

Simulation snapshot of a "slip link" (red) consisting of two cohesin rings in a dimer sliding along a chromatin fiber (blue). The sliding leads to formation of a loop in the fiber. Selected for an Editors' Suggestion. [C. A. Brackley *et al*., Phys. Rev. Lett. **119**, 138101 (2017)]

NEWSPAPER

PHYSICAL REVIEW LETTERS

Contents

Articles published 23 September–29 September 2017

VOLUME 119, NUMBER 13 29 September 2017

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

Nonexponential Quantum Decay under Environmental Decoherence 130401
M. Beau, J. Kiukas, I. L. Egusquiza, and A. del Campo
Detecting Topological Invariants in Nonunitary Discrete-Time Quantum Walks 130501
Xiang Zhan, Lei Xiao, Zhihao Bian, Kunkun Wang, Xingze Qiu, Barry C. Sanders, Wei Yi, and Peng Xue
What Randomized Benchmarking Actually Measures 130502
Timothy Proctor, Kenneth Rudinger, Kevin Young, Mohan Sarovar, and Robin Blume-Kohout
Improving a Solid-State Qubit through an Engineered Mesoscopic Environment 130503
G. Éthier-Majcher, D. Gangloff, R. Stockill, E. Clarke, M. Hugues, C. Le Gall, and M. Atatüre
Optimal Measurements for Simultaneous Quantum Estimation of Multiple Phases 130504
Luca Pezzè, Mario A. Ciampini, Nicolò Spagnolo, Peter C. Humphreys, Animesh Datta, Ian A. Walmsley, Marco Barbieri, Fabio Sciarrino, and Augusto Smerzi
Spatial Multiplexing of Atom-Photon Entanglement Sources using Feedforward Control and Switching Networks 130505
Long Tian, Zhongxiao Xu, Lirong Chen, Wei Ge, Haoxiang Yuan, Yafei Wen, Shengzhi Wang, Shujing Li, and Hai Wang
Kinetic Energy of a Trapped Fermi Gas at Finite Temperature 130601
Jacek Grela, Satya N. Majumdar, and Grégory Schehr

Gravitation and Astrophysics

Stochastic and Resolvable Gravitational Waves from Ultralight Bosons 131101
Richard Brito, Shrobana Ghosh, Enrico Barausse, Emanuele Berti, Vitor Cardoso, Irina Dvorkin, Antoine Klein, and Paolo Pani
Probing Primordial Black Hole Dark Matter with Gravitational Waves 131301
Ely D. Kovetz

Elementary Particles and Fields

Modular Invariance of Conformal Field Theory on $S^1 \times S^3$ and Circle Fibrations 131601
Edgar Shaghoulian
Dark Kinetic Heating of Neutron Stars and an Infrared Window on WIMPs, SIMPs, and Pure Higgsinos 131801
Masha Baryakhtar, Joseph Bramante, Shirley Weishi Li, Tim Linden, and Nirmal Raj
Single-Electron and Single-Photon Sensitivity with a Silicon Skipper CCD 131802
Javier Tiffenberg, Miguel Sofo-Haro, Alex Drlica-Wagner, Rouven Essig, Yann Guardincerri, Steve Holland, Tomer Volansky, and Tien-Tien Yu
Maximally Symmetric Composite Higgs Models 131803
Csaba Csáki, Teng Ma, and Jing Shu
Search for Invisible Decays of a Dark Photon Produced in e^+e^- Collisions at *BABAR* 131804
J. P. Lees *et al.* (*BABAR* Collaboration)

(Continued Inside)

Selected for a Viewpoint in *Physics*. Please visit http://physics.aps.org/.
By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

Copyright 2017 American Physical Society

0031-9007(20170929)119:13;1-2

First Simultaneous Extraction of Spin-Dependent Parton Distributions and Fragmentation Functions from a Global QCD Analysis 132001
J. J. Ethier, N. Sato, and W. Melnitchouk Jefferson Lab Angular Momentum (JAM) Collaboration

Electromagnetic Charge Radius of the Pion at High Precision 132002
B. Ananthanarayan, Irinel Caprini, and Diganta Das

