – Published 23 June 2015

Bursts of Terahertz Radiation from Large-Scale Plasmas Irradiated by Relativistic Picosecond Laser Pulses

G.Q. Liao (廖国前), Y.T. Li (李玉同), C. Li (李春), L.N. Su (苏鲁宁), Y. Zheng (郑轶), M. Liu (刘梦),

W.M. Wang (王伟民), Z.D. Hu (胡志丹), W.C. Yan (闫文超), J. Dunn, J. Nilsen, J. Hunter, Y. Liu

(刘越), X. Wang (王瑄), L.M. Chen (陈黎明), J.L. Ma (马景龙), X. Lu (鲁欣), Z. Jin (金展), R.

Kodama (兒玉了祐), Z.M. Sheng (盛政明), and J. Zhang (张杰)

Phys. Rev. Lett. **114**, 255001 (2015) – Published 23 June 2015

Cross-Scale Interactions between Electron and Ion Scale Turbulence in a Tokamak Plasma

S. Maeyama, Y. Idomura, T.-H. Watanabe, M. Nakata, M. Yagi, N. Miyato, A. Ishizawa, and M. Nunami

Phys. Rev. Lett. **114**, 255002 (2015) – Published 23 June 2015

Editors' Suggestion

Alpha Heating and Burning Plasmas in Inertial Confinement Fusion

R. Betti, A.R. Christopherson, B.K. Spears, R. Nora, A. Bose, J. Howard, K.M. Woo, M.J.

Edwards, and J. Sanz

Phys. Rev. Lett. **114**, 255003 (2015) – Published 26 June 2015

Condensed Matter: Structure, etc.

Coherent Heteronuclear Spin Dynamics in an Ultracold Spinor Mixture

Xiaoke Li, Bing Zhu, Xiaodong He, Fudong Wang, Mingyang Guo, Zhi-Fang Xu, Shizhong Zhang, and Dajun Wang

Phys. Rev. Lett. **114**, 255301 (2015) – Published 25 June 2015

Editors' Suggestion

Connecting Berezinskii-Kosterlitz-Thouless and BEC Phase Transitions by Tuning Interactions in a Trapped Gas

Richard J. Fletcher, Martin Robert-de-Saint-Vincent, Jay Man, Nir Navon, Robert P. Smith, Konrad G. H. Viebahn, and Zoran Hadzibabic

Phys. Rev. Lett. **114**, 255302 (2015) – Published 26 June 2015

Featured in Physics Editors' Suggestion

Imaging Molecular Motion: Femtosecond X-Ray Scattering of an Electrocyclic Chemical Reaction

M. P. Minitti, J. M. Budarz, A. Kirrander, J. S. Robinson, D. Ratner, T. J. Lane, D. Zhu, J. M. Glowina, M. Kozina, H. T. Lemke, M. Sikorski, Y. Feng, S. Nelson, K. Saita, B. Stankus, T. Northey, J. B. Hastings, and P. M. Weber

Phys. Rev. Lett. **114**, 255501 (2015) – Published 22 June 2015

Quantum Critical Scaling of Dirty Bosons in Two Dimensions

Ray Ng and Erik S. Sørensen

Phys. Rev. Lett. **114**, 255701 (2015) – Published 23 June 2015

Condensed Matter: Electronic Properties, etc.

Editors' Suggestion

Gapped Surface States in a Strong-Topological-Insulator Material

A. P. Weber, Q. D. Gibson, Huiwen Ji, A. N. Caruso, A. V. Fedorov, R. J. Cava, and T. Valla

Phys. Rev. Lett. **114**, 256401 (2015) – Published 23 June 2015

Topological Valley Currents in Gapped Dirac Materials

Yuri D. Lensky, Justin C. W. Song, Polnop Samutpraphoot, and Leonid S. Levitov

Phys. Rev. Lett. **114**, 256601 (2015) – Published 24 June 2015

Strain Doping: Reversible Single-Axis Control of a Complex Oxide Lattice via Helium Implantation

Hangwen Guo, Shuai Dong, Philip D. Rack, John D. Budai, Christianne Beekman, Zheng Gai, Wolter Siemons, C. M. Gonzalez, R. Timilsina, Anthony T. Wong, Andreas Herklotz, Paul C. Snijders, Elbio Dagotto, and Thomas Z. Ward

