

HIGHLIGHTED ARTICLES

**Featured in Physics** **Editors' Suggestion**

*Cavity-Modified Collective Rayleigh Scattering of Two Atoms*

René Reimann, Wolfgang Alt, Tobias Kampschulte, Tobias Macha, Lothar Ratschbacher, Natalie Thau, Seokchan Yoon, and Dieter Meschede

Phys. Rev. Lett. **114**, 023601 (2015) – Published 14 January 2015

Two groups have independently isolated two atoms in a single cavity and measured that the collective light output is not simply the sum of single emitters.

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*Enhanced Quantum Interface with Collective Ion-Cavity Coupling*

B. Casabone, K. Friebe, B. Brandstätter, K. Schüppert, R. Blatt, and T.E. Northup

Phys. Rev. Lett. **114**, 023602 (2015) – Published 14 January 2015

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*Orbital Engineering in Symmetry-Breaking Polar Heterostructures*

Ankit S. Disa, Divine P. Kumah, Andrei Malashevich, Hanghui Chen, Dario A. Arena, Eliot D. Specht, Sohrab Ismail-Beigi, F.J. Walker, and Charles H. Ahn

Phys. Rev. Lett. **114**, 026801 (2015) – Published 12 January 2015

In transition-metal oxides, the ability to control which atomic orbitals are occupied by electrons could be used to develop materials with new functionalities.

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*Sequence Determines Degree of Knottedness in a Coarse-Grained Protein Model*

Thomas Wüst, Daniel Reith, and Peter Virnau

Phys. Rev. Lett. **114**, 028102 (2015) – Published 15 January 2015

The sequence of amino acids in certain biomolecules could be a factor in ensuring that they remain free of knots.

### **Featured in Physics**

#### *Simple Model for Identifying Critical Regions in Atrial Fibrillation*

Kim Christensen, Kishan A. Manani, and Nicholas S. Peters

Phys. Rev. Lett. **114**, 028104 (2015) – Published 16 January 2015

A simple model of heart tissue that represents the architecture of cell-cell communication more realistically than previous models spontaneously develops faulty electrical waves that mimic a dangerous heart condition.

### **Editors' Suggestion**

#### *Nonlocality and Conflicting Interest Games*

Anna Pappa, Niraj Kumar, Thomas Lawson, Miklos Santha, Shengyu Zhang, Eleni Diamanti, and Iordanis Kerenidis

Phys. Rev. Lett. **114**, 020401 (2015) – Published 14 January 2015

Quantum nonlocality gives players an advantage in conflicting interest games, as demonstrated by the Battle of the Sexes game implemented with entangled photons.

### **Editors' Suggestion**

#### *Quantum Critical Transport and the Hall Angle in Holographic Models*

Mike Blake and Aristomenis Donos

Phys. Rev. Lett. **114**, 021601 (2015) – Published 12 January 2015

The techniques of gauge/gravity duality provide a holographic model explaining the anomalous scaling of resistivity in strange metals.

### **Editors' Suggestion**

#### *$\Lambda\Lambda$ Correlation Function in Au+Au Collisions at $\sqrt{s_{NN}}=200$ GeV*

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

Phys. Rev. Lett. **114**, 022301 (2015) – Published 12 January 2015

A high statistics measurement of the  $\Lambda\Lambda$  correlation function in heavy-ion collisions at RHIC suggests that the strength of the interaction is weak and provides a new limit on H-dibaryon production.

### **Editors' Suggestion**

#### *Thermometry via Light Shifts in Optical Lattices*

M. McDonald, B.H. McGuyer, G.Z. Iwata, and T. Zelevinsky

Phys. Rev. Lett. **114**, 023001 (2015) – Published 14 January 2015

A new spectroscopic technique provides an order of magnitude improvement in the temperature measurement of ultracold gases in optical lattices.

**Editors' Suggestion**

*Retrieving Time-Dependent Green's Functions in Optics with Low-Coherence Interferometry*

Amaury Badon, Geoffroy Lerosey, Albert C. Boccara, Mathias Fink, and Alexandre Aubry

Phys. Rev. Lett. **114**, 023901 (2015) – Published 12 January 2015

Time dependent Green's functions are measured at optical frequencies for scattered waves propagating in complex media using low coherence interferometry.

**Editors' Suggestion**

*Onset of a Limit Cycle and Universal Three-Body Parameter in Efimov Physics*

Yusuke Horinouchi and Masahito Ueda

Phys. Rev. Lett. **114**, 025301 (2015) – Published 13 January 2015

A functional renormalization group analysis shows that the three-body behavior of identical bosons is independent of the details of their pairwise short-range interactions.

**Editors' Suggestion**

*Collective Dynamics of Dividing Chemotactic Cells*

Anatolij Gelimson and Ramin Golestanian

Phys. Rev. Lett. **114**, 028101 (2015) – Published 12 January 2015

Dynamical renormalization group methods can be used to probe the long-range chemical interactions in cell populations.