Exposing the QCD Splitting Function with CMS Open Data 132003
Andrew Larkoski, Simone Marzani, Jesse Thaler, Aashish Tripathee, and Wei Xue

Nuclear Physics

High-Precision Probe of the Fully Sequential Decay Width of the Hoyle State in ^{12}C 132501
D. Dell'Aquila, I. Lombardo, G. Verde, M. Vigilante, L. Acosta, C. Agodi, F. Cappuzzello, D. Carbone, M. Cavallaro, S. Cherubini, A. Cvetinovic, G. D'Agata, L. Francalanza, G. L. Guardo, M. Gulino, I. Indelicato, M. La Cognata, L. Lamia, A. Ordine, R. G. Pizzone, S. M. R. Puglia, G. G. Rapisarda, S. Romano, G. Santagati, R. Spartà, G. Spadaccini, C. Spitaleri, and A. Tumino

New Measurement of the Direct 3α Decay from the ^{12}C Hoyle State 132502
R. Smith, Tz. Kokalova, C. Wheldon, J. E. Bishop, M. Freer, N. Curtis, and D. J. Parker

A Laser Excitation Scheme for ^{229m}Th 132503
Lars von der Wense, Benedict Seiferle, Simon Stellmer, Johannes Weitenberg, Georgy Kazakov, Adriana Pálffy, and Peter G. Thirolf

Atomic, Molecular, and Optical Physics

Potential Energy Surface Reconstruction and Lifetime Determination of Molecular Double-Core-Hole States in the Hard X-Ray Regime 133001
T. Marchenko, G. Goldsztejn, K. Jänkälä, O. Travnikova, L. Journel, R. Guillemin, N. Sisourat, D. Céolin, M. Žitnik, M. Kavčič, K. Bučar, A. Mihelič, B. Cunha de Miranda, I. Ismail, A. F. Lago, F. Gel'mukhanov, R. Püttner, M. N. Piancastelli, and M. Simon

Precision Measurement of Time-Reversal Symmetry Violation with Laser-Cooled Polyatomic Molecules 133002
Ivan Kozyryev and Nicholas R. Hutzler

Excess Hydrogen Bond at the Ice-Vapor Interface around 200 K 133003
Wilbert J. Smit, Fujie Tang, M. Alejandra Sánchez, Ellen H. G. Backus, Limei Xu, Taisuke Hasegawa, Mischa Bonn, Huib J. Bakker, and Yuki Nagata

General Linearized Theory of Quantum Fluctuations around Arbitrary Limit Cycles 133601
Carlos Navarrete-Benlloch, Talitha Weiss, Stefan Walter, and Germán J. de Valcárcel

Nonlinear Dynamics, Fluid Dynamics, Classical Optics, etc.

Negative Landau Damping in Bilayer Graphene 133901
Tiago A. Morgado and Mário G. Silveirinha

Ultimate Stable Underwater Superhydrophobic State 134501
Yaolei Xiang, Shenglin Huang, Pengyu Lv, Yahui Xue, Qiang Su, and Huiling Duan

Dissipative Effects on Inertial-Range Statistics at High Reynolds Numbers 134502
Michael Sinhuber, Gregory P. Bewley, and Eberhard Bodenschatz

Plasma and Beam Physics

Coherent Beam-Beam Instability in Collisions with a Large Crossing Angle 134801
K. Ohmi, N. Kuroo, K. Oide, D. Zhou, and F. Zimmermann

Landau Damping of Beam Instabilities by Electron Lenses 134802
V. Shiltsev, Y. Alexahin, A. Burov, and A. Valishev

Ab initio Exchange-Correlation Free Energy of the Uniform Electron Gas at Warm Dense Matter Conditions 135001
Simon Groth, Tobias Dornheim, Travis Sjostrom, Fionn D. Malone, W. M. C. Foulkes, and Michael Bonitz

(Continued on Preceding Page)

Selected for a Viewpoint in *Physics*. Please visit http://physics.aps.org/.
By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007)

Condensed Matter: Structure, etc.