Phys. Rev. Lett. **114**, 256801 (2015) – Published 25 June 2015

Spin-Fluctuation-Driven Nematic Charge-Density Wave in Cuprate Superconductors: Impact of Aslamazov-Larkin Vertex Corrections

Youichi Yamakawa and Hiroshi Kontani

Phys. Rev. Lett. **114**, 257001 (2015) – Published 23 June 2015

Effective Field Theory of the Disordered Weyl Semimetal

Alexander Altland and Dmitry Bagrets

Phys. Rev. Lett. **114**, 257201 (2015) – Published 23 June 2015

Topological Surface States Originated Spin-Orbit Torques in Bi_2Se_3

Yi Wang, Praveen Deorani, Karan Banerjee, Nikesh Koirala, Matthew Brahlek, Seongshik Oh, and Hyunsoo Yang

Phys. Rev. Lett. **114**, 257202 (2015) – Published 24 June 2015

First-Order Melting of a Weak Spin-Orbit Mott Insulator into a Correlated Metal

Tom Hogan, Z. Yamani, D. Walkup, Xiang Chen, Rebecca Dally, Thomas Z. Ward, M. P. M. Dean, John Hill, Z. Islam, Vidya Madhavan, and Stephen D. Wilson

Phys. Rev. Lett. **114**, 257203 (2015) – Published 25 June 2015

Polymer, Soft Matter, Biological, and Interdisciplinary Physics

Editors' Suggestion

Braiding a Flock: Winding Statistics of Interacting Flying Spins

Jean-Baptiste Caussin and Denis Bartolo

Phys. Rev. Lett. **114**, 258101 (2015) – Published 23 June 2015

Examining the Mechanical Equilibrium of Microscopic Stresses in Molecular Simulations

Alejandro Torres-Sánchez, Juan M. Vanegas, and Marino Arroyo
Phys. Rev. Lett. **114**, 258102 (2015) – Published 23 June 2015

Time-Frequency Analysis Reveals Pairwise Interactions in Insect Swarms

James G. Puckett, Rui Ni, and Nicholas T. Ouellette
Phys. Rev. Lett. **114**, 258103 (2015) – Published 25 June 2015

Hydrodynamic Trapping of Swimming Bacteria by Convex Walls

O. Sipos, K. Nagy, R. Di Leonardo, and P. Galajda
Phys. Rev. Lett. **114**, 258104 (2015) – Published 25 June 2015

Generalized Manning Condensation Model Captures the RNA Ion Atmosphere

Ryan L. Hayes, Jeffrey K. Noel, Ana Mandic, Paul C. Whitford, Karissa Y. Sanbonmatsu, Udayan Mohanty, and José N. Onuchic
Phys. Rev. Lett. **114**, 258105 (2015) – Published 26 June 2015

Controlling the Location of Bare Nanoparticles in Polymer-Nanoparticle Blend Films by Adding Polymer-Grafted Nanoparticles

Kishore Kumar Sriramoju and Venkat Padmanabhan
Phys. Rev. Lett. **114**, 258301 (2015) – Published 24 June 2015

Probing Colloidal Gels at Multiple Length Scales: The Role of Hydrodynamics

C. Patrick Royall, Jens Eggers, Akira Furukawa, and Hajime Tanaka
Phys. Rev. Lett. **114**, 258302 (2015) – Published 24 June 2015

Direct Observation of the Dynamics of Self-Assembly of Individual Solvation Layers in Molecularly Confined Liquids

Josep Relat-Goberna and Sergi Garcia-Manyes
Phys. Rev. Lett. **114**, 258303 (2015) – Published 25 June 2015

ERRATA

*Erratum: Observation of Measurement-Induced Entanglement and Quantum Trajectories of Remote Superconducting Qubits [Phys. Rev. Lett. **112**, 170501 (2014)]*

N. Roch, M.E. Schwartz, F. Motzoi, C. Macklin, R. Vijay, A.W. Eddins, A.N. Korotkov, K.B. Whaley, M. Sarovar, and I. Siddiqi
Phys. Rev. Lett. **114**, 259901 (2015) – Published 26 June 2015