LETTERS

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

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Gravitation and Astrophysics

*Solution to the Cosmic Ray Anisotropy Problem*

Philipp Mertsch and Stefan Funk

Phys. Rev. Lett. **114**, 021101 (2015) – Published 13 January 2015

Elementary Particles and Fields

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Nuclear Physics

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*Mass Measurements Demonstrate a Strong  $N=28$  Shell Gap in Argon*

Z. Meisel *et al.*

Phys. Rev. Lett. **114**, 022501 (2015) – Published 15 January 2015

Atomic, Molecular, and Optical Physics

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*Fermionic Suppression of Dipolar Relaxation*

Nathaniel Q. Burdick, Kristian Baumann, Yijun Tang, Mingwu Lu, and Benjamin L. Lev

Phys. Rev. Lett. **114**, 023201 (2015) – Published 14 January 2015

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Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

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*Quantum Vacuum Photon Modes and Superhydrophobicity*

Louis Dellieu, Olivier Deparis, Jérôme Muller, and Michaël Sarrazin

Phys. Rev. Lett. **114**, 024501 (2015) – Published 14 January 2015

Plasma and Beam Physics

*Ion Thermal Decoupling and Species Separation in Shock-Driven Implosions*

Hans G. Rinderknecht, M.J. Rosenberg, C.K. Li, N.M. Hoffman, G. Kagan, A.B. Zylstra, H. Sio, J.A. Frenje, M. Gatu Johnson, F.H. Séguin, R.D. Petrasso, P. Amendt, C. Bellei, S. Wilks, J. Delettrez, V. Yu. Glebov, C. Stoeckl, T.C. Sangster, D.D. Meyerhofer, and A. Nikroo

Phys. Rev. Lett. **114**, 025001 (2015) – Published 14 January 2015

Condensed Matter: Structure, etc.

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*Long-Range Spatial Correlations of Particle Displacements and the Emergence of Elasticity*

Elijah Flenner and Grzegorz Szamel

Phys. Rev. Lett. **114**, 025501 (2015) – Published 14 January 2015

*Finite-Size Effects on Liquid-Solid Phase Coexistence and the Estimation of Crystal Nucleation Barriers*

Antonia Statt, Peter Virnau, and Kurt Binder

Phys. Rev. Lett. **114**, 026101 (2015) – Published 13 January 2015

Condensed Matter: Electronic Properties, etc.

*Generalized Kitaev Models and Extrinsic Non-Abelian Twist Defects*

Maissam Barkeshli, Hong-Chen Jiang, Ronny Thomale, and Xiao-Liang Qi

Phys. Rev. Lett. **114**, 026401 (2015) – Published 13 January 2015

Show Abstract

### **PDFHTML**

*Dynamics of the Excitonic Coupling in Organic Crystals*

Juan Aragón and Alessandro Troisi

Phys. Rev. Lett. **114**, 026402 (2015) – Published 14 January 2015

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In transition-metal oxides, the ability to control which atomic orbitals are occupied by electrons could be used to develop materials with new functionalities.

*Experimental Evidence for a Bragg Glass Density Wave Phase in a Transition-Metal Dichalcogenide*

Jun-ichi Okamoto, Carlos J. Arguello, Ethan P. Rosenthal, Abhay N. Pasupathy, and Andrew J. Millis

Phys. Rev. Lett. **114**, 026802 (2015) – Published 15 January 2015

*Spin-Orbit Coupling and the Optical Spin Hall Effect in Photonic Graphene*

A. V. Nalitov, G. Malpuech, H. Terças, and D.D. Solnyshkov

Phys. Rev. Lett. **114**, 026803 (2015) – Published 16 January 2015

*Origin of the Tetragonal-to-Orthorhombic Phase Transition in FeSe: A Combined Thermodynamic and NMR Study of Nematicity*

A. E. Böhrer, T. Arai, F. Hardy, T. Hattori, T. Iye, T. Wolf, H. v. Löhneysen, K. Ishida, and C. Meingast

Phys. Rev. Lett. **114**, 027001 (2015) – Published 15 January 2015

*Molecular Pairing and Fully Gapped Superconductivity in Yb-doped CeCoIn<sub>5</sub>*

Onur Erten, Rebecca Flint, and Piers Coleman

Phys. Rev. Lett. **114**, 027002 (2015) – Published 15 January 2015

*Nodal to Nodeless Superconducting Energy-Gap Structure Change Concomitant with Fermi-Surface Reconstruction in the Heavy-Fermion Compound CeCoIn<sub>5</sub>*

Hyunsoo Kim, M. A. Tanatar, R. Flint, C. Petrovic, Rongwei Hu, B. D. White, I. K. Lum, M. B. Maple, and R. Prozorov

Phys. Rev. Lett. **114**, 027003 (2015) – Published 15 January 2015

*Microscopic Model Calculations for the Magnetization Process of Layered Triangular-Lattice Quantum Antiferromagnets*

Daisuke Yamamoto, Giacomo Marmorini, and Ippei Danshita

Phys. Rev. Lett. **114**, 027201 (2015) – Published 16 January 2015

Polymer, Soft Matter, Biological, and Interdisciplinary Physics

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*Retrieval Capabilities of Hierarchical Networks: From Dyson to Hopfield*

Elena Agliari, Adriano Barra, Andrea Galluzzi, Francesco Guerra, Daniele Tantari, and Flavia Tavani

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*Propagating Director Bend Fluctuations in Nematic Liquid Crystals*

Anja Humpert and Michael P. Allen

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*Flow Enhancement due to Elastic Turbulence in Channel Flows of Shear Thinning Fluids*

Hugues Bodiguel, Julien Beaumont, Anaïs Machado, Laetitia Martinie, Hamid Kellay, and Annie Colin

Phys. Rev. Lett. **114**, 028302 (2015) – Published 15 January 2015

*Robust Reconstruction of Complex Networks from Sparse Data*

Xiao Han, Zhesi Shen, Wen-Xu Wang, and Zengru Di

Phys. Rev. Lett. **114**, 028701 (2015) – Published 14 January 2015