Kinetically Controlled Two-Step Amorphization and Amorphous-Amorphous Transition in Ice 135701
Chuanlong Lin, Xue Yong, John S. Tse, Jesse S. Smith, Stanislav V. Sinogeikin, Curtis Kenney-Benson, and Guoyin Shen

Many-Molecule Reaction Triggered by a Single Photon in Polaritonic Chemistry 136001
Javier Galego, Francisco J. Garcia-Vidal, and Johannes Feist

Large-Scale Structure and Hyperuniformity of Amorphous Ices 136002
Fausto Martelli, Salvatore Torquato, Nicolas Giovambattista, and Roberto Car

Vibrational Action Spectroscopy of Solids: New Surface-Sensitive Technique 136101
Zongfang Wu, Agata Płucienik, Felix E. Feiten, Matthias Naschitzki, Walter Wachsmann, Sandy Gewinner, Wieland Schöllkopf, Volker Staemmler, Helmut Kuhlenbeck, and Hans-Joachim Freund

Condensed Matter: Electronic Properties, etc.

Prediction of Triple Point Fermions in Simple Half-Heusler Topological Insulators 136401
Hao Yang, Jiabin Yu, Stuart S. P. Parkin, Claudia Felser, Chao-Xing Liu, and Binghai Yan

Charge Density Waves in Graphite: Towards the Magnetic Ultraquantum Limit 136601
F. Arnold, A. Isidori, E. Kampert, B. Yager, M. Eschrig, and J. Saunders

Theory of Thermal Relaxation of Electrons in Semiconductors 136602
Sridhar Sadasivam, Maria K. Y. Chan, and Pierre Darancet

Anomaly Indicators for Time-Reversal Symmetric Topological Orders 136801
Chenjie Wang and Michael Levin

Chiral Spin Mode on the Surface of a Topological Insulator 136802
H.-H. Kung, S. Maiti, X. Wang, S.-W. Cheong, D. L. Maslov, and G. Blumberg

Scaling of Majorana Zero-Bias Conductance Peaks 136803
Fabrizio Nichele, Asbjørn C. C. Drachmann, Alexander M. Whiticar, Eoin C. T. O'Farrell, Henri J. Suominen, Antonio Fornieri, Tian Wang, Geoffrey C. Gardner, Candice Thomas, Anthony T. Hatke, Peter Krogstrup, Michael J. Manfra, Karsten Flensberg, and Charles M. Marcus

Anomalous Nonlocal Resistance and Spin-Charge Conversion Mechanisms in Two-Dimensional Metals 136804
Chunli Huang, Y. D. Chong, and Miguel A. Cazalilla

Anomalous Acoustic Plasmon Mode from Topologically Protected States 136805
Xun Jia, Shuyuan Zhang, Raman Sankar, Fang-Cheng Chou, Weihua Wang, K. Kempa, E. W. Plummer, Jiandi Zhang, Xuetao Zhu, and Jiandong Guo

3D Quantum Hall Effect of Fermi Arc in Topological Semimetals 136806
C. M. Wang, Hai-Peng Sun, Hai-Zhou Lu, and X. C. Xie

Nontrivial Chern Numbers in Three-Terminal Josephson Junctions 136807
Julia S. Meyer and Manuel Houzet

Emission of Nonclassical Radiation by Inelastic Cooper Pair Tunneling 137001
M. Westig, B. Kubala, O. Parlavecchio, Y. Mukharsky, C. Altimiras, P. Joyez, D. Vion, P. Roche, D. Esteve, M. Hofheinz, M. Trif, P. Simon, J. Ankerhold, and F. Portier

Magnetic Skyrmions and Skyrmion Clusters in the Helical Phase of Cu_2OSeO_3 137201
Jan Müller, Jayaraman Rajeswari, Ping Huang, Yoshie Murooka, Henrik M. Rønnow, Fabrizio Carbone, and Achim Rosch

Detection of the Spin-Chemical Potential in Topological Insulators Using Spin-Polarized Four-Probe STM 137202
Saban M. Hus, X.-G. Zhang, Giang D. Nguyen, Wonhee Ko, Arthur P. Baddorf, Yong P. Chen, and An-Ping Li

Magnetic Circular Dichroism in X-Ray Emission from Ferromagnets 137203
Toshiya Inami

Current-Nonlinear Hall Effect and Spin-Orbit Torque Magnetization Switching in a Magnetic Topological Insulator 137204
K. Yasuda, A. Tsukazaki, R. Yoshimi, K. Kondou, K. S. Takahashi, Y. Otani, M. Kawasaki, and Y. Tokura

Field-Induced Instability of a Gapless Spin Liquid with a Spinon Fermi Surface 137205
M. Gomilšek, M. Klanjšek, R. Žitko, M. Pregelj, F. Bert, P. Mendels, Y. Li, Q. M. Zhang, and A. Zorko

(Continued on Preceding Page)

Selected for a Viewpoint in *Physics*. Please visit http://physics.aps.org/.

By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007)

Gate-Controlled Spin-Valley Locking of Resident Carriers in WSe_2 Monolayers 137401
P. Dey, Luyi Yang, C. Robert, G. Wang, B. Urbaszek, X. Marie, and S. A. Crooker
Optical Force Enhancement Using an Imaginary Vector Potential for Photons 137402
Lana Descheemaeker, Vincent Ginis, Sophie Viaene, and Philippe Tassin
Macroscopic Polarization from Antiferrodistortive Cycloids in Ferroelastic $SrTiO_3$ 137601
Andrea Schiaffino and Massimiliano Stengel

Polymer, Soft Matter, Biological, Climate, and Interdisciplinary Physics

Determining Quiescent Colloidal Suspension Viscosities Using the Green-Kubo Relation and Image-Based Stress Measurements 138001
Neil Y. C. Lin, Matthew Bierbaum, and Itai Cohen
Surface Polarization Effects on Ion-Containing Emulsions 138002
Meng Shen, Honghao Li, and Monica Olvera de la Cruz
Nonequilibrium Chromosome Looping via Molecular Slip Links 138101
C. A. Brackley, J. Johnson, D. Michieletto, A. N. Morozov, M. Nicodemi, P. R. Cook, and D. Marenduzzo
Helicase Stepping Investigated with One-Nucleotide Resolution Fluorescence Resonance Energy Transfer 138102
Wenxia Lin, Jianbing Ma, Daguan Nong, Chunhua Xu, Bo Zhang, Jinghua Li, Qi Jia, Shuoxing Dou, Fangfu Ye, Xuguang Xi, Ying Lu, and Ming Li
Intermittent Granular Dynamics at a Seismogenic Plate Boundary 138501
Yasmine Meroz and Brendan J. Meade

Errata

Erratum: Distinct Turbulence Saturation Regimes in Stellarators [Phys. Rev. Lett. **118**, 105002 (2017)] 139901
G. G. Plunk, P. Xanthopoulos, and P. Helander
Publisher's Note: Solar Irradiance Variability is Caused by the Magnetic Activity on the Solar Surface [Phys. Rev. Lett. **119**, 091102 (2017)] 139902
Kok Leng Yeo, Sami K. Solanki, Charlotte M. Norris, Benjamin Beeck, Yvonne C. Unruh, and Natalie A. Krivova
Erratum: Evidence for a Phase Transition in Silicate Melt at Extreme Pressure and Temperature Conditions [Phys. Rev. Lett. **108**, 065701 (2012)] 139903
D. K. Spaulding, R. S. McWilliams, R. Jeanloz, J. H. Eggert, P. M. Celliers, D. G. Hicks, G. W. Collins, and R. F. Smith

Selected for a Viewpoint in *Physics*. Please visit http://physics.aps.org/.
By suggesting a few manuscripts each week, we hope to promote reading across fields. Please see our Announcement Phys. Rev. Lett. 98, 010001 (2007).

Physics
spotlighting exceptional research

The American Physical Society's free online publication, *Physics* (http://physics.aps.org/), provides thought-provoking analysis and spotlights exceptional